

SUBTERRANEAN SPECIES OF THE US AND CANADA

By John Roth, October 5, 2001

Includes cave or aquatic subterranean (cavernicoles, cave fossils, hyporheic, marine infauna, aquatic interstitial) and bat and woodrat parasites; excludes most soil fauna and marine burrowers

First cave mentioned is type locality unless preceded by Ac (accidental) or Tp (troglophile)

See "Bibliography of Subterranean Species of the US and Canada" in this CDROM for extended citations.

@ - Taxonomic citation &/or spelling not verified

* - Only found in that area

Groups reviewed by taxonomists (Since new data has been added to most groups since the reviews, all errors are the responsibility of the author)

amphipods (Bousfield)

annelids (Mark Wetzel, William Fender)

ants (Mark DuBois)

bacteria (Bruce Thompson)

beetles -

Carabidae (Don Schwert, George Ball, Richard Krinsky)

Dysticidae - Paul Spangler

Elateridae - Jim Smith

Elmidae - Cheryl Barr

Leiodidae - Stewart Peck

Pslaphidae - Don Chandler

Scarabidae - Henry Howden, Mary Liz Jameson, Bret Ratcliffe

Staphilinidae - Rod Hanley, Margaret Thayer

centipedes (Richard Shelley)

copepods (Janet Reid)

crayfish (Keith Crandall)

earthworms (William M. Fender & Dorothy McKey-Fender)

fish (Bob Pruitt)

fleas (Dr. Allen Benton; Robert Lewis)

flies (Scott Fitzgerald, Greg Courtney)

Anthomyiidae - Graham Griffiths

Calliphoridae - Bruce Cooper

Chironomidae - John Epler, Broughton Caldwell

Mycetophilidae - J. Vockeroth

Simuliidae - Peter Adler, Greg Courtney

Tachinidae - Jim O'Hara

fungi (John Rutherford, Frank Dugin)
harvestmen (James Cokendolpher)
homoptera & hemiptera/heteroptera - Richard Packauskas

isopods - Julian Lewis
leeches - Mark Wetzel
midges - John Epler

millipedes (Richard Shelley)
mites, cave (Miloslav Zacharda)

water mites (David Cook)
oribatida/astigmata (Roy Norton)
astigmata (James Philips)
mesostigmata (Frank Radowsky)

moths (Don Lafontaine)
nematodes (George Caine, Allen Shostak, Ivan Kanev Stoyanov)
ostracods (Rosalie Maddocks)

pseudoscorpions (William Muchmore)
psocoptera (Thomas Sidebottom)
salamanders (Andy Grubbs)

schizomids (James Cokendolpher)
snails (Terry Feest)
spiders (Norm Platnick, Joseph Beatty)

springtails (Ken Christiansen)
symphyliids (Clive Edwards)
trematode (Allen Shostak, Jeff Lotz, Ivan Kanev Stoyanov)

turbellaria (Ronald Sluys)
worms (William Fender)

Major State references: Alabama (**AL**): Peck 1989; Alaska (**AK**): Carlson 1994; Arizona (**AZ**): Dorst & Blinn 1997; Peck 1980; Welbourne 1976, 1999; Arkansas (**AR**): Barnett 1970; Dunivan et al. 1982; Grove 1974; McDaniel, Paige & Tumblison 1979; McDaniel & Smith 1976; Peck & Peck 1982; British Columbia (**BC**): Shaw 1999; California (**CA**): Crawford 1989; Rudolph, et al. 1985; Colorado (**CO**): S. Fitzgerald; Georgia (**GA**): Holsinger & Peck 1971; Reeves 2000; Reeves, Jensen & Ozier 2001; Illinois (**IL**): Peck & Christiansen 1990; Webb, Taylor & Krejca 1993; Iowa (**IA**): Alexander 1980; Peck & Christiansen 1990; Indiana (**IN**): Lewis 1999; Kentucky (**KY**): Barr 1958, 1971; Harker & Barr 1979; Maryland (**MD**): Franz & Slifer 1971; Minnesota (**MN**): Alexander 1980; Peck & 1990; Mississippi (**MS**): Middleton 1976; Missouri (**MO**): Gardner 1986; New Jersey (**NJ**): Nicholas 1976; New Mexico (**NM**): Barr & Reddell 1967; Northup & Welbourn 1997; North Carolina (**NC**): Holler 1976; Nova Scotia (**NV**): Moselely 1999; Ohio (**OH**): Hobbs & Flynn 1981; Oklahoma (**OK**): Black 1971; Ontario (**ON**): Peck 1988; Oregon (**OR**): Benedict & McEvoy 1995; Crawford 1994, 1996; Pennsylvania (**PA**): Dearolf 1941, 1953; Holsinger 1976; South Carolina (**SC**): Holler 2000; Tennessee (**TN**): Barr

1958, 1961; Holsinger & Culver 1985; Texas (**TX**): Reddell 1998; Utah (UT) Peck 198; Virginia (**VA**): Holsinger & Culver 1985; Washington (**WA**): Crawford & Sender 1985; Crawford 1993; West Virginia (**WV**): Holsinger, Baroody & Culver. 1975; Wisconsin (**WI**): Alexander 1980; Peck & Christiansen 1990

ABALONE - Gastropod of Order Archaeogastropoda

Superfamily Pleurotomariacea

Family Haliotidae (*Haliotis*)

Haliotis Linnaeus, 1758 - Haliotidae abalone (9 species in US or Canada)

Haliotis undet. sp. (TTx in CA marine)

abiotics (see climate, habitat, metabolism, temperature, relative humidity, oxygen, weather) Keith 1975/a, 1977; Williams & Moore 1982

abbreviation or abbreviated development - Phylogenetic abbreviation of the process of structural development, as in neoteny.

abundance - Number of individuals of a certain taxon level in a given area or volume.

abundant - Population usually present with > 50 individuals or more per day.

acclimation - The change in a biologic rate (such as breathing or heart beat) to a change in surrounding temperatures

actinomycetes - A bacteria **microbe** with fungi-like mycelium. May cause "cavers' perfume" odor See cave **slime**. Lavoie & Northrup 1994

adaptation - Inherited structure, function, or behavior that improves survival in a particular habitat. (See abiotics, evolution, natural selection) - Brigg 1986; Bull & Mitchell 1970, 1972; Culver, Kane, Fong 1995; Culver, Kane, Fong, Jones, Taylor & Sauereisen 1990; Dickson 1977; LaVal 1965a; Parzefall 1986; Poulson 1961, 1964; Sbordoni 1982; Sket 1985; Starr 1968; Turner & Clench 1974; Ueno, S.I. 1987

adaptive radiation - The relatively rapid evolutionary divergence of one phylogenetic line into different adaptive forms.

adaptive shift/radiation - Bibl.: Howarth 1981, 1986, 1987, 1987a, 1991

accidental - 1. **Population** of 1-3 records/year, judged unlikely to be repeated on a regular basis. Incl. ants, bears, mites, people, rabbits, most snakes, & turtles. 2. Species that have fallen, washed or otherwise gotten into a cave without purposal locomotion. Rare intruders from other habitats. Syn.: strange, xenoc(o)enic.

accidental (geologic) - Pyroclastics formed from fragments of nonvolcanic rocks or from

volcanics not related to the erupting volcano.

acoenic or acenic - Species who live in many different habitats and high ecological amplitudes.

adult - Males and females which are sexually mature.

adventitious - Found in an area to which it is not native, having been introduced by humans..

aerogenic - Adj. for bacteria that liberate gas during metabolism of certain substrates, as may be the case in hydromagnesite balloons.

aerotolerant - Anaerobic bacteria which will not be inhibited by oxygen and can still grow at sub-optimal rates.

aesthetase – Sensory (especially olfactory) bristles on antenna or antennules.

Agnathans – Part of Subphylum Vertebrata that includes ostracoderms, conodonts and Peyromyzontiformes (lampreys).

agonistic - See behavior

albinism - The genetically determined absence of pigments in animals. Mohr 1938

algae, blue-green - See bacteria, cyanobacteria

Algae

Approx. = Phycophyta (see also blue-green algae **bacteria**). About 33,000 species. A relatively simple plant or photosynthetic cell without root, stem & leaves; which has no true vascular system. Incl. diatoms, green, red & yellow-green algae. Euglenoids are placed among the **protists**.

Not a formal taxon group, green algae are paraphyletic with respect to Plantae. Like plants, "green algae" have chlorophylls "a" & "b" & an alternation of generations. Unlike plants, alternations may be isomorphic, so that gametophyte & sporophyte are indistinguishable. Major groups distinguished by number & arrangement of flagella.

Bibl.: Aley 1972, 1976, 1984, 1985; Aley, Aley & Rhodes 1984; Claus 1963; Dalby 1966; Dobat 1998; Nagy, J. P. 1964; Wong 1975; J.H. Jones 1965?; W. Lang 1946; McNeil 1935; Oneil & Kuehn 1988; Trepasso & Kaletsky 1994; J. Ward & Dufford 1979

Brown Algae

Phylum or Division Chromophyta

Division Phaeophycophyta

Class Phaeophyceae (brown algae)

Order Fucales

Fucaceae (*Ascophyllum*, *Fucus*)

Ascophyllum Stackhouse, 1809 - Fucaceae algae, Order Fucales

Ascophyllum *nodosum* (*Fucus nodosus* Linnaeus, 1753) Le Jolis (NE Atlantic, Britain/ Knotted wrackweed/ sea cave in ME),

Fucus Linnaeus, 1753 (rockreefs) undet. sp. (sea cave in ME)

Diatoms

May be >12,000 sp. Domain Eucarya, Kingdom (or division) Bacillariophyta, class Bacillariophyceae (= Diatomata) or an algae division (Bacillariophyta) or order (Bacillariales or Diatomales). Within a grouping with five other kingdoms that seem to be related: labyrinthulids, Oomycota, Chrysophyta, Xanthophyta, and Phaeophyta. Considered by some authors a cyst differentiation within phylum Chrysophyta. Dominant group of phytoplankton. Can be 1mm across, most are smaller. Thin double shells of silica called frustules. Shell top has hole pattern characteristic of the sp. Spines or setae chain with other cells, increasing buoyancy. Appear 100 myrs ago & reach peak abundance in Miocene. Sediments called diatomites or diatomaceous earths used in insulation, abrasives, ceramics & fillers. **Bibl.:** Cox 1996; **CA:** W. Shepard et al. 2000; **OR:** St. Clair, Rushforth & Allen 1982; **KY:** Van Landingham 1964-7); **MT:** Bahls 1981; **NA:** Vineyard 1979; **US:** Patrick & Reimer 1967, 1975; **UT:** St. Clair, Rushforth.

Division Heterokontophyta (= Kingdom or Division Bacillariophyta)
(also put in Kingdom Protocistae)

Class Bacillariophyceae (= Diatomata)

Order Centrales

Thalassiosiraceae (*Cyclotella*, *Stephanodiscus*)

Suborder Discineae

Superfamily Coscinodiscinea

Coscinodiscaceae (*Coscinodiscus*)

Melosiraceae (*Melosira*, *Pyxidicula*)

Order Navicales

Suborder Biraphidineae (also put in Raphidineae),

Naviculaceae (also put in Order Pennales)

(*Amphipleura*, *Amphiprora*, *Anomoeneis*, *Diploneis* (also in own family),

Caloneis,

Cocconeis (also put in Achnanthaceae), *Frustulia*, *Gyrosigma*, *Mastogloia*,

Melosira, *Navicula* *P. innularia*, *Pleurosigma*, *Stauroneis*)

Suborder Neidiineae

Brachysiraceae (*Brachysira*) (also put in Order Pennales)

Order Pennales (see also protists)

Gomphonemaceae (*Gomphonema*)

Suborder Arphidineae

Diatomaceae

(*Asterionella*, *Cymatopleura*, *Diatoma* (also in Rhizophoraceae),
Fragilaria, *Meridion*, *Neidium*, *Opephora*, *Synedra*, *Tabellaria*)

Suborder Biraphidineae

Epithemiaceae (*Epithemia*, *Rhopalodia*)

Suborder Fragilarineae

Eunotiaceae (*Eunotia*)

Suborder Monoraphidineae

Achnanthaceae (*Achnanthes*, *Cocconeis* (also put in Naviculaceae), *Rhoicosphenia*),

Suborder Raphidineae

Cymbellaceae (*Amphora*, *Cymbella*)

Naviculaceae (put in Order Naviculales)

Nitzschiaceae (*Cylindrotheca*, *Denticula*, *Hantzschia*, *Nitzschia*)

Achnanthes Bory De St. Vincent, 1822 - Achnanthaceae diatoms

Achnanthes *affinis* Grun. (benthic in Devil's Hole, swNV)

Achnanthes *clevei* Grun. var. *c. Patrick* (MN hyporheic)

Achnanthes *coarctata* (*Eurotia c. Breb. in W.Sm.Grun.*, 1855)

Achnanthes *exigua* Grun. (MT,OR; benthic in Devil's Hole, swNV)

Achnanthes *exigua e. var. constricta* (Grun.) Hust. (MT caves; MN hyporheic)

Achnanthes *exigua* var. *heterovalva* (OR; benthic in Devil's Hole, swNV)

Achnanthes *gibberula* Grun. (benthic in Devil's Hole, swNV)

Achnanthes *grimmer* Grun. (benthic in Devil's Hole, swNV)

Achnanthes *hungarica* (Grun.) Grun. (benthic in Devil's Hole, swNV)

Achnanthes *lanceolata* (Brebisson, 1846) Grunow (MT,OR caves; MN hyporheic; benthic in Devil's Hole, swNV)

Achnanthes *linearis* (W.M.Smith, 1855) Grun forma *curta* H.L. Smith ex. Boyer, 1916 (MT caves; MN hyporheic; benthic in Devil's Hole, swNV)

Achnanthes *microcephala* Kuetzing, 1844 (OR), *minutissima* Kuetz, 1833. (MT,OR),

Achnanthes *minutissima* Kutz (benthic in Devil's Hole, swNV)

Achnanthes *montana* (Kuetz) Krasske, 1929 (OR),

Achnanthes undet. species (MT,OR,UT)

Achnanthes *submarina* Hust. (benthic in Devil's Hole, swNV)

Achnanthes *suchlandtii* Hust.(benthic in Devil's Hole, swNV)

Achnanthes 2 undet. species (benthic in Devil's Hole, swNV)

Amphipleura Kuetzing, 1844 – Naviculaceae diatoms

Amphipleura *pellucida* (Kutz.) Kuetzing var. p. Patrick (MN hyporheic)

Amphora Ehrenberg & Kuetzing, 1844 - Raphidineae diatom (also classified as ar protist)

Amphora *coffeaiformis* (Agardh) (MN hyporheic)

Amphora *coffeaiformis* (Agardh) var. *perpusilla* (Grunow, 1880) Detoni (=A.p.) (OR/by lights, alien?)

Amphora *ovalis* var. *libyca* (Her.) Cl. (MN hyporheic)

Amphora *ovalis* var. *pediculus* Kutz.(MN hyporheic)

Amphiprora Ehrenberg, 1841 – Naviculaceae diatoms

Amphiprora *alata* Ehrenberg (MN hyporheic)

Amphiprora *ornata* Bailey (MN hyporheic)

Anomoconeis *serians* (Bre'b.) Cl. Var. *brachysira* (Bre'b) Cl. (benthic in Devil's Hole, swNV)

Anomoeneis Phitzer, 1871 – Naviculaceae diatoms

Anomoeneis *sphaerophora* (Her.) Pfitzer, 1871 var. s. Patrick (MN hyporheic)

Asterionella Hassal, 1850 Diatomaceae diatoms

Asterionella *formosa* Hassal, 1850 var. *formosa* Patrick (MN hyporheic)

Brachysira Kutz., 1836 – Brachysiraceae in Order Naviculales

Brachysira *aponina* Kutz. (benthic in Devil's Hole, swNV)

Caloneis Cleve, 1894 - Naviculaceae diatoms

Caloneis *bacillum* Cleve, 1894 (UT/by lights, alien?; MN hyporheic)

Caloneis *lewisii* Patrick var. *l.* Parick (MN hyporheic)

Caloneis *limosa* (Kutz) Patrick var. *limosa* Patrick (MN hyporheic)

Caloneis undet. sp. (benthic in Devil's Hole, swNV)

Caloneis *ventricosa* Ehr. (benthic in Devil's Hole, swNV)

Cocconeis Ehrenberg, 1837 - Naviculaceae or Achnanthaceae diatoms

Cocconeis *pediculus* Ehr. var. p. Patrick (MN hyporheic)

Cocconeis *placentula* (Ehrenb.)

Cocconeis *placentula* var. *euglypta* (Her.) (Cl. (MT caves; MN hyporheic))

Cocconeis *placentula* var. *lineata* (C.l. Ehrenberg, 1849) (MT, UT/by lights, alien?; MN hyporheic)

Cocconeis *placentula* var. *placentula* Patrick (MN hyporheic)

Cocconeis undet. sp. (benthic in Devil's Hole, swNV)

Coscinodiscus Ehrenberg, 1938 (= *Phacodiscus*) Coscinodiscaceae diatoms

Coscinodiscus undet. sp. or species (near lights in NV; benthic in Devil's Hole, swNV)

Cyclotella Kuetzing, 1834 – Thalassiosiraceae diatoms

Cyclotella *catenata* Brun. (MN hyporheic)

Cyclotella *comata* (Her.) Kutz. (MN hyporheic)

Cyclotella *glomerata* Bachmann (MN hyporheic)

Cyclotella *meneghiniana* Kuetzing (MN hyporheic)

Cyclotella *striata* Grun var. *bipunctata* Fricke (MN hyporheic)

Cylindrotheca - Nitzschiaceae diatoms

Cylindrotheca *gracilis* (Breb.) Grun. (MN hyporheic)

Cymatopleura W. Smith, 1851 - Diatomaceae diatoms

Cymatopleura undet. sp. (OR cave)

Cymatopleura *solea* (Berb.) W. Sm. (MN hyporheic)

Cymatopleura *solea* (Berb.) W. Sm. var. *regula* (Ehr.) Grun. (MN hyporheic)

Cymbella C.A. Agardh, 1830 - Cymbellaceae diatoms

Cymbella *affinis* (*Achnanthes a.* Grun in Cl. & Svenska, 1880 (MT caves; MN hyporheic))

Cymbella *angustata* (W. Sm.) Cl. (benthic in Devil's Hole, swNV)

Cymbella *cesati* (Rabh.) Grun. (benthic in Devil's Hole, swNV)

Cymbella *cistula* (Hemprich) Grun. (MN hyporheic)

Cymbella *clausii* Van Landingham, 1967 (Tp? in Mammoth Cave, KY)

Cymbella *delicatula* (W. Sm.) Cl. (benthic in Devil's Hole, swNV)

Cymbella *ehrenbergii* Kutz. (MN hyporheic)

Cymbella *fonticola* Hust. (benthic in Devil's Hole, swNV)

Cymbella *gerloffii* Van Landingham, 1967 (Tp? in Mammoth Cave, KY)

Cymbella *gracilis* (Rabh.) Cl. (MN hyporheic)

Cymbella *hebridica* (Greg.) Grun. (MN hyporheic)

Cymbella *hohnii* VanLandingham, 1967 (Tp? in Mammoth Cave,KY)

Cymbella *microcephala* Grun.(benthic in Devil's Hole, swNV)

Cymbella *microcephala* Grun.forma *lateus* (Krassler) Reim. (benthic in Devil's Hole, swNV)

Cymbella *minuta* Hilse (benthic in Devil's Hole, swNV)

Cymbella *minuta* var. *silesiaca* (Bleisch ex Rabh, 1864.) Reim. Comb nov. (MT,OR)

Cymbella *norvegica* Grun.(benthic & phytoplankton in Devil's Hole, swNV)

Cymbella *obtusiuscula* Kutz. (MN hyporheic)

Cymbella *prostata* Kutz. (MN hyporheic)

Cymbella *sinuata* Gregory, 1856 (MT caves; MN hyporheic)

Cymbella undet. sp. (phytoplankton in Devil's Hole, swNV)

Cymbella *tumidai* (Breb) Van Heurck (MN hyporheic)

Cymbella *tumida* (Breb.) Van Heurck (MN hyporheic)

Cymbella *ventricosa* Kutz. (MN hyporheic)

Denticula Kuetzing, 1844 – Nitzschiaceae diatoms

Denticula *elegans* Kutz (benthic in Devil's Hole, swNV)

Diatoma Bory De St. Vincent, 1824 - Diatomaceae diatoms

Diatoma *hiemale* Lyngbye, 1819 (UT/by lights, alien?)

Diatoma *hiemale* var. *mesodon* (UT/by lights, alien?)

Diatoma *vulgare* Bory De St. Vincent, 1824 (MT, UT caves by lights, alien?; MN hyporheic)

Diploneis C.G.Ehrenberg ex Cleve, 1894 - Naviculaceae diatoms

Diploneis undet. sp. or species (OR,NM)

Epithemia - Epithemiaceae diatoms

Epithemia *argus* Kuetz. var. *longicornis* Grun. (MN hyporheic)

Epithemia *sorex* Kutz. (MN hyporheic)

Epithemia *turgida* (Her.) Kutz. (MN hyporheic)

Eurotia Ehrenberg, 1937 – Eunotiaceae diatoms

Eurotia *monodon* Her. var. *m.* Patrick (MN hyporheic)

Eurotia *praerupta* Ehr. (benthic in Devil's Hole, swNV)

Eurotia *praerupta* Ehr. var. *p.* Patrick (MN hyporheic)

Eurotia undet. sp. (benthic & phytoplankton in Devil's Hole, swNV)

Fragilaria Lyngbye, 1819 - Diatomaceae diatoms

Fragilaria *brevistriata* var. *inflata* (Pant.) Hust. (MN hyporheic)

Fragilaria *capucina* var. *mesolepta* Rabh. (MN hyporheic)

Fragilaria *construens* (Ehr., 1893) Grun. (MT,OR/by lights, alien?),

Fragilaria *construens* var. *binodis* (UT/by lights, alien?)

Fragilaria *construens* var. *c.* Patrick (MN hyporheic)

Fragilaria *leptostauron* var. *dubia* (Grun.) Hust. (MN hyporheic)

Fragilaria *pinnata* var. *intercedens* (Grun.) Hust. (MN hyporheic)

Fragilaria undet. sp. (benthic & phytoplankton in Devil's Hole, swNV)

Fragilaria *vaucheriae* (Kutz) Rabh (benthic in Devil's Hole, swNV)

Fragilaria *vaucheriae* var. *v.* Patrick (MN hyporheic)

Frustulia Agardh, 1824 – Naviculaceae diatoms

Frustulia *rhomboides* (Her) De Tonis var. *r.* Patrick (MN hyporheic)

Frustulia *vulgaris* (Thaiwtes) DeT. var. *v.* Patrick (MN hyporheic)

Gomphonema Agardh, 1824 - Gomphonemaceae diatoms

Gomphonema *acuminatum* var. *brebissonii* (Kutz.) Cl. (MN hyporheic)

Gomphonema *acuminatum* var. *coronata* (Her.) W. Sm. (MN hyporheic)

Gomphonema *acuminatum* var. *trigonocephala* (Her.) Grun. (MN hyporheic)

Gomphonema *angustatum* (Kutz.) Rabrenh (benthic in Devil's Hole, swNV)

Gomphonema *angustatus* var. *producta* Grun. (MN hyporheic)

Gomphonema *constrictum* Ehr. (MN hyporheic)

Gomphonema *gracile* Ehr. (MN hyporheic)

Gomphonema *hotchkissii* VanLandingham, 1966 (Tp in Mammoth Cave,KY), *olivaceum* (UT/by lights, alien?)

Gomphonema *intricatum* Kutz (benthic in Devil's Hole, swNV)

Gomphonema *intricatum* var. *pumila* Grunow (MN hyporheic)

Gomphonema *olivaceum* (Lyng.) Kutz.(MN hyporheic)

Gomphonema *parvulum* var. *micropus* (Kutz.) Cl. (MN hyporheic)

Gomphonema *sphaerophorum* Ehr. (MN hyporheic)

Gomphonema undet. sp. (benthic in Devil's Hole, swNV)

Gyrosigma Hassall, 1845 - Naviculaceae diatoms

Gyrosigma *attenuatum* (Kutz) Rabdh. Var. *a.* Parick (MN hyporheic)

Gyrosigma *acuminatum* (Kutz.) Rabh. = *Pleurosigma* *scalptrum*

Gyrosigma *obtusatum* (Sulliv. & Wormley) Boyer var. *a.* Parick (MN hyporheic)

Hantzschia Grunow, 1877 - Nitzschiaceae diatoms

Hantzschia *amphioxys* (Ehr.) Grunow in Cleve & Grunow.

Hantzschia *amphioxys* var. *erassaw* M. Peragallo in Heribaud et al., 1920 (MT,OR,UT/by lights, alien?)

Hantzschia *amphioxys* var. *major* Grun. (MN hyporheic)

Mastogloia Thwaites ex W. Sm. – Naviculaceae diatoms

Mastogloia *smithi* Thw. var. *lacustris* Grun. (benthic in Devil's Hole, swNV)

Melosira C.A. Agardh, 1824 - Naviculaceae diatoms . Bibl. Kashima & Ogawa 1995 (UT,OR (assoc. with siliceous coralloids)/by lights, alien?) (also placed in Protista)

Melosira *ambigua* (Grun.) O. Mull. (MN hyporheic)

Melosira *distans* var. *Lyrata* forma *curvata* Jouse=, 1952. (NM,MT)

Melosira *granulata* (Ehr., 1843) Ralfs, 1861 (MT caves; MN hyporheic)

Melosira *roseana* Rabhehorst, 1852 (MT)

Melosira undet. sp, (NM/by lights, alien?)

Melosira *varians* (?Agardh, 1827) Kirchner, 1878 (MT caves; MN hyporheic)

Meridion - Diatomaceae diatoms

Meridion *circulare* (Grev.) Ag. var. *circulare* Patrick (MN hyporheic)

Navicula Bory de St.-Vicent, 1822 (all sp. by lights, aliens?) - Naviculaceae diatoms

Navicula *anglica* var. *subsalsa* (Grun.) Cl. (MN hyporheic)

Navicula *atomus* (Kutzing, 1844) Grunow, 1860 (UT cave)

Navicula *brekkaensis* Petersen, 1928 (OR cave)

Navicula *capitata* Ehr. var. *capitata* Patrick. (MN hyporheic)

Navicula *cincta* (Ehr., 1854) Ralfs in Pritch, 1861

Navicula *cincta* var. *rostrata* Reimer, 1962 (MT)

Navicula *clamans* Hustedt, 1939. (MT)

Navicula *contenta* Grunow in Van Heurek, 1880 (UT)

Navicula *contenta* var. *biceps* Arnott Ms., Grunow in van Heurek, 1885 (OR)

Navicula *contenta* f. *parallela* J.B. Petersen, 1928 (MT)

Navicula *cryptocephala* Kuetzing, 1844 var. *veneta* (N.v. Kutz., 1844) (MT, OR, UT caves; MN hyporheic)

Navicula *cuspidata* (Kutz.) Kutz. var. *c.* Patrick. (MN hyporheic)

Navicula *declivis* Hust. (MN hyporheic)

Navicula *frustulum* Hust. (benthic in Devil's Hole, swNV)

Navicula *gallica* (W.M. Smith, 1857) var. *montana* Bahls (MT,O R)

Navicula *gastrum* (Ehr.) Kutz. var. *gastrum* Patrick. (MN hyporheic)

Navicula *halophila* (Grun.) Cl. Ehr. var. *h.* Patrick. (MN hyporheic)

Navicula *hambergii* Hust. var. *h.* Patrick. (MN hyporheic)

Navicula *insociabilis* Krasske, 1961 (OR)

Navicula *laterostrata* Hsut. var. *l.* Patrick. (MN hyporheic)

Navicula *minima* Grun. (benthic in Devil's Hole, swNV)

Navicula *menisculus* var. *upsaliensis* (Grun.) Grun. (MN hyporheic)

Navicula *minima* var. *minima* Grun., 1880 (MT,OR)

Navicula *murrayii* West et G.S. West, 1911 (UT)

Navicula *mutica* Kuetzing, 1844

Navicula *mutica* var. *m.* Kuetzing, 1844 (MT,UT)

Navicula *mutica* var. *binoidis* (MT,UT)

Navicula *mutica* var. *n.* (Ehr.) Hust (KY/unlighted)

Navicula *mutica* var. *undulata* (Hilse in Rabdh., 1860) Grun., 1880 (MT,UT)

Navicula nivalis = *N. mutica* var. *n.* (Ehr.) Hust

Navicula *odiosa* Wallace var. *o.* Patrick. (MN hyporheic)

Navicula *parva* (Menegh.) Cl.-Euler (benthic in Devil's Hole, swNV)

Navicula *pelliculosa* Breb ex Gilse, 1849 (OR)

Navicula *permitis* Hustedt, 1945 (UT)

Navicula *perpusilla* (*Synedra p.* Kutz., 1844) Grun. (Epigeal in SE, middle Atlantic states/ near cave lights in MT,OR)

Navicula *procracta* Grun. var. *p.* Patrick. (MN hyporheic)

Navicula *pupula* (*Stauroneis p.* R. Gregory, 1854) Grun. in Cl. & Grun, 1880

Navicula *pupula* var. *elliptica*. (MN hyporheic)

Navicula *pupula* var. *rectangularis* (N.p. forma r. Gregory, 1854) (MT, OR)

Navicula *radiosa* var. *r.* Kuetzing, 1844 (UT)

Navicula *radiosa* var. *tenella* (Breb. & Kutz.) Grun. (MN hyporheic)

Navicula *rinehardtii* (Grun.) var. *salinarum* Patrick (MN hyporheic)

Navicula *salinarum* Grun. var. *s.* Patrick (MN hyporheic)

Navicula *salinarum* Grun. var. *intermedia* (Grun.) Cl. Patrick (MN hyporheic)

Navicula *secura* Patrick, 1759 (OR),

Navicula *seminulum* var. *hustedtii*. Patrick (MN hyporheic)

Navicula undet. species (6 species in NV cave near lights; benthic in Devil's Hole, swNV)

Navicula *texana* Patrick var. *t.* Patrick (MN hyporheic)

Navicula *tripunctata* (O.F. Mueller, 1786) Bory (MT; MN hyporheic; benthic in Devil's Hole, swNV)

Navicula *tuscula* Her. var. *t.* Patrick (MN hyporheic)

Navicula *vulpina* Kutz. var. *v.* Patrick (MN hyporheic)

Neidium - Diatomaceae diatoms

Neidium *affine* var. *humerus* Reim. (MN hyporheic)

Neidium *dubium* (Her.) Cl. var. *d* Patrick (MN hyporheic)

Neidium *kozlowii* var. *parvum* Mareschk (MN hyporheic)

Nitzschia Hassall, 1845 (by lights, alien?) - Nitzschiaceae diatoms

Nitzschia *acicularis* Grun. (MN hyporheic)

Nitzschia *acuta* Hantzsch (MN hyporheic)

Nitzschia *amphibia* Grun. (MN hyporheic; benthic in Devil's Hole, swNV)

Nitzschia *denticula* Grun. (benthic in Devil's Hole, swNV)

Nitzschia *dissipata* (Kuetzing, 1844) Grun, 1862 (MT caves; MN hyporheic; benthic in Devil's Hole, swNV))

Nitzschia *filiformis* (W. Sm.) Hust. (MN hyporheic)

Nitzschia *fonticola* Grun. (MN hyporheic; benthic in Devil's Hole, swNV)

Nitzschia *frustulum* (Kuetz, 1844) Grun. (MT,UT caves; benthic in Devil's Hole, swNV)

Nitzschia *hantzchiana* Rabh. (benthic in Devil's Hole, swNV)

Nitzschia *kutzingiana* Hilse(benthic in Devil's Hole, swNV)

Nitzschia *linearis* W.Smith (MT, OR, UT caves)

Nitzschia *palea* (Kutz.) W. Sm. (MN hyporheic; benthic in Devil's Hole, swNV))

Nitzschia *paleacea* Grun. (MT,OR; phytoplankton in Devil's Hole, swNV)

Nitzschia *romana* Grun. (benthic in Devil's Hole, swNV)

Nitzschia *sigmoidea* (Ehr.) W.Sm. (MN hyporheic)

Nitzschia undet. sp. or species (NM caves; benthic in Devil's Hole, swNV)

Nitzschia *vitrea* Norman (benthic in Devil's Hole, swNV)

Opephora Petit, 1888- Diatomaceae diatoms

Opephora *martyi* Herib. var. *martyi* Patrick (MN hyporheic)

Pinnularia Lindley, 1834 - Naviculaceae diatoms

Pinnularia *intermedia* C. G. Ehrenberg, 1843 (UT/by lights, alien?)

Pinnularia undet. sp. or species (OR by lights, alien?; MN hyporheic; benthic in Devil's Hole, swNV)

Pleurosigma W. Smith, 1852 - Naviculaceae diatoms

Pleurosigma *scalptum* Corda, 1835 (MT caves; MN hyporheic)

Pyxidicula –N.I. Strelnikova & V.A. Nikolaev, 1986 - Melosiraceae diatoms (also placed in Protista)

Pyxidicula *cymbalum* Penard (MN hyporheic)

Pyxidicula *operculata* Ehrenberg (MN hyporheic)

Rhoicosphenia Grunow, 1860 - Achnanthaceae diatoms

Rhoicosphenia *curvata* (Kutz., 1833) Grunow ex Rabdh, 1864 (MT)

Rhopalodia - Epithemiaceae diatoms

Rhopalodia *gibba* (Ehr.) O. Mull. (MN hyporheic)

Rhopalodia *giberula* (Ehr.) O. Mull. (MN hyporheic)

Stauroneis Ehrenberg, 1843 - Naviculaceae diatoms

Stauroneis *kriegeri* Patrick var. *k.* Patrick (MN hyporheic)

Stauroneis *phoenicenteron* forma *gracilis* (Her.) Hust. (MN hyporheic)

Stauroneis *salina* W. Sm. (MN hyporheic)

Stauroneis *smithii* Grun. var. *s.* Patrick (MN hyporheic)

Stauroneis undet. sp. (UT/by lights, alien?)

Rhoicosphenia Grunow, 1860 – Achnanthaceae diatoms

Rhoicosphenia *curvata* (Kutz.) Grun. var. *curvata* Patrick (MN hyporheic)

Stephanodiscus Ehrenberg, 1845 – Thalassiosiraceae diatoms

Stephanodiscus *astraea* (Ehr.) Grun. *minutula* (Ehr.) Grun. (benthic in Devil's Hole, swNV)

Stephanodiscus *niagarae* Ehrenberg, 1845 (MN hyporheic)

Surirella – Surirellaceae diatoms

Surirella *angustata* Kutz., *elegans* Ehr. (MN hyporheic)

Surirella *linearis* var. *helvetica* (Brun.) Meister (MN hyporheic)

Surirella *ovata* Kuetzing (MN hyporheic)

Surirella *ovalis* Breb. (MN hyporheic)

Surirella *robusta* var. *splendida* (Ehr.) Van Heurck (MN hyporheic)

Surirella *spiralis* Kuetzing (MN hyporheic)

Synedra Ehrenberg, 1832 - Diatomaceae diatoms

Synedra *acus* Kutz. var. *acus* Patrick (MN hyporheic)

Synedra *capitata* Kutz. var. *c.* Patrick (MN hyporheic)

Synedra *delicatissima* Wm. Smith var. *d.* Patrick (MN hyporheic)

Synedra *parasitica* Kutz. var. *p.* Patrick (MN hyporheic)

Synedra *parasitica* Kutz. var. *subconstricta* Patrick (MN hyporheic)

Synedra *rumpens* (Kutz (benthic in Devil's Hole, swNV)

Synedra undet. species (MT,NM/by lights, alien?)

Synedra *ulna* (*Bacillaria u.* Nitz., 1817) (Mammoth Cave,KY; MN hyporheic)

Tabellaria Ehrenberg, 1840 - Diatomaceae diatoms

Tabellaria *fenestrata* (*Diastoma t.* Lyngb. 1819) (MN, TX sandy hyporheic)

Tabellaria *flocculosa* (Roth) Kutz (benthic in Devil's Hole, swNV)

Tabellaria *flocculosa* var. *flocculosa* (Roth) Kutz (MN, TX sandy hyporheic)

Euglenoid Algae – See protists

Green Algae (Division Chlorophyta)

Class Chlorophyceae (A large, important group of about 10,000 species now placed in Plantae.

Some members also placed in Protista; mostly freshwater, a few marine in coastal waters)

Bibl.: W. Shepard et al. 2000

Division or Kingdom Chlorophyta

Class Chlorophyceae

Order Chaetophorales

Superfamily Trebouxiophyceae

Chaetophoraceae (*Microthamnion*, *Stigeoclonium*)

Order Chlorococcales

Chlorococcaceae (*Chlorococcum*, *Tetraedron*)

Chlorellaceae (=Oocystaceae)

(incl. *Ankistrodesmus*, *Chlorella*, *Kirchneriella*, *Nannochloris*, *Tetrachloris*,

Trebouxia)

Coelastraceae (*Coelastrum*)

Dictyosphaeriaceae (*Dictyosphaerium*, *Dimorphococcus*, *Polysphondylium*)

Hydrodictyaceae (*Pediastrum*, *Sorastrum*)

Scenedesmaceae (now in Zygnematales)

Order Chlorosarcinales

Borodinellaceae (*Chlorosarcina*, *Chlorosphaera*, *Chlorosphaeropsis*)

Coccomyxaceae (*Coccomyxa*, *Diogenes*, *Gloeocystis* (put in Palmellaceae))

Order Cladophorales

Cladophoraceae (*Cladophora*), now in Ulvophyceae,

Order Ctenocladales

Ctenocladaceae (*Protococcus*)

Order Desmidiiales

Desmidiaceae (*Closterium*, *Cosmarium*, *Euastrum*, *Staurastrum*)

Order Klebsormidiales

Elakatotrichaceae (*Elakotothrix*)

Klebsormidiae (*Klebsormidium*)

Order Laminariales

Alariaceae (*Alaria*)

Laminariaceae (*Laminaria*, *Ulva*)

Order Microsporales

Microsporaceae (*Microspora*)

Order Oedogoniales

Oedogoniaceae (*Bulbochaete*, *Oedogonium*)

Order Prasioales

Prasiolaceae (*Hormidium*),

Order Sphaeropleales

Superfamily Palmellopsidacea

Palmellaceae (*Asterococcus*, *Gloeocystis* (also put in Coccomyxaceae),

Neochloris,

Palmella, *Sphaerocystis*)

Order Trentepohliales

Trentepohliaceae (*Pseudopleurococcus*),

Order Ulotrichales

Ulotrichaceae (*Hormidiopsis*, *Klebsormidium*, *Oocystis* (once in Chlorococcaceae)

Stichococcus, *Ulothrix*)

Order Ulvales

Ulvaceae (*Ulva*) (also subsumed in Laminariales)

Ulvophyceae (*Cladophora*, *Ulva*)

Order Volvocales (also placed in protists)

Chlamydomonadaceae (*Lobomonas Polytoma*)

(both once put in protists, Order Volvocida)

Phacotaceae (*Phacotus*)

Volvocaceae (*Eudorina*)

Order Zygnematales

Mesotaeniaceae (*Mesotaenium*, *Netrium*, *Roya*)

Scenedesmaceae (*Actinastrum*, *Crucigenia*, *Scenedesmus*) (also put in Chlorococcales)

Tetracystaceae (*Planophila*)

Zygnemataceae (*Mougeotia*, *Sirogonium*, *Spirogyra*)

Actinastrum Langerheim, 1882 – Zygnematales green algae in Scenedesmaceae

Actinastrum gracilimum G.M. Sm. (MN hyporheic)

Alaria Greville, 1830 (edible kelp) Laminariales green algae in Alariaceae

Alaria undet. sp. (sea cave in ME),

Ankistrodesmus Corda, 1838 - Chaetophorales green algae in Chlorellaceae

Ankistrodesmus falcatus (Corda) Ralfs (MN hyporheic)

Ankistrodesmus falcatus var. f. (Corda) Ralfs (KY caves)

Asterococcus Scherffel, 1908 Sphaeropleales green algae in Palmellaceae

Asterococcus superbis (Cienkowski) Scherffel (KY),

Bulbochaete C.A. Agardh, 1817 – Oedogoniales green algae in Oedogoniaceae

Bulbochaete undet. sp. (MN hyporheic)

Chlorella Beijerinck, 1890 - Chaetophorales green algae in Chlorellaceae

Chlorella ellipsoidea G. Gartner, 1974 (*C. saccharophila* var. *e.* Gern) (KY),

Chlorella undet. sp. or species (NM,OR/alien?; endolithic in ON karst)

Chlorella vulgaris (Beijerinck, 1890) Beijer (KY,NV near lights),

Chlorococcum Meneghini, 1842 - Chaetophorales green algae in Chlorococcaceae

Chlorococcum humicola (Naegeli, 1868) Rabenhorst (Palla) (NV near lights)

Chlorococcum undet. sp. or species (KY, NM/ alien?; endolithic in ON karst; benthic in Devil's Hole, NV)

Chlorhormidium Fott, 1960 = *Hormidium*

Chlorosphaera Klebs, 1883 - Chlorosarcinales green algae in Borodinellaceae

Chlorosphaera undet. sp. (OR/alien?)

Chlorosphaeropsis Vischer, 1933 - Chlorosarcinales green algae in Borodinellaceae
Chlorosphaeropsis undet. sp. (OR/alien?)

Chlorosarcina Gerneck, 1907 - Chlorosarcinales green algae in Borodinellaceae
Chlorosarcina consociata (Klebs in Artari, 1893) G.M. Smith, 1933 (KY)
Chlorosarcina undet. sp. (NM/alien?; endolithic in ON karst)

Cladophora Ulvales green algae in Ulvophyceae
Cladophora Kuetzing, 1843 *kuetzingianum* = *Microthamnion k.*
Cladophora undet. sp. (MN hyporheic)

Closterium J. Ralfs, 1848 - Desmidiaceae green algae in Desmidiaceae
Closterium moniliferum (Bory.) Ehr. (MN hyporheic)
Closterium undet. sp. (sandy TX hyporheic)

Coccomyxa W. Schmidle, 1901 - Chlorosarcinales green algae in Coccomyxaceae
Coccomyxa dispar W. Schmidle, 1901 (KY, NV? near lights),
Coccomyxa undet. sp. (endolithic in ON karst),

Coelastrum Naegeli, 1849 – Chlorococcales green algae in Coelastraceae
Coelastrum microporum Naegeli (MN hyporheic)

Cosmarium Dulac, 1867 - Desmidiaceae green algae in Desmidiaceae
Cosmarium undet. sp. or species (NV cave near lights; MN hyporheic)

Crucigenia Morren, 1850 – Zygnematales green algae in Scenedesmaceae
Crucigenia rectangularis (A. Braun) Gay (MN hyporheic)

Dictyosphaerium Naegeli, 1849 – Chlorococcales green algae in Dictyosphaeriaceae
Dictyosphaerium pulchellum Wood, 1872 (MN hyporheic)

Dimorphococcus A. Braun, 1855 - Chlorococcales green algae in Dictyosphaeriaceae
Dimorphococcus lanatus A. Braun, 1855 (MN hyporheic)

Diogenes Pennington, 1941 Chlorosarcinales green algae in Coccomyxaceae
Diogenes prob. *rotundus* Pennington, 1941 (KY)

Elakatothrix Wille, 1898 – Elakatotrichaceae, green algae in Order Klebsormidiales
Elakatothrix viridis Wille (benthic in Devil's Hole, NV)

Eudorina Ehrenberg, 1832 – Volvocaceae protists in Volvocales (also put in protists)
Eudorina elegans Ehrenberg, 1832 (MN hyporheic)

Euastrum Ehrenberg & Ralfs, 1848 – Desmidiaceae green algae in Desmidiaceae
Euastrum undet. sp. (MN hyporheic)

Gloeocystis Naegeli, 1849 Chlorosarcinales green algae in Palmellaceae
Gloeocystis undet. sp. (endolithic in ON karst; benthic in Devil's Hole, NV))

Hormidiopsis Heering in Pascher, 1914 - Ulotrichales green algae in Ulotrichaceae
Hormidiopsis undet. sp. (NM/alien?)

Hormidium Kuetzing, 1843 - Prasioales green algae in Prasiolaceae
Hormidium undet. sp. (OR/alien?)

Kirchneriella Schmidle, 1893 Chlorococcales green algae in Chlorellaceae
Kirchneriella *lunaris* (Kirchner) Moebius, 1894 (*Rhapidium vonvolutum lunare*) (KY),

Klebsormidium Silva, Mattox & Blackwell, 1972 - Ulotrichales green algae in Ulotrichaceae
Klebsormidium *flaccidum* (*Chlorhormidium* f. A. Braun) Kutz. (endolithic in ON karst),

Laminaria J. Lamouroux, 1813 - Laminariales green algae in Laminariaceae
Laminaria *digitata* (Fucus d. Hudson, 1762) Lamouroux (= *Fomes* & *Fucus digitatus*; *L. intermedia* Foslie, 1884; *L. stenophylla* (Harvey) J. Agardh, 1868; *Laminaria* d. var. *stenophylla*) (horsetail kelp) (ME sea cave)

Lobomonas P.A. Dangeard, 1898 – Chlamydomonadaceae green algae
(once in Volvocales protests)

Lobomonas undet. sp. (MN lake benthic)

Mesotaenium Naegeli, 1849- Zygnematales green algae in Mesotaeniaceae
Mesotaenium undet. sp. (OR/alien?)

Microthamnion Naegeli in Kuetzing, 1849 - Chaetophorales green algae in Chaetophoraceae
Microthamnion *kutzingianum* Naegeli in Kuetzing, 1849 (KY)

Microspora Thured, 1850 – Microsporales green algae in Microsporaceae
Microspora *stagnorum* (Kuetz.) Lagerheim (MN hyporheic)

Mougeotia C.A. Agardh, 1824 - Zygnematales green algae in Zygnemataceae
Mougeotia undet. sp. (sandy TX, MN hyporheic)

Mougeotiopsis Palla, 1894 - Zygnematales green algae in Zygnemataceae
Mougeotiopsis *calospora* Palla, 1894 (NV near lights)

Nannochloris Naumann, 1890 - Chlorococcales green algae in Chlorellaceae
Nannochloris undet. sp. (NV near lights)

Neochloris Starr, 1955 - Sphaeropleales green algae in Palmellaceae
Neochloris *minuta* Arce & Bold (Mammoth Cave, KY)

Netrium (Naegeli) Itzigsohn & Rothe - Zygnematales green algae in Mesotaeniaceae
Netrium undet. sp. (MN hyporheic)

Oedogonium Hirn, 1900 – Oedogoniales green algae in Oedogoniaceae
Oedogonium undet. sp. or species (MN hyporheic; benthic & phytoplankton in Devil's Hole, NV)

Oocystis Naegeli Ex A.Braun, 1855 - Ulotrichales green algae Ulotrichaceae
Oocystis *borgei* Snow (MN hyporheic)
Oocystis undet. sp. (MN hyporheic)

Oocystis *borgei* Naegeli (KY)
Oocystis undet. sp. (MN hyporheic)

Palmella Lyngbye, 1819 - Sphaeropleales green algae in Palmellaceae
Palmella *minuta* Leiblein, 1830 (NV near lights)

Pediastrum Meyen, 1829 – Chlorococcales green algae in Hydrodictyaceae
Pediastrum *boryanum* (Turpin) Meneghini (MN hyporheic)
Pediastrum *duplex* Meyen (MN hyporheic)

Pediastrum *duplex* var. *clathratum* (A. Braun) Lagerheim (MN hyporheic)
Pediastrum *glanduliferum* Bennett (MN hyporheic)

Pediastrum *simplex* (Meyen) Lemmermann (MN hyporheic)
Pediastrum *tetras* (Ehr.) Ralfs (MN hyporheic)

Phacotus. Perty, 1852 - (also placed in Chlamydomonadales or Volvocales protists)
Phacotus *lenticularis* (Ehrenberg, 1831) (MN lake benthic)

Planophila Gerneck, 1907 - green algae in Tetracystaceae
Planophila *laetevirens* Gerneck (KY)

Pleurococcus Meneghini, 1837 - Ctenocladales green algae in Ctenocladaceae
Pleurococcus undet. sp. (NM/alien?; also deep in cave)

Polytoma Ehrenberg, 1838 - Chlamydomonadaceae green algae
(once put in Chlorophyceae protists, Order Volvocida)

Polytoma *minus* Pascher (Mammoth Cave, KY)

Protococcus C.A Agardh, 1824 (= *Pleurococcus*, *Pseudopleurococcus*) Ctenocladales green algae in Ctenocladaceae

Protococcus undet. sp. or species (AR cave; benthic in Devil's Hole, NV))

Protococcus viridis (F. Bauer) C.A. Agardh, 1824 (KY, NV near lights; nNM twilight zone)

Pseudopleurococcus J.W. Snow, 1899 - Trentepohliales green algae in Trentepohliaceae

Pseudopleurococcus printizii (Vischer, 1933) (endolithic in ON karst)

Roya W. West and G.S. West, 1896 emend. Hodgetts, 1920 - Zygnematales green algae in Mesotaeniaceae

Roya undet. sp. (NV near lights)

Scenedesmus Meyen, 1829 - Zygnematales green algae in Scenedesmaceae (also put in Chlorococcales)

Scenedesmus arcuatus var. *platydisca* G.M. Sm. (MN hyporheic)

Scenedesmus brasiliensis Bohlin, 1897 (Mammoth Cave, KY)

Scenedesmus dimorphus (Turp.) Breb. (MN hyporheic)

Scenedesmus opoliensis var. *contacta* Prescott (MN hyporheic)

Scenedesmus quadricauda (Turp.) Breb. (MN hyporheic)

Sorastrum Kuetzing, 1845 – Hydrodictyaceae green algae

Sorastrum spinulosum Naegeli (MN hyporheic)

Sphaerocystis R. Chodat, 1897 Sphaeropleales green algae in Palmellaceae

Sphaerocystis schroeteri Chodat (MN hyporheic)

Sphaerocystis undet. sp. (OR/alien?)

Sirogonium Kuetzing, 1843 - Zygnematales green algae in Zygnemataceae

Sirogonium undet. sp. (sandy TX hyporheic)

Spirogyra Link in C. G. Nees, 1820 - Zygnematales green algae in Zygnemataceae

Spirogyra undet. sp. or species (MN, sandy TX hyporheic; benthic in Devil's Hole, NV)

Staurastrum Meyen & J. Ralfs, 1848 – Desmidiaceae green algae in Desmidiaceae

Staurastrum undet. sp. (MN hyporheic)

Stichococcus Naegeli, 1849 - Ulotrichales green algae in Ulotrichaceae

Stichococcus bacillarus Naegeli, 1849 (endolithic in ON karst; MN hyporheic)

Stichococcus chlorelloides Naegeli, 1849 (endolithic in ON karst)

Stichococcus undet. sp. (OR/alien?; endolithic in ON karst)

Stigeoclonium Kuetzing, 1843 – Chaetophorales green algae in Chaetophoraceae

Stigeoclonium pachydermum Pescott (MN hyporheic)

Tetrachloris Pascher, 1925 - Chlorellaceae green algae in Chlorococcales (also placed in cyanobacteria)

Tetrachloris inconstans Pasher, 1925 (KY)

Tetraedron Kuetzing, 1845 – Chaetophorales green algae in Cholorococcaceae

Tetraedron hastatum (Reinsch) Hansgirg (MN hyporheic)

Tetraedron trigonum var. *gracile* (Reinsch) DeToni (MN hyporheic)

Trebouxia Puymaly, 1924 - Chaetophorales green algae in Chlorellaceae

Trebouxia undet. sp. (endolithic in ON karst),

Ulothrix Kuetzing, 1836 - Ulotrichales green algae in Ulotrichaceae

Ulothrix tenerrima Kuetzing, 1843 fa. (KY)

Ulothrix zonata (Weber & Mohr) Kuetz. (MN hyporheic)

Ulva Linnaeus, 1753 Ulvales green algae in Ulvophyceae

Ulva lactuca J. Lamouroux, 1813 (sea cave in ME),

Golden algae (= golden brown algae) Kingdom (or Division) Chrysophyta, Class Chrysophyceae. Many are unicellular but some are colonial. Marine ones have silica skeletons extending to the Cambrian. May be sisters to the phaeophytes (brown seaweeds)

Order Chromalinales

Chromulinaceae (*Oikomonas*)

Order Ochromonadales

Ochromonadaceae (*Uroglenopsis*)

Synuraceae (also put in Mallomonadales) (*Mallomonas*, *Monas*)

Mallomonas Perty, 1851 - Synuraceae in Mallomonadales yellow green algae (also treated as a protist)

Mallomonas elongata Reverdin, 1919 (*Monas e.*) (Shelta CAVE,AL)

Monas O.F. Mueller, 1786 (Ehrenberg) (= *Spumella* Cienkowski, 1870) Synuraceae in Mallomonadales yellow green algae (microflagellates) (also classified as a protist & bacteria)

Monas elongata = *Mallomonas e.*

Monas *dangeardii* Lemmermann (Pascher) (Mammoth Cave,KY),

Monas *colpoda* (Mammoth Cave, KY)

Monas undet. sp. (AK freshwater pond interstitial)

Monas *obliqua* Schewiakoff (Pascher) (Mammoth Cave.,KY & Shelta Cave,AL)

Monas guttula Ehrenberg (Kudo) (Mammoth Cave, KY)

Monas *socialis* Pascher (Mammoth Cave, KY)

Oikomonas Kent, 1880 – Chromulinaceae in Chromalinales golden algae (also put in protests)

Oikomonas undet. sp. (AK freshwater pond interstitial)

Uroglenopsis Calkin – Ochromonadaceae golden algae

Uroglenopsis americana (Calkins) Lemmermann (MN hyporheic)

Red Seaweeds or Algae

Kingdom (or Division) Rhodophyta. First multicellular photobionts. About 4,000 species nearly all marine; most tropical. All are sexual with haploid dominant but with some with haploid and diploid alternate generations. All have reddish plastids with chlorophyll a (no b or c) and phycobilins. Some are calcified.

Class Florideophyceae

Order Corallinales

Corallinaceae (*Corallina*)

Spongitaceae

Subfamily Mastophoroideae (*Archeolithoporella*) (uncertain taxonomic placement)

Order Rhodymeniales

Rhodymeniaceae (*Rhodymenia*)

Order Gonotrichales

Gonotrichaceae (*Asterocystis*)

Archeolithoporella – Spongitaceae red algae, Subfamily Mastophoroideae (uncertain taxonomic placement)

Archeolithoporella undet. sp. (Permian fossil in Lechuguilla Cave, Eddy Co., NM)

Asterocystis Gobi, 1878 Ex T Schmitz, 1896 Gonotrichales red algae in Gonotrichaceae

Asterocystis *smaragdiana* (Reinsch) Forti, 907 (Mammoth Cave, KY)

Corallina Linnaeus, 1759 Corallinales red algae in Corallinaceae

Corallina undet. sp. (sea cave in ME)

Lemanea Bory de St. Vincent, 1808- Lemaneaceae red algae

Lemanea *torulosa* (Carmichael) Sirdot (KY)

Rhodochorton C. Naegeli, 1862 - Nemaliales red algae in Acrochaetiaceae

Rhodochorton undet.sp. (KY))

Rhodymenia Greville, 1830 - Rhodymeniales red algae in Rhodymeniaceae

Rhodymenia *palmata* (J.V. Lamoureux) Kuntze, 1891 (dulce/sea cave in ME),

Yellow-green Algae

Kingdon (or Division) Xanthophyta

About 100 species that tend to form freshwater colonies (sometimes discrete cells or syncytial).

Yellow from several xanthins and green from chlorophyll a, c, and e.

Class Xanthophyceae (= Heterocontae)

Order Mischococcales

Characiopsidaceae (*Harpochytrium*)

Ophiocytaceae (*Ophiocytium*)

Pleurochloridaceae (*Botrydiopsis*, *Chloridella*)

Order Tribonematales

Heteropediaceae (*Heterococcus*)

Order Vaucheriales

Vaucheriaceae (*Vaucheria*)

Botrydiopsis Borzi, 1895 - Order Mischococcales yellow-green algae in Pleurochloridaceae:

Botrydiopsis undet. sp. or *arhiza* B.1895 (NM/alien?),

Chloridella Pascher, 1932 Order Mischococcales yellow-green algae in Pleurochloridaceae (also put in Xanthophyceae)

Chloridella *neglecta* (Pascher & Geitler) Pascher (endolithic in ON karst)

Chrysococcus Klebs, 1892 - Order Chromallinales yellow green algae in Chrysococcaceae:

Chrysococcus *klebsianus* Pascher (KY)

Harpochytrium Lagerheim, 1890 - Characiopsidaceae in Mischococcales yellow-green algae

Harpochytrium *hyalotheca* Lagerheim, 1890 (KY)

Heterococcus Chodat, 1907- Heteropediaceae yellow-green algae in Order Tribonematales

Heterococcus undet. sp. (endolithic in ON karst),

Heterothrix Pascher, 1932 - Xanthonemataceae yellow green algae

Heterothrix undet. sp. (endolithic in ON karst)

Ophiocytium Naegeli, 1849 – Ophiocytaceae yellow-green algae

Ophiocytium undet. sp. (MN hyporheic)

Vaucheria De Candolle, 1801 – Vaucheriaceae yellow green algae in Order Vaucheriales (also put in Siphonales)

Vaucheria undet. sp. (MN hyporheic)

alien - Population of current macroinvertebrate, vertebrate, fungi, microbe, or plant directly or indirectly introduced into an area by people. Also when a native population has increased due to human impact. In show caves includes algae, rats, ants, algae, ferns, mites, spiders, & mosses. Certain amphipods, spiders, & springtails are aliens in other caves. See human impacts. Elliott, 1992c; Howarth 1985; Hyman 1943

Allee effect - Failure to reproduce due to lack of social stimulation caused by low populations.

allele - Abbrev. for allelomorph - A mutated gene that occupies the same locus on a chromosome as the unmutated gene.

allelochemicals - Serve to communicate between species, esp. insects. Compare pheromones.

Alligators

Crocodylian reptile of Order Crocodilia

Family Alligatoridae (alligators and caimans) (*Alligator*)

Alligator Cuvier, 1807 – Alligatoridae reptile (1 species in US)

Alligator mississippiensis (Daudin, 1803)) (late Pleist.? In Herculaneum Crevice, Jefferson Co., MO/ alligator/ seNC to sFL, w. along coastal plain to sTX,n. to se OK,sAR),

allochthonous - Not native, substances that come from outside a habitat.

allometry - Growth of characters at different rates, resulting in changes in shape correlated with size changes.

allomorphosis - Rapid speciation.

allopatric - Adj. for species or population in an area different from that of other, closely related species/population. Cf. parapatric. Allopatric speciation results from separation due to geographic barrier or climatic change. Incl. clinal speciation.

amberat or amber rat - Varnish-like yellow, red, brown, or black **stain** of **woodrat** urine residue in dry caves. Sheep Canyon Cave, MT. **Bibl.:** R. Benedict 1982; Orr 1957

Amblypygida - See whipless **whipscorpions**.

amensalism - Syn: antibiosis.

ammonia - Gas **hazard** from decomposition of guano (usually bats). Knutson 1984.

ammonoid - Any extinct **cephalopod** of subclass Ammonoidea, typified by an external shell symmetrical & coiled in a plane & with a bulbous protoconch & septa with angular sutural flexures & a small marginal siphuncle.

Amphibian (See **frog**, **salamander** & **toad**) - **Biology:** Duellman & Trueb 1994; Noble 1954; **Migration** - Mohr 1944; Names: American Soc. 1956; Collins. 1990, 1997; **Areas:** **AR:** Dellinger & Black 1938; Dowling 1957; **AZ:** Duellman 1955; **BC:** Carl 1959; **CA:** Brattstrom 1953, 1958; Canada: Conant 1958; **CO:** Douglas 1966; **CT:** Klemens 1991; **FL:** Carr & Goin 1955; Holman 1958-9; **HI:** McKeown 1996; **IL:** R. Olson 1956; **IN:** Hay, 1891; Minton 1972; **KS:** J. Bruiekelman 1946; Collins 1974; B. & Smith 1946; Karns et al. 1974; Tihen 1939; Craddock & Minckley 1965; Tihen 1937; **KY:** Bishop 1926; Hale 1984; **MD:** Franz 1969; McCauley 1945; **MN:** Breckenridge 1944; Oldfield & Moriarty 1994; **MO:** Myers 1958-9; C. Meyers 1958; Wiley 1968-9; **New England:** DeGraaf & Rudis 1983; **nNA:** ..: A. Wright & Wright 1949; **ND:** : A. Blair 1952; **NV:** Brattstrom 1958; **OH:** Duellman 1951; Langlois 1964; C. Walker 1946; **OK:** : A. Blair 1952; A. Bragg 1955; A. Bragg & Hudson 1951; Ortenburger 1930; O. & Freeman 1930; **TX:** Strecker and Williams; **PA:** Conant 1974; Mohr 1939; A. Smith 1945; Yoder 1940; **TN:** Blair 1961; **US:** : A. Blair 1957; Conant 1958; Redmond 1985; **TX:** Raun 1971,; Brame 1962; B. Brown 1948; Mosauer 1932; Holman 1969; **VA:** R. Hoffman 1955; Hutchinson 1956; Netting & Wilson 1940; Tobey 1985; **World:** S. Gorham 1974; **WV:** Llewellyn 1940; Netting 1936; N. Green 1964; **Paleo:** Fay 1984; Holman 1995; Van Dam 1976; Holman 1969;

amphibiont - Invertebrates with both hypogean & epigean life stages, as in certain **amphipods**, **hellgrammites**, **flies** (esp. midges), **mayflies** & **caddisflies**. Syn.: amphibite. Cf. stygobiont.

Amphiesmenoptera - Superorder of Insect that includes Orders Trichoptera (stoneflies), Lepidoptera (moths and butterflies) and Hymenoptera (wasps, bees and kin)

Amphipods

Tiny peracaridan **crustacean** of Phylum Arthropoda, Subphylum Crustacea, Class Malacostraca Subclass Eumalacostraca, Superorder Syncarida (=Paracarida), Order Amphipoda. Similar to an isopod in lacking a carapace & stalked eyes & having many jointed legs. 7 pairs of uniramous pereopodal (thoracic) limbs, first 4 pairs directed backwards, last 3 pairs directed forwards, hence term "amphi-pod" (both kinds of legs), vs. "iso-pod (equal or similar kinds of legs) with unique arrangement of abdominal limbs (first 3 pairs are pleopods, last 3 pairs are uropods whereas in all other eumalacostracans the first five pairs are pleopods & the sixth only is a uropod. Amphipods are unique also in having coaxial gill respiration. Most of the 3,650 known species are marine. Syns.: scuds, water fleas, fresh-water shrimp, sideswimmers. Bousfield 1958, 1877, 1982; Holsinger 1972, 1985, 1986; Barnard 1983, Stock 1986; Holsinger & Longley 1980

Bibl: Bousfield 1978, 1982; Buuikema 1980; Crawford 1976, 1977,; Culver 1976,, Culver & Poulson 1971; Fitzpatrick 1983,; Holsinger 1985, 1995; Holsinger & Buikema 1979a; Holsinger, Mort & Recklies 1983; Hubricht 1959; Notenboom 1991; Stock 1986a; Kane & Culver 1986; A. Pearse 1913.

Areas: **CO:** Pennak & Rosin 1976; Ward & Holsinger 1981; **GA** Bilbo 1971; **HI:** Barnard 1970, 1977; **IL:** Jenio 1972; **IN:** Fage 1931; Vandel 1964; **KS:** .: Moffett & Huggins 1982; **KY:** Hay 1903; Minckley & Cole 1963,; Fage 1931; Pederson 1990; **OK:** Black 1973a; Mackin 1935a, 1940a, 1941; **OR:** Benedict 1974a, 1973c; **NA:** Holsinger 1986; **OH:** Beckett 1977; Patton 1956; **ON:** Huntsman 1915,; **TX:** Barnard & Barnard 1982; Elliott & Mitchell 1973; Holsinger 1966b; Holsinger & Longley 1980; Grubbs 1976; **WA:** Benedict 1974a; Hubricht & Harrison 1941; Pearse 1917; **WV:** Culver 1976

Suborder Caprellidea

Family Aeginellidae (*Tritella* (put in Caprellidae)

Family Caprellidae (*Caprella*, *Deutella*, *Luconacia*, *Mayerella*, *Metacaprella*, *Paracaprella*, *Tritella* (also placed in Aeginellidae))

Family Phtiscidae (*Hemiproto*)

Natantia infraordinal grouping (of Bousfield & Shih 1994.

Superfamily Eusiroidea Bousfield, 1979

Eusiridae

(*Eusiroides*, *Eusirus*, *Oradarea*, *Paramoera*, *Pontogeneia*, *Rhachotropis*, *Tethygeneia*)

Pontogeneiidae (*Accedomoera*, *Paramoera*)

Superfamily Pardiliscoidea Bousfield, 1979

Paradaliscidae (*Halicoides*, *Nicippe*, *Pardalisca*, *Rhynohalicella*, *Spelaeonicippe*)

Reptantia infraordinal grouping (of Bousfield & Shih, 1994)

Superfamily Bogidielloidea Bousfield, 1977

2000 Artesiidae (=Artisiidae) (*Artesia* - also put in Bogidiellidae) Bibl.: Koenemann
 Bogidiellidae (*Artesia* (also put in own family), *Parabogidiella*, *Stygogidiella*).

Superfamily Corophioidea Barnard & B., 1983

 Aoridae
 (*Aoroides*, *Acuminodeutopus*, *Amphideutopus*, *Grandidierella* (once in
Corophiidae),
 Lembos, *Leptocheirus*, *Microdeutopus*, *Rudilemboides*)

 Corophiidae (*Globosolembos*, *Grandidierella* (now in Aoridae), *Cerapus*,
Corophium,
 Erichthonius, *Lembos* (also put in Aoridae), *Microprotopus*, *Monocorophium*,
Photis,
 Pseudunciola, *Unciola*)

 Isaeidae
 (*Cheirimeidia*, *Gammaropsis*, *Kermystheas*, *Microprotopus*, *Photis*,
Protomeidia)

Superfamily Crangonyctoidea Bousfield, 1973

 Allocrangonyctidae (put in Gammaridea & also subsumed in Crangonyctidae)
 Crangonyctidae (put in Gammaridea)

Suborder Gammaridaea (=Gammaridea)

Superfamily Gammaroidea Bousfield, 1977

 Acanthonotozomatidae ((*Acanthonotozoma*, *Odius*)
 Ampithoidae (*Cymadusa*)

 Argissidae (*Argissa*)
 Amphilochidae (*Amphilochus*, *Gitana*, *Gitanopsis*, *Peramphithoe*)
 Anisogammaridae (*Anisogammarus* (put in Melitidae), *Ramellogammarus*)

Ampeliscidae (*Amplisca*, *Byblis*)
 Atylidae (*Atylus*)

Bateidae (*Batea*)

Calliopiidae (*Calliopi*, *Halirages*, *Leptamphoos*)
 Crangonyctidae (also put in own superfamily, Crangonyctoidea)
 (*Apocrangonyx*, *Bactrurus*, *Crangonyx*, *Stygobromus*, *Stygonectes*, *Stygonyx*,

Synpleonia, Synurella)

Dexaminidae (*Dexamonica*)

Eusiridae (now in Eusiroidea)

Gammaridae

(*Dulichella, Elasmopus, Eriopisa, Gamarellus, Gammarus* (see Crangonyctidae),
Maera, Marinagammarus, Weyprechtia)

Haustoriidae

Acanthohaustorius, Amphiporeia, Bathyporeia, Eohaustorius, Haustorius,
Lepidactylus, Parahaustorius, Pontoporeia, Protohaustorius, Pseudohaustorius,
Urothoe

Ischyroceridae (*Erichthonius, Ischyrocerus, Microjassa, Jassa*)

Leucothoidae (*Leucothoe*)

Lysianassidae

(*Acidostoma, Allogaussia, Anonyx, Cyphocaris, Hippomedon, Lepidepcreum*
Lysianassa, Lysianopsis, Onisimus, Opisa, Orchomene, Orchomenella,

Pachynus,

Prachynella, Psammonyx)

Megaluropidae (*Gibberosus*)

Melphidippidae (*Eogammarus, Melphidippa, Melphis(s)ana*)

Oedicerotidae

(*Americhelidium, Ameroculodes, Arrhis, Bathymedon, Deflexilodes, Monoculodes,*
Monoculopsis, Paroedicerus, Synchelidium, Westwoodilla)

Phoxocephalidae

(*Cephalophoxoides, Eobrolgus, Eudevenopu* (also put in Platyschnopidae),

Eobrolgus,

Eyakia, Foxiphalus, Grandifloxus, Harpinia, Harpiniopsis, Heterophoxus
Mandibulophoxus, Metaphoxus, Metharpinia, Parametaphoxus,

Phoxocephalus,

Paraphoxus, Pontharpinia, Pseudoharpinia?, Rhepoxynius)

Platyschnopidae (*Eudevenopus*) (put in Phoxocephalidae)

Pleustidae

(*Chromopleustes, Dactyleustes, Gnathopleustes, Incisocalliope, Micropleustes,*
Parapleustes, Neopleustes, Pleusirus, Pleusymtes, Stenopleustes,

Thorlaksonius)

Podoceridae (*Dulichia, Dyopedos, Paradulichia, Podocerus*)

Stenothoidae

(*Metopa*, *Metopella*, *Parametopella*, *Probolisca*, *Proboloides*, *Stenothoe*,
Stenothoides, *Stenula*)

Synopiidae (*Bruzelia*, *Tiron*, *Syrrohoe*)

Superfamily Hadzioidea Bousfield, 1982

(Allocrangonyctidae (also incl. in Crangonyctoidea) (*Allocrangonyx*)

Hadziidae (incl. in Melitoidea)

(*Allotexiweckelia*, *Hadzia*, *Holsingerius*, *Liagoceradocus*, *Metaniphargus*,
Mexiweckellia, *Paramexiweckelia*, *Psammogammarus*, *Texiweckelia*,

Texiweckeliopsis

Melitidae (also incl. in Melitoidea)

(*Anisogammarus* (also put in Anisogammaridae), *Canarimelita*, *Desdimelita*,

Dulzura,

Melita, *Eriopisella*, *Megamoera*, *Rotomelita*)

Nuuanidae (*Nuuanu*)

Superfamily Ingolfiellidea

Ingolfiellidae (*Ingolfiella*)

Superfamily Melitoidea

Hadziidae, Melitidae (both put in Hadzioidea)

Superfamily Talitroidea Bulycheva, 1957

Hyaellidae (*Hyaella*, *Talitroides* (now in own family))

Talitridae

(*Americorchestia*, *Platorchestia*, *Spelaeorchestia* (once put in Hyaellidae;
Orchestia, *Talitroides* (once put in Hyaellidae))

Superfamily Liljeborgioidea Bousfield, 1977

Liljeborgiidae (*Listriella*)

Sebiidae (*Seborgia*)

Suborder Hyperidea

Hyperidae (*Hyperia*, *Hyperoche*, *Parathemisto*)

Families incl.

Acanthonotozomatidae (*Acanthonotozoma*, *Odius*)

Ampithoidae (*Cymadusa*)

Allocrangonyctidae (*Allocrangonyx*) Holsinger, 1989

Ampeliscidae (*Amplisca*, *Byblis*)

Amphilochidae (*Amphilochus*, *Gitana*, *Gitanopsis*)

Anisogammaridae Bousfield, 1977 (*Ramellogammarus*)

Aoridae Stebbing, 1899 (*Aoroides*, *Acuminodeutopus*, *Amphideutopus*, *Grandidierella* (once in Corophiidae), *Lembos*, *Leptocheirus*, *Microdeutopus*, *Rudilemboides*)

Argissidae (*Argissa*)

Artesiidae H.1980 (*Artesia* - also put in Bogidiellidae)

Atylidae (*Atylus*)

Bateidae (*Batea*)

Bogidiellidae Hertzog, 1936 (incl. *Artesiidae*)

(*Artesia*, *Parabogidiella*, *Stygogidiella*). 23 genera, approx. 109 sp. & ssp. Only St. Some generic differentiation before Pangean breakup. K-strategy (few eggs, long life). undescr.? genus & species (TX/Pb). **Bibl.** Coineau & Stock 1986; Koenemann 2000; Stock, 1981

Calliopiidae (*Calliopi*, *Halirages*, *Leptamphopus*)

Caprellidae (ghost shrimps) (*Caprella*, *Deutella*, *Luconacia*, *Mayerella*, *Metacaprella*, *Paracaprella*, *Tritella*)

Corophiidae (*Grandidierella* (now in Aoridae), *Cerapus*, *Corophium*, *Erichthonius*, *Lembos* (also put in Aoridae), *Microprotopus*, *Photis*, *Pseudunciola*, *Unciola* undet. genus in brackish LA beach)

Crangonyctidae Bousfield, 1973, emend Holsinger, 1977 (most genera once in Gammaridae) (*Apocrangonyx*, *Bactrurus*, *Crangonyx*, *Stygobromus*, *Stygonectes*, *Stygonyx*, *Synpleonia*, *Synurella*) Bousfield & Holsinger 1989 ; Holsinger 1977, 1985; Koenemann 2000

Eusiridae

(*Eusiroides*, *Eusirus*, *Oradarea*, *Paramoera*, *Pontogeneia*, *Rhachotropis*, *Tethygeneia*)

Gammaridae Leach, 1813 (*Elasmopus*, *Eriopisa*, *Gamarellus*, *Gammarus* (see Crangonyctidae), *Maera*, *Marinagammarus*, *Weyprechtia*; undet. genus in brackish beach sediment at Lake Pontchartrain, LA). **Bibl.:** Barnard & Karaman 1982; Bousfield 1977; Stock, 1986; Holsinger 1969, 1976c, 1972

Hadziidae Karaman, 1943 (*Allotexiweckelia*, *Hadzia*, *Holsingerius*, *Liagoceradocus*, *Metaniphargus*, *Mexiweckellia*, *Paramexiweckelia*, *Psammogammarus*, *Texiweckelia*, *Texiweckeliopsis*, new genus & species in TX/Pb) (also subsumed in Melitidae) **Bibl.:** Barnard 1958; Stock 1977

Haustoriidae (undet. genus in brackish beach sediment at Lake Pontchartrain, LA; *Acanthohaustorius*, *Amphiporeia*, *Bathyporeia*, *Eohaustorius*, *Haustorius*, *Lepidactylus*,

Neohaustorius, Parahaustorius, Pontoporeia, Protohaustorius, Pseudohaustorius, Urothoe)

Bibl.: M. Sweet 1996

Hyaellidae Bulychева, 1957; Subfamily Hyaellinae Bousfield, 1996 (*Hyaella, Talitroides* (now in own family))

Ingolfiellidae (*Ingolfiella*)

Isaeidae (*Cheirimedeia, Gammaropsis, Kermystheas, Microprotopus, Photis, Protomedeia*)

Ischyroceridae (*Erichthonius, Ischyrocerus, Jassa, Microjassa*)

Liljeborgiidae (*Listriella*)

Lysianassidae (*Acidostoma, Allogaussia, Anonyx, Cyphocaris, Hippomedon, Lepidepcreum, Lysianassa, Lysianopsis, Onisimus, Opisa, Orchomene, Orchomene\lla, Pachynus, Prachynella, Psammonyx*)

Megaluropidae (*Gibberosus*)

Melitidae Bousfield, 1973 (also subsumed in Gammaridae) (see Hadziidae) (*Anisogammarus, Canarimelita, Desdimelita, Dulzura, Eriopisella, Megamoera, Melita, Rotomelita*)

Melphidippidae (*Eogammarus, , Melphidippa, Melphisana*)

Niphargidae (*Metaniphargus* (now in Hadziidae)) - Niphargidae is strictly Eurasian
Nuuanidae McKinney & Barnard? (*Nuuanu*)

Oedicerotidae

(*Americhelidium, Ameroculodes, Arrhis, Bathymedon, Deflexilodes, Monoculodes, Monoculopsis, Paroedicerus, Synchelidium, Westwoodilla*)

Paradaliscidae Boeck, 1871 (*Halicoides, Nicippe, Spelaeonicippe*)

Phoxocephalidae

(*Cephalophoxoides, Eobrolgus, Eudevenopu* (also put in Platyischnopidae), *Eobrolgus, Eyakia, Foxiphalus, Grandifloxus, Harpinia, Harpiniopsis, Heterophoxus, Mandibulophoxus, Metaphoxus, Metharpinia, Parametaphoxus, Phoxocephalus, Paraphoxus, Pontharpinia, Pseudoharpinia, Rhepoxynius*)

Pleustidae

(*Chromopleustes, Dactyleustes, Gnathopleustes, Incisocalliope, Micropleustes, Parapleustes, Neopleustes, Pleusirus, Pleusymtes, Stenopleustes, Thorlaksonius*)

Podoceridae (*Dulichia, Dyopedos, Paradulichia, Podocerus*)

Pontogeneiidae Stebbing, 1906 (*Accedomoera, Peramoera*)

Pontoporeiidae (*Monoporeia*)

Sebidae Walker, 1908 (*Seborgia*) Holsinger, 1986a

Stenothoidae

(*Metopa*, *Metopella*, *Parametopella*, *Probolisca*, *Proboloides*, *Stenothoe*, *Stenothoides*, *Stenula*)

Synopiidae (*Bruzelia*, *Tiron*, *Syrrohoe*)

Talitridae (sand and beach fleas) (*Americorchestia*, *Platorchestia*, *Spelaeorchestia* (once put in Hyalellidae; *Talitroides* (once put in Hyalellidae) (*Americorchestia*, *Orchestia*, undet. genus in brackish beach sediment at Lake Pontchartrain, LA)

Acanthohaustorius Bousfield, 1965 - Haustoriidae amphipods

Acanthohaustorius intermedius Bousfield, 1965 (rare Virginian marine infauna)

Acanthohaustorius millsi Bousfield, 1965 (FL, GA, MD, SC, VA, Carolinian marine infauna)

Acanthohaustorius similis A.B. Frame, 1980 (uncommon Virginian marine infauna)

Acanthohaustorius uncinus J.M. Foste, 1989 (wFL Gulf of Mex. marine infauna)

Acanthonotozoma Boeck, 1876 - Acanthonotozomatidae amphipods

Acanthonotozoma rusanorae Bryazgin, 1974 (AK marine infauna)

Accedomoera J.L. Barnard, 1964 – Pontogeneiidae amphipods

Accedomoera vabor J.L. Barnard, 1969 (WA marine infauna)

Acidostoma Lilljeborg, 1865 – Lysianassidae amphipods

Acidostoma hancocki Hurley, 1963 (WA marine infauna)

Acuminodeutopus J.L. Barnard, 1959 - Aoridae amphipods

Acuminodeutopus naglei (Bousfield, 1973) (FL & Carolinian marine infauna)

Acuminodeutopus heteruopus (SC marine infauna)

Allocrangonyx Schellenberg, 1937 - Allocrangonyctidae amphipod. Bibl.: Holsinger 1971

Allocrangonyx hubrichti Holsinger, 1971 (type locality in cave in Phelps Co. + caves in WA, Crawford & Pulaski Cos., MO & White Co., AR/ Tb/ MO State T&E/Central Missouri Cave Amphipod)

Allocrangonyx pellucidus (*Niphargus p.* Mackin, 1953) Holsinger, 1971 (s.Pontotoc Co., scOK +Murray Co., *Arbuckle Mts., AR/ Pb? or Pp, caves, crevice rivulets, karst springs/ OK T&E/ OK Cave Amphipod/ G1G3)

Allocrangonyx undet. sp. (crevice rivulets in San Blois Mts. near Wilburton, Latimer Co., OK+AR, MO/Pb?)

Allogaussia Schellenberg, 1926 – Lysianassoidae amphipods

Allogaussia undet. sp. (WA marine infauna)

Allotexiweckelia Holsinger in Holsinger, & Longley, 1980 - Hadziidae amphipods (once put in elitidae)

Allotexiweckelia hamakua J.L. Barnard, 1970 (anchialine cave in HI)

Allotexiweckelia hirsuta Holsinger in Holsinger, & Longley, 1980 (Artesian well in San Marcos, Hays Co.,TX/ Pb/ Hairy well amphipod)

Allotexiweckelia sal J.L. Barnard, 1952 (sea caves in CA)

Americhelidium E.L. Bousfield & A. Chevrier, 1996 – Oedicerotidae amphipods

Americhelidium americanum (Bousfield, 1973) (rare Virginian marine infauna)

Americhelidium millsii E.L. Bousfield & A. Chevrier, 1996 (WA marine infauna)

Americhelidium pectinatum E.L. Bousfield & A. Chevrier, 1996 (WA marine infauna)

Americhelidium rectipalmum (*Synchelidium* r. Mills, 1962) Bousfield & Chevrier, 1996 (WA marine infauna)

Americhelidium variabilum E.L. Bousfield & A. Chevrier, 1996 (WA marine infauna)

Americorchestia E.L. Bousfield, 1991 - Talitridae amphipods

Americorchestia longicornis (Say, 1818) (NB, PQ Gulf of St. Lawrence sandy marine interstitial)

Americorchestia megalophthalma (Bate, 1862) (NB, PQ Gulf of St. Lawrence sandy marine interstitial)

Ameroculodes E.L. Bousfield & A. Chevrier, 1996 – Oedicerotidae amphipods

Ameroculodes undet. sp. (Carolinian, Virginian, MA marine infauna)

Ampelisca Kroyer, 1842 - Ampeliscidae amphipods

Ampelisca abdita Mills, 1964 (CA (alien), FL, LA, MA, MD, TX, NJ, RI, VA marine infauna)

Ampelisca agassizi (*Byblis* a. Judd, 1896) (AK, CA, wFL, WA marine infauna)

Ampelisca bicarinata G.D. Goeke & R.W. Heard, Jr., 1983 (FL Gulf of Mex. marine infauna)

Ampelisca brachycladus Roney, 1890) (AK, CA marine infauna)

Ampelisca brevisimulata J.L. Barnard (AK, CA, WA marine infauna)

Ampelisca careyi Dickinson, 1982 (CA, WA marine infauna)

Ampelisca compressa (WA marine infauna)

Ampelisca cristata Holmes, 1908 (WA marine infauna)

Ampelisca eschrichti Kroyer, 1842 (AK marine infauna)

Ampelisca cristata c. Holmes, 1908 (CA marine infauna)

Ampelisca cristata microdentata J. Barnard, 1954 (CA marine infauna)

Ampelisca furcigera Bulycheva, 1936 (AK marine infauna)

Ampelisca hancocki complex (CA, WA marine infauna)

Ampelisca hessleri J.J. Dickinson, 1982 (AK marine infauna)

Ampelisca holmesi Pearse, 1908 (FL, LA marine benthic)

Ampelisca identata J. Barnard, 1954 (CA marine infauna)

Ampelisca lobata Holmes, 1908 (WA marine infauna)

Ampelisca lobatata c. Holmes, 1908 (CA marine infauna)

Ampelisca macrocephala Liljeborg, 1852 (AK, NJ, NC, WA marine infauna)

Ampelisca milleri J.L. Barnard, 1954 (CA marine infauna)

Ampelisca pacifica Holmes, 1908 (CA marine infauna)

Ampelisca pugetica Stimpson, 1864 (CA, WA marine infauna)

Ampelisca romigi J.L. Barnard, 1954 (CA marine infauna)

Ampelisca shoemakeri J.L. Barnard, 1954 (CA marine infauna)

Ampelisca undet. sp. or species (tube-dwelling in MA benthic; Baffin Island (neCanada) marine infauna)

Ampelisca unsocalae J.L. Barnard, 1954 (CA, WA marine infauna)

Ampelisca vadorum Mills, 1963 (FL, LA, MA, MD, NJ, NY, VA marine infauna & surface deposit feeder)

Ampelisca verrilli Mills, 1967 (LA, MA, MD, NC, NJ, VA marine infauna)

Amphideutopus J.L. Barnard, 1959 - Aoridae amphipods

Amphideutopus oculatus J.L. Barnard, 1959 (CA marine infauna)

Amphilochus Bate, 1862 - Amphilochidae amphipods

Amphilochus casahoya McInney, 1978 (LA marine infauna?; (cf. *A.c.*) FL Gulf of Mex. marine infauna)

Amphilochus littoralis Stout, 1912 (CA marine infauna)

Amphilochus neopolitanus Della Valle, 1893 complex (CA marine infauna)

Amphilochus picadrus j. Barnard, 1962 (CA marine infauna)

Amphilochus undet. sp. or species (TX, wFL marine infauna)

Amphiporeia Shoemaker, 1929 - Haustoriidae amphipods

Amphiporeia lawrenciana Shoemaker, 1930 (NB, PQ Gulf of St. Lawrence sandy marine interstitial)

Amphithoe Leach, 1814 - Amphitoidae amphipods

Ampithoe lacertosa Bate, 1858 (AK, WA marine infauna)

Ampithoe longimana Smith, 1873 (Carolinian, Virginian, LA, w,eFL marine infauna)

Ampithoe plumulosa Shoemaker, 1938 (CA marine benthic)

Ampithoe raymondi “Audouin, 1826 (CA marine benthic)

Ampithoe rubricata (Montagu, 1808) (MA sandy marine infauna; (NB, PQ Gulf of St. Lawrence sandy marine interstitial)

Ampithoe valida Smith, 1873 (*A. shimizuensis* Stephensen, 1944) (CA, LA, MD, VA marine benthic)

Anisogammarus Derjavin, 1927 (also put in Anisogammaridae) – Melitideae amphipods

Anisogammarus pugettensis (Dana, 1853) (CA marine infauna)

Anonyx Kroyer, 1833 - Lysianassidae amphipods

Anonyx lilljeborgi Boeck, 1871 (WA marine infauna)

Anonyx multiarticulatus (Pearse, 1913) (AK marine infauna)

Anonyx nugax (Phipps, 1774) (Baffin Island (neCanada) marine infauna)

Anonyx sarsi Steele & Brunel, 1968 (NB, PQ Gulf of St. Lawrence sandy marine interstitial)

Aoroides Walker, 1898 - Aoridae amphipods

Aoroides columbiae Walker, 1898 (CA, WA marine infauna)

Aoroides exilis Conlan & Bousfield, 1982 (WA marine infauna)

Aoroides inermis Conlan & Bousfield, 1982 (WA marine infauna)

Aoroides intermedius Conlan & Bousfield, 1982 (AK, WA marine infauna)

Aoroides undet. sp. or species (sCA, WA marine infauna)

Apocrangonyx Karaman, 1974 = *Stygobromus*. Bibl.: Holsinger 1969a, 1977, 1978

Argissa Boeck, 1871 - Argissidae amphipods

Argissa hamatipes (Syrroë l. Norman, 1869 (AK, sCA, wFL, OR, LA, WA marine infauna)

Arrhis Boeck, 1861 - Oedicerotidae amphipods

Arrhis lutheki (AK marine infauna)

Arrhis undet sp. (WA marine infauna)

Aruga - Lysianassidae amphipods

Aruga oculata Holmes, 1908 (sCA marine infauna)

Aruga holmesi J.L. Barnard, 1955 (sCA marine infauna)

Artesia Holsinger, & Longley, 1980 - Bogidiellidae amphipods (also put in Artesidae)

Artesia subterranea Holsinger in Holsinger & Longley, 1980 (Artesian well in San Marcos, Hays

Co.,scTX/Pb/Artesian well amphipod)

Artesia welbourni Holsinger, 1992 (caves& wells, *Culberson Co.,TX/rare gypsum St,Pb/West Texas cave amphipod)

Atylus Leach, 1815 - Atylidae amphipods

Atylus collingi Gurjanova, 1938 (WA marine infauna)

Atylus levidensus J.L. Barnard (WA marine infauna)

Bacetrurus Hay, 1902 - Crangonyctidae amphipods. **Bibl.:** Koenemann 2000; Koenemann & Holsinger 1999, 2000

“Bacetrurus angulus” Koenemann & Holsinger 2001? (Claiborne Co.,TN & cave in Lee Co.,VA/ Tb in slow flow cave streams)

Bacetrurus brachycaudus Hubricht & Mackin, 1940 (type locality in walled spring, St. Louis Co.,MO/ Pp (caves, seeps, ditches, and springs) in swIL (Calhoun, Green, Union, St. Clair, Sangamon, Pike, Monroe, Montgomery, Jackson, Johnson, Greene, Williamson, St. Claire, Adams Cos.) & eMO (Boone, Crawford, Dent, Franklin, Iron, Lincoln, Perry, Texas, St. Louis, St. Genevieve, St. Charles, St. Francois, Scott, Reynolds, Ralls, Pike, Madison, Lincoln, Jefferson, Bollinger Cos.) **Bibl.:** Bechler 1981, 1985

“Bacetrurus cellulanus” Koenemann & Holsinger 2001? (*spring at IN Univ., Monroe Co., IN/ Pb/ extinct?, can't relocate, last seen in 1963, pesticides used and spring sealed)

Bacetrurus hubrichti Shoemaker, 1945 (well,Topeka,Shawnee Co.,eKS (Cowley, Neosbo, Riley, Shawnee, Bourbon, Butler, Chautaugua, Clay Cos.) +wcMO(Miller Co.), OK (Muskogee & Rogers Cos.)/St, Pb in springs, seeps, caves, or wells/ MO State T&E Status Uncertain/ Kansas well amphipod) **Bibl.:** C. Edler & Dodds 1996; Shoemaker 1945

Bacetrurus mucronatus (=Gammarus m.; Carinogammarus m.; Crangonyx m. Forbes, 1876) Hay, 1902 (Pb in seIA (Des Moines, Henry, Washington Cos.), c,nIL (Champaign, Coles, Fulton, Gallatin, Henderson, Knox, La Salle, McDonough, McLean, Montgomery, Moultrie, Peoria, Saline, Vermillion, Warren, Williamson), s,cIN (Grant, Henry, Marion, Montgomery, Noble, Shelby Cos.) (MI (Berrien, Monroe Cos.), wOH (Bulter, Clinton, Logan, Lucas, Marion, Montgomery, Preble, Wayne, Wood Cos./ Pb,Tp,seep,well,drain,salt marsh; MA, MS, NC, NJ, TX, VA marine infauna; PEI, NB, PQ Gulf of St. Lawrence sandy marine interstitial) / mucronate groundwater amphipod). **Bibl.:** L. Ross 1926; S. Williams 1932

Bacetrurus parvus - see *Stygobromus p.*

“Bacetrurus pseudomucronatus” Koenemann & Holsinger 2001? (Pb in caves, wells, seeps in neAR (Lawrence, Randolph Co.) & scMO (Carter, Douglas, Oregon, Shannon Cos.) Gardner 1986; Sutton 1997)

Bacetrurus undescr. sp. #1 (cave in Loudoun Co.,VA/Pb)

Bactrurus undet. sp. (Pb in 2 caves in Carter Co., MO)

Bactrurus subtilis - see *Stygobromus s.*

"Bactrurus wilsoni" Koenemann & Holsinger 2001? (Pb in wells in AL (Blount Co. (Caldwell & Wilson residences)

Batea Muller, 1865 - Bateidae amphipods

Batea catharinensis Muller, 1865 (FL, LA, NJ, TX, VA marine infauna)

Batea insipida (FL Gulf of Mex. marine infauna)

Batea secunda (MA marine sandy infauna)

Batea transversa Shoemaker, 1926 (CA marine sandy infauna)

Bathymedon Sars, 1895 - Oedicerotidae amphipods

Bathymedon kassites Barnard, 1966 (sCA marine infauna)

Bathymedon pumilis Barnard, 1962 (sCA, WA marine infauna)

Bathymedon roquedo Barnard, 1962 (sCA marine infauna)

Bathymedon vulpeculus J.L. Barnard, 1971 (sCA marine infauna)

Bathymedon undet. sp. (AK marine infauna)

Bathyporeia Lindstrom, 1855 - Haustoriidae amphipods

Bathyporeia parkeri Bousfield, 1973 (rare Virginian marine infauna)

Bathyporeia porteri Lindstrom, 1855 (VA marine infauna)

Bathyporeia quoddyensis Shoemaker, 1949 (Virginian marine infauna)

Bathyporeia undet. sp. (GA marine infauna)

Bemlos Shoemaker, 1925 - Corophiidae amphipods

Bemlos audbetti (*Lembos a.* J.L. Barnard, 1962) (sCA marine infauna)

Bemlos brunneomaculatus (Meyer, 1977)

Bemlos brunneomaculatus mackinneyi (eFl, wFL Gulf of Mex. marine infauna)

Bemlos concavus (*Lembos a.* Stout, 1913) (sCA marine infauna)

Bemlos setosus (*Lembos s.* A.A. Myers, 1978) (FL, LA marine benthic)

Bemlos unicornis (Carolinian, wFL Gulf of Mex. marine infauna)

Bruzelia Boeck, 1871 – Synopiidae amphipods

Bruzelia tuberculata Sars, 1883 (WA marine infauna)

Byblis Boeck, 1871 - Ampeliscidae amphipods

Byblis undet. sp. or sp. (AK, Baffin Island (neCanada) marine infauna)

Byblis mills Dickerson, 1983 (WA marine infauna)

Byblis veleronis J. L. Barnard, 1954 (sCA, WA marine infauna)

Calliopius Liljeborg, 1865 - Calliopiidae amphipods

Calliopius columbianus Bousfield & Hendrycks, 1997 (BC, WA marine infauna)

Calliopius laeviusculus (Kroyer, 1838) (NB, PQ Gulf of St. Lawrence sandy marine interstitial)

Canarimelita Bousfield, 1990 - Melitidae amphipods (also subsumed in Gammaridae)

Canarimelita janstocki B., 1990 (anchialine pool near Hilo, HI/Pb)

Caprella Guilding, 1824 (ghost shrimps) Caprellidae amphipods

Caprella acutifrons Stimpson, 1957 (CA marine sandy infauna)

Caprella californica Stimpson, 1957 (CA marine sandy infauna)

Caprella equilibra Say, 1818 (CA marine sandy infauna)

Caprella geometrica (MA marine sandy infauna)

Caprella gracilior Mayer, 1903 (CA marine sandy infauna)

Caprella mendax Mayer, 1903 (CA marine sandy infauna)

Caprella natalensis (*Caprella acutifrons* var. n. Mayer, 1903) (CA marine sandy infauna)

Caprella penantis Leach, 1814 (= *C. acutifrons* Latreille, 1816)(e,wFL, MD, NC, VA, PEI (Gulf of St. Lawrence) marine interstitial)

Caprella septrionalis Kroyer, 1838 (PEI, PQ, NB Gulf of St. Lawrence sandy marine interstitial)

Caprella undet. sp. (AK marine infauna)

Caprella unica Mayer, 1903 (PQ Gulf of St. Lawrence sandy marine interstitial)

Caprella verrucosa Boeck, 1872 (CA marine sandy infauna)

Carinogammarus mucronatus (Say) (MA, NC, NS marine sandy infauna)

Cephalophoxoides Gurjanova, 1977 - Phoxocephalidae amphipods

Cephalophoxoides homilis (*Phoxocephalus h.* Barnard, 1960) (sCA marine infauna)

Cerapus Say, 1817 - Corophiidae amphipods

Cerapus estuarius (wFL marine infauna)

Cerapus undet. sp. (Carolinian marine infauna)

Cerapus tubularis Say, 1817 (sCA, MD, MA, VA, Carolinian marine infauna)

Cheirimedeia Barnard, 1962 – Isaeidae amphipods

Cheirimedeia zotea Barnard, 1962 (WA marine infauna)

Chromopleustes E. L. Bousfield & E.A. Hendrycks, 1995 – Pleustidae amphipods

Chromopleustes (CA marine benthic & infauna?)

Corophium Latreille, 1806 - Corophiidae amphipods

Corophium* (*Monocorophium*) *acherusicum Costa, 1857 (AK, TX, e,wFL, VA, WA, PQ Gulf of St. Lawrence (NB, PQ) sandy marine interstitial)

Corophium alienense Chapman, 1988 (CA (alien) marine infauna)

Corophium* (*Laticorophium*) *baconi Shoemaker, 1934 (Carolinian, wFl Gulf of Mex. (cf. *C. b.*) marine infauna)

Corophium bonelli G.O. Sars, 1895 (NB, PQ Gulf of St. Lawrence sandy marine interstitial)

Corophium brevis Shoemaker, 1949 (OR, WA marine infauna)

Corophium* (*Monocorophium*) *carlottensis Bousfield & Hoover, 1997 WA marine infauna)

Corophium crassicorne Bruzelius, 1859 (WA marine infauna)

Corophium heteroceratum Yu, 1938 (CA marine infauna)

Corophium* (*Monocorophium*) *insidiosum Crawford, 1937 (CT, MA marine sandy infauna; NB, PQ Gulf of St. Lawrence sandy marine interstitial)

Corophium lacustre Vanhoffen, 1911 (NC rare marine infauna)

Corophium louisianum Shoemaker, 1934 (wFL, LA, TX estuary marine infauna)

Corophium undet. sp. or species (Salton Sea (CA) & sCA marine infauna)

Corophium salmonis Stimpson, 1857 (AK, OR, WA marine infauna)

Corophium simile Shoemaker, 1934 (Carolinian, GA marine infauna)

Corophium* (*Americorophium*) *spinicorne Stimpson, 1857 (CA (alien),OR, WA marine infauna)

Corophium stimpsoni Shoemaker, 1941 (CA (alien) marine infauna)

Corophium tuberculatum Shoemaker, 1934 (FL, MD, NJ, VA estuary marine infauna)

Corophium volutator Pallas, 1766 (NC marine infauna)

Crangonyx Bate, 1859 - Crangonyctidae amphipods

Bibl.: Bechler 1977; Zhang 1997. Most epigean as adults but some hypogean as immatures

Crangonyx anomalus Hubricht, 1943 (IL,nKY,sOH spr.(-fed stream, seep)/ Tx or Ac in IL?, KY/ IL State T&E/Anomalous Spring Amphipod)

Crangonyx antennatus (= *Niphargus a.* Packard, 1881; *Eucrangonyx a.*) Cope (type in Marion Co., eTN)/ sprs. & spring fed streams in nAL(Blount, Calhoun, De Kalb, Jackson, Jefferson, Marshall, St. Clair Cos.), neGA (upper AL River basin -. Chatooga, Floyd, Walker & Dade Co.), sIL, IN (1 cave in Jennings Co.); seKY, swOH (1 cave in Shelby Co.). sc,eTN(21 cos., incl. Anderson, Bledsoe, Campbell, Claiborne, Cumberland, Decatur, Franklin, Grainger, Hamilton, Hancock, Hawkins, Knox, Marion, McMinn, Meigs, Rhea, Roane, Sullivan, Union, Washington, Wayne Cos.), swVA(Lee, Scott, Wise, WA Cos.)/St,Tb/ VA Special Concern T&E; IL State T&E/Appalachian Valley cave amphipod)

Crangonyx antennatus **Bibl.:** Culver 1976, 1981; Dickson 1976-7, 1977a, 1978, 1979; Dickson & Holsinger 1981; Dickson, H. Patton & Avise 1979; Holsinger 1975a; Holsinger, & Dickson 1977; Shoemaker 1942.

Crangonyx dearolfi Shoemaker, 1942 (type locality cave in Berks Co., PA +Piedmont & Valley & Ridge Provinces (Cumberland, Dauphin, Franklin & York Cos.,PA) & 3 caves in WA Co. (MD T& E S1 G2G3)/ Pennsylvania or Dearolf's cave amphipod)

Crangonyx floridanus Bousfield, 1963 (eLA, east, central US w. to KS, introduced into CO,OR, Japan/swamp,pools/Tp in n&s.FL (Dade, Suwannee , Polk?, & Jackson Cos.) & MO (Camden Co.); Tx or Ac in ne AL)

Crangonyx forbesi (= *Eucrangonyx f.* Hubricht & Mackin, 1940) Hubricht, 1943 (type locality in spring in St. Louis Co.(MO)+sprs. in IL, IN, OH/ spr.,pond,stream,Tp in nAR (Fulton Co.), OK (Mayes Co.), swIL(Monroe, Jackson, Williamson, Pike & St. Clair Cos.), KS (Cherokee Co.); KY (Barren, Christian, Edmonson (Mammoth C.), Grayson, Green, Hart, Meade Cos.), eMO (St. Louis, Barry, Benton, Callaway, Camden, Carter, Christian, Franklin, Hickory, Jefferson, Jasper, Madison Cos.)/ WV (epigeal in Mason Co.) ; Tp or Tx in IN (Floyd, Dubois, Jefferson, Lawrence, Orange & Harrison Cos.) & PA (Fayette Co.) /Forbes' amphipod/S3(IN)/G4) **Bibl.:** D. Crawford & Tarter 1979

Crangonyx gracilis S.I. Smith, 1871 group/complex (see *C. indianensis* in undesr. sp) (epigeal (primarily Great Lakes region,less common in IN, ON, WI, MI ,IL, OH/ Tx or Tp in CO, IL, KS, KY, NY, sON, seVA, WV/hyporheic in CO & NY/ T&E VA S1S3) Shoemaker 1933

Crangonyx g. packardi - see *C.p.*

Crangonyx grandimanus Bousfield, 1963 (type locality in Marion Co., FL/ Northern Highland, Woodville Karst (St.Marks-Wakulla R. Basin), Crystal Beach & Miami karst,FL (Alachua, Citrus, Dade, Gilchrist, Hernando, Leon, Levy,, Madison, Marion, Pasco, Pinellas, Suwanee, Wakulla, Madison Co. in n., s. to Dade Co.: most of FL except for Choctawhatchee-Yellow-Escambia & Apalachicola-Chattahoochee Flint hydrologic subregions in wFL Panhandle)/Pb, caaves, wells, karst springs/Federal T&E species of concern & FL T&E S2 global G2/ Florida cave amphipod)

Crangonyx hobbsi Shoemaker, 1941 (type locality cave in Alachua Co.,FL + Alachua, Citrus, Columbia, Dade, Gilchrist, Hernando, Leon, Levy, Madison, Marion, Pasco, Pinellas, Suwanee, Wakulla Cos., FL/Pb/Federal T&E special concern; FL T&E S2S3 global G2G3/Hobbs' cave amphipod)

Crangonyx minor Bousfield, 1953 (stream & ponds in neAR, seLA, sIL, MO, sOK, sON,wTN; Tp or Tx in IL,KY(Rockcastle Co.),TN; Tp? in OH/ Federal sp. of concern/ Minor or minor cave amphipod)

Crangonyx mucronatus - see *Bactrurus m.*

Crangonyx obliquus Bates, 1859 (Ac or Tx in Mammoth C.,KY; *C.o.* complex in seVA hyporheic)

Crangonyx packardii (*C.gracilis* p. S.I. Smith, 1888; *C.p* & *g.*,*E.p* Stebbing, 1899) S.I. Smith, 1888 (type locality in Lawrence Co.,IN/ (Clark, Crawford, Decatur, Greene, Harrison, Jefferson, Jennings, Lawrence, Monroe, Orange, Owen, Wahshington Cos.)+sIL(mostly caves in Shawnee Hills Natural Div.: Hardins, Saline, Union, Johnson Cos.), KS (Anderson, Barren, Bourbon, Butler, Franklin, Marion, Miami, Pottawatomie, Riley & Wilson Cos.); sc,wKY; (Crittenden, Carter, Edmonson (Mammoth C.), Rockcastle, Simpson Cos.); wcMO (Benton, Boone, Cass, Jackson Cos.)/Pb/ IL State T&E;IN T&E/Packard's Cave Amphipod) Hubricht 1943

Crangonyx packardii group or complex (IL & KY(Carter, Estill,Jackson, Lee & Pulaski Cos.))/Tb,Pb)

Crangonyx pseudogracilis Bousfield, 1958 (*C. aberrans* Smith, 1983) (most freshwater habitats in eCT,eMA,RI, largely west of Appalachians from GreatLakes area s.,sw. to LA,TX/ Tx? in sON & KY (2 caves in Jackson Co.)) Bibl.: MacNeil 1997

Crangonyx richmondensis richmondensis (*C.r.* Ellis, 1940) Bousfield, 1958 (*C. occidentalis* Hubricht & Harrison, 1941; *C. r. occidentalis* Bousfield, 1958; *C. r. laurnetianus* Bousfield, 1958; *C. alpinus* Bousfield,1963) (streams, lakes, ponds, swamps, bogs, ditches, drains and rarely caves in seAK to NF,NS, s. to FL/Pp in 3 se AK caves)

Crangonyx rivularis Bousfield, 1958 (epigeal in rivers, streams, springs, ditches, ponds, small lakes, rarely caves in seON, IN,n,se.IL,cKY,n,seOH,c.s.MI,eMO,sWV/ Tx? in KY(Estill, Fayette Cos.),sON/ ON stream amphipod)

Crangonyx setodactylus Bousfield, 1958 (seON w. to sMI, s. to e.cIN, ncKY in cold streams,drain outlets, springs, sloughs, temporary pools/ very rare Tx in cave in KY)

Crangonyx shoemakeri (*Eucrangonyx* s. Hubricht & Mackin, 1940) Bousfield, 1958 (DC, scMD s. & sw. to scVA/sprs., streams, bogs, temporary pools/ Tx? in MD/ Shoemaker's amphipod) **Bibl.:** Holsinger 1972

Crangonyx undescr sp. #1 (" *C. aka*" in Zhang 1997/ streams & seeps in Pope, Van Buren, Saline Cos.,AR)

Crangonyx undescr sp. #2 (" *C. acicularis*" in Zhang 1997/ sprs.. & spr.-fed streams, some karstic, in TN (Sullivan Co.) & VA (Montgomery Co.))

Crangonyx undescr sp. #3 (" *C. castellanum*" in Zhang 1997/ sinkhole & five caves in Rockcastle Co.,one cave in Pulaski Co, w. margin of Cumberland Plateau, KY/ known only from caves & sinkholes) **Bibl.:** Seibert 1973

Crangonyx undescr. sp.#4 (*C. "barri"* in Zhang 1997/KY (Adair, Barren, Cumberland, Edmonson, Fayette, Jefferson, Madison, Meade, Monroe, Nelson Cos.) n.to IN half way up Blue

River (Clark & Crawford Cos.),IN) Lewis 1997

Crangonyx undescr sp. #5 (*C. bousfieldi*” in Zhang 1997/ small streams, one spr, one well/ Tp? in one cave in Highland Co.,OH)

Crangonyx undescr sp. #6 (“*C. caecus*” in Zhang 1997)/ Cascade (=North Cave) Cavern + five other caves in *Carter Co.,KY/ mainly cave pools, one stream/ Pb)

Crangonyx undescr sp. #7 (“*C. consimilis*” in Zhang 1997/epigean in eTN, nAL, ecMS/ Tp? in TN (Rutherford Co.)

Crangonyx undescr sp. #8 (“*C. cooperi*” Zhang/ type & 3 other caves in Morgan Co. & 1 cave in Colbert Co., both in AL/ Tb, not troglomorphic)

Crangonyx undescr sp. #9-? (“*C. fontinalis*” in Zhang 1997/ epigean in karstic sprs. near Repass & 2 caves in Bland Co.,VA/ same sp.? as in *?well, Bland Co.,VA/Tb/VA T&E S1, Global G1))

Crangonyx undescr sp.#10 (*C. "indianensis"* in Zhang 1997 (= *C. gracilis* in part) / type locality cave in Greene Co.,IN (type locality)/ cKY n. into scIN karst/ Pb? Tp, not troglomorphic. **Bibl.:** Porter & Hobbs 1997/ /IN T&E) Lewis 1997

Crangonyx undescr sp. #11 (“*C. insolitus*” in Zhang 1997 (*type locality cave in Shannon Co.,MO/Pb)

Crangonyx undescr sp.#12 (*C. "lewisi"* in Zhang 1997/ type locality in cave in Jennings Co., IN/ Clark, Jefferson Cos., seIN & ncKY (Mead, Owen Cos.)/ Tp, springs)

Crangonyx undescr. sp. #13 (“*C. longidactylus*” in Zhang 1997/ swales, cave spr. (Simpson Co.,KY), reservoirs in scKY,swNC)

Crangonyx undescr sp. #14 (“*C. montanus*” in Zhang 1997/ springs., spring-fed swamps & ponds/ karst window in WV (Greenbrier Co.) & VA karst sprs. “(Alleghany, Bath, Rockbridge Cos.)

Crangonyx undescr sp. #15 (“*C. ohioensis*” in Zhang 1997(seeps in IN (Clark Co.), KY (Carter, Lewis Cos.)/ St, Tp? (Adams Co.) & well in OH River drainage)

Crangonyx undescr sp. #16 (“*C. specus*” in Zhang 1997 (type in cave, Pulaski Co., KY/ two other caves in Pulaski Co.) & one cave in Wayne Co., extreme w. margin of Cumberland Plateau or e.margin of Cumberland Saddle, small part of Cumberland River drainage, KY/ Tb, Pb)

Crangonyx undescr sp.#17 (Wakulla Co., FL/ T&E S? & global G1 rank)

Crangonyx undescr sp.#18 (Dade Co., FL/ stygophile or stygobiotic)

Crangonyx undet. species (near *C. obliquus* Bates, 1859 & *C. richmondensis occidentalis* Hubricht & Harrison, 1941 in NW)

Cymadusa Savigny, 1816 - Ampithoidae amphipods

Cymadusa compta Smith, 1873 (e,wFL, LA, Virginian marine infauna)

Cymadusa uncinata (*Acanthogrubia u.* Stout, 1912) (CA marine benthic)

Cyphocaris Boeck, 1871 - Lysianassidae amphipods

Cyphocaris challenger Stebbing, 1888 (WA marine infauna)

Deflexilodes E. L. Bousfield & A. Chevrier, 1996 - Oedicerotidae amphipods

Deflexilodes enigmaticus E. L. Bousfield & A. Chevrier, 1996 (WA marine infauna)

Desdimelita N. E. Jarrett & E.L. Bousfield, 1996 – Melitade amphipods

Desdimelita desdichada (= *Melita d.* Barnard, 1962) (WA marine infauna)

Deutella Mayer, 1890 - Caprellidae amphipods

Deutella incerta (Virginian, wFL, LA Gulf of Mex. marine infauna)

Dexamonica – Dexaminidae amphipods

Dexamonica reduncans (WA marine infauna)

Dulichia Kroyer, 1845 – Podoceridae amphipods

Dulichia rhabdoplastis McCloskey, 1970 (CA, WA marine infauna)

Dulichella Stout, 1912 – Gammaridae amphipods

Dulichella appendiculata Say, 1818 (Carolinian marine infauna)

Dulzura J.L. Barnard, 1969 - Melitidae amphipods (also subsumed in Gammaridae)

Dulzura hamakua J.L. Barnard, 1970 (4-5 m. deep, marine sublittoral (probable) interstitial)

Dulzura sal J.L. Barnard, 1969 (CA marine beach & sublittoral interstitial)

Dyopedos Bate, 1857 – Podoceridae amphipods

Dyopedos arcticus (Murdoch, 1885)(WA marine infauna)

Dyopedos bispinis (Gurjanova, 1930) (CA, WA, North Atlantic marine infauna)

Dyopedos monacanthus (Metzger, 1875) (WA marine infauna)

Dyopedos undet. sp. (AK marine infauna)

Elasmopus Costa, 1853 - Gammaridae amphipods

Elasmopus bampo. J.L. Barnard, 1979 (CA marine benthic)

Elasmopus laevis S.I. Smith, 1873 (e,wFL, LA, MD, VA marine infauna)

Elasmopus mutatus J.L. Barnard, 1962 (CA marine benthic)

Elasmopus procellimanus FL Gulf of Mex. marine infauna)

Elasmopus rapax Costa, 1853 (FL marine benthic)

Eobrolgus J.L. Barnard, 1979 – Phoxocephalidae amphipods
Eobrolgus spinosus Holmes, 1905 (Carolinian, e,w,FL, Virginian, WA marine infauna)

Eogammarus Birstein, 1933 – Melphidippidae amphipods (also put in Gammaridae)
Eogammarus confervicolus (Stimpson, 1856) (AK, OR, WA marine infauna)
Eogammarus oclairi Bousfield, 1979 (WA marine infauna)

Eohaustorius J.L. Barnard, 1957 - Haustoriidae amphipods
Eohaustorius estuarius Bosworth, 1973 (WA marine & brackish sandy interstitial burrower)

Eohaustorius washingtonianus (Thorsteinson, 1941) (OR, WA marine & brackish sandy interstitial burrower)

Erichthonius Milne-Edwards, 1830 - Corophiidae amphipods
Erichthonius brasiliensis (*Pyctilus b.* Dana, 1852) (sCA, FL, MD, TX, VA, WA marine infauna)
Erichthonius hunteri (AK, WA marine infauna)

Erichthonius rubricornis (*Cerapus r.* Stimpson, 1853) (sCA, WA marine infauna)
Erichthonius tolli Bruggen, 1909 (AK marine infauna)

Eriopisa Wrzesniovsky, 1890 - Gammaridae amphipods
Eriopisa laakona = *Metaniphargus l.*

Eriopisella Chevreux, 1920 - Melitidae amphipods (also subsumed in Gammaridae)
Eriopisella upolu J.L. Barnard, 1970 (Oahu (HI) marine sublittoral (probable) interstitial)

Eudevenopus Thomas & Barnard, 1983 - Phoxocephalidae amphipods (also put in Platyschnopidae)

Eudevenopus honduranus Thomas & Barnard, 1983 (w,eFL, LA marine infauna)

Eusiroides Stebbing, 1888 - Eusiridae amphipods
Eusiroides monoculoides (*Atylus m.* Haswell, 1879) (CA marine benthic, infauna?)

Eusirus Kroyer, 1845 - Eusiridae amphipods
Eusirus columbianus E.L. Bousfield & E.A. Hendrycks, 1995 (WA marine infauna)
Eusirus cuspidatus Kroyer, 1845 (WA marine infauna)

Eusirus propinquus G.O. Sars, 1893 (NB, PQ Gulf of St. Lawrence sandy marine interstitial)
Eusirus undet. sp. (CA marine infauna)

Eyakia J.L. Barnard, 1979 - Phoxocephalidae amphipods
Eyakia robusta (*Paraphoxus robustus* Holmes, 1908) (AK, sCA, WA marine infauna)

Foxiphalus J.L. Barnard, 1979 - Phoxocephalidae amphipods

Foxiphalus cognatus (*Paraphoxus c.* Barnard, 1960) (AK, sCA, WA marine infauna)

Foxiphalus golfensis Barnard & Barnard, 1982 (sCA marine infauna)

Foxiphalus obtusidens Alderman, 1936 (sCA, WA marine infauna)

Foxiphalus similis (*Paraphoxus s.* Barnard, 1960) (sCA, WA marine infauna)

Gamarellus Herbst, 1793 - Gammaridae amphipods

Gamarellus angulosus (Rathke, 1843) NB, PQ Gulf of St. Lawrence sandy marine interstitial)

Gamarellus homari (J.C. Fabricius, 1779) NB, PQ Gulf of St. Lawrence sandy marine interstitial)

Gammaropsis Liljeborg, 1855 - Isaeidae amphipods

Gammaropsis barnardi Kudryashov & Tzvetkova, 1975 (CA marine infauna?)

Gammaropsis ellisi K.E. Conlan, 1983 (WA marine infauna)

Gammaropsis mamola (*Megamphopus m.* J.L. Barnard, 1962) (sCA marine infauna)

Gammaropsis melanops Sars, 1895 (AK marine infauna)

Gammaropsis (*Podoceroopsis*) *ociosa* (J.L. Barnard, 1962) (sCA, WA marine infauna)

Gammaropsis shoemakeri K.E. Conlan, 1983 (WA marine infauna)

Gammaropsis (*Gammaropsis*) *thompsoni* (*Kermystheus o.* Walker, 1898) (sCA, WA marine infauna)

Gammarus Fabricius, 1775 (= *Cancer*, *Pephredo*, *Lepleurus*, *Rivulogammarus*, *Fluviogammarus*, *Lagunogammarus*) Gammaridae amphipods

Gammarus Bibl.: Bechler 1977; Borowsky 1984, 1991; Bousfield 1958, 1976; Cole 1970, 1980, Holsinger 1977; Marchant 1981; Minckley 1964; M.& Cole 1963; Whitehurst 1988

Gammarus acherondytes Hubricht & Mackin, 1940 (type locality + 3 other caves in Monroe Co. & one cave in St.Clair Co. + 6 other sites in St.Clair or Monroe Cos.,swIL/Federal taxa proposed to be listed as endangered T&E; IL State T&E, global G3/Illinois cave amphipod/ Tb) **Bibl.:** Holsinger 1972; S. Taylor & Bade 1998; Webb 1995.

Gammarus annulatus Smith, 1873 (PQ Gulf of St. Lawrence sandy marine interstitial)

Gammarus chesapeakeensis (MA marine sandy infauna)

Gammarus daiberi Bousfield, 1969 (Carolinian, Virginian marine infauna)

Gammarus desparatus Cole, 1981 (Noels Amphipod/G2S2 in freshwater FL/Pb?),

Gammarus duebeni Liljeborg, 1851 (PQ Gulf of St. Lawrence sandy marine interstitial)

Gammarus fasciatus Say, 1818 (PQ Gulf of St. Lawrence sandy marine interstitial)

Gammarus hyalelloides Cole, 1976 **(one spring and one cave in Jeff Davis Co., TX/ Pb,spring outlet/ dimunitive amphipod/ G1)

Gammarus *lacustris lacustris* G.O. Sars, 1864 (Epigeal in nUS, Lower CO River, OK disjunct/ Pp in 6 seAK caves; AB lake benthic)

Gammarus *lacustris limnaeus* S.I. Smith, 1874 (= *G. robustus* S.I. Smith, 1875) (OK/ Pb, Tp or Tb) **Bibl.:** Hubricht 1943

Gammarus *lawrencianus* Bousfield, 1956 (PEI Gulf of St. Lawrence sandy marine interstitial)

Gammarus *minus minus* Say, 1818 (= *R.m.*, *G. elki* Reinmer, 1969, *propinquus* Hay, 1902, *purpurascens* Hay, 1902 & *tenuipes* Shoemaker, 1940) (spring 1mi.w of Exteon, Chester Co., PA/ .Pb?, epigeal, Tp in AL, AR, GA, IL, IN, KY, MD, MO, OH, OK, PA, TN, VA, WV; Tx in AR)

Gammarus *minus* **Bibl.:** Cole 1970a; Culver 1986a, 1987; Culver, Chang et al. 1995; Culver & Fong 1994; & Culver 1970; Culver, Jernigan, O'Connell & Kane 1994; Culver, Kane & Fong 1995; Fong 1983, 1985, 1991; Fong & Dai 1991; Gooch 1980, 1990; Gooch & Wiseman 1980; Gooch & Glazier 1986; Gooch & Golladay 1981; Gooch & Hetrick 1979; Haley 1997; Hervant, Mathieu & Barre' 1999; Hervant, Mathieu, Barre' & Simon 1999; Hetrick 1973 Hetrick & Gooch 1973, 1981; Holsinger 1987; Hoyte 1994; Jernigan, Culver & Fong 1994; R. Jones 1988, 1990; Jones & Culver 1989; R. Jones 1989, 1990; Kane & Chang 1995; Kane, Culver & Jones 1992; Kane & Chang 1995; Khashoggi 1988; Kostalos 1971, 1979; Kostalos & Seymour 1976; Khashoggi 1988; Lapp 1993; McCormick & Sarbu 1991; Man 1991; Man & Fong 1991; Mixon 1995; Nadel 1993; Ning 1989; B. Parker 2000; Schram 1987; Vawter, Fong & Culver 1987, 1989; Zeit 1993; Zhang 1997

Gammarus *minus pinicollis* Cole, 1976 (non-cave IL, MO/ Pb in IL, MO)

Gammarus *minus* var. *tenuipes* Shoemaker (interstitial)

Gammarus mucronatus Say, 1818 = *Mucrogammarus m.*

Gammarus obliquus = *Crangonyx o.*

Gammarus *palustris* Bousfield, 1969 (NC marine infauna)

Gammarus *pecos* Cole & Blousfield, 1970 (TX epigeal, spring outlets, Pb?/ Pecos amphipod)

Gammarus pinicollis = see *B.m.p.*

Gammarus *pseudolimnaeus* Bousfield, 1958 (epigeal in upper MS & Great Lakes drainage and Atlantic coastal plain to NC, lakes, and rivers (AR, cE, IL, IA, KY, MI, OK, sON, PQ, TN, WI)/ stream, spr., Tp or Tx in AR, IL, MO) **Bibl.:** Barlocher & Kendrick 1975; Hynes & Harper 1972; S. Miller 1978; Rees 1972; Williams & Moore 1982

Gammarus *purpurascens* Hay, 1902 - now subsumed in *G.minus*

Gammarus *setosus* Dementieva, 1931 (PEI Gulf of St. Lawrence sandy marine interstitial)

Gammarus *tigrinus* Sexton, 1939 (hyporheic? in NB; rare NC marine infauna)

Gammarus undescr. sp.#1 (*spring in Chaves Co., NM/spring)

Gammarus undescr. sp.#1 sp.#2? (sc, swMO, nAr, neOK/Tb)

Gammarus undescr. sp.#1 sp.#3 or ssp. near *forbesi* (sc,swMO, n.AR,neOK?/ Tb)

Gammarus undet. sp(p). (Estill, Powell, Rockcastle & Wayne Co.,KY/Pb;Tp in OH; sea cave in ME)

Gammarus troglophilus Hubricht & Mackin, 1940 (type locality in Monroe Co.,IL/ sw IL(St.Clair & Monroe Cos.), MO, swTN + Williams Co.,VA?/ Tp,spr.) **Bibl.:** Bechler 1981, 1985; Cole 1970; Jenio 1980; Weise 1953

Gibberosus J.D. Thomas & J.L. Barnard, 1986 - Megaluropidae amphipods

Gibberosus myersi (McKinney, 1980) (w,eFL marine infauna)

Gitana Boeck, 1871 - Amphilochidae amphipods

Gitana calitemplado J.L. Barnard, 1962 (sCA marine infauna)

Gitanopsis Sars, 1892 – Amphilochidae amphipods

Gitanopsis laguna Mckinney, 1978 (wFL Gulf of Mex. marine infauna)

Gitanopsis* cf. *laguna Mckinney, 1978 (Carolinian marine infauna)

Gitanopsis undet. sp (WA marine infauna)

Gitanopsis tortugae Shoemaker, 1933 (Carolinian marine infauna)

Globosolembos Myers, 1985 – Corophiidae amphipods

Globosolembos smithi (*Lembos s.* Holmes) (Carolinian, e,wFL, LA, NC marine infauna)

Gnathopleustes E.L. Bousfield & E.A. Hendrycks, 1995 - Pleustidae amphipods

Gnathopleustes pugettensis (Dana, 1853)(WA marine infauna)

Grandidierella Coutiere, 1904; Myers 1970 - Aoridae amphipods

Grandidierella bonnieroides Stephensen, 1947 (e,wFL, LA, TX, VA marine infauna)

Grandidierella japonica Stephensen, 1938 (AK, CA, FL, LA, VA, WA marine infauna)

Grandidierella koa Barnard, 1977 (Hawaii I.,HI/Pp?)

Grandidierella palama Barnard, 1977 (*? type in Maui, HI/ lava tube anchialine Pb)

Grandifoxus J.L. Barnard, 1979 – Phoxocephalidae amphipods

Grandifoxus dixonensis N.E. Jarrett & E.L. Bousfield, 1994 (WA marine infauna)

Grandifoxus grandis Stimpson, 1857 (WA marine infauna)

Hadzia S. Karaman, 1932 (= *Liagoceradocus*) Hadziidae amphipods (once put in Melitidae)

Hadzia lonomaka Barnard, 1977 (Maui I,Cape Kinau, Nukuele No.1/anchialine),

Halicoides - Paradaliscidae amphipods

Halicoides synopiae (Barnard, 1962) (sCA marine infauna)

Halirages Boeck, 1971 - Calliopiidae amphipods

Halirages fulvocinctus M.Sars, 1858 (PQ, NB Gulf of St. Lawrence sandy marine interstitial)

Haploops Liljeborg, 1856 - Ampeliscidae amphipods

Haploops undet. sp. (Baffin Island (neCanada) marine infauna)

Haploops tubicola Liljeborg, 1856 (WA marine infauna)

Harpinia Boeck, 1871 - Phoxocephalidae amphipods

Harpinia kobjakovae Whittington, 1959 (AK marine infauna)

Harpiniopsis Stephensen, 1925 - Phoxocephalidae amphipods

Harpiniopsis epistomata J. Barnard, 1960 (CA marine infauna)

Harpiniopsis excavata (AK marine infauna)

Harpiniopsis fulgens J. L. Barnard, 1960 (sCA, WA marine infauna)

Harpiniopsis galera J. Barnard, 1960 (CA marine infauna)

Haustorius Muller, 1775 - Haustoriidae amphipods

Haustorius undet. sp. or species (GA, MS marine interstitial)

Hemiproto McCain, 1968 - Phtiscidae amphipods

Hemiproto undescr. sp. (sCA marine infauna)

Heterophoxus Shoemaker, 1925 - Phoxocephalidae amphipods

Heterophoxus affinis (*Harpinia a.* Holmes, 1908) (BC, CA marine infauna)

Heterophoxus conlanae (WA marine infauna)

Heterophoxus ellisi Jarrett & Bousfield, 1994 (CA,OR,WA marine infauna)

Heterophoxus oculatus (*Harpina o.* Holmes, 1908) (AK, CA, WA marine infauna)

Heterophoxus undet. sp. (sCA marine infauna)

Hippomedon Boeck, 1871 – Lysianassidae amphipods

Hippomedon cf *coecus* Holmes, 1908 (WA marine infauna)

Hippomedon columbianus Jarrett & Bousfield, 1982 (CA, OR, WA marine infauna)

Hippomedon denticulatus Bate, 1857 (WA marine infauna)

Hippomedon undet. sp. (AK marine infauna)

Hippomedon subrobustus Hurley 1963 (CA, OR, WA marine infauna)

Hippomedon tenax Barnard, 1966 (CA marine infauna)

Hippomedon zetesimus Hurley 1963 (CA marine infauna)

Holsingerius Karaman & Barnard, 1982 - Hadziidae amphipods (once put in Melitidae)

Holsingerius samacos (*Texiweckelia s.* Holsinger in Holsinger, & Longley, 1980) (artesian well at San Marcos, Hays Co.,TX/Tb,St./ San Marcos well amphipod)

Holsingerius smaragdinus Holsinger, 1992 (type in sink and cave in Stockton Plateau, Val Verde Co., TX/ St./ Emerald Sink amphipod)

Hyale Rathke, 1837 - Hyalidae amphipods

Hyale nilssoni (Rathke, 1843) (PQ, NB Gulf of St. Lawrence sandy marine interstitial)

Hyale plumulosa Stimpson, 1857 (WA marine sandy infauna)

Hyale prevostii (MA marine sandy infauna)

Hyale undet. sp. (sCA marine infauna)

Hyaella Latreille, 1806 - Hyaellidae amphipods, Subfamily Hyaellinae

Hyaella azteca (Saussure, 1858) (epigeal in MT, VA, WA, WI/ Tx in AR, FL, OK, TX; karstic spr. & hyporheic in CA; AB lake benthic; IL river benthic/ harmed by zinc, copper, and cadmium) **Bibl.:** Hargrave 1970.

Hyaella montezuma Cole & Watkins, 1977 (*Montezuma Well, AZ/sink Pb?/ Montezuma's Well amphipod). **Bibl.:** Dehdashti 1987; Dehdashti, English & Blinn 1983; Runck 1993

Hyaella (prob.) undet. sp. or species (hyporheic (probable) of Rio Calaveras, Jemez Mts., NM; Ttp in Devil's Hole, NV)

Hyaella undescr. sp. (*Death Valley Texas Spring, CA/ Pb) **Bibl.:** Baldinger 1998

Hyperia Latreille I Desmarest, 1823 – Hyperiididae amphipods

Hyperia undet. sp. (WA marine infauna)

Hyperoche Bovallius, 1887 – Hyperiididae amphipods

Hyperoche undet. sp. (WA marine infauna)

Ingolfiella Hansen, 1903 - Ingolfiellidae amphipods

Ingolfiella fuscina Dojiri & Sieg, 1987 (Gulf of Mexico, Atlantic coast of NA/ shallow water 17-151 m., interstitial? & infauna)

Ischyrocerus Kroyer, 1838 - Ischyroceridae amphipods

Ischyrocerus anguipes Kroyer, 1838 (CA, WA & PEI, PQ, NB Gulf of St. Lawrence sandy marine interstitial)

Ischyrocerus pelagops J.L. Barnard, 1962 (CA marine infauna)

Ischyrocerus undet. sp. or species (AK, WA marine infauna)

Jassa Leach, 1814 - Ischyroceridae amphipods

Jassa falcata (Virginian (rare), WA marine infauna)

Jassa marmorata Holmes, 1903 (PQ, NB Gulf of St. Lawrence, Virginian sandy marine interstitial)

Jassa slatteryi Conlan, 1909 (CA marine infauna)

Kermystheas ociosa = *Gammaropsis (Podoceropsis) o.*

Lembos J. L. Barnard, 1973 - Corophiidae or Aoridae amphipods

Lembos rectangulatus A.A. Myers, 1977 (FL marine infauna)

Lembos setosus = *Bemlos s.*

Lembos smithi (Holmes, 1873) (FL, LA, NC, NJ marine infauna)

Lembos unifasciatus Myers, 1977 (LA marine infauna)

Lembos websteri Bate, 1857 (NC marine infauna)

Lembos undet. sp. (TX estuary marine infauna)

Marinagammarus – Gammarida amphipods

Marinagammarus stierorsis (NC marine infauna)

Lepidactylus Say, 1818 - Haustoriidae amphipods

Lepidactylus dytiscus Say, 1818 (GA, MD, MA, VA marine infauna)

Lepidactylus undet. sp. (LA marine benthic infauna)

Lepidepcreum Bate & Westwood, 1868 - Lysianassidae amphipods

Lepidepcreum comatum Gurjanova, 1962 (AK marine infauna)

Lepidepcreum garthi Hurley, 1963 (sCA, OR, WA marine infauna)

Lepidepcreum gurjanovae Hurley, 1963 (sCA, OR, WA marine infauna)

Lepidepcreum undescr. sp. (sCA marine infauna)

Leptamphopus Sars, 1895 – Calliopidae amphipods

Leptamphopus undet. sp. (WA marine infauna)

Leptocheirus Zaddach, 1884 - Aoridae amphipods

Leptocheirus pinguis Stimpson, 1853 (MA, NY, RI marine infauna filter feeder)

Leptocheirus plumulosus Shoemaker, 1932 (Carolinian, MD, MA, VA marine infauna)

Leucothoe Leach, 1814 – Leucothoidae amphipods

Leucothoe spinicarpa Abildgaard (NC marine infauna)

Liagoceradocus Barnard, 1965 - Hadziidae amphipods (once put in Melitidae)

Liagoceradocus lonomaka (J.L. Barnard, 1977) (anchialine cave in Maui, HI)

Listriella Barnard, 1959 - Liljeborgiidae amphipods

Listriella albina J.L. Barnard, 1959 (FL, TX marine infauna)

Listriella barnardi Wigley, 1963 (e,wFL, LA, TX, VA marine infauna)

Listriella clymenellae (Mills, 1961) (TX, VA estuary marine infauna)

Listriella eriopisa J.L. Barnard, 1959 (sCA marine infauna)

Listriella diffusa J.L. Barnard, 1959 (sCA marine infauna)

Listriella goleta J.L. Barnard, 1959 (sCA marine infauna)

Listriella melanica J.L. Barnard, 1959 (sCA marine infauna)

Luconacia Mayer, 1903 - Caprellidae amphipods

Luconacia incerta (Mayer, 1903) (FL, Virginian marine infauna)

Lysianassa Milne-Edwards, 1830 - Lysianassidae amphipods

Lysianassa holmesi (WA marine infauna)

Lysianopsis Stebbing, 1906 - Lysiannassidae amphipods

Lysianopsis alba Holmes, 1903 (CA, FL, NC, Virginian infauna)

Maera Leach, 1814 - Gammaridae amphipods

Maera caroliniana Bynum & Fox, 1977 (Carolinian marine infauna)

Maera danae Stimpson, 1853 (AK, NJ, WA & Gulf of St. Lawrence (PQ, NB) marine interstitial)

Maera loveni (AK, WA sandy marine interstitial)

Maera simile Stout, 1913 (sCA marine infauna)

Maera undet. species (Cape Kinau, Maui, HI/hypogean, anchialine cave; NC marine infauna)

Maera vigota J.L. Barnard, 1969 (sCA marine infauna)

Mandibulophoxus J.L. Barnard, 1957 - Phoxocephalidae amphipods

Mandibulophoxus uncistrostratus Giles, 1890 (OR, WA marine infauna)

Marinagammarus Sexton & Spooner, 1940 (also treated as subgenus of *Gammarus*) – Gammaridae amphipods

Marinagammarus stoerorsis (NC marine infauna)

Megamoera Bate, 1862 – Melitidae amphipods

Megamoera borealis N.E. Jarrett & E.L. Bousfield, 1996 (WA marine infauna)

Melita Leach, 1814 - Gammaridae amphipods

Melita californica (WA marine infauna)

Melita dentata Kroyer, 1842 (AK, CA, WA marine infauna)

Melita desdichada Barnard, 1962 (AK, CA marine infauna)

Melita elongata Sheridan, 1979 (wFl Gulf of Mex. marine infauna)

Melita nitida Smith, 1873 (Virginian, Carolinian, MA marine infauna)

Melita oregonensis Barnard, 1954 (AK, OR, WA marine infauna)

Melita sulca (Stout, 1913) (WA marine infauna)

Melphidippa Boeck, 1871 - Melphidippidae amphipods

Melphidippa goesi Stebbing, 1899 (WA marine infauna)

Melphisana J.L. Barnard, 1962 - Melphidippidae amphipods

Melphisana bola J.L. Barnard, 1962 (sCA, WA marine infauna)

Metaniphargus Stephensen, 1933 - Hadziidae amphipods (once put in Melitidae)

Metaniphargus laakona J.L. Barnard, 1970 (= *Eriopisa l.*) (Cape Kinau (Maui) & Kaho'olawe Island, HI/ hypogean, anchialinecaves, interstitial)

Metaphoxus Lincoln, 1979 - Phoxocephalidae amphipods

Metaphoxus frequens J.L. Barnard, 1960 (sCA, WA marine infauna)

Metaphoxus fultoni (Scott, 1890) (WA marine infauna)

Metharpinia Schellenberg, 1931 - Phoxocephalidae amphipods

Metharpinia coronadoi Barnard, 1980 (CA marine benthic)

Metharpinia floridana Shoemaker, 1933 (e,wFL marine infauna)

Metharpinia jonesii (*Paraphoxus j.* Barnard, 1980) (CA marine benthic)

Metopa Boeck, 1871 - Stenothoidae amphipods

Metopa bruzelii (Goes, 1866) (PQ, NB Gulf of St. Lawrence sandy marine interstitial)

Metopa dawsoni J.L. Barnard, 1962 (sCA, WA marine infauna)

@*Metopa proboldes* (WA marine infauna)

Metopella Stebbing, 1906 - Stenothoidae amphipods

Metopella undet sp. (WA marine infauna)

Mexiweckelia Holsinger & Minckley, 1971 - Hadziidae amphipods. **Bibl.:** Barnard & B. 1983; Holsinger 1973a

Mexiweckelia coahuila Bowman 1992 (type in cave in Coahuila, Mexico +Bexar & Medina Cos.(TX)/St)

Mexiweckelia hardeni Holsinger, 1992 (hyporheic in creek in Medina Co. +Comal Co, TX/ Pb, hyporheic/ Harden's interstitial amphipod)

Mexiweckelia texensis - see *Texiweckelia*

Mayerella Janko, 1987 - Caprellidae amphipods

Mayerella banksia Laubitz, 1970 (sCA, WA marine infauna)

Metacaprella - Caprellidae amphipods

Metacaprella anomala (WA marine infauna)

Metacaprella kennerlyi (WA marine infauna)

Microdeutopus Costa, 1853 - Aoridae amphipods

Microdeutopus anomalus (Rathke, 1843) (Europe (Spain) & CT marine infauna)

Microdeutopus gryllotalpa Costa, 1853 (MA, NY, Virginian marine sandy infauna, suspension deposit feeder, tubiculous)

Microdeutopus myersi Bynum & Fox, 1977 (FL marine benthic)

Microjassa Stebbing, 1899 - Ischyroceridae amphipods

Microjassa litotes Stebbing, 1899 (WA marine infauna)

Microprotopus Norman, 1867 - Isaeidae amphipods

Microprotopus undet. sp. or species (FL, TX estuary benthic)

Microprotopus raneyi Wigley, 1966. (e,wFL, MD, VA rare marine infauna)

Monocorophium E.L. Bousfield & P.M. Hoover, 1997 – Corophiidae amphipods

Monocorophium carlottensis E.L. Bousfield & P.M. Hoover, 1997 (WA (alien) marine infauna?)

Monocorophium acherusicum (MD, VA marine infauna?)

Monocorophium tuberculatum (Shoemaker, 1934) (Virginian, Carolinian marine infauna)

Monoculodes Stimpson, 1853 - Oedicerotidae amphipods

Monoculodes edwardsi Holmes, 1905 (wFL, MA, Gulf of St. Lawrence (PQ, NB), Virginian (rare) sandy marine infauna)

Monoculodes emarginatus Barnard, 1962 (CA marine infauna)

Monoculodes latissimanus Stephensen, 1931 (CA marine infauna)

Monoculodes norvegicus Bloeck, 1876 (WA marine infauna)

Monoculodes nyei Shoemaker, 1933 (wFL, LA, TX estuary marine infauna)

Monoculodes undet. sp. or species (Baffin Island (neCanada), GA, NC & sCA marine infauna)

Monoculodes rectipalmum Mills, 1962 (CA marine infauna)

Monoculodes spinipes Mills, 1962 (OR, WA marine infauna)

Monoculodes tuberculatus Boeck, 1871 (MA marine sandy infauna; PQ, NB Gulf of St. Lawrence sandy marine interstitial)

Monoculodes zernovi Gurjanova, 1938 (AK, WA marine infauna)

Monoculopsis Ledoyer, 1973 - Oedicerotidae amphipods

Monoculopsis longicornis (Boeck, 1871) (PEI, PQ, NB Gulf of St. Lawrence sandy marine interstitial)

Monoporeia E.L. Bousfield, 1989 - Pontoporeiidae amphipods

Monoporeia undet. sp. (PQ Gulf of St. Lawrence sandy marine interstitial)

Mucrogammarus – Gammaridae amphipods

Mucrogammarus mucronatus (= *Gammarus* g. Say, 1818) (TX, Virginian marine infauna)

Neohaustorius Bousfield, 1965 – Haustoriidae amphipods

Neohaustorius schmitzi Bousfield, 1965 (GA marine infauna)

Neopleustes Stebbing, 1906 - Pleustidae amphipods

Neopleustes undet. sp. (AK marine infauna)

Nicippe Bruzellius, 1859 - Pardaliscidae amphipods

Nicippe tumida Bruzellius, 1859 (AK, sCA marine infauna)

Niphargus - see *Allocrangonyx* p. Bibl.: Mackin, 1935

Nuuanu Barnard, 1970 - Nuuanidae amphipods

Nuuanu amikai J.Barnard, 1977 (Cape Kinau (Maui) & Kaho'olawe Island, HI/ hypogean, anchialine caves)

Odius Liljeborg, 1865 - Acanthonotozomatidae amphipods

Odius crassiginus Liljeborg, 1865 (AK marine infauna)

Oediceros Kroyer, 1842 - Oedicerotidae amphipods

Oediceros saginatus Kroyer, 1842 (PEI, PQ, NB Gulf of St. Lawrence sandy marine interstitial)

Onisimus Boeck, 1871 - Lysianassidae amphipods

Onisimus undet. sp. (Baffin Island (neCanada) marine infauna)

Opisa Kroyer, 1842 - Lysianassidae amphipods

Opisa tridentata Hurley, 1963 (sCA, OR, WA marine infauna)

Oradarea A.O. Walker, 1903 - Eusiridae amphipods

Oradarea longimana (*Amphithopsis* l. Boeck, 1871) (CA, WA marine infauna)

Orchestia Leach, 1814 - Talitridae amphipods

Orchestia grillus (Bosc, 1802) (NC & PEI, PQ, NB Gulf of St. Lawrence sandy marine interstitial)

Orchomene Boeck, 1871 Lysianassidae amphipods

Orchomene anaquelus J.L. Barnard, 1954 (sCA marine infauna)

Orchomene decipiens (*Orchomenella p.* Hurley, 1963) (sCA, OR, WA marine infauna)

Orchomene pacificus (*Orchomenella p.* Gurjanova, 1938) (sCA, OR, WA marine infauna)

Orchomene obtusa Sars, 1895 (WA marine infauna)

Orchomene pinguis Boeck, 1861 = *Orchomenella p.*

Orchomene undet. sp. (AK marine infauna)

Orchomenella Sars, 1890 - Lysiannassidae amphipods

Orchomenella (*Orchomenopsis*) *minuta* (MA marine infauna)

Orchomenella (*Orchomenopsis*) *pinguis* (G.O. Sars, 1891) (AK, PEI, PQ, NB Gulf of St. Lawrence sandy marine interstitial; sCA, MA, WA marine infauna)

Pachynus Bulychewa, 1955 - Lysianassidae amphipods

Pachynus barnardi Hurley, 1963 (sCA, OR, WA marine infauna)

Parabogidiella Holsinger, & Longley, 1980 - Bogidiellidae amphipods

Parabogidiella americana Holsinger in Holsinger & Longley, 1980 (artesian well in San Marcos (Hays Co.) +Bexar Co,scTX/Pb)

Paracaprella Mayer, 1903 - Caprellidae amphipods

Paracaprella pusilla (Carolinian , wFL Gulf of Mex.marine interstitial)

Paracaprella tenuis Mayer, 1903 (e,wFL, LA, MD, VA marine infauna; PEI Gulf of St. Lawrence sandy marine interstitial)

Paradulichia Boeck, 1871 – Podoceridae amphipods

Paradulichia typica Boeck, 1871 (WA marine infauna)

Parahaustorius Bousfield, 1965 – Haustoriidae amphipods

Parahaustorius attenuatus (Carolinian, Virginian marine infauna)

Parahaustorius longimerus (Carolinian, Virginian GA marine infauna)

Parametaphoxus Gurjanova, 1977 - Phoxocephalidae amphipods

Parametaphoxus fultoni (Scott, 1890) (sCA marine infauna)

Parametaphoxus quaylei Jarrett & Bousfield, 1994(sCA marine infauna)

Parametopella Gurjanova, 1938 - Stenothoidae amphipods

Parametopella cypris Holmes, 1905 (MD, VA marine infauna?)

Parametopella undet. sp. or species (TX estuary benthic; WA, wFL Gulf of Mex. marine infauna)

Paramexiweckelia Holsinger, 1981 - Hadziidae amphipods

Paramexiweckelia ruffoi Holsinger, 1993 (Val Verde Co.,TX/St/ Ruffo's spring amphipod)
Holsinger, 1995a

Paramicrodeutopus A.A. Myers, 1988 - amphipods

Paramicrodeutopus cf. *myersi* (Bynum & Fox, 1977) (wFL Gulf of Mex. marine infauna)

Paramicrodeutopus schmitti (*Microdeutopus* s. Shoemaker, 1942) (sCA marine infauna)

Paramoera Miers, 1875 - Eusiridae amphipods. **Bibl.:** Staude 1986

Paramoera columbiana Bousfield, 1958 (intertidal & freshwater in 3 seAK caves)

Paramoera lokowai J. Barnard, 1977 (*Honaunau Well No. 1, Hawaii I.,HI/anchialine/ G1)

Paramoera paakai J. Barnard, 1977 (*Tokyo-Land lava pond,Hawaii I.,HI/anchialine/ G1G2)

Paramoera rua J.Barnard, 1977 (*type locality cave in Big Island, HI/ anchialine/ G1)

Paraphoxus Sars, 1891- Phoxocephalidae amphipods

Paraphoxus bicuspidatus Barnard, 1960 (CA marine infauna)

Paraphoxus epistomus (Shoemaker, 1938) (Atlantic marine infauna burrower)

Paraphoxus gracilis N.E. Jarrett & E.L. Bousfield, 1994 (WA marine infauna)

Paraphoxus heterocuspidatus Barnard, 1960 (WA marine infauna)

Paraphoxus holbolli (Kroyer, 1842) (Atlantic marine infauna burrower)

Paraphoxus milleri (Thornsteinson, 1941) (OR, WA marine infauna)

Paraphoxus robustus = *Eyakia robusta*

Paraphoxus oculatus (Carolinian, WA marine infauna)

Paraphoxus similis Barnard, 1960 (AK, CA marine infauna)

Parapleustes Buchholz, 1874 - Pleustidae amphipods

Parapleustes americanus E.L. Bousfield & E.A. Hendrycks, 1995 (WA marine infauna)

Parapleustes gracilis Buchholz, 1874 (PEI, PQ, NB Gulf of St. Lawrence sandy marine interstitial)

Parapleustes pugettensis (Dana, 1853) (WA marine infauna)

Parathemisto Boeck, 1870 – Hyperiididae amphipods

Parathemisto pacifica (WA marine infauna)

Pardalisca Kroyer, 1842 - Pardaliscidae amphipods

Pardalisca cuspidata (WA marine infauna)

Pardalisca tenuipes G.O. Sars, 1893 (WA & Gulf of St. Lawrence (PEI, PQ, NB) sandy marine interstitial)

Paroedicerus Sars, 1895 - Oedicerotidae amphipods

Paroediceros undet. sp. (Baffin Island (neCanada) marine infauna)

Peramphithoe Conlan & Bousfield, 1982 – Amphilochidae amphipods

Peramphithoe undet. sp. (WA marine infauna)

Photis Kroyer, 1842 - Isaeidae amphipods

Photis acia J.L. Barnard, 1962 (CA marine infauna)

Photis bifurcata J.L. Barnard, 1962 (CA, WA marine infauna)

Photis brevipes Shoemaker, 1942 (AK, CA, WA marine infauna)

Photis californica Stout, 1913 (CA marine infauna)

Photis conchiola Alderman, 1936 (CA marine infauna)

Photis lacia J.L. Barnard, 1962 (CA, WA marine infauna)

Photis linearmanus Conlan, 1994 (CA marine infauna)

Photis longicaudata (Bate & Westwood, 1862) (Carolinian marine infauna)

Photis macinerneyi Conlan, 1983 (CA, WA marine infauna)

Photis macrotica J.L. Barnard, 1962 (CA, WA marine infauna)

Photis macromanus Mckinney, Kalke, & Holland, 1978 (LA marine infauna)

Photis melanicus Mckinney, 1980 (LA marine infauna)

Photis oligochaeta K.E. Conlan, 1983 (WA marine infauna)

Photis pachydactyla K.E. Conlan, 1983 (WA marine infauna)

Photis parvidons K.E. Conlan, 1983 (CA, WA marine infauna)

Photis pugnator Shoemaker, 1945 (Virginian marine infauna)

Photis reinhardi Kroeyer, 1842 (rare Virginian marine infauna)

Photis spasskii Gurjanova, 1951 (WA marine infauna)

Photis viuda J.L. Barnard, 1962 (CA marine infauna)

Phoxocephalus Stebbing, 1888 - Phoxocephalidae amphipods

Phoxocephalus holbolli (Kroyer, 1842) (PEI, PQ, NB Gulf of St. Lawrence sandy marine interstitial & NY, MA surface/ suspension deposit feeder, tubiculous))

Platorchestia Bousfield, 1982 - Talitridae amphipods

Platorchestia platensis (Kroyer, 1845) (PEI, PQ, NB Gulf of St. Lawrence sandy marine interstitial)

Pleusymtes J.L. Barnard, 1969 - Pleustidae amphipods

Pleusymtes coquilla J.L. Barnard, 1969 (WA marine infauna)

Pleusymtes glaber (Boeck, 1861) (Virginian (rare) Gulf of St. Lawrence (PEI, PQ, NB) sandy

marine interstitial)

Pleusymtes pulchella (G.O. Sars, 1876) (PEI, PQ, NB Gulf of St. Lawrence sandy marine interstitial)

Pleusymtes undet. sp. (AK marine infauna)

Pleusymtes subglaber (Barnard & Given, 1960) (sCA, WA marine infauna)

Photis Kroyer, 1842 - Isaeidae amphipods

Photis lacia J.L. Barnard, 1962 (sCA marine infauna)

Podocerus Leach, 1814 - Podoceridae amphipods

Podocerus brasiliensis (*Platophium b.* Dana, 1853 (CA, FL marine infauna)

Podocerus cristatus (*Cyrtophium c.* Thomson, 1879) (CA, FL, WA marine infauna)

Podocerus undet. sp. (sCA marine infauna)

Pontharpinia Stebbing, 1897 - Phoxocephalidae amphipods

Pontharpinia floridana Shoemaker (NC marine infauna)

Pontogeneia Boeck, 1871 - Eusiridae amphipods

Pontogeneia inermis (*Amphithoe i.* Kroyer, 1838) Kroyer, 1838) (CA, WA & PEI, PQ, NB Gulf of St. Lawrence sandy marine interstitial)

Pontogeneia intermedia Gurjanova, 1938 (WA marine infauna)

Pontogeneia rostrata (WA marine infauna)

Pontoporeia Kroyer, 1842 - Haustoriidae amphipods

Pontoporeia affinis Lindstrom (OR, WA marine infauna)

Pontoporeia femorata Kroyer, 1842 (Baffin Island (neCanada), WA marine infauna)

Pontoporeia inermis (*Amphithoe i.* Kroyer, 1838) (CA marine infauna)

Pontoporeia rostrata Gurjanova, 1938 (CA, Baffin Island (neCanada) marine infauna)

Prachynella J.L. Barnard, 1964 - Lysianassidae amphipods

Prachynella lodo J.L. Barnard, 1964 (sCA, WA marine infauna)

Proboloides Della Valle, 1893 - Stenothoidae amphipods

Proboloides undet sp. (WA marine infauna)

Protohaustorius Bousfield, 1965 – Haustoriidae amphipods

Protohaustorius deichmannae Bousfield, 1965 (Carolinian, Virginian (cf. *P.d.*) marine infauna)

Protohaustorius wigleyi Bousfield, 1965 (Carolinian, Virginian marine infauna)

Protomedeia Kroyer, 1842 - Isaeidae amphipods

Protomedeia articulata J.L. Barnard, 1962 (WA marine infauna)

Protomedeia grandimana Bruggen, 1906 (WA marine infauna)

Protomedeia penates Barnard or *P. prudens* (WA marine infauna)

Protomedeia prudens J.L. Barnard, 1966 (AK, WA marine infauna)

Protomedeia prudens/ *Cheirimedeia* (WA marine infauna)

Protomedeia undet. sp. or species (AK, sCA marine infauna)

Psammogammarus Karaman, 1955 - Hadziidae amphipods (once put in Melitidae)

Psammogammarus garthi J.L. Barnard, 1952 (sCA sea caves?; CA marine sublittoral interstitial)

Psammonyx Bousfield, 1973 – Lysianassidae amphipods

Psammonyx nobilis (Stimpson, 1853) (NH marine infauna) K. Scott 1975

Pseudalibrotus Della Valle, 1893 - Lysiannassidae amphipods

Pseudalibrotus undet. sp. (Baffin Island (neCanada) marine infauna)

Pseudohaustorius Bousfield, 1965 - Haustoriidae amphipods

Pseudohaustorius caroliniensis Bousfield, 1965 (eFL marine infauna)

Pseudohaustorius undet. sp. or species (wFL Gulf of Mex., SC marine infauna)

Pseudunciola Bousfield, 1973 – Corophiidae amphipods

Pseudunciola obliquua Virginian marine infauna)

Ramellogammarus Bousfield, 1979 - Anisogammaridae amphipods

Ramellogammarus undet. sp. or species (Tx or Tp in 3 seAK intertidal & freshwatercaves: anticipated for other Pacific seaside freshwatercaves)

Relictoseborgia hershleri = *Seborgia h.*

Rhachotropis Boeck, 1871 - Eusiridae amphipods

Rhachotropis barnardi Bousfield & Hyndrycks, 1995 (sCA, WA marine infauna)

Rhachotropis clemens Barnard, 1967 (WA marine infauna)

Rhachotropis distincta (Holmes, 1908) (CA & PEI, PQ, NB Gulf of St. Lawrence sandy marine interstitial)

Rhachotropis inflata Sars, 1883 (WA marine infauna)

Rhachotropis oculata Hansen, 1888 (WA marine infauna)

Rhepoxynius J.L. Barnard, 1979 - Phoxocephalidae amphipods

Rhepoxynius abronius (*Paraphoxus a.* J. Barnard, 1960) (AK, sCA, NY, WA marine infauna)

Rhepoxynius barnardi N.E. Jarrett & E.L. Bousfield, 1994 (WA marine infauna)
Rhepoxynius bicuspidatus (*Paraphoxus b.* J.L. Barnard, 1960) (sCA marine infauna)
Rhepoxynius boreovariatus N.E. Jarrett & E.L. Bousfield, 1994 (WA marine infauna)

Rhepoxynius daboius (*Paraphoxus d.* J. Barnard, 1960) (sCA, OR, WA marine infauna)
Rhepoxynius fatigans (*Paraphoxus f.* J. Barnard, 1960) (sCA marine infauna)

Rhepoxynius heterocuspidatus (*Paraphoxus h.* Barnard, 1960) (sCA marine infauna)
Rhepoxynius hudsoni J.L. Barnard & C.M. Barnard, 1982 (Carolinian, Virginian marine infauna)

Rhepoxynius lacubrans (*Paraphoxus l.* J. Barnard, 1960) (sCA marine infauna)
Rhepoxynius menziesi Barnard & Barnard, 1982 (sCA, WA marine infauna)

Rhepoxynius pallidus (*R. tridentatus* ssp. *p.*) (WA marine infauna)
Rhepoxynius undet. sp. (Virginian marine infauna)

Rhepoxynius stenodes (*Paraphoxus s.* Barnard, 1960) J.L. Barnard, 1954 (sCA marine infauna)
Rhepoxynius variatus (*Paraphoxus v.* J.L. Barnard, 1960) (sCA, WA marine infauna)

Rhynohalicella – Pardaliscidae amphipods
Rhynohalicella halona (Barnard, 1971) (WA marine infauna)

Rotomelita J.L. Barnard, 1976 - Melitidae amphipods (also subsumed in Gammaridae)
Rotomelita ana J.L. Barnard, 1977 (*cave in Maui, HI/ Pb, anchialine, 1-2% salinity)
Rotomelita loko J.L. Barnard, 1977 (*type locality cave in Big Island, HI/ Pp, Tb?, anchialine, 2-12% salinity)

Rudilemboides Barnard, 1959 - Aoridae amphipods
Rudilemboides naglei Bousfield, 1973 (Carolinian, LA, e,wFL marine infauna)
Rudilemboides stenopropodus Barnard, 1959 (sCA marine infauna)

Schisturella Norman, 1900 - Lysianassidae amphipods
Schisturella cocula Hurley, 1963 (WA marine infauna)

Seborgia Bousfield, 1970- Sebiidae amphipods. **Bibl.:** Karaman 1982
Seborgia (*Relictoseborgia*) *hershleri* Holsinger, 1992 (spr.e. of Devils R., 32km n. of Del Rio, Val Verde Co., scTX/ St /Hershler's spring amphipod)

Seborgia (*Relictoseborgia*) *relicta* Holsinger in Holsinger, & Longley, 1980 (= *Texiweckelia r.*) (artesian well in San Marcos (Hays Co.) + Medina & Comal Cos., Edwards Aquifer, scTx/Pb/ Minute artesian well amphipod),

Spelaeonicippe Stock & Vermeulen, 1982 - Pardaliscidae amphipods
Spelaeonicippe undet.sp. (possibly in anchialine caves in Florida Keys)

Spelaeorchestia Bousfield & Howarth, 1976 - Talitridae amphipods

Spelaeorchestia koloana Bousfield & Howarth, 1976 (Kauai cave amphipod/Koloa Cave #2, *caves near Koloa,s.coastal plain of Kauai,HI/Federal T&E ; HI S1.1, global G1 rank/ threatened by surface activities such as vegetation removal, grading, filling, paving, agricultural development, and chemical and biological controls employed to control non-native plants)

Stenopleustes Sars, 1893 – Pleustidae amphipods

Stenopleustes inermis Shoemaker, 1949 (Carolinian marine infauna)

Stenopleustes inermis Shoemaker, 1949 (= *S. thermis* misspelling?) (Virginian marine infauna)

Stenothoe Dana, 1852 - Stenothoidae amphipods

Stenothoe undet. sp. or species (WA, FL Gulf of Mex. marine infauna)

Stenothoides Chevreux, 1900 - Stenothoidae amphipods

Stenothoides bicoma J.L. Barnard, 1962 (sCA marine infauna)

Stenula J.L. Barnard, 1962 - Stenothoidae amphipods

Stenula undet. sp. (WA marine infauna)

Stygobromus Cope, 1872 (= *Apocrangonyx*, *Boruta*, *Stygonectes*, *Synpleonia*, *Synurella*)

Crangonyctidae amphipods. **Bibl.:** Holsinger 1974a, 1976b, 1978; Holsinger, & Cooper 1977; Karaman 1974; Koenemann 2000; Ward & Holsinger 1981

Stygobromus *abditus* Holsinger, 1978 (type & one other cave in Pulaski Co., 1 cave in Smyth Co. & 2 caves in WA Co., all VA/ Tb, St/ VA Threatened T&E/James Cave amphipod)

Stygobromus *acicularis* Holsinger (in ms.)

Stygobromus *ackerlyi* Holsinger, 1978 (type in cave in Polk Co.; also in one cave in Floyd Co., both counties of GA/ Tb, Pb/ Ackerly's cave amphipod/ G1)

Stygobromus *affinis* Holsinger (in ms.)

Stygobromus *alabamensis a.* (*Stygonectes a.* Stout, 1911; *Stygonectes americana* Mackin, 1935; *Sstygonectes a.occidentalis* Holsinger, 1967) (sc,swAL(Clark, Lee, Wilcox Cos.) &nLA(Union Co.) to ecMS (Clarke, Lauderdale Cos.), nw.to swTN (S3?, G4G5), w.to nAr(Benton, Boone, Clebune, Conway, Garland, Independence, Izard, Jackson, Johnson, Logan, Marion, Newton, Searcy, Stone, Van Buren, Washington Cos.), KS (Cheokee,Douglas, Marion Cos.), eTX (Dallas, Nacogdoches, Palo Pinto Cos.), eOk (Adair, Choctaw, Delaware, Latimer, Mayes, Murray, Ottawa, Pontotoc, Tulsa, Tipton Cos.), n.to cMO(12cos.), MD(3cos.) /Pb,rarely cr.) Hubricht 1947,

Stygobromus *alabamensis occidentalis* (*Stygonectes a.o.* Holsinger, 1967; part of *S.a.* Stout, 1911; *Synpleonia* & *C. a.*) (well 2 mi. e of Auburn, Lee Co.,AL+LA?,OK(Pontotoc & Murray Cos.),TX(Palo Pinto, Irion?, & Dallas Cos.)/ Alabama groundwater amphipod/ phreatobite,

seep,spr.),

Stygobromus allegheniensis (*Stygonectes a.* Holsinger, 1967) (wMD(Allegany, Garrett, Washington Cos.), c&eNY(Albany, Chemung, Chenango, Hekimer, Jefferson, Livingston, Montgomery, Onondaga, Orange, Schohaire, Steuben, Sullivan, Ulster Cos.), cPA(Berks, Blair, Cameron, Center, Clearfield, Clinton, Fayette, Lancaster, Lebanon, Mifflin, Monroe, Schuylkill, Somerset, Tioga, Union, Westmoreland Cos.), neWV(Hardy, Jefferson, Morgan Cos. – S1)/ St,seep,spr.,well/Shenandoah or Allegheny cave amphipod/MD rare T&E S2S3; WV T&E S1, global G4 or G5) Karaman1974

Stygobromus araeus (*Crangonyx a.* Holsinger, 1969) (seep 1.6km n of Crittenden Nansemond (VA) +neVA(Chesapeake, Isle of Wight, James City, New Kent, Newport News, Surry, York Cos.) & Gates Co.,NC/Pb/NC State T&E/Tidewater interstitial amphipod),

Stygobromus arbucklensis Holsinger (in ms.)

Stygobromus arizonensis Holsinger, 1974 (cave (type locality), nearby mine spr. & other cave, all in Cochise Co. & bog sprs. (Santa Cruz Co.), & Sycamore Cr. 32 km ne of Phoenix (Maricopa Co.), all in AZ/ federal T&E species of concern/ St in caves, bog springs, seeps/AZ cave amphipod)

Stygobromus balconis (*Stygonectes b.* Hubricht, 1943) (type locality in cave in Hays Co./ caves in Hays, Coryell, Kendall, San Saba & Travis Cos.,Balcones Fault Zone,TX/Tb/Balcones cave amphipod) Bibl.: Holsinger 1978

Stygobromus baroodyi Holsinger, 1978 (type localit in cave in *Rockbridge Co.,VA/ Tp,St/ VA Special Concern T&E & S1S2, Global G2/Rockbridge Co. cave amphipod)

Stygobromus barri (*Stygonectes b.* Holsinger, 1967) (*MO seep/Madison, St. Francois & Wayne Cos./Pb/MO State T&E; Federal Species of Concern/ Barr's cave amphipod)

Stygobromus barryi Holsinger, 1978 (*cave in Unicoi Co.,TN/St/ Blankenship Cave amphipod/ G1)

Stygobromus bifurca = *Synurella b.*

Stygobromus bifurcatus (*Stygonectes b.* Holsinger, 1967) (type in San Saba Co./ caves in Bell, Coryell, Hays, Kendall, Lampasas, San Saba, Travis, Williamson Cos.,scTX/ St/ Bifurcated cave amphipod)

Stygobromus biggersi Holsinger, 1978 (type locality in Frederick Co.(VA)/ other caves in VA (WA Co.(2-3c.), MD, WV (Jefferson Co.), PA (Cumberland & Franklin Cos.)/St/VA T&E; MD T&E S1; WV T&E S1, global G4 or G2G4/ Bigger's cave amphipod)

Stygobromus borealis Holsinger, 1978 (type localithy in cave in Rutland Co.(VT)/ seeps in Rensselaer Co.(NY) & MA, Taconic Mts.(Berkshire Co.)/ Pb/ MA State Special Concern T&E/

New England cave amphipod)

“Stygobromus bosanaki” Holsinger (in ms.)

Stygobromus bowmani (*Stygonectes b.* Holsinger, 1967) (*seep, Mayes Co., OK/Bowman’s cave amphipod/ St./ G1G3)

Stygobromus canadensis Holsinger, 1980a (type locality cave in Alberta/ St, glacial refugia/Castleguard Cave amphipod) **Bibl.:** Holsinger, 1981; Holsinger, & Shaw 1986

Stygobromus carolinensis Holsinger, 1978 (seeps in Yancey Co.,NC/Tb/Carolina seep scud/NC T&E S1?; NC & Federal Special Concern/Carolina groundwater amphipod)

Stygobromus clantoni (=Synpleonia c. Creaser, 1934; *Boruta a.* Mackin, 1935; *Synpleonia americana* Hubricht, 1947) (well 4mi.se of Ottawa, eKS (Anderson, Butler, Chase, Cowley, Franklin, Miami Cos.) +nAR(Clay Co.), wMO (Camden, Cass, Hickory, Jefferson Cos.), OK/ St, mostly wells/KS T&E S2S4, G2G4 global rank/Clanton's cave amphipod)

Stygobromus coloradensis Ward, 1977 (N.Fork S.Platte R.,Jefferson Co.,CO/ Pb, hyporheic/ Colorado groundwater amphipod)

Stygobromus conradi (*Stygonectes c.* Holsinger, 1967) Karaman 1974 (type locality cave and one othe cave in Bath Co.) + one cave in Highland Co., all in VA/ Tb/ VA Special Concern T&E & S1S2, Global G1G2/Burnsville Cove cave amphipod)

“Stygobromus consobrinus” Holsinger (in ms.)

Stygobromus cooperi (*Stygonectes c.* Holsinger, 1967) Karaman1974 (*one cave, once sealed shut, Berkeley Co., WV/ Tb/ WV T&E S1, global G1; Federal Species of Concern/ Cooper's cave amphipod)

Stygobromus culveri Holsinger, 1978 (type locality in Randolph Co., also caves in Tucker Co., bothWV/ St/ WV T&E S1, global G3; Federal Species of Concern/Culver's cave amphipod)

Stygobromus cumberlandus Holsinger,1978 (type locality cave I n Wise Co./ 2 caves in Lee Co. +Scott Co. & well (Duffield),VA/Tb,St/ VA Special Concern T&E & S1, Global 1/ Cumberland cave amphipod)

“Stygobromus davisi” Holsinger (in ms.)

Stygobromus dejectus (*Stygonectes d.* Holsinger, 1967) (type locality cave & Boxed Spr.?, Kendall Co.,TX/ Cascade cave amphipod/ Pb)

Stygobromus dentata = *Synurella d.*

Stygobromus dicksoni Holsinger, 1978 (type locality cave in Jackson Co.,AL/ caves in

neAL(Marison & Marshall Cos.), TN (Hamilton Co.) & nGA (Chattooga, Dade & Walker Cos.)/ St, Tb/ Dickson's cave amphipod)

Stygobromus elatus (*Stygonectes* Holsinger, 1967b) (*AR seep near Magazine Mtn., Logan Co./Pb/elevated spring amphipod)

Stygobromus elliotti Holsinger, 1974b (type locality and 2 othe caves in Skamania Co.,WA/Sb,St/ Washington lava cave amphipod/ G1)

Stygobromus emarginatus (*Synpleonia e.* Hubricht, 1943) (type locality cave and one other cave in Greenbrier Co., one in Tucker Co., one cave in Pocahontas Co.) one in Randolph Co., + caves in Monroe Co., WV & Garrett Co.,MD/ Tb/ WV T&E S3, global G3; MD T&E S1/Greenbrier Cave Amphipod) Culver 1976; Knapp & Fong 1997

Stygobromus ephemerus (*Stygobronyx e.* Holsinger, 1969a; *Apocrangonyx e.* Holsinger, 1969a) (**type locality cave in Giles Co.,VA/Tb/ VA Special Concern T&E & S1, Global G1/Ephemeral cave amphipod)

Stygobromus estesi Holsinger, 1978 (type locality cave and one othe cave in Craig Co. + cave in Allegheny Co.,VA/Tb,St/ VA Special Concern T&E & S1, Global G1/Craig Co. cave amphipod)

Stygobromus exilis Hubricht, 1943 (= in part *C. vitreus* (Cope) Holmes 1909, *E. & S.v.*) (Mammoth C. type locality/ KY (Barren, Christian, Edmonson, Hart, Logan, McCreary, Metcalf, Russell, Simpson, Todd, Trigg, Warren, Wayne Cos.), Bibb Co.(AL) & TN (Bedford, Bledsoe, Campbell, Cannon, Clay, De Kalb, Fentress, Franklin, Maury, Putnam, Robertson, Rutherford, Smith, Trousdale, Wislon Cos.)/Tp or St/ central Kentucky cave amphipod)

Stygobromus fecundus Holsinger, 1978 (*cave in Great Smoky Mts.Natl. Park, Blount Co.,TN/ Cades Cove cave amphipod/ St/ G1)

Stygobromus fergusonii Holsinger, 1978 (type & one other cave in Montgomery Co. & one or more caves in Botetourt Co., both in VA/Tb/ VA Special Concern T&E & S1, Global G1/Montgomery Co. cave amphipod),

Stygobromus finleyi Holsinger, 1978 (type locality cave in Claiborne Co.,TN + cave in, Lee Co., both VA/ Tb/ VA T&E S1, G1G4/ English or Finley's Cave Amphipod)

Stygobromus flagellatus (*Crangonyx f.* Benedict, 1896; Hay, 1902; *S. bowersii* Ulrich, 1902; *Stygonectes f.*) Karaman, 1974; Holsinger, 1967 (artesian well at San Marcos + 2 caves in Hays Co. & cave or caves in Bexar Co.,TX/ Tp,hypogean), Holsinger 1995, group (Val Verde Co.,TX/St/ Ezell's Cave amphipod),

Stygobromus franzi Holsinger, 1978 (type locality cave in in Garrett Co. + caves in Garrett, WA & Allegany Cos.,MD (S1) & Monongalia, Bedford, Mineral & Preston Cos.,WV (SU) & /Pb in karst & nonkarst sprs./Franz's cave amphipod/ G2G3)

Stygobromus gardneri Holsinger (in ms.) (Carter, Crawford, Dent, Franklin, Iron, Jefferson, Oregon, Perry, Phelps, Shannon, St. Francois, WA Cos.,MO/ Pb in caves & springs)

Stygobromus giovannolii” Holsinger (in ms.) (cave & 3 seeps in Edmonson Co.,KY)

Stygobromus godfreyi” Holsinger (in ms.) (*?cave in Morgan Co.,AL)

Stygobromus gracilipes (*Stygonectes* g. Holsinger, 1967) Karaman, 1974 (type locality cave in Warren Co. + other caves in Frederick, Warren, & Rockingham Cos., all VA +MD (WA Co.),WV (Berkeley & Jefferson Cos. – S1) & PA (Franklin Co.)/Tb,St/VA Special Concern T&E & S1, Global G2G4; MD T&E S1/ Shenandoah Valley cave amphipod)

Stygobromus gradyi Holsinger, 1974b (type locality cave in Tuolumne Co. + other cave (or new sp.) & 2 other caves in Amador Co. & 5 caves in Calaveras Co.,CA (Tb G3/CA T&E G1S1, Federal Species of Concern/ Grady's cave amphipod)

Stygobromus grahami Holsinger, 1974b (type locality cave in Calaveras Co. + caves in Amador Co.,CA/ Tb,Pb/ G3/ Graham's cave amphipod),

Stygobromus grandis Holsinger, 1978 (*cave in Chattooga Co.,GA/Tb/ P. Cave amphipod)

Stygobromus hadenoecus (*Stygonectes* h. Holsinger, 1966) (*cave in Edwards Co.,TX/Devil's Sinkhole amphipod/St) Bibl.: Elliot 1973

Stygobromus harai Holsinger, 1974a *** (type locality & mine & one other cave in Tuolumne Co.,CA/G3G4? Tb/CA T&E G1S1, Federal Species of Concern/ Hara's cave amphipod)

Stygobromus hayi (*Synpleonia* h. Hubricht & Mackin, 1940) K.1974 (*? Natl. Zoological Pk., DC + WV?/ spr.,Tp/ federal T&E/ Hay's Spring amphipod)

Stygobromus heteropodus Hubricht, 1943 (Pickle Spr.& other springs, Ste. Genevieve Co.,MO/ Pb/ Pickle Sprs. amphipod)

Stygobromus hoffmani Holsinger, 1978 (type locality cave & one other cave (destroyed by highway),Alleghany Co.,VA/Tb/VA Threatened T&E & S1, Global G1G2/Alleghany County cave amphipod) Holsinger, 1978

Stygobromus holsingeri Ward, 1977 (spr.3.2 km.w of Fort Collins + other sprs. in Larimer Co. & Devils Gulch & Redstone seep springs in Tarriner Co., CO/ Pb/ Holsinger's groundwater amphipod)

Stygobromus hubbsi Shoemaker, 1942 (*type locality cave in Harney Co.,OR/FC-2 T&E/ Malheur Cave amphipod) **Bibl.:** Benedict & McEvoy 1995

Stygobromus hubbsi sp. group (nAZ & all CA sp.(but *S. mysticus*)/Pb)

Stygobromus ictalurus Holsinger (in ms.) (*cave in Blount Co.,AL/ Tb)

Stygobromus *illinoisensis* Holsinger (in ms.) (*discharge pipe in Pope Co., IL)

Stygobromus *indentatus* (Holsinger, 1967) (= *Synpleonia pizzinii* Shoemaker, 1938)
Karaman 1974 (MD (Anne Arundel Co. – G3), NC (Nash Co.), se VA (Isle of Wright, Lancaster, Nantux, Northumberland & Caroline Cos.)/ Pb?/ NC T&E S1?, G3G4 global rank; NC & Federal Special Concern/ tidewater stygonectid amphipod) Holsinger 1967

Stygobromus *indianensis* Holsinger (in ms.) (drain tile in Floyd Co., IN)

Stygobromus *inexpectatus* Holsinger, 1978 (*one cave in Calhoun Co., AL/ M. Cave amphipod)

Stygobromus *inopinus* Holsinger (in ms.) (creek in Winston Co., AL)

Stygobromus *interitus* Holsinger, 1978 (*one cave in Craig Co., VA/ Tb/ VA T&E S1, Global G1/ New Castle Murder Hole amphipod)

Stygobromus *iowae* Hubricht, 1943 (spr. .7 mi. n of Fayette, Fayette Co. + 2 caves in Winneshiek Co., IA & mine in Daviess Co., Ozarks, IL)/ Tp, mine- subglacial survival?/ IL State T&E/ Iowa Amphipod)

Stygobromus *kenki* Holsinger, 1978 (spr. in Rock Cr. Park, DC + Fairfax Co., VA/ Pb/ VA T&E S1, Global G1/ Rock Cr. groundwater amphipod)

Stygobromus koloana = *Spelaeorchestia k.*

Stygobromus *lacicolus* Holsinger, 1974 (Lake Tahoe at Cave Rock, El Dorado & Placer Cos., CA & Douglas Co., NV/ Pb? & lake (480', 18-197', 392' deep)/ G3G3/ deep lake amphipod)

Stygobromus *leensis* Holsinger, 1978 (type locality cave and 3 other caves in Lee Co., VA/ Tb/ VA Special Concern T&E & S1, Global G1/ Lee Co. cave amphipod)

Stygobromus *lewisi* Holsinger (in ms.) (*cave in Hardin Co., CA)

Stygobromus *longipes* (S.l. Holsinger, 1966) (type locality cave in Kendall Co. + cave in Comal Co., TX/ Tb/ G1) Harden 1984

Stygobromus *lucifugus* (*Crangonyx l.* Hay, 1882) Stebbing, 1899 (*well in Abingdon, Nox Co., IL/ Dubious cave amphipod) (extinct? As last seen in 1882 but is probable syn. of *S. subtilis* Hubricht, 1943 according to Holsinger 1969)

Stygobromus *mackenziei* Holsinger, 1974b (cave type locality in Santa Cruz Co. & possibly Montgomery Spr. (or new sp., Santa Barbara Co., CA/ CA T&E G1S1, Federal Species of Concern/ MacKenzie's Cave Amphipod/ St)

Stygobromus *mackini* Hubricht, 1943 (cave type locality in, Russell Co., sw VA (Blank, Giles,

Lee, Russell, Scott, Smyth, Tazewell, Washington, Wise Cos.) +neTN(Anderson, Grainger, Hancock, Hawkins, Roane, Sullivan, Union Cos.), KY(Carter, Estill, Jessamine, Lee, Woodford Cos.), IN(Clark Co. - or a closely related undescr. sp.), WV (SR) (Mercer & Monroe Cos.)/Pb/VA Special Concern T&E; IN T&E/ Southwestern VA cave amphipod/ G3G4)

Stygobromus *megapodus* Holsinger (in ms.)

Stygobromus *minutus* Holsinger, 1978 (cave type locality & one other cave in Walker Co.,GA/Pettijohn Cave amphipod/St,Pb) **Bibl.:** Buhlmann 1996, 2000

Stygobromus *montanensis* Holsinger, 1974b (well at Victor Crossing,Ravalli Co.,MT/ Pb/ Montana groundwater amphipod)

Stygobromus *montanus* (*Stygonectes m.* Holsinger, 1967) (*AR spr. near Rich Mt.,Polk Co./ Pb/ Mountain cave amphipod)

Stygobromus *morrisoni* (*Stygonectes m.* Holsinger, 1967) K.1974 (cave type locality & two other caves in Bath Co., 2 caves in Highland Co.,VA & one in Pendleton Co. + Hardy Co.,WV/ Tb/ VA & WV T&E & S1, Global G2G3; Federal & WV Species of Concern/ Morrison's cave amphipod)

Stygobromus *mundus* (*Stygonectes m.* Holsinger, 1967) K.1974 (cave type locality Bath Co. & tributary to Cowpasture R. (Alleghany Co.),VA/Tb/ VA Special Concern T&E & S1, Global G3/ Bath Co. cave amphipod)

Stygobromus *mysticus* Holsinger, 1974 (well? at Greenview, Siskiyou Co.,CA/ Pb/ Northern California groundwater amphipod)

Stygobromus *nanus* Holsinger, 1978 (*cave type locality in Pocahontas Co.,WV/Tb/WV T&E S1, global G1; Federal Species of Concern/ Pocahontas cave amphipod)

Stygobromus *nortoni* (= *Stygonectes n.* Holsinger, 1969a) (cave type locality in Clay Co., + one other cave in Hamilton Co., both TN & one cave in Jackson Co.,AL/ Tb/ TN State T&E/ Norton's cave amphipod/ TN SH G3)

Stygobromus *obrutus* Holsinger, 1978 (well w. of Danville, Pittsylvania Co. Roanoke River Basin, VA/ Pb/ VA T&E S1, Global G1G2/Pittsylvania well amphipod) Holsinger 1978,

Stygobromus *obscurus* Holsinger, 1974b (well at Victor Crossing,Ravalli Co.,MT/Pb/ obscure well amphipod)

Stygobromus *onondagaensis* (*Cragonyx o.* Hubricht & Mackin, 1940) (cave type locality in Onondaga C.,(MO)/ c,se & swMO(12cos., incl. Camden, Crawford, Dent, Franklin Howell, Lawrence, Madison, Miller, Oregon, Ozark, Phelps, Pulaski, Shannon, St. Francois, Taney, Washington, Wayne), AR (Benton, Lawrence, Madison, Miller Cos.), OK (Adair, Cherokee, Delaware, Mayes, Rogers Cos.) & seKS (Butler & Cowley Cos.)/Pb/MO State T&E Watch list;

Federal Species of Concern/ Onondaga Cave amphipod)

Stygobromus oregonensis Holsinger, 1974b (*cave type locality /crevice in basalt near Roseburg, Douglas Co.,OR/ Tb/ Oregon cave amphipod/ critically imperiled in OR Natural Heritage list)

Stygobromus ozarkensis (*Stygonectes o.* Holsinger, 1967) (cave type locality in Stone Co., MO)/ MO (Barry, Greene, McDonald, Stone, Taney, Wright Cos.), OK (Adair, Benton, Cherokee, DE, Mayes, Madison & Mayes Cos.) & AR (Benton, Izard, Logan, Madison & Newton Cos./ Tb,seep/ OK T&E; MO State T&E Watch list; Federal Species of Concern/G3G4/ Ozark cave amphipod)

Stygobromus parvus (*Stygonectes p.* Holsinger, 1969) (cave type locality in Randolph Co., 2 caves in Pocahontas Co.) & one cave in Tucker Co., all WV/ Tb/ WV T&E S1; global G1G2; Federal Species of Concern/ Minute cave amphipod)

Stygobromus pecki (*Stygonectes p.* Holsinger, 1967) (*Peck's cave amphipod in Comal Springs, Landa Park,New Braunfels,Comal Co.,TX/ Federally Endangered T&E/Pb) C. Barr 1993; USFWS 1997

Stygobromus pennaki Ward, 1977 (N.Fork S.Platte R.,Jefferson Co. +Arapahoe Co.,CO/ Pb, hyporheic/ G3/Pennak's groundwater amphipod)

Stygobromus phreaticus Holsinger, 1978 (well in Fairfax Co. +Alexandria Co.,VA/Pb/VA Undet. T&E & S1, Global G3/ northern Virginia well amphipod)

Stygobromus pizzinii (*Synpleonia p.* Shoemaker, 1938) (Wetzel's Spr.w of Georgetown, DC+ MD (Frederick, Howard, WA & Montgomery Cos.,VA(Fairfax Co.), PA(4sites, Chester, Lancaster, Fayette & Montgomery Cos.)/Pb,spr.,seep,well/VA Special Concern T&E & S1, Global G3 or G2/Pizzini's groundwater amphipod)

Stygobromus pollostus Holsinger, 1978 (cave type locality & 4 other caves in Greenbrier Co., one cave in Monroe Co. one cave in Pocohontas Co., all WV/ Tb/ WV T&E S1, global G1G3/Least cave amphipod)

Stygobromus pseudospinosus Holsinger, 1978 (*Luray C.,Page Co.,VA/VA Threatened T&E & S1, Global G1/Luray Caverns amphipod)

Stygobromus putealis (*Crangonyx s.* Holmes, 1909; Schellenberg, 1936; *C.p.*), (well, Rosendale, Fond du Lac Co.,WI + wells in Dodge & Green Lake Cos./Wisconsin well amphibod/Pb, wells, spring, subglacial survival?/ on IL rare list)

Stygobromus puteanus Holsinger, 1974b (well near Three Forks,Gallatin Co.,MT/Pb/ Montana well amphipod)

Stygobromus pygmaeus Holsinger (in ms.)

Stygobromus *quatsinensis* Holsinger & Shaw, 1987 (cave type locality & one other cave on Vancouver Island, BC + cave on Heceta Island & springs, resurgent streams and caves on Prince of Wales Island, AK/ Pb/ Vancouver Island cave amphipod)

Stygobromus *redactus* Holsinger, 1978 (*cave type locality in Monroe Co., WV/ Tb/ P. Cave amphipod/ S1G1)

Stygobromus *reddelli* (*Stygonectes r.* Holsinger, 1966) (*cave type locality in San Saba Co., TX/ Tb/ Reddell's cave amphipod)

Stygobromus *russelli* (*S.r.* Holsinger, 1967) Holsinger, 1992 (cave type locality in Coryell Co., TX/ Bandera, Bell, Bexar, Burnet, Comal, Coryell, Hays, Kendall, Kerr, Mason, Medina, San Saba, Travis, Williamson Cos., Balcones Fault Zone (& just s.(Medina Co.)), Edwards Plateau TX/ Tb/ Russel's cave amphipod) **Bibl.:** Elliott 1973

Stygobromus *secundus* Bousfield & Holsinger, 1981 (Pb?/ Alberta spring amphipod)

Stygobromus *sheldoni* Holsinger, 1974 (bog spr. by Sagehen Cr., NV Co., CA/ Pb/ Sheldon's spring amphipod)

“Stygobromus *sheltae*” Holsinger (in ms.) (one cave in Madison Co., AL/ Tb, Pb)

Stygobromus *sierrensis* Holsinger, 1974 (*spr. in Trosi Canyon, Sierra Co., CA/ Pb/ Sierra spring amphipod)

Stygobromus *simulatus* Holsinger (in ms.)

Stygobromus *smithi* Hubricht, 1943 (Bibb, Blount & Tuscaloosa Cos., AL/ spr., well/ G3/ Pb/ Alabama well amphipod) **Bibl.:** Holsinger 1972

Stygobromus undescr. sp.#2 (Dixon Spr., Hardin Co., IL/ Tb or Pb)

Stygobromus undescr. sp.#3 (Univ. IN at Albany, Floyd Co./ poss. extinct?)

Stygobromus undescr. sp.#4 (2 caves in Harrison Co., IN/ Pb/ IN T&E) Lewis 1997

Stygobromus undescr. sp.#5 (Wahkeena Cr., Multnomah Co., OR/ Pb)

Stygobromus undescr. sp.#6 *flagellatus* group (Val Verde Co., TX/ St) Holsinger 1995

Stygobromus undescr. sp.#6 (well at French Cr., Upshur Co., WV/ Tb/ WV T&E S1S2, global G1),

Stygobromus undescr. sp.#7 (spr. at Milepost 6, Blue Ridge Parkway, Augusta Co., VA/ Pb?, *spinosus* group?)

Stygobromus undescr. sp.#8 (*one cave in Craig Co., VA/ Tb/ VA T&E S1, Global G1)

Stygobromus undescr. sp.#8 (near *S. onondagaensis*, 10 cos. in ecMO/ Tb)

Stygobromus undescr. sp.#9 (Rockcastle & nearby Cos., KY/ Tb) Seibert (1973),

Stygobromus undescr. sp.#10 (*hubbsi* group,*Border C.,Culberson Co.,TX/St)

Stygobromus undescr. sp.#11 (*?cave in Uinta Mt., Uintah Co., UT/Tb)

Stygobromus undescr.(probable) sp.#12 (*onodagaensis* group, one cave each in Adair, Cherokee & DE Co.),OK/Tb)

Stygobromus undescr. sp.#13 (cave in Murray Co.,OK/Tb)

Stygobromus undescr. (possible) sp.#14 (one cave in Crawford Co. & possibly in 3 caves in WA Co.), MO/Tb/ G1?)

Stygobromus undescr. sp.#15 (3 caves in Jackson Co.,AL/Pb,Tb)

Stygobromus undescr. sp.16 (Rockbridge Co.,VA/Tb/VA T&E S1, Global G1)

Stygobromus undescr. sp.17 (Nelson Co.,VA/Tb/VA T&E S1, Global G1)

Stygobromus undescr. sp.18 (Patrick Co.,VA/Tb/VA T&E S1, Global G1),

Stygobromus undescr. sp.19 (Shenandoah Co.,VA/Tb/VA T&E S1, Global G1),

Stygobromus undescr. sp.20 (*one cave in Rockbridge Co.,VA/Tb/VA T&E S1, Global G1)

Stygobromus undescr. sp.#21 (*one cave in Monroe Co.,WV/ Tb/ WV T&E S1S2, global G1)

Stygobromus undescr. sp.#22 (*one cave in Hardy Co.,WV/Tb//WV T&E S1, global G1)

Stygobromus undescr. sp.#23 (*one cave in WV/Pb/WV T&E S3, global G3; Federal Species of Concern)

Stygobromus undescr. sp.#24 (*one cave in Menard Co.,TX)

Stygobromus undescr. sp.#25(Barrelville Spr.(Allegany Co.) & one cave in Garrett Co., MD/ Pb/ sp. #5 in MD T&E/ S1 G?)

Stygobromus undescr. sp.#26 (caves e.of Conococheague Cr.,WA Co.,MD/Pb <5c.??/ sp. #14 in MD T&E/ Roundtop amphipod)

Stygobromus undescr. sp.26-7? (TX/Pb)

Stygobromus sp. 28-9 (Montgomery Spr.,Santa Barbara Co.,CA/Pb)

Stygobromus undescr. sp. #30 (nonkarst hyporheic, Gallina Cr., near Taos,NM)

Stygobromus undescr. sp. #31 (or *S. mackini* in Clark Co.,IN)

Stygobromus undescr. sp. #32 (WA Co.,IN)

Stygobromus undescr. sp. #33 (*one cave in Botetourt Co.,VA)

Stygobromus undescr. sp. #34 (Pb in two cave in Prince of Wales Island, seAK/G1)

Stygobromus undescr. sp. #35 (two caves in WA Co.,IN/ Pb)

Stygobromus undescr sp. #36 (*?cave in Orangeburg Co., SC/Tb,. St?)

Stygobromus undescr. sp.#26 (MD/Pb/ sp. #6 in MD T&E S1G??/ Roundtop amphipod)

Stygobromus undet. sp.1-2 (c. at Trail Cr., Flathead R., MT) Stanford, Ward & Ellis 1994)

Stygobromus undet. sp.#3 (nMS/Tp or habitual Tx)

Stygobromus undet. sp.#4 (near *clantoni*) (nAR/Tb?)

Stygobromus undet. sp.#5-? (Carter, Estill, Lee, McCreary, Pulaski, Rockcastle & Wayne Cos., KY)

Stygobromus undet. sp.#6-? (Calaveras, Santa Cruz, Trinity & Tuolumne Cos., CA/Pb)

Stygobromus undet. sp.#7? (hyporheic in SC coastal blackwater stream)

Stygobromus undet. sp.#8? (OK hyporheic)

Stygobromus *sparsus* Holsinger, 1978 *** (cave type locality and 2 other caves in Great Smoky Mt. Natl. Park, Blount Co., TN/ Tb/ G. Cave amphipod/ SR G1G2)

Stygobromus *spinatus* (*Stygonectes* s. Holsinger, 1967) K. 1974 (type locality cave + >4 other caves in Greenbrier + caves in s Monroe Cos. nne to cPocahontas Co., WV/Tb/ Southern West Virginia cave amphipod or Spr. cave amphipod/ S3G3) Bibl.: Culver 1976

Stygobromus *spinosus* (*Crangonyx* s. Hubricht & Mackin, 1940; *Stygonectes* s. Holsinger, 1943 (in part)) (spring near Hawksbill Mt. (Madison Co.)/ Albermarle, Augusta, Clarke, Fauquier, Madison, Page, Rappahannock, Warren Cos., VA/Tp, phreatobia/ VA Special Concern T&E & S1, global G3/ Blue Ridge Mt. amphipod)

Stygobromus *stegerorum* Holsinger, 1978 ** (type locality cave & one other cave in Augusta Co., VA/Tb/ VA Threatened T&E & S1, global G1/ Madison Cave amphipod)

Stygobromus *stellmacki* (*Stygonectes* s. Holsinger, 1967) (type locality cave in Centre Co. + cave in Mifflin Co., both in PA/Tb/ Stellmack's cave amphipod)

Stygobromus *subtilis* (*Apocrangonyx* s. Hubricht, 1943) (small seep near cave in Jackson Co.) + Adams Co. sse to Union, Monroe & Jersey Cos., IL + MO (Ste. Genevieve Co.)/ Pb/ MO State T&E; Federal Species of Concern/ Subtle cave amphipod),

Stygobromus *subtilis* Hubricht, 1943 (Pb? & deep lake (1534-410') in Lake Tahoe, Washoe Co., CA)

Stygobromus *tenuis* t. (*Crangonyx* t. (S.I. Smith, 1874; *S.t.* Shoemaker, 1938) Karaman, 1974 (well in Middletown, Middlesex Co. (CT)/ CT (Litchfield, Middlesex & New Haven Cos.), NY (NY Co.), MA (Berkshire Co.)/ glacial refugia to MD (6cos.) & PA/Pb)

Stygobromus *tenuis* *potomacus* (*Stygonectes* t.p. Holsinger, 1967) Karaman, 1974 (DC, MD (Anne Arundel, Baltimore, Frederick, Harford, Howard, Montgomery, Prince George, Washington Cos.), PA (Adams Co.) & VA (Alexandria, Arlington, Caroline, Fairfax, Falls Church, Loudoun, Prince William Cos.)/ Pb/ VA Special Concern T&E; WV T&E S1 rank & global G1/ Potomac groundwater amphipod),

Stygobromus *tritus* Holsinger, 1974b (shallow well at Victor Crossing, Ravalli Co. & Missoula Co., MT/Pb)

Stygobromus *vescus* Holsinger (in ms.)

Stygobromus *vitreus* Cope, 1872 (Mammoth C. (Type locality) /+nAL(Colbert, Jackson, Lauderdale, Madison, Mogan Cos.),cKY(Barren, Edmonson, Hart, Trigg Cos.) & cTN (SR) (Franklin & Montgomery Cos.)/ Tp,seep/ KY Special Concern T&E/ Mammoth Cave amphipod/ G3G4) **Bibl.:** Shoemaker 1942

Stygobromus *wengerorum* Holsinger, 1974b (type locality cave & one other cave in Mariposa Co.,CA/CA T&E G1S1 Federal Species of Concern/Tb/ Wenger's cave amphipod)

Stygogidiella Stock, 1981 - Bogidiellidae amphipods

Stygogidiella *virginalis* Stock, 1981 (Virgin Islands)

Stygonectes Hay, 1902 = *Stygobromus* (see also *Synpleonia*, *Crangonyx*) - Crangonyctidae amphipods. **Bibl.:** Culver & Holsinger (1969; Holsinger, 1966, 1966b, 1967e, 1977a, 1978; R. Graham 1967

Stygonyx Bousfield & Holsinger, 1989 - Crangonyctidae amphipods

Stygonyx *courtneyi* Bousfield & Holsinger, 1989 (*under & on sides of Wahkeena Cr.,OR/Pb, hypogean /Courtney's groundwater amphipod)

Synchelidium Sars, 1895 - Oedicerotidae amphipods

Synchelidium *americanum* Bousfield, 1973 (FL, LA, Virginian marine infauna)

Synchelidium *rectipalmmum* Mills, 1962 (AK, sCA, OR, WA marine infauna)

Synchelidium *shoemakeri* Mills, 1962 (AK, sCA, OR, WA marine infauna)

Synpleonia Wrzesniowski, 1881. - Crangonyctidae amphipods. **Bibl.:** Creaser 1934 (see *Crangonyx a.*, *Stygobromus cl.*, *em.*, *hayi*)

Synpleonia americana = *Stygobromus clantoni*

Synurella Wrzesniowski, 1877 (see *Stygobromus dentata*) - Crangonyctidae amphipods

Synurella *bifurca* (Hay, 1882) (AR, IL,TN, s.to Gulf/spr.,stream,pond,Tx? in TN)

Synurella *dentata* Hubricht, 1943 (*Stygobromus d.*) (sprs., ponds & small streams in sIL,seIN,cKS,swOH, s to KY & ncTN/Tx?) **Bibl.:** Mackin 1935; Porter 1995

Syrrhoë Chevreux, 1908 - Synopiidae amphipods

Syrrhoë *crenulata* Goes, 1866 (AK marine infauna)

Syrrhoë *longifrons* Shoemaker, 1964 (AK, sCA, WA marine infauna)

Talitroides Bonnier, 1898 - Talitridae amphipods

Talitroides *alluaudi* (Chevreux, 1901) (HI/alien epigean, Eb & Tx or Ac)

Talitroides *topitotum* (Burt, 1934) (HI/alien epigean, Eb & Tx or Ac)

Tethygenia- Eusiridae amphipods

Tethygenia *opata* (*Pontogeneia o.* J.L. Barnard, 1979) (CA marine benthic, infauna?)

Texiweckelia Holsinger in Holsinger & Longley, 1980 (= *Mexiweckelia* (in part) Holsinger, & Minckley, 1971) (see *Holsingerius*, *Texiweckeliopsis*) - Hadziidae amphipods (once put in Melitidae)

Texiweckelia insolita = *Texiweckeliopsis i.*

Texiweckelia relictata = *Seborgia relictata*,

Texiweckelia samacos = *Holsingerius s.*

Texiweckelia *texensis* (*Mexiweckelia t.* Holsinger, 1973) (artesian well at San Marcos, Hays Co. + Bexar Co., Edwards Aquifer, scTX/Pb) **Bibl.:** Holsinger, & Langley 1980

Texiweckeliopsis Karaman & Barnard, 1982 - Hadziidae amphipods (once put in Melitidae)

Texiweckeliopsis *insolita* (*Texiweckelia i.* Holsinger in Holsinger & Longley, 1980a) (artesian well at San Marcos, Hays Co., + Bexar Co., Edwards Aquifer, scTX/ Pb/ Unusual well amphipod)

Thorlaksonius E.L. Bousfield & E.A. Hendrycks, 1994 - Pleustidae amphipods

Thorlaksonius *carinatus* E.L. Bousfield & E.A. Hendrycks, 1994 (WA marine infauna)

Thorlaksonius *depressus* (Alderman, 1936) (WA marine infauna)

Thorlaksonius *platypus* (Barnard & Given, 1960) (WA marine infauna)

Tiron Liljeborg, 1865 - Synopiidae amphipods

Tiron *biocellata* J.L. Barnard, 1972 (AK, WA marine infauna)

Tiron *triocellatus* G.D. Goeke, 1982 (w,eFL marine infauna)

Tiron *tropakis* Barnard, 1972 (FL marine benthic)

Trachypleustes E.L. Bousfield & E.A. Hendrycks, 1995 – Pleustidae amphipods

Trachypleustes cf *trevori* E.L. Bousfield & E.A. Hendrycks, 1995 (WA marine infauna)

Tritella Mayer, 1890 - Caprellidae amphipods (also placed in Aeginellidae)

Tritella *pilimana* Mayer, 1890 (sCA, WA marine infauna)

Unciola Say, 1818 - Corophiidae amphipods

Unciola *irrorata* Say, 1818 (MA, NY, NC, VA marine sandy infauna)

Unciola *serrata* Shoemaker, 1945 (Carolinian, MD, VA marine infauna)

Urothoe Dana, 1852 - Haustoriidae amphipods

Urothoe denticulata Gurjanova, 1951 (AK marine infauna)

Urothoe varvarini Gurjanova, 1953 (sCA marine infauna)

Westwoodilla Bate, 1856 - Oedicerotidae amphipods

Westwoodilla caecula Bate, 1856 (AK, sCA, WA marine infauna)

Weyprechtia Stuxberg, 1880 - Gammaridae amphipods

Weyprechtia pinguis (Kroyer, 1838) (PEI, PQ, NB Gulf of St. Lawrence sandy marine interstitial)

anaerobes - Bacteria that can grow only in the absence of oxygen.

anaerobic - Pertaining to an organism living with or conditions of no free oxygen.

analogous - Adjs. for traits shared by different species due to convergent evolution. Cf.

homologous.

analysis of variance - Statistics method for dividing total variance so as to attribute the parts to different sources or to compare different samples.

anchialine - 1. Karst caves submerged even at low tide. Incl. blue hole (inland & ocean). 2.

Bodies of haline water usually with a restricted exposure to open air, always with more or less extensive subterranean connection to the sea & with both marine & terrestrial influences. M.

Garman 1997; Stock, Illife & Williams 1986

angel insects – See Zoraptera. Not known from US or Canadian caves or aquatic interstitial habitats

Anemones (= see anemones; ‘true’ sea anemones)

Phylum **Cnidaria**, class **Anthozoa** (or phylum), subclass Zoantharia (=Hexacorallia) (sea anemones, true corals, black corals, tube anemones), order Actiniaria. See Cnidaria. About 41 families either solitary or forming clones but never colonial or with calcified skeletons (like most corals). Unlike Subclass Octocorallia, tentacles are in multiples of six. Some secrete chiton and most have symbiotic zooxanthellae. The main body (the column) has holes (to release water upon contractions), warts, verrucas, pseudotentacles, or vesicles. The hollow tentacles are like fingers or branched.

Subclass Zoantharia (=Hexacorallia)

Order Actiniaria

Suborder Nynanthae: (=Thenaria)

Superfamily Endomyaria

Actiniidae (*Aulctinia*, *Tealia*)

Aulactinia Verill, 1864 - Actiniidae anemones

Aulactinia stella (Patella s. F.C. Muewcher, 1987) (silver spotted anemone/ TTp in ME sea cave)

Tealia Gosse, 1858 (= *Urticina* Marenzeller, 1977) - Actiniidae anemones

Tealia *felina* (Linnaeus, 1767) (dahlia anemone/ME sea cave)

anabolism - All of the metabolic reactions that involve a energy input and resulting in production of organics.

anchialine – Subterranean habitat of salty or brackish waters that can appear as landlocked ponds, etc. but which are hydraulically connected to normal seawater. Syn.: anchihaline.

angiosperm - Plant with **flowers**, in which seeds, resulting from double fertilization, are in an ovary, comprising the fruit.

anhydrobiosis - Adj. for the ability to tolerate dessication, as in many rotifers and tardigrades.

anisotropic - Having different shapes or properties in different directions. Cf. isotropic.

Annelida - Phylum of coelomate, segmented animals that are almost all wormlike & elongate. Foster 1972. Incl. Oligochaeta (earth**worms**, esp. Lumbriculidae), branchiobdelids (on amphipods, crayfish), & **leeches**

anopthalmia - Eyelessness caused by genetic change in a previously sighted organism. See evolution, regressive.

anoxia - lacks of dissolved oxygen

anoxybiosis - Cryptobiotic state in Tardigrada caused by low amounts of dissolved oxygen
ant - see Hymenoptera.

anthropic - See human impacts

antelope - See **mammal**, **antelope**

Anthozoa - Marine **macroinvertebrate** phylum. Incl. **corals**, sea pens & sea **anemones**.

antibiosis - Unintentional action by one organism that is harmful to another.

antlion - See **Neuroptera**

anurans (= Salienta, Ecaudata) (anurans, frogs and toads). An order of Amphibia. Adults lack tails and are rather stocky or squat. 4 limbs bear 4 fingers and 5 toes, the latter often webbed. Hindlimbs are usually longer and adapted for jumping &/or swimming. About 2,600 species. See **frogs** and **toads**.

aplodontia - Syn: **mountain beaver** (see **Mammals**)

apomixis - Reproduction without fertilization and/or meiosis but with the appearance of an ordinary sexual cycle. Incl. parthenogenesis and adventitious embryony.

apomorphic - Pertaining to a derived character state with the group of taxa being considered, in

contrast to the ancestral (plesiomorphic) state.

aprosymbiotic - A species normally symbiotic but without its symbiotic partner.

apterous - without wings.

Arachnida - Class of phylum Arthropoda. Coddington et al. 1990. Orders incl. Acari (**mites/ticks**), Araneae (**spiders**), Opiliones (**harvestmen**), Palpigradi (microwhipscorpions), Schizomida (**schizomids**), Pseudoscorpiones (**pseudoscorpions**), Ricinulei (ricinuleids), Scorpiones (**scorpions**), Solifugae (**solifugids, wind scorpions, etc.**) & Pedipalpi (Suborders Uropygi (or Order) (**whipscorpions**) & Amblypygi (whipspiders))

Nearly all species are land-based except for water mites and a few water spiders. Head and thorax combined with a rear part, prosoma, composed of six adult parts, each with a pair of appendages (first front pair the chelicerae, second the pedipalps) and usually covered with a shield (carapace). The rear body (abdomen or opisthosoma) has at most 13 segments. In most orders, the chelicerae ends are pincer-like or claw-like. The pedipalps may serve as walking legs but in spiders, windscorpions, harvestmen, mites, they have become palps. Fossils from Silurian to present. About 38.000 known living species.

Araneae - Syn: **spider**.

archeocyathid - **Fossil** & extinct macro-invertebrate of the Phylum Archaeocyatha & typified by a cone-, goblet-, or vase-shaped skeleton of calcium carbonate. Included with **sponges**.

Archaeognatha - Subclass of Insecta. Includes Order Archaeognatha (=Microcoryphia)

area-effect speciation - From differentiation of two subspecies with incompatible gene complexes, so that hybrids are strongly selected against. Common in taxon in stable habitats & with low dispersal ability.

armadillo - See **mammal**.

aromatic hydrocarbon - See organic, pollution, & impacts

Arthropoda - Phylum of bilaterally symmetrical invertebrates with a segmented body & jointed legs. Incl. arachnid (**harvestmen, spiders, pseudoscorpions, schizomids, scorpions, whipscorpions**), crustacean (**amphipods, branchiopods, copepods, crayfish, isopods, ostracods, shrimp**), bristletail, hexapod (**diplurans, springtails, insects, thysanurans**) & **mites**. Howarth, 1983

“Arthropoda” – Ecdysozoa with appendages. Does appear monophyletic and incl. nematodes, Nematomorpha, Kinorhyncha, Pripulida, Loricifera, tardigrades, Onychophora (considered by some a subphylum of Arthropoda) & arthropods.

Antliophora - Insecta superorder that includes Orders Mecoptera, Siphonaptera (fleas), Diptera (flies).

Artiodactyla - Even toed **ungulate** (see **mammal**). Incl. **antelope, caribou, bison, goat & sheep.**

Aschelminthes (= Nematelminthes) - A “worm” phylum of about 12,500 species, incl. classes Rotifera, Nematoda, Nematomorpha and Acanthocephala (see WORM)..

aspect succession - Changes in the composition of communities due to changes in the seasons.

assimilation - The ingestion of nutrients and their transformation into organic materials of the ingestors..

association - The gathering of different animal taxa in a particular place.

atavism- The occurrence of traits originally those of an ancestor.

atmobios - All those species living above ground and which are surrounded by the Earth’s normal atmosphere. Incl. epigaion. Cf. Edaphon.

autapomorphy – Having a unique derivd trait by a species of monophyletic taxon. Cf. synapomorphy.

autoecology - Interactions of individuals & populations usually of only 1-2 species.

autopoesis - Adaptation to environmental changes that result in little morphologic change. Usually due to initial behavioural flexibility or morphologic non-specialization.

autotroph - In reference to carbon source - an organism which uses carbon dioxide as the sole carbon source.

autotrophy - A process in which organics of a species are synthesized from simple inorganics such as carbon dioxide, ammonia, nitrate and sulfate, with the energy source being light or inorganic chemicals.

Babesiosis - Disease carried by *Ixodes* **mites**.

Bacteria & Achaea

(see also microbe, moonmilk, nitrification) - A unicellular **microbe**. Once in Kingdom Monera (Division Bacteria) but now divided into Superkingdoms or Kingdoms Bacteria (=Eubacteria) & Archaea (=Archaeobacteria). Incl. saprophytes, pathogens, chemotrophs, **actinomycetes**, cave **slime**, iron, sulfur, thermophilic.

Bibl.: Albrechtsen 1990; Amy & Halderman; Bengtsson 1989; Angert 1998; J. Anderson & Meadows 1969; Angert et al 1998; J. Anderson & Meadows 1969; Bitton & Gerba 1984; Boston 1999; Brock, Passman & Voder 1973; Brockman, Donovan et al. 1989; Butoryak 1988; Caldwell 1977; Caumartin 1963; Chapelle et al 1988; Chess 1987; Chess & White 1989; Cunningham 1991; Cunningham, Northup, Pollastro, Wright & Larock 1995; Dickson 1975; J.

Duff & Triska 1990-1; Ehrlich 1996; Feldhake & Vestal 1985; R.Fallon & Boylen 1990; Findlay, Meyer & Smith 1984, 1986; Fliermans & Hazen 1990; Friedmann 1979; Hoey 1971; Koehn 1991; Kostalos & Seymour 1976; Lavoie 1981a, 1981b,c; Lavoie & McCrossnoe 1982; Nemetz et al. 1994; Northup, Barnes et al. 1998; Northup, Beck & Mallory 1997; Northup, Dahm, et al. 2001; Nelson 1996; Palmer & P. 1990a; Peck 1987, Rusterholtz 1994; Samuelson 1997; Saswosky & Palmer 1994a; Skerman et al. 1989; Thompson & Olson 1988; D.C. White et al. 1983. : R. Boyd 1974; 1952; Greer 1985; Koehn et al. 1991; Limeres 1961; Northup, Lavoie & Mallory 1997; Olson & Thompson 1988; Rusterholtz 1989; Rusterholtz & Mallory 1994; J. Smith 1976; Spilde et al. 1998; Thornton & Thonrton 1986; W. White & Ellisher 1959; K.Williams 1990; Zanolwiak 1987; Zanolwiak et al. 1993

biothems - Cunningham et al. 1995; LaRock & Cunningham 1995; Palmer & P. 1991; Yonge & Krouse 1989

moonmilk - Boyd 1965

calcium carbonate (see also **moonmilk**) - Chafetz 1994; Reddy 1994; W. White, Smailer & Brennan 1994; W. White 1994

iron - Caldwell & C. 1980; Ghiorse 1984, 1988,; Peck 1965-6

manganese - Di Ruggiero & Gounot 1990; Ghiorse 1984, 1988,; Nealson 1992; N. & Ford 1980; Peck 1965-6
todorokite - Cunningham et al. 1995

nitrates: Fliermans & Schmidt 1977; Gerundo & Schwartz 1949; Hill 1981; Jameson et al. 1994; Lewis 1991; Moore 1994; Nemetz et al. 1994 Hess 1900; Mansfield & Boardman 1932;

sulfur - Buck et al. 1994; Cunningham, DuChene et al. 1994-a; Ehrlich 1994; Grubbs 1989; Hill 1995; Lackey & Morgan 1965; Lovely et al. 1994; Holsinger, Martin & Brigmon 1994; Maslyn & Pisarowicz 1994; Northup, Dahm, et al. 2001; Palmer & P. 1990, 1994; Queen 1994-a; Stoner 1994; Stossell 1994; Summers 1995; Vlasceanu & Kinkle 1994; Worthington 1994. Grubbs 1991; Pohl & White 1965

Empire (=Domain, Urkingdom or Superkingdom) **Archaea** (=Archaeobaktra, Archae-bacteria)
Kingdom Crenarchaeota (use sulfur compound as terminal electron acceptor)
(thermophilic and low temperature marine & freshwater)
(marsh and lake infauna in IN)

Order Pyrodictia?

Pyridictiaceae (*Pyrodictium*, *Pyrolobus*)

Order Thermoproteales

Famiy Thermofiliaceae (*Thermofilum*)

Family Thermoproteaceae (*Thermoproteus*, *Pyrobaculum*)

Kingdom “Korarchaeota” (WY hot springs)

Kingdom Euryarchaeota (use carbon dioxide as main electron acceptor and produce methane)

Order Methanococcales

Methanococcaceae (*Methanococcus*)

Order Methanobacteriales

Methanobacteriaceae (*Methanothermus* (put in Methanothermaceae)
(*Methanomicrobium*)

Methanothermaceae (*Methanothermus* (also put in Methanobacteriaceae)

Order Methanosarcinales

Methanosarcinaceae (once in Order Methanobacteriales) (*Methanosarcina*)

Order Pseudomonadales (put in proteobacteria or cyanobacteria (see below)
or subsumed in Cytophagales)

Order Halobacteriales

Halobacteriaceae (once grouped with eubacterial gram-positive) (*Halobacterium*)

Empire, Domain or Superkingdom Bacteria (=Prokaryote)

Kingdom Aquificae

Order Aquificales

Aquificaceae (*Aquifex*)

Order Deinococcales

Deinococcaceae (*Deinococcus*)

Kingdom Eubacteria (= Eubaktra)

Subkingdom or Division Gracilicutes (all Gram-negative Eubacteria with extra cell wall)

Class Nitrochematia

Order Nitrobactines

Nitrobacteraceae (also put in proteobacteria & Pseudomonadales

Suborder Pseudomonadinae)

(*Nitrobacter*, *Nitrosomonas*, *Prochlorales*?)

Phylum Bacteroidetes (also subsumed in Phylum Cytophaga-Flavobacterium-Bacteroides)

Class Sphingobacteria

Order Sphingobacteriales

Flexibacteraceae (*Runella*)

Phylum Cytophaga-Flavobacterium-Bacteroides (see above)

Order Cytophagales

Flavobacteriaceae

(also but in Phylum Bacteroidetes, Class Flavobacteria, Order Flavobacteriales)

(*Cytophaga-Flavobacterium*)

Kingdom or Phylum Proteobacteria (= purple bacteria)

Gram-Negative Proteobacteria

Neisseriaceae

(*Acinetobacter* (also put in Chromobacteraceae)

Moraxella (now in Moraxellaceae), *Paracolonobacterium*)

Order Hyphomicrobiales

Hyphomicrobiaceae Badudieri 1950 (*Hyphomicrobium*)

Alpha Subdivision (or as Class Alphaproteobacteria)

Caulobacterales

Caulobacteraceae (*Caulobacter*)

Order Rhizobiales

Hyphomicrobiaceae (= Athiorhodaceae) (Rhizobiaceae group & family

uncertain)

(*Pedomicrobium*)

Beta Subdivision (or as Class Betaproteobacteria)

Class Nitrochematia

Order Nitrosomanadines (also put in Phylum Chemobacteria)

Nitrobacteraceae (*Nitrosomonas*) (once in Pseudomonadales)

Order Burkholderiales

Alcaligenaceae (once in Order Alcaligenes) (*Achromobacter*, *Alcaligenes*)

Comamonadaceae (*Variovorax*)

Gram Negative

Order Thiobacteriales

Thiobacteriaceae (*Thiobacillus*) (some species alpha or gamma purple)

Gram Positive

Order Nitrosomonadales

Gallionellaceae (*Gallionella*)

Gamma Subdivision

Order Eubacteriales (gram positive)

Azotobacteraceae (*Azotobacter*)

Order Pseudomonadales

Moraxellaceae (=Acinetobacteraceae)

(*Acinetobacter* (once put in Achromobacteraceae (of Eubacteriales)
& Alcaligenaceae, Chromobacteraceae & Neisseriaceae),

Chromobacterium

Moraxella (also put in Neisseriaceae)

Pseudomonadaceae

(*Aeromonas*, *Altermononas*, *Chryseomonas*, *Pseudomonas*, *Shewanella*)
(all uncertain classification)

Order Spirillales

Vibrionaceae (*Vibrio*)

Epsilon Subdivision

Order Beggiatoales

Oscillatoriaceae (*Beggiatoa* (once in protista, now in cyanobacteria)

Thiothrix (also put in Pseudomonadales)

Nitrobacteraceae (now in Pseudomonadales)

Subkingdom Firmicutes (also as Class, Division, Phylum or Order)

Class Bacilli (Gram-positive)

Order Bacillales

Bacillus/Clostridium group

Bacillaceae (*Bacillus*, *Listeria*)

Subkingdom Sporofirmabacteria (motile, endospore forming Gram-positive Eubacteria)

Phylum Anoxybacteria

Gram-positive Proteobacteria

Low G-C

Order Chlamydobacteriales (once in Eubacteriales)

Lactobacillaceae (*Lactobacillus*, *Sphaerocilus*, *Streptococcus*) (sheathed
bacteria)

Crenotrichaceae (*Crenothrix* (also put in Actinomycetales), *Leptothrix*)

Phylum Aerendosporobacteria

Order Bacillines

Bacillaceae (once in Eubacteriales) (*Bacillus*)

Phylum Micrococcobacteria

Order Micrococcines

Micrococcaceae (*Arthrobacter* (see cyanobacteria), *Micrococcus*, *Staphylococcus*)

Kingdom Spirochaetes

Order Spirochaetales

Spirochaetaceae (*Borrelia*)

Kingdom Cyanobacteria (=blue-green algae or bacteria), part of the eubacteria)

Phylum Cyanophycota (also as Division)

Bibl.: DeSaussure 1961; J. James, Patsalides & Cox 1994, 1994a; W. Shepard et al.
2000

Class Chlorococcatia

Order Chamaesiphonales (= Chamaesiphonines)

(or put in Class Cyanophyceae) (=Schizophyceae, Mixophyceae)

Chamaesiphonaceae (*Chamaesiphon*)

Class Oxyphotobacteria (= Class Cyanophyceae (=Schizophyceae, Mixophyceae) in part)

Order Chroococcales

Chroococcaceae

(*Anacystis*, *Aphanothece*, *Chroococcidiopsis*, *Coccochloris*, *Chroococcus*,
Gloeocapsa, *Gloeothece*, *Lungbya*, *Microcystis* (also in Eubacteriobionta),
Synechococcus, *Synechocystis*)

Entophysalidaceae (*Chlorogloea*)

Microcystaceae (*Aphanothece*)

Order Nostocales (= Nostocines)

Nostocaceae (*Anabaena*, *Cylindrospermum*, *Nostoc*)

Oscillatoriaceae (now in own order)

Rivulariaceae (*Calothrix*, *Gloeotrichia*, *Raphidiopsis*)

Scytonemataceae (*Hydrocoryne*, *Scytonema*, *Tolypothrix*)

Order Oscillatoriales

Oscillatoriaceae

(*Arthrospira*, *Beggiatoa*, *Gomontiella*, *Oscillatoria*, *Microcoleus*, *Phormidium* (also
of uncertain family status) *Plectonema*, *Schizothrix*, *Spirulina*, *Thiotrix*)

Scytonemataceae (*Tolypothrix*)

Order Pleurocapsales

Chaesiphonaceae (*Chamaesiphon*)

Pleurocapsaceae (*Myxosarcina*)

Order Pseudomonadales (also not incl. in blue-green, see above) (*Aphanothece*)

Class Hormogoniata

Order Stigonematales (= Stigonematines)

Stigonemataceae (*Geitleria*, *Hapalosiphon*, *Thalpophila*)

Domain or Empire Eucarya (= Kingdom Eubacteria) (bacteria with nuclei)

Order Maduromycetes (now in fungi)

Suborder Streptosporangineae

Thermomonosporaceae

(*Actinomadura*) (now in Actinomycetales, see below)

Subkingdom Staticfirmabacteria (all Gram-positive, non-motile, non-spore Eubacteria)

Division Firmicutes

Phylum or Class Actinobacteria (=Thallobacteria?)

Order Actinomycetales

Actinomycetaceae

(*Actinomadura*, *Actinomyces* (gram positive, also put in fungi),

Actinomycetes

Curtobacterium (also put in Microbacteriaceae) *Thermoactinomyces*)

Corynebacteriaceae

(*Aureobacterium*, *Brevibacterium* (also put in Enterobacteriaceae),

Clavibacter,

Corynebacterium)

Mycobacteriaceae (*Mycobacterium*, *Rhodococcus*)

Suborder Streptomycineae

Streptomycetaceae (Gram positive) (*Streptomyces*)

Order Enterobacteriales (once subsumed in Order Eubacteriales)

Enterobacteriaceae

(*Aerobacter*, *Arizona*, *Brevibacterium* (also in Corynebacteriaceae),

Citrobacter,

Enterobacter, *Escherichia*, *Proteus*, *Salmonella*, *Serratia*, *Yersinia*)

Order Cytophagales (*Geitleria*) (or in order Stigonematales) (also placed in algae)

Superfamily Beggiatoaceacea (now elevated to order and put in cyanobacteria))

Achromobacter Yabuuchi & Yanko, 1981 (groundwater) Eubacteriales bacteria in
Alcaligenaceae

Achromobacter undet. sp. (groundwater; OR Caves, OR)

Acinetobacter Brisou & Prevot, 1954 (groundwater; ID basalt aquifer) Eubacteriales bacteria in Neisseriaceae

Acinetobacter anitratus = *Paracolobactrum* a.

Acinetobacter *calcoaceticus* (Beijerinck, 1911) Bauman, Doudoroff & Stanier, 1968) Migula, 1895 (on OK *Myotis velifer* bats)

Acinetobacter *lwoffii* (*A. calcoaceticus* var. *l.*) (Andreau, 1940) Brisou & Prevot 1940 emend. Bouvet & Grimont, 1986 (on OK Tx *Myotis velifer* bats)

Actinomadura H. Lechev. & M.P. Lechev, 1969 - Actinomycetales bacteria in Actinomycetaceae (also put in Thermomonosporaceae)

Actinomadura undet. sp. (WV)

Actinomyces - Harz, 1877 - Actinomycetales gram positive prokaryote in Actinomycetaceae (also put in fungi)

Actinomyces undet sp. or species (KY (Mammoth C.) water; OR (OR C.) moonmilk)

Actinomycetes Krassilnikove, 1949 (name now obsolete) Actinomycetales bacteria in Actinomycetaceae

Actinomycetes undet. sp. #1 (Lechuguilla C., NM) Lavoie & Northrup 1994

Actinomycetes undet. sp. #2 (high organic muds in Knox Co., TN)

Aerobacter Beijerinck, 1900 - Eubacteriales bacteria in Enterobacteriaceae

Aerobacter undet. sp. (in aphotic (no light) Edwards Aquifer, San Marcos (Hays Co.), TX

Aeromonas Stanier, 1936 (groundwater) Pseudomonadales gamma proteobacteria in Pseudomonadaceae

Aeromonas undet. sp. (WV)

Alcaligenes Castellani & Chalmers, 1919 - Eubacteriales bacteria in Alcaligenaceae

Alcaligenes undet.sp. (groundwater; ID basalt aquifer; KY (Mammoth C.) water)

Alteromonas Baumann, Baumann, Mandel & Allen, 1972 emend. Gauthier et al. 1995 (= *Alterimonas*) (brown-pigmented agarolytic bacteria) Pseudomonadales gamma proteobacteria in Pseudomonadaceae

Alteromonas putrefaciens = *Shewanella* p.

Anacystis Meneghini, 1836 - Chroococcaceae cyanobacteria

Anacystis gelatinosa (Henn.) Lemm. (benthic in Devil's Hole, swNV)

Anacystis montana (Lightf.) F.E. Drouet & W.A. Daily

Anacystis montana forma *m.* (NM)

Anacystis undet. sp. (in aphotic (no light) Edwards Aquifer, San Marcos (Hays Co.), TX)

Anabaena Bory de St Vincent ex Bornet & Flah, 1886 '1888' Nostocales bacteria or cyanobacteria in Nostocaceae

Anabaena affinis Watanabe, 1992 (NV,OR caves by lights, alien?; MN hyporheic),

Anabaena catenula (Kutzing) Bornet & Flahault, 1886 (OR/by lights, alien?)

Anabaena undet. sp. or species (in aphotic (no light) Edwards Aquifer, San Marcos (Hays Co.), TX); benthic in Devil's Hole, swNV)

Anabaena spiroides Klebahn (MN hyporheic)

Aphanizomenon Morren, 1888 Ex Bornet & Flahault - Nostocales cyanobacteria in Nostocaceae

Aphanizomenon flos-aquae (L.) Ralfs (MN hyporheic)

Aphanocapsa Nageli, 1849 - Chroococcales cyanobacteria in Chroococcaceae

Aphanocapsa undet. sp. (benthic in Devil's Hole, swNV)

Aphanothece Naegeli, 1849 - Chroococcales cyanobacteria in Chroococcaceae (once placed in Pseudomonadales bacteria, family Microcystaceae) (genus questionable and may be included into genus *Synechococcus*)

Aphanothece castagnei (NM, OR/ by lights, alien?),

Aphanothece gelatinosa (Henn.) Lemmermann (OR/by lights, alien?),

Aphanothece nidulans P. Richter, 1884 (NM/by lights, alien?)

Aphanothece undet. sp. (OR/by lights, alien?)

Aquifex Huber et al., 1992 - Aquificaceae archaea

Aquifex undet sp. (WY hot springs)

Arizona Kauffmann & Edwards, 1952 (= *Salmonella*) Eubacteriales bacteria in Enterobacteriaceae

Arizona hinshawii (*Salmonella III arizonae*? (Borman, 1957) Kauffman 1964)) on OK *Myotis velifer* bats)

Arthrobacter Conn & Dimmick, 1947 - Eubacteriales bacteria in Micrococcaceae

Arthrobacter undet. sp. or species (Lechuguilla (NM), Oregon (OR) pool water & Mammoth (KY) Caves; deep US groundwater; ID basalt aquifer; TN cave stream)

Arthrobacter *globiformis* (Conn, 1928) Conn & Dimmick, 1947 (TN cave stream)

Arthrospira Sitzenberger & Gomont, 1893 – Oscillatoriales cyanobacteria in Oscillatoriaceae

Arthrospira gomontiana Setchell, 1985 (MN hyporheic)

Aureobacterium Collins, Jones, Keddie, Kroppenstedt & Schleifer, 1983 - Corynebacteriaceae bacteria

Aureobacterium undet. sp. (water in Mammoth C., KY)

Azotobacter Beijerinck, 1901 – Azotobacteraceae Gamma Proteobacteria

Azotobacter undet. sp. or species (cave stream water, feces, and cave slime in OR C., OR) eubacteriales

Bacillus Cohn, 1872 – Gram positive procaryote (aerobic or facultatively anaerobic, most sp. chemoorganoheterotrophic; US groundwater; ID basalt aquifer) Eubacteriales bacteria in Bacillaceae

Bacillus *azotoformans* Pichinoty, Debarjac, Mandel & Asselineau, 1983 (Low organic muds in Knox Co., TN),

Bacillus *cereus* Frankland & Frankland, 1887 (on OK *Myotis velifer* bat; low organic muds in TN)

Bacillus *brevis* Migula, 1900 (= *B. canicollis* b.) (low organic muds in Knox Co., TN)

Bacillus *circulans* Jordan, 1890 (low organic muds in Knox Co., TN)

Bacillus *firmus* Bredemann & Werner, 1933 (TN cave stream)

Bacillus *globisporus* Larkin & Stokes, 1967 (= *B. g.* ssp. *g.*) (TN cave stream)

Bacillus *macerans* Schardinger, 1905 (on OK *Myotis velifer* bats)

Bacillus *megaterium* DeBary, 1884 (on OK *Myotis velifer* bats; TN cave stream)

Bacillus *mycoides* Flugger, 1886 (= *B. cereus* ssp. *m.*) (TN cave stream)

Bacillus *polymyxa* (Prazmowski, 1880) Mace, 1889 (low organic muds in Knox Co., TN),

Bacillus undet. sp. or species (Lechuguilla C., NM; water in Mammoth C., KY; high organic muds in Knox Co., TN; in aphotic (no light) Edwards Aquifer, San Marcos (Hays Co.), TX; KY (Mammoth C.) water; on OK Tx *Myotis velifer* bats)

Bacillus *subtilis*. (Ehrenberg, 1835) Cohn, 1872 (low organic muds in Knox Co., TN),

Bacillus *thuringiensis* Berliner, 1915 (= *B. cereus* ssp. *t.*; *B. t.* ssp. *t.*) (TN cave stream)

Beggiatoa Trevisan, 1842 - Oscillatoriaceae cyanobacteria (also put in bacteria) - roteobacteria gamma (aerobic, microaerophilic; anaerobic, respiratory; typically chemoorganoheterotrophic; acetate, hexoses (e.g. glucose) are not used; often aquatic; reduces sulfur compounds)

Eubacteriales **Bibl.:** Larkin & Strohl 1983; T. Williams & Unz 1985

Beggiatoa alba (Vaucher, 1803) Trevisan, 1845 (KY) Schmidt et al. 1987

Borrelia Swellengrebel, 1907 – Domain Prokaryote in Kingdom Spirochaetes, Spirochaetaceae in Spirochaetales

Borrelia undet. sp. (On CA *Antrozous pallidus* bats) (cause of relapsing fever)

Borrelia burgdorferi Johnson, Schmid, Hyde, Steigerwalt & Brenner, 1984 (in ticks on CA *Neotoma micropus* woodrats/ cause of lyme disease)

Brevibacterium Breed, 1953 - Eubacteriales gram positives and relatives - Corynebacteriaceae bacteria (also put in Enterobacteriaceae)

Brevibacterium megaterium Breed, 1953 (water in Mammoth C., KY)

Brevibacterium undet. sp. #1 (water in Mammoth C., KY)

Brucella Meyer & Shaw, 1920 - Eubacteriales bacteria

Brucella neotomae Stoenner & Lackman, 1957 (= *B. abortus* ssp. *neotomae*?) (endoparasite on UT *Neotoma lepida* woodrats)

Calothrix Agardh, 1886 Ex Bornet & Flahault - Rivulariaceae in Order Nostocales

Calothrix thermalis (Schwae) Hansg. (benthic in Devil's Hole, swNV)

Caulobacter Henrici & Johnson, 1935 Pseudomonadales gamma proteobacteria in Caulobacteraceae

Caulobacter undet. sp. (groundwater)

Chamaesiphon A. Braun in Rabenhorst, 1864, emend. Geitler, 1925 or (Braun & Grunow, 1865) Pleurocapsales cyanobacteria in Chamaesiphonaceae. **Bibl.:** Geitler 1925

Chamaesiphon gracilis Rabenhorst, 1864 (Mammoth C., KY)

Chamaesiphon undet. sp. (benthic in Devil's Hole, swNV)

Chlorogloea Wille, 1900 - Chroococcales cyanobacteria in Entophysalidaceae

Chlorogloea undet. sp. (endolithic in ON karst)

Chromobacterium Bergonzini, 1881 (= *Chromobacter*) - Eubacteriales bacteria in Chromobacteraceae (also put in Neisseriaceae)

Chromobacterium undet. sp. or species (US groundwater; water in Mammoth C., KY & OR Caves, OR; in aphotic (no light) Edwards Aquifer, San Marcos (Hays Co.), TX)

Chroococcidiopsis (Geitler, 1933) Waterbury & Stanier, 1976 - Chroococcales cyanobacteria in Chroococcaceae

Chroococcidiopsis undet. sp. (endolithic in ON karst)

Chroococcus Nageli, 1849 - Chroococcales cyanobacteria in Chroococcaceae

Chroococcus undet. sp. (benthic in Devil's Hole, swNV)

Chryseomonas Holmes, Steigerwalt, Weaver & Brenner, 1986 emend. Holmes et al. 1987 (may be junior syn. of *Pseudomonas*) Pseudomonadales Archae in Pseudomonadaceae

Chryseomonas *luteola* (Kodama, Kimura & Komogata, 1985) Holmes et al., 1987 (Lechuguilla C., NM)

Citrobacter Werkman & Gillen, 1932 - Eubacteriales bacteria in Enterobacteriaceae

Citrobacter *freundii* Werkman & Gillen, 1932 (on OK Tx *Myotis velifer* bats)

Clavibacter Davis, Gallaspie, Vidaver, & Harris, 1984 - Corynebacteriaceae? bacteria

Clavibacter undet. sp. (ID basalt aquifer)

Coccochloris Sprengel, 1807 - - Chroococcales cyanobacteria in Chroococcaceae

Coccochloris undet. sp. (Lehman C., NV)

Corynebacterium Lehmann & Neumann, 1896 - Corynebacteriaceae bacteria

Corynebacterium undet. sp. or species (water in Mammoth C., KY; moonmilk in OR C., OR; on OK *Myotis velifer* bats)

Corynebacterium *aquaticum* Leifson, 1962 (WI hyporheic; NM & SD caves; on OK Tx *Myotis velifer* bats) (reduces sulfur compounds)

Corynebacterium *pseudodiphtheriticum* Lehmann & Neumann, 1896 (on OK Tx *Myotis velifer* bats)

Curtobacterium Yamada & Komagata, 1972 - Actinomycetales bacteria in Actinomycetaceae (also put in Microbacteriaceae)

Curtobacterium undet. sp. (water in Mammoth C., KY)

Cylindrospermum Kuetzing, 1843 Ex Bornet & Flahault, 1887 - Nostocales bacteria or cyanobacteria in Nostocaceae

Cylindrospermum *catenatum* Ralfs in Bornet & Flahault, 1887 (OR/by lights, alien?)

Deinococcus Brooks and Murray, 1981 – Deinococcaceae bacteria in Order Deinococcales

Deinococcus undet. sp. (aerobic groundwaters)

Enterobacter Hormaeche & Edwards, 1960 - Eubacteriales bacteria in Enterobacteriaceae

Enterobacter *aerogenes* Hormaeche & Edwards, 1960 (on OK *Myotis velifer* bats)

Enterobacter *agglomerans* Ewing & Fife, 1972 (on OK Tx *Myotis velifer* bats)

Escherichia Castellani and Chalmers, 1919 - Enterobacteriaceae bacteria in Eubacteriales
Escherichia undet. sp. (in aphotic (no light) Edwards Aquifer, San Marcos (Hays Co.), TX)

Flavobacterium Bergey et al., 1923 (groundwater) Eubacteriales bacteria in Flavobacteriaceae
Flavobacterium undet. sp. (KY (Mammoth C.) water)

Gallionella Ehrenberg, 1838 (Gram-positive with stalked, bean-shaped cells)
Nitrosomonadales Beta proteobacteria in Gallionellaceae

Gallionella ferruginea E., 1838 (producer? of branching iron oxides in C. of the Winds, CO
+WV groundwater)

Geitleria Friedmann, 1955 - Stigonemataceae cyanobacteria in Order Stigonematales (also
placed in Cytophagales)

Geitleria calcarea Friedmann 1979 (FL)

Geitleria floridana Friedmann 1979 (FL)

Gloeocapsa Kuetzing, 1843 - Chroococcales cyanobacteria in Chroococcaceae

Gloeocapsa undet. sp. or species (endolithic in ON karst; near lights in NV; in aphotic (no light)
Edwards Aquifer, San Marcos (Hays Co.), TX); benthic & phytoplankton in Devil's Hole,
swNV)

Gloeotheca Nageli, 1849 - Chroococcales cyanobacteria in Chroococcaceae

Gloeotheca undet. sp. (endolithic in ON karst),

Gloeotrichia Jg. Agardh & Bornet & Flah., 1886 - Nostocales cyanobacteria in Rivulariaceae

Gloeotrichia natans (Hedwig) Rabenhorst (MN hyporheic)

Gloeotrichia spsum (C. A. Ag.) Thurst (MN hyporheic)

Gomontiella Teodoresco, 1901 Oscillatoriaceae cyanobacteria

Gomontiella *magyariana* Claus (KY)

Halobacterium Elazari-Volcani, 1957 - Halobacteriaceae bacteria in Pesudomonadales bacteria
(salty groundwater rich in organics)

Halococcus Schoop, 1935- Pesudomonadales bacteria in (salty groundwater rich in organics)

Hapalosiphon (Naeg. in Kuetzing, 1849) Ex Bornet & Flahault, 1887 - Stigonematales
cyanobacteria in Stigonemataceae

Hapalosiphon intricatus West or West & West. Bibl.: Davis & Rands 1982

Hapalosiphon undet. sp. (MN hyporheic)

@*Heterohormogonium* (Smith, 1950) Burr. in Copeland
Heterohormogonium schizodichotmum (benthic in Devil's Hole, swNV)

Hydrocoryne Schwabe, 1827 Ex Bornet & Flahault, 1887 - Nostocales cyanobacteria in Scytonemataceae

Hydrocoryne undet. sp. (OR/by lights, alien?)

Hyphomicrobium Stutzer & Hartleb, 1898 - Hyphomicrobiales eucaryote proteobacteria in Hyphomicrobiaceae

Hyphomicrobium undet. sp. (groundwater)

Kurthia Trevisan, 1885 (exiguobacterium, gram positive) Eubacteriales bacteria in Bacillaceae

Kurthia undet. sp. #2 (high organic muds in Maury Co., TN)

Lactobacillus Beijerinck, 1901 - Gram positive eucaryote, Lactobacillaceae bacteria in Chlamydobacteriales

Lactobacillus undet. sp. (on OK Tx *Myotis velifer* bats)

Leptothrix Kuetzing, 1843 - Chlamydobacteriales bacteria in Crenotrichaceae
Gram-positive flagellated **bacteria**. Sheaths often contain oxides of iron or manganese. Aerobic **chemo-organotrophs** in slow-moving, unpolluted, iron-containing streams. Pools more than 2' deep often orange-yellow. Peck 1987; Northrup, Dahm et al. 2000

Leptothrix undet. sp. or species (NM (Lechuguilla & Carlsbad C., Eddy Co.), SD)

Listeria Pirie, 1940 - Formicutes bacteria in Bacillaceae

Listeria *denitrificans* Prevot, 1961 (cave stream in Knox Co., TN)

Listeria undet. sp. #1 (low organic muds in Knox Co., TN)

Listeria undet. sp. #2 (high organic muds in Knox Co., TN)

Lyngbya Agardh & Gomont, 1892 - **Oscillatoriales cyanobacteria in Oscillatoriaceae**

Lyngbya aestuarii (Mert.) Liebmann (MN hyporheic)

Lyngbya birgei G.M. Smith (MN hyporheic)

Lyngbya limnetica Lemm. (benthic & phytoplankton in Devil's Hole, swNV)

Lyngbya maiuscula (Dillw.) Harvey (benthic in Devil's Hole, swNV)

Lyngbya pusilla tenuior fa.nov. = *Micromonas p.*

Lyngbya undet. sp. (benthic in Devil's Hole, swNV)

Methanobacterium Kluver & Van Niel, 1936 (= *Methanibacterium*) Pseudomonadales Archae

Methanobacterium undet sp. (anaerobic groundwater rich in organics)

Methanococcus (Kluyver & Van Niel, 1936) emend. Mah & Kuhn, 1984 - Methanococcaceae
Archae in Methanococcales

Methanococcus undet sp. (anaerobic groundwater rich in organics)

Methanomicrobium Balch & Wolfe, 1981 - Pseudomonadales Archae in Methanobacteriaceae
Methanomicrobium undet sp. (anaerobic groundwater rich in organics)

Methanosarcina (Kluyver & Van Niel, 1936) emend. Mah & Kuhn, 1984 – Methanosarcinaceae
Archae in Methanobacteriales

Methanosarcina undet sp. (anaerobic groundwater rich in organics)

Methanothermus Pseudomonadales Archae in Methanothermaceae (also put in
Methanobacteriaceae)

Methanothermus undet sp. (anaerobic groundwater rich in organics)

Micrococcus Cohn, 1872 - Eubacteriales bacteria in Micrococcaceae

Micrococcus *luteus* (Schroeter, 1872) Cohn, 1872 (low organic muds in Knox Co., TN; on OK
Tx *Myotis velifer* bats)

Micrococcus undet. sp. (low organic muds in Knox Co., TN; in aphotic (no light) Edwards
Aquifer, San Marcos (Hays Co.), TX; KY (Mammoth C.) water))

Micrococcus *varians* Migula, 1900 (low organic muds in Knox Co., TN; on OK Tx *Myotis*
velifer bats)

Microcoleus Desmazieres & Gomont - Oscillatoriales cyanobacteria in Oscillatoriaceae
Microcoleus *vaginatus* (Vauch.) Gomont (MN hyporheic; benthic in Devil's Hole, swNV)

Microcystis Lemmermann, 1907 (= *Polycystis*) Chroococcales cyanobacteria in Microcystaceae

Microcystis *stagnalis* Lemmermann, 1907 (KY),

Microcystis undet. sp. or species (near lights in NV; benthic in Devil's Hole, swNV)

Micromonas pusilla (Butcher) = *Oocystis* p.

Moraxella Lwoff, 1939 - Eubacteriales bacteria in Neisseriaceae

Moraxella undet. sp. (groundwater; on OK Tx *Myotis velifer* bats (or *Pseudomonas*))

Mycobacterium Lehmann & Neumann, 1896 - Actinomycetales bacteria in Mycobacteriaceae

Mycobacterium undet. sp. or species (water in Mammoth C., KY; in aphotic (no light) Edwards
Aquifer, San Marcos (Hays Co.), TX)

Myxosarcina Printz, 1921 – Pleurocapsaceae in Order Pleurocapsales

Myxosarcina amethystine Copeland (benthic in Devil's Hole, swNV)

Nitrobacter Winogradsky, 1892 - Eubacteriales in Nitrobacteraceae . **Bibl.:** Fliermans & Schmidt 1974, 1977

Nitrobacter undet. sp. W(WV),

Nitrosomonas Winogradsky, 1892 - Nitrobacteraceae beta proteobacteria prokaryote in Eubacteriales

Nitrosomonas undet. sp. (WV)

Nocardia Trevisan, 1889 - Actinomycetales bacteria in Nocardiaceae

Nocardia undet. sp. (WV)

Nostoc (Vaucher, 1803) Bornet & Flahault, 1886 - Nostocales bacteria or cyanobacteria in Nostocaceae

Nostoc *minutissimum* Kutzing ex Bornet & Flahault, 1887 (KY)

Nostoc *paludosum* Klebahn (MN hyporheic)

Nostoc undet. sp. (endolithic in ON karst),

Oscillatoria Vaucher, 1803 Ex Gomont, 1893 - Oscillatoriales cyanobacteria in Oscillatoriaceae

Oscillatoria *acutissima* Dufferath (MN hyporheic)

Oscillatoria *agardhii* Gomont, 1892 (OR/by lights, alien?; MN hyporheic)

Oscillatoria *amoena* (Kuetz.) Gomont (OR/by lights, alien?)

Oscillatoria *amphibia* C.A. Agardh (MN hyporheic; benthic in Devil's Hole, swNV)

Oscillatoria *amphigranulata* van Goor (benthic in Devil's Hole, swNV)

Oscillatoria *animalis* Agardh ex Gomont, 1892 (KY)

Oscillatoria *ariticulata* Gardner (MN hyporheic)

Oscillatoria *chalybea* Mertens (MN hyporheic)

Oscillatoria *clausiana* (KY)

Oscillatoria *curviceps* C.A. Agardh (MN hyporheic)

Oscillatoria *formosa* Bory (MN hyporheic)

Oscillatoria *limnetica* Lemmermann (MN hyporheic)

Oscillatoria *limosa* (Roth) C.A. Agardh (MN hyporheic)

Oscillatoria *neglecta* Lemmermann, 1910 (Mammoth C.,KY)

Oscillatoria *negra* Vaucher (MN hyporheic)

Oscillatoria *princeps* Vauch. (benthic in Devil's Hole, swNV)

Oscillatoria undet. sp. or species (in aphotic (no light) Edwards Aquifer, San Marcos (Hays Co.), TX; benthic in Devil's Hole, swNV)

Oscillatoria *subbrevis* Schmidle (MN hyporheic)

Oscillatoria *subtillissima* Kuetzing (KY)

Oscillatoria *tenuis* Agardh ex Gomont, 1892 (OR/by lights, alien?), & undet. sp. (NV/alien?),

Oscillatoria *terebriformis* C.A. Agardh (MN hyporheic)

Paracolobactrum Borman, Stuart and Wheeler, 1944 - Neisseriaceae bacteria in Eubacteriales

Paracolobactrum *anitratus*. (*Achromobacter anitratum* (Schaub & Hauber) Brissow, 1953;

Acinetobacter a.) (on OK Tx *Myotis velifer* bats)

Pedomicrobium (Aristovskaya, 1961) Gebers & Beese, 1988 – Hyphomicrobiaceae (= Athiorhodaceae) (Rhizobiaceae group) bacteria in Rhizobiales (also put in Pseudomonadales) alpha proteobacteria

Pedomicrobium *manganicum* (Aristovskaya, 1961) Gebers, 1981 (or undescr. sp.) (in corrosion residues in wallrock in Lechuguilla C., Eddy Co., NM) **Bibl.:** Northrup, Dahm et al. 2000

Phormidium (Kutzing, 1843) Ex Gomont, 1893 - Oscillatoriales cyanobacteria in Oscillatoriaceae

Phormidium *cebennense* Gomont (KY),

Phormidium *purpurascens* (Kutz.) Gom. (benthic in Devil's Hole, swNV)

Phormidium undet. sp. (endolithic in ON karst),

Phormidium *subtruncatum* Woronich.f. (KY),

Plectonema (Thuret, 1875) ex Gomont, 1892 - Oscillatoriales cyanobacteria in Oscillatoriaceae

Plectonema *notatum* Schmidle, 1901 (OR/by lights, alien?),

Plectonema undet. sp. or species (endolithic in ON karst; benthic in Devil's Hole, swNV)

Proteus Hauser, 1885 Enterobacteriaceae bacteria in Eubacteriales

Proteus undet. sp. (in aphotic (no light) Edwards Aquifer, San Marcos (Hays Co.), TX; KY (Mammoth C.) water)

Pseudomonas Migula, 1894 - Pseudomonadales Archae in Pseudomonadaceae

Pseudomonas *aeruginosa* (Schroeter, 1872) Migula, 1900 (TN cave stream)

Pseudomonas *calcioprecipitans* Molish, 1925 (incertae sedis) (prob. in WI moonmilk)

Pseudomonas *diminuta* Leifson & Hugh, 1954 (on OK *Myotis velifer* bats)

Pseudomonas *fluorescens* Migula, 1895 (on OK Tx *Myotis velifer* bat; TN cave stream)

Pseudomonas *putida* (Trevisan, 1889) Migula, 1895 (TN cave stream)

Pseudomonas undet. sp. (in aphotic (no light) Edwards Aquifer, San Marcos (Hays Co.), TX)

Pseudomonas undet. sp. #1 (low organic muds in Knox Co., TN),

Pseudomonas undet. sp. #2 (high organic muds in Knox Co., TN; ID basalt aquifer)

Pseudonocardia (Henssen, 1967 or 1957 emend. Warwick et al. 1994 Actinomycetales bacteria in Nocardiaceae

Pseudonocardia undet. sp.(WV)

Pyrodictium Stetter, Koenig & Stackebrandt, 1983 - Pyridictiaceae gram-positive archaea in Order Pyrodictia?

Pyrodictium undet. sp. (WY hot springs)

Pyrolobus - Pyridictiaceae gram-positive archaea in Order Pyrodictia?

Pyrolobus undet. sp. (WY hot springs)

Rhaphidiopsis Fritsch & Rich, 1929 – Rivulariaceae bacteria in Order Nostocales

Rhaphidiopsis undet. sp.(benthic in Devil’s Hole, swNV)

Runella Larkin & Williams, 1978 – Flexibacteraceae bacteria in Sphingobacteriales

Runella undet. sp. or species (moonmilk, suspected feces on silt and silt in OR C., OR)

Rhodococcus Zopf, 1891 - Mycobacteriaceae bacteria in Actinomycetales

Rhodococcus undet. sp.(Lechuguilla C.,NM)

Salmonella Lignieres, 1900 - Eubacteriales gamma proteobacteria prokaryote in Enterobacteriaceae

Salmonella undet. sp. (KY cave water; *Salmonella*-like spp. on OK Tx *Myotis velifer* bats)

Bibl.: Rusterholtz & Mallory 1990

Schizothrix Kutzing, 1843 Ex Gomont, 1892 - Oscillatoriales cyanobacteria in Oscillatoriaceae

Schizothrix *callicola* (C. Agardh) Gomont, 1892 (NV/alien?)

Schizothrix undet. sp. or species (endolithic in ON karst; in aphotic (no light) Edwards Aquifer, San Marcos (Hays Co.), TX))

Scytonema Agardh, 1887 Ex Bornet & Flahault - Nostocales cyanobacteria in Scytonemataceae

Scytonema undet. sp. (benthic in Devil’s Hole, swNV)

Serratia Bizio, 1823 - Eubacteriales bacteria in Enterobacteriaceae

Serratia *liquefaciens* (Brimes & Hennerty, 1931) Bascomb, Lapage, Willcox & Curtis, 1971) (on OK Tx *Myotis velifer* bats)

Serratia undet. sp. (in aphotic (no light) Edwards Aquifer, San Marcos (Hays Co.), TX)

Shewanella MacDonell & Colwell, 1986 - Pseudomonadales Archae in Pseudomonadaceae

Shewanella putrefaciens (*Alteromonas putrefaciens* Lee, Gibson & Shewan, 1981) MacDonell & Colwell, 1986 (TN cave water)

Sphaerocilus Kuetzing, 1833 (sheathed bacteria) - Lactobacillaceae bacteria in Chlamydobacteriales

Sphaerotilus *natans* Kuetzing, 1833 (KY caves)

Sphaerotilus undet. sp. (up to 3cm. thick films on cave walls in IN; in polluted caves in KY; US groundwater)

Spirulina Turpin & Gomont, 1893 - Oscillatoriales cyanobacteria in Oscillatoriaceae

Spirulina laxissima G.S. West (MN hyporheic)

Spirulina major Kuetz. (MN hyporheic)

Staphylococcus Rosenbach, 1884 – Gram positive eucaryote, Eubacteriales in Micrococcaceae

Staphylococcus aureus Rosenbach, 1884 (= *S. a. ssp. a.*) (KY (Mammoth C.) water)

Staphylococcus cohnii Schleifer & Kloos, 1975 (on OK *Myotis velifer* bats)

Staphylococcus faecalis Andrewes & Horder, 1906 (on OK *Myotis velifer* bats)

Staphylococcus facium Orla-Jensen, 1919 (on OK *Myotis velifer* bats)

Staphylococcus lentus (Kloos et al. 1976) Schleifer, Geyer, Klipper-Baelz & Devriese, 1983 (on OK *Myotis velifer* bats)

Staphylococcus undet. sp. (Lechuguilla C., NM; on OK Tx *Myotis velifer* batss))

Staphylococcus sciuri Kloos, Schleifer & Smith, 1976 (on OK *Myotis velifer* bats)

Staphylococcus xylosus Schleifer & Kloos, 1975 (on OK *Myotis velifer* bats)

Streptococcus Rosenbach, 1884 - Gram positive eucaryote, Chlamydobacteriales in Lactobacillaceae

Streptococcus faecalis Andrewes & Horder, 1906 (sewage contaminated groundwaters)

Streptococcus undet. sp. (on OK Tx *Myotis velifer* bats)

Streptomyces (Waksman & Henrici, 1943) Emend. Wellington et al., 1992 – Gram positive eucaryote, Eubacteriales in Streptomycetaceae

Streptomyces undet. sp. #1 (WV),

Streptomyces undet. sp. #2 (high organic muds in Maury Co., TN),

Synechococcus Negeli, 1849- Chroococcales cyanobacteria in Chroococcaceae

Synechococcus lividus Copeland (benthic in Devil's Hole, swNV)

Synechococcus *minervae* Copeland.(benthic in Devil's Hole, swNV)

Synechococcus undet. sp (benthic in Devil's Hole, swNV)

Synechocystis C. Sauvageau, 1892 - Oscillatoriales cyanobacteria in Oscillatoriaceae

Synechocystis undet. sp. or species (endolithic in ON karst; benthic in Devil's Hole, swNV)

Tetrachloris Pascher, 1925 - See algae

Thalpophila Borzi, 1906 – Stigonemataceae cyanobacteria in Order Stigonematales

Thalpophila imperialis Copeland (benthic in Devil's Hole, swNV)

Thermoactinomyces Tsilinsky, 1899 - Actinomycetales bacteria in Actinomycetaceae

Thermoactinomyces undet. sp. (WV)

Thermofilum Zillig, Gierl, Schreiber, Wunderl, Janekovic, Stetter & Klenk, 1983

Thermofilaceae archae in Order Thermoproteales

Thermofilum undet. sp. (WY hot springs)

Thiobacillus Beijerinck, 1904 (reduces sulfur compounds) Pseudomonadales Archae in Thiobacteriaceae

Thiobacillus undet. sp. (NM,SD)

Thiothrix Winogradsky, 1888 Oscillatoriaceae gamma proteobacteria (reduces sulfur compounds) (also put in cyanobacteria) **Bibl.:** (FL,KY) Brigmon et al. 1994(a-b); Larkin 1980; Larkin & Strohl 1983; T. Williams & Unz 1985; Polman & Larkin 1990; Strohl & Schmidt 1984

Thiothrix *nivea* (Rabenhorst, 1865) Winogradsky, 1888 (FL)

Thiothrix *tenuissima* Winogradsky, 1888 (KY)

Tolypothrix Kuetzing, 1887 Ex Bornet & Flahault, 1887 - Oscillatoriales cyanobacteria in Scytonemataceae

Tolypothrix *distorta* Kuetz. Ex Bornet & Flahault (MN hyporheic)

Tolypothrix *lanata* (Desv.) Wartm. (OR/by lights, alien?)

Variovorax Willems et al., 1991 – Comamonadaceae in Order Burkholderiales in beta division of Proteobacteria)

Variovorax paradoxus (*Alcaligenes p.* Davis, 1969) Willems et al., 1991 (or undescr. sp.) (in corrosion residues in wallrock in Lechuguilla C., Eddy Co., NM) **Bibl.:** Northrup, Dahm et al. 2000

Vibrio Pacini, 1854- Pseudomonadales gamma proteobacteria prokaryote in Vibrionaceae

Vibrio undet. sp. (Mammoth C.,KY)

Yersinia Van Loghem, 1944 -= Eubacteriales Enterobacteriaceae bacteria in Division Gracilicutes, gamma Proteobacteria, Class Enterics

Yersinia *pseudotuberculosis* ssp. *pestis* Bercovier, Mollaret, Alonso, Brault, Fanning, Steigerwalt and Brenner, 1981 (*Y.p* (Lehmann and Newmann, 1896) Van Loghem, 1944) (in CA *Neotoma fuscipes* & *N. cinerea* woodrats) (cause of bubonic plague)

badger - See **mammal**, Carnivora, badger

bandits - Marauding cavernicolous predators & scavengers which plunder the resources of communities which inhabit guano beds, but which live mainly in other cave microhabitats.

barklice - **Insect** Order **Psocoptera**.

Barnacles - **Crustacean** of Subclass Cirripedia (= Thecostraca). Adults always attached to a substrate or as a parasite. Body short and compressed, the pleon strongly reduced and with no appendages. No external segments in thorax of most species. Each segment with a pair of long, biramous appendages (cirri, absent or degenerate in parasites) densely covered with setae. Larvae in two-valved carapace that forms the mantle in adults. About 800 species known. May be the ancestors of ostracods. **Bibl.:** Russell & Elliott 1994

Subclass Cirripedia

Order Thoracica:

Suborder Balanomorphia

Superfamily Balanoidea

Archaeobalanidae: *Semibalanus*

Balanidae: *Balanus* da Costa, 1778 (CA marine)

Superfamily Coronuloidea

Tetraclitidae: *Tetraclita*

Superfamily Chthamaloidea (=Ththamaloida)

Chthamalidae: *Chthamalus*

Suborder Scalpellomorpha

Scalpellidae (also put in Suborder Lepadomorpha)

(*Hamatoscalpellum*)

Balanus De Costa, 1887 - Balanidae barnacles

Balanus amphitrite Darwin (Salton Sea benthic, CA)

Balanus balanus (O. Fabricius, 1780) (PQ Gulf of St. Lawrence sandy marine interstitial)

Balanus crenatus Bruguiere, 1789 (CA, WA, PQ Gulf of St. Lawrence sandy marine interstitial)

Balanus glandula Darwin, 1854 (WA marine infauna)
Balanus (*Solidobalanus*) *hesperius* (AK, WA marine infauna)
Balanus improvisus Darwin, 1854 (rare MA, Virginian marine infauna)

Balanus rostratus Hoek (AK marine infauna)
Balanus undet. sp. (WA marine infauna)
Balanus venustus (FL Gulf of Mex. marine infauna)

Chthamalus Ranzani, 1817 - Chthamalidae barnacles
Chthamalus undet. sp. (CA marine caves)

Hamatoscalpellum Zevina, 1978 - Scalpellidae barnacles
Hamatoscalpellum californicum (*Scalpellum* c. Pilsbry, 1907; *S. osseum* Pilsbry, 1907) (sCA marine infauna)

Scalpellum Leach, 1817 – Scalpellidae barnacles
Scalpellum californicum (WA marine infauna)
Scalpellum sanctipretensis (WA marine infauna)

Semibalanus Pilsbry, 1916 - Archaeobalanidae barnacles
Semibalanus balanoides (Linne', 1767) (PQ Gulf of St. Lawrence sandy marine interstitial; ME sea caves)

Tetracilita Schumacher, 1817 - Tetracitidae barnacles
Tetracilita undet. sp. (CA marine caves)

barotolerant - A organism able to tolerate high hydrostaic pressure, although growing better at normal pressures.

barrier - Features such as rivers, canyons, oceans, deserts, etc. that prevent dispersal & mixing of gene pools. See dispersal.

bat - See **mammal**, insectivore.

bat fleas - See fleas.

bat **flies** (Streblidae) & bat spider fli es (Nycteribiidae) - See **fly**.

batellite - **Type** of current species assoc. with bats or bat guano. Cf. bandit.

bat scat - Small, elongate, & rough-surfaced. It may occur in **guano** piles (especially at day roosts) or may be widely scattered (especially at night roosts). Bat scat crumbles between the fingers, breaking into small shiny particles, the remains of insect bodies. Incl. **guano**.

bear - See **mammal**, **Carnivora**

beaver - See **mammal**, **rodent**

bed bug - Hemiptera **bug** parasite of Family Cimicidae. Paleolithic humans probably got them from bats as both share three species.

bee - See Hymenoptera

Beetles & Weevils

Main group of **insects** of Order Coleoptera (= Eleutherata, Elytroptera), Subclass Pterygota, Division Neoptera, Subdivision Endopterygota (=Holometabola), Section Neuropterida (or divided in various sections, see below). Name from Greek koleos, “sheath” and pteron, “wing,” referring to the formation of the front pair of wings into hardened wing covers. Wing are also folded when not in use, enabling beetles to utilize almost any habitat. This partly accounts for their great diversity, over 350,000 known species, with 23,800 species and 3,145 genera in the US and Canada, about a third of all species known there. First found in Permian.

.025-150 mm. (usually 2-20mm). Body hard or leathery, often elongate, cylindrical, hemispherical, or slightly to extremely flattened. Some females resemble larvae rather than adults. Most are black or dark brown but some are colorful, especially in reds and yellows. Heads are small except for heads elongated into snouts in weevils. No cerci. Biting mouth parts, horny front wing covers over membranous rear wings, & all legs similar. Several groups are aquatic both as larvae and as adults, some of them predators and others herbivores. Most adults are leaf feeders or scavengers but many are ectoparasites, pollinators or predators. Cave-adapted ones tend to have longer antennae, enhanced humidity detection, smaller eyes & less pigment than related, non-cave ones. Larvae are usually pale, with sparse hairs, & head distinct & darker than body. Most adults live above ground but many live under bark or bore into wood.

Bibl.: Anon. 1973; Ashworth 1973; H. Barber 1929; Barr 1959c; Bruce Conn & Demoss 1984,; Crowson 1981; Leng 1920; Poulson 1973, 1975; Spangler 1986; Valentine 1941; **Evolution & Taxonomy:** Beutel 1995; Crowson 1960; Lawrence & Newton 1995; Pakaluk & Slipinski 1995; Poulson 1979a; **Areas:** **AL:** Nicholas 1966a; Hebard 1934; Loeding 1945; Nicholas 1966; **Appalachia:** Jeannel & Henrot, 1949; Molas 1973; Henrot 1949; Jennel & Henrot 1949; **CA:** R. Graham 1963; **IN:** Blatchley 1910; Krekeler 1961; Krekeler 1969; Wickham, 1896; **KY:** Anon., 1881; Barr 1959c; Hubbard, 1881; **NA:** Arnett 1978; T. Erwin et al. 1977; Lindroth 1961-9; H. Scott 1967; Erwin & Ball 1977; Chemsak & Linsley 1982; **NE:** Dillon & D. 1961; Downie & Arnett 1996; **NW:** 1953-71; **Ozarks:** Barr 1964d; **TN:** Barr 1959c; Hebard 1934 **TX:** Barr 1964e; Barr & Steeves 1963; West: Benedict 1976a; **US:** Arnett 1963; **WV:** Hebard 1934; **VA :** Hebard 1934

Suborder Adephaga Schellenberg, 1806

Section Geadephaga

Series Carabiformia

Superfamily Caraboidea (or no superfamily)

(Carabidae, Cicindelidae (or as subfamily of Carabidae), Dysticidae, Gyrinidae, Haliplidae, Noteridae)

Section Hydradephaga

(Cicindelidae, Dysticidae, Gyrinidae, Haliplidae, Noteridae)

Superfamily Dermestoidea - see above

Suborder Polyphaga Emery, 1886

Series Bostrichiformia

Superfamily Bostrichoidea Latreille, 1802

(Anobiidae, Bostrichidae, Dermestidae (also put in Dermestidea), Ptinidae)

Series Chrysomeliformia

Superfamily Chrysomeloidea (also put in Cucujiformia) (Cerambycidae, Chrysomelidae)

Superfamily Cleroidea (also put in Cucujiformia) (Cleridae, Melyridae)

Series Cucujiformia

Superfamily Chrysomeloidea L. 1902 (now in Chrysomeliformia)

Superfamily Cleroidea L., 1802 – (now in Chrysomeliformia) (Cleridae, Melyridae)

Superfamily Curculionoidea L., 1902 (Anthribidae, Curculionidae)

Superfamily Cucujoidea L., 1802 (Cleridae, Melyridae)

Superfamily Tenebrionoidea L., 1802

(Aderidae, Alleculidae, Mycetophagidae, Salpingidae, Tenebrionidae)

Series Elateriformia

Superfamily Byrrhoidea Latreille, 1804

(Byrrhidae, Elmidae, Dryopidae, Ptilodactylidae (last 3 also put in Dryopoidea))

Superfamily Buprestoidea (Buprestidae)

Superfamily Cantharoidea (see Elateroidea)

Superfamily Dascilloidea (Dascillidae)

Superfamily Dryopoidea (also subsumed in Byrrhoidea)

(Brachypsectridae (now in Cucujoidea), Dryopidae, Elmidae (now in Byrrhoidea), Ptilodactylidae)

Section Elateridina

Superfamily Elateroidea Leach, 1815

(Cantharidae (also put in own superfamily), Elateridae, Lampyridae, Phengodidae)

Section Catharidina (not used by Lawrence & Newton)

Superfamily Cucujoidea

(Brachypsectridae) (once in Dryopoidea), Coccinellidae, Corylophidae, Cryptophagidae,

Cucujidae, Languriidae, Nitidulidae)

Series Staphyliniformia

Superfamily Hydrophiloidea Latreille, 1802 (Histeridae, Hydrophilidae)

Superfamily Staphylinoidea Latreille, 1802

(Agyrtidae, Leiodidae, Ptiliidae, Silphidae, Staphylinidae)

Series Scirtoformia

Superfamily Scirtoidea Fleming, 1821 (Dascillidae, Scirtidae)

Series Scarabeiformia

Superfamily Scarabaeoidea L., 1802

(Scarabaeidae, Hybosoridae (or as Subfamily Hybosorinae in Scarabaeidae),

Trogidae)

ADERIDAE Winkler, 1927 (antlike leaf beetles) (=Euglenidae)

Vanonus Casey, 1895 (= *Tanilotes* Casey, 1895) (13 species in US or Canada)

Vanonus undet. sp. (Ac? in cave in Edwards Co., TX)

AGYRTIDAE Thomson, 1859 (agyrtae beetles; primitive carrion beetles) (=Elateridae) -
Subsumed in Silphidae) **Bibl.:** Peck, 1990

ALLECULIDAE (Latreille, 1802) = Alleculinae in Tenebrionidae

AMPHIZOIDAE (trout stream beetles)

Amphizoa Leconte, 1853 - Amphizoidae beetles (13 species in US or Canada)

Amphizoa undet. sp. (Tx or Ac in 2 seAKcaves)

ANOBIIDAE Fleming, 1821 (drugstore and deathwatch beetles; deathwatch, drugstore, spider or ptinid beetles) (=Ptinidae). About, 17 sp. n. of Mex., mostly alien. Feed mostly on seeds or scavenge in mammal, bird & bee nests. Undet. genus in 16,150 & 9,320 years old in *Neotoma* woodrat nest in Tinajas Mts., Yuma Co, AZ) **Bibl.** Papp 1962; Spilman 1975

Ptininae Latreille, 1802 (Spider Beetles) (*Niptinus*, *Niptus*, *Ptinus*) **Bibl.:** T. Philips 1997
Xyletininae (*Lasioderma*)

Lasioderma Stephens, 1835 (= *Pseudochina* Jacqueln du Val, 1860; *Hypora* Mulsant & Rey, 1864) Anobiidae beetles, Subfamily Xyletininae (4 species in US or Canada)

Lasioderma *serricorne* (*Ptinus* s. Fabricius; *Ptilinus testaceus* Duftschmid, 1825; *L. castaneum* Melsheimer, 1846; *Xyletinus brevis* Wollaston, 1861) (NA/ Ac in cave in Edwards Co., TX)

Niptinus Fall, 1905 - Anobiidae beetles, Subfamily Ptininae (2 species in US or Canada)

Niptinus *ovalipennis* Fall, 1905 (Tp? in cave in Travis Co., TX)

Niptus Boieldieu, 1856 (spider beetles) Anobiidae beetles, Subfamily Ptininae. (7 species in US & Canada) **Bibl.:**Spilman 1968; Aalbu & Andrews 1992; W. Brown 1959

Niptus *abditus* Brown, 1959 (*one cave in Great Salt Lake, Tooele Co., UT/Tx? in woodrat nests)

Niptus *abtrusus* Spilman, 1968 (cave type locality in Val Verde Co. & one cave in Brewster Co., both TX (also fossil in woodrat middens & epigeal in Tx pastures & barnyards), Mexico & Big Bend Natl. Park; nr. *N. abtrusus* - 13,500 to 1,200 years old in *Neotoma* nest, Ajo Mts., Pima Co., AZ) /Texan spider beetles/Tp)

Niptus *arcanus* Aalbu & Andrews, 1992 (**Mitchell (type locality) & El Pakiva C., Providence Mts. State Rec. Area, San Bernardino Co., CA/ Tb)

Niptus *kelleri* (*Pseudeurostus k.* Brown, 1959) (*one cave in Cache Co., UT/Tb or Tp)

Niptus undet. species (Tb in CA; *Neotoma* woodrat midden in Canyonlands, UT; 32,000 to 1,200 years old in *Neotoma* nest, Ajo Mts., Pima Co., AZ)

Niptus *ventriculus* LeConte, 1859. (Ac or Tx in woodrat nest in cave in Grand Canyon, Coconino Co., AZ; fossil in *Neotoma* woodrat midden, Puerto Blanco Mts., Pima Co., sAZ;)/ 13 time periods from 0 to >26,000 yrs. BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM))

Ptinus Linnaeus, 1767 (= *Gynopterus* Mulsant & Rey, 1868) - Anobiidae beetles, Subfamily Ptininae. (38 species in US & Canada)

Ptinus (*Ptinus*) *clavipes* Panzer (= *P. brunneus* Duftschmidt, 1825; *P. hirtellus* Sturm, 1837, *P. testaceus* Olivier, 1790) (epigeal in NY, s. to GA, Guatemala, w. to CA/ Habitual Tx in CA/ brown spider beetle).

Ptinus (*Gynopterus*) *feminalis* Fall, 1905 (epigeal in central AZ/ fossil in *Neotoma* woodrat midden, Puerto Blanco Mts., Pima Co., sAZ; 20,500 & 1,200 years old in *Neotoma* nest, Ajo Mts., Pima Co., AZ))

Ptinus cf. (*Ptinus*) *fur* (*Cerambyx f.* Linnaeus, 1758) (cosmopolitan/ white-marked spider beetle/ 32,000 to 1,200 years old in *Neotoma* nest, Ajo Mts., Pima Co., AZ)

Ptinus *priminidi* Spilman, 1976 (extinct Wisconsin fossil from *Neotoma* woodrat nests in Whipple Artillery, Kofa & Puerto Blanco Mts. of AZ)

Ptinus undet. sp. (Ac or Tx in woodrat nest in cave in Grand Canyon, Coconino Co., AZ & *Neotoma* woodrat midden in Canyonlands, UT/ 12,000 to 12,300 BP in *Neotoma* woodrat nest in

wTX (El Paso Co.) or sNM; 9,120 to 2,260 years old in scNM *Neotoma* woodrat nest)

Antblood beetles family - See Dermestidae

ANTHICIDAE (antlike flower beetles)

Subfamily Notoxinae (*Notoxus*)

Notoxus Geoffroy, 1762 (= *Nonocerus* Faldeman, 1837; *Ceratoderus* Blanchard, 1846)

Anthicidae beetles, Subfamily Notoxinae (46 species in US or Canada)

Notoxus *murinipennis* LeConte, 1851 (= *N. bicolor* Say, 1917 Homo.) (Tx in WA Co., IN (S3/G4))

Formicilla Leconte, 1851 (= *Formicus* L. 1861) Anthicidae beetles (1 species in US or Canada)

Formicilla *munda* L., 1851 (*F. evanescens*, *gilensis* Casey, 1895) (Ac in cave in Uvalde Co., TX)

Antloving beetles family - See Pselaphidae

APIONIDAE - Subsumed in Curculionidae

ARTEMATOPODIDAE Lacordaire, 1857 (soft-bodied plant beetles) (= Eurypogonidae) (also subsumed in Dascilliade)

Subfamily Macropogoninae (*Macropogon*)

Macropogon Motschulsky, 1859 (once in Dascillidae) - Artematopodidae beetles (3 species in US or Canada)

Macropogon undet. sp. (Ac or Tx in WA? cave)

BOSTRICHIDAE (branch & twig borers; false powder-post beetles)

undet. genus (8,700 to 7,000 years old in *Neotoma* woodrat nest in Tinajas Mts., Yuma Co., AZ)

BRACHYPSECTRIDAE (Texas beetles)

Brachypsectra LeConte, 1874 - Brachypsectridae beetles

Brachypsectra fulva LeConte, 1874 (epigeal in AZ, CA, UT, TX/ 9,120+- 500 years old in *Neotoma* woodrat nest in scNM/ Texas beetle)

BRUCHIDAE (pea & bean weevils) (also subsumed in Chrysomelidae)

Subfamily Bruchinae (*Acanthoscelides*, *Algarobius*, *Bruchus*, *Mimosestes*, *Stator*)

Acanthoscelides Schilsky, 1905- Bruchidae beetles, Subfamily Bruchinae (also put in Chrysomelidae & Cleridae) (61 species in US or Canada)

Acanthoscelides undet. sp. (Ac or Tx in woodrat nest in cave in Grand Canyon, Coconino Co., AZ)

Algarobius Bridwell, 1946 (also put in Chrysomelidae) Bruchidae beetles, Subfamily Bruchinae (2 species in SW)

Algarobius undet. sp. or species (Ac in cave in Sutton Co., TX\ 9,600 & 1,200 years old in Neotoma nest, Ajo Mts., Pima Co., AZ)

Bruchus Linnaeus, 1767 - Bruchidae beetles, Subfamily Bruchinae (4 species in US)

Bruchus undet. sp. (15,00 to 15,500 yrs.BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM/ 9,000 to 6,000 year old in *Neotoma* woodrat nest in Big Bend Natl. Park, wTX)))

Mimosestes (see Chrysomelidae)

Mimosestes Bridwell, 1946 (= *Cercidiestes* Bridwell, 1946) Bruchida beetles, Subfamily Bruchinae (also put in Chrysomelidae (5 species in US or Canada)

Mimosestes amicus (*Bruchus a.* Horn, 1873) (Ac in cave in Sutton Co., TX)

Mimosestes nubigens (*Bruchus n.* Motschulsky, 1874 (3,200 to >26,000 yrs.BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM)

Stator Bridwell, 1946 - Bruchidae beetles, Subfamily Bruchinae (also put in Chrysomelidae) (10 species in US or Canada)

Stator limbatus (*Bruchus l.* Horn, 1873). (13,500 & 1,200 years old in *Neotoma* nest, Ajo Mts., Pima Co., AZ)

BUPRESTIDAE Leach, 1815 (flatheaded or metallic wood borers; metallic wood-boring beetles)

Subfamily Agrilinae Laporte, 1835 (branch-and-leaf buprestids)

Tribe Agrilini (*Agrilus*)

Subfamily Buprestinae (sculptured buprestids)

Tribe Acmaeoderini (*Acmaeodera* (once put in Buprestinae)

Tribe Chrysobothrini (*Chrysobothris*) (once put in Buprestinae)

Acmaeodera Eschscholtz, 1829 - Buprestidae beetles, Subfamily Buprestinae, Tribe Acmaeoderini (128 species in US or Canada)

Acmaeodera *cuneata* Fall, 1869 (0 to 100 years BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM)

Acmaeodera undet. sp. (12,250 years old in *Neotoma* woodrat nest in Butler Mts., Yuma Co., AZ)

Agrilus Curtis, 182 (*Teres* Harris, 1829; *Anambus* Thomson, 1864; *Engyaulus* Waterhouse, 1889; *Diplolophotus* Abeille, 1897; *Agrilomorphus* Thery, 1909; *Coroebilus*, *Personatus*, *Duttus*, *Bubbagrillus*, *Melagrillus* Curletti, 1993) Buprestidae beetles, Subfamily Argilinae, Tribe Agrilini (161 species in US or Canada)

Agrilus *aurichalceus* Redtenbacher, 1849 (= *A. proximus* Rey, 1891; *A. rubicola* & *obtusus* Abeille, 1897; *A. chrysoderes* Bedel, 1921; *A. communis* Obenberger, 1924; *A. antiquus* Gavoy, 1926) (Tx in TX)

Agrilus undet. sp. (8,100 years old in *Neotoma* woodrat nest, Ajo Mts., Pima Co., AZ)

Chrysobothris Eschscholtz, 1829 (= *Chrysobotis* E. 1829; *Odontomus* Kirby, 1837; *Knowltonia* Fisher, 1935) (borers) Buprestidae beetles, Subfamily Buprestinae, Tribe Chrysobothrini (133 species in US or Canada)

Chrysobothris undet. sp. (Ac in cave in Pecos Co., TX)

Euspilotus - put in Histeridae

BYRRHIDAE Latreille, 1802 (pill beetles)

Subfamily Byrrhinae L., 1804

Tribe Byrrhini (*Byrrhus*)

Tribe Liolonini (*Lioligus*)

Subfamily Syncalypinae (once treated as Syncalypidae) (*Syncalypa*)

Byrrhus Linnaeus, 1767 - Byrrhidae beetles, Subfamily Byrrhinae, Tribe Byrrhini (28 species in US, Canada)

Byrrhus undet sp. (2,000 year old remains in entrance pit in cave in AB, Canada)

Lioligus Casey, 1912 - Byrrhidae beetles, Subfamily Byrrhinae, Tribe Liolonini (5 species in US)

Lioligus *nitida* (*Simplocaria n.* Motschulsky, 1845; *L. striolatus* Casey, 1912; *L. keeni* Casey, 1912; *L. aequabilis* Casey, 1912) (TTP in WA).

Syncalypa Dillwyn, 1829 (= *Curimopsis* in part) Byrrhidae beetles, Subfamily Syncalypinae

(1-2 species in US, Canada)

Syncalyptra cf. *tessellata* (*Byrrhus t.* LeConte, 1850 (= *S. grisea*?) (3,200 to 4,000 yrs. BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM)

BRACHYPSECTRIDAE (Texas beetles)

Brachypsectra LeConte, 1872 - Brachypsectridae beetles (one species in US)

Brachypsectra *fulva* LeConte, 1872 (epigeal in AZ, CA, TX, UT/ Texas beetle/ Late Quaternary fossil in scNM *Neotoma* woodrat nest)

CANTHARIDAE Imhoff, 1856 (soldier or leather-winged beetles). **Bibl.:** Peck, 1975a
Undet. genus - Tx or Ac in Vancouver Island, BC

Subfamily Cantharinae Imhoff., 1856

Tribe Cauliognathini (*Chauliognathus*)

Tribe Cantharini (*Cantharis*)

Tribe Podabrini (*Podabrus*)

Cantharis Linnaeus, 1758 - Canthariidae beetles in Subfamily Cantharinae, Tribe Cantharini (36 species in US, Canada)

Cantharis undet. sp. or species (Tx in AL?, GA (Chattooga, Dade, Walker Cos.), IN (Harrison, Crawford Cos.), MO, sON, TN, TX, VA) **Bibl.:** Peck, 1975a

Chauliognathus Hentz, 1830 - Canthariidae beetles in Subfamily Cantharinae, Tribe Cauliognathini (18 species in US, Canada)

Chauliognathus undet. sp. (Ac in 1 seAKcaves)

Podabrus Westwood, 1838 (leather-wing) Canthariidae beetles in Subfamily Cantharinae, Tribe Podabrini (107 species in US, Canada)

Podabrus undet. sp. (Tx or Ac in CA)

CARABIDAE Latreille, 1810 (predaceous or carnivorous ground, carabid or ground & tiger beetles). About 1,000 sp. n. of Mex. Most predaceous or omnivorous, a few feed on fungi.

Bibl.: Acorn & Ball, 1991; Alie, 1967; Badaracca, 1986a; Bartkowiak, Tschardt & Weber, 1991; Kane 1986; Valentine 1952; Barr 1966-7, 1981, 1985b,c; Casele & Laneyrie 1989; Casey 1931; Erwin et al. 1979; Jeannel 1920, 1926-30, 1931, 1941-2, 1949a, Kane 1984a, 1986a;

Kane & Brunner 1986a; LeConte, 1848; Kane 1986, 1985; Lindroth 1961a; Keith 1973; Lindroth 1968; Van Zant, Poulson, & Kane 1978; Schaeffer 1910; Kane 1979, 1984, 1986; LeConte & Horn, 1883; W. Martin & Weber 1985. **Areas:** **AL:** Vigna Taglianti 1973; **AR:** Barr 1964c, 1966b; **Appalachian:** Barr 1965a, 1981b, 1985a; **CA:** Horn, 1888; **Canada & AK:** Lindroth 1961a; **E:** Kane 1985; **IN:** Van Dyke 1940; **KY:** Barr 1959c, 1966; Packard, 1876; Van Dyke 1940; **NM:** Van Dyke 1949; **TN:** Barr 1959c, 1971a; **TX:** Barr 1959f, 1965; **US:** Barr 1981; **VA:** Barr 1960c; Van Dyke 1940; **WV:** Barr 1959d, 1960b; Horn, 1868; Thaxter 1893

Brachininae Bonelli, 1810

Tribe Brachinini (bombadier beetles) (*Brachinus*)

Carabinae Latreille, 1802. **Bibl.:** Garner 1955

Supertribe Carabidae

Carabini (searchers) (*Calosoma*, *Carabus*),

Cychrini (snail-eating ground beetles),

(*Carabus* (now in Carabini) *Cychrus*, *Scaphinotus*, *Sphaeroderus*)

Supertribe Nebriidae

Tribe Nebriini (*Nebria*) (also put in Subfamily Nebriinae)

Tribe Notiophilini (*Notiophilus*) (also put in Subfamily Nebriinae)

Supertribe Scaritidae

Scaritini (*Clivina*, *Dyschirius*, *Pasimachus*, *Scarites*, *Schizogenius*)

Cicindelinae Latreille, 1802 (tiger beetles) **Bibl.:** Boyd 1982; J. Leonard & Bell 1998

Tribe Cincindelini

Subtribe Cincidelina (*Cicindela*)

Tribe Megacephalini

Subtribe Omina (*Amblycheila*, *Omus*) (put in Subfamily Cicindelinae, Tribe Omini)

Tribe Omini (*Amblycheila*, *Omus*) (also put in Megacephalini, Subtribe Omina)

Cymidine

Tribe Lebiini (now put in Harpalinae)

Harpalinae Bonelli, 1810 (also subsumed in Carabinae)

Tribe Platynini (*Agonum*, *Atranus* (also put in Harpalini), *Calathus* (also put in Pterostichini), *Chaenius*, *Mexisphodrus* (also put in Prosthodriini), *Notiobia* (put in Harpalini), *Platynus*, *Rhadine* (also put in Tribe Bembidiini), *Synuchus* (also put in Pterostichini))

Tribe Prosthodriini (*Mexisphodrus*) (also put in Platynini)

Supertribe Callistitae

Callistini (*Chlaenius*) (put in Chlaenini)

Chlaenini (vivid metallic ground beetles)

Subtribe Chalaeniina (*Chlaenius* (also put in Callistini)

Licinini (notched-mouthed ground beetles)

Subtribe Dicaelina (also put in Panagaeini) (*Dicaelus*)

Supertribe Dryptitae

Tribe Galeritini (false bombardier beetles) (*Galerita*) (also placed as subtribe of Zuphiini)

Supertribe Harpalitae

Tribe Harpalini (dingy ground beetles) (*Amara* (put in Zabрини), *Apenes* (put in Lebiini), *Atelothrus*?, *Atranus* (put in Platynini), *Cymindis* (put in Lebiini), *Gastrellarius*, *Poecilus* (both in Pterostichini)

Subtribe Anisodactylina

Genus-group Anisodactyli (*Anisodactylus*)

Genus-group Notiobii (*Notiobia*) (also put in Platynini)

Subtribe Harpalina

Genus-group Harpali (*Harpalus*) (also put in Platynini)

Genus-group Selenophori (*Discoderus*, *Selenophorus*)

Genus-group Trichotichni (*Trichotichnus*)

Subtribe Stenolophina

Genus-group Stenolophi

(*Acupalpus*, *Bradycellus*, *Stenolophus*)) **Bibl.:** Kraim 1983

Tribe Zabрини (= Amarini) (*Amara*) (also put in Harpalini)

Supertribe Anthiitae

Tribe Helluonini (flat-horned ground beetles)

Subtribe Omphrina (*Helluomorphoides*)

Supertribe Lebiitae

Lebiini (colorful foliage ground beetles)

Subtribe Apenina (*Apenes*)

Subtribe Calleidina (*Calleida*)

Subtribe Cymindidina (*Cymindis*, *Pinacodera*)

Subtribe Dromiina (*Syntomus*)

Subtribe Lebiina (*Lebia*)

Odacanthini (long-necked ground beetles) (*Colliuris*)

Supertribe Panagaetiae

Tribe Panagaeini (hairy ground beetles) (*Dicaelus* (now in Licinini))

Supertribe Pterostichitae

Tribe Pterostichini (woodland ground beetles) (*Agonum*, *Platynus*, *Calathus* (all now in Platynini), *Cyclotrachelus*, *Gastrellarius* (also put in Harpilini), *Poecilus* (also put in Platynini), *Pterostichus*, *Synuchus* (put in Platynini) **Bibl.:** R. Thompson 1979; Will

2000

Omophroninae Bonelli, 1810:

Omophronini (round sand beetles) (*Omophron*)

Scaritinae Bonelli, 1810 (Pedunculate ground beetles) (now put in Carabinae)

Scaritini (*Clivina*, *Dyschirius*, *Pasimachus*, *Scarites*, *Schizogenius*)

Trechinae Bonelli, 1810:

Bembidiini (minute ground beetles) (*Anillinus*, *Anilloides*, *Bembidion*) (all put in Trechini), *Elaphropus*, *Horologion*, *Paratachys*, *Tachys*, *Rhadine* (put in Subfamily Harpalinae, Tribe Platynini), *Troglanillus*) (probable undescr. sp. in *cave in Tulare Co., CA)

Subtribe Anillina (*Anillaspis*) (once in Trichini & Psydrini), *Anillinus*, *Anillodes*, new genus (one sp.? in *cave in Tuolumne Co., CA/Tb or epigeal & one sp.? in (Calaveras, Tulare Co. & Tuolumne Cos.) /Tb or epigeal)

Broscini (*Brascodera*)

Patrobini (*Patrobus*)

Supertribe Trechitae

Tribe Trechini (Trechine beetles) (*Ameroduvalius*, *Anillaspis* (now in Bembidiini) (minute

ground beetles) (*Anillinus*, *Anilloides*, *Bembidion*) (all put in Trechini), *Aphanotrechus*,

Bembidion (also put in Bembidiini), *Darlingtonia*, *Neaphaenops*, *Nelsonites*, *Pseudanophthalmus*, *Trechus*, *Xenotrechus*) **Bibl.:** Jennel 1920, 1938

Acupalpus Latreille, 1829 (= *Anthraxus* Motschulsky, 1850; *Philodes* LeConte, 1861; *Balius* Schiodte, 1861; *Manicellus* M. 1864; *Goniolophus* & *Tachistodes* Casey, 1914) Carabidae beetles in Subfamily Harpalinae, Tribe Harpalini, Subtribe Stenolophina, Genus-group Stenolophi (19 species in US, Canada)

Acupalpus *partiaris* (= *Agonoderus* & *Trechus partiaris* Say, 1823; *Tachistodes lyratus* & *convergens* Casey, 1924) (epigeal ME to AZ, w. to SD/ TTx in TX)

Acupalpus undet. sp. (Ac in cave in Culberson Co., TX)

Agonoderus Dejean, 1829 = subgenus of *Stenolophus*

Agonoderus partarius = *Acupalpus* p.

Agonum Bonelli, 1810; Sanderson & Miller, 1941 (= *Agonothorax* Motschulsky, 1850; *Europhilus* Chaudoir, 1859; *Olisares* M.165; *Platynomicrus*, *Melanogonum*, *Pragonum*, *Taphranchus*, *Circinalidia*, *Micragonum*, *Circinalia*, *Stereagonum*, *Stictanchus*, *Deratanchus* Casey, 1920; *Punctagonum* Gray, 1937) (See *Platynus*, *Rhadine*) Carabidae beetles in Subfamily Pterostichinae, Tribe Pterostichini (115 species in US, Canada) **Bibl.:** Liebherr 1983

Agonum (*Platynomicrus*) *bicolor* (= *Anchomenus* b. Dejean, 1828; *P. marginellus* LeConte, 1860) (NW, AK, YK, NT, BC, AB epigeal/Ac or Tx in IN)

Agonum caudatum = *Rhadine* c.

Agonum *cyclifer* (= *Anchomenus* c. Bates, 1883; *Platynus arizonensis* Horn, 1892) (epigeal in AZ, TX/ Tp? in AZ,NM)

Agonum (*Stictanchus*) *extensicolle* (*Feronia* e. Say, 1823; *Anchomenus proximus* T.W. Harris, 1828; *A. obscuratus* Chaudoir, 1843; *A. lecontei* LeConte, 1844; *A. viridis* LeConte, 1848, *A. cyanescens* Motschulsky, 1859, *A. gaudens* Casey, 1920; *A. gaudens clientulus* Casey, 1920, *A. vigilans* C.1920) (US, Canada(w. to SK) except NW,NV/ Tp in caves in Bexar & King Cos.,TX; Ac or Tx in cave in Jackson Co.,AL & MO; Ac in Livingston Co.,KY) **Bibl.:** Liebherr 1983

Agonum howdeni = *Rhadine* h.

Agonum jonesi = *Rhadine* j.

Agonum longicollis = *Rhadine* l.

Agonum ozarkense = *Rhadine* o.

Agonum *pallipes* (*Carabus* p. Fabricius, 1787; *Harpalus* p. Fabricius, 1792) (epigeal ON s. to FL, w. to AR, IL, MO, TN/ Tx in cave in Monroe Co.,KY)

Agonum perlevis Csy. = *Rhadine* p.

Agonum (*Micragonum*) *punctiforme* = *Platynus* p.

Agonum reflexum = *Platynus* r.

Agonum undet. sp. (2,000 year old remains in entrance pit in cave in AB; (>43,300 & 9,900 years old in *Neotoma* woodrat nest in Tinajas Mts., Yuma Co,AZ); Tx in Bat Cave., Carter Co. Caves)

Agonum tenuicolle - see *Platynus*

Agonum *texanus* (= *Platynus* t. LeConte, 1878; *Anchomenus megillus* Bates, 1891) (AZ, KS, NM, OK, TX epigeal/ Tp in Lampasas & Culberson? Cos.,TX)

Agonum *viride* (= *Selenophorus gagatinus* Dejean, 1829; S.v. LeConte, 1848; *S. maurus*

Haldeman, 1843) or *Anisodactylus viridescens* Leconte, 1861?) (SE/?Ac in one cave each in Bexar & Hays Co.,TX)

Amara Bonelli, 1810 (= *Centrioptera*) Carabidae beetles in Subfamily Harpalinae, Tribe Zabrinini (also put in Harpalini) (191 species in US or Canada)

Amara *chalcea* Dejean, 1828 (epigean in most of NA/ 1->/26 thousand yrs.BP in *Neotoma* woodrat nest in wTX (El Paso Co.) & 9,120+- 500 years & 4,340-2,260 years old in *Neotoma* nest in scNM)

Amara (*Celia*) *musculus* (*Feronia m.* Say, 1823; *C.m.* Say, 1925; *C. lyncea*, *nugator*, *curticeps*, *shoemakeri*, *vegrandis*, *fluminea*, *crenulata*, *limbalis*, *paululua*, *scintilla*, *brevitarsis*, *pimalis* & *minnesotana* Casey, 1924) (Tx or Ac in cave in Carter Co.,KY)

Amara undet. sp. (*Neotoma* woodrat midden in Canyonlands, UT; (2,000 year old remains in entrance pit in AB cave; (or *Cryptoglossa*) (740 years old in *Neotoma* woodrat nest in Butler Mts., Yuma Co.,AZ))

Amara (*Celia*) *texana* (*Celia t.* Putzeys, 1866) Blaisdell, 1924 (E except FL/ Ttx in TX)

Amara (*Curtonotus*) *torrida* (*Carabus t.* Panzer, 1797; *A. infausta* LeConte, 1855; *Centrioptera t.*; *Curtonotus albertanus*, *biarcuatus*, *brevipennis* Casey, 1924; *C. scutana*, *labradorensis* Casey, 1918; *C. brevilabris* Kirby, 1837; *A. consueta* Fall, 1926; *A. cylindrica* LeConte, 1878; *C. dura* Casey; *C. holmbergi*, *somnolentus*, *reflexus* Putzeys, 1866; *A. hudsonica* Hayward, 1908; *A. melanogastrea* Dejean, 1828) (NA/ Ttx in TX)

Amblycheila Say, 1830 (= *Amblychila*) - Carabidae beetles in Subfamily Cicindelinae, Tribe Omini (also put in Megacephalini, Subtribe Omina) (15 species in US, Canada)

Amblycheila *schwartzi* Horn, 1903 (epigean in AZ, CA, UT/ Habitual Tx in CA)

Amerizus - see *Bembidion w.*

Ameroduvalius Valentine, 1952 - Carabidae beetles in Subfamily Trechinae, Tribe Trichini.(1-3? species in US, Canada) **Bibl.:** Kane, 1986a

Ameroduvalius *jeanneli* Valentine, 1952 (Cumberland Plateau of sKY/ Tb)

Ameroduvalius *jeanneli j.* (=A.j. Valentine, 1952) (Grand Crystal Cave (now flooded by Lake Cumberland) & two other caves in Pulaski Co.+ one cave in McCreary Co, KY/ Tb/ G3T3)

Ameroduvalius *jeanneli pubescens* (A.j. Valentine, 1952) (type locality cave & one other cave in Wayne Co.,KY/Tb)

Ameroduvalius *jeanneli rockcastlei* Valentine, 1952 (type locality cave * & 7 other caves in Rockcastle Co. +7 caves in Pulaski Co. & 9 caves in Jackson Co.,KY/Tb/G3T3)

Ameroduvalius jeanneli valentinei Valentine, 1952 (type locality cave & one other caves in Wayne Co.,KY/Tb)

Ameroduvalius krekeleri? (type locality cave & 2 other caves in Wayne Co.,KY/Tb)

Ameroduvalius persimilis *(cave in Rockcastle Co.,KY/Tb) =? *Pseudanophthalmus p.*

Anillaspis Casey, 1918 - Carabidae beetles in Subfamily Trechinae, Tribe Bembidiini, Subtribe Anilina (once in Trechinae, Tribe Trechini) (2 species in US or Canada)

Anillaspis explanatus (*Anillus e.* Horn, 1888) (epigean in CA/Tx in cave in El Dorado Co.,CA)

Anillaspis undet. sp. (Calaveras Co.,CA/ Tx or Ac)

Anillinus Casey, 1918 (= *Troglanillus* Jeannel, 1963) Carabidae beetles in Subfamily Trechinae, Tribe Bembidiini, Subtribe Anilina (also put in Trechini) (12 species in US, Canada)

Anillinus longiceps Jeannel, 1963 (*type locality cave in Marion Co.,TN/ Tb,Tp or Tx)

Anillinus undescr. sps. (Al,GA/ Edaphobite, Tp)

Anillinus undet. sp. (Tp or Tb or edaphic in GA (Dade Co.))

Anillinus valentinei (*Troglanillus v.* Jeannel, 1963) (***?type locality cave & one other cave in De Kalb Co., & one cave in Jefferson Co., neAL/ Tb ,Ed/ G3 or G1?)

Anillodes J., 1963 - Carabidae beetles in Subfamily Trechinae, Tribe Bembidiini, Subtribe Anilina (also put in Trechini) (2 species in US, Canada)

Anillodes undet. sp. (Calavaras, Santa Cruz, Tulare & Tuolumne Cos.,CA/Tp?)

Anillodes cf. *sinuatus* Jeannel, 1963 (epigean in TX/ Tx or Ac in TX)

Anisodactylus Dejean, 1829 - Carabidae beetles in Subfamily Harpalinae, Tribe Harpalini, Subtribe Anisodactylina, Genus-group Anisodactyli (33 species in US, Canada)

Anisodactylus undet. sp. (E/Tx; Tx in cave in Edwards Co., TX)

Anisotarsus Chaudoir, 1837 = subgenus of *Notiobia*

Anophthalmus Horn, 1883 (see *Pseudanophthalmus*. **Bibl.:** Jeannel, 1926

Anophthalmus interstitialis Hubbard, 1880 = *P. striatus*

Apenes LeConte, 1851 - Carabidae beetles in Subfamily Harpilinae, Tribe Lebiini, Subtribe Apenina (also put in Harpalini) (6 species in US or Canada)

Apenes (*Apenes*) *sinuata* (*Cymindis s.* Say, 1823; *A. pustulata* Dejean, 1831) (E to ON/ Tx or Ac

in cave in Val Verde Co.,TX)

Aphanotrechus Barr, 1960 - See *Pseudanoththalmus virginicus*

Atelothrus Sharp, 1903 - Carabidae beetles in Subfamily Harpilinae, Tribe Harpalini

Atelothrus *aaae* Samuelson & Liebherr in Liebherr & Samuelson, 1992 (*one cave in Haleakala Natl. Park, HI)

Atelothrus *howarthi* Samuelson & Liebherr in Liebherr & Samuelson, 1992 (*one cave in Haleakala Natl. Park, HI)

Atranus LeConte, 1848 - Carabidae beetles in Subfamily Harpilinae, Tribe Platynini (1 species in US or Canada)

Atranus *pubescens* (*Anchomenus p.* Dejean, 1828; *A. obconicus* Halderman, 1843) LeConte, 1848 (MW, E n. to ON, PQ, NB/ Tp in AL, AR, GA (Dade Co.), IL, IN, KY(Mammoth C.), MO, OK, VA, TX)

Batriasymmodes (now in *Pselaphidae*)

Bembidion Latreille, 1802 (= *Peryphys* Hayward, 1897) (bombardier beetles) Carabidae beetles in Subfamily Trechinae, Tribe Bembidini (also put in Trichini) (255 species in US, Canada)

Bembidion (*Peryphanes*) *grapii* Gyllenhal, 1827 (= *Peryphys picipes* Kirby, 1837; *B. seductum*, *scrutatum* & *nitens* Casey, 1918; *B. picipes*) (NA epigeal/ Tx or Tp in Kendall Co.,TX; Pendleton Co.,WV & Camden Co.,MO)

Bembidion (*Peryphanes*) *grapii* group (Tp or Tx in cave in Eddy Co.,NM)

Bembidion (*Pseudoperyphus*) *honestum* Say, 1823 (*Bembidion hesperium* & *binarium* Casey, 1918; *Pterostichus h.*) (NE to New Brunswick,ON, PQ/ TTx in KY)

Bembidion (*Trechonepha*) *iridescent* (*Ochthedromus i.* LeConte, 1852; *Trechonepha* Casey) (*B. amicum*, *deceptor*, *fabrum*, *impium*, *obliviosum*, *repens*, *volatile* Casey; *B. parallelocolle* (Motschulsky)) (AB, BC, CA, ID, MT, NV, OR, UT, WA epigeal/ Tp or Tx in NM,WA; Tp in CA (Amador, Calaveras, Mariposa & Santa Cruz Cos.,CA)

Bembidion (*Peryphanes*) *lacunarium* (P.L. Zimmerman, 1827; *B.militare* Casey, 1884; *B. histricum* Casey, 1918) (eUS,Canada to IA, TX; BC?,ID?,WA? epigeal/ Tp in AR, GA (Dade Co.). IL, IN (Crawford, Orange Cos.(S4?/G4)), KY (Mammoth C.), OK, TX)

Bembidion (*Amerizus*) *oblongulum* (*Trechus o.* Mann., 1852; *A. crassicornis* & *keeni* Casey, 1918) (eUS,Canada to AK, BC, IL, TN, NC /Tx in TN),

Bembidion undet. sp. or species (Tp in Childress, Comal, Crockett, Culberson, Kinney, Williamson Cos., TX; Tx or Tp in MO; TTx or Ac in AZ)

Bembidion proximus = *Paratachys p.*

Bembidion (*Coxendix*) undet. sp. (1,400 & 3,200 yrs.BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM)

Bembidion (*Peryphanes*) *texanum* Chaudoir, 1868 (*Peryphus t.*; *B. inquietum* & *cogitans* Casey, 1918) (AZ,MB,NM,OK,SD,WI/ Tp in IL,OK,TX)

Bembidion (*Notaphus*) *viridicolle* (= *N.v.* LaFerte'-Se'nectere, 1841; *B. apicale* Jaquelin du Val, 1857; *B. hamiferum* Chaudoir, 1868; *Bembicidium chevrolati* Gemminger & Harold, 1868; *B. particeps* Casey, 1918) La Ferte (epigeal AB to ON, s. to FL,WY/ Tx or Tp in Val Verde Co.,TX)

Bembidion (*Amerizus*) *wingatei* (A.w. Bland, 1864) (IL, IN, KY, LB, MA, ME, MI, NB, NC, NF, NH, NS, NY, OR, ON, PA, PM, PQ, VA, VT, WI, WV/disjunct Tp glacial relict in IL, IA, neKY, nwVA, swPA, WI, neWV)

Brachinus Weber, 1801- Carabidae beetles in Subfamily Brachininae, Tribe Brachinini (48 species in US, Canada)

Brachinus (*Neobrachinus*) undet. sp. (bombardier beetles) (Tx, Ac or Tp in Comal & King Cos.,TX; Tx in cave in Lawrence Co.,IN)

Bradycellus Erichson, 1837 - Carabidae beetles in Subfamily Harpilinae, Tribe Harpalini, Subtribe Stenolophina, Genus-group Stenolophi (also put in Platynini) (54 species in US, Canada)

Bradycellus (*Stenocellus*) *nubifer* LeConte, 1858 (*B. ventralis*, 1858; *Stenocellus n.* Casey, 1914) (AB, AZ, BC, CA, ID, MT, NV, OR, SK, TX, UT, WA/Tx? in Collingsworth Co., TX)

Bradycellus (*S.*) *rupestris* (*Trechus r.* Say, 1823; *Acupalpus elongatulus* Dejean, 1829; *Stenolophus cinctus* & *debilipes* Say, 1830; *Trechus flavipes* Kirby, 1837; *B. parallelus* Chudoir, 1868; *Tachycellus n.* Dejean) (eUS & Canada (ON,PQ,NB,NS) to OK,SD,CA?,CO?,NM?,WY?/ Tp or Tx? in Comal, Edwards & San Saba Cos.,TX; Tp, Tx or Ac in IN; Ac in AL)

Brascodera Lindroth, 1961 - Carabidae beetles in Subfamily Trechinae, Tribe Broscini (1 species in US)

Brascodera (*Brascodera*) *insignis* (*Miscodera i.* Mannerheim, 1852) (seAK, s. to OR, e. to WY epigeal/ Tp in WA & OR C.,OR)

Calathus Bonelli, 1810 (= *Procalathus* Jedlicka, 1953; *Neocalathus* Ball & Negre, 1972) Carabidae beetles in Subfamily Harpilinae, Tribe Platynini (also put in Pterostichini) (11 species in US, Canada)

Calathus *ingratus* Dejean, 1828 (epigeal BC to NF,s.to VA,WY/ 2,000 year old remains in

entrance pit in AB cave)

Calathus *opaculus* LeConte, 1854 (= *C. sonoricus*, *alutaceus*, *appalachius*, *obesulus* Casey, 1913; *C. ventricosus* C., 1920) (Tp in Childress & Culberson Cos., TX)

Calleida Latreille & Dejean, 1824 (= *Callida*) Carabidae beetles in Subfamily Harpilinae, Tribe Lebiini, Subtribe Calleidina (12 species in US, Canada)

Calleida (*Philophuga*) *viridis* Dejean, 1831 (CA, e. to KS, n. to BC, e. to Manitoba/ 1,400 to 1,700 yrs.BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM)

Calosoma Weber, 1801 (22 syns.) Carabidae beetles in Subfamily Carabinae, Tribe Carabini (41 species in US, Canada)

Calosoma (*Camedula*) *peregrinator* Guérin-Meneville, 1844 (4,000 to 2,500 years old in *Neotoma* woodrat nest in Big Bend Natl. Park, wTX)

Calosoma (*Calodrepa*) *scrutator* (*Carabus* s. Fabricius, 1775) (epigeal NH, CT s. to NE, w. to CO, SD, TX/ caterpillar hunter/ Ac? in Bexar Co., TX & Grand Canyon, Coconino Co., AZ)

Calosoma undet. sp. (Ac? in Menard Co., TX)

Carabus Linnaeus, 1758 - Carabidae beetles in Subfamily Carabinae, Tribe Carabini (13 species in US, Canada)

Carabus (*Archicarabus*) *nemoralis* O.F. Muller, 1764 (Atlantic coast to NJ, w.to WI; OR to BC/European ground beetles/ GA to NM, n.to BC/ Tx or Ac in sOR)

Carabus undet sp. (2,000 year old remains in entrance pit in AB cave)

Carabus (*Tomocarabus*) *taedatus* Fabricius, 1787 (epigeal AK to NF, s. to OR ,UT, CO/ 2,000 year old remains in entrance pit in AB cave)

Celia Zimmerman, 1832 = subgenus of *Amara*
Celia muscula = *Amara m.*

Centrioptera Horn, 1870 (also put in Tenebrionidae) = *Amara* & *Cryptoglossa*

Chlaenius Bonelli, 1810 - Carabidae beetles in Subfamily Harpilinae, Tribe Chlaenini, Subtribe Chlaeniina (also put in Callistini) (51 species in US or Canada)

Chlaenius (*C.*) *aestivus* Say, 1823 (*C. cobaltinus* Dejean, 1826; *C. congener* LeConte, 1844) (eUS,Canada to AR, LA, OK? epigeal/ Tx? in FL,IL)

Chlaenius (*Chlaeniellus*) *brevilabris* b. (*Chlaenius* b. & *consimilis* LeConte, 1848; *C. texanellus* Casey) (eUS to SD,AR,TX,CO?,NM?,ON)/ Tp in cave in Crawford Co., MO)

Chlaenius *eurythropus* Germar, 1824 (*C. rufilabris* Dejean, 1826; *C. umbratarsis* & *oblongipennis* Casey, 1920) (eUS, Canada to SD, OK/ Tx or Ac in FL, TX)

Chlaenius (*Chalaenius*) *laticollis* Say, 1823 (*C. rufipes* Dejean, 1826; *C. brevicollis* LeConte, 1848; *C. brachyderus* Chaudoir, 1856) (NE to ON/ Tx in OK)

Chlaenius *punctulatus* (= *Acupalpus p.* Hatch, 1953?) (Pleistocene fossil in Port Kennedy C., Montgomery Co., PA)

Cicindela Linnaeus, 1758 (tiger beetles) Carabidae beetles in Subfamily Cicindelinae, Tribe Cincindelini (86 species in US, Canada)

Cicindela undet. sp. (7,000 to 2,500 years old in Neotoma woodrat nest in Big Bend Natl. Park, wTX)

Clivina Latreille, 1801 (seedcorn beetle) Carabidae beetles in Subfamily Carabinae (= Scaritinae), Tribe Scaritini (24 species in US, Canada)

Clivina undet. sp. (Tx in KY, TX; Ac in TN (Davidson Co.))

Colliurus De Geer, 1774 (*Casnonia* Dejean, 1821; *Odacanthella* Liebke, 1930, *Calocolliuris* L., 1938 - Carabidae beetles in Subfamily Harpilinae, Tribe Odacanthini (5 species in US or Canada)

Colliurus (*Cosnonia*) *pennsylvanica* (*Attelabus p.* Linnaeus, 1767) (E to ON, PQ/ prob. Tx in TX)

Cryptophagus - now in Cryptophagidae

Cychrus Fabricius, 1794 - Carabidae beetles in Subfamily Carabinae, Tribe Cychrini (3 species in US, Canada)

Cychrus *minor* (extinct?, valid species?) (Pleistocene fossil in Port Kennedy C., Montgomery Co., PA)

Cychrus *tuberculatus* Harris, 1839 (epigeal AK to OR & seID, e. to wWY/ Tx in 2 seAK caves & Vancouver Island, BC)

Cychrus *wheatleyi* (extinct?, valid species?) Pleistocene fossil in Port Kennedy C., Montgomery Co., PA)

Cyclotrachelus Chaudoir, 1838 (= *Evarthrus* LeConte, 1852; *Fortax* Motschulsky, 1866; *Ferestria* Leng, 1915; *Anaferonia*, *Megasteropus*, *Eumolops* Casey, 1918; *Cyclotrachelus* Chaudoir, 1838 ; *Evarthrus* LeConte, 1852; *Fortax* Motschulsky, 1866; *Ferestria* Leng, 1915; *Anaferonia*, *Megasteropus*, *Eumolops* Casey, 1918) Carabidae beetles in Subfamily Harpilinae, Tribe Pterostichini (43 species in US or Canada)

Cyclotrachelus (*Evarthrus*) *fuscatus* (*Evarthrus* f. Freitag, 1969) (Tx or Ac in 1 IL cave)

Cyclotrachelus (*Evarthrus*) *sodalis* (Feronia S. LeConte, 1848; *F. vagans*, *corax*, *colossus* L.1848; *E. fatuus* L.1852; *Eumolops sulcata* Casey, 1918; *Evarthrinus retractus* C., 1920; *E. inflatipennis* C.1924; *Evarthrus lodingi* Van Dyke, 1926) (epigean IA, KS, MO, NE, AL, TN, GA to ON/ Tx or Ac in 1 IL cave),

Cymindis Latreille, 1802 (= *Pinacodera* Schaum, 1857; *Planesus* Motschulsky, 1864) Carabidae beetles in Subfamily Harpilinae, Tribe Lebiini, Subtribe Cymindidina (also put in Platynini) (27 species in US or Canada)

Cymindis (*Pinacodera*) *arizonensis* Schaeffer, 1910 (*C. zuniana* Casey, 1913) (epigean AZ,CA,NM/ occasional Tx in CA/ 2,000 to 16,3000 yrs.BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM))

Cymindis (*P.*) *interior* Lindroth, 1969 (epigean NE,ON s. to CO,CA, w. to BC/ 100 to > 26,000 yrs.BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM)

Cymindis (*P.*) *aurora* (valid species?) (extinct? Pleistocene fossil in Port Kennedy C., Montgomery Co., PA)

Cymindis (*P.*) *laticollis* Say, 1830 (*C. villigera* Chaudoir, 1873) (epigean AZ?, AR, CO,NM, Ok, SD, TX,WY, MB? MD?/ Ac in Edwards Co., TX)

Cymindis (*P.*) *platicollis* (*Cymindis* p. Say, 1823) (100 to >26,000 yrs.BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM)

Cymindus (*P.*) *unicolor* Kirby, 1837 (2,000 year old remains in entrance pit in AB cave)

Darlingtonia Val., 1952 - Carabidae beetles in Subfamily Trechinae, Tribe Trichini (1 species in US or Canada) **Bibl.:** Kane, 1986a

Darlingtonia *kentuckensis* k. (= *D. k.* Val., 1952) (cave type locality cave in Pulaski Co. +McCreary, Wayne, Estill, Rockcastle, Jackson & Clinton Cos.(KY) & cave in Fentress Co.(TN); Cumberland Plateau of seKY and adjacent TN/ Tb) **Bibl.:** T. Marsh 1969; Norton, 1984; Sperka, 1974

Darlingtonia *kentuckensis lexingtoni* Val., 1952 (type locality cave in *Rockcastle Co.,KY/ Tb)

Darlingtonia *kentuckensis* undescr. ssp. (central Jackson Co.,KY/Tb)

Dicaelus Bonelli, 1813 (= *Liodicaelus* Casey, 1913; *Paradicaelus* Ball, 1841) Carabidae beetles in Subfamily Harpilinae, Tribe Licinini, Subtribe Dicaelina (also put in Panagaeini) (14 species in US or Canada)

Dicaelus *alutaceus* Mesa, 1916? (Pleistocene fossil in Port Kennedy C., Montgomery Co., PA)

Dicaelus *ambiguus* Laferte'-Senectere, 1841 (nomina nuda) (epigeal in IN/ Tp in Onondaga Co., Crawford Co., MO)

Dicaelus (*D.*) *crenatus* LeConte, 1853 (epigeal AR, KS, MO, OK, TX, AZ? FL? LA?/ Ac in Burnet Co., TX)

Discoderus LeConte, 1853 - Carabidae beetles in Subfamily Harpilinae, Tribe Harpalini, Subtribe Harpalina, Genus-group Selenophori (also put in Platynini) (18 species in US or Canada)

Discoderus undet. sp. (Tx in Uvalde Co., TX)

Discoderus *impotens* LeConte, 1858 (Holocene remains in woodrat nest in Grand Canyon, Coconino Co., AZ & *Neotoma* woodrat midden in Canyonlands, UT/ 2,00 to 15,500 yrs.BP in *Neotoma* woodrat nest in wTX (El Paso Co.) & 24,00 to 23,000 years old in Big Bend Natl.Park)

Discoderus (*D.*) *parallelus* Haldeman, 1843 (100 to 15,500 yrs.BP in *Neotoma* woodrat nest in wTX (El Paso Co.)

Dyschirius Bonelli, 1810 (= *Akephorus* LeConte, 1852; *Dyschiridius*, *Dyschiriodes* Jeannel, 1941) Carabidae beetles in Subfamily Carabinae (= Scaritinae), Tribe Scaritini (56 species in US, Canada)

Dyschirius undet. sp. or species (Tx in stream-bank detritus in Monroe & Carter Cos., KY)

Elaphropus Motschulsky, 1839 (*Barytachys* Chaudoir, 1868; *Tachyura* Motschulsky, 1839) Carabidae beetles in Subfamily Harpilinae, Tribe Bembidiini (31 species in US, Canada)

Elaphropus (*Tachyura*) *incurvus* (*Bembidion* i. Say, 1830; *Tachyura parallela* Casey, 1918 homo.; *Tachys rhodensis* Csiki, 1928; *Tachyura*, *Tachys* i.) (epigeal nNA s. to AL, CO, OR/ Tx or Ac in 1 IL cave)

Elaphropus (*Tachyura*) *ferrugineus* (= *Bembidium* f. Dejean, 1831; *Tachys ferrugineus*; *T. ovipennis* Chaudoir, 1868) (epigeal AL n.to CT, w. to TN, IL, IA/ Tp in GA, MO, TX (common, San Saba Co.), OK) **Bibl.:** Barr, 1964; Loding, 1945

Eurytrichus - see *Notiobia* & *Anisotarsus*

Evarthrus = *Cyclotrachelus*

Feronia honesta = *Gastrellarius* h.,

Feronia chalcites = *Poecilus* c.,

Feronia lachrymosus = *Pterostichus* l.,

Galerita Fabricius, 1801 - Carabidae beetles in Subfamily Harpilinae, Tribe Galeritini in Subfamily Harpilinae, Tribe Galaeritini (*Galaerita* also placed as subtribe of Zuphiini) (8 species in US, Canada)

Galerita (Progaleritina) janus Fabricius, 1792 = *Progaleritina j.*

Galerita undet. sp. of subg. *Progaleritina* (Tx in AR,OK)

Galerita undet. sp. (Ac in gypsum cave in Culberson Co., TX)

Gastrellarius Casey, 1918 - Carabidae beetles in Subfamily Harpilinae, Tribe Pterostichini (also put in Platynini) (3 species in US or Canada)

Gastrellarius *honestus* (= *Feronia h.* Say, 1823; *Pterostichus h.*) (Epigeal AL n.to NB, w. to TN, KY,IL/ Ac or Tx in sON)

Goniolophus = *Acupalpus*

Harpalus Latreille, 1802 - Carabidae beetles in Subfamily Harpilinae, Tribe Harpalini, Subtribe Harpalina, Genus-group Harpali (also put in Platynini) (97 species in US, Canada)

Harpalus (*Megapangus*) *caliginosus* (*Carabus c.* Fabricius, 1775) (epigeal sCanada to nw Mexico/ Ac in San Saba Co., TX)

Harpalus (*Cordoharpalus*) *fulgens* Csiki, 1931 (*H. nitidulus* Chaudori, 1843 (secondary homonym of *H.n.* (Stephens, 1828; *H.f.* C.1931 (replacement name for *H.n.*)) (eUS to AR, TX, IL, n.to ON/ Tp or Tx in Onondaga C., Crawford Co., MO/ 16-16.3 thousand yrs.BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM; 3,200-15,500 yrs.BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM)

Harpalus (*Pseudophonus*) *pennsylvanicus* (*Carabus p.* DeGeer, 1774; *H. longior* Kirby, 1837; *H. p. mormonicus* Casey, 1914; *H. immixtus* Casey, 1924) (NA, Canada (BC, MB, ON, PQ, NB, NS, PE epigeal/ Tx? in WA Co., IN; Ac in GA (Bartow Co.))

Harpalus (*H.*) sp. cf. *spadiceus* Dejean, 1829 (*H. comis* Haldeman; *H. carolinae* Schaeffer, 1910) (epigeal GA n.to PQ, ON, w.to OH, KY, TN/ Ac in Williamson Co., TX; 100 to 19,700 yrs.BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM)

Helluomorphoides Ball, 1951 - Carabidae beetles in Subfamily Harpilinae, Tribe Helluonini, Subtribe Omphrina (8 species in US, Canada)

Helluomorphoides *ferrugineus* (*Helluomorpha f.* LeConte, 1853; *H. languida* Casey, 1913)) (VA (NY?) to GA (FL?()), w. to SW, KS/ Tx in Edwards, Williamson Cos., TX)

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Helluomorphoides *texanus* LeConte, 1853 (12,000 to 15,500 yrs.BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM)

Helluomorphoides undet. sp. (Ac or Tx in Edwards Co., TX;)

Horologion Valentine, 1932a - Carabidae beetles in Subfamily Harpilinae, Tribe Bembidiini, Subtribe Anillina (one species in US)

Horologion *speokoites* Val., 1932a (*type locality cave in Greenbrier Co., WV/Tb or Eb?/WV T&E S1 rank & global G1 rank; Federal Species of Concern/A. Cave Ground Beetle)

Lebia Latreille, 1802 - Carabidae beetles in Subfamily Harpilinae, Tribe Lebiini, Subtribe Lebiina (= *Loxopeza* Chaudoir, 1870; *Metabola*, *Dianchomena*, *Aphelogenia* Chaudoir, 1871) (51 species in US, Canada)

Lebia (*Polycheloma*) *lecontei* Madge 1967 (epigean in TX & AZ/ 7,300 to 17,800 yrs.BP in *Neotoma* woodrat nest in wTX (El Paso Co.) & ,120+- 500 years old in scNM *Neotoma* woodrat nest)

Lebia undet. sp. (6,400 to 6,800 yrs.BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM)

Mecyclothorax Sharp, 1903 Carabidae beetles (also put in Psydritae, Tribe Trepidopterini)

Mecyclothorax undet. sp. (Tx? in HI)

Metabletus americanus = *Syntomus a.*

Mexisphodrus Barr, 1965 - Carabidae beetles in Subfamily Harpilinae, Tribe Platynini or Prosphodrini. **Bibl.:** Barr 1982

Mexisphodrus *valverdensis* Barr, 1982 (type cave locality? & one other cave in Val Verde Co., TX/ Tp)

Microtrechus - see *Trechus*

Neaphaenops Jeannel, 1920 (see *Pseudanotalmus*) - Carabidae beetles in Subfamily Harpilinae, Tribe Trechini (1 US species). **Bibl.:** Barr, 1979a; Kane, 1986a; Packard, 1874; Griffith, 1986-8, 1990-1

Neaphaenops *henroti* (*P.h.* Jeannel, 1949, *Batrisodes h.*?) (type locality cave in Greenbrier Co. (WV) + other caves in KY?/ Tb/ semispecies with *N.m.*)

Neaphaenops *tellkampfi* (Erichson, 1844) (Tb from eastern part of western Pennyroyal Plateau of KY from Ohio River s. to TN border)

Neaphaenops *tellkampfi henroti* Jeannel, 1949 (type locality cave in Meade, Co. + other caves in Breckinridge, Hart, Hardin Cos., KY/ Tb) **Bibl.:** D. Griffith; Kane 1981

Neaphaenops *tellkampfi meridionalis* Barr, 1959 (= *N.m.*) (type locality cave in Simpson, Co./ other caves in Simpson, Warren, Logan & Allen Cos., KY/ Tb semispecies with *N.h.* or *N.t.h.*) **Bibl.:** D. Griffith; Kane 1981

Neaphaenops *tellkampfi t.* Barr, 1959 (*N.t.* & *Anopthalmus t.* Erickson (in Tellkamp, 1844) ; *P.t.*

Jeannel, 1928) J.1949 (type locality cave in Mammoth C., Edmonson Co./ other caves in Allen, Barren, Edmonson, Hardin, Hart, Jefferson, Jennings, Montgomery, Warren, Meade & Simpson Cos., KY/ Tb/ G3T3)

Neapphaenops tellkampfi t. **Bibl.:** Barr, 1967; Brunner & Kane, 1981; Caccone, 1985; Ghaffar, 1985; Ghaffar, et al, 1984; Giuseffi, Kane & Duggley, 1978; Griffith, 1988-a, 1990a; Kane, 1981; Kane & Brunner, 1986; Kane & Poulson, 1975, 1976, 1984; Kane & Ryan, 1983; Larsen, Booth & Perkes, 1984; Norton, 1984; N., Kane & Poulson, 1975; Martin, 1977; Poulson, Griffith & Schmidt, 1992; Studier, 1996; Turanchik & Kane, 1979; Van Zant & Poulson, 1975;

Neapphaenops tellkampfi viator Barr, 1979 (type locality cave in Green Co., other caves in Green, Robertson, Hart & Metcalfe Cos., KY/ Tb) **Bibl.:** D. Griffith; Kane, 1981

Nebria Latreille, 1806 - Carabidae beetles in Subfamily Carabinae, Tribe Nebriniini (also put in Subfamily Nebriinae) (43 species in US, Canada, mostly along margins of cold streams)

Nebria kincaidi k. Schwarz, 1900 (Tx or Ac in Vancouver Island, BC)

Nebria (*Boreonebria*) *gyllenhali* Schonherr, 1806 (epigean ON to OR, AK, s. to NY/ 2,000 year old remains in entrance pit in AB cave)

Nebria undet. sp. (Tx or Ac in MN)

Nebria suturalis Leconte, 1850 (*N. longula* L., 1878; *N. nimbose* Casey) (AB, CO, LB, MI?, NF?, NH, NY, ON, PQ, VT epigean/ Tx in VT)

Nelsonites Valentine, 1952 - Carabidae beetles in Subfamily Harpilinae, Tribe Trechini (also put in Bembidiini) (2-3 species in US, Canada)

Nelsonites jonesi j. (*N.j.* Val., 1952) (type locality cave in Pulaski Co. +7 other caves in Pulaski Co. & Rockcastle Cos., seKY/ Tb/ G1G2T1T2?)

Nelsonites undescr. sp.#1-3? (KY &/or TN/Tb)

Nelsonites walteri Val., 1952 (type locality cave in Putnam Co./ Putnam, Overton, Fentress, White & Van Buren Cos., TN/ Tb/ S3G3)

Notiobia Perty, 1830 (*Anisotarsus* Chaudoir, 1837; *Eurytrichus* LeConte, 1848; *Stilbolidus* Casey, 1914; *Notiobis*) Carabidae beetles in Subfamily Harpilinae, Subtribe Anisodactylina, Genus-group Notiobii (also put in Tribe Platynini) (7 species in US, Canada) **Bibl.:** Noonan 1971

Notiobia (*Notiobia*) undet. sp. (Tp in Terrell, Uvalde, Val Verde Cos., TX)

Notiophilus Dumeril, 1806 - Carabidae beetles in Subfamily Carabinae, Tribe Notiophilini (also put in Subfamily Nebriinae) (15 species in US, Canada)

Notiophilus *simulator* Fall, 1906 (epigean AB, BC, CO, ID, MT, OR, UT, WY, AK?, TX?/ 2,000 year old remains in entrance pit in AB cave)

Omophron Latreille, 1802 (*Homophron*, *Paromophron*, *Istor*, *Prosecon*, *Semebnov*, 1922)
Carabidae beetles in Subfamily Omophroninae, Tribe Omophronini (11 species in US, Canada)

Omophron *americanum* Dejean, 1831 (*O. saii* Kirby, 1837; *O. lacustre* & *texanum* Casey, 1897; *O. fontinale* & *iridescent* C.1913; *O. lengi* & *illustre* C.1920; *Homophron tanneri* & *t. proximum* Chandler, 1841) (US, Canada except Far West/ hunch-backed beetle/ Tx or Ac in KY (Carter Co.))

Omus Eschscholtz, 1813 (= *Leptomus*, *Megomus* Casey, 1914) Carabidae beetles in Subfamily Cicindelinae, Tribe Omini (also put in Megacephalini, Subtribe Omina) (5-15 species in US, Canada)

Omus *californicus* c. E.1829 (epigean CA, OR/Tx or Ac in CA)

Omus *dejeanii* Reiche, 1838 (epigean BC, OR, WA, AK, CA, MT?, UT? Epigean/ Ac or Tx in 1 OK cave)

Paratachys Casey, 1918 - Carabidae beetles in Subfamily Harpilinae, Tribe Bembidiini (20 species in US, Canada)

Paratachys *oblitus* (*Tachys o.*, *cuneatus*, *appalachius*, *iowensis*, *gentilis*, *obliquus* Casey, 1918) (NE to ON, PQ/ Tp or Tx in Carter Co., KY)

Paratachys *proximus* (= *Bembidium p.* Say, 1823; *Tachys nubifer* & *proximus*) Casey, 1918) (eUS, Canada (PQ, ON) to SD, AR, MO/ Tp in Mex., seNM, cTX)

Paratachys undet. sp. (Tp in GA (Brady Co.))

Pasimachus Bonelli, 1813 - Carabidae beetles in Subfamily Caribinae (or Scaritinae), Tribe Scaritini (10 species in US, Canada)

Pasimachus (*P.*) *californicus* Chaudoir, 1850 (*P. validus* LeConte, 1858; *P. corpulentus* LeConte, 1858; *P. c. transversus*, *P. acomanus*, *P. obesus* & *P. cephaotes* Casey, 1913) (AZ to AR, CO, OK, UT/ Tx in NM, TX)

Pasimachus undet. sp. (Tx in TX)

Patrobus Dejean, 1821 - Carabidae beetles in Subfamily Trechinae, Tribe Patrobini (6 species in US, Canada)

Patrobus (*Neopatrobis*) *longicornis* (*Feronia l.* Say, 1823; *P. americanus* Dejean) (nAK, BC to Newfoundland, s. to nAB; most US, Canada, except CA, LB, TX, YK/ Tx in AL, IL, IN, KY, MO, VA)

Pinacodera Schaum, 1857 = subgenus of *Cymindis*
Platynidius Casey, 1920 (also put in Staphylinidae) = *Platynus*

Platynus Bonelli, 1810 (= *Limodromus* Motschulsky; *Batenus* M., 1865; *Platynidius*, *Paranchomenus* Casey, 1920; *Microplatynus* Barr, 1982; *Glyptolenopsis* Perrault, 1991; *Agonum* (in part) Lindroth, 1966) Carabidae beetles in Subfamily Harpilinae, Tribe Platynini (19 species in US or Canada)

Platynus (*P.*) *bruneomarginatus* (*Achomenus b.* Mannerheim, 1843; *A. rugiceps* M., 1843; *A. marginatus* Menetries, 1843 (Homo.); *P. cinctellus* & *bicolor* LeConte, 1854; *P. tenebricosus* & *bicoloratus* Gemminger & Harold, 1868) (epigeal BC, ID, OR, WA, AZ?, NM?, NV?/ Tx or Ac in Calaveras & Tuolumne Cos., CA)

Platynus *cervicalis* (*Platynidius c.* Casey, 1920) (Tx or Ac in KY (1c.))

Platynus *jonesi* (Rhadine j. Barr, 1960; *Agonum j.*) (type locality cave in Conecuh Co., AL +nFL/ Tb or Tp/ G1?)

Platynus *parmarginatus* Hamilton, 1893 (= *P. cincticollis p.*) (type locality cave in Newton Co., AR/ epigeal in E, e. Canada to IA, SC/ Tx or Tp in AR, IL, KY, MO, TN; Tp in GA (Walker Co.))

Platynus jonesi = *Rhadine j.*
Platynus marginatus = *Agonum bicolor*

Platynus (*Microplatynus*) *pecki* Barr, 1982 (Tp? in NM)

Platynus *punctiformis* Say, 1823 (= *Agonum (Micragonum) p.*) (E/Tx in TN (Smith Co.), TX; Tx or Ac in IN?)

Platynus reflexus = *P. tenuicollis*

Platynus undescr. sp. (Tp in 6 MO cos.)

Platynus undet. sp. (Tx in AR; Tx or Ac in MN)

Platynus (*P.*) *tenuicollis* (*Anchomenus marginatus* & *t.* LeConte, 1848; *Limodromus acuticollis* Motschulsky, 1865; *Colpodes approximatus* Chaudoir, 1879; *P. reflexus* LeConte, 1879; *A. distinguendus* Casey, 1920; *A. pennsylvanicus* T. LeConte, 1863; *A. reflexion*; *Agonum t.*) (E, MW to SD, CA?, CO?/ Tp in AL (Jackson Co.), AR, IL, IN (Lawrence Co.), KY (Mammoth Cave), MO, OK, sON, TN, TX, VA, WV; Tx in GA; Tp or Tx in IN (Crawford, Harrison Co. (S3/G4)) Lieberr 1988

Poecilus Bonelli, 1810 (= *Feronia* Latreille, 1817; *Derus* Motschulsky, 1844; *Derulus* Tschitscherine, 1896; *Leconteus*, *Americobius* Lutshnik, 1915) Carabidae beetles in Subfamily Harpilinae, Tribe Pterostichini (also put in Platynini) (13 species in US or Canada)

Poecilus (*P.*) *chalcites* (*Feronia c.* Say, 1823; *Pterostichus sayi*; *P. micrans* Chaudoir, 1843; *Feronia s.* Brulle, 1835) (NE to ON, PQ/ Tx or Ac in IN)

Progaleritina = subgenus. of *Galerita*

Pseudanophthalmus Jeannel, 1920 (*Aphanotrechus* Barr, 1960) Carabidae beetles in Subfamily Harpilinae, Tribe Trechini (also put in Bembidiini) (89 species in US, Canada)

Bibl.: Barr, 1960b, 1962, 1965, 1979a, 1980, 1981, 1986,, Krekeler, 1958-9, 1961, 1973, Badaracca, 1986; Buhlmann, 1992a; Horn, 1883a; Kane, 1986a; Krekeler, 1958a; McKinney 1974; Valentine, 1932; Van Zant & Poulson, 1975;

Pseudanophthalmus *abditus* (*P.horni a.* Krekeler, 1973) (type locality cave & two others in Woodford Co. + cave or caves in Jessamine Co.,KY/ Tb/ G1?/ KY, VA T&E/ concealed cave beetle)

Pseudanophthalmus *acherontis* (*P. tiresias acherontis* Barr, 1959) Barr, 1980 (*type locality cave in Rutherford Co.,TN/Tb/State T&E/ Ec. Cave Beetle/ S1S2 G1G2)

Pseudanophthalmus *alabamae* Val., 1932 (*type locality cave in De Kalb Co.,AL) Barr, 1965); Jeannel, 1949

Pseudanophthalmus *alladini* (= *P. loedingi a.* Val., 1945) (type locality cave in Madison Co./ caves of Flint & Paint Rock R. tributaries,n. of TN R. in Madison & Jackson Cos.,AL/Tb/G3)

Pseudanophthalmus *andrewsi* Barr, 1981 (type locality cave + 7 other caves in Jackson Co., KY/ Tb)

Pseudanophthalmus angulatus LeConte, 1863 = *P. menetriesii*

Pseudanophthalmus *apicalis* Barr, 1981 (*type locality cave in Wayne Co.,KY/Tb)
Pseudanophthalmus aquaticus Val., 1945 = *P. loedingi a.*

Pseudanophthalmus *assimilis* Barr, 1981a (type locality cave & one other caves in De Kalb Co.,nAL/ Tb/ G1G2)

Pseudanophthalmus *audax* Horn, 1883 (type locality cave, Mammoth Cave and one other cave in Edmonson Co., and one cave in Hart Co., all in KY/ upper hypogean?/ KY T&E G3 or G1/ Concealed Cave Beetle) Barr 1959b

Pseudanophthalmus *avernus* (= *P. hubbardi a.* Valentine, 1945) Barr, 1965 (*Endless C.,Rockingham Co.,VA/Tb/VA T&E S1 rank & Species of Concern; global G1 rank/Avernus Cave Beetle)

Pseudanophthalmus *barberi* (= *P. eremita b.* Jeannel, 1931) J.1928 (cave type locality in Meade Co. & one other cave in Hart Co., all in KY/ Tb/ G1G2) Badaracca, 1986

Pseudanophthalmus *barri* K.1973 (cave type locality & one other cave Clark Co.,IN/ IN T&E

G1/ Tb)

Pseudanophthalmus bathycola Valentine, 1932 = *P. pusio*

Pseudanophthalmus *beakleyi* (= *P. robustus* b. Valentine, 1937; *P.(r.) lupus* Barr, 1959) Barr, 1980 (cave type locality in Pickett Co./ Pickett, Overton, Fentress Cos.(TN) & s.Clinton & s.Wayne Cos.(KY)/Tb/G3G4)

Pseudanophthalmus *bendermani* (*P.tiresias* b. Barr, 1959) Barr, 1980 (*cave type locality in Maury Co.,TN/ Tb/ State T&E/ Be. Cave Beetle/ S1S2 G1G2)

Pseudanophthalmus *blatchleyi* (*P.tenuis* b. Barr, 1960) (cave type locality in *Monroe Co.,IN/ Tb/ G3T1T2)

Pseudanophthalmus bloomi = *P. tenuis* t.

Pseudanophthalmus boonensis Krekeler, 1958 = *P. shilohensis* b.

Pseudanophthalmus *caecus* (*P. horni* c. Krekeler, 1973) (*?cave type locality in Woodford Co.,KY/ State T&E G3T3 or G1/ Cl. Cave Beetle)

Pseudanophthalmus *calcareus* Barr, 1981 (*cave type locality in Whitley Co.,KY/Tb/State T&E/Limestone Cave Beetle)

Pseudanophthalmus *catherinae* (= *P. tiresias* c. Barr, 1959) Barr, 1980 (*cave type locality in Marshall Co.,TN/Tb/State T&E/Catherine's Cave Beetle/ S1S2 G1G2)

Pseudanophthalmus *catoryctos* Krekeler, 1973 (*cave type locality in Madison Co.,KY/Tb/ State T&E/Lesser Adams Cave Beetle)

Pseudanophthalmus *cerberus cerberus* Barr, 1985 (= *P. completus* B., 1985) (cave type locality in Monroe Co. +nw. to se.Barren & sw.Metcalf Cos., ne to s.Adair & nw.Cumberland Cos.,scKY +Clay & Jackson Cos.,TN/G34T3T4/Tb)

Pseudanophthalmus *cerberus completus* Barr, 1985 (cave type locality in *cBarren Co., scKY/ G34T3T2/Tb)

Pseudanophthalmus *chthonius* K.1973 (cave type locality & one other cave in Jefferson Co./ one cave in Jennings Co. , 2 caves in Clark Co.), & many other caves along OH R., all in IN/Tb/G3)

Pseudanophthalmus *ciliaris* c. (= *P.c.* Valentine, 1937; = *P. c. colemanensis* & *loganensis* Barr, 1959) Barr, 1979 (cave type locality in Montgomery Co.), +Robertson & e.Christian Cos.,TN, polytypic in KY/ Tb)

Pseudanophthalmus *ciliaris colemanensis* Barr, 1959 (*cave type locality in Montgomery Co.,TN/TN State T&E),

Pseudanophthalmus ciliaris loganensis (=P.l.)
Pseudanophthalmus ciliaris orlindae (=P.o.)
Pseudanophthalmus colemanensis Barr, 1959 = *P. ciliaris colemanensis*
Pseudanophthalmus completus Barr, 1985 = *P. cerberus completus*

Pseudanophthalmus *cnephusus* Krekeler, 1973 (*cave type locality in Larue Co.,KY/Tb/ G1)
Pseudanophthalmus *conditus* Krekeler, 1973 (*cave type locality in Boyle Co.,KY/Tb)
Pseudanophthalmus constrictus Val., 1932 = *P. fuscus constrictus*

Pseudanophthalmus *cordicollis* Barr, 1981 (*cave type locality near edge of Allegheny Front, Wise Co.,VA/Tb)

Pseudanophthalmus *cumberlandus* Val., 1937 (***?cave type locality & one other cave in Smith Co. & one cave in Macon Co., all in TN/ Tb/ S3 G3 or G1)

Pseudanophthalmus *darlingtoni d.* Barr, 1985 (type locality cave in Adair Co. +Green & Metcalfe Cos.,scKY/Tb/G3T3)

Pseudanophthalmus *darlingtoni persimilis* Barr, 1985 (= *Ameroduvalius p.?*) (type locality cave in Green Co. +Hart & Rockcastle? Cos.,scKY/Tb/G3T3)

Pseudanophthalmus *deceptivus* Barr, 1981 (*type locality cave in Lee Co.,VA/Tb/Lee Co. cave beetle/State T&E)

Pseudanophthalmus *delicatus* (=P. *hirsutus d.* Val., 1932) Barr, 1981 (*type locality cave in Lee Co., VA/ Tb)

Pseudanophthalmus *desertus* (=P.d.d. Krekeler, 1973) Barr, 1985 (type locality cave in Clark Co., one cave each in Henry Co., Scott Co. & Owen Co., all in KY/Tb/ G1)

Pseudanophthalmus desertus major = *P.m.*

Pseudanophthalmus *digitus* Val., 1932 (type locality cave in Hamilton Co.,TN +Byers & 2 caves in Dade Co.,GA/G3G4)

Pseudanophthalmus *distinguens* Val., 1948 (*loedingi d.* Val.1945) (type locality cave & 3 other caves Morgan Co.,AL/Tb/G1G2) Jeannel, 1949

Pseudanophthalmus donaldsoni Krekeler, 1958 = *P. youngi d.*,

Pseudanophthalmus *egberti* Barr, 1965 (type locality cave & one other cave in New River Valley,Giles Co.,VA/ Tb/ VA T&E S1 rank & Species of Concern; global G1 rank/New River Valley Cave Beetle)

Pseudanophthalmus *elevatus* (*P.grandis e.* Valentine, 1932) (*Organ C.(near Ronceverte),

Greenbrier Co., WV/ Tb/WV T&E S1; global G3T2)

Pseudanophthalmus elongatus Krekeler, 1973 (type locality cave & 3 other caves in Garrard Co. + caves in Mercer Co., KY/ Tb/ G3)

Pseudanophthalmus emersoni Krekeler, 1958 (*type locality cave in Lawrence Co., IN)

Pseudanophthalmus engelhardti (*Anophthalmus e.* Barber, 1928) Jeannel, 1928 (*type locality cave in Claiborne Co., TN/Tb/TN State T&E/Englehart's Cave Beetle/ S1S2 G1G2). Bibl.: Barr 1981b

Pseudanophthalmus eremita (*A.e. & tenuis* Horn, 1871) Jeannel, 1928 (Wyandotte C., Crawford Co. + 3 other caves in Harrison Co., *Crawford Upland area of lower Blue River basin, IN/ Tb/G1 - IN T&E)

Pseudanophthalmus eureka Barr, 1981 (type locality cave & one other cave in McCreary Co. & 2 caves in Wayne Co., KY/ Tb)

Pseudanophthalmus exiguus e. Krekeler, 1973 (type locality cave in Estill Co. + caves in Lee & Powell Cos., KY/ Tb/ G3T3)

Pseudanophthalmus exiguus furtivus Krekeler, 1973 (type locality cave in *Estill Co., KY/State T&E, G3T1T2)

Pseudanophthalmus exoticus Krekeler, 1973 (*type locality cave in Estill Co., KY/Tb/State T&E or H)

Pseudanophthalmus farrelli (= *P. robustus* f. Barr, 1959) (type locality cave in *s. De Kalb Co., AL/Tb/ / S1S2 G1G2)

Pseudanophthalmus fastigatus Barr, 1981 (*type locality cave in Walker Co., GA/ tapered cave beetle/ Tb/ S1? G1G2)

Pseudanophthalmus fluviatilis (*P. loedingi* f. Val., 1948) (type locality cave & other caves of Newsome Sinks, Morgan Co. + Marshall Co., AL/Tb G3) Jeannel, 1949

Pseudanophthalmus fowlerae Barr, 1980 (*type locality cave in Clay Co., TN/Tb/TN State T&E/Fowler's Cave Beetle/ S1S2 G1G2)

Pseudanophthalmus frigidus Barr, 1981 (*type locality cave in Bell Co., KY/Tb/State T&E/Icebox Cave Beetle)

Pseudanophthalmus fulleri Val., 1932 (*P. loedingi* f. Val., 1948) (type locality cave + other caves of Lookout Valley, Hamilton Co. (TN) + Dade, Hamilton & Walker Cos. (GA)/ Tb/ G3G4) Barr 1965, 1981a; Buhlamann 2000; Jeannel 1949

Pseudanophthalmus furtivus Krekeler, 1973 = *P. exiguus* f.

Pseudanophthalmus fuscus f. Val., 1932 (type locality cave & 3 other caves in Greenbrier Co., 2 caves in Pocohontas Co., & 2 caves in Monroe Co., all WV/Tb/WV T&E S2; global G2G3),

Pseudanophthalmus fuscus constrictus Val., 1932 (Organ C.,*s Greenbrier Co.,WV/Tb/WV T&E S2; global G3)

Pseudanophthalmus fuscus subaequalis = *P.s.*

Pseudanophthalmus garmani Jeannel, 1949 = *P. horni*

Pseudanophthalmus georgiae Barr, 1981 (type locality cave in Chattooga Co. & 3 caves in Walker Co., both GA/ Georgian cave beetle/ Tb/ / S1? G1G2)

Pseudanophthalmus globiceps Barr, 1985 (*type locality cave in Hart Co.,scKY/Tb/State T&E)

Pseudanophthalmus gracilis Val., 1932 (type locality cave in Giles Co. & one other cave in Craig Co., both VA/ Tb)

Pseudanophthalmus grandis elevatus = *P.e.*

Pseudanophthalmus grandis Val.1931 (=P.g.g. Val.1932) (type locality cave & >5 other caves in Greenbrier Co., 3 caves in Pocohontas Co. & 2-3 caves in Monroe Co., allWV/ Tb/ WV T&E S1; global G3T3)

Pseudanophthalmus grandis orthosulcatus = *P.o.*

Pseudanophthalmus grandis undescr. ssp. (Tb in WV/ S1G3T?)

Pseudanophthalmus hadenoecus Barr, 1965 (*type locality cave in Pendleton Co.,WV/Tb/WV T&E S1; global G1; Federal Species of Concern/Timber Ridge Cave Beetle)

Pseudanophthalmus hesperus Barr, 1959 (*type locality cave in Perry Co.,TN/ Tb/ / S1S2 G1G2)

Pseudanophthalmus higinbothami Val., 1931 (type locality cave & > 4 other caves (n.Greenbrier Co.) & 3 caves in Pocahontas Co., all WV/ Tb/ WV T&E S2; global G2G3)

Pseudanophthalmus hirsutus (=P.h.h. Val., 1931) Barr, 1981 (*type locality cave at Cumberland Gap),Lee Co.,VA & Claiborne Co.,TN/ Tb/ VA T&E S1 rank & Species of Concern; global G1 rank; TN State T&E/Lee County Cave Beetle)

Pseudanophthalmus h. delicatus = *P.d.*

Pseudanophthalmus hoffmani Barr, 1965 (type locality cave & 2 other caves in Smyth Co. + <3 caves in Bland Co., both VA/Tb/VA T&E S1 rank & Species of Concern; global G1G2)

rank/Hoffman's Cave Beetle)

Pseudanophthalmus *holsingeri* Barr, 1965 (*type locality cave in Lee Co.,VA/Holsinger's Cave Beetle/ Federal Candidate T&E, priority 8/Tb) Buhlmann, 1992

Pseudanophthalmus horni abditus =*P.a.*

Pseudanophthalmus *horni* (= *Anophthalmus h.* Garman, 1892; *P. minor* & (*h.*) *garmani* Jeannel, 1949; *P.abditus*, *caecus* & *h.h.* Krekeler, 1973) Jeannel, 1928 (type locality cave & quarry fissures in Fayette Co. + caves in Scott Co.,KY/ Tb/ State T&E G3T3) Krekeler, 1972

Pseudanophthalmus horni caecus = *P.c.*

Pseudanophthalmus horni abditus =*P.a.*

Pseudanophthalmus *hortulanus* Barr, 1965 (*type locality cave in Tazewell Co.,VA/Tb//VA T&E S1 rank & Species of Concern; global G1 rank/Burke's Garden Cave Beetle)

Pseudanophthalmus *hubbardi* (*A.b.* Barber, 1928; *A.h.h.* Jeannel, 1931 *A.tenuis* Horn) J., 1928 (*Luray C.,VA/Tb/VA T&E S1 rank & Species of Concern; global G1 rank/Hubbard's Cave Beetle)

Pseudanophthalmus hubbardi avernus = *P. a.*

Pseudanophthalmus hubbardi limicola = *P. l.*

Pseudanophthalmus hubbardi parvicollis = *P. h.*

Pseudanophthalmus *hubrichti* Valentine, 1948 (*type locality cave in Russell Co.,VA/Tb/VA T&E S1 rank & Species of Concern; global G1 rank) Buhlmann, 1992

Pseudanophthalmus *humeralis* (*P.loedingi* h. Jeannel, 1949, *P.l.brevis* Val.1945, *P.h.b* Val.1932) Valentine, 1931 (type locality cave in Hamilton Co., cave in Grundy Co., 2 caves in Franklin Co., all TN +n.AL?/Tb/or semispecies/G3)

Pseudanophthalmus *hypertrichosis* Val., 1932 (type locality cave in Pocahontas Co. +Greenbrier & Randolph Cos.,sWV/Tb/WV T&E S3; global G3)

Pseudanophthalmus *hypolithos* Barr, 1981 (type locality cave in Pike Co.,KY + cave in Campbell Co., TN/ Tb/ TN State T&E/Ashcamp Cave Beetle)

Pseudanophthalmus *illinoisensis* Barr & Peck, 1966 (*type locality cave in Hardin Co.,IL/Tb)

Pseudanophthalmus *inexpectatus i.* (= *P.i.* Barr, 1959) Krekeler, 1973 (type locality cave in White or Mammoth Edmonson Co.,KY/Tb/State T&E G3T1T2/Surprising Cave Beetle)

Pseudanophthalmus *inexpectatus orientalis* Krekeler, 1973 (type locality cave in Green Co. & one cave in Taylor Co., both KY/ Tb/ G3T3)

Pseudanophthalmus *inquisitor* Barr, 1980 (*type locality cave in Clay Co.,TN/ Tb/ S1S2 G1G2)

Pseudanophthalmus *insularis* (*P.tiresias* i. Barr, 1959) Barr, 1980 (*type locality cave in Davidson Co.,TN/ Tb/ TN State T&E/ Ba. Sta. Cave Beetle/ S1S2 G1G2)

Pseudanophthalmus *intermedius* (*Neaphaenops* i. Val.1931) Val., 1932 ** (type locality cave and one other cave in Grundy Co.,TN/ Tb)

Pseudanophthalmus *intersectus* Barr, 1965 (*type locality cave in Bath Co.,VA/Tb/VA T&E S1 rank & Species of Concern; global G1 rank/ Cro. Cave Beetle)

Pseudanophthalmus jeanneli Krekeler, 1958 = *P. tenuis* j.

Pseudanophthalmus *jonesi* Val., 1945 (type locality cave in Grassy Cove, Cumberland Co.,TN/Tb/TN State T&E/Grassy Cove Cave Beetle/ S1S2 G1G2)

Pseudanophthalmus *krameri* Krekeler, 1973 (*type locality cave in Adams Co.,OH/extinct? Tb) Hobbs III, 1997)

Pseudanophthalmus *kekeleri* Barr, 1965 (*type locality cave (destroyed by quarry) in Randolph Co.,WV/ Tb/ WV T&E SH; global G1; Federal Species of Concern/ extinct?)

Pseudanophthalmus *lallemani* Jeannel, 1949 (*type locality cave in TNC G.D.C. Preserve, Greenbrier Co.,WV/Tb/WV T&E S1; global G1; Federal Sp. of Concern/ lalleman's cave beetle)

Pseudanophthalmus *leona* Barr, 1960 (*type locality cave in Hoosier Natl. Forest, Lawrence Co.,IN/Tb/IN T&E)

Pseudanophthalmus *limicola* (*P.hubbardi* ssp. l. Jeannel, 1931) Valentine,1932 (type locality cave & 2 other caves in Shenandoah Co.,VA/Tb//VA T&E S1 rank & Species of Concern; global G1 rank/Mud-dwelling Cave Beetle)

Pseudanophthalmus loedingi aquaticus Val., 1945 (*type locality cave in Morgan Co.,AL/ Tb)
Pseudanophthalmus loedingi aladdini = *P.a.*

Pseudanophthalmus loedingi distinguens = *P.d.*

Pseudanophthalmus loedingi fluviatilis = *P.f.*

Pseudanophthalmus loedingi humeralis = *P.h.*

Pseudanophthalmus *loedingi* (= *P.l.l.* Val., 1931) (type locality cave in *nwMadison Co.,AL/Tb/or semispecies)

Pseudanophthalmus loedingi meridionalis = *P.m.*

Pseudanophthalmus loedingi profundus = *P.p.*

Pseudanophthalmus *loganensis* (*P.ciliaris* l. Barr, 1959) Barr, 1979 (type locality cave in Logan Co.,+other caves of upper Red River Valley,KY (Warren & Simpson Cos.)+Robertson & Sumner Cos., TN/ Tb/S1 G1G2)

Pseudanophthalmus *longiceps* Barr, 1981 (type locality cave in Lee Co.,VA & one cave in Hancock Co.,TN/Tb/VA T&E S1 rank & Species of Concern; global G1 rank; TN State T&E/Long-headed Cave Beetle)

Pseudanophthalmus longicollis Jeannel, 1949 = *P. tenuis* l.

Pseudanophthalmus *macradei* Val., 1948 (Cumberland C.,*e.Warren Co.,TN/ S1S2 G1G2)

Pseudanophthalmus *major* (= *P.desertus* m. Krekeler, 1973) Barr, 1985 (*type locality cave in Harrison Co., KY/ Tb/ KY T&E/G3T1T2)

Pseudanophthalmus *masoni* Barr, 1981 (type locality cave + 6 other caves in Wayne Co.,KY)

Pseudanophthalmus mayfieldensis = *P. shilohensis* m.

Pseudanophthalmus megosteus Barr, 1959 = *P. robustus*

Pseudanophthalmus *menetriesi* m. (*A.m., striatus & ventricosus* Motschoulsky, 1862; *A. angulatus* LeConte, 1863; *A. interstitialis* Hubbard, 1880; *P.m.* Jeannel, 1928) Barr, 1985 (Mammoth & four other caves in *?Edmonson Co, KY/Tb G3T1T2) Barr 1967; Kane & Ryan 1983

Pseudanophthalmus *menetriesi campestris* Barr, 1985 (type locality cave & 2 other caves in Barren Co., to Hart Co., KY & 2 caves in Warren Co., all TN/ Tb)

Pseudanophthalmus *meridionalis* Val.1945 (*P. loedingi* m.) (type locality cave in *Marshall Co.,AL)

Pseudanophthalmus minor Jeannel, 1949 = *P. horni*

Pseudanophthalmus *montanus* Barr, 1965 (type locality cave & two other caves in *Tucker Co.,WV/Tb/WV T&E S1; global G1; Federal Species of Concern/Dry Fork Valley Cave Beetle)

Pseudanophthalmus morrisoni = *P. tenuis* m.

Pseudanophthalmus neglectus Jeannel, 1949 = *P. robustus*

Pseudanophthalmus *nelsoni* Barr, 1965 (*?*type locality & 1 other cave (or undescr. sp.), Alleghany Co.,VA/ Tb/ federal species of concern) Buhlmann 1992

Pseudanophthalmus *nickajackensis* Barr, 1981a (Nickajack C.(now flooded),Marion Co.(TN), +adjacent Jackson Co.,AL/Tb/TN State T&E, S1 G3G4/Nickajack Cave Beetle),

Pseudanophthalmus *nortoni* Barr, 1981 (*type locality cave in Rhea Co.,TN/Tb/ State T&E/

Norton's Cave Beetle/ S1S2 G1G2)

Pseudanophthalmus *occidentalis* (*P.tiresias* o. Barr, 1959) Barr, 1980 (type locality cave in Lewis Co.) & one cave in Hickman Co., both TN/ Tb/ TN State T&E/ S2 G1G2/ western cave beetle)

Pseudanophthalmus *ohioensis* Krekeler, 1973 (*type locality cave in Adams Co.,OH/Tb)
Pseudanophthalmus orientalis Krekeler, 1973 = *P. inexpectatus* o.

Pseudanophthalmus *orlindae* (= *P.ciliaris* o. Barr, 1959) Barr, 1979 (type locality cave in *s.Fork of Red River, Robertson Co.,TN/ Tb/ G1)

Pseudanophthalmus *orpheus* Barr, 1981 (type locality cave & 3 other caves in Wayne Co.,KY/ Tb)

Pseudanophthalmus *orthosulcatus* (*P.grandis* o. Val., 1932) Jeannel, 1949 (type locality cave in *Monroe Co.,WV/Tb/WV T&E S1; global G3T1)

Pseudanophthalmus *packardi* Barr, 1959 (type locality cave in Carter Co. +Elliot Co.(prob.),KY/Tb/G3)

Pseudanophthalmus *pallidus* Barr, 1981 (type locality cave in *Claiborne Co.,TN/Tb/TN State T&E/ / S1S2 G1G2/ Pale Cave Beetle)

Pseudanophthalmus *paradoxus* Barr, 1981 (*type locality cave in Hawkins Co.,TN/Tb/TN State T&E/Ridgetop Cave Beetle/ S1S2 G1G2)

Pseudanophthalmus *parvicollis* (*P.hubbardi* p. Jeannel, 1931) Barr, 1965 (*type locality cave in Shenandoah Co.,VA/Tb/VA T&E S1 rank & Species of Concern; global G1 rank/Thin-neck Cave Beetle),

Pseudanophthalmus *parvus* Krekeler, 1973 (*type locality cave in Marion Co.,KY)

Pseudanophthalmus *paulus* Barr, 1981 (*type locality cave in Monroe Co.,TN/Tb/State T&E/ S1S2 G1G2)

Pseudanophthalmus *paynei* Barr, 1981 (*type locality cave in Anderson Co.,TN/ Tb/ State T&E/ Payne's Cave Beetle/ S1S2 G1G2)

Pseudanophthalmus persimilis (= *P. darlingtoni* p.)

Pseudanophthalmus *petrunkevitchi* Val., 1945 (Skyline (Warren Co.) & one cave in Page Co., both VA/ Tb/ VA T&E S1 rank & Species of Concern; global G3 rank/ Petrunkevitch's Cave Beetle)

Pseudanophthalmus *pholeter* K.1973 (*type locality cave in Madison Co.,KY/ State T&E),

Pseudanophthalmus pilosus Barr, 1985 (type locality cave in swHardin Co. + other caves in nwHart Co. n. of Hart Co. Ridge,scKY/ Tb/ G3)

Pseudanophthalmus pontis Barr, 1965 (*Buck Hill (=Natural Bridge) C.,Rockbridge Co.VA/Tb/VA T&E S1 rank & global G1 rank/Natural Bridge Cave Beetle/ cave now commercialized with tunnel, lights & altered RH, temp.)

Pseudanophthalmus potomaca p. (*P.p.* Val., 1932; *P.hubbardi p.* Val.1945) Jeannel, 1949, (type locality cave in Pendleton Co.,WV & cave in Highland Co.,VA/Tb/VA T&E S1 rank & Species of Concern; global G3G4T3T4 rank/South Branch Valley Cave Beetle)

Pseudanophthalmus potomaca senecae Val., 1932 (*P.hubbardi s.* Val.1945) (type locality cave in Pendleton Co.,WV/ WV T&E S1/ Tb/ G2T1)

Pseudanophthalmus praetermissus Barr, 1981 (*type locality cave in Scott Co.,VA/Tb/VA T&E S1 rank & Species of Concern; global G1 rank/Overlooked Cave Beetle)

Pseudanophthalmus princeps Barr, 1979 (type locality cave in Franklin Co. + caves in Warren & Summer Cos., KY/ G3/ Tb)

Pseudanophthalmus productus Barr, 1980 (type locality cave in Smith Co. +Jackson & Putnam Cos.,TN/Tb/ S3 G3)

Pseudanophthalmus profundus (=loedingi *p.* Val., 1943; *P. aquaticus* Val.1945) Val.1945 (type locality cave in Madison Co. & other caves in Jackson Co.,*n.AL/Tb/or semispecies/G3)

Pseudanophthalmus proximus Barr, 1981 (type locality & one other cave in Jackson Co.,KY/ G1/ Tb)

Pseudanophthalmus pubescens p. (*A.p.* Horn, 1868; *P.p.* Jeannel, 1928) (type locality cave in Barren Co. & Mammoth C., Edmonson, both KY/ Tb/ G3T3) Kane 1981; Kane & Ryan 1983

Pseudanophthalmus pubescens intrepidus Barr, 1985 (type locality cave in Allen Co. & other caves in Barren Co., both scKY/ Tb/ State T&E G3T3)

Pseudanophthalmus punctatus Val.1932 (=P.pusio *var. punctatus* Val.1931) (type locality cave & one other cave in Giles Co., 2 caves in Pendleton Co.,WV/ Tb/ VA T&E S1 rank & Species of Concern; global G1 rank/ Spotted Cave Beetle)

Pseudanophthalmus pusillus Barr, 1981 (*type locality cave in Anderson Co.,TN/Tb/State T&E/ Tiny Cave Beetle/ S1S2 G1G2)

Pseudanophthalmus pusio Horn, 1868 (*P. pusio p.* Val.1932, Jeannel, 1949; *P.pusio bathycola* Val.1932) (type locality cave in Montgomery Co.) + caves in Roanoke Co.,VA/Tb/VA T&E S1 rank & Species of Concern; global G3 rank/ Tb)

Pseudanophthalmus *puteanus* Krekeler, 1973 (*type locality cave in Mercer Co.,KY/ Tb/ State T&E/Old Well Cave Beetle)

Pseudanophthalmus *quadratus* Barr, 1965 (*type locality cave in Giles Co.,VA/Tb/VA T&E S1 rank & Species of Concern; global G1 rank/Strayleys Cave Beetle)

Pseudanophthalmus *rittmani* Krekeler, 1973 (type locality cave + 5 other caves in Estill Co. & 2 cave in Powell Co., bothKY/Tb G3)

Pseudanophthalmus robustus beaklei = *P. b.*

Pseudanophthalmus robustus farrelli = *P. f.*

Pseudanophthalmus robustus lupus = *P. beakleyi*

Pseudanophthalmus *robustus megosteus* Barr, 1959 (type locality cave in *Van Buren Co.,TN/Tb)

Pseudanophthalmus *robustus neglectus* Jeannel, 1949 (***type locality in Cumberland Cave + 2 other caves in *e.Warren Co.,TN/Tb)

Pseudanophthalmus *robustus r.* (*P.r.* Val., 1931) Barr, 1959 (type locality cave in Putnam Co., 2 caves in White Co., + other caves in Van Buren & Warren Cos.,TN/Tb S3 G3). **Bibl.:** Barr, 1962c

Pseudanophthalmus *rogersae* Barr, 1981 (*type locality cave in Harlan Co.,KY/Tb/State T&E/ Roger's Cave Beetle/ KY secretary's order in 2000 found lands that included this site to be unsuitable for mining)

Pseudanophthalmus *rotundatus* Val., 1932 (type locality cave in Claiborne Co. + Hancock Co., both TN & Lee Co.,VA/ Tb/ VA T&E S1 rank & global G3G4 rank/ Rotund Cave Beetle)

Pseudanophthalmus *sanctipauli* (= *S. hubrichti* Barr, 1965) Barr, 1981 (type locality & one other cave in Russell Co.,VA/ Tb/ VA T&E S1 rank & global G1 rank/ Saint Paul Cave Beetle)

Pseudanophthalmus *sanguineus* Barr, 1981 (*type locality cave in Meniffee Co.,KY/Tb)

Pseudanophthalmus *scholasticus* Barr, 1981 (*type locality cave in Harlan Co.,KY/Tb/State T&E/Scholarly Cave Beetle/ KY secretary's order in 2000 found lands that included this site to be unsuitable for mining))

Pseudanophthalmus *scutillus* Barr, 1981 (*type locality cave in Campbell Co.,TN/Tb/State T&E/ Lean Cave Beetle/ S1S2 G1G2)

Pseudanophthalmus *seclusus* Barr, 1981 (type locality cave in Scott Co.,VA/Tb/VA T&E S1 rank & Species of Concern; global G1 rank)

Pseudanophthalmus *sequoyah* Barr, 1981 (*type locality cave in De Kalb Co.,n.AL/Tb)

Pseudanophthalmus *sericus* Barr, 1981 (*type locality cave in Scott Co.,VA/Tb/VA T&E S1 rank & Species of Concern; global G1 rank/Silken Cave Beetle)

Pseudanophthalmus *shilohensis boonensis* (P.b. K., 1958) Barr, 1960 (type locality cave in Owen Co. & other caves in WA Co., IN/ Tb/ G3T1T2 - IN T&E)

Pseudanophthalmus *shilohensis mayfieldensis* (P.m. K., 1958) Barr, 1960 (type locality cave in *Monroe Co.,IN/Tb/G3T1T2 - IN T&E)

Pseudanophthalmus *shilohensis s.* (P.s. Krekeler, 1958) Barr, 1960 (type locality cave in *w. Lawrence Co.,IN/G3T1T2 - IN T&E)

Pseudanophthalmus *sidus* Barr, 1965 (*type locality cave in Campbell Co.,TN/Tb/State T&E/ Mer. Cave Beetle/ S1S2 G1G2)

Pseudanophthalmus *simplex* Barr, 1980 *** (type locality cave & two other caves in Jackson Co., TN/ Tb/ State T&E/ S1S2 G1G2/ simple cave beetle)

Pseudanophthalmus *simulans* Barr, 1985 (*type locality cave in Hart Co.,KY/State T&E)

Pseudanophthalmus undescr. sp.#2 (*cave in Campbell Co.,TN/Tb)

Pseudanophthalmus undescr. sp.#3 (two caves in Bath Co,VA/Tb/VA T&E S1 rank & global G1 rank)

Pseudanophthalmus undescr. sp.#4 (*cave in Russell Co.VA/Tb/VA T&E S1 rank & global G1 rank)

Pseudanophthalmus undescr. sp.#5 (*cave in Russell Co.,VA/Tb/VA T&E S1 rank & global G1 rank/ entrance filled in)

Pseudanophthalmus undescr. sp.#6? (*cave in Russell Co.,VA/Tb/VA T&E S1 rank & global G1 rank)

Pseudanophthalmus undescr. sp.#8 (*cave in WA Co.,VA/Tb/VA T&E S1 rank & global G1 rank)

Pseudanophthalmus undescr. sp.#9 (3 caves in Wythe Co.,VA/Tb)

Pseudanophthalmus undescr. sp.#10 (*cave in Pulaski Co.,VA/Tb/VA T&E S1 rank & global G1 rank)

Pseudanophthalmus undescr. sp.#11 (*cave in Rockbridge Co.,VA/Tb/VA T&E S1 rank & global G1 rank)

Pseudanophthalmus undescr. sp.#12 (*cumberlandus* sp. group, Limestone Co.,AL & sTN)

Pseudanophthalmus undescr. sp.#13 (*cave in Lauderdale Co.,AL/Tb)

Pseudanophthalmus undescr. sp.#14 (3 caves in Colbert Co.,AL/Tb)

Pseudanophthalmus undescr. sp.#15 (*?cave in Tingling Hole, Lawrence Co.,AL/ Tb)

Pseudanophthalmus undescr. sp.#16 (*cave in Morgan Co.,AL/ Tb)

Pseudanophthalmus undescr. sp.#17 (*?cave in Jackson Co.,AL/ Tb)

Pseudanophthalmus undescr. sp.#18 (Marshall & Jackson Cos.,AL/Tb)

Pseudanophthalmus undescr. sp.#18 (*?cave in Jackson Co.,AL/Tb)

Pseudanophthalmus undescr. sp.#19 (*intermedius* group, Jackson Co.,AL +adj.TN/Tb) Barr & Peck 1965

Pseudanophthalmus undescr. sp.#20 (*intermedius* group, Jackson Co.,AL/Tb)

Pseudanophthalmus undescr. #21 (**?cave in Jackson Co. (*P.andrewsi*?) & Rockcastle Co.,KY/Tb) Seibert, 1973)

Pseudanophthalmus undescr. sp.#22 (*?cave in Todd Co.,KY)

Pseudanophthalmus undescr. sp.#23 (*cave in Todd Co.,KY)

Pseudanophthalmus undescr. sp.#24 (from *eremita* group in KY Bluegrass)

Pseudanophthalmus undescr. sp.#25 (*Clark Co.,IN)

Pseudanophthalmus sp.#26, (*?cave in WV/WV T&E S1; global G1/ same? as sp. #14 in MD T&E S1)

Pseudanophthalmus undescr. sp #27 (*? cave in Orange Co.,IN)

Pseudanophthalmus undescr. sp.#28 (*c. in Fayette Co.,PA)

Pseudanophthalmus undescr. sp.#29 (* cave in IN)

Pseudanophthalmus undescr. sp.#30 (* cave in Monroe Co.,IN)

Pseudanophthalmus undescr. sp.#31 (*Mercer Co.,WV/WV T&E S1; global G1)

Pseudanophthalmus undescr. sp.#32 (* cave in Randolph Co.,WV/WV T&E S1; global G1)

Pseudanophthalmus undescr. sp.#34 (***near Hadley, Warren Co.,KY)

Pseudanophthalmus undescr. sp.35 (***Warren & Butler Co.,KY)

Pseudanophthalmus undescr. sp. 36 (* cave in Boutetourt Co., VA/ Tb/ VA T&E S1 rank & global G1 rank)

Pseudanophthalmus undescr. sp.#37 (cave in VA/ Tb/ VA T&E S1 rank & global G1 rank)
Pseudanophthalmus undescr. sp.#38 (cave in VA/ Tb/ VA T&E S1 rank & global G1 rank)

Pseudanophthalmus undescr. sp. #39 (possibly new sp. (or *P. nelsoni*) in Alleghany Co.,VA;
>1 species.of TN R.Basin, Grayson Co.,KY)

Pseudanophthalmus undescr. sp. A (*cumberlandus* group) (cave & one other cave Rockcastle Co., KY/Tb)

Pseudanophthalmus undescr. sp.B (*cumberlandus* group) (cave & 5 other caves in Pulaski Co.,KY/Tb)

Pseudanophthalmus undescr. sp.C (*cumberlandus* group) (2 caves in Wayne Co., KY)

Pseudanophthalmus *solivagus* Krekeler, 1973 (type locality cave & 4 other caves in Woodford Co.,KY/Tb/ G1)

Pseudanophthalmus *steevesi* Barr, 1981 (type locality cave & at least 4 other caves in*Blount Co.,nAL/ Tb)

Pseudanophthalmus *striatus* Motschoulsky, 1862 (Mammoth (Edmonson Co.)+Barren & Hart Cos.,KY/Tb/G3) Barr, 1967

Pseudanophthalmus *stricticollis* (*P. eremita* s. Jeannel, 1931; *P. tenuis* s. Barr, 1960) (Marengo C.(Crawford Co.) + Orange Co.,Upper Blue River area,IN/Tb/G3T1T2) **Bibl.:** Badaracca, 1986; Keith 1979; Krekeler 1958

Pseudanophthalmus *subaequalis* (*P. fuscus* s. Val., 1931) Val., 1952 (** type locality cave & 2 other caves in Greenbriar Co., WV/ Tb/ WV T&E S1; global G1/ Greenbrier cave beetle)

Pseudanophthalmus *sylvaticus* Barr, 1967 (Cranberry Glades,WV/edaphobitic)

Pseudanophthalmus *templetoni* Val., 1952 (*P. intermedius* t. Val., 1948; *P. tennesseensis* t.; *P.t.t.* Barr, 1959) (Cumberland C.,e.Warren Co. +n.Grundy Co.,TN/Tb/ / S1S2 G1G2)

Pseudanophthalmus *tenebrosus* Krekeler, 1973 (** type locality cave in Henry Co.,KY/Tb/State T&E/ Stevens Cr.)

Pseudanophthalmus *tennesseensis* (= *P. tenesensis* V., 1937) (* type locality cave & 2 other caves in Knox Co.) & 1 cave in Roane Co., both TN/ Tb/ S3G3)

Pseudanophthalmus *tenuis* t. (*Anophthalmus* t. Horn, 1871; *A. eremita* Horn, Leng, 1920, *P.eremita* Jeannel, 1928; *P.bloomi* & *jeanneli* Krekeler, 1958; *P. longicollis* Jeannel, 1949) Barr, 1960 (Wyandotte C.,Crawford Co. +Harrison, Orange? & sWA Cos., IN/ Blue River cave ground beetle/ Tb - IN T&E) **Bibl.:** Badaracca, 1986; Keith, 1975a, 1979

Pseudanophthalmus tenuis blatchleyi = *P.b.*
Pseudanophthalmus tenuis jeanneli = *T. stricticollis*

Pseudanophthalmus *tenuis morrisoni* Barr, 1960 (= *P.m.*) (= *P. eremita m.* Jeannel, 1931)
Krekeler, 1958 (*type locality & 2 other caves (all in same cave system) in Lawrence Co., IN/
Tb/ G3T1T2)

Pseudanophthalmus tenuis stricticollis = *P.s.*
Pseudanophthalmus *thomasi* Barr, 1981 **(* type locality cave in Scott Co.,VA),

Pseudanophthalmus *tiresias* (*P.t.t.* Barr, 1959) Barr, 1980 (* type locality cave & 1 other cave
in De Kalb Co.,TN/State T&E/ Ind. C. Pt. C. Beetle/ S1S2 G1G2)

Pseudanophthalmus tiresias acherontis = *P.a.*
Pseudanophthalmus tiresias bandermani = *P.b.*
Pseudanophthalmus tiresias catherinae = *P.c.*

Pseudanophthalmus tiresias insularis = *P.i.*
Pseudanophthalmus tiresias occidentalis = *P.o.*

Pseudanophthalmus *tortus* ((* type locality cave & 1 other cave in Wayne Co.,KY/Tb)

Pseudanophthalmus *transfluvialis* Barr, 1985 (type locality cave in Warren Co.,*Bowling Green
area,KY & one cave in Logan Co., scKY/Tb/G1G2)

Pseudanophthalmus *troglodytes* Krekeler, 1973 (type locality cave in Jefferson Co., KY (extinct
in type locality?)/ Tb/State T&E/ Louisville Cave Beetle/ G1G2)

Pseudanophthalmus *tullahoma* (*P. tiresias tullahoma* Barr, 1959) Barr, 1980 (type locality cave
(mostly inundated by dam) & other cave (prob.) (inundated by dam) & cave near dam,Coffee
Co.,TN/TN State T&E G1G2/Duck River Cave Beetle/ S1 G1G2) Smyre, 1977

Pseudanophthalmus *umbratilis* Krekeler, 1972 or, 1973 (type locality cave in Garrard Co. &
other caves in Dix R. & Elkhorn Cr. drainage,Fayette, Garrard, Owen & Woodford Cos.,KY/Tb
G3)

Pseudanophthalmus *unionis* Barr, 1981 (type locality & one other cave Union Co.,TN/Tb/State
T&E G1G2/Union County Cave Beetle/ S1S2 G1G2)

Pseudanophthalmus *valentinei* Jeann., 1949 (type locality cave in e.Putnam Co. +e.Overton
Co.,KY/Tb/ S3 G2G4)

Pseudanophthalmus *vanburenensis* (*P. templetoni* v. Barr, 1959) Barr, 1962 (*type locality cave
in an Buren Co.,TN/ Tb/ S1S2 G1G2)

Pseudanophthalmus *ventus* Barr, 1981 (*type locality cave in Marion Co.,TN/ Tb/ State T&E/

Bl. Cave Beetle/ S1S2 G1G2)

Pseudanophthalmus *vicarius* Barr, 1965 (type locality & five other caves in Tazewell Co.,VA/Tb G1G2)

Pseudanophthalmus *virginicus* (Barr) Barr, 1981 (*Aphanotrechus* v. Barr) (*type locality cave in Tazewell Co.,VA/Tb/VA T&E S1 rank, Species of Concern & global G1 rank/Maiden Spr. Cave Beetle)

Pseudanophthalmus *wallacei* Barr, 1981 (*type locality cave in Anderson Co.,TN/Tb/State T&E/Wallace's Cave Beetle/ S1S2 G1G2)

Pseudanophthalmus *youngi donaldsoni* (P.d. Krekeler, 1958) Barr, 1960 (*type locality & 2 other caves (all in same cave system) in Lawrence Co.,IN/Tb - IN T&E)

Pseudanophthalmus *youngi y.* (P.y. Krekeler, 1958) Barr, 1960 (type locality cave in WA Co.,Upper Blue River area, Lost River, Cave River Valley, incl. Orange Co.,IN/Tb/G3T1T2 - IN T&E),

Pterostichus Bonelli, 1810 (=Hypherpes Chaudoir, 1838 +>45 syns.) (common black ground beetles) Carabidae beetles in Subfamily Harpilinae, Tribe Pterostichini.(234 species in US, Canada) **Bibl.:** Ball 1963

Pterostichus (*Hypherpes*) *algidus* LeConte, 1852 (=Feronia valida Dejean, 1828 (primary homonym of F.v.); *H. innatus* Casey, 1918; *H. responsor* & *anthrax* C.1918 (AK, BC, CA, OR, WA epigeal/ Tx in CA,WA)

Pterostichus *californicus* Dejean, 1828 (woodrat ectoparasite in CA non-cave *Neotoma fuscipes* woodrat nest)

Pterostichus *congestus* Menetries, 1843 (woodrat ectoparasite in CA non-cave *Neotoma fuscipes* woodrat nest)

Pterostichus (*Morphnosoma*) *coracinus* Newmann, 1838 (*Feronia c.*, *monedula*, *moerens* Newman, 1838; *P. adjunctus*, *flebilis* LeConte, 1852; *P. erebeus* Casey, 1913; *Euferonia roanica*, *coracina venator* & *c. ludibunda* Casey, 1920; *E. lacustris* & *strigosula* Casey, 1924; *E. washingtonensis* (var. *rufitarsis*) Nicolay & Weiss, 1934 (eUS & Canada to IL,GA,wON/Ac or TTx in AL,IL(1 cave))

Pterostichus (*Hypherpes*) *herculaneus* Mannerheim, 1843 (AK?,BC,ID,MT,OR,WA/ Tp? in WA)

Pterostichus honestus = *Bembidion h.*

Pterostichus (*Morphnosoma*) *lachrymosus* (=Feronia c. Newman, 1838) (BC to NF/ Tx or Ac in sON),

Pterostichus (*Holciophorus*) *lama* (*Feronia atra* Dejean, 1828 (secondary homonym of *P. ater*; *F.l.* Menetries, 1843; *H. vancouveri*, *pollens*, *cephalus* & *domitor* Casey, 1913) (epigeal in BC, CA, NV?, OR, WA/ Tx in BC, CA)

Pterostichus (*Hypherpes*) *nigrocoreuleus* Van Dyke, 1925 (Tx in Vancouver Island, BC)

Pterostichus *permundus* (*Feronia permunda* Say, 1830) (Tx in Camden Co., MO)

Pterostichus *protractus* LeConte, 1860 (2,000 year old remains in entrance pit in Rat's Nest Cave, AB)

Pterostichus near *punctiventris* (= *Feronia amnicola* Chaudoir, 1878; *P.a.* Casey, 1918) (AL? to AR, MO/Tx in OK)

Pterostichus sayi = *Poecilus chalcites*

Pterostichus *relictus* (*Feronia relictus* Newman, 1838) (Tp or Tx in GA (Dade Co.))

Pterostichus undet. sp(s). (TTx in KY; Ttx or Ac in 3 seAK; (2,000 year old remains in entrance pit in Rat's Nest Cave, AB)

Pterostichus (*Holciophorus*) undet. sp. or species (Tx? in one cave in Mariposa Co., CA; Ac or Tx in Blount Co., TN; Ttx in one cave in Carter Co., KY; Pleistocene fossil in Port Kennedy Co., Montgomery Co., PA)

Pterostichus undescr. sp.#1 (near *P. algidus*) (Tx or Ac? in Mitchell C., San Bernadino Co., CA)

Pterostichus (*Hypherpes*) undescr. sp.#2 (subgenus (cave in Mariposa Co., CA/Tx?))

Pterostichus (*Hypherpes*) undescr. sp.#3 (**? 2 caves in Santa Cruz Co., CA/Tx?)

Pterostichus (*Hypherpes*) undescr. sp.#4 (cave in Santa Cruz Co., CA/Tx?),

Pterostichus undescr. sp.#5 (cave in Tuolumne Co., CA/Tx?)

Pterostichus (*Hypherpes*) undescr. sp.#6 (cave in Santa Cruz Co., CA/Tx?)

Pterostichus (*Holciophorus*) undescr. sp.#7? (or undet.) (cave in Mariposa Co., CA/Tx?)

Pterostichus cf. *vicinus* Mannerheim, 1843 (CA epigeal/ Tx in CA)

Rhadine LeConte, 1848 (*Comstockia* Van Dyke, 1918; *Spelaeorhadine* Bolivar & Peltain, 1944)
Carabidae beetles in Subfamily Harpilinae, Tribe Platynini (also put in Tribe Bembidiini) (40 species in US, Canada. **Bibl.**: Barr, 1964c,e, 1965, 1974a; Elliott, 1976b; Reddell, 1965

Rhadine arizai = *Spelaeorhadine* a. Bolivar & Peltain, 1944

Rhadine arizai babcocki – see *R. b.*; *Rhadine arizai howdeni* - See *R.h.*

Rhadine *austinica* Barr, 1974 (type locality cave in *sTravis Co., TX/Tb G1G2)

Rhadine *babcocki* Barr, 1960 (Tp in Sutton Co., Edwards, Pecos, Terrell, Val Verde Cos., TX)

Rhadine crinicolis Barr, 1974 = *R. specac.*
Rhadine ewersi = *R. infernalis e.*

Rhadine *caudata* (*Platynus c.* LeConte, 1863; *A.c.* Csiki, 1931) (Cumberland C.(TN) /E to IN,AR/TTx in nAL (Marshall Co.),AR,WI,PA; Tp in TN (Warren Co.),GA,VA (Roanoke Co.) Barr, 1964

Rhadine *exilis* (*A.(Rhadine) exile* Barr & Lawrence, 1960) Reddell, 1966 (type locality + many other caves in Bexar Co.,TX/Tb G1G2/ Federal endangered T&E)

Rhadine gentilis Barr, 1974 = *R. specac. g.*

Rhadine *howdeni* Barr & Lawrence, 1960 (= *Agonum h.* Barr & Lawrence; *R. arizai h.*) (type locality cave in Kerr Co. +Edwards & Uvalde Cos.,Edwards Plateau & Balcones Fault Zone,scTX; 9,120+- 500 years old in scNM *Neotoma* woodrat nest)/ Tp)

Rhadine *infernalis ewersi* (*A.i.e.* Barr, 1960) (type locality & at least 3 other caves in Bexar Co.,TX/Tb G3T1T2)

Rhadine *infernalis i.* (*A.i.i.* Barr & Lawrence, 1960) (type locality & other caves in wBexar Co., TX/ Tb/ G1 or G3 T1T2/ Federal endangered T&E, first listed Dec. 2000)

Rhadine *insolita* Barr, 1974 (type locality cave in Comal Co., + cave in Hays Co., TX/Tb/ G1G2)

Rhadine jonesi Barr, 1960 = *Platynus j.*

Rhadine *koepekei k.* (*A.j., A.& R.k.* Barr, 1960) 1-3,200 yrs.BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM)

Rhadine *koepekei k.* (*A.j., A.& R.k.* Barr, 1960) ** (type locality & at least one other cave in Kendall Co., TX/Tb/ G3 or G1 T1T2)

Rhadine *koepekei privata* Barr, 1974 (type locality & at least four other caves in Kendall Co.,TX/Tb G3 T1T2)

Rhadine *larvalis* LeConte, 1848 (*Agonum jonesi* Barr, 1960) (type locality cave in Conecuh Co., AL/epigean in AL, AR, CA?, FL, MO, MT?, NV?, MS, PA?/ Tx? in AR, IL, MO, MS, TN(1c.)/ Tp in FL) Choate & Rogers 1976

Rhadine *larvalis* group (Tx in TX)

Rhadine *longiceps* Van Dyke, 1949 (swTX/ TTP in 2 caves in Brewster Co.,TX)

Rhadine *longicollis* (*A.longicollis* Csiki, 1931) Benedict, 1927 (Tp in Carlsbad C.,Eddy Co.,NM, +Culberson Co.,TX/ .1 to 18,000 yrs.BP in wTX (El Paso Co.) Or sNM & 24,00 to 22,500 years old in Big Bend Natl. Park, wTX) Bibl.: Pate 1996

Rhadine mckenziei Barr, 1974 = *R. tenebrosa* m.

Rhadine *menetriesi* Motsch, 1862 (Mammoth C. type locality & three other caves in Edmonson Co.,KY/Tb) Kane 1981; Kane & Poulson 1976

Rhadine *noctivaga* Barr, 1974 ** (type locality cave + caves N of North San Gabriel River,Williamson Co.,TX)

Rhadine *ozarkensis* Sanderson & Miller, 1941 (*type locality cave in WA Co.,AR/Tb or Tp)

Rhadine *perlevis* Casey, 1913 (epigean from nMex.to sAZ/Tx or Tp in Chihuahua, Mex., Chiricahua Mts, AZ; extralimital fossil remains in woodrat nest in Bida Canyon, Grand Canyon, AZ)

Rhadine *persephone* Barr, 1974 (To. C. ground beetle) (type locality cave in Travis Co., +19 caves in Travis Co. & 25 caves in Williamson Co.,TX/ Tp, T&E/ G1 or G3) Reddell, 1984

Rhadine privata Barr, 1974 = *R. koepkei* p.

Rhadine *rubra* (*A. rubrum* Barr, 1960) (type locality cave in heeler Co.,TX+ 12 cos.,(w,cTX) & wOK/ gypsum Tp)

Rhadine *russelli* Barr, 1974 (*type locality & one other cave in Travis Co., 3 caves in Burnet Co., +2 caves in Williamson Co., TX/ Tb/ G3)

Rhadine undescr. sp.#1-2 (Hays, Coryell Cos.,TX/Tb) Reddell, 1994)

Rhadine undescr. sp.#3 (2 caves in Eddy Co.,NM/ G1/ Tb?)

Rhadine undescr. sp.#4 (nr. *longipes*) (*cave in Culberson Co.,TX/ Tp)

Rhadine undescr. sp.#5 (prob.) (*?cave in Murray Co.,OK/Tp or Tb)

Rhadine undescr. sp.#6 (*cave in Inyo Co.,CA/Tb) Ubick & Briggs, 1992

Rhadine undescr. sp.#7 (Carlsbad C.,NM/Tp)

Rhadine undet. sp. or species (Tx in Coconino Co.,AZ; Tp in El Malpais Natl. Monument, nNM; Tx in cave in Grand Canyon, Coconino Co.,AZ); 2-3 & 15-15.5 thousand yrs.BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM))

Rhadine *specia crinicollis* Barr, 1974 ** (type locality & one other cave in Comal Co.,TX/Tb/ G1)

Rhadine *specia s.* (*A. specum* Barr, 1960) (type locality & one other cave in Kendall Co. & 2 caves in Comal Co., TX/ Tb/ G3T1T2),

Rhadine *specia gentilis* Barr, 1974 ** (type locality & at least one other cave in Comal Co.,TX/ G3T1T2/ Tb)

Rhadine *subterranea* s. (*Comstockia* s. Van Dyke, 1918; *A.s* Barr & Lawrence, 1960) Barr, 1964 (type locality & at least 2 other caves in Travis Co.+ cave(s) in Williamson Co., TX/ Tb/ G3T3)
Bibl.: Barr, 1981; Mitchell, 1965, 1968a, 1970, 1971, 1971a-b

Rhadine *subterranea mitchelli* Barr, 1974 (type locality cave in Williamson Co. +Travis Co.,TX/ Tb/ G1?)

Rhadine *tenebrosa* t. (*A. tenebrosum* Barr, 1960) Barr, 1974 (type locality cave in Kerr Co.,TX,+Bandera, Real & Medina Co./Tb)

Rhadine *tenebrosa mckenziei* Barr, 1974 (type locality & at least 2 other caves in Uvalde Co +Real Co.,TX/Tb/G3T3)

Scaphinotus DeJean, 1826 (= *Irichroa* Newman, 1838; *Nomareetus* LeConte, 1853; *Anobolus*, *Stenocantharus* Gistel, 1857; *Maronetus* Casey, 1914; *Megaliridia* C., 1920; *Steniridia* C., 1924 *Pemphus*, *Brennus* Motschulsky, 1866; *Pseudonomareetus*, *Neocyclus* Roeschke, 1907) (boat-backed ground beetles) Carabidae beetles in Subfamily Carabinae, Tribe Cychnini (49 species in US, Canada) **Bibl.:** Ball 1965, 1966a; Gidaspow 1959

Scaphinotus (*Neocyclus*) *angulatus* Harris, 1839 (epigeal nCA to swBC/ Tx or Tp in Vancouver Island, BC)

Scaphinotus (*Stenocantharus*) *angusticollis* (*Cychnus* a. Fischer von Waldheim, 1823; *Pemphus* a. var. *nigripennis* Roeschke, 1907; *S.a. olympiae* Van Dyke, 1944; *S. longipes* Casey) (Siberia to CA,AB?,NT?/Tp in Vancouver Island, BC; cave in Skagit Co.,WA & 3 seAK caves)

Scaphinotus (*Brennus*) *interruptus* (*Cychnus* i. Menetries, 1843; *C. constrictus* LeConte, 1853; *C. dissolutus* Schaum, 1863; *Brennus politus*, *sinuatus*, *corpulentus*, Casey, 1897; *B. integer* C., 1914; *B. beringi*, *parvulicollis*, *procerus* C., 1920) (cCA/Tx or Ac in Napa Co.,CA)

Scaphinotus (*Brennus*) *johnsoni* Van Dyke, 1924 (epigeal CA to AK/ Tx or Tp in Vancouver Island, BC)

Scaphinotus (*B.*) *marginatus* (*Cychnus* m. Fischer von Waldheim, 1820; *Brennus cupripennis* Casey, 1897; *B.m.* var. *fallax* Roeschke, 1907; *B. columbianus*, *gracilis*, *wrangelli* & *montanicus* Casey, 1920; *B. oregonus* Casey, 1920) (AB, AK to BC, CA, ID, MT, WY/ Tp or Tx in AK, BC, OR, WA) **Bibl.:** Carcamo 1997; Cheeseman & Pritchard, 1984

Scaphinotus (*B.*) *riversi* (*Brennus* r. & *S. oreophilus* r. Roeschke, 1907) (epigeal in CA/ Tx in CA)

Scaphinotus (*Brennus*) *rugiceps* r. (*Cychnus* r. Horn, 1872; *Brennus orcatus* & *compositus* Casey, 1897; *B.r. congener* C.1914) (epigeal in sOR,nwCA/Tx or Tp in CA mine)

Scaphinotus undet. sp. (Tx or Ac in nMS)

Scaphinotus *unicolor* (Carabus u. Fabricius, 1787)

Scaphinotus *unicolor* undescr. ssp. (Tp in nAL, MS, nAR, sIL, sMO)

Scarites Fabricius, 1775 (emits a distinctive odor if disturbed) Carabidae beetles in Subfamily Carabinae (= Scaritinae), Tribe Scaritini (7 species in US, Canada)

Scarites (*Scarites*) *subterraneus* Fabr., 1775 (*Carabus* s. Sulzer, 1776; *Carabus interruptus* Herbst, 1874; *S. subterreus* Bonelli, 1813; *S. beckwithii* Stephens, 1827; *S. denticollis* Chaudoir, 1843; *S. californicus* LeConte, 1852; *S. durangoensis* Bates, 1891) (ON to FL, w. to SD, TX epigeal/ Tp in Porter's (IN) (type?) & Carlsbad (NM) & Ac in Dudley (Crockett Co., TX)

Schizogenius Putzeys, 1846 (= *Genioschizus* Whitehead, 1972) - Carabidae beetles in Subfamily Carabinae (or Scaritinae), Tribe Scaritini. (24 species in US, Canada) **Bibl.:** Whitehead, 1972.

Schizogenius (*Schizogenius*) *tibialis* Whitehead, 1972 (Tp in one cave in Uvalde Co., TX)

Spelaeorhadine Bolivar & Peltain, 1944

Spelaeorhadine araizai = *Rhadine a.*

Selenophorus Dejean, 1829 - Carabidae beetles in Subfamily Harpilinae, Tribe Harpalini, Subtribe Harpalina, Genus-group Selenophori (97 species in US, Canada)

Selenophorus *gagatinus* Dejean, 1829 (1,200 to 12,300 yrs.BP in *Neotoma* woodrat nest in wTX (El Paso Co.) & Big Bend Natl. Park)

Selenophorus *palliatu*s (Carabus p. Fabricius, 1798 (14,300 to 15,500 yrs.BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM)

Selenophorus undet.? (Tp or Tx in Eddy Co.(NM) & wTX/ 3,200 to 4,300 yrs.BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM)

Speleobama vana - put in Pselaphidae

Sphaeroderus Dejean, 1826 – Carabidae beetles, Subfamily Carabinae, Tribe Cychrini

Sphaeroderus *stenostomus* (*Cychrus* s. Weber, 1801) (Tx in GA (Dade Co.))

Stenolophus Dejean, 1821 (= *Agonoderus* Dejean, 1829) Carabidae beetles in Subfamily Harpilinae, Tribe Harpalini, Subtribe Stenolophina, Genus-group Stenolophi (also put in Platynini) (41 species in US, Canada)

Stenolophus (*S.*) *ochropezus* (*Feronia* o. Say, 1823; *S. convexicollis* LeConte, 1848; *S. laticollis* Motschulsky, 1864; *S. gracilis*, *floridanus* & *testaceicollis* Casey, 1924; *S.o.*) (eUS & Canada to MB, AZ, CO/Tx in MO, VA/Ac or Tx in IN)

Stenolophus undet. sp. or species (E/Tx in TN (Overton Co.), TX; Ac in IN)

Syntomus Hope, 1838 (*Metabletus* Schmidt-Goebel, 1846) Carabidae beetles in Subfamily Harpalinae, Tribe Lebiini, Subtribe Dromiina (1 species in US or Canada)

Syntomus *americanus* (*Dromius a.* Dejean, 1831; *M. borealis* Zimmermann, 1869) (epigean Newfoundland w. to BC, s. to Mexico/ Ac in one cave in Culberson Co., TX)

Synuchus Gyllenhal, 1810 - Carabidae beetles in Subfamily Harpilinae, Tribe Platynini (also put in Pterostichini) (2 species in US or Canada)

Synuchus *impunctatus* (*Feronia i.* Say, 1823) (Canada, s. to GA/ 1,400 & 3,200 yrs.BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM)

Tachys Dejean, 1821 (= *Tachyura* Hayward, 1897; *Isotachys* Casey, 1918) Carabidae beetles in Subfamily Harpilinae, Tribe Bembidiini (12 species in US, Canada)

Tachys appalachius Casey, 1918 = *Paratachys oblitus*

Tachys *arcanicola* Blackburn, 1878 (alien Tp in HI)

Tachys ferrugineus = *Elaphropus f.*

Tachys incurva = *Elaphropus i.*

Tachys *undet. sp.* (Tx or Ac in 1 IL cave; Tx in cave in Montgomery Co., TN)

Tachys *undescrib. sp.?* (*cave in Kendall Co, TX)

Tachys proximus (Say) (= *Paratachys p.*),

Trechonepha iridescens = *Bembidion i.*

Trechus Clairville, 1806 - Carabidae beetles in Subfamily Trechinae, Tribe Trichini. (48 species in US, Canada) **Bibl.:** Val., 1952, Barr, 1962a, 1985, 1985, Ebbets, 1986; Schaeffer, 1901

Trechus (*Trechus*) *cumberlandus* Barr, 1962 (type locality cave in Wayne Co. + Rockcastle & Pulaski Cos., KY & Cumberland, Van Buren, Overton & Grundy Cos., TN/ cold springs & sinkholes in wet debris epigean/ Cumberland Plateau Tp, glacial relict) Barr, 1979a; Ebbets, 1986

Trechus (*Trechus*) *hydropicus canus* (= *T. beutenmulleri c.* Barr, 1962) Barr, 1979a (swVA, seKY/ Tx or Tp, mts.)

Trechus (*Trechus*) *ovipennis* Motschulsky, 1845 (AK, BC, CA, OR, WA epigean/ epigean, Tp in cave (closed) in Santa Cruz Co., CA),

Trechus (*T.*) *ovipennis californicus* Motschulsky, 1845 (Tx? in Santa Cruz Co., CA)

Trechus *undescrib. sp.* (Ed, TTP? in Snowbird Mts., NC)

Trechus (*Trechus*) *tauricus* Barr, 1979a (*type locality cave in Great Smoky Mts. Natl. Park,

Blount Co.,TN/Tb &/or sinkhole Ep)

Trechus (*Trechus*) *tennesseensis tauricus* Barr, 1962 = *T. tauricus*

Trechus (*Trechus*) *tennesseensis tennesensis* Barr, 1962 (*type locality cave in Roane Co.,TN/Tb)

Trechus (*Microtrechus*) *tuckaleechee* (*Microtrechus t.*) Barr, 1962 (Tuckaleechee C., T. Cove, Blount Co., *eTN/ Tp)

Trechus (*Trechus*) *vandikei* (M. v. Jeannel, 1927) group (Tx or Ac in CA)

Trichotichnus Morawitz, 1863 (*Pteropalus*, *Episcopellus* Casey, 1914) Carabidae beetles in Subfamily Harpilinae, Tribe Harpalini (4 species in US, Canada)

Trichotichnus (*Iridessus*) undet. sp. (Ac in TX)

Troglanillus Jeannel, 1963 = *Anillinus*

Troglanillus valentinei Jeannel, 1963 = *Anillinus v.*

Troglanillus? undet. sp. (Tx in cave in Grundy Co., TN/ determined by Barr 1957 as *Anillus*)

Xenotrechus Barr & Krekeler, 1967 - Carabidae beetles in Subfamily Trechinae, Tribe Trichini (2 species in US)

Xenotrechus *condei* Barr & Krekeler, 1967 (type locality & one other cave in Jefferson Co., MO/ Tb/ G3 or G1)

Xenotrechus *denticollis* Barr & Krekeler, 1967 (**type locality & one other cave Ste. Genevieve Co.,MO/Tb/ G1G2)

CATOPIDAE - put in Leiodidae

Checkered beetles family - See Cleridae

CERAMBYCIDAE Latreille, 1802 (long-horned beetles) **Bibl.:** Linsley & Chemsak 1961-76 Subfamilies incl.

Lamiinae (flat-faced long-horns)

Tribe Moneilemini (*Moneilema*, *Plectrura*)

Prioninae (tooth-necked long-horns)

Tribe Prionini (*Prionus*)

Spondylinae (*Spondylis*) (also put in Spondylidae)

Moneilema Say, 1824 (*Collapteryx* Newman, 1838; *Monilema* LeConte, 1852; *Omoscylon* Thomson, 1867; *Monoplesa* Motschulsky, 1875) Cerambycidae beetles, Subfamily Lamiinae (6

species in US or Canada)

Moneilema undet. sp. (Ac in one cave in Lampasas Co., TX)

Plectrura Mannerheim, 1852 - Cerambycidae beetles, Subfamily Lamiinae (1 species in US or Canada)

Plectrura *dentipes* (*Callidium d.* Olivier, 1790) undet. sp. (Ac in 1 seAK cave)

Prionus Fabricius, 1775 (= *Homaesthesis* LeConte, 1873; *Neopolyarthron* Semenov, 1899; *Microarthron* Pic, 1900; *Riponus*, *Prionina* Casey, 1912; *Prionellus*, *Antennalia* C.1924) Cerambycidae beetles, Subfamily Prioninae, Tribe Prionini (13 species in US, Canada; feed on roots)

Prionus undet. sp. (Ac in cave in King Co., TX)

Spondylis Fabricius, 1775 - Cerambycidae beetles, Subfamily Spondyliinae (1 species in US, Canada)

Spondylis *upiformis* Mannerheim, 1843 (swCanada, s. to CA, AZ, CO/ 2,000 year old remains in entrance pit in AB cave)

CHRYSOMELIDAE Latreille, 1802 (leaf beetles) **Bibl.:** Jacques 1988; Wilcox 1975
One or two undet. genera 10,950 & 7,530 to 6,000 years old in *Neotoma* woodrat nests in Tinajas & Butler Mts., Yuma Co,AZ))

Subfamilies incl.

Alticinae (once subsumed in Galerucinae) (*Altica*, *Chaetocnema*, *Glyptina*, *Phyllotreta*)

Bruchinae (seed beetles)

(*Acanthoscelides*, *Algarobius*, *Bruchus*, *Stator*, *Mimosestes*) (all in Bruchidae)

Chrysomelinae (broad-bodied leaf beetles)

(*Calligrapha*, *Chrysolina*, *Disonycha*, *Leptinotarsa*, *Zygogramma*)

Tribe Chrysomelini (*Chrysomela*)

Criocerinae (shining leaf beetles) (*Lema*)

Cryptocephalinae (cylindrical leaf beetles) (*Pachybrachis*)

Eumolpinae (oval leaf beetles)

Tribe Adoxiini (*Fidia*, *Myochrous*)

Galerucinae (skeletonizing leaf beetles)

(*Altica*, *Chaetocnema*, *Glyptina*, *Phyllotreta*) (all now in Alticinae))

Tribe Galerucini (*Pyrrhalta*, *Trirhabda*)

Tribe Luperini

Subtribe Luperina (*Triarius*)

Acanthoscelides & *Algarobius*- put in Bruchidae

Altica Muller, 1764 (flea beetles)- Chrysomelidae beetles, Subfamily Alticinae (once in Galerucinae) (6 species in US or Canada)

Altica undet. sp. or species (*Neotoma* woodrat midden in Glen Canyon cave, UT; yrs.BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM/ 22,00 to 2,100 & 6,000 to 4,000 year old in *Neotoma* woodrat nest in Big Bend Natl. Park, wTX)))

Bruchus Linnaeus, 1767 - See Bruchidae

Calligrapha Chevrolat, 1837 - Chrysomelidae beetles, Subfamily Chrysomelinae (36 species in US, Canada)

Calligrapha *dislocata* Rogers, 1854 (9,400 to 10,300 yrs.BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM)

Chaetocnema Stephens, 1831 (*Odontocnema* S., 1831; *Plectroscelis* Redtenbacher, 1845; *Udorpes*, *Ydorpes* Motschulsky, 1845; *Hydrous* M., 1860; *Carcharodis* Weise, 1910) flea beetles in Chrysomelidae, Subfamily Subfamily Alticinae (once in Galerucinae) (31 species in US or Canada)

Chaetocnema *elongatula* Crotch, 1873 (9,400 to 15,500 yrs.BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM)

Chaetocnema undet. sp. (Ac in Irion, Uvalde Cos., TX; Ac or Tx in one cave in Grand Canyon, Coconino Co., AZ)

Chrysolina Motschulsky, 1860 - Chrysomelidae beetles, Subfamily Chrysomelinae (16 species in US, Canada)

Chrysolina *auripennis* (*Chrysomela* a. Say, 1824) (Ac in cave in Val Verde Co., TX)

Chrysolina undet. sp. (>26,000 yrs.BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM)

Chrysomela Linnaeus, 1758 - Chrysomelidae beetles, Subfamily Chrysomelinae, Tribe Chrysomelini (17 species in US, Canada)

Chrysomela undet. sp. (9,120+- 500 years old in scNM *Neotoma* woodrat nest)

Disonycha Chevrolat, 1844 - Chrysomelidae beetles, Subfamily Chrysomelinae (35 species in US or Canada)

Disonycha undet. sp. (Ac in cave in Sutton Co., TX)

Fidia Walsh, 1867 - Chrysomelidae beetles, Subfamily Eumolpinae, Tribe Adoxiini (rootworms) (6 species in US or Canada)

Fidia *longipes* (*Eumolpus l.* Melsheimer, 1847) (Tx or Ac in one cave in AR)

Glyptina LeConte, 1859 (flea beetle) - Chrysomelidae beetles, Subfamily Alticinae (once in Galerucinae) (12 species in US or Canada)

Glyptina undet. sp. (20,500 years old in *Neotoma* nest, Ajo Mts., Pima Co., AZ)

Lema Fabricius, 1798 - Chrysomelidae beetles in Subfamily Criocerinae (25 species in US, Canada)

Lema *trilinea* White, 1993 (Ac or Tx in one cave in Grand Canyon, Coconino Co., AZ/ threelined potato beetle)

Leptinotarsa Stal, 1858 (= *Myocoryna* S. 1858) Chrysomelidae beetles, Subfamily Chrysomelinae (12 species in US, Canada)

Leptinotarsa sp. prob. *haldemani* (*Doryphora h.* Rogers, 1856; *D. libatrix*, *chlorizans* Suffrian, 1858; *Myocoryna violascens* Stal, 1859) Rogers (Ac in cave in Sutton Co. & cave in Burnet Co., TX)

Leptinotarsa *decemlineata* (*Doryphora d.* Say, 1824; 15 syns.) (Colorado potato beetle/ Ac in one cave in Uvalde Co., TX),

Mimosestes Bridwell, 1946 - put in Bruchidae

Myochrous Erichson, 1847 - Chrysomelidae beetles, Subfamily Eumolpinae, Tribe Adoxiini (13 species in US, Canada)

Myochrous *denticollis* (*Colaspis* Say, 1824) (Ac in one cave in Uvalde Co., TX)

Pachybrachis Chevrolat, 1837 - Chrysomelidae beetles, Subfamily Cryptocephalinae (151 species in US, Canada)

Pachybrachis *mitis* Fall, 1915 (0-10,300 yrs. BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM)

Pachybrachis undet. sp. (*Neotoma* woodrat midden in Canyonlands, UT; cf. *Pachybrachis* 10,300 years old in *Neotoma* woodrat nest in Tinajas Mts., Yuma Co., AZ)

Phyllotreta Chevrolat, 1837 (= *Orchestris* Kirby, 1837; *Tanygaster* Blatchley, 1921) (flea beetles) Chrysomelidae beetles, Subfamily Alticinae (once in Galerucinae) (38 species in US or Canada)

Phyllotreta *mitis* Fall, 1915 (0 to 10,300 yrs. BP in *Neotoma* woodrat nest in wTX (El Paso Co.)

or sNM))

Phyllotreta undet. sp. (Ac in Irion, Uvalde Cos., TX/ flea beetles)

Pyrrhalta Joannis, 1866 (= *Galeruca*) Chrysomelidae beetles, Subfamily Galerucinae, Tribe Galerucini (16 species in US or Canada)

Pyrrhalta undet. sp. (0 to >26,000 yrs.BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM)

Scelolyperus Crotch, 1874 - Chrysomelidae beetles, Subfamily Galerucinae (27 species in US or Canada)

Scelolyperus undet sp. (21,000 to 14,000 year old in *Neotoma* woodrat nest in Big Bend Natl. Park, wTX; 9,120+- 500 years old in scNM *Neotoma* woodrat nest)

Stator Bridwell, 1946 - put in Bruchidae

Triarius Jacoby, 1887 - Chrysomelidae beetles, Subfamily Galerucinae, Tribe Luperini, Subtribe Luperina (6 species in US, Canada)

Triarius vittipennis (*Malacosoma* v. Horn, 1893) (Ac in a mine in Presidio Co., TX)

Trirhabda LeConte, 1865 - Chrysomelidae beetles, Subfamily Galerucinae, Tribe Galerucini (27 species in US or Canada)

Trirhabda undet. sp. (9,120+- 500 years old in scNM *Neotoma* woodrat nest)

Zygogramma Chevrolat, 1837 - Chrysomelidae beetles, Subfamily Chrysomelinae
Zygogramma dislocata = *Calligrapha d.*

CICINDELIDAE (tiger beetles) (now in Tribe Cincindelini in Carabidae)

CLERIDAE Latreille, 1802 (checkered beetles). About 55 sp. & ssp. n. of Mex. Most adults feed on bark beetles; a few scavenge or feed on pollen.

Tellinae Leach, 1815 or Clerinae (Tribe Tillini) (*Cymatodera*)

Cymatodera Gray, 1832 - Cleridae beetles in Tellinae or Clerinae (Tribe Tillini) (71 species in US or Canada) **Bibl.:** W. Barr 1951

Cymatodera antennata Schaeffer, 1908 (0 to 11,400 years BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM)

Cymatodera latefascia Schaeffer, 1904 (epigean in US?/ Tp in Mitchell C., San Bernadino, CA/

3,200 to 4,00 and 10,500 to 10,800 years BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM)).

Cymatodera undet. sp. (Ac in cave in Menard Co., TX; fossil in *Neotoma* woodrat midden, Puerto Blanco Mts., Pima Co., sAZ)

Cymatodera pallida Schaeffer, 1908 (late Pleistocene extralimital in Grand Canyon, Coconino Co., AZ)

Click beetle family - See Elateridae

Clown beetle family - See Histeridae

COCCINELLIDAE Latreille, 1807 (lady(bird) beetles)

Subfamily Chilocorinae (*Chilocorus*)

Subfamily Coccinellinae

Tribe Coccinellini (*Hippodamia*, *Olla*)

Subfamily Scymninae

Tribe Hyperaspini (*Hyperaspis*)

Chilocorus Leach, 1815 - Coccinellidae beetles, Subfamily Chilocorinae (9 species in US or Canada)

Chilocorus stigma (*Coccinella s.* Say, 1835) (Ac in one cave in Edwards Co., TX)

Hippodamia Dejean, 1837 (= *Hemisphaerica* Hope, 1840; *Adonia* Myulsant, 1846; *Parippidamia* Iablokoff-Khnzorian, 1979) - Coccinellidae beetles, Subfamily Coccinellinae, Tribe Coccinellini (13 species in US or Canada)

Hippodamia convergens Guérin-Meneville (*H. modesta* Melsheimer, 1847; *H. praticola* Mulsant, 1850; *H. obsoleta* Crotch, 1873; *H. juncta* Casey, 1899) (Ac in Culberson, Edwards, Presidio, Sutton Cos., TX)

Hyperaspis Redtenbach, 1844 (= *Oxynchus* LeConte, 1850) - Coccinellidae beetles, Subfamily Scymninae, Tribe Hyperaspini (87 species in US or Canada)

Hyperaspis lateralis Mulsant, 1850 (= *H. omissa* Casey, 1879; *H. montanica*, *laevipennis* C. 1899; *H. flammula*, *wellmani* Nunenmacher, 1911; *H. idae* N. 1941; *H. nigrocauda* Dobzhansky, 1941) (Ac in one cave in Edwards Co., TX)

Hyperaspis trifurcata Schaeffer, 1905 (0 to 1000 years BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM))

Olla Casey, 1899 - Coccinellidae beetles, Subfamily Coccinellinae, Tribe Coccinellini (1

species in US)

Olla *v-nigrum* (*Harmonia* v. Mulsant, 1866; *Coccinella abdominalis* Say, 1824 Homo.; *Cycloneda sayi* Crotch, 1871; *O. plagiata*, *sobrina*, *fenestralis* Casey, 1899; *O. semilunaris* Johnson, 1910; *O. arizonae* Casey, 1924) (CA, TX, BC, ID, CO epigeal/ ash-gray ladybird beetle/Ac in cave in Sutton Co., TX)

COLYDIIDAE (cylindrical bark beetles)

Lasconotus Erichson, 1845 - Colydiidae beetles in Subfamily Colydiinae (21 species in US or Canada)

Lasconotus undet. sp. (>26,000 yrs.in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM))

CORYLOPHIDAE LeConte, 1852 (minute fungus beetles)

Rypobius LeConte, 1852 - Corylophidae beetles, Subfamily Orthoperinae (2 species in US or Canada)

Rypobius undet. sp. (Ac in cave in Burnet Co., TX)

CRYPTOPHAGIDAE Kirby, 1837 ((silken) fungus beetles) (incl. Hypocopridae) incl.
undet. Tx genus and species in CO

Tribe Atomariini (*Atomaria*)

Tribe Cryptophagini (*Cryptophagus*)

Atomaria Stephens, 1830 - Cryptophagidae beetles, Subfamily Atomariinae, Tribe Atomariini (41 species in US or Canada)

Atomaria undet. sp. (Tx or Ac in CA)

Atomaria *subrecta* Casey, 1900 (Tx or Ac in WA)

Cryptophagus Herbst, 1792 (fungus beetles) - Cryptophagidae beetles, Subfamily Cryptophilinae, Tribe Cryptophagini (43 species in US or Canada)

Cryptophagus near *fumidulus* Casey, 1900 (CA/occasional Tx)

Cryptophagus near *politus* Casey, 1900 (CA/occasional Tx)

Cryptophagus undet. species (NW/ Tx or Tp in AL,IL,KY; Tx in IN (Crawford, Harrison Cos.), MO; Tp in AR; Tx or Ac in CA,TX; Tx or Tp in one cave in MT; (in CA non-cave *Neotoma fuscipes* woodrat nest); on PA *Neotoma magister* woodrat)

Cryptophagus *valens* Casey, 1900 (Tx or Ac in 1 IL cave)

CUCUJIDAE

Cathartus - now in Silvanidae

CURCULIONIDAE Latreille, 1802 (snout beetles, (true) weevil (beetles) or water weevils)

Bibl.: Kissinger 1964

Undet. Genus (10,070 to 9,900 years old in *Neotoma* woodrat nest in Tinajas Mts., Yuma C Co,AZ)

Apioninae (pear-shaped weevils)

Tribe Apionini (*Apion*) (also put in Apionidae, also once in Brenthidae)

Brachyderinae Billberg, 1820 (broad-nosed weevils) (= Thylacitinae) (*Otiorhynchus* (now in Otiorrhynchinae),)

Tribe Brachyderini (*Mitostylus*, *Sciaphilus*)

Tribe Polydrusini (*Pantomorus*, *Polydrusus*)

Tribe Tanymericini (*Piscatopus*)

Cleoninae

Tribe Cleonini (*Cleonis*)

Cossoninae (bark weevils) (also put in Cossonidae)

Tribe Onycholipini (*Onychobaris*)

Cryptorhynchinae

Tribe Cryptorhynchini

SubTribe Tylodnia (*Calles*) (also put in Curculioninae)

Tribe Ithyporini (*Conotrachelus*, *Micromastus*) (both also put in Curculioninae)

Curculioninae L., 1802 (acorn and nut weevils)

(*Apleurus*, *Calles*, *Conotrachelus* (both now in Cryptorhynchinae), *Curculio*, *Steremnius*,)

Tribe Baridini, SubTribe Centrinina (*Anacentrinus*)

Tribe Smicronychini (*Smicronyx*)

Tribe Lixini, SubTribe Cleonina (*Cleonidius*)

Tribe Erihrinini, SubTribe Smicronychina (*Smicronyx*) (now in Smicronychini)

Dryophthorinae (*Scyphophorus*) (now in Baridinae)

Hylobiinae

Tribe Anchonini (*Lymnantes*)

Hyperinae (clover and alfalfa weevils)

Tribe Hyperini (*Hypera*)

Otiorrhynchinae

Tribe Leptopiini (*Dichoxenus*, *Orimodema*, *Sapotes*, *Trichalophus*)

Tribe Ophryastini (*Ophryastes*)

Tribe Otiorrhinini (*Otiorrhynchus*)

Tribe Peritelini (*Eucyllus*)

Prionomerinae

Tribe Tychiini (*Tychius*)

Rhynchophorinae

Tribe Sphenophorini (*Scyphophorus*)

Scolytinae (typical bark beetles) (also placed in own family)

Tribe Cactopinini (*Cactopinus*)

Tribe Corythylini (*Pityophthorus*)

Tribe Hylastini (*Hylastes*)

Anacentrinus Buchanan, 1932 - Curculionidae beetles in Subfamily Curculioninae, Tribe Baridini, subTribe Centrinina (14 species in US or Canada)

Anacentrinus *deplanatus* (*Limnobaris a.* Casey, 1892)) (Ac in one cave ni Edwards Co., TX)

Anchytarsus Guérin-Meneville, 1843 - now in Ptilodactylidae

Apion Herbst, 1797 - Curculionidae beetles, Subfamily Apioninae, Tribe Apionini (also put in Apionidae) (145 species in US or Canada)

Apion undet. sp. (0 to 1,000 & 7,300 to >26,000 yrs.BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM)

Apleurus Chevrolat, 1873 - Curculionidae beetles in Subfamily Curculioninae (7 species in US or Canada)

Apleurus *angularis* (*Cleonus a.* LeConte, 1859) (Ac or Tx remains in woodrat nest in one cave in Grand Canyon, Coconino Co., AZ)

Cactopinus Schwarz, 1899 - Curculionidae beetles, Subfamily Scolytinae, Tribe Cactopinini (also put in Scolytidae) (5 species in US)

Cactopinus *hubbardi* Schwarz, 1899 (saguaro bark beetle/ fossil in *Neotoma* woodrat midden, Puerto Blanco Mts., Pima Co., sAZ; 9,600 to 8,600 years old in *Neotoma* nest, Ajo Mts., Pima Co., AZ)

Calles Kissinger, 1964 - Curculionidae beetles in Subfamily Cryptorhynchinae, Tribe Cryptorhynchini, Subtribe Tylocladia (once in Curculioninae) (1 species in US)

Calles *cladotrichis* (*Tylocladia c.* Pierce, 1912) (12,900 yrs.BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM)

Cleonidius Casey, 1891 (= *Lixestus* Reitter, 1916) Curculionidae beetles in Subfamily Curculioninae, Tribe Lixini, Subtribe Cleonina (20 species in US or Canada)

Cleonidius *quadrilineatus* (*Apleurus q.* Chevrolat, 1873; *Cleonis q.*) (Ac or Tx remains in woodrat nest in Bida Cave, Grand Canyon, Coconino Co., AZ; *Cleonidius* sp. nr. *q.* Ac in Devil's Sinkhole, Edwards Co., TX;)

Cleonidius undet. sp. (Ac or Tx remains in woodrat nest in one cave in Grand Canyon, Coconino Co., AZ)

Cleonis Dejean, 1821 (= *Geomorus* Schonherr, 1823; *Cleonus* S., 1826) Curculionidae beetles in Subfamily Cleoninae, Tribe Cleonini (45 species in US or Canada)

Cleonis sp. nr. *quadrilineatus* = *Cleonidius q.*

Cleonis undet. sp. (12,000 to 12,300 yrs.BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM)

Conotrachelus Dejean, 1835 - Curculionidae beetles in Subfamily Cryptorhynchinae, Tribe Ithyporini (59 species in US or Canada)

Conotrachelus *invadens* Fall, 1907 (0 to 1,000 & 3,200 to 4,000 yrs.BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM)

Conotrachelus undet. sp. or species (3,200 to 4,000 yrs.BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM; 21,800. years old in *Neotoma* woodrat nest, Ajo Mts., Pima Co., AZ)

Curculio Linnaeus, 1758 - Curculionidae beetles in Subfamily Curculioninae (also put in Curculioninae) (30 species in US or Canada)

Curculio *proboscoides* (*Curculio p.* Fabricius, 1775) (Ttx in Crawford Co., KY) Bibl.: Sullivan 1962

Dichoxenus Horn, 1876 - Curculionidae beetles in Subfamily Curculioninae, Tribe Leptopiini (4 species in US or Canada)

Dichoxenus *setiger* Horn, 1876 (2,000 to 500 year old *Neotoma* woodrat nest in Big Bend Natl. Park, wTX)

Eucyllus Horn, 1876 - Curculioninae beetles in Subfamily Brachycerinae, Tribe Peritelini (8

species in US or Canada)

Eucyllus echinus Van Dyke, 1936 (21,800 years old in *Neotoma* nest, Ajo Mts., Pima Co., AZ)

Hylastes Erichson, 1836 - Curculionidae beetles, Subfamily Scolytinae, Tribe Hylastini (also put in Scolytidae beetles, Subfamily Hylesininae) (13 species in US or Canada)

Hylastes undet. sp. (<26,000 yrs.BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM/ 16,000 to 14,000 year old woodrat nest in Big Bend Natl. Park, wTX)

Hypera Germar, 1817 (= *Phytonomus* Schonherr, 1823) Curculionidae beetles in Subfamily Hyperinae, Tribe Hyperini (16 species in US or Canada)

Hypera *postica* (*Rhynchaenus* Gryllenhal, 1813) (epigeal in TX,CA,ID,NY,FL/ Ac in one cave in Hays Co., TX)

Lymantes Schonher, 1838 (= *Typhloglymma* Dury, 1901) - Curculionidae beetles in Subfamily Hylobiinae, Tribe Anchonini (also put in Curculioninae)(4 species in US or Canada)

Lymantes prob. *puteolatum* (Drury, 1901) (MO/Tx or Ac?)

Micromastus LeConte, 1876 - Curculionidae beetles in Subfamily Cryptorhynchinae, Tribe Ithyporini (1 species in US or Canada) (also put in Curculioninae)(1 species in US or Canada)

Micromastus *gracilis* Boheman, 1859 (confined to CA non-cave *Neotoma fuscipes* woodrat nest)

Mitostylus Horn, 1876 (= *Derosomus* Sharp, 1891) - Curculionidae beetles in Subfamily Brachycerinae, Tribe Brachyderini (4 species in US or Canada)

Mitostylus *setosus* Sharp, 1891 (Tp? in cave in Eddy Co.,NM)

Onychobaris LeConte, 1876 - Curculioninae beetles, Subfamily Cossoninae, Tribe Onycholipini (34 species in US or Canada)

Onychobaris *mystica* Casey, 1892 (Ac in one cave in Presidio Co., TX)

Ophryastes Say, 1831 - Curculioninae beetles, Subfamily Brachycerinae, Tribe Ophryastini (36 species in US or Canada)

Ophryastes *argentatus* LeConte, 1853 (4,200 to 19,700 yrs.BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM) 12,500 to 9,000year old woodrat nest in Big Bend Natl. Park, wTX))

Ophryastes undet. sp. or species (Ac or Tx remains in woodrat nest in one cave in Grand Canyon, Coconino Co.,AZ; fossil in *Neotoma* woodrat midden, Puerto Blanco Mts.,Pima Co., sAZ; 7,530 years old in *Neotoma* woodrat nest in Butler Mts., Yuma Co.,AZ/ 3,200 to 4,000 and 9,400 to 10,300 yrs.BP in *Neotoma* woodrat nest in wTX (El Paso Co.); 9,120+- 500 years old

in scNM)

Ophryastes *tuberosus* LeConte, 1853 (3,200 to 15,300 yrs.BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM)

Ophryastes *varius* LeConte, 1853 (3,200 to 4,000 yrs.BP in *Neotoma* woodrat nest in scNM)

Orimodema Horn, 1876 - Curculioninae beetles, Subfamily Brachycerinae, Tribe Leptopiini (1 species in US or Canada)

Orimodema *protracta* Horn, 1876 (Ac or Tx remains in woodrat nest in one cave in Grand Canyon, Coconino Co.,AZ)

Otiorrhynchus Germar, 1824 (once put in own family) - Curculionidae beetles in Subfamily Otiorrhynchinae, Tribe Otiorrhinini (also put in Brachycerinae) (16 species in US or Canada)

Otiorrhynchus *ovatus* Linnaeus, 1758 (NE/ Strawberry Root Weevil/Tx or Ac in sON; 2,000 year old remains in entrance pit in AB cave)

Pantomorus Schonherr, 1840 - Curculionidae beetles in Subfamily Brachycerinae, Tribe Polydrusini (10 species in US or Canada)

Pantomorus *elegans eximus* Horn, 1876 (3,200 to 4,000 yrs.BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM)

Piscatopus Sleeper, 1960 - Curculioninae beetles, Subfamily Brachycerinae, Tribe Tanymecini (1 species in US or Canada)

Piscatopus *griseus* Sleeper, 1960 (2,000 to 3,000 yrs.BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM)

Pityophthorus Eichhoff, 1864 - Subfamily Scolytinae in Curculionidae (also put in Scolytidae, Subfamily Scolytinae) (105 species in US or Canada)

Pityophthorus undet. sp. (9,120+- 500 years old in scNM *Neotoma* woodrat nest)

Polydrusus Germar, 1817 - Curculionidae beetles in Subfamily Brachycerinae (5 species in US or Canada)

Polydrusus *impressifrons* Gyllenhal, 1834 (MB, PQ, NB, NS epigeal/ Tx or Ac in sON)

Sapotes Casey, 1888 Curculionidae beetles in Subfamily Brachycerinae, Tribe Leptopiini (2 species in US or Canada)

Sapotes *longipilis* Van Dyke, 1934 (3,200 to 10,300 yrs.BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM)/ 29,000 to 500 year old in *Neotoma* woodrat nest in Big Bend Natl. Park,

wTX))

Sapotes undet. sp. (Ac or Tx in woodrat nest in one cave in Grand Canyon, Coconino Co.,AZ)

Sciaphilus Schonherr, 1823 - Curculionidae beetles in Subfamily Brachycerinae, Tribe Brachyderini (1 species in US or Canada)

Sciaphilus *asperatus* Bonsdorff, 1785 (eCanada & BC/Tx or Ac in sON)

Scyphophorus Schonherr, 1838 - Curculionidae beetles in Subfamily Rhynchophorinae, Tribe Sphenophorini (once in Dryophthorinae) (2 species in US or Canada)

Scyphophorus undet. sp. (Ac or Tx in woodrat nest in one cave in Grand Canyon, Coconino Co.,AZ)

Smicronyx Schonherr, 1843 - Curculionidae beetles in Subfamily Curculioninae, Tribe Smicronychini (also put in Eirrhiniini, subTribe Smicronychina) (70 species in US & Canada)

Smicronyx *imbricatus* Casey, 1892 (= *Synertha hornii* Dietz, 1894) (CA to SE except FL/ Ac in AZ)

Smicronyx undet. sp. (32,000 years old in Neotoma nest, Ajo Mts., Pima Co., AZ)

Steremnius Schonherr, 1836 - Curculionidae beetles in Subfamily Curculioninae (3 species in US or Canada)

Steremnius *carinatus* Boheman, 1842 (soil epigeal assoc. with Doug-fir tree roots/ Ac, Tx or Tp in Vancouver Island, BC)

Trichalophus LeConte, 1876 - Curculionidae beetles in Subfamily Brachycerinae, Tribe Leptopiini (9 species in US or Canada)

Trichalophus *alternatus* Say, 1831 (2,000 year old remains in entrance pit in AB cave)

Tychius Germar, 1817 - Curculionidae beetles in Subfamily Prionomerinae, tribe Tychiini (also put in Curculioninae) (14 species in US or Canada)

Tychius *tectus* LeConte, 1876 (2,000 years old in Neotoma nest, Ajo Mts., Pima Co., AZ) year old remains in entrance pit in AB cave)

Darkling beetles family - See Tenebrionidae

DASCILLIDAE Guérin-Meneville, 1843 (=Dasyllidae) (incl. Karumiidae) (soft-bodied plant beetles)

Macropogon - now in Armatopodidae

DERMESTIDAE Latreille, 1802 (dermestid, (dry) skin or larder beetles) (incl. Thorictidae). About 48 sp. & ssp. n. of Mex. Usually found on flowers, dried carcasses, in social Hymenoptera, bird & mammal nests, museums, houses. They eat pollen, feathers, hair, fur or insect remains.

Attageninae

Tribe Attagenini (*Attagenus*, *Novelsis*)

Dermestinae L., 1804

Tribe Dermestini (*Dermestes*)

Megatominae Leach, 1815

Tribe Anthrenini (*Anthrenus*, *Trogoderma*)

Anthrenus I.C. Schaeffer, 1776 - Dermestidae beetles in Subfamily Megatominae, Tribe Anthrenini (12 species in US or Canada)

Anthrenus prob. *verbasci* (= *Byrrhus* v. Linneaus, 1767) (NA epigeal / buffalo or varied carpet beetle/ Tx guanobitic/ Tp in one cave in Edwards Co., TX)

Attagenus Latreille, 1802 - Dermestidae beetles in Subfamily Attageninae, Tribe Attagenini (5 species in US or Canada)

Attagenus *elongatus* (*Caenoscelis elongata* Casey, 1900) (in CA non-cave *Neotoma fuscipes* woodrat nest)

Attagenus *megatoma* (*Dermestes m.* Fabricius, 1798; *D. piceus* Olivier, 1790 (Homo.); *D. unicolor* Brahm, 1791; *A. sordidus* Heer, 1841; *A. fulvipes* Mulsant & Rey, 1867; *A. obliquus* Rey, 1889; *A. deficiens* Casey, 1900; *A. canadensis* C.1916)) (black carpet beetle/ guanobitic Tp in Bracken Bat Cave, Comal Co., TX) Bibl.: Burkholder 1967; L. Butler 1968; Dunkel 1969

Attagenus undet. sp. or species (guanobitic Tp in San Saba & Val Verde Cos., TX; fungivore on ON bat guano)

Dermestes Linne', 1758 (larder beetles) - Dermestidae beetles in Subfamily Dermestinae, Tribe Dermestini (23 species in US or Canada)

Dermestes *ater* De Geer, 1774 (*D. domesticus* Germar, 1824; *D. cadaverinus* Fabricius, 1775; *D. piceus* Thunberg, 1781; *D. felinus* F., 1787; *D. hispidulus* Montrouzier, 1860; *D. chinensis* Motschulsky, 1866; *D. subcostatus* Murray, 1867; *D. noxius* Mulsant & Rey, 1867) (epigeal in NA/ black larder beetle/ Tp in TX)

Dermestes (*Dermestinus*) *carnivorus* Fabricius, 1775 (= *D. carniforus*) (E to BC/ Tx or Tp

gaunobic in Mex., TX)

Dermestes *nubilis* Say, 1832 (*D. caninus* Germar, 1824 (Homo.)(guanobic)(Tp in one cave in Edwards Co. & one in Sutton Co., TX)

Novelsis Casey, 1900 (= *Paranovelsis* C., 1900; *Genattus* Sharp, 1902) - Dermestidae beetles in Subfamily Attageninae, Tribe Attagenini (9 species in US or Canada)

Novelsis *versicolor* (*Attagenus* v. Jayne, 1882) (SW, Mex./Tx or Ac in CA)

Trogoderma Berthold, 1827 (= *Macropirion* Hope, 1840; *Eurhopalus* Solier, 1849; *Psacus* Opascoe, 1866; *Asidora* Mulsant & Rey, 1868; *Acolpus* Jayne, 1882; *Eucnocerus* Sharp, 1902; *Entomotrogus* Ganglbauer, 1904) Curculionidae beetles in Subfamily Megatominae, Tribe Anthrenini (also put in Megatomini) (15 species in US or Canada)

Trogoderma undet. sp. or species (Ac in cave in Travis Co., TX; in 2,000 to 500 year old in *Neotoma* woodrat nest in Big Bend Natl. Park, wTX))

Drive beetles family - See Elmidae

DRYOPIDAE Billberg, 1820 (longtoed water beetles or long-toed beetles). **Bibl.:** H. Brown, 1972, 1976.

Stygoparnus Barr & Spangler, 1992 - Dryopidae beetles (1 species in US)

Stygoparnus *comalensis* Barr & Spangler, 1992 (*Comal Spr. 2 & run, New Braunfels, Comal Co., TX/Tb/ Federally endangered T&E) C. Barr, 1993

DYTISCIDAE Leach, 1815 (water beetles or (predaceous) diving beetles). About 270 sp. n. of Mex., 147 genera, 3,000 sp. in world. Most St. in a beetle family. Many shallow-water habitats, esp. in emergent plant zone. Some in springs and cold pools. All larvae predaceous, some scavengers among adults. Univoltine or semivoltine. Most overwinter as adults. **Bibl.:** Young 1967.

Copelatinae Van den Branden, 1885 (once a tribe in Colymbetinae)
Tribe Copelatini (*Copelatus*)

Colymbetinae Erichson, 1837
Tribe Agabini (*Agabinus*, *Agabus*)

Dytiscinae Leach, 1815
Tribe Dytiscini (*Dysticus*, *Phytobius*)

Hydaticinae
Tribe Hydaticini (*Acilius*) (once in Dytiscinae)

Hydroporinae Aube, 1836 (*Comaldessus*, *Stygoporus*)

Tribe Bidessini (*Bidessonotus*, undet. Ac or Tx genus in TX)

Tribe Hydroporini (*Deronectes*, *Haideoporus*, *Hydroporus*, *Hygrotus*, *Lioporeus*)

Tribe Hydrovatini (*Hydrovatus*)

Laccophilinae Gistel, 1856

Tribe Laccophilini (*Laccodytes*, *Laccophilus*)

Agabinus Crotch, 1873 - Dytiscidae beetles in Subfamily Colymbetinae, Tribe Agabini (82 species in US or Canada)

Agabinus *sculpturellus* Zimmermann, 1919 (Ac, Tx or Tp in Vancouver Island, BC)

Agabus Leach, 1817. Bibl.: Fall, 1922 - Dytiscidae beetles in Subfamily Columbinae (87 species in US or Canada)

Agabus *larsoni* H. Ferry & Nilsson, 1993 (Tx or Ac in one cave in NS)

Agabus *semivittatus* LeConte, 1851 (epigean in NE,SE,SW US, Canada/ Tx or Ac in one cave in NS)

Agabus undet. sp. #1 (*seriatus* Say, 1823 group or species complex/ Tp? in one cave in OR Co.,MO)

Agabus undet. sp. #2 (Tp in Adams #2, OR Co.,MO)

Acilius (s. str.) Leach, 1817 (= *Homaeolytrus* Gobert, 1874) (small flat diving beetles)
Dytiscidae beetles in Subfamily Dytiscinae (7 species in US or Canada)

Acilius *fraternus* (*Dytiscus* f. Harris, 1828) (E/sinkholes in FL)

Bidessonotus Regimbart, 1895 - Dytiscidae beetles in Subfamily Hydroporinae, Tribe Bidessini (4 species in US or Canada)

Bidessonotus *longovalis* (*Bidessus* l. Blatchley, 1919) (epigean, sinkhole ponds in FL)

Bidessus Sharp, 1882 - Dytiscidae beetles in Subfamily Hydroporinae, Tribe Bidessini (19 species in US or Canada)

Bidessus undet. sp. (Ac in cave in Uvalde Co., TX)

Comaldessus Spangler & Barr, 1995 - Dytiscidae beetles in Subfamily Hydroporinae (1 species in US)

Comaldessus *stygius* Spangler & Barr, 1995 (*Comal Spr., New Braunfels, Comal Co.,TX/ Pb)

Copelatus Erichson, 1832 (= *Lioporus* Stephens, 1835) - Dytiscidae beetles in Subfamily Copelatinae, Tribe Copelatini (8 species in US or Canada)

Copelatus undet. sp. (Ac in one cave in Val Verde Co., TX) & 1 seAK cave)

Deronectes Sharp, 1882 - Dytiscidae beetles in Subfamily Hydroporinae, Tribe Hydroporini (21 species in US or Canada)

Deronectes undet. sp. (MI lake benthic)

Dysticus Linnaeus, 1758 - Dytiscidae beetles in Subfamily Dytiscinae, Tribe Dytiscini (12 species in US or Canada)

Dysticus undet. sp. (Ac or Tx in one cave? in NS)

Graphoderus Dejean, 1833 - Dytiscidae beetles in Subfamily Dytiscinae, Tribe Aciliini (5 species in US or Canada)

Graphoderus undet. sp. (Ac in 1 seAK cave)

Haideoporus Young & Longley, 1976 - Dytiscidae beetles in Subfamily Hydroporinae, Tribe Hydroporini (1 species in US)

Haideoporus *texanus* Y.& L., 1976 (type locality in artesian well; cave in Hays Co. +Comal Spr. (Comal Co.) & Hill Country,TX/St G1G2?) Longley & Spangler, 1977

Hydaticus = *Phytobius*

Hydroporus Clairville, 1806 (*Graptodytes* Seidlitz, 1887; *Nebrioporus* Regimbart; *Heterosternus*, *Stictotarsus*, *Stictonotus* Zimmermann, 1919; *Neoporus* Guignot, 1931; *Circinoporus* G., 1945 *Heterosternuta* Strand, 1935) - Dytiscidae beetles in Subfamily Hydroporinae, Tribe Hydroporini

Hydroporus (*Sternoporus*) *cimicoides* Sharp, 1882 (NJ & VA to FL/TTx? in FL sinkhole ponds)

Hydroporus *cocheconis* Fall, 1917 (PQ St. Lawrence sandy marine interstitial)

Hydroporus (*Neoporus*) *clypealis* Sharp, 1822 (eUS from MA to GA, w to IL,AL/ Ac or Tx in FL)

Hydroporus (s.str.) *falli* Blatchley, 1925 (peninsular FL/Tx? in sinkhole ponds)

Hydroporus pilatei = *Lioporeus p.*

Hydroporus (*Sanfilippodytes*) *planusculus* Fall, 1923 (PQ to BC, NH to NM,NF/Tp? in IA)

Hydroporus undet. sp. or species (Tx or Ac in nAL, nMS; PA (prob.) hyporheic)

Hydroporus (*S.*) *uniformis* Batchely, 1925 (s.FL sinkhole ponds)

Hydrovatus Motschulsky, 1855 (*Axynoptilus* Schaum, 1868; *Hydatonychus* Kolbe, 1883; *Vathydrus* Guignot, 1954) Dytiscidae beetles in Subfamily Hydroporinae, Tribe Hydrovatini (8 species in US or Canada)

Hydrovatus undet. sp. (Ac in 1 seAK cave)

Hygrotus Stephens, 1828 (= *Coelambus* Thomson, 1869)- Dytiscidae beetles in Subfamily Hydroporinae, Tribe Hydroporini (47 species in US or Canada)

Hygrotus *sayi* Balfour-Browne, 1944 (*Laccophilus punctatus* Say, 1824) (all Canada/Tx or Ac in sON),

Laccodytes Regimbart, 1895 - Dytiscidae beetles in Subfamily Laccophilinae, Tribe Laccophilini (1 species in US or Canada)

Laccodytes *pumilio* LeConte, 1878 (NB to FL epigeal/ NB St. Lawrence sandy marine interstitial)

Laccophilus Leach, 1817 - Dytiscidae beetles in Subfamily Laccophilinae, Tribe Laccophilini (14 species in US or Canada)

Laccophilus *maculosus* L., 1817 (= *L. californicus* Motschulsky, 1859; *L. descipiens* LeConte, 1851; *L. fuscus* Sharp, 1882; *L. shermani* Leech, 1944; *L. truncatus* Mannerheim, 1853) (s to GA, TX, NM, CA; eCanada w. to MB/ Tx or Ac in sON)

Laccophilus undet. sp. (Ac in one cave in Comal Co., TX)

Lioporeus Guignot, 1905 (= *Falloporus* Wolfe & Matta, 1981) - Dytiscidae beetles in Subfamily Hydroporinae, Tribe Hydroporini (2 species in US or Canada)

Lioporeus *pilatei* (*Hydroporus p.* Fall, 1917 (epigeal in TX & most of US e. of Great Plains/ TTx? in Blue Springs, FL),

Phytobius Schonherr, 1833 (*Hydaticus* Schonherr Hom.) - Dytiscidae beetles in Subfamily Dytiscinae, Tribe Dysticini (11 species in US or Canada)

Phytobius undet. sp. (Ac in 1 seAK cave)

Rhantus Dejean, 1833 - Dytiscidae beetles in Subfamily Columbinae, Tribe Columbetini (13 species in US or Canada)

Rhantus (*Rhantus*?) undet. sp. or species (Ac in 1 seAK cave; PQ Gulf of St. Lawrence sandy marine interstitial)

Stygoporus Larson & LaBonte, 1994 - Dytiscidae beetles in Subfamily Hydroporinae (1 species in US)

Stygoporus *oregonensis* Larson & LaBonte, 1994 (*shallow well near Dallas, Polk Co., OR/hyporheic).

ELATERIDAE Leach, 1815 (=Agrypnidae) (click beetles or wireworms). Most click when lying on back. Adults in low plants, rotting wood; they fast or feed on tender plant tissue. Larvae predaceous; soil ones mostly feed on roots.

Agrypninae Candeze, 1857 (*Agrypnus*, *Conoderus*, *Colaulon*, *Danosoma*) (all now in Pyrophorinae)

Cardiophorinae C., 1859 (*Cardiophorus*, *Esthesopus*, *Horistonotus*)

Denticollinae Stein & Weise, 1877 (*Limonius*) or in Pyrophorinae
Tribe Athoini (*Limonius*) (now in Elaterinae)

Subfamily Elaterinae
Tribe Denticollini (*Limonius*)
Tribe Elaterini (*Ampedus*, *Elater*)

Pyrophorinae
Tribe Agrypnini (= Adelocerini) (*Agrypnus*, *Danosoma*)
Tribe Conoderini (*Colaulon*, *Conoderus*)

Ampedus Germar, 1844 (= *Ectamenogonus* Buysson, 1893) Elateridae beetles, Subfamily Elaterinae, Tribe Ampedini (60 species in US or Canada)

Ampedus sp. nr. *impolitus* (*Elator i.* Melsheimer, 1844) (Ac in one cave in Bexar Co., TX)

Ampedus undet. sp. (Ac in cave in Bexar Co., TX)
Agrypnus rectangularis = *Colaulon r.*

Cardiophorus Eschscholtz, 1829 - Elateridae beetles in Subfamily Cardiophorinae (42 species in US or Canada)

Cardiophorus undet. sp. (Tx in MO; Tx or Tp in Coryell, Uvalde Cos., TX)

Colaulon Arnett, 1951 - Elateridae beetles in Subfamily Agrypninae (1 species in US or Canada)

Colaulon *rectangularis* (*Agrypnus r.* Say, 1825) *Adelocera curtus* Le Conte, 1853) (Tp guanobic in two caves in Val Verde Co., TX)

Conoderus Eschscholtz, 1829 (= *Monocrepidius* E.1829; *Oophorus* Melsheimer, 1844) (wireworms)- Elateridae beetles in Subfamily Pyrophorinae, Tribe Conoderini (once in Agrypninae) (20 species in US or Canada)

Conoderus undet. sp. (Ac in one cave in Bexar Co., TX)

Danosoma Thomson, 1859 - Elateridae beetles, Subfamily Agrypninae (2 species in US or Canada)

Danosoma obtectus (*Elater o.* Say, 1836; *Lepidotus o.*) (Tx or Ac in Carter Co., MO (tentative ID))

Elater Linnaeus, 1758 (*Ludius* Berthold, 1827; *Steatoderus* Dejean, 1835) - Elateridae beetles in Subfamily Elaterinae, Tribe Elaterini (4 species in US or Canada)

Elater undet. sp. (Ac in one cave? in Travis Co., TX)

Esthesopus Eschscholtz, 1829 - - Elateridae beetles in Subfamily Cardiophorinae (11 species in US or Canada)

Esthesopus praeditus Horn, 1885 (Ac in Kinney Co., TX)

Esthesopus undet. sp. (Ac in Brewster, Terrell Cos., TX)

Horistonotus Candeze, 1860 - Elateridae beetles in Subfamily Cardiophorinae (53 species in US or Canada)

Horistonotus curiatus (Elater Say, 1839) (Ac in one cave in Williamson Co., TX)

Horistonotus simplex LeConte, 1863 (NM epigeal/ Ac in one cave in Edwards Co.,TX)

Hypolithus Eschscholtz, 1829 (considered as *Agonum*/*Rhadine* subgenus) - Elateridae beetles in Subfamily Denticollinae (17 species in US or Canada)

Hypolithus undet. sp. or species (Ac in 1 seAK cave; 4,200 to to 5,500 yrs.BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM))

Lepidotus obtectus = *Danosoma o.*

Limonius Eschscholtz, 1829 (= *Gambrinus* LeConte, 1853; *Nothodes* L.1861; *Cidnopus* Thomson, 1859; *Pheletes* Kiesenwetter, 1863) (wire worms) Elateridae beetles in Subfamily Elaterinae, Tribe Denticollini (also put Denticollinae or in Pyrophorinae) (69 species in US or Canada)

Limonius flavomarginatus Knull, 1938 (epigeal in OH,NC,VA/Tp or Tx in MO bat guano) Martin, 1980)

Limonius mirus Le Conte, 1853 (Tx in CA)

Limonius undet. sp. (Tx or Ac in CA) & (Ac in one cave in Travis Co., TX)

Limonius undescr. sp.? (Tp or Tx? in MO)

ELMIDAE Schuckard, 1839 (drive or riffle beetles) Bibl.: H. Brown, 1983, 1987

Undet. genus rarely found in hyporheic of SC coastal blackwater stream

Undet genus in sON groundwater and rarely in hyporheic

Subfamilies incl.

Eliminae

Tribe Elmini

(*Ancyronyx*, *Dubiraphia*, *Heterelmis*, *Macrelmis*, *Macronyssus*, *Microcylloepus*,
Neoelmis, *Opitoservus*, *Stenelmis*)

Larainae (*Lara*)

Ancyronyx Erichson, 1847 - Elmidae beetles, Subfamily Elminae, Tribe Elmini (1 species in US)

Ancyronyx *variegata* (*Macronychus variegatus* Germar, 1824) (epigeal in neUs, w. to OK, TX, KS, MO/ IL, seVA hyporheic)

Dubiraphia Sanderson, 1954 - Elmidae beetles, Subfamily Elminae, Tribe Elmini (10 species in US or Canada)

Dubiraphia *quadrinotata* (*Elmis q.* Say, 1825) (seVA hyporheic)

Dubiraphia undet. sp. (Ac or Tx in TN; rare Virginian marine infauna)

Heterelmis Sharp, 1882 - Elmidae beetles, Subfamily Elminae, Tribe Elmini (4 species in US)

Heterelmis *comalensis* Bosse, Tuff & Brown, 1988 (Comal (Comal Co.) & San Marcos (Hays Co.) Spr., TX/ Federally endangered T&E/Pb) H. Brown & Barr, 1988

Lara LeConte, 1852 - Elmidae beetles, Subfamily Larainae (2 species in US)

Lara undet. sp. (hyporheic in OR)

Macrelmis Motschulsky, 1859 (= *Elsianus* Sharp, 1882) - Elmidae beetles, Subfamily Elminae (3 species in US or Canada)

Macrelmis *texana* (*Elsianus* Schaeffer, 1911) (hyporheic in Medina Co., TX)

Macronychus Muller, 1806 - Elmidae beetles, Subfamily Elminae, Tribe Elmini (1 species in US or Canada)

Macronychus *glabratus* Say, 1835 (IL, PQ, seVA hyporheic)

Microcylloepus Hinton, 1935 - Elmidae beetles, Subfamily Elminae, Tribe Elmini (4 species in US or Canada)

Microcylloepus *pusillus* (*Stenelmis* p. LeConte, 1852; *Elmis similis* Hon, 1870; *E. foveata* L. 1874; *Helmis apta*, *loedingi*, *perdita* Musgrave, 1933) (Tp in Barton Springs & cave in Travis Co., TX; seVA hyporheic)

Neoelmis Musgrave, 1935 - Elmidae beetles, Subfamily Elminae, Tribe Elmini (1 species in US)

Neoelmis *caesa* (*Elmis* c. LeConte, 1874) (epigean in TX, OK/ hyporheic in Medina Co., TX)

Optioservus Sanderson, 1954 - Elmidae beetles, Subfamily Elminae, Tribe Elmini (13 species in US or Canada)

Optioservus ampliatus (Fall) = *O. ovalis*

Optioservus *ovalis* (*Limnius* o. LeConte, 1863) (ON hyporheic)

Optioservus undet sp. (nCA hyporheic)

Stenelmis Dufour, 1835 - Elmidae beetles, Subfamily Elminae, Tribe Elmini (28 species in US or Canada) **Bibl.:** M. Sanderson 1937; Schmude 1992; W. Shepard 1980

Stenelmis *bicarinata* LeConte, 1852 (*S. maerkelii* Motschulsky, 1854; *S. vittipennis* Zimmermann, 1869; *S. convexula* Sanderson, 1938) (East to PQ/ TX hyporheic)

Stenelmis *calida* Chandler, 1949 (type locality cave, Indian Spr. & Point of Rocks Spr., Nye Co., NV/ Tx? or Tp)

Stenelmis *cheryl* H. Brown, 1987 (TX hyporheic)

Stenelmis *crenata* (*Elmis* m. Say, 1824; *S. sordida* Motschulsky, 1859) (Tx? in MN; ON hyporheic)

Stenelmis *exigua* Sanderson, 1938 (hyporheic in KY) Farmer 1978

Stenelmis *occidentalis* Schmude & Brown, 1991 (= *S. mexicanus*) (TX hyporheic)

Stenelmis undet. sp. or species (Ac or Tx in sON) (hyporheic in IL?, PQ, PA, Bexar, Travis Cos., TX; Tp in cave in Medina Co. & cave in Travis Co., TX; MI lake benthic; rare Virginian marine infauna)

EUGLENIDAE = ADERIDAE

GLARISIDAE (glaresid beetles)

Glaresis Erichson, 1848 (also put in Trogidae) (9 species in US or Canada)

Glaresis undet. sp. (16,000 to 8,000 year old in Neotoma woodrat nest in Big Bend Natl. Park, wTX)

GYRINIDAE Latreille, 1810 (whirligig beetles)

Subfamily Gyrininae

Tribe Gyrinini (*Gyrinus*)

Gyrinus Geoffroy, 1762 (*Gyrinulus* Zaitzer, 1907; *Oreogyrinus* Ochs, 1935) Gyrinidae beetles, Subfamily Gyrininae, Tribe Gyrinini (40 species in US or Canada)

Gyrinus *plicifer* LeConte, 1851 (*G. marginiventris* Motschulsky, 1859) (Tx or Ac in CA)

Gyrinus *pachysomus* Fall, 1922 (SC,VA,AL/sinkhole ponds in FL)

HALIPLIDAE Aube, 1836 (crawling water beetles)

Haliplus Latreille, 1802 (= *Cnemidotus* Illiger, 1802; *Hoplitus* Clairville, 1806; *Paraliaphlus*, *Liaphlus* Guignot, 1928) Haliplidae beetles (46 species in US or Canada)

Haliplus *annulatus* Roberts, 1913 (sinkhole ponds in FL),

Haliplus undet. sp. or species (Ac in 1 seAK cave; PQ Gulf of St. Lawrence sandy marine interstitial))

Peltodytes Regimbart, 1872 - Haliplidae beetles (18 species in US or Canada)

Peltodytes *muticus* (*Cnemidotus m.* LeConte, 1853) (sinkhole ponds in FL)

HELODIDAE (marsh beetles) - subsumed into Scirtidae

HISTERIDAE Gyllenhal, 1808 (clown, hister, or blister beetles). About 120 sp. n. of Mex. Mostly prey on insects assoc. with decaying organics. Some in animal burrows or commensal with ants.

Abraeinae

Tribe Abraeini (*Abraeus*) (once in Dendrophilinae)

Dendrophilinae Reitter, 1909

Tribe Anapleini (*Anapleus*)

Tribe Bacaniini (*Geocolus*)

Tribe Dendrophilini (*Dendrophilus*)

Tribe Paromalini (*Carcinops*, *Xestipyge*)

Histerinae Gyllenhal, 1808

Tribe Histerini (*Hister*, *Margarinotus*)

Saprininae Blanchard, 1845

(*Euspilotus*, *Geomysaprinus*, *Gnathoncus*, *Neosaprinus*, *Saprinus*)

Abraeus Leach, 1817 (*Habraeus* Agassiz, 1846 Emend.) Histeridae beetles in Subfamily Abraeinae, Tribe Abraeini (once in Dendrophilinae) (1 species in US)

Abraeus *bolteri* LeConte, 1880 (epigean CA, n. to WA, e. to TX/ Tp in one cave in Irion Co., TX)

Anapleus Horn, 1873 - idae beetles in Subfamily Dendrophilinae, Tribe Anapleini (2 species in US or Canada)

Anapleus *marginatus* LeConte, 1853 (Tp in cave in Kendall Co.,TX),
Anapleus undet. sp. (NM/Tp?,twigs)

Carcinops Marseul, 1855 (= *Carcinus* M.1855 (homo.); *Carcinopsiada* Casey, 1916) - Histeridae beetles in Subfamily Dendrophilinae, Tribe Paromalini (14 species in US or Canada)

Carcinops (*Carcinops*) *pumilio* (*Paromalus* p. Erichson, 1834; *Dendrophilus* *quaatuordecimstriatus* Stephens, 1835; *Hister nanus* Dejean, 1837 (Unav.); *Epierus krujanensis* Mader, 1921) (Tp guanobic in one cave in Medina co., TX) **Bibl.:** Geden 1984

Carcinops undet. sp. (Tp guanobic in one cave in Comal Co., TX)

Dendrophilus Leach, 1817- Histeridae beetles in Subfamily Dendrophilinae, Tribe Dendrophilini (5 species in US or Canada)

Dendrophilus undet. sp. (Ac or Tx in cave in Carter Co., KY)

Euspilotus Lewis, 1907 (also put in Buprestidae) (= *Neosaprinus* Bickhardt, 1909; *Platysaprinus* B., 1914; *Platysaprinus* B., 1916, *Hesperosaprinus* Wenzel, 1962) - Histeridae beetles in Subfamily Saprininae (28 species in US or Canada)

Euspilotus undescr. sp. near *agricus* Curtis, 1825 (Tp in one cave in Jackson Co.,AL/Ed in nearby area) &

Euspilotus undet. sp. (guanobic Tp in one cave in Burnet Co. & Menard Co., TX)

Geocolus Wenzel, 1944 - Histeridae beetles in Subfamily Dendrophilinae, Tribe Bacaniini (2 species in US or Canada)

Geocolus undescr. sp. (AL,GA/Tb,Ed),

Geomysaprinus Ross, 1940 (= *Priscosaprinus* Wenzel, 1962) Histeridae beetles in Subfamily Saprininae (4 species in US or Canada)

Geomysaprinus (*Priscosaprinus*) *laramiensis* (*Saprinus l.* Casey, 1893) (BC & AB to CA/Ac or Tx in CA)

Geomysaprinus undet. sp. (Tp in one cave in Kinney Co., TX)

Geomysaprinus (*P.*) undescr.? sp. (Tp in Mitchell C., San Bernadino)

Geomysaprinus umbilicatus = *Margarinotus u.*

Gnathoncus Jacquelin du Val, 1859 - Histeridae beetles in Subfamily Sapriniinae (5-8 species in US or Canada)

Gnathoncus deletus = *G. rotundatus*.

Gnathoncus *interceptus* (*Saprinus i.* LeConte, 1851) (in CA non-cave *Neotoma fuscipes* woodrat nest)

Gnathoncus *rotundatus* (*Hister r.* Kugelanin; *Saprinus deletus*; LeConte, 1845) (Tx? or Ac in one cave in Eddy Co., NM & Nickajack C., Marion Co., TN)

Hister Linneus, 1758 - Histeridae beetles in Subfamily Histerinae, Tribe Histerini (33-58 species in US or Canada). Bibl.: Caterino 1998

Hister interruptus = *Margarinotus i.*

Hister *foedatus* Leconte, 1844 (in CA non-cave *Neotoma fuscipes* woodrat nest)

Hister undet. sp. or species (Ttp? In NM carrion, fungi, burrows; (Tp in one cave in Kinney Co., TX; Tx or Ac in MN/ 100 and 10,500 to 10,800 yrs. in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM)))

Margarinotus Marseul, 1853 (= *Grammostethus* Lewis, 1906; *Eucalohister* Reitter, 1909; *Paralister* Bickhardt, 1917; *Ptomister* Houlbert & Monnot, 1922; *Stenister* Reichardt, 1926; *Promethister* Kryzhanovskij, 1966) Histeridae beetles in Subfamily Histerinae, Tribe Histerini (30 species in US or Canada)

Margarinotus *egregius* (*Hister e.* Casey, 1916) (Tx or Ac in GA (Dade Co.))

Margarinotus (*Ptomister*) *interruptus* (*Hister i.* Beauvois, 1805) (E to ON,PQ,NB/Tx in MO)

Margarinotus undet. sp. (Ac or TTx in MO)

Margarinotus *umbilicatus* (*Hister u.* Casey, 1893; *Geomysaprinus u.*) (Tx or Ac in CA)

Neosaprinus (= *Agricus* in BUPRESTIDAE?) Histeridae beetles in Subfamily Sapriniinae

Saprinus Erichson, 1834 (*Plesioprinus* Houlbert & Monnot, 1923 (Univ.); *Phaonius* Reichardt, 1941; *Hemisaprinus*, *Microsaprinus* Kryzhanovskij, 1976) - Histeridae beetles in Subfamily Sapriniinae (9-103 species in US or Canada)

Saprinus *discoidealis* LeConte, 1851 (*S. amplus* Casey, 1916; *S. latifrons* C.1918; *S. mayhewi* Papp, 1962; *S. latiformis* Casey) (BC to CA/Occasional Tx in CA)

Saprinus undet. sp. (Tp, guanobic in three caves in Irion Cos., TX)

Spilodiscus Lewis, 1906 - Histeridae beetles in Subfamily Histerinae, Tribe Histerini (19 species in US or Canada) **Bibl.:** Caterino 1998

Spilodiscus undet. sp. (Tp, guanobic in one cave in Edwards Co., TX)

Xestipyge Marseul, 1862 - Histeridae beetles, Subfamily Dendrophilinae, Subtribe Paromalini (2 species in US or Canada)

Xestipyge *conjunctum* (*Hister conjunctus* Say, 1825) (Tx or Ac in one cave in Stone Co., MO)

HYBOSORIDAE Erichson, 1847 (scarab, lamellicorn, or Hybosorine beetles)

Hybosorus MacLeay, 1819 - put in Scarabaeidae)

HYDROPHILIDAE Latreille, 1802 (water scavenger beetles). About 150 sp. n. of Mex.; terrestrial ones (Sphaeridiinae) not known from caves

Berosinae (*Berosus*) (put in Hydrophilinae)

Helophorinae (*Helophorus*)

Hydrobiinae (also used for subfamily of snail) (or subsumed in Hydrophilinae)

Tribe Helocharini

Subtribe Acidocerina (*Enochrus*, *Cymbiodyta*)

Tribe Hydrobiini (*Paracymus*) (put in Hydrophilinae)

Hydrophilinae Latreille, 1802

Tribe Anacaenini (*Paracymus*) (also put in Hydrobiinae)

Tribe Berosini (*Berosus*) (also put in Berosinae)

Tribe Hydrophilini

Subtribe Hydrophilina (*Tropisternus*)

Berosus Leach, 1817 (= *Enoplurus* Hope, 1838) Hydrophilidae beetles in Hydrophilinae, Tribe Berosini (also put in Berosinae) (17-29 species in US or Canada)

Berosus undet. sp. or species (Tx or Ac in nMS; IL?, TX hyporheic)

Cymbiodyta Bedel, 1881 (= *Hydrocombis* Sharp, 1882) Hydrophilidae beetles in Subfamily Hydrobiinae, Tribe Helocharini, Subtribe Acidocerina (22 species in US or Canada)

Cymbiodyta undet. sp. (Tx or Ac in TX, IN (or *Enochrus*))

Cymbiodyta *semistriata* (*Philhydrus* s. Zimmermann, 1869; *C. semistriata* Smetana, 1974; *P.*

fimriatus LeConte, 1855 or 1845 (nec M.1846) (E n.to NB, s. to SC, w. to CO/ Tp or Tx in cave each in Travis & Williamson Co., TX & Camden Co., MO)

Cymbiodyta *punctatostriata* (*Philhydrus p.* Horn, 1873) (CA/Tx or Ac in CA),
Cymbiodyta *vindicata* Fall, 1924 (Canada, US except SW,OR,CA/ Tx in cave in Culberson Co., TX)

Enochrus Thomson, 1859 (= *Methydrus* Rey, 1885; *Lunetus* Zaitzev, 1908; *Hugoscottia* Knisch, 1922; *Philhydrus*) Hydrophilidae beetles in Subfamily Hydrobiinae, Tribe Helocharini, Subtribe Acidocerina (20 species in US or Canada)

Enochrus *carinatus* (*Philhydrus c.* LeConte, 1855 (Sycamore Cr. (AZ) hyporheic)
Enochrus undet. sp. (Tx or Ac in IN)

Helophorus Illiger, 1801 - Hydrophilidae beetles, Subfamily Helophorinae (43 species in US or Canada)

Helophorus undet. sp. (Ac in 1 seAK cave)

Paracymus Thomson, 1867 Hydrophilidae beetles in Subfamily Hydrobiinae, Tribe Anacaenini (15 species in US or Canada)

Paracymus undet. sp. (Ac in cave in Edwards Co., TX)

Tropisternus Solier, 1834 (= *Pleurhomus* Sharp, 1883; *Cyphostethus* Orchymont, 1919; *Homostethus* O.1921, *Pristoternus* O., 1936) Hydrophilidae beetles in Subfamily Hydrophilinae, Tribe Hydrophilini, Subtribe Hydrophilina (14-17 species in US or Canada)

Tropisternus *lateralis* Leech, 1948 (ex parte, nec Fab.1775) (*H. dorsalis* Brulle, 1838; *Tripisternus sellatus* Laporte, 1840; *T. limbalis* LeConte, 1855; *T. marginatus*, *humeralis* Motschulsky, 1859; *T. binotatus* Walker, 1866) (Canada to FL, w. to Rockies)

Tropisternus *lateralis nimbatus* (= *T.n.* Say, 1823) (E to MB, ON, PQ, NS epigeal/ Ac in Dead Horse Sink, Comal Co., TX)

Lamellicorn beetles family - See Scarabaeidae

LAMPYRIDAE Latreille, 1817 (lightning bug or firefly; fire flies, glowworms).

Lampyrinae L.1817

Lampyrini (*Lampyris*, *Microphotus*)

Lampyris Linnaeus, 1758 (= *Pleotomodes* Green, 1948) Lampyridae beetles in Subfamily Lampyrinae, Tribe Lampyrini (2 species in US or Canada)

Lampyris undet. sp. (Tx or Ac in CA),

Microphotus LeConte, 1866 - Lampyridae beetles in Subfamily Lampyrinae, Tribe Lampyrini (7 species in US or Canada)

Microphotus undet. sp. (Ac in one cave in Irion Co., TX)

LANGURIIDAE Crotch, 1873 (lizard beetles)

Langurinae C., 1873

Tribe Languriini (*Languria*)

Languria Latreille, 1802 - Languriidae beetles in Subfamily Langurinae, Tribe Lampyrini (15 species in US or Canada)

Languria *laeta* LeConte, 1854 (stem borer/Tx in swallow nests in one cave in Edwards Co., TX)

Larder beetles family - See Dermestidae

LATRIDIIDAE Erichson, 1842 (=Lathridiidae) (minute brown scavenger beetles). About 60 sp. n. of Mex. Habitat & feeding similar to Histeridae. Unidentified genus & sp. in LAVA, Siskiyou Co., CA)

Corticariinae Curtis, 1829 (*Corticaria*)

Latridiine Erichson, 1842 (*Akalyptoischion*, *Enicmus*, *Latridius*, *Metophthalmus*)

Akalyptoischion Andrews, 1976 - Latridiidae beetles in Subfamily Latridinae (8 species in US or Canada)

Akalyptoischion undescr. sp. (Mitchell C., San Bernardino, CA/Habitual Tx)

Corticaria Marshall, 1902 - Latridiidae beetles in Subfamily Corticariinae (35 species in US or Canada)

Corticaria *pubescens* Gyllenhal, 1827 (Ac, Tx or Tp guanophile in one cave? in NS)

Corticaria undet. sp. or species (Ac in Williamson Co., TX & Mammoth C.(KY)/ 24,000 to 7,000 year old in *Neotoma* woodrat nest in Big Bend Natl. Park, wTX))

Enicmus C.G.Thomson, 1859 (22 sp.) - Latridiidae beetles in Subfamily Latridinae (12 species in US or Canada)

Enicmus undet. sp. (TTP or TTx in nAZ)

Latridius Herbst, 1793 (= *Lathridius* of authors, 1793 (missp.)) (square-nosed fungus beetles)
Lathridiidae beetles in Subfamily Latridinae (8 species in US or Canada)

Latridius undet. sp. (Ac in cave in Kerr Co., TX)

Metophtalmus Wollaston, 1854 - Latridiidae beetles in Subfamily Latridinae (6 species in US or Canada)

Metophtalmus *rudis* Fall, 1899 (Tp in Mitchell C., San Bernardino, CA)

LEIODIDAE Fleming, 1821 (round fungus or small scavenger beetles) (=Anisotomidae, incl. Catopidae, Colonida, Leptodiridae, Leptinidae)) (most genera also put in Catopidae or Leptodiridae). All have a nearly enclosed gutter incircling antennal articulation on dorsal antennae segments 7, 9 & 10 or 8-10 in 11-segmented antennae & segments 7-9 in 10-segmented antennae, with internal sensory vesicles in some segments. About 130 sp. n. of Mex. Most scavenge decaying organics in most forests or fields. Many cave ones eat fungi. **Bibl.:** R. Anderson, 1985; Gounot, 1967-9; Peck 1981a, 1990, 1997b; Horn, 1880, 1888; LeConte & Horn, 1883.

Agathidiinae (*Anisotoma*) (also put in Leiodinae)

Bathysciinae

Tribe Leptodirini? (*Bathyscia*)

Catapocerinae Hatch, 1927

Tribe Catopocerini (*Catopocerus*)

Tribe Glacicavicolini (*Glacicavicola*) (also put in Glacicaricolinae)

Cholevinae Kirby, 1837 (= Catopidae, Leptodiridae) **Bibl.:** Giachino & Peck 1998

Tribe Catopini (*Catops*, *Catroptrichus*, *Prionochaeta*) (all also put in Cholevini)

Tribe Cholevini (*Sciodrepoides*) **Bibl.** Peck 1981a

Tribe Anemadini (=Nemadini) (*Dissochaetus* *Nemadus*) (all also put in Cholevini)

Tribe Ptomaphagini (*Ptomaphagus*)

Coloninae Horn, 1880 (*Colon*)

Glacicaricolinae (*Glacicavicola*) (put in Catapocerinae)

Leiodinae Fleming, 1821

Tribe Agthidiini (*Anisotoma*) (also put in Agathidiinae)

Tribe Leiodini (*Leiodes*)

Tribe Pseudoliodini (*Colenis*)

Tribe Sogdini (*Triarthron*)

Adelopsis Portevin, 1907
Adelopsis cumberlanda = *Ptomaphagus c.*
Adelopsis loedingi = *Ptomaphagus l.*

Anisotoma Panzer, 1797 - Leiodidae beetles, Subfamily Leiodinae, Tribe Agthidiini (also put in Agathidiinae) (15 species in US or Canada)

Anisotoma *errans* W.J. Brown, 1937 (2,000 year old remains in entrance pit in AB cave)

Bathyscia Schiodte, 1849 - Leiodidae beetles, Subfamily Bathysciinae?, Tribe Leptodirini?

Bathyscia *thoracica* Motschulsky, 1854 (Tx or Ac in Mammoth C., KY)

Catopocerus Motschulsky, 1869 (= *Homaeosoma* Austin, 1880, *Pinodytes* Horn, 1880, *Typhroleiodes* Hatch, 1935) Leiodidae beetles in Subfamily Catopocerinae, Tribe Catopocerini Glacicavicolini (also put in Leptodiridae) (14 species in US or Canada) **Bibl.:** Peck, 1974a

Catopocerus *alabamae* Peck, 1974 (*type locality cave in Madison Co., AL/Tp, Ed)

Catopocerus *appalachianus* Peck, 1974 (AL to WV Appalachia, NC, TN, IL; Ed/Tp in AL, TN, WV)

Catopocerus *jonesi* Peck, 1974 (type locality cave in Marshall Co., 2 caves in Morgan Co., & one cave in Jackson Co., AL/ Tp, Ed)

Catopocerus *pusio* (*Pinodytes* Horn, 1892) (Tx or Ac in CA)

Catopocerus undescr. sp. (Tp or Tx in *OR C., OR)

Catopocerus *subterraneous* (*Typhroleiodes s.* Hatch, 1953) (Ac, Tx or Tp in Vancouver Island, BC)

Catops Paykull, 1798 (also put in Leptodiridae) (= *Sciodrepa* Thomson, 1862; *Sciodrepoides*) (10 sp., 6 undescribed) In US or Canada) Leiodidae beetles in Subfamily Cholevinae, Tribe Cholevini

Catops *alsiosus* (= *Choleva a.* Horn, 1885) (NA/Tx or Ac in KY, IN)

Catops *americanus* Hatch, 1928 (*Choleva americana*) (14,300 yrs. in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM))

Catops *basilaris* Say, 1823 (= *C. cadaverinus* Mannerheim, 1853; *C. spencianus* Kirby, 1837) (N, NC, SW/ Ttp? in WA; Tx or Ac in NWT; Tx or Tp in BC)

Catops *egenus* (*Choleva a.* Horn, 1880) (AK to CA & ON/Ac or Tx in WA)

Catops (fumatus) terminans = *Sciodrepoides t.*,

Catops *gratiosus* (= *holeva g.* Blanchard, 1915; *Choleva alsiosa* Blatchley (not Horn), 1910) Hatch, 1928 (VA to AB & BC(disjunct), ME, ON, NS, PQ, WA disjunct/Tp in Al (DeKalb Co.), BC, GA (Dade & Walker Cos.), IL, IN (Monroe, Crawford, 4 cos. (S2/G4)), KY (Mammoth C.,

Carter, Fayette, Barren Cos.), sON, TN (Stewart, Dickson Cos.), WA, WV) Peck, 1974

Catops (= *Sciodrepoides*) undet. sp. or species (facultative Tp in SE; Tx or Ac in AK, CA, MN; (2,000 year old remains in entrance pit in AB cave)

Catops *terminans* = *Sciodrepoides t.*

Catoptrichus Murry, 1856 (= *Sciodrepa* (in part) C.G. Thomson, 1862) Leiodidae beetles in Subfamily Cholevinae, Tribe Cholevini (1 species in US and Canada)

Catoptrichus *frankenhaeuseri* (*Catops f.* Mannerheim, 1852) (epigeal AK to OR/ Tp? in BC, OR, WA)

Choleva (also placed in Silphidae) = *Catops*

Colenis Erichson, 1845 - Leiodidae beetles, Subfamily Leiodinae, Tribe Pseudoliodini (4 species in US or Canada)

Colenis *impunctata* LeConte, 1853) (epigeal from MI s. to FL, LA/ from dead Tx bat in Carter Co., MO)

Colon Herbst, 1777 (= *Curvimanon* Fleischman, 1807; *Myloechus* Latreille, 1807) Leiodidae beetles in Subfamily Coloninae

Colon undescr. sp. (Tx or TP in OR C., OR)

Dissochaetus Reitter, 1884 (also put in Leptodiridae) Leiodidae beetles in Subfamily Cholevinae, Tribe Nemadini or Cholevini (3 species in US or Canada) S. Peck 1999

Dissochaetus *oblitus* (*Catops o.* LeConte, 1853) (Tx, Tp or Ac in Nickajack C., TN)

Dissochaetus undescr. sp. (*?cave in Eddy Co., NM/Tp?)

Glacicavicola Westcott, 1968 - Leiodidae beetles in Subfamily Catopocerinae, Tribe Glacicavicolini (also put in Glacicaricolinae) (1 species in US) **Bibl.:** Peck, 1974

Glacicavicola *bathyscioides* Westcott, 1968 (type locality cave in Clark Co. & one cave each in Power & Fremont Co., + Craters of the Moon Natl. Monument (Butte Co., ID) & adjacent WY/ Tb/ ID T&E S1S3, global G3G4 rank). **Bibl.:** Larsen, Booth & Perkes, 1984; Larsen, Booth, Perks & Gundersen 1979; Peck 1970, 1974, 1981c

Leiodes Latreille, 1796 - Leiodidae beetles in Subfamily Leiodinae, Tribe Leiodini (72 species in US or Canada)

Leiodes undet. sp. (15,000 to 13,000 year old in *Neotoma* woodrat nest in Big Bend Natl. Park, wTX)

Leptinus Muller, 1818 - Leiodidae beetles in Subfamily Platypsyllinae (once in Leptinidae) (3 species in US and Canada)

Leptinus *testaceus* Muller, 1817 (*L. americanus* LeConte) (in BC *Neotoma* woodrat nest/ mouse-nest beetle)

Nemadus Thompson, 1867 Leiodidae beetles in Subfamily Cholevinae, Tribe Anemadini (also put in Nemadini & Leptodiridae). (11 species in US or Canada) Bibl.: Fall 1937

Nemadus *horni* Hatch, 1933 (E to PA/ Tp guanobic in AL, nFl, GA(Dade, Decatur & Walker Cos.), KY, VA)

Nemadus undescr. sp(p). (Dickson, Robertson & Bedford Cos.,TN/ Tb)

Nemadus maybe undescr. sp. (Tp guanobic in one cave each in Alachua & Jackson Cos., FL/ SE epigean?)

Prionochoeta Horn, 1880 (also put in Leptodiridae) Leiodidae beetles in Subfamily Cholevinae, Tribe Cholevini (1 species in US and Canada)

Prionochoeta *opaca* (*Catops opacus* Say, 1825) (AR,nFL, to sON,PQ,NS, w.to IA, KY, OK, TN, VA/ facultative Tp guanobic in AR, nFL, GA, sON, IA, KY, OK, TN, VA) Peck 1977a

Ptomaphagus Illiger, 1798 (*Adelops* Telkampff, 1844; *Catopsimorphus* Aube, 1850) (also put in Leptodiridae) (52 species in US or Canda) Leiodidae beetles in Subfamily Cholevinae, Tribe Ptomaphagini. Bibl.:Barr 1963d, Carmody, Murphy & Peck 1972; Cohen & Poulson 1982; Peck 1973a, 1976a, 1977, 1978, 1982a, 1983, 1984, 1986a, 1997; Carmody & Peck 1973; Peck 1967, 1998

Ptomaphagus abditus = *P. cavernicola*

Ptomaphagus *appalachiana* Peck, 1978 (type locality cave in De Kalb Co.,AL)/neAL, nwGA/ Tp)

Ptomaphagus *barri* Peck, 1975 *(type locality & one other cave in Cannon Co.,TN/Tb/ S1S2 G1G2)

Ptomaphagus (*Adelops*) *californicus* (*Catops c.* LeConte, 1853; *P. latior* Hatch, 1933) (saprophilein CA,CO,NV/Tp & burrows, ant nests in CA,NV) MacKay 1980

Ptomaphagus *cavernicola* Schwarz, 1898 (= *P. abditus* Peck, 1973) (type locality cave in Stone Co.,MO or Talneah C., Morgan Co., AL/one SC epigean site/ Tp in AR (Fuloton, Searcy Cos.), AL, AR, nFL, GA (Decatur & Grady Cos.), IN(questionable record), IA, neMexico, MO, OK, TX/former candidate T&E/Tp, rare epigean in IL, KY,T N). Bibl.: Peck 1973, 1982b

Ptomaphagus *chromolithus* Peck, 1984 (Jackson Co.(AL) & Franklin Co.(TN),*upper Paint

Rock River Valley/Tb G3G4)

Ptomaphagus cocytus Peck, 1973 (type locality cave in Coconino Co.(AZ)/Tb/round fungus beetle)

Ptomaphagus (Adelops) consobrinus Leconte, 1853 (saprohile in NC, FL/ Tx in cave in Madison Co., AL)

Ptomaphagus cumberlandia Peck, 1978 (= *Adelopsis c.*) (Ep, Tp in one cave in Jackson Co. & 2 in Marshall Co., AL)

Ptomaphagus episcopus Peck, 1973 (**type locality & 1 other cave in Marshall Co., AL/ Tb)

Ptomaphagus fecundus (= *P. hatchi* f. Barr, 1963) Peck, 1973 (*type locality cave in Franklin Co., seTN/ Tb/ S1S2 G1G2) Peck 1984

Ptomaphagus fiskei Peck, 1973 (type locality & at least six other caves in e. & w. flanks of Pigeon Mt., Walker Co., GA/ red leiodid beetle/ Tb)

Ptomaphagus fesus Horn, 1885 (= *P. inermis* Jeannel, 1933) (CA, W, Mex/ Tp & hypogean nests & burrows in CA, TX)

Ptomaphagus fumosa Peck, 1978 (Ed in Great Smokies Natl. Park/ Tp in nwGA)

Ptomaphagus (Adelops) hatchi Jeannel, 1939 (*P. henroti* h. & *P. laticornis* J., 1949) (type locality cave in Grundy Co. & other caves in Franklin Co., seTN & Jackson & Marshall Co., neAL/ Tb G3G4T3T4) Peck 1973, 1984

Ptomaphagus hazelae Peck, 1973 (type locality cave & 2 other caves in Jackson Co., AL/ Tb/ G1G2)

Ptomaphagus henroti ellipticus Jeannel, 1949 (type locality cave in Madison Co., Huntsville, AL/ Tb/ G1)

Ptomaphagus henroti henroti = *P. hatchi*

Ptomaphagus (Adelops) hirtus (*Adelops h.* Tellkamp, 1844) Jeannel, 1936 (Mammoth C. (Type locality) /Edmonson, Barren, Warren & Hart Cos., KY/ Tb G3). **Bibl.:** Caccone 1985; Laing, Carmody & Peck 1976a; Peck 1975c; J. Cohen 1985-6; Hoey 1979

Ptomaphagus (Adelops) hubrichti Barr, 1958 (type locality cave in sDe Kalb Co. + Cannon & Wilson Cos., TN/ Tb/ S3G3) Peck 1975

Ptomaphagus (Adelops) inyoensis Peck & Gnaspini, 1997 (*type locality cave in Inyo Co., CA/ Tp)

Ptomaphagus inermis = *P. fesus*

Ptomaphagus jonesi Jeannel, 1949 (junior? syn. of *P. loedingi*) (type locality & 2 other caves in Colbert Co., AL/ Tp,Ep)

Ptomaphagus julius (*P. loedingi* j. Peck, 1973; also treated as = *P. loedingi*) P.1984 (type locality & 1 other cave in Jackson Co.,AL/Tb) Peck 1984

Ptomaphagus laticornis Jeannel, 1949 (also syn. of *P.hatchi*) (type locality & one other cave in Madison Co., AL/Tb G3) Peck 1984

Ptomaphagus latior = *P. californicus*

Ptomaphagus loedingi (*Adelopsis l.* Hatch, 1953; *A. valentinei jonesi*, *P.v.j.*; *P. ellipticus, jonesi, longicornis* Jeannel, 1949; *P. julius* & *solanum* Peck, 1973) Jeannel, 1936 (type locality & one other cave in Madison Co. +Jackson Co.,AL/Tb G1G2). Bibl.: Peck 1975c, 1978; Peck 1968

Ptomaphagus longicornis (*P.valentinei l., loedingi longicornis* Jeannel, 1949; junior? syn. of *P. loedingi*) Peck, 1984 (type locality cave in Madison Co.,*w.outliers of Cumberland Plateau w. of Flint R.,Madison & Jackson Cos.,AL/Tb G3)

Ptomaphagus (*Adelops*) *nevadicus* Horn, 1880 (*P. piperi* Hatch 1933; *P. densus* & *thomomysi* H. 1957) (BC to MB & CA/Tp in Calaveras & Tuolumne Cos.,CA)
Ptomaphagus nicholasi Barr, 1963 = *P. hirtus*

Ptomaphagus scottsboroensis Peck, 1978 (type locality in limestone cracks near cave in Jackson Co., *headwaters of Mud & Coon Cr./Tp)

Ptomaphagus shapardi Sanderson, 1939 (type locality cave in Cherokee Co.,OK/Eb/Tp in AR, MO?, OK, TX) Peck, 1982a

Ptomaphagus solanum (*P.loedingi solanum* Peck, 1973) P., 1984 (type locality cave in Jackson Co. , AL/ Tb G1G2)

Ptomaphagus undet. sp. (Ac or Tx in 1 seAK cave)

Ptomaphagus torodei Peck, 1984 (type locality & one other cave in Jackson Co.,AL/Tb G1G2)

Ptomaphagus valentinei v. Jeannel, 1933 (type locality cave in Jackson Co. & other caves in Madison Cos.,AL/Tb G3) Peck 1973, 1984

Ptomaphagus valentinei jonesi =*P. loedingi*

Ptomaphagus valentinei longicornis = *P. l.*

Ptomaphagus walteri Peck, 1973 (type locality & two other caves in Blount Co., AL/ Tb G1G2)

Ptomaphagus *whiteselli* Barr, 1963 (type locality & at least 4 other caves Dade Co.,nwGA + at least two caves in De Kalb Co.,AL/ Tb / G3G43) Peck 1973

Sciodrepoides Hatch, 1933 (=Catops in part) Leiodidae beetles in Subfamily Cholevinae, Tribe Cholevini (2 species in US or Canada)

Sciodrepoides *fumatus terminans* (C.t. LeConte, 1850) (epigean n. half of NA/ TX? in GA)

Triarthron Maerkel, 1840 - Leiodidae beetles, Subfamily Leiodinae, Tribe Sogdini (2 species in US or Canada)

Triarthron undet. sp. (Ac or Tx in NS cave)

LEPTINIDAE (mammal nest beetles) (genera now in Leiodidae).

LEPTODIRIDAE (small carrion beetles) (genera now in Leiodidae).

Long-toed (water) beetles family - See Dryopidae

MELANDRYIDAE (false darkling beetles)

Subfamily Melandryinae

Tribe Serropalpini (*Xylita*)

Allopoda, *Anaspis* & *Scraptia* - all now in Scraptidae)

Xylita Paykull, 1798 - Melandryidae beetles in Subfamily Melandryinae, Tribe Serropalpini (4 species in US or Canada)

Xylita undet. sp. (Ac in 1 seAK cave)

MELOIDAE (blister beetles)

Meloinae

Tribe Lyttini

Subtribe Eupomphina (*Megetra*, *Pyrota*)

Subtribe Epicautina (*Epicauta*)

Nemognathinae

Tribe Nemognathini

Subtribe Nemognathina (*Nemognatha*)

Epicauta Dejean, 1836 (=Causima D.1836; *Henous* Halderman, 1852; *Macrobasis*, *Apterospasta* LeConte, 1858; *Isopentha* Mulsant, 1858; *Pleuropompha* L.1862; *Nomaspis* L.1866; *Gnathopasta* Horn, 1875; *Anomalonyx* Denier, 1935; *Anomalonychus* Saylor, 1940; *Maculicauta* Dillon, 1952) blister beetles in Meloidae, Subfamily Meloinae, Tribe Lyttini, Subtribe Epicautina (111 species in US or Canada)

Epicauta *nigritarsus* (*Lytta n.* LeConte, 1853; *E. hesitata* Dillon, 1952) (?Ac in one cave in Sutton Co., TX)

Epicauta undet. sp. (?Ac in cave in Uvalde Co., TX)

Megetra LeConte, 1859 (also put in Scarabaeidae) Meloidae beetles, Subfamily Meloinae, Tribe Lyttini, Subtribe Eupomphina (8 species in US or Canada)

Megetra *cancellata* (*Meloe c.* Brandt & Erichson, 1832; *Megetra hoegei* Duges, 1889; *Megetra championi* Van Dyke, 1928) (Ac in one cave in Culberson Co., TX)

Nemognatha Illiger, 1807 (= *Nematognatha* Gemminger & Harold, 1870 Emend.; *Pronemognatha*, *Pauronemognatha*, *Meganemognatha* Enns, 1956) Meloidae beetles, Subfamily Nemognathinae, Tribe Nemognathini, Subtribe Nemognathina (28 species in US or Canada)

Nemognatha *lurida l.*, *apicaulis* LeConte, 1853; *N. bicolor* Walker, 1866; *N. hurdi* MacSwain, 1951; *N. rufa* Duges, 1899) (epigeal in CA, AZ, TX, BC, WA, OR, NV, UT, AB, CO/ nectar sucking blister beetle/ ?Ac in one cave in Sutton Co., TX)

Pyrota Dejean, 1833 - Meloidae beetles, Subfamily Meloinae, Tribe Lyttini, Subtribe Eupomphina (27 species in US or Canada)

Pyrota *postica* LeConte, 1866 (*Cantharis lacordairei* Berg, 1881) (epigeal in AZ, NM, TX/creosote bush beetle/ Ac in John's Guano Mine, Presidio Co., TX)

MELYRIDAE Leach, 1815 (=Malalchiidae) (soft-winged flower beetles)
undet. sp. (8,970 years old in *Neotoma* woodrat nest in Tinajas Mts., Yuma Co., AZ)

Subfamily Dasytinae (*Mecomyceter*)

Subfamily Malachiinae Fleming, 1821 (*Attalusinus*, *Collops*)

Attalusinus Leng, 1918 - Melyridae beetles, Subfamily Melachiinae (1 species in US)

Attalusinus *submarginatus* (= *Ebaeus s.* LeConte, 1852) (CA, AZ, TX epigeal /Occasional Tx in CA)

Collops Erichson, 1840 - Melyridae beetles, Subfamily Melachiinae (48 species in US or Canada)

Collops *balteata* LeConte, 1852 (*C. oklahomensis* Brown, 1928) (Ac in one cave in Uvalde Co., TX)

Mecomyceter Horn, 1882 Melyridae beetles, Subfamily Dasytinae (4 species in US or Canada)

Mecomyceter undet. sp. (Ac in 1 seAK cave)

MICROMALTHIDAE (telephone-pole or micromalthid beetles)

Micromalthus Leconte, 1878 - Micromalthidae beetles (1 species in US)

Micromalthus *debilis* L. 1878 (Ac in one cave in Bexar Co., TX)

MYCETOPHAGIDAE Leach, 1815 (hairy fungus or sap beetles).

Subfamily Mycetophaginae L., 1815

Tribe Mycetohagini (*Litargus*, *Typhaea*)

Litargus Erichson, 1846 (*Tilargus*, *Alitargus*, *Litargellus*, *Paralitargus* Casey, 1900)

Mycetophagidae beetles, Subfamily Mycetophaginae, Tribe Mycetohagini (6 species in US or Canada)

Litargus *balteatus* LeConte, 1856 (*L. transversus* & *infulatus* L., 1856) (Tp? In IA)

Typhaea Curtis, 1839 - Mycetophagidae beetles in Subfamily Mycetophaginae, Tribe Mycetohagini (1 species in US and Canada)

Typhaea *stercorea* Linnaeus, 1758 (cosmopolitan epigeal/ hairy fungus beetle/ >26,000 yrs. BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM/ 15,000 to 14,000 & 2,000 to 500 year old in *Neotoma* woodrat nest in Big Bend Natl. Park, wTX)

marsh beetles - See Scirtidae

NITIDULIDAE Latreille, 1802 (sap(-feeding) & fungus beetles; sap-feeding & dried fruit beetles. Undet. genera (OK Tx? on organics; Late Pleisto. To middle Holocene in *Neotoma* woodrat nest in Tinajas Mts., Yuma Co, AZ))

Cillaeinae Kirejtshuk & Audison, 1986 (*Conotelus*) (also put in Carpophilinae)

Cryptarchinae Thomson, 1859 (*Glischrochilus*)

Carpophilinae (*Epuraea*) (now in Nitidulinae)

Nitidulinae Latreille, 1802 (*Eupuraea*, *Stelidota*)

Conotelus Erichson, 1843 - Nitidulidae beetles, Subfamily Cillaeinae (4 species in US or Canada)

Conotelus *stenoides* Murray, 1864 (> 26,000 yrs. BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM)

Epuraea Erichson, 1843 - Nitidulidae beetles, Subfamily Carpophilinae (34 species in US or Canada)

Epuraea *avara* Randall, 1838 (Ac, Tx or Tp in Vancouver Island, BC)

Glischrochilus Reitter, 1873 (= *Librodor* R., 1884) (9 sp.) Nitidulidae beetles, Subfamily Cryptarchinae (9 species in US)

Glischrochilus *fasciata* (*Nitidula f.* Olivier, 1790; *Ips quadrimaculosa* & *geminatus* Melsheimer, 1846; *I. cylindricus* LeConte, 1863) (epigeal in NE/ red-spotted sap beetles/Tx or Ac in 2 KY caves)

Carpophilus Stephens, 1830 - Nitidulidae beetles, Subfamily Carpophilinae (35 species in US or Canada)

Carpophilus undet. sp. (fossil in *Neotoma* woodrat midden, Puerto Blanco Mts., Pima Co., AZ)

Stelidota Erichson, 1843 - Nitidulidae beetles, Subfamily Nitidulinae (4 species in US)

Stelidota undet. sp. (Ac in TX)

NOTERIDAE Thomson, 1860 (burrowing water beetles)

Undet. genera (OK/on organics)

Noterinae T., 1860

Tribe Notomicrini (*Notomicrus*,

Tribe Suphisini (*Suphisellus*)

Notomicrus Sharp, 1882 - Noteridae beetles, Subfamily Notorinae, Tribe Notomicrini (2 species in US or Canada)

Notomicrus undet. sp. (Ac in Valdina Farms Sinkhole, Medina Co., TX)

Suphisellus Crotch, 1873 (5 sp.) - Noteridae beetles, Subfamily Notorinae (6 species in US or Canada)

Suphisellus *puncticollis* (*Suphis p.* C., 1873) (MA to MI, s.to FL/FL sinkhole pond)

Suphisellus *insularis* (*Canthydrus i., simplex, similis* Sharp, 1887; *C. floridanus* Blatchley, 1914) (FL to Caribbean/ FL n. to Alachua Co. in sinkholes)

OMOPHRONIDAE - subsumed into Carabidae

OTHNIIDAE (false tiger beetles) - See Staphylinidae

Predacious diving beetle family - See Dytiscidae

PHALACRIDAE (shining flower or shining mold beetles)

Litochropus Casey, 1893 - Phalacridae beetles (2 species in US or Canada)

Litochropus undet. sp. (Ac in 1 seAK cave)

PHENGODIDAE LeConte, 1861 (glow-worm beetles)
(unidentified genus & sp. in Calaveras Co., CA; Menard Co., TX)

PSEPHENIDAE (water penny beetles)

Psephenus Haldeman, 1853 - Psephenidae (1 species in US)

Psephenus herricki (Fluvicola h. DeKay, 1844) (epigeal in E, w. to OK, KS/ water penny beetle/
PA hyporheic)

PSELAPHIDAE Latreille, 1802 (((ant-like litter beetles or (short-winged) mold beetles) (also subsumed in Staphylinidae as Pselaphinae L., 1802 (ant-loving beetle subfamily). Antennae with apical antennomere(s) enlarged, body generally stouter & more rigid than in Staphylinidae, 2-3 tarsomeres, vertexal foveae. Mainly in wet organic substrates (leaf litter, logs, low plants). Adults prey on small invertebrates such as nematodes, mites & springtails. About 100 sp. n. of Mex

Bibl.: J. Bowman 1934; Chandler 1990; Engelmann 1956; LeConte 1950; Park 1951, 1953a,b, 1956, 1958, 1960; Reitter, 1881; Newton & Chandler 1989; Peck 1974; Park 1951; **NA:** Chandler 1990; **SE:** Park 1956; **TN:** Park 1951; **TX:** Chandler 1992; Carlton 1990;. Antennae with apical antennomere(s) enlarged, body generally stout & rigid, two to three tarsomeres & vertexal foveae. incl. 3 unidentified genera & sp. in Calaveras Co., CA) **General taxonomy:** Bowman 1934; Park 1953; Chandler 1990; Chandler 1997; **Cave biology:** Park 1951, 1956, 1960. Keys: **AL+TN** Park 1951; **e.US** Park 1960; **TX:** Chandler 1992.

Subfamily Batrisinae

SuperTribe Batrisitae

Batrisini (*Batrisodes*, *Batriasymmodes* (also put in Pselaphinae & Staphalinidae)
Texamaurops)

Subfamily Goniacerinae

Tribe Bythinini (*Subterrochus*, *Speleocheus*, *Tychobythinus*)

Tribe Speleobamini (*Speleobama*)

Subfamily Pselaphinae (*Arianops*, *Pselaptrichus*)

SuperTribe Batrisitae

Tribe Batrisini (*Batriasymmodes*) (also put in Batrisinae & Staphalinidae)

Tribe Amauropsini (*Arianops*)

SuperTribe Euplectitae

Tribe Euplectini (*Biblopectus*)

SuperTribe Pselaphitae

Tribe Tmesiphorini (*Tmesiphorus*)

Arianops Brendel, 1893; (syn. *Arispeleops* Park), Barr 1974, revision) - Pselaphidae beetles,

Subfamily Pselaphinae, Super Tribe Batrisitae, Tribe Amauropsini (also put in Staphylinidae, Subfamily Pselaphinae, Tribe Amauropsini or in Tribe Batrisini, Subtribe Amauropsina) (31 species in US)

Arianops *cavernensis* Park, 1951 (*type locality cave in Marshall Co., AL). AL/Tb)

Arianops *jeanneli* Park, 1956 (*type locality cave in Lee Co., VA). VA/Tb/VA T& E S1 G1 rank.

Arianops *pecki* Barr, 1974 (type locality & two other caves in Cannon Co., TN/ Tb/ G1)

Arianops undescr. sp. (Tb? in AL)

Arianops *steevesi* Barr, 1974 (type locality & one other caves in Jackson Co., AL/ Tb)

Arianops *stygica* Park, 1960 (type locality Cumberland Cave, Warren Co., TN/ Tp)

Arispeleops = *Arianops*

Babnormodes = subgenus of *Batrisodes*

Batriasymmodes Park, 1951 (as subgenus); Park 1965, as genus, revision) Pselaphidae beetles, Subfamily Pselaphinae, SuperTribe Batrisitae, Tribe Batrisini (also put in Batrisinae, Staphylinidae (Subfamily Pselaphinae, Tribe Batrisini, Subtribe Batrisina) or in Omaliinae) (6-8 species in US)

Batriasymmodes (*B.*) *greeveri* Park, 1965 (type locality cave in Sullivan Co., TN/ Tb/ TN S1S2 G1G2, less than six caves)

Batriasymmodes (*B.*) *monstrosus* (LeConte, 1849 (type locality cave in Lee Co., VA; Barr 1987). IL to NJ to FL/myrmecophile, epigeal Tx)

Batriasymmodes (*B.*) *parki* Barr, 1987. (*type locality cave in Mercer Co., WV/ Tb)

Batriasymmodes (*B.*) *quisnamus* (*Batrisodes q.* Park 1951) (= *Batrisodes jeanneli* Park, 1951; *P. reduncus* Park, 1956) (type locality cave in Pickett Co., TN); + caves in Clay, Davidson, DeKalb, Jackson, Maury, Lawrence, Macon, Overton, Pickett, Putnam, Rutherford, Smith, Sumner & Wayne Cos., TN (S3); Edmonson (Mammoth C.), Wayne & Simpson Cos., KY) /Tb/ S3G3)

Batriasymmodes (*B.*) *spelaeus* (Park, 1951) (type locality cave in Blount Co., AL). (++) caves in Blount, DeKalb, Lauderdale, Lawrence, Marshall, Morgan, St. Clair & Winston Cos., AL; Clay, Grainger, Jefferson, Van Buren & White Cos., TN/ Tb)

Batriasymmodes (*Speleodes*) *troglydytes* (Park), 1951 (*type locality cave in Butler Co., AL/ Tb)

Batriasymmodes undescribed sp.#1 (cave in Colbert Co. & one other cave in Winston Co., AL/

Tp)

Batriasymmodes undescribed sp.#2 (2 caves in Jackson Co. & one cave in Marshall Co., AL)/Tp)

Batriasymmodes undet. sp. (Tp in Dade Co., GA)

Batrisodes Reitter, 1882 (subgenera *Babnormodes* Park, 1951, *Excavodes* Park, 1951)
Pselaphidae beetles in Subfamily Batrisinae, Tribe Batrisini (also put in Staphylinidae, Subfamily Pselaphinae, Tribe Batrisini, Subtribe Batrisina) (73 species in US or Canada) **Bibl.:** Park 1947, 1956, 1958, 1960

Batrisodes (*Babnormodes*) *barri* Park, 1958 (type locality & one other cave in Dickson Co., TN/ Tb/ S1S2 G1G2)

Batrisodes (*Excavodes*) *cavernosus* Park, 1951 (**type locality & one other cave in Butler Co., AL/ Tb/ G1)

Batrisodes (*Excavodes*) *clypeonotus* (Brendel, 1893). (type locality cave in Menard Co., TX/ MO, AL, TX epigean myrmecophile/epigean Tx in TX)

Batrisodes (*Bbnormodes*) *clypeospecus* Park, 1960 (type locality & two other caves in Overton Co., TN/ Tb/ S1S2 G1G2)

Batrisodes (*Babnormodes*) *ferulifer* Park, 1960 (*type locality cave in Maury Co., TN/ Tb/ S1S2 G1G2)

Batrisodes (*Babnormodes*) *gemmae* Park, 1960 (*type locality cave in Dickson Co., TN/ Tb/ S1S2 G1G2)

Batrisodes (*Babnormodes*) *gemmae* Park, 1956. (*type locality cave in Dickson Co., TN/ Tb/ S1S2 G1G2)

Batrisodes (*Excavodes*) *globosus* LeConte, 1849) (caves in TX; Chandler 1992; Tx in AL, GA (possibly in Walker Co.), IN (Harrison Co.(S3/G4)), VA, TX). (Eastern US to CO, AB and WA, in ant nests in n. range/ Epigean Tx)

Batrisodes (*Excavodes*) *grubbsi* Chandler, 1992 (*type locality cave in Hays Co., TX/ Tb)

Batrisodes (*Babnormodes*) *henroti* Park, 1956(type locality cave in Barren Co. & other caves in Barren & Edmonson Cos., KY + Hart Co., KY/ Tb/ G3)

Batrisodes (*Babnormodes*). *hubrichti* Park, 1958 (type locality cave in Barren Co. & Mammoth C., Edmonson Co., KY / Tb)

Batrisodes jeanneli = *Batriasymmodes quisnamus*

Batrisodes (*Babnormodes*) *jocuevestus* Park, 1960 (*type locality cave in Madison Co., AL).
AL/Tb.

Batrisodes (*Babnormodes*) *jonesi* Park, 1951 (type locality cave in *eColbert Co., AL/ Tb)

Batrisodes (*Babnormodes*) *krekeri* Park, 1960 (*type locality cave in Clark Co., IN / Tb/ IN T
& E/ G1)

Batrisodes (*Babnormodes*) *pannosus* Park, 1960 (*type locality cave in Putnam Co., TN/ Tb/
S1S2 G1G2)

Batrisodes (*Babnormodes*) *profundus* Park, 1956(*type locality cave in Conecuh Co., AL/ Tb)

Batrisodes quisnamus - see *Batriasymmodes*

Batrisodes reduncus = *Batriasymmodes quisnamus*

Batrisodes (*Excavodes*) *reyesi* Chandler, 1992 (*****type locality & 4 other caves in Burnet Co.,
TX/ Tb/ G3)

Batrisodes *rossi* Park, 1947 (epigean & Tx or Tp in IL)

Batrisodes schneiderensis = *Batrisodes uncicornis*

Batrisodes undescribed sp.#1 (*?cave in Marshall Co., AL/Tb)

Batrisodes undescribed sp.#2 (*cave in Conecuh Co., AL/Tb)

Batrisodes undescribed sp.#3 (2 caves in Madison Co., AL/ Tb/ G1)

Batrisodes undescribed? sp.#4 (cave in Big Mouth Cave, Harrison Co., IN/Tb)

Batrisodes undescribed sp.#5-8 (KY/Tb)

Batrisodes (*Babnormodes*) undescribed sp.#9 (*cave in Coryell Co., TX/Tb) Reddell 1994)

Batrisodes undescribed sp. #10 (*?Caverns of Sonora, Sutton Co.,TX/Tb)

Batrisodes undescribed sp. #11 (Bello Co.,TX/Tb)

Batrisodes undescribed sp. #12 (subgenus *Excavadoes*) (Williamson Co.,TX/Tb?)

Batrisodes undetermined sp. (OK/Tx)

Batrisodes undescribed sp. (**cave in Harrison Co. & one cave in Crawford Co.,IN/ S1/G1)

Batrisodes (*Babnormodes*) *specus* Park, 1951 (type locality cave & caves in Madison &
(Marshall Cos., AL & 2 caves in Jefferson Co.,TN /Tb/ G3)

Batrisodes *spretus* (*Batrisus* s. LeConte, 1850) (Ac, Tx or Tp in Mammoth C.,KY)

Batrisodes (*Babnormodes*) *subterraneus* Park, 1951 (*type locality cave in Marshall Co., AL/Tb)

Batrisodes (*Excavodes*) *texanus* Chandler, 1992 (type locality & three other caves in Williamson Co.), TX / US T&E/ Cof. C. mold b./ Tb/ G1)

Batrisodes (*Babnormodes*) *tumoris* Park, 1960 (*type locality cave in Colbert Co.,AL). AL/Tp or epigeal Tx)

Batrisodes (*Babnormodes*) *uncicornis* (Casey), 1897 (syn. *B. schneiderensis* Park 1960) type locality cave in Kendall Co. + other TX caves/ epigeal in MA, FL, TX/ Tp)

Batrisodes (*Babnormodes*) *valentinei* Park 1951 (type locality & other caves in Madison Co., one cave in Jackson Co.) & one cave in Morgan Co. AL & one cave in Grundy Co.,TN/ Tb/ G3)

Batrisodes (*Excavodes*) *venyivi* Chandler, 1992. (type locality cave + 3 nearby caves, Bexar Co.,TX/ Tb/ Helotes mold beetle/ Proposed federal endangered T&E)

Biblopectus Reitter, 1881 (=Acolonia Casey) - Pselaphidae beetles, Subfamily Pselaphinae, SuperTribe Euplectitae, Tribe Euplectini (also put in Staphylinidae, Subfamily Pselaphinae, Tribe Euplectini, Subtribe Euplectina) (5 species in US or Canada)

Biblopectus sp. nr. *ruficeps* (*Euplectus* r. LeConte, 1863) (Ac in cave in Travis Co. & cave in Williamson Co., TX)

Biblopectus undescr. sp. (Ac in cave in Bell Co. & cave in Coryell Co., TX)

Bythinopsis = *Tychobythinus*

Cylindrartus Schaufuss, 1887 - Pselaphidae beetles (also put in Staphylinidae, Subfamily Pselaphinae, Tribe Tychini) (5 species in US or Canada)

Cylindrartus *bicornis* Chandler, 1988 (Tx or Tp in cave in San Saba Co., TX). TX/epigeal Tx)

Excavodes = subgenus of *Batrisodes*

Hamotoides = subgenus of *Hamotus*

Hamotus Aube, 1844 Pselaphidae beetles (also put in Staphylinidae, Subfamily Pselaphinae, Tribe Harnotini) (4 species in US or Canada)

Hamotus (*Hamotoides*) *electrae* Park, 1942 (Mex./TX). (Tx in caves in Kinney, Hays, Medina & Uvalde Cos.,TX/epigeal Tx)

Hamotus undescr. sp. (*?cave in Medina Co., TX/ extinct?)

Leptoplectus Casey, 1908 - Pselaphidae beetles (also put in Staphylinidae, Subfamily

Pselaphinae, Tribe Euplectini, Subtribe Euplectina) (1 species in US)

Leptoplectus *pertenuis* (*Euplectus* p. Casey, 1884; *L. insolens*, *exilissimus* Casey 1908) (Tx in Harrison Co., IN (S3/G4))

Machaerites - see *Speleochochus* or *Subterrochus*

Pselaptrichus Brendel, 1899 - Pselaphidae beetles (also put in Staphylinidae, Subfamily Pselaphinae, Tribe Bythinini) (33 species in US or Canada)

Pselaptrichus undet. sp. (15,000 to 13,000 year old in Neotoma woodrat nest in Big Bend Natl. Park, wTX)

Rhexius LeConte, 1850 - Pselaphidae beetles (also put in Staphylinidae, Subfamily Pselaphinae, Tribe Euplectini, Subtribe Rhexina) (8 species in US)

Rhexius *stephani* Chandler, 1990 (Ac in cave in Travis Co., TX)

Speleobama Park, 1951 - Pselaphidae beetles, Subfamily Goniacerinae, Tribe Speleobamini (also put in Staphylinidae, Subfamily Pselaphinae, Tribe Speleobamini) (1 species in US)

Speleobama *vana* Park, 1951 (*type locality cave in Jefferson Co., AL). AL/Tb)

Speleochochus Park, 1951 (as subgenus of *Machaerites*; as own genus Park, 1960) Pselaphidae beetles, Subfamily Goniacerinae, Tribe Bythinini (also put in Staphylinidae, Subfamily Pselaphinae)

Speleochochus *croceus* Park, 1960. (= *Subterrochus* c.) (**type locality & one other cave in Madison Co., AL/ Tb)

Speleochochus *eurous* (Park), 1960 (= *Subterrochus* e.) (*type locality cave in Jackson Co., AL/ Tb)

Speleochochus *ferus* (Park), 1951 (= *Subterrochus* f.) (type locality cave & one nearby cave in Madison Co. & 4 caves or sinkholes in Jackson Co., AL/ Tb/ G3)

Speleochochus undescribed sp. #1 (*cave in Walker Co, GA/ Tb)

Speleochochus undescribed sp. #2 (*cave in Walker Co., GA/ Tb?) **Bibl.:** Buhlmann 2000

Speleochochus *steevesii* (Park), 1960. (*type locality cave in Marshall Co., AL/ Tb)

Speleochochus *stycticus* (*Macherites* s. Park, 1951) (type locality & other caves in *Madison Co., AL/ Tb)

Speleochochus *synstycticus* (Park), 1956. (*type locality cave in Madison Co., AL/ Tb)

Speleodes = subgenus of *Batriasymmodes*

Texamaurops Barr, 1963e - Pselaphidae beetles, Subfamily Batrisinae, SuperTribe Batrisitae, Tribe Batrisini (also put in Staphylinidae, Subfamily Pselaphinae, Tribe Batrisini (3 species in US)

Texamaurops *reddelli* Barr & Steeves, 1963. (type locality & at least 4 other caves in Travis Co., TX). (US T&E as Kr. C. mold beetles). TX/Tb/T&E/ G3).

Tmesiphorus LeConte, 1849 - Pselaphidae beetles, Subfamily Pselaphinae, SuperTribe Pselaphitae, Tribe Tmesiphorini (also put in Staphylinidae, Subfamily Pselaphinae, Tribe Tmesiphorini) (2 species in US)

Tmesiphorus *costalis* LeConte, 1849. (Eastern US epigean / Tp or Tx in AL, TX; Tx in TX, sON/ epigean in TX)

Tmesiphorus new sp.? (*?cave in Travis Co., TX/ Tp?)

Trimioarcus Park, 1952 - Pselaphidae beetles (also put in Staphylinidae, Subfamily Pselaphinae)

Trimioarcus *musamator* Chandler, 1992. (2 caves in Travis Co., + Coryell & Bell Cos., TX). TX/ epigean Tx)

Trimiopectus Brendel, 1890 - Pselaphidae beetles (also put in Staphylinidae, Subfamily Pselaphinae) (3 species in US or Canada)

Trimiopectus undet. sp. (Ac in 1 seAK cave)

Tychobythinus Ganglbauer, 1896 (=Bythinopsis) (Key, Besuchet, 1982) Pselaphidae beetles, Subfamily Goniacerinae, Tribe Bythinini (also put in Staphylinidae, Subfamily Pselaphinae) (4 species in US or Canada)

Tychobythinus *bythinoides* (=Machaerodes & Tychus b. Brendel, 1865) (Tx in Orange Co., IN (S2/G3))

Tychobythinus *hubrichti* (Park), 1960 (*type locality cave in Hart Co., KY/ Tb/ G1G2)

Tychobythinus *jonesi* (Park), 1951. (*type locality cave in Colbert Co., AL/ Tb/ G1G2)

Tychobythinus *strinatii* Besuchet, 1982. (Cumberland C., Warren Co., TN/ rare epigean/ Tb/ S1S2 G1G2)

PTILIIDAE Erichson, 1845 (feather-winged or featherwing beetles). Contain the smallest known beetles; most <1mm. long. Wings normally folded out of site, thought to be used largely for passive flotation. About 23 genera & 120 known species n. of Mexico. Mainly in wet organic substrates (leaf litter, logs, dung). Dybas 1966

Acrotrichinae Reitter, 1909

Tribe Acrotrichini (*Acrotrichis*)

Ptiliinae

Tribe Ptilinini (*Ptenidium*)

Acrotrichis Motschulsky, 1850 (= *Acratrichis*) Ptilidae beetle, Subfamily Acrotrichinae, Tribe Acrotrichini (43 species in US or Canada)

Acrotrichis undet. sp. (Tp? guanophile in cave in NS)

Acrotrichis *horni* Mathews, 1872 (in CA non-cave *Neotoma fuscipes* woodrat nest)

Ptenidium Erichson, 1845 (*Trichopteryx* Kirby, 1826; *Ctenopteryx* Flach, 1889; *Acatrichis* Arnett, 1971) Ptiliidae beetles, Subfamily Ptiliinae, Tribe Ptilinini (13 species in US or Canada)

Ptenidium undet. sp. (Occasional Tp in KY in streambank detritus in cave in Carter Co.)

PTILODACTYLIDAE Laporte, 1836 (toed-winged or ptilodactylid beetles) Bibl.: Stribling 1986

Subfamily Ptilodactylinae (*Lachnodactyla*, *Ptilodactyla*)

Subfamily Anchytarsinae (*Anchytarsus*)

Anchytarsus Guérin-Meneville, 1843 - Ptilodactylidae beetles, Subfamily Anchytarsinae (once in Curculionidae) (1 species in US or Canada)

Anchytarsus bicolor (*Atopa b.* Melsheimer, 1846) (seVA hyporheic)

Lachnodactyla - Ptilodactylidae beetles, Subfamily Ptilodactylinae (2 species in US or Canada)

Lachnodactyla sp. cf. *texana* Schaeffer, 1906 (Tp? in cave in Medina Co., TX)

Ptilodactyla Illiger, 1807 - Ptilodactylidae beetles, Subfamily Ptilodactylinae (4 species in US or Canada)

Ptilodactyla *equilobata* Chapin, 1927 (Tp? in cave in Uvalde Co., TX)

Ptilodactyla *serricollis* (*Ptilinis s.* Say, 1823) (much of eU.S./Tp (probably) in Cascade C., Kendall Co., TX)

Ptilodactyla undet. sp(p). (Tx? in MO; Tp in Bexar, Medina, Val Verde Cos., TX)

PTINIDAE - subsumed in Anobiidae

Round fungus beetles family - See Leiodidae

Savage beetles family - See Carabidae

PYROCHROIDAE Latreille, 1807 (fire-colored beetles)

Subfamilies incl. Agnathinae (*Cononotus*) - put in Salpingidae

SALPINGIDAE Leach, 1815 (narrow waisted bark beetles).

Agleninae Horn, 1878 (*Aglenus*)

Cononotinae (*Cononotus*)

Aglenus Erichson, 1845 (also put in Staphylinidae & once in Colydiidae) Salpingidae beetles, Subfamily Agleninae (1 species in US or Canada)

Aglenus *brunneus* (*Hypophloeus b.* Gyllenhal, 1813; *A. major & rugipennis* Schaufuss, 1882; *A. longior* Pic, 1923; *Anommatus obsoletus* Shuckard, 1939)) (NA/mushroom beetles/Tp guanobic in KY (Carter Co.) Bibl.: Woodroffe, 1967

Cononotus LeConte, 1851 (also put in Pyrochroidae) Salpingidae beetles, Subfamily Cononotinae (6 species in US or Canada)

Cononotus *bryanti* Van Dyke, 1939 (fossil in *Neotoma* woodrat midden, Puerto Blanco Mts., Pima Co., sAZ; 10,950 years old in *Neotoma* woodrat nest in Tinajas Mts., Yuma Co., AZ; 14,500 years old in *Neotoma* nest, Ajo Mts., Pima Co., AZ)

Cononotus *macer* Horn, 1868 (2,000 to 3,000 yrs. BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM))

SCAPHIDIIDAE (shining fungus beetles)

Baeocera - put in Staphylinidae

SCARABAEIDAE LeConte, 1858 (scarabs or scarab beetles; June & lamellicorn beetles, cockchafers) **Bibl.:** J. Cooper 1983

Many of the Scarabs are economically important. Larvae of most of the injurious species live in soil where they feed on roots; they are called white grubs. Adults usually eat leaves or fruit. Most adults of this family tunnel and form a dung ball underground for larvae; some larvae live in soil where they feed on organic matter or roots of plants. Aphodius species feed on humus or dung of higher animals and are abundant in cow dung. They are usually black, often with brown, yellow or red markings.

By far the most important amulet in ancient Egypt was the scarab, symbolically as sacred to the Egyptians as the cross is to Christians. Scarabs were already known in the Old Kingdom, and in the First Intermediate Period the undersides were decorated. They were probably sacred in the Prehistoric Period and had a role in the early worship of animals, judging from the actual beetles that were found stored in jars buried with the deceased and from those found in graves during the time of King Den of Dynasty I. A scaraboid-shaped alabaster box from Tarkhan seems to confirm that the scarab was already venerated at the beginning of Dynasty I. Scarabs are the most

numerous amulets and were produced well beyond the dynastic periods.

Undet. genus 10,300 to 8970 years old in *Neotoma* woodrat nest in Tinajas Mts., Yuma Co., AZ)

Aphodiinae Leach, 1815 (aphodiine dung beetles)

Tribe Aphodiini (*Aphodius*, *Ataenius*, *Dialytes*, *Rhyssenus*)

Tribe Eupariini (*Martinezia*)

Cetoniinae L., 1815 (flower beetles & others)

Tribe Cetoniini (*Euphoria*)

Tribe Cremastochilini (*Cremastochilus*)

Hybosorinae (*Hybosorus*) (also put in own family)

Melolonthinae MacLeay, 1819 (may beetles and June bugs; June beetles, chafers & others) ()

Tribe Melolonthini (*Diplotaxis*, *Dichelonyx*, *Serica*, *Phyllophaga*)

Scarabaeinae Latreille, 1802 (dung beetles & tumblebugs)

Tribe Coprini (*Ateuchus*, *Copris*, *Dichotomius*, *Phanaeus* (also put in Scarabini))

Tribe Onthophagini (*Onthophagus*)

Tribe Scarabaeini (*Canthon*)

Tribe Scarabini (*Phanaeus*) (now in Coprini)

Aphodius Illiger, 1798 (>100 syns.) (aphodiine dung beetles) (189 sp.) Scarabaeidae beetles in Subfamily Aphodiinae, Tribe Aphodiini (211 species in US, Canada)

Aphodius *aleutus* Eschscholtz, 1822 (Tp? guanophile in cave in NS)

Aphodius *aemulus* Horn, 1887 (burrow/ Tp or Tx in NM, TX NS/ 18,000 to 19,700 yrs. BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM))

Aphodius *congregatus* Mannerheim, 1853 (2,000 year old remains in entrance pit in AB cave)

Aphodius *davisi* Fall, 1930 (confined to CA non-cave *Neotoma fuscipes* woodrat nest)

Aphodius *granarius* (*Scarabaeus* g. Linnaeus, 1767; *A. niger* Creutzer, 1799; *A. carbonarius* Sturm, 1805; *A. ater* Thunberg, 1818; *A. haemorrhous*, *lucens*, *emarginatus*, *melanopus* Stephens, 1830; *A. elongatus* Menetries, 1832; *A. retusus* Walth, 1834; *A. aterrimus* Melsheimer, 1846; *A. adalaidae* Hope, 1847; *A. metallicus* Haldeman, 1848; *A. pereyi* Harold, 1870; *A. inutilis* Horn, 1887; *A. nama* Kolbe, 1908) (US/Tp in cave in Sutton Co., TX) **Bibl.:** Johaningsmeier 1999

Aphodius *neotomae* Fall, 1907 (confined to CA non-cave *Neotoma fuscipes* woodrat nest)

Aphodius *precursor* (Pleistocene fossil in Port Kennedy C., Montgomery Co., PA)

Aphodius undescr.? sp. (3 caves in MO/ Tp?)

Aphodius *ruficlarus* Fall, 1932 (Ac or Tx in woodrat nest in cave in Grand Canyon, Coconino Co., AZ)

Aphodius *rusicola* Melsheimer, 1845; *A. ruricola* Haldeman, 1848 Emend.; *A. curtus* H., 1848; *A. aurelianus* Harold, 1863)) (/Tx? in MO)

Aphodius undet. sp. or species (Tx? in 2 caves in DE Co., OK; undet. sp. (*Neotoma* woodrat midden in Canyonlands, UT; 2,000 year old remains in entrance pit in AB vcave/ NS/ 100 to >26,000 yrs. BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM; 13,500 years old in *Neotoma* nest, Ajo Mts., Pima Co., AZ)

Aphodius *sparsus* LeConte, 1878 (*A. blaisdelli* Fall, 1905; *A. sheldoni* Barrett, 1932) (TTp in WA; Tx woodrat nests in CA; confined to CA non-cave *Neotoma fuscipes* woodrat nest)

Aphodius *tuberosus* Barrett, 1932 (confined to CA non-cave *Neotoma fuscipes* woodrat nest)

Aphodius *vandykei* Barrett, 1931 (confined to CA non-cave *Neotoma fuscipes* woodrat nest)

Ataenius Harold, 1867 (*Oxyomus* Blanchard, 1842 (Homo.); *Euparia* Erichson, 1847; *Hexalus* Mulsant & Rey, 1870; *Brancoataenius* Paulian, 1979; *Stenataenius* Chalumeau, 1982) (63 sp.) Scarabaeidae beetles in Subfamily Aphodiinae, Tribe Aphodiini (66 species in US or Canada)

Ataenius *desertus* Horn, 1871 (2,000 to 14,300 yrs. BP in *Neotoma* woodrat nest in wTX (El Paso Co.) & 9,120+- 500 & 4,340+- 2,260 years old late Quaternary fossil in scNM *Neotoma* woodrat nest)

Ataenius undescr.? sp. (near *spretulus* (*Aphodius* s. Haldeman, 1848; *Ataenius consors* Fall, 1930; *A. falli* Hinton, 1934))) *(cave in Crawford Co., MO/ Tp)

Ataenius undet. sp. or species (Tx in OK, TX; *Neotoma* woodrat midden in cave in UT) & Cochise Co., AZ),

Ateuchus Weber, 1801 (*Choeridium* Serville, 1828) Scarabaeidae beetles in Subfamily Scarabaeinae, Tribe Coprini (3 species in US, Canada)

Ateuchus *ebeninum* Horn, 1876 (= *Choeridium e.*) (Pleistocene fossil in Port Kennedy C., Montgomery Co. PA)

Ateuchus *lecontei* Harold, 1868 (= *Onthophagus l.*) (3,000 to >3,000 yrs. BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM)

Ateuchus *texanus* (*Choeridium t.* Robinson, 1948) (Tp? in cave in Medina Co. & cave in Uvalde Co., TX)

Ateuchus sp. prob. *lecontei* Harold, 1868 (Tp? in cave in Comal Co., TX)

Canthon Hoffmannsegg, 1817 (tumblebugs). Scarabaeidae beetles in Subfamily Scarabaeinae (8 species in US or Canada) **Bibl.:** Halffiter, 1961

Canthon *granulifera* Schmidt, 1921 (*Absolus mexicana* m. Champion, 1892)? (TTx in TX) & **Canthon** *imitator* Brown, 1946 (NE,SE, TX epigeal/ western tumblebug/ Tx or Ac in Carlsbad (Eddy Co., NM) & cave in King Co., TX)

Canthon undet. sp. (?Ac in cave in Uvalde Co., TX)

Canthon *viridis* (Coprins v. Beauvois, 1805; *Ateuchus obsoletus* Say, 1823; *Onthophagus viricatus* Say, 1835; *Canthon globiforme* Harold, 1868) (?Ac in Medina, Uvalde Cos., TX)

Coprins Geoffroy, 1762 (*Litocoprins* Waterhouse, 1891) (dung beetles) Scarabaeidae beetles in Subfamily Scarabaeinae, Tribe Coprini (10 species in US or Canada)

Coprins *arizonensis* Schaeffer, 1906 (in AZ *Neotoma* woodrat nest)

Coprins *minutus* (Scarabaeus m. Drury, 1773; *S. silenus* Fabricius; *S. ammon* F., 1781 (Homo.); *S. lar* F., 1987)) (NE, SE, TX, OK, IA, MO epigeal/ small black dung beetle/Tx in MO)

Cotinus Burmeister, 1842 (*Balsameda*, *Latemnis* Thomson, 1880; *Cotinorrhina* Schoch, 1895; *Criniflava* Goodrich, 1966; Cotinis) Scarabaeidae beetles in Subfamily Cetoniinae, Tribe Gymnetini (also put in Scarabaeinae) (4 species in US or Canada)

Cotinus sp. prob. *macclevei* Warner, 1990 (obligate rodent nest inquiline, esp. AZ *Neotoma* woodrat nests)

Cotinus sp. prob. *mutabilis* (Gymnetis m. Gory & Percheron, 1833; *C. texana* Casey, 1915) (green June beetle/ Ac in cave in Bexar Co., TX)

Cremastocheilus Knoch, 1801 - Scarabaeidae beetles, Subfamily Cetoniinae, Tribe Cremastochilini (32 species in US, Canada)

Cremastocheilus undet. sp. (fossil in *Neotoma* woodrat midden, Puerto Blanco Mts., Pima Co., sAZ)

Dichelonyx Harris, 1826 (*Dichelonycha* K., 1837 Emend.) Scarabaeidae beetles in Subfamily Melolonthinae, Tribe Melolonthini (29 species in US or Canada)

Dichelonyx *vicina* Fall, 1901 (*D. deserta* & *columbiana* Hopping, 1931) (Tx or Ac in WA)

Dichotomius Hope, 1838 Scarabaeidae beetles in Subfamily Scarabaeinae, Tribe Coprini (3 species in US or Canada)

Dichotomius *carolinus* (Scarabaeus c. Linnaeus, 1758) (epigeal in NE, KS, MO, TX, OK, SD, MA, FL/ 12,000 - 12,300 yrs. in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM/)

Dialytes Harold, 1869 - Scarabaeidae beetles in Subfamily Aphodiinae, Tribe Aphodiini (5 species in US or Canada)

Dialytes undet. sp. (9,120+- 500 years old in scNM *Neotoma* woodrat nest)

Diplotaxis Kirby, 1837 (= *Orsonyx*, *Alobus* LeConte, 1856; *Diazus* L.1859) Scarabaeidae beetles in Subfamily Melolonthinae, Tribe Melolonthini (104 species in US or Canada)

Diplotaxis undet. sp. (?Tx in Edwards, Travis Cos., TX; Ac or Tx in woodrat nest in cave in ave, Grand Canyon, Coconino Co., AZ & *Neotoma* woodrat midden in Canyonlands, UT; extant in *Neotoma* nest in Cochise Co., AZ / 2,000 to 15,500 yrs. BP in *Neotoma* woodrat nest in wTX (El Paso Co.); 4,340 to 2,260 in scNM *Neotoma* woodrat nest; 15,680 years old in *Neotoma* woodrat nest in Tinajas Mts., Yuma Co, AZ)

Euphoria Burmeister, 1842 (= *Erihipis* B., 1842; *Erihipidia*, *Euphorhipis*, *Haplophoria*, *Isohipina*, *Parisorhipis*, *Rhipiphoria*, *Euphoriaspis* Casey, 1915) (flower beetles) (once put in Staphylinidae) Scarabaeidae beetles in Subfamily Cetoniinae, Tribe Cetoniini (28 species in US or Canada)

Euphoria *fulgidus* (= *Cetonia* f. Fabricius, 1775; *E. fuscocyanea* Casey, 1915; *Quedius* f.; or if in Staphylinidae: *Gauropterus* Thomson, 1869) (Europe, nAfrica, NA/alien TP in AL, GA, IL, IN, KY (Mammoth C.), MO, VA, WV)

Hybosorus MacLeay, 1819 - Scarabaeidae beetles, Subfamily Hybosorinae (also put in Hybosoridae) (1 species in US)

Hybosorus *illigeri* Reiche, 1853 (epigeal in SE, n. to IN/ Ac in cave in Edwards Co., TX)

Hybosorus MacLeay, 1819 - MacLeay, 1819 - (also put in Hybosoridae)

Hybosorus *illigeri* Reiche, 1853 (Ac in cave in Edwards Co., TX)

Martinezia Chalumeau, 1893 - Scarabaeidae beetles in Subfamily Aphodiinae, Tribe Eupariini (1 species in US or Canada)

Martinezia *dutertrei* (Chalumeau, 1893) (= *Myrmecaphodius excavaticollis*) (Blanchard) (Tx, fire ant associate, in cave in Bexar Co., TX)

Megetra cancellata - put in Meloidae

Myrmecaphodius excavaticollis (Blanchard) = *Martnezia dutertrei*

Omorgus Erichson, 1848 - put in Trogidae

Onthophagus Latreille, 1802 (*Chalcoderus*, *Manapus*, *Psilax* Erichson; *Monapus* E., 1848; *Proagoderus*, *Gonocyphus*, *Diastellopalpus* Lansberge, 1886; *Pauronthophagus*, *Tauronthophagus* Shipp, 1895; *Eremophagus*, *Furcothophagus*, *Palaeonthophagus*, *Parentius*, *Trichonthophagus* Zunino, 1979; *Hyalonthophagus* Palestrini et al., 1988) Scarabaeidae beetles

in Subfamily Scarabaeinae, Tribe Onthophagini (dung beetles: 34 species in US or Canada).

Bibl.: Howden & Cartwright, 1982

Onthophagus *brevifrons* Horn, 1881 (TTp? in NM, TX/ 100 to >26,000 yrs. BP in *Neotoma* woodrat nest in wTX (El Paso Co.); 14,920+1360 years old in scNM *Neotoma* woodrat nest; 20,500, 8,500 & 1,200 years old in *Neotoma* nest, Ajo Mts., Pima Co., AZ)

Onthophagus *browni* Howden & Cartwright, 1963 (Tp in cave in Culberson Co., TX; Ac in CO/ in AZ *Neotoma* woodrat nest; 100 to >26,000 yrs. BP in *Neotoma* woodrat nest in wTX (El Paso Co.); 9,120+- 500 years old in scNM *Neotoma* woodrat nest)

Onthophagus *cavernicollis* Howden & Cartwright, 1963 (type locality cave in Harrison Co., AR/ Tp guanophile in AR, MO, OK, TX)

Onthophagus *cochisus* Brown, 1917 (10,000 to >12,300 yrs. BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM)

Onthophagus *hecate* h. (*Scarabaeus* h. Panzer, 1794; *Copris hastator* & *latebrosus* Fabricius, 1801; *C. obtectus* Beauvois, 1805; *O. furcicollis* & *lama* Dejean, 1836; *O. scabricollis* Kirby, 1837; *O. sayi* Laporte, 1840; *O. blatchleyi* Brown, 1929)) (Tx in MO)

Onthophagus *lecontei* (2,000 to 3,000 yrs. BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM)

Onthophagus *orpheus* o. (*Scarabaeus* o. Panzer, 1794; *C. canadensis* Fabricius, 1801; *O. pseudorpheus* Howden & Cartwright, 1963)) (Tx in MO, Tx or Tp in TN/ *Neotoma* woodrat nest in FL)

Onthophagus undet. sp. or species (MO/Tx in MO; (Ac or Tx in woodrat nest in Bida Cave, Grand Canyon, Coconino Co., AZ; fossil in *Neotoma* woodrat midden, Puerto Blanco Mts., Pima Co., sAZ)

Onthophagus *subopacus* Robinson, 1940 (3,200 to 10,300 yrs. BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM)

Onthophagus *velutinus* Horn, 1875 (CA, TX/habitual Tx, woodrat dung; in woodrat nest in TX; 14,500 to 1,200 years old in *Neotoma* nest, Ajo Mts., Pima Co., AZ)

Phanaeus MacLeay, 1819 - Scarabaeidae beetles in Subfamily Scarabaeinae, Tribe Coprini or Scarabini (10 species in US or Canada)

Phanaeus *antiquus* Horn, 1876 (Pleistocene fossil in Port Kennedy C., Montgomery Co., PA)

Phyllophaga Harris, 1827 (= *Rhizotrogus* Berthold, 1827; *Lachnosterna*, Holotrichia, 1837; *Ancylonycha* Blanchard, 1845; *Trichesthes*, *Phytalus* Erichson, 1847; *Listrochelus*, *Tostegoptera*, *Chlaenobia*, B., 1850; T. B. 1850 emend.; *Endrosa*, *Eugastra*, *Gymnis* LeConte, 1856;

Chirodines Bates, 1888; *Triodonyx* Saylor, 1942) Scarabaeidae beetles in Subfamily Melolonthinae, Tribe Melolonthini (or not placed in tribe) (217 species in US or Canada)

Phyllophaga *ignava* (*Lachnosterna i.* Horn, 1887) (?Ac in cave in, Val Verde Co., TX)

Phyllophaga *rubiginosa* (L.r. LeConte, 1856) Ac in cave in Travis Co., TX)

Phyllophaga undet. sp. or species (Ac or Tx in woodrat nest in Bida Cave, Grand Canyon, Coconino Co., AZ/ NS/ 2,000 to 19,700 yrs. BP in *Neotoma* woodrat nest in wTX (El Paso Co.) & Big Bend Natl. Park

Rhyssemus Mulsant, 1842 (= *Banacardius* Petrovitz, 1967) Scarabaeidae beetles in Subfamily Aphodiinae, Tribe Aphodiini (4 species in US or Canada)

Rhyssemus undet. sp. (Ac in cave in Coryell Co., TX)

Serica MacLeay, 1819 - Scarabaeidae beetles in Subfamily Melolonthinae, Tribe Melolonthini (109 species in US or Canada)

Serica undet. sp. (Ac or Tx in woodrat nest in Bida Cave, Grand Canyon, Coconino Co., AZ & *Neotoma* woodrat midden in Canyonlands, UT/ NS/ 2,000 to 10,800 yrs. BP in *Neotoma* woodrat nest in Big Bend Natl. Park, El Paso Co., wTX)

Trox - now in Trogidae

SCIRTIDAE Fleming, 1821 (marsh beetles)
Subfamily Helodinae (Cyphon, Elodes)

Cyphon Paykull, 1799 - Scirtidae beetles, Subfamily Helodinae (14 species in US or Canada)
Cyphon *concinus* (*Helodes c.* LeConte, 1853) (Tx or Ac in CA)

Elodes Latreille, 1796 (*Sacodes* LeConte, 1853; *Hemicyphon* LeConte, 1866; *Helodes* Duval, 1861 (Emend.) - Scirtidae beetles, Subfamily Helodinae (10 species in US or Canada)

Elodes *emarginata* Hatch, 1962 (CA to BC/Ac? in WA)

SCOLYTIDAE (bark beetles; bark, cone & ambrosia beetles)
(now subsumed at least in part as Subfamily Scolytinae in Curculionidae
Hylesininae (crenulate bark beetles) (*Hylastes*, *Pityophthorus*)

Hylastes Erichson, 1836 - Now in Subfamily Scolytinae in Curculionidae
Pityophthorus- Scolytidae beetles, Subfamily Scolytinae - Now in Scolytinae in Curculionidae

SCRAPTIDAE (false darkling beetles) (also subsumed in Melandryidae)
Anaspidinae Mulsant, 1856 (*Allopoda*, *Anaspis*, *Diclidia*)

Scraptiinae (*Scraptia*)

Allopoda LeConte, 1866 - Scraptidae beetles in Subfamily Anaspidinae (3 species in US or Canada)

Allopoda *lutea* Halderman, 1848 (Ac in cave in Real Co., TX)

Anaspis Geoffroy, 1762 - Scraptidae beetles in Subfamily Anaspidinae (13 species in US or Canada)

Anaspis *rufa* Say, 1826 (Ac or Tx in cave in Grand Canyon, Coconino Co., AZ)

Diclidia LeConte, 1862 - Scraptidae beetles in Subfamily Anaspidinae (9 species in US or Canada)

Diclidia *laetula* (*Anaspis l.* LeConte, 1858) (Tx? In CO,wTX).

Scraptia Latreille, 1807 - Scraptidae beetles in Subfamily Scraptiinae (3 species in US or Canada)

Scraptia undet. sp. (Ac in cave in Medina Co., TX)

SCYDMAENIDAE (antlike stone beetles)

Tribe Euconnini (*Euconnus*)

Tribe Scydmaenini (*Scydmaenus*) (both also put in Scydmaeninae, Tribe Euconnini)

Euconnus Thomson, 1862 (= *Tetramelus* Motschusky, 1869; *Napochus* Reitter, 1881; *Euconophron* R.1884; *Microcydmus* Sauley, 1893; *Smicorphus* Casey, 1893; *Xestophus*, *Scapophus*, *Psomophus* C.1897; *Napoconnus* Franz, 1957; *Magellanoconnus* F.1967; *Nudatoconnus* F.1980) Scydmaenidae beetles, Tribe Euconnini (also put in Subfamily Scydmaeninae) (26 species in US or Canada)

Euconnus undet. sp. (TTP in cTX)

Euconnus (*Connophron*) undet. sp. (TTP in Bexar, Travis Cos.)

Scydmaenus Latreille, 1802 - Scydmaenidae beetles, Tribe Scydmaenus (11 species in US or Canada) (also put in Subfamily Scydmaeninae)

Scydmaenus undet sp. (Tx or Ac in stream-bank detritus in cave in Carter Co., KY)

SILPHIDAE Latreille, 1807 (carrion or burying beetles). About, 180 sp. n. of Mex., 230 species globally. Mainly feed on vertebrate carcasses; some scavenge or feed on plants. **Bibl.:** Peck, 1990; Peck & Miller, 1989 Horn, 1880; Jennel, 1922

Subfamily Nicrophorinae Kirby, 1837
Tribe Nicrophorini (*Nicrophorus*)

Subfamily Silphinae L., 1807 (*Thanatophilus*) (also put in Necrophilini)
Tribe Necrophilini
(*Necrophilus* (also put in Agyrtidae, Subfamily Necrophilinae), *Thanatophilus*)

Choleva - placed in Leiodidae

Necrophilus Latreille, 1829 Silphidae beetles, Subfamily Silphinae, Tribe Necrophilini (also placed in Elateridae & Agyrtidae, Subfamily Necrophilinae) (2 species in US or Canada)

Necrophilus *hydrophiloides* Guérin-Meneville, 1835 (*N. ater* Motschulsky, 1845) (AK to CA/TTx or Ac in CA)

Necrophilus *pettitti* Horn, 1880 (sON to nFL, w. to KY,TN/high elev.Ed/ Ttp in AL, KY, TN; TTx in MO; Tx in IN (WA Co.(S2/G4)) **Bibl.:** Peck 1981

Nicrophorus Fabricius, 1775 (*Nicrophorus* Thunberg, 1798 (Emend.); *Cyrtoscelis* Hope, 1840; *Acanthopsilus* Portevin, 1914; *Neochrocharis* P., 1923; *Eunecrophorus*, *Necrocleptes*, *Necropter*, *Semenov*, *Stictonecropter*, 1933; *Neonicrophorus* Hatch, 1946) Silphidae beetles in Subfamily Nicrophorinae, Tribe Nicrophorini (15 species in US or Canada)

Nicrophorus *investigator* Zetterstedt, 1824 (epigean in AZ, CA, NM, NW, MN/ 2,000 year old remains in entrance pit in AB cave)

Nicrophorus *marginatus* Fabricius, 1801 (= *N. Requiescator* Gistel, 1848; *N. montezumae* Matthews, 1888; *N. cordiger* Portevin, 1924; *N. sanjuanae*, *engelhardti*, *leachi* Hatch, 1927; *N. mckittricki* Pierce, 1949 (Unav.))(Ac in cave in Pecos Co., TX)

Nicrophorus *nigrita* Mannerheim, 1843 (*N. ruficornis* Motschulsky, 1869) (CA to TX/black burying beetles/Tx or Ac in CA)

Thanatophilus Leach, 1815 - Silphidae in Subfamily Silphinae, Tribe Necrophilini (6 species in US or Canada)

Thanatophilus *lapponicus* (*Silpha l.* Herbst, 1793) .(2,000 year old remains in entrance pit in Rat's Nest Cave, AB)

Thanatophilus undet. sp. (Ac or Tx in woodrat nest in cave in Grand Canyon, Coconino Co.,AZ)

SILVANIDAE ((silvanid) flat bark beetles) (also subsumed in Cucujidae)

Cathartus Reiche, 1854 (once put in Cucujidae) (grain beetles) Silvanidae beetles in Subfamily Silvaninae (1 species in US)

Cathartus quadricollis (*Sylvanus q.* Guerrin-Meneville, 1844) (cosmopolitan epigeal/
square-necked grain beetle/ Tx or Ac in 1 IL cave)

Skin beetles family - See Dermestidae

Small carrion beetles family - See Leptodiridae

small scavenger beetles - See Leiodidae

Soldier beetles family - See Cantharidae

Spider beetles family - See Ptinidae

SPONDYLIDAE - subsumed in Cerambycidae

STAPHYLINIDAE Latreille, 1902 (rove beetles).

Bibl.: Blackwelder 1952; Jarrige 1960; Jeannel & Jarrige 1949; Klimaszewski & Peck 1986;
Moore & Legner 1974-5, 1979.

Adult rove beetles can often be found running on the soil surface, on plants or under leaf litter, but many of them are also able to fly. Most of the species have three larval stages, which prefer living in the litter layer and the upper soil layers but appear on the soil surface from time to time. Some specialists inhabit the burrows of small mammals like moles or live in nests of ants while others are parasitoids of flies. Staphylinids occur in a variety of habitats including seashore and riversides, but do not live in the water itself. Adults and larvae of a lot of species are predators who prey on eggs, larvae and adults of other arthropods; but many of them are not exclusively carnivorous. They may feed additionally on dead organic material and fungi.

Rove beetles are among the most proficient fliers of all beetles. Many species run with the tips of the abdomen raised, but none can actually sting. Larvae usually occur in the same habitat as the adults. Most prey on small animals such as other insects while a few eat decaying vegetable matter. The genus *Quedius* are most common on organic debris, such as ground litter, moss, grass piles, compost, carrion and dung. A few occur in very moist areas, such as marshes, swamps or in wet moss. A few live in animal nests. Adults and larvae most common on fungi but also live on slime molds (*Myxomycetes*), in decaying vegetation, or under bark. Certain species of this family are able to roll up into a tight ball.

Unidentified genus & sp. in Calaveras & Tulare Cos., CA & Kazumura C., HI.

Aleocharinae Fleming, 1821 (obscure rove beetles) **Bibl.:** Seevers 1978

Undet. genus & sp. (Santa Cruz & Shasta Cos., CA)

Tribe Aleocharini Fleming, 1821

Subtribe Aleocharina (*Aleochara*, *Deinopsis*?)

Tribe Athetini Casey, 1910 (*Aloconata*, *Xenota*)

Subtribe Dimetrotina *Dimetrota*,

Subtribe Athetina (*Atheta*)

Tribe Deinopsini (*Deinopsis*)
Tribe Falagriini Mulsant & Rey, 1873 (*Lissagria*, *Myrmecocephalus*)
Tribe Hoplandriini Casey, 1910 (*Hoplandria*, *Tetrallus* (also put in Athetini))

Tribe Lomechusini Fleming, 1821
Subtribe Lomechusina (*Zyras*)

Tribe Myllaenini Ganglbauer, 1895 (*Baryodma*, *Myllaena*)

Tribe Oxypodini
Subtribe Blepharhymenina
(*Blepharhymenus*, *Ilyobates*, *Ocalea*, *Oxypoda* (all 3 now in Subtribe Oxypodina))
Subtribe Oxypodina
(*Ilyobates*, *Ocalea*, *Oxypoda* (all also put in Subtribe Blepharhymenina))
Subtribe Tachyusina (*Tachyusa*)

Empelinae (*Empelus*)
Euaesthetinae Thomson, 1859 (pselaphid-like rove beetles) (*Euaesthetus*)
Habrocerinae (*Habrocerus*)

Lispinae (*Clavilispinus*) (put in Subfamily Osoriinae, Tribe Thoracophorini, Subtribe Clavilispinina, also put in Oxytelinae)

Omaliinae MacLeay, 1825 (ocellate rove beetles)
(Ac, Tx or Tp undet. genus in Vancouver Island, BC)

Tribe Anthophagini Thomson, 1859 (*Brathinus*, *Deinopteroloma*, *Deleaster* (now in Oxytelinae), *Geodromicus*, *Lesteva*, *Microedus*, *Olophrum*, *Orobanus*, *Phlaeopterus*, *Xylodromus* (now in Omaliini)), Undet. genus or genera (2,000 year old remains in entrance pit in Rat's Nest Cave, AB)

Tribe Eusphalerini (*Eusphalerum*) (once in Anthophagini)

Tribe Omaliini MacLeay, 1825 (*Xylodromus*) (once in Anthophagini)

Osoriinae Erichson, 1839 (unmargined rove beetles) (*Cylindropsis*) (also put in Lispinae & Osoriinae)

Subfamily Osoriinae, Tribe Thoracophorini, Subtribe Clavilispinina (*Clavilispinus*) (also put in Oxyporinae (cross-toothed rove beetles) (*Oxyporus*))

Oxytelinae Fleming, 1821 (spiny-legged rove beetles) Bibl.: Herman 1967 (*Ochtheophilus*)
Tribe Coprophilini (*Carpelimus*, *Clavilispinus*, *Deleaster* (now in Tribe Deleasterini))

Tribe Deleasterini (*Deleaster*) (once put in Coprophilini & Omaliinae)
Tribe Oxytelini (*Oxytelus*)

Paederinae Fleming, 1821 (Paederine rove beetles)
Ac, Tx or Tp undet. genera in Vancouver Island, WA)

Tribe Paederini Fleming, 1821
Subtribe Cryptobiina Casey, 1905 (*Biocrypta*, *Homaeotarsus*)
Subtribe Echiasterina Casey, 1905 (*Echiaster*, *Myrmecosaurus*)

Subtribe Lathrobiina Laporte, 1835 (*Lathrobium*, *Lobrathium*),
Subtribe Medonina Casey, 1905 (*Lithocharis*, *Medon*, *Sunius*)
Subtribe Paederina (*Paederus*)

Subtribe Scopaeina Mulsant & Rey, 1878
(*Orus*, *Scopaeus*, *Stamnoderus* (also put in Xantholininae))

Subtribe Stilicopsina Casey, 1905 (*Stilicolina*)
Subtribe Stilicina (*Eustilicus*, *Rugilis*)

Piestinae (*Asemobius*) (now in Pseudopsinae)

Proteininae Erichson, 1839 (=Pteroniinae Moore, 1964):
Proteinini (*Proteinus*)

Pseudopsinae (*Asemobius*) (also put in Piestinae)
Quediinae (*Hemiquedius*) (put in Staphylininae)

Scaphidiinae Latreille, 1807 (shining fungus beetles)
Tribe Scaphisomatini (*Baeocera*)

Staphylininae Latreille, 1802 (large rove beetles)
Tribe Diochini Casey, 1906 (*Diochus*)

Subtribe Philonthina Kirby, 1837
(*Belonuchus*, *Beeria*, *Bisnius*, *Erichsonius*, *Gabrius*, *Hemiquedius* (put in
Quediinae),
Hesperus, *Neobisnius*, *Philonthus*, *Quedius*) **Bibl.:** Smetana 1995

Subtribe Quidiina Kraatz, 1857 (*Heterothops*)

Tribe Staphylinini Latreille, 1802 (*Flohria*)
Subtribe Staphylinina Latreille, 1802 (*Staphylinus*, *Platydracus*)
Subtribe Quediina (*Hemiquedius*) (also put in Quediinae)

Tribe Xantholini ((*Hesperolinus* (also put in Xantholininae))

Steninae M. MacLeay, 1825 (water skaters) (*Dianous*, *Stenus*),

Tachyporinae Macleay, 1825 (crab-like rove beetles) (*Ischnosoma*)
Deropini Smetana, 1983 (*Derops*)

Mycetoporini Thomson, 1859 (*Lordithon*, *Mycetoporus*)
Tachyporini MacLeay, 1825
(*Coproporus*, *Nitidotachinus*, *Rimulicola*, *Sepedophilus*, *Tachinus*, *Tachyporus*)

Trichophyinae Thomson, 1858 (*Trichophya*)

Xantholininae (*Hesperolinus* (also put in Staphylininae), *Stamnoderus*) (put in Paederinae)

- not known from North America

Aleochara Gravenhorst, 1802 (*Polystoma* Stephens, 1833; *Ceranota* Stephens, 1839; *Ceronota* Agassiz, 1846, emend., 1840; *Mecorhopalus* Solier, 1849; *Coprochara*#, *Heterochara*, *Dyschara*, *Homoeochara*, *Polychara*, *Xenochara*# Mulsant & Rey, 1874; *Metalea* Mulsant & Ray, 1875; *Maseochara*# Sharp, 1883; *Emplenota*#, *Tithanis* Casey, 1884; *Polistoma* Casey, 1893; *Ophiochara*, *Isochara*, *Megalogastris*, *Palaeochara*, *Triochara* Bernhauer, 1901; *Calochara*#, *Echiochara*#, *Polystomota*, *Eucharina* (homo.), *Aidochara*#?, *Ctenochara*, *Notiochara*, *Oreochara*, *Pinalochara*, *Rheobioma*, *Rheochara* Casey, 1906; *Copiata*, *Polycharina*, *Polystomaria* Reitter, 1909; *Aryodma*, *Funda* Blackwelder, 1952) (93 species in US or Canada). **Bibl.:** Klimaszewski, 1984) Staphylinidae beetles in Subfamily Aleocharinae, Tribe Aleocharini, Subtribe Aleocharina (93 species in US or Canada)

Aleochara (*Xenochara*) *angusticeps* Sharp, 1883 (Guatemala/Tx or Ac in one TN cave)

Aleochara (*Coprochara*) *bimaculata* Gravenhorst, 1802 (CO/Tx or Tp in Carlsbad C., NM) K. 1984

Aleochara (*Xenochara*) *castaneipennis* Mannerheim, 1843 (= *Baryodma acomana*, *robustula*, *glenorana*, *insulana*, *mannerheimi*, *rotundicollis* Casey, 1906; *B. eludens*, *concurrans* Casey, 1911; *A. oregona* Hatch, 1957) (AK to CA, PQ, SE/ Tx in AL, IL, KY, MO, PA, TN)

Aleochara (*Calochara*) *cavernicola* Klimaszewski, 1984 (*type locality cave in Calaveras Co., CA/ Tp or Tb)

Aleochara (*X.*) *fumata* Gravenhorst, 1802 (= *A. languida* Sachse, 1852; *A. mycetophaga* Kraatz, 1856; *A. lata* Thomson, 1860; *Baryodma affluens* & *defecta* Casey, 1906;) (Tx or (Tp) in AL, MO, OK)

Aleochara (*Echiochara*) *lucifuga* Casey, 1893 (*Echiochara* & *Rheochara* l.; *Calodera cavicola* Garman, 1894) (NA epigeal / Tx in CA, OH; Tp in AL, IL, IA, IN, KY (Mammoth C.) MD, MO, PA, TN, VA, WV)

Aleochara (*A.*) *lustrica* Say, 1836 (*A. pauper*, *serrata* Sharp, 1883; *A. algonquina*, *fusicornis*, *sternalis*, *medialis*, *texana* Casey, 1906) (Tp or Tx in cave in TN)

Aleochara (*Coprochara*) *minuta* = *A. verna*

Aleochara (*Echochara*) *ocularis* Klimaszewski, 1984 (s. Canada to IA, KY & MO/Tx in IA, KY (1 cave), MO (1 cave))

Aleochara *quadrata* Sharp, 1883 (= *Baryodma uvidula*) (in CA *Neotoma fuscipes* woodrat nest)

Aleochara (*Xenochara*) *taeniata* Erichson, 1839 (= *A. lapidicola* Sahlberg, 1844; *A. oxypodia* Sharp, 1883) (Tx? in NM?)

Aleochara undet. sp.#1 (2 caves in MO/Tx)

Aleochara undet. sp.#2 (cave in MO./Tx)

Aleochara undet. sp.#3? (= *Emplenota*) (cave in MO/ Tp?)

Aleochara undet. sp.#4-5? (caves in MO/ Tx)

Aleochara undet. sp.#6 (OR C., Josephine Co., OR)

Aleochara undet. sp. #7? (cave in Edwards Co., TX)

Aleochara undet. sp.#8? (Tp in IN (Clark Co.), ,KY(Warren, Adair Cos.),TN)

Aleochara *verna* Say, 1836 (*Baryodma tolerata* Casey, 1911; *B. pumilio* Casey, 1911; *A. tecumsehi* Muona, 1977; *A. cedari* Likovsky, 1984; *A. alticola* Sharp, 1883; *A. longula* Heer, 1839; *A. binotata* Kraatz, 1858; *Baryodma incrassata* Thomson, 1860; and *B. subtilis* J. Sahlberg, 1876; *Baryodma m.* Casey, 1906; *A. tanumi* Likovsky, 1984) (AL, IA, PA, WI epigean / guanobic Tp in KY, TN, WV, VA; TTp or TTx in CA),

Aloconota Thomson, 1858 (*Taphrodota*, *Terasota* Casey, 1906) (often treated as a subgenus of *Atheta*, though as a genus by Ashe in American Beetles staph chapter) Staphylinidae beetles in Subfamily Aleocharinae, Tribe Athetini (8 species in US or Canada)

Aloconota *diversiseta* Klimaszewski & Peck, 1986 (no epigean sites/Tp in Marshal & Madison Cos., AL/Tp?)

Aloconota (*Aloconota*) *insecta* (*Homalota insecta* Thomson, 1856; *Atheta i.*) (circumboreal, MA epigean/ Tp in AL, IL, KY (Mammoth C.) , MO, NY (Peck), TN, VA, WV)

Aloconota (*Echochara*) *lucifuga* (Casey, 1893) (Tp in East)

Aloconota *neospelea* Klimaszewski & Peck, 1986 (*type locality cave in Madison Co., AL/Tp?)

Anotylus Thomson, 1859 - Staphylinidae beetles in Subfamily Oxytelinae, Tribe Corophilini (18 species in US or Canada)

Anotylus exiguus = *Clavilispinus e.*

Anotylus insignitus (Oxytelus i. Gravenhorst, 1806) (widespread epigeal in eCanada, eUS & much of tropic and subtropic America, common on guano or rotting material/ Ac in TN (Nickajack C., Marion Co.)

Anotylus tetracarlinatus (*Staphylinus t.* Block, 1799) (Palearctic now widespread alien in eCan and e,nUS/ Ac in AL (Jackson Co.)

Anthobium Leach, 1819; Samouelle (in part) = *Deinopteroloma* & *Mathrileum*

Asemobius Horn, 1895 - Staphylinidae beetles in Subfamily Pseudopsinae (also put in Piestinae) (1 species in US and Canada)

Asemobius caelatus Horn, 1895 (epigeal CA, WA, sBC/ Ac in 1 seAK cave)

Atheta Thomson, 1858 (*Amidobia*#, *Dilacra*#, Thomson, 1858; *Solenia*, *Ceritaxa*#, *Aglypha*, *Thinoecia*, *Ouralia*, Mulsant & Rey, 1873; *Megista*, *Hemitropia*, *Polyota*, *Dralica*#, *Hypnotadelete*, *Heteronoma*, *Pelurga* (homo.), *Phryogora* I, *Traumoecia*#, M.&R., 1874; *Pseudosipalia* Seidlitz, 1889; *Oreostiba*#, Ganglbauer, 1895; *Elytrusa* Casey, 1906; Casey, 1910; Tottenham, 1939; *Brundinia*#, T., 1949) Staphylinidae beetles in Subfamily Aleocharinae, Tribe Athetini, Subtribe Athetina (7-536 species in US or Canada)

Atheta (*Atheta*) *alabama* Klimaszewski & Peck, 1986 (*type locality cave in Morgan Co.,AL/ Tb or Tp)

Atheta (*A.*) *annexa* = *Xenota a.*

Atheta fenyessi Casey, 1911 = *Tetrallus f.*

Atheta (*Dimetrota*) *lucifuga* = *Dimetrota l.*

Atheta occidentalis = *Xenota o.*

Atheta undescr. sp.(s) (FL,GA,IN,IA,KY,MO,PA,VA/Tp)

Atheta undescr. sp.#2 (*?cave in MO/Tp)

Atheta undescr. sp.#3 (IL/Tp)

Atheta undescr. sp.#4 (caves in Barry, Franklin, Howell & Ripley Co.s, MO,Al,IN,VA/ Tp)

Atheta undescr. sp.#5 (AL,FL,GA,KY,MO,TN/Tp),

Atheta undet.species (Tp guano in IL, MO, GA, KY (on guano & stream-bank detritus in cave in Carter Co., se & nwNM (Carlsbad & Malpais); Tp or Tx in CA)

Atheta (*Dimetrota*) *troglophila* Klimaszewski & Peck, 1986 (type locality cave in De Kalb Co.,TN/ Tp in AL, AR, FL, GA (Dade & Walker Cos.), IA, IL, IN, KY (Mammoth C.), MO, PA, VA/ VA T&E)

Baeocera Erichson, 1845 (*Sciatrophes* Blackburn, 1903; *Cyparella* Achard, 1924; *Amaloceroschema* Loeb, 1967; *Eubaeocera* Cornell, 1967) (also put in Scaphidiidae) Staphylinidae beetles in Subfamily Scaphidiinae, Tribe Scaphisomatini (39 species in US or Canada)

Baeocera undet. sp. (Ac in Burnet, Travis Cos., TX)

Baryodma Thomson, 1858(= *Aleochara* in part or in whole) Staphylinidae beetles in Subfamily Aleocharinae, subTribe Myllaenini (21? species in US or Canada)

Baryodma uvidula Casey = *Aleochara quadrata*

Beeria Hatch, 1957 - Staphylinidae beetles in Subfamily, Staphylininae, Tribe Diochini, subTribe Philonthina (1 species in US & Canada)

Beeria *nematocera* (*Philonthus* n. Casey, 1915; *B. punctata* Hatch, 1957) (seAK to wOR/ Tp in WA; Tp or Tx in BC) **Bibl.:** Smetana 1977-8, 1981b

Belonuchus Nordmann, 1837 - Staphylinidae beetles in Subfamily, Staphylininae, Tribe Diochini, subTribe Philonthina (11 species in US or Canada) **Bibl.:** Mank 1923; Silvestri 1945; Smetana 1995

Belonuchus *aphaobius* Smetana, 1995 (type locality in Travis Co.?, TX/ Tp in c,wTX (Bexar, Sutton, Kendall, Travis Cos.))

Belonuchus undescr. sp.? (near *B. moquinius*, may = *B. aphaobius*) (Tp in seNM, wTX (San Saba Co.))

Belonuchus undet. sp. (Tp in Johnston & Woodward Cos.,OK)

Belonuchus *rufipennis* (*Staphylinus* r. Fabricius, 1801) (e,swUS/ frequent Tp in TX (Edwards, Hays, Lampasas, Travis, Williamson, Val Verde Cos.))

Belonuchus *troglophilus* Smetana, 1995 (type locality cave in Cochise Co., AZ/ known only from caves/ Obligate Tp in sAZ (Cochise Co.), wTX (Brewster, Val Verde Cos.) & OK (Woodward, Johnston Cos.))

Biocrypta Casey, 1905 - Staphylinidae beetles in Subfamily Paederinae, Tribe Paederini, subTribe Cryptobiina (2 species in US or Canada) Larvae: Newton 1990a.

Biocrypta *magnolia* Blatchley, 1917 (epigeal FL/ Tp in cave in San Saba & Travis Cos.,TX +Mex.)

Biocrypta undet. sp. (Tp in Bell, Bexar, Coryell, Travis Cos., TX)

Bisnius Stephens, 1829 (*Gefyrobius* Thomson 1859) Staphylinidae beetles in Subfamily,

Staphylininae, Tribe Diochini, subTribe Philonthina (34 species in US or Canada) Bibl.: Smetana 1995

Bisnius *parvus* Sharp, 1874 (epigeal in most of US (except south) & sCanada/ Tx or Tp in MO & OK (Woodward Co.))

Bisnius *sordidus* (*Staphylinus s.* Gravenhorst, 1802; *Philonthus pachycephalus* Nordmann, 1837; *P. placidus* Erichson, 1840; *P. niger* Melsheimer, 1844; *P. chilensis*, *chloropterus* Solier, 1849; *P. longipennis* Provancher, 1877; *P. brouni* Duvivier, 1883; *P. testaceipennis* Roubal, 1948) (Tp or Tx in MO)

Blepharhymenus Solier, 1849 (*Echidnoglossa* Wollaston, 1864; *Blepharhymenus* Gemminger & Harold, 1868 emend.; *Colusa* Casey, 1885) Staphylinidae beetles in Subfamily Aleocharinae, Tribe Oxypodini, Subtribe Blepharhymenina (25 species in US or Canada)

Blepharhymenus *illectus* (*Echidnoglossa illecta* Casey, 1911) (Tp in AL, MO, TN)

Brathinus LeConte, 1852 - Staphylinidae beetles in Subfamily Omaliinae, Tribe Anthophagini.(3 species in US or Canada) **Bibl.:** Hubbard 1894; Peck 1975d

Brathinus *nitidus* LeConte, 1852 (Newfoundland & NS w. to Lake Superior & s.along Appalachia to n.AL/ infrequent Tp in AL (DeKalb Co.), KY, NS, NY, OK, TN (Grundy Co.), seVA, epigeal or Tx? in north) **Bibl.:** Frank, Habeck & Peck 1987,1975d: Peck 1975; Thayer 1985

Carpelimus Leach, 1819 (= *Trogophloeus*, *Taenosoma* Mannerheim, 1830; *Batychrus* Gistel, 1834; *Troginus* Mulsant & Rey, 1878; *Boopinus* Klima, 1904; *Corynocerus* Eichelbaum, 1915; *Oxytrogon* Wendeler, 1930; *Nanolobus* Cameron, 1933; *Bucephalinus* Koch, 1934; *Myopinus*, *Paraboopinus*, *Paracarpelimus*, *Thoracoplatynus* Scheerpeltz, 1937; *Paratrogophloeus* Hatch, 1957; *Typhlopinus* Coiffait, 1967) Staphylinidae beetles in Subfamily Oxytelinae, Tribe Coprophilini (79 species in US or Canada)

Carpelimus undet. sp. or species (Tp in Bexar,Culberson,Edwards Cos.,TX; Tp or Tx in MO)

Ceuthophagus - See *Geodromicus*

Clavilispinus Bernhauer, 1926 Thomson, 1859 Staphylinidae beetles in Subfamily Osoriinae, Tribe Thoracophorini, Subtribe Clavilispinina (also put in Lispinae & Oxytelinae, Tribe Corophilini) (6 species in US or Canada)

Clavilispinus *exiguus* (*Lispinus* Erichson, 1840; *Anotylus exiguus*) (epigeal in SW, SE US/ infrequent troglophile in AL (DeKalb, Marshal Cos.), IA (Clayton, Jackson Cos.), IL (Monroe Co.) & TN (Cannon & Grundy Cos.)

Conosoma velocipes = *Sepedophilus v.*

Coproporus Kraatz, 1857 - Staphylinidae beetles in Subfamily Tachyporinae, Tribe Tachyporini (9 species in US or Canada)

Coproporus *laevis* LeConte, 1863 (epigean in eUS, NY w. to AR, s. to TX, FL/ Ac in KY (Boyle Co.)

Coproporus undet. sp. (Wonder C., TN)

Cylindropsis Fauvel, 1885 - Staphylinidae beetles in Subfamily Osoriinae (1? species in US, may not be found north of Mexico)

Cylindropsis (or related genus) undescr.? sp. (*cave in Travis Co., TX/ Tb)

Deinopsis Matthews, 1838 (= *Dinopsis* Agassiz, 1846) Staphylinidae beetles in Subfamily Aleocharinae, Tribe Deinopsini (once in Aleocharini) (11 species in US or Canada)

Deinopsis undet. Sp. (Tx in IL)

Deinopteroloma Jansson, 1946 (= *Mathrilaenum* Moore, 1966) - Staphylinidae beetles in Subfamily Omaliinae, Tribe Anthophagini (2 species in US or Canada) **Bibl.:** Jansson, 1946; Smetana 1985

Deinopteroloma *pictum* (*Lathrimaeum* p. Fauvel, 1878) (Epigean CA to WA/ Ac or Tx in cave in Skagit Co., WA)

Deinopteroloma *subcostatum* (*Anthobium* s. Maklin, 1853; *Mathrilaenum* s. Moore, 1966) Jansson, 1946 (epigean CA to AK/ Ac, Tx or Tp in Vancouver Island, BC)

Deleaster Erichson, 1839 - Staphylinidae beetles in Subfamily Oxytelinae, Tribe Deleasterini (also put in Tribe Coprophilini) (3 species in US or Canada)

Deleaster *trimaculatus* Fall, 1910 (epigean in CO, NM, AZ, nwMex./ Ac in AZ (Gila Co.)

Derops Sharp, 1889 (= *Rimulincola* Sanderson, 1947) Tachyporinae Macleay, 1825 (crab-like rove beetles) Staphylinidae beetles in Subfamily Tachyporinae, Tribe Deropini (1 species in US) **Bibl.:** Smetana 1985

Derops *divalis* (*Rimulincola* d. Sanderson, 1947) (type locality in deep rock crevices, Devils' Den State Park (near Winslow), AR/ frequently in very deep litter in rock cracks in Ozarks region in to IL/ infrequent Tp in AR, IL (Monroe, Pike Cos.), MO (Barry, Crawford, Phelps Cos.)) **Bibl.:** Smetana 1983

Dianous Leach, 1819 - Staphylinidae beetles, Subfamily Steninae (2 species in US or Canada)

Dianous *chalybaeus* LeConte, 1863 (epigean across Canada & in neUS/ Ac in NY (Warren Co.)

Dimetrota (= *Rheocara* l. Casey; *Echochara* l. Casey; *Dalotia*, *Engamota* Casey, 1910;

Dimetrotina Casey 1911; *Coproceramius* Gistel, 1857) Staphylinidae beetles in Subfamily Aleocharinae, Tribe Athetini, Subtribe Dimetrotina (43 species in US or Canada)

Dimetrota *lucifuga* Klimaszewski & Peck, 1986 (type locality cave in Marshall Co.(AL)/caves only/ Tp in AL, FL, GA, KY, MO, TN, TX)

Dimetrota *prudhoensis* Lohse, 1990 (Ac, Tx or Tp in Vancouver Island, BC)

Diachus Erichson, 1839 (large rove beetles) Staphylinidae beetles in Subfamily Staphylininae, Tribe Diochini (1 species in US or Canada)

Diachus *schaumi* Kraatz, 1860 (*D. brevipennis*, *pallidiceps*, *thoracicus* Casey, 1906)(epigean eUS, n. to sON & PQ/ Tp in Bell, Coryell, Travis, Williamson Cos., TX) **Bibl.:** Smetana 1982; Newton 1990a)

Echiaster Erichson, 1840 (*Leptogenius* Casey, 1886) Staphylinidae beetles in Subfamily Paederinae, Tribe Paederini, subTribe Echiasterina (2 species in US or Canada)

Echiaster *brevicornis* (*L.b.* Casey, 1886; *L. virginicus* Fall, 1901) (epigean IN, TX, seUS/ Ac in cave in Travis Co., TX)

Echiaster undet. sp. (?Ac in Bexar, Williamson Cos., TX)

Echochara (see *Aleochara*),
Echochara lucifuga (= *Aleochara l.*),

Empelus LeConte, 1862 - Staphylinidae beetles in Subfamily Empelinae (1 species in US or Canada)

Empelus *brunnipennis* (Mannerheim, 1852) (epigean sAK to CA/ Ac, Tx or Tp in Vancouver Island, BC) **Bibl.:** Newton & Thayer 1992, 1995

Erichsonius Fauvel, 1874 (= *Actobius* Fauvel, 1876; *Sectophilonthus* Tottenham, 1949 (subgenus)) Staphylinidae beetles in Subfamily Staphylininae, Tribe Diochini, subTribe Philonthina.(19 species in US or Canada) **Bibl.:** Frank, 1975, 1981

Erichsonius *nanus* (*A.n.* Horn, 1884) (epigean from AK to Canada, MidWest, NE/ Ac in cave in IL (Hardin Co.))

Erichsonius *patella* (*Actobius p.* Horn, 1884) (epigean across most of Canada, nUS/ Ac St. Claire Co. (AL)), GA (Chatooga Co.), KY (Hart Co.), MO (Howell Co.), TN (Claiborne Co.) & VA (Montgomery Co.)

Erichsonius *pusio* (*Actobius p* Horn, 1884) (sCanada, nUS from UT to NC/ Ac in cave in IL (Hardin Co.))

Erichsonius undet. sp. or species (Tx in cave each in Howell & McDonald & OR Cos., MO; Tp in Bell, Bexar, Coryell, Kendall, Travis Cos., TX)

Euaesthetus Gravenhorst, 1806 (*Eristhetus* Leach, 1819; *Evaesthetus*, *Eristethus* Agassiz, 1856 Emend.) Staphylinidae beetles in Subfamily Euaesthetinae (12-18 species in US or Canada)

Euaesthetus undet. sp. (Ac in cave in Bell Co., TX)

Eusphalerum Kraatz, 1858 Staphylinidae beetles in Subfamily Omalinae, Tribe Eusphalerini (27 species in US or Canada)

Eusphalerum *fenyesi* Bernhauer, 1912 (Ac, Tx or Tp in Vancouver Island, BC)

Eusphalerum *pothos* Mannerheim, 1843 (Ac, Tx or Tp in Vancouver Island, BC)

Eusphalerum undet. sp. (Ac or Tx in 1 seAK cave)

Eustilicus Sharp, 1886 (= *Trochoderus* Sharp, 1886; *Omostilicus*, *Stilicolina* Casey, 1905) Herman, 1970) Staphylinidae beetles in Subfamily Paederinae, Tribe Paederini, subTribe Stilicina (may belong in Medonina) (6 species in US or Canada) **Bibl.:** Frania, 1986; M. Sanderson 1947

Eustilicus *condei* (*Stilicolina c.* Jarrige, 1960) (type locality cave in Kerr Co., cTX +11 TX cos. & seNM, Mex./ Tp, caves only) **Bibl.:** Frania 1990; Herman 1970

Eustilicus *tristis* (*Lathrobium t.* Melsheimer, 1844; *Stilicolina t.*) (ne to c, swUS epigeal/ Infrequent Tp in CA, AL, KY (Adair; Co.), MO (Howell Co.)) I. Moore 1964

Falagria Leach, 1819 - see *Lissagria*

Flohria Sharp, 1884 - Staphylinidae beetles in Subfamily Staphylininae, Tribe Staphylinini, Subtribe Philonthina? (1 species in US or Canada)

Flohria *subcoerulea* (*Trigonophorus s.* LeConte, 1863; *Trigonopselaphus s.*) (Ttx or Ac in Cot Cave, Kickapoo Caverns State Park, Kinney Co., TX)

Gabrius Curtis, 1829 - Staphylinidae beetles in Subfamily, Staphylininae, Tribe Diochini, subTribe Philonthina (42 species in US or Canada)

Gabrius *microphthalmus* (*Philonthus m.* Horn, 1884) (across sCanada, eUS from SD to NC/ Ac in IL (Hardin Co.))

Gastrolobium - See *Homaeotarsus*

Geodromicus Redtenbacher, 1856 (= *Psephidonus* Gistel, 1856) Staphylinidae beetles in Subfamily Omaliinae, Tribe Anthophagini (12 species in US or Canada)

Geodromicus *brunneus* (= *Anthrophagus b.* Say, 1823; *Ceuthophagus b.* Packard, 1896; *Anthrophagus caesus* Erichson, 1840; *A. verticalis* Say, 1834) (E to PQ epigean / frequent Tp in **AL** (Peck: Beanfield Cave, Jackson Co.), **AR** (Peck: Brewer (Boone Co.) & Blanchard Sprg. (Stone Co.) Cave), **GA** (Peck: Bible Spr. & Mt. Cove Farm Cave, Walker Co.), **IL** (Hardin Co.), **IN** (Jefferson Co.), **KY** (Edmondson, Peck: Gerrard, Hart, Metcalf, Scott, Warren Cos.), **MO** (Peck: Crawford & Perry Cos.), **NY** (Peck); **OH** (Adams Co.), **TN** (Cannon Co.), **VA** (Smyth & Tazewell Cos.), **WV** (Greenbrier, Monroe & Pocahontas Cos.) TTx in **OK** (prob.); **IL**, **KY** (Mammoth C.))

Geodromicus undet. sp. or species (Tx in AR; Tx or Ac in cave in Carter Co., KY)

Habrocerus Erichson, 1829 Staphylinidae beetles in Subfamily Habrocerinae (3 species in US or Canada)

Habrocerus undet. sp. (Ac in 1 seAK cave)

Hemiquedius Casey, 1915 Staphylinidae beetles in Subfamily Staphylininae, Tribe Staphylinini, Subtribe Quediina (also put in Quediinae & Tribe Diachini, subtribe Philonthina) (3 species in US or Canada)

Hemiquedius campbelli (*Heterothops c.* Smetana, 1971) (eUS from MI, TX to FL epigean/ Ac in KY (cave in Edmonson Co.))

Hemiquedius carbonatus Fall, 1901 (cf. remains of 12,900 yrs. BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM))

Hesperolinus Casey, 1906 - Staphylinidae beetles in Subfamily Staphylininae, Tribe Xantholini (also put in Xantholininae) (1 species in US or Canada)

Hesperolinus parvus (*Leptolinus p.* LeConte, 1863) (epigean in CA non-cave *Neotoma fuscipes* woodrat nest)

Hesperus Fauvel, 1874 - Staphylinidae beetles in Subfamily Staphylininae, Tribe Diachini, subtribe Philonthina (6 species in US or Canada)

Hesperus baltimorensis (*Staphylinus b.* Gravenhorst, 1802; *Philonthus b.*) (epigean most of eUS/ Tx? in MO (cave in Crawford Co.))

Hesperus stehri Moore, 1958 (*type locality cave in Hocking Co., OH/ Tp) Smetana 1995

Heterothops Stephens, 1829 = *Trichophya* &/or *Trichopygus* Nordmann, 1837

Heterothops campbelli = *Hemiquedius c.*

Heterothops caronatus = *Hemiquedius c.*

Heterothops pilicornis = *Trichophya p.*

Homaeotarsus Hochhuth, 1851 (= *Spirosoma* Motschulsky, 1857; *Hesperobium* Casey, 1886;

Gastrolobium Casey, 1905; *Homoeobium*, *Nemoeotus* Blackwelder, 1939) Staphylinidae beetles in Subfamily Paederinae, Tribe Paederini, subTribe Cryptobiina

Homaeotarsus *badius* (*Lathrobium b.* Gravenhorst, 1902) (eUS epigeal/ Ac in cave in MO (Franklin Co.)

Homaeotarsus *bicolor* (*Lathrobium b.* Gravenhorst, 1902) (widespread eUS epigeal/ Ac in cave in IL (Hardin Co.)

Homaeotarsus *capito* (*Cryptobium c.* Casey, 1884) (widespread eUS epigeal/ Ac in IL (cave in Hardin Co.)

Homaeotarsus *carolinus* (*Cryptobium c.* Erichson, 1840) (c,eUS epigeal/ Ac in AL (2 caves in Jackson Co.), KY (one cave in Barren Co.) & TN (cave in Grundy Co.)

Homaeotarsus *cinctum* (*Lathrobium c.* Say, 1834) (widespread US? epigeal/ Ac in VA (cave in WA Co.)

Homaeotarsus (*Gastrolobium*) sp. nr. *pimerianus* LeConte, 1863 (c. to wUS epigeal/ Ac in AZ (cave in Gila Co.) & NM (one cave each in Chaves & Lincoln Cos.)/ sp. nr. *pimerianus* – Tp? in cave in Edwards Co., TX)

Homaeotarsus undet. sp. or species (Tp in cTX; Tx in 1 cave each in Logan Co. & Carter Cos., KY)

Hoplandria Kraatz, 1857 (= *Genosema*#, *Lophomucter*# Notman, 1920; *Arrhenandria*# Genier, 1989) Staphylinidae beetles in Subfamily Aleocharinae, Tribe Hoplandriini (12 species in US or Canada)

Hoplandria (*H.*) *lateralis* (*Gyrophana l.* Melsheimer, 1844; *H. ochracea* Kraatz, 1857; *H. arizonica*, *carinata* & *texana* Casey, 1910) (epigeal E to ON,PQ/ Ac in IL (2 caves)

Ilyobates Kraatz, 1856 (= *Gennadota* Casey, 1906) Staphylinidae beetles in Subfamily Aleocharinae, Tribe Oxypodini, Subtribe Oxypodina (once in Blepharhymenina) (2 species in US or Canada)

Ilyobates *canadensis* (*G.c.* Casey, 1906) (eCanada to PA epigeal/Tx or Ac in 2 PA caves)

Ilyobates *puberulus* (*G.p.* Casey, 1893; *Callicerus p.* Casey) (ON to PA epigeal/ Tp in IA, NY, MW, IL, MO)

Ischnosoma Stephens, 1829 - Staphylinidae beetles in Subfamily Tachyporinae (13 species in US or Canada)

Ischnosoma *splendidus* (*Tachinus s.* Gravenhorst, 1806) (in CA non-cave *Neotoma fuscipes* woodrat nest)

Lathrobium Gravenhorst, 1802 (=Lathrobium Billberg, 1820; *Glyptomerus* Mueller, 1856; *Typhlobium* Kraatz, 1856; *Centrocnemis* Joseph, 1868 Homo.; *Hypophylladobius* Fauvel, 1885; *Tetartopeus*# or treated as genus Czwalina, 1888; *Litolathra*, *Abletobium*#, *Apteralium*#, *Deratopeus*, *Lathrobioma*#, *Lathrobiopsis*#, *Lathrolepta*# Casey, 1905; *Centrocnemiella* Strand, 1934; *Madecalobrathium* Scheerpeltz, 1961; *Glyptomerodoschema* Scheerpeltz, 1976)
Staphylinidae beetles in Subfamily Paederinae, Tribe Paederini, subTribe Lathrobiina (71 species in US or Canada)

Lathrobium (*Tetartopeus*) *angulare* LeConte, 1863 (seCanada, eUS epigeal, NH to AR, TN/ Ac in FL (cave in Alachua Co.)

Lathrobium (*Apteralium*) *brevipenne* LeConte, 1863 (swUS epigeal/ Ac in MO (1 cave each in Boone & OR Cos.) & NC (cave in Jackson Co.?)

Lathrobium undet. sp. (Ac? in cave in San Saba Co., TX)

Lesteva Latreille, 1796 (*Pseudolesteva* & *Tevales* Casey, 1893; *Paralesteva* C., 1905; *Lesta* Blackwelder, 1952) - Staphylinidae beetles in Subfamily Omaliinae, Tribe Anthophagini (2 species in US or Canada) Steel 1970

Lesteva *cribratulus* (*Trevalis* c. Casey, 1893) (infrequent Tp in AL (Jackson & St.Claire Cos.), Y (Carter Estill & Meniffee Cos.) & NC (Transylvania Co.)

Lesteva *pallipes* LeConte, 1863 (*L. biguttata* & *picescens* LeConte, 1863) (Tp in AL (DeKalb, Franklin, Jackson, Madison, Marshal Cos.), AR (Boone Co), GA (Bartow, Chatooga & Walker Cos.), IA (Winneshiek Co.), IL (Hardin Co.), IN (Harrison, Lawrence & Crawford Cos.), KY (Edmonson Co. (Mammoth Cave), Estill, Garrard, Hart, Jackson, Larue, Meade, Metcalf, Rockcastle, Taylor, Westford, Woodford Cos.), MD (Allegeny Co.?), MO (Boone, Camden, Carter, Stone Cos.), TN (Cannon, Davidson, DeKalb, Franklin, Giles, Grundy, Rutherford Cos., TTX?) & VA (Montgomery, Roanoke & Smyth Cos.)

Leucorus - see *Orus*

Lissagria Casey, 1906 (*Omoschema* Notman, 1920) Staphylinidae beetles in Subfamily Aleocharinae, Tribe Falagriini (2 species in US or Canada)

Lissagria *laeviuscula* (*Falagria* l. LeConte, 1866; *L. impressifrons*, *fissilis*, *longicollis*, *minuscula*, *robusta* Casey, 1906) (epigeal in CA/ TTx in CA)

Lithocharis Dejean, 1833 (= *Pseudomedon* Mulsant & Rey, 1878; *Metaxyodonta* & *Ramona* Casey, 1886) Staphylinidae beetles in Subfamily Paederinae, Tribe Paederini, subTribe Medonina (9-10 species in US or Canada) **Bibl.:** Frank 1991; Paulian 1941

Lithocharis undescr. sp. (cave each in Kiowa Co.(OK) + Childress, Hardeman & Wheeler Co., nwTX/ prob. Tp)

Lithocharis undet. sp. (Tp? in Bexar, Williamson Cos., TX)

Lobrathium Mulsant & Rey, 1878 (= *Bathrolium* Gozis, 1886; *lathrobiella*, *Eulathrobium*, *Lathrotropis*, *Pseudolathra*, *Linolathra*, *Microlathra*, *Paralathra* Casey, 1905; *Ponthrobium* Korge, 1971; *Allobrathium* Coiffait, 1972) Staphylinidae beetles in Subfamily Paederinae, Tribe Paederini, subTribe Lathrobiina (70 species in US or Canada)

Lobrathium *gnomum* (*Lathrotropsis* g. Casey, 1905) (swUS epigeal/ Ac in CA, Mariposa & Tuolumne Cos.)

Lobrathium (*Eulathrobium*) *subseriatum* (*Lathrobium* s. LeConte, 1880; *Lathrotropis ustulatum* Casey, 1905) (BC to CA/ Tp in CA)

Lobrathium undet. sp. (?Ac in cave in Comal Co., TX)

Lordithon Thomson, 1859 (= *Bobitobus* Tottenham, 1939) Tachyporinae Macleay, 1825 (crab-like rove beetles) Staphylinidae beetles in Subfamily Tachyporinae, Tribe Mycetoporini (23-29 species in US or Canada)

Lordithon *obsoletus* (*Tachinus* o. Say, 1834) (epigeal in eCanada, eUS, NS to NY to KS, s. to TX & FL/ Ac in cave in GA (Chatooga Co.))

Lordithon (*L.*) *thoracicus* (= *Oxyporus* t. Fabricius, 1776; *Tachinus cincticollis* & *trimaculatus* Say, 1834; *Oxyporus pygmaeus* Fabricius, 1776; *Bolitobius binotatus* & *venustus* Melsheimer, 1844; *Bolitobius occidentalis* Casey, 1884) (epigeal in all Canada, NE to CA/TTx in CA)

Lordithon *poecilus* (*Bolitobius* p. Mannerheim, 1852) (Ac, Tx or Tp in Vancouver Island, BC)

Lordithon undet. sp(s). (?Ac in cave in Bell Co., TX; Ac 1 seAK cave)
Mathrilaenum Moore, 1966 = *Deinopteroloma*

Medon Stephens, 1833 (= *Platymedon* Casey, 1889; *Oxymedon*, *Medonodonta*, *Paramedon* & *Tetramedon* Casey, 1905) Staphylinidae beetles in Subfamily Paederinae, Tribe Paederini, subTribe Medonina (also put in Lathrobiini) (51 species in US or Canada)

Medon *consanguineum* (*Lithocharis* c.. Casey, 1886) (in CA non-cave *Neotoma fuscipes* woodrat nest)

Medon undet. sp. (TTx or Ac in CA, TX)

Microsaurus - see *Quedius*

Microedus LeConte, 1874 - Staphylinidae beetles in Subfamily Omalinae, Tribe Anthophagini (10 species in US or Canada)

Microedus *austinianus* LeConte, 1874 (epigean AK to CA, AB to AZ/ Tx or Tp in Vancouver Island, BC)

Microedus *fenderi* Hatch, 1957 (or undescr. sp.) (epigean AK to CA, AB to AZ/ Tx or Tp in Vancouver Island, BC)

Mycetoporus Mannerheim, 1831 - Staphylinidae beetles in Subfamily Tachyporinae, Tribe Mycetoporini (22 species in US or Canada)

Mycetoporus *neotomae* Fall, 1910 (in CA non-cave *Neotoma fuscipes* woodrat nest)
Mycetoporus splendidus = *Ischnosoma s.*

Myllaena Erichson, 1837 (*Centroglossa* Matthews, 1838) Staphylinidae beetles in Subfamily Aleocharinae, Tribe Aleocharini Myllaenini (9-22 species in US or Canada)

Myllaena *arcana* Casey, 1911 (*M. immunda* C.1911) (ON,NB & PQ s. to AL, w. to AB, IA, AL, sMex./ Ac in 1 AL cave)

Myllaena undet. sp. (in CA non-cave *Neotoma fuscipes* woodrat nest)

Myrmecocephalus MacLeay, 1873 (*Stilicioides* Broun, 1880; *Stenagria* Sharp, 1883; *Lorinota* Casey, 1906) Staphylinidae beetles in Subfamily Aleocharinae, Tribe Falagriini (8 species in US or Canada)

Myrmecocephalus *cingulatus* (*Falagria c.* LeConte, 1866; *M. tenuicornis* Casey, 1906; *L. sinuosa* C., 1911) (Ac in 1 IL cave)

Myrmecosaurus Wasmann, 1909 - Staphylinidae beetles in Subfamily Paederinae, Tribe Paederini, subTribe Echiasterina (1 species in US or Canada)

Myrmecosaurus *ferrugineus* Bruch, 1932 (epigean in FL, AL, LA/ alien, fireant associate/ Tx in cave in Travis Co., TX)

Neobisnius Ganglbauer, 1895 - Staphylinidae beetles in Subfamily Staphylininae, Tribe Diochini, subTribe Philonthina (14-17 species in US or Canada)

Neobisnius *paederoides* (*Philonthus p.* LeConte, 1863) (e,sUS epigean/ Ac in IL (cave in Hardin Co.)

Neobisnius *sobrinus* (*Philonthus s.* Erichson, 1863) (seCanada, most of US (except AK, sFL) epigean/ infrequent Tp in KY (Adair, Green, Meade, Metcalf, Woodward Cos.), MO (Crawford Co.) & TN (Rutherford Co.)

Neobisnius undet. sp. or species (cave each in Taney Co.,MO & Bexar Co., TX)

Nitidotachinus Campbell, 1993 - Staphylinidae beetles in Subfamily Tachyporinae, subTribe

Tachyporini (5 species in US or Canada)

Nitidotachinus *scrutator* (= *Tachinus* s. Gemminger & Harold, 1868; *T. discoideus* Melsheimer, 1844, Homo.; *T. repandus* Horn, 1877)(Tp or Tx in MO)

Nitidotachinus undescr. sp.#1 (Tp in MO,TN)

Nitidotachinus undescr. sp.#2 (*cave in Crawford Co,MO/ Tp)

Nitidotachinus *tachyporoides* (*Tachinus* t. Horn, 1877) (type locality? cave in Lawrence Co., IN/ Tx, Ac or Tp)

Ocalea Erickson, 1839 (= *Isoglossa* Casey, 1893; *Rheobioma* Casey, 1906) Staphylinidae beetles in Subfamily Aleocharinae, Tribe Oxypodini, Subtribe Oxypodina (7 species in US or Canada)

Ocalea *vancouveri* Casey, 1893 (Ac, Tx or Tp in Vancouver Island, BC)

Ochtheophilus Mulsant & Rey, 1856 (*Ancyrophorus* Kraatz, 1858) - Staphylinidae beetles in Subfamily Oxytelinae (3 species in US or Canada)

Ochtheophilus *biimpressus* (*Phloeonaeus* b. Maklin, 1852) (Ac, Tx or Tp in Vancouver Island, BC)

Olophrum Erickson, 1839 - Staphylinidae beetles in Subfamily Omaliinae, Tribe Anthophagini (7-9 species in US or Canada)

Olophrum *obtectum* Erickson, 1839 (epigean in eCanada, neUS, s. to KS, TN, NC/ Ac in TN (Anderson Co.))

Ontholestes Ganglbauer, 1895 - Staphylinidae beetles in Subfamily Staphylininae (2 species in US or Canada)

Ontholestes *cingulatus* (*Staphylinus* c. Gravenhorst, 1802) (epigean E, NW/ Ac or Ttx in Newton Co., AR)

Orobanus LeConte, 1878 - Staphylinidae beetles in Subfamily Omaliinae, Tribe Anthophagini (7 species in US or Canada)

Orobanus *falli* Mank, 1934 (Tx? in Vancouver Island, BC)

Orobanus *rufipes* Casey, 1886 (Tx? in Vancouver Island, BC)

Orobanus *tarsalis* Hatch, 1957 (Tx? in Vancouver Island, BC)

Orobanus undet. sp. or species (TTx or Ac? in CA & 5 seAK cave)

Orus Casey, 1884 (*Leucorus*#, *Pycnorus*# Casey, 1905; *Nivorus*# Herman, 1965) Staphylinidae beetles in Subfamily Paederinae, Tribe Paederini, subTribe Scopaeina (16-18 species in US or Canada)

Orus (*Leucorus*) *rubens* (= *L. r.* Casey, 1905) (AZ, IO, IL, KS/ infrequent Tp in seNM, cTX (Collingsworth, Travis, Williamson, Val Verde Cos.) Herman, 1964, 1965)

Oxypoda Mannerheim, 1830; *Sphenoma* Mannerheim, 1830; *Disochara* Thomson, 1858; *Bessopora*, *Demosoma* Thomson, 1859; *Baeoglana* Thomson, 1867; *Podoxya* Mulsant & Rey, 1874; *Paroxypoda* Ganglbauer, 1895; *Hylota* Casey, 1906) Staphylinidae beetles in Subfamily Aleocharinae, Tribe Oxypodini, Subtribe Oxypodina (102 species in US or Canada)

Oxypoda undet. sp. or species (Tx in GA, seNM, MO)

Oxyporus Fabricius, 1775 - Staphylinidae beetles in Subfamily Oxyporinae (14 species in US or Canada)

Oxyporus undet. sp. (2,000 year old remains in entrance pit in AB caves)

Oxytelus Gravenhorst, 1802 (= *Epomotylus*, *Tanycraeus* Thomson, 1859 (both now treated as subgenera) Staphylinidae beetles in Subfamily Oxytelinae, Tribe Oxytelini (9 species in NA, 2? N US or Canada)

Oxytelus *nimius* (epigean in eCanada, eUS/ Ac in cave in TN (Franklin Co.)

Oxytelus *oxiguus* Erichson, 1840 (Tx or Ac in 1 IL cave),

Oxytelus undet. sp. (Tx or Ac in Nickajack C., Marion Co., TN)

Paederus Fabricius, 1777 (= *Leucopaederus*, *Pauderillus* Casey, 1905) Staphylinidae beetles in Subfamily Paederinae, Tribe Paederini, Subtribe Paederina (15 species in US or Canada)

Paederus *littorarius* Gravenhorst, 1806 (across Canada, nUS epigean/ Ac in cave in KY (Lawrence Co.)

Philonthus Stephens, 1829 (*Laxobates* Gistel, 1834; *Spatulonthus* Tottenham, 1955; *Paragabrius* Coiffait, 1963; *Palaeophilonthus* Coiffait, 1972) (112 for US + Canada) - Staphylinidae beetles in Subfamily Staphylininae, Tribe Diochini, subTribe Philonthina. (112-143 species in US or Canada)

Philonthus *ceruleipennis* (Mannerheim, 1830) (sCanada, eUS epigean, frequent on decaying mushrooms/ Ac in cave in GA (Walker Co.)

Philonthus *consanguineum* (*Lithocaris c.* Casey, 1886) (in CA non-cave *Neotoma fuscipes* woodrat nest)

Philonthus *fuscipennis* (Mannerheim, 1830 nec Block, 1799) (Tx? in Vancouver Island, BC) *Philonthus microphthalmus* = *Gabrius m.*

Philonthus *nigritulus* (*Staphylinus n.* Gravenhorst, 1802; *Gabrius n.*) (in CA non-cave *Neotoma fuscipes* woodrat nest)

Philonthus sordidus = *Bisnius* s.

Philonthus undescr. sp.#1(IA/Tp)

Philonthus undescr. sp.#2(IA/Tp)

Philonthus undescr. sp.#3(seNM,wTX/Tp)

Philonthus undescr. sp.#4(Crawford,WA Cos.,MO/Tb or Tp)

Philonthus undescr. sp.#5? (one cave each in Kiowa Co., OK & Williamson Co., TX)

Philonthus undet. sp. or species (Tp or Tx in cave in Walker Co.,GA; Tp in Grady Co., GA; Tx? in TN; Tp in TX; 2,000 year old remains in entrance pit in AB cave)

Philonthus *thoracius* (*Staphylinus* t. Gravenhurst 1802) (sCanada, most of US epigean/ Ac in cave in MO (Crawford Co.)

Phlaeopterus Motschulsky, 1852 - Staphylinidae beetles in Subfamily Omaliinae, Tribe Anthophagini (14 species in US or Canada)

Phlaeopterus *cavicollis* Fauvel, 1878 (Ac, Tx or Tp in Vancouver Island, BC)

Phlaeopterus undet. sp. (Ac in 1 seAK cave)

Platydracus Thomson, 1858 (= *Staphylinus* auctorum (in part)) Staphylinidae beetles in Subfamily Staphylininae, Tribe Staphylinini, subTribe Staphylinina (27 species in US or Canada)

Bibl.: A. Newton 1973

Platydracus (*Platydracus*) *cinnamopterus* (*Staphylinus* c. Gravenhorst, 1802) (Tp in Onondaga C.,Crawford Co.,MO)

Platydracus undet. sp. (Ac in Coryell, Travis Cos., TX)

Proteinus Latreille, 1796 (= *Protinus* Agassiz, 1846 Emend.; *Pteronius* Blackwelder, 1952) Staphylinidae beetles in Subfamily Proteininae, Tribe Proteinini (10 species in US or Canada)

Proteinus *basilis* Maklin, 1852 (Ac, Tx or Tp in Vancouver Island, WA)

Proteinus *limbatus* Maklin, 1852 (= *P. maeklini* Fauvel, 1869) (AK to WA,ON/Ac? in WA)

Psephidonus Gistel, 1856 = *Geodromicus*

Quedius Stephens, 1829 (*Raphirus*# Stephens, 1829; *Microsaurus*# Dejean, 1833; *Aemulus* Gistel, 1834; *Thanatomanes* G., 1856; *Arphirus* Tottenham, 1945; *Ediquus*#, *Sauridus* Mulsant & Ray, 1876; *Quedionuchus*# Sharp, 1884; *Distichalius*, *Megaquedius*#, *Quediochrus*, *Anastictodera*, *Paraquedius*#, *Quediellus* Casey, 1915) - Staphylinidae beetles in Subfamily Staphylininae, Tribe Diochini, subTribe Philonthina (also put in Quediinae) (91 species in US or Canada) **Bibl.:** Smetana 1971, 1973, 1976, 1981b.

Quedius (*Distichalius*) *capucinus* (*Staphylinus* c. Gravenhorst, 1806; *Philonthus ater* Ziegler, 1846; *Q. bardus* Melsheimer, 1846; *S. inversus* Say, 1834; *Q. seeversi* Korge, 1962), (E to ON, PQ for *Q.c.*/ Tp guanobic in KY(Edmonson (Mammoth C., Warren Cos.), MO (Boone Co.), TN (Dickson, Perry, Wayne, Smith, Warren, Grundy Cos.)

Quedius *caseyi* Scheerpeltz, 1933 (2,000 year old remains in entrance pit in AB cave)

Quedius (*Microsaurus*) *erythrogaster* Mannerheim, 1852 (*Q.neotomae* Hatch, 1957) (epigean in NA to BC, MB, ON, SK/ Tp in AL (Colbert, Jackson, Madison, Marshal Cos.) , AR (Newton, Independence, Wa Cos.), CA (Amador, Calaveras, Mariposa Cos.), GA (Dade Co.), IL (Jersey, Johnson, Monroe Cos.), KY (Mammoth C. (Edmonson Co.), Fayette, Hart Cos.)), **MO** (Barry, Boone, Calaway, Camden, Carter, Crawford, Franklin, Howell, Iron, Madison, McDonald, Miller, Oregon, Phelps, Pike, Pulaski, Shannon, Taney, Texas, WA Cos.), **OK** (Adair, Seminole Cos.), OR (Barney Co.), PA (Berks Co.), TN (Cannon, DeKalb, Franklin, Marion, Rutherford, Smith, Warren Cos.), VA (Bath, Lee, Giles, Pulaski, Rockbridge, Rockingham, Scott, Shenandoah, Tazewell, WA Cos.), WV (Greenbrier, Monroe Cos.); TTx or TTP in AB, CA (Calaveras Co.) & NY (Schoharie Co.); in CA non-cave *Neotoma fuscipes* woodrat nest; 2,000 year old remains in entrance pit in Rat's Nest Cave, AB) **Bibl.:** P. Richards 1992; Smetana 1971

Quedius (*Microsaurus*) *fulgidus* (*Staphylinus* f. Fabricius, 1787) (epigean in Germany, alien epigean in AZ, BC, CA, CO, DC, ID, KS, MA, MI, MN, MO, NC, NJ, NM, NY, OR, PA, VA, WA, WI/ non-native Tp in AL (Calhoun, Jackson, Madison, Marshal Cos.), AR (Washington Co), GA (Dade, Walker Cos.), IL (Adams, Calhoun, Monroe, Pike, Union Cos.), IN (Lawrence & Crawford Cos.), KY (Adair, Edmonson, Fayette, Hart, Warren, Wayne Cos.), PA (Hobo Cave, Berks Co.), TN (Cannon, Coffee, DeKalb, Franklin, Marion, Wilson Cos.), VA & WV (Greenbrier, Monroe Cos.)

Quedius *laticollis* (*Staphylinus* l. Gravenhorst, 1802) (Ac in KY (Boyle & Woodford Cos.) & TN (cave in Overton Co.)

Quedius (*M.*) *limbifer* Horn, 1878 (/TTx or Ac in CA; in CA non-cave *Neotoma fuscipes* woodrat nest)

Quedius (*M.*) *mesomelinus* (*Staphylinus* m. Marsham (non-native epigean in AK, CA, CO, CT, FL, GA, IL, IN, IA, ME, MA, MI, MO, MV, NJ, NY, NC, OH, OR, PA, UT, VA, WA, Wv, WI/ alien Tp in IA, MN, NB, sON, PA, VA)

Quedius neotomae = *Q.e.*,

Quedius (*M.*) *pellax* Smetana, 1971 (BC to CA/Tp in Calaveras Co.,CA)

Quedius undet. sp. #1 (Tp or Tx in PA, WV)

Quedius undet. sp. #2 sp.#2 (Tp in IL)

Quedius undet. sp. #3 (Tx in AR)

Quedius undet. sp. #4 (Tp in Bexar, Culberson, San Saba, Williamson Cos., TX)

Quedius undet. sp. #5 (16,000 to 16,300 yrs. BP in *Neotoma* woodrat nest in wTX (El Paso Co.)

or sNM))

Quedius (*M.*) *spelaeus spelaeus* (*Q.*(*M.*)*s.* Horn, 1871; *Q. spelaeus* Smetana, 1971 (described as a subspecies of *spelaeus*); *Quediochrus quadriceps* Casey, 1915) (epigean in AB, BC, CA, CO, IA, MO, MT, NE, NW, sCanada, US, WA, WI/ Tp in nCA, ID, IA, IL (4 caves or mines), IN (Monroe, Lawrence, & Crawford Cos.), KY (Mammoth C.), MN (Peck), NS, NY (one cave), OR, UT, WV, VA, WA; 2,000 year old remains in entrance pit in Rat's Nest Cave, AB)

Rheochara lucifuga = *Aleochara* (*Echochara*) *l.*

Rimulincola Sanderson, 1947 - Staphylinidae beetles in Subfamily Tachyporinae, subTribe Tachyporini (1 species in US or Canada)

Rimulincola divalis Sanderson, 1947 = *Derops divalis*

Rugilis Leach, 1819 - Staphylinidae beetles in Subfamily Paederinae, Tribe Paederini, subTribe Stilicina (12 species in US or Canada)

Rugilis *dentatus* Say, 1834 (eUS epigean/ Ac in MO (Perry Co.))

Rugilis *opaculus* (*Stilicus o.* Say, 1880) (eUS epigean/ Ac in VA (cave in Montgomery Co.))

Scopaeus Erichson, 1839 (= *Polyodontus* Solier, 1849; *Scoponeus* Motschulsky, 1858; *Leptorus*, Casey, 1886; *Scopaeoma*, *Scopaeopsis* Casey, 1905; *Pseudorus* Casey, 1910) Staphylinidae beetles in Subfamily Paederinae, Tribe Paederini, subTribe Scopaeina (42 species in US or Canada)

Scopaeus undet. Sp (Tx or Ac in 1 IL cave)

Sepedophilus Gistel, 1856 (= *Conurus* Stephens, 1829 (Homo.); *Conosomus* auctorum Motschulsky, 1857; *Conosoma* auctorum Roger, 1856 (all 3 misidentifications) Staphylinidae beetles in Subfamily Tachyporinae, subTribe Tachyporini (30-22 species in US or Canada)

Sepedophilus *castaneus* (*Conosoma c.* Horn, 1877) (Tx or Ac in CA)

Sepedophilus *crassus* (*Tachyporus c.* Gravenhorst, 1802) (eUS, eCanada epigean/ Ac in !IA (cave in Jackson Co.))

Sepedophilus *littoreus* (*Staphylinus l.* Linnaeus, 1758) (eUS, eCanada epigean/ Ac in !IA (cave in Jackson Co.; Tp in Dade Co., GA)

Sepedophilus *opicus* (*Tachyporus o.* Say, 1834) (Ac in TX (Coryell, Travis Cos.) & MO (Wright Co.))

Sepedophilus *velocipes* (*Conosoma v.* Casey, 1895; *C. virginiae* C., 1895) (NE,se Canada to NS/Ac or Tx in sON)

Sepedophilus sp. nr. *basalis* (*Conurus basalis* Erichson, 1839; *C. pulicarius* Sachse, 1852; *C.*

setifer Casey, 1884) (Ac in cave in Travis Co., TX)

Sepedophilus undet. sp. (Tp? in cTX)

Stamnoderus Sharp, 1886 Staphylinidae beetles in Subfamily Paederinae, Tribe Paederini, subTribe Scopaeina (also put in Xantholininae) (3 species in US or Canada)

Stamnoderus undet. sp. (Tp in Bandera, Edwards (or undescr. sp. in one *cave), Medina, Val Verde Cos., TX)

Staphylinus Linnaeus, 1758 - See *Platyhydracus*

Stenus Latreille, 1796 (*Euryops* Gravenhorst, 1802; *Zolmaenus* Stephens, 1829; *Laestris* Melsheimer, 1844; *Hemistenus* Motschulsky, 1860; *Mesostenus* Rey, 1884; *Nestus*, *Hypostenus*, *Tesnus* Rey, 1884; *Areus*, *Mutinus* Casey, 1884; *Astenus*, *Stenosidotus* Lynch, 1884; *Parastenus* Heyden, 1905; *Systemus* Eichelbaum, 1913; *Metastenus* Adam, 1987) Staphylinidae beetles in Subfamily Steninae (197-167 species in US or Canada)

Stenus (*Tesnus*) *alacer* Casey, 1884 (epigean in eUS/ Ac in MO (Perro Co.)

Stenus (*Stenus*) *bilentigatus* Casey, 1884 (epigean in eUS/ Ac in MO (WA Co.)

Stenus (*Stenus*) *renifer* LeConte, 1863 (epigean in swUS/ Ac in KY (Barren Co.)

Stenus undet. sp. or species (Tx in sON, CA, KY, NY)

Stilicolina Casey, 1905 = *Eustilicus*

Stilocharis - see *Lithocharis*

Sunius Stephens, 1829 (= *Hypomedon* Mulsant & Rey, 1878; *Chloecharis* Lynch, 1884; *Caloderma*, *Lena*, *Oligopterus*, *Trachysectus* Casey, 1886; *Asteria* Fauvel, 1889; *Hemimедon*, *Medonella*, *Micromedon* (Homo.) Casey, 1905; *Euastenus* Fiori, 1915; *Xenocharis* Bierig, 1934) Staphylinidae beetles in Subfamily Paederinae, Tribe Paederini, subTribe Medonina (27 species in US or Canada)

Sunius (*Caloderma*) *luculentus* (*Caloderma m.* Casey, 1886) (eUS epigean/ Ac in KY (Marion & Woodford Cos.)

Sunius (*Caloderma*) *mollis* (*Caloderma m.* Casey, 1905) or undescr. sp. (Tp in Mitchell C., San Bernardino, CA)

Tachinus Gravenhorst, 1802 (*Tachinoderus* Motschulsky, 1857 (now as subgens) (see *Nitidotachinus*) Staphylinidae beetles, Subfamily Tachyporinae, Tribe Tachyporini (42 species in US or Canada)

Tachinus *canadensis* Horn, 1877 (epigean in seCanada, neUS, s. to NC/ Ac in MO (Boone Co.)

Tachinus *contortus* Hatch, 1957 (2,000 year old remains in entrance pit in AB cave)

Tachinus *fimbriatus* Gravenhorst, 1802 (epigean in seCanada, eUS, s. to AR, GA/ Ac in MO (Boone Co.)

Tachinus *frigidus* Erichson, 1839 (epigean in nNA, s. To CO/ Ac in IA (Jackson Co.)

Tachinus *fumipennis* (*Tachyporus* f. Gravenhorst, 1802) (epigean in sCanada, eUS, s. to FL, TX/ Ac in MO (Barry Co.) & IA (Jackson Co.)

Tachinus *horni* Campbell, 1973 (epigean in seCanada, neUS, s. to NC/ Ac in IN (Harrison Co. & WA Cos.)

Tachinus *maculicollis* Maklin, 1852 (Ac, Tx or Tp in Vancouver Island, WA)

Tachinus *mexicanus* Campbell, 1873 (4,340 to 2,260 years old in scNM *Neotoma* woodrat nest)

Tachinus *scrutator* Gemminger & Harold, 1868 (epigean in sc, eCanada, neUS, s. to AR, TN/ Ac in MO (Carter, Crawford, Phelps Cos.)

Tachinus undet. sp. (Tx or Ac in cave in Carter Co., KY)

Tachyporus Gravenhorst, 1802 (*Trachyporus* Rey, 1882; *Palporus*# Campbell, 1979) Staphylinidae beetles, Subfamily Tachyporinae, subTribe Tachyporini (30 species in US or Canada)

Tachyporus *californicus* Horn, 1877 (in CA non-cave *Neotoma fuscipes* woodrat nest)

Tachyporus *jocosus* Say, 1834 (*T. acaudus* Say, 1834; *T. arduus* Erichson, 1839; *T. maculipennis* LeConte, 1866; *T. infuscatus* Bernhauer, 1917; *T. snyderi* Blackwelder, 1936) (Tx or Ac in 1 IL cave (Hardin Co.) & KY (Woodford Co.)

Tachyporus undet. sp. (?Ac in cave in Williamson Co., TX)

Tachyusa Erichson, 1837 (*Tachyusota* Casey, 1906; *Ischnopoda* Stephens, 1835; *Thinonoma* Thomson, 1859; *Leucopus* Bertolini, 1872; *Caliusa*, *Cathusya* Mulsant & Rey, 1874; *Calischnopoda* Reitter, 1909; *Pischnopoda* Tottenham, 1939; *Chyusata* Tottenham, 1945; *Ischnopoderona* Scheerpeltz, 1974) (frequently treated as subgenus of *Ischnopoda*) Staphylinidae beetles in Subfamily Aleocharinae, Tribe Oxypodini, Subtribe Tachyusina (21 species in US or Canada)

Tachyusa *gracillima* LeConte, 1863 (epigean Lake Superior, NY,VA/Tx or Ac in MO cave)

Tetrallus Bernhauer, 1905 Staphylinidae beetles in Subfamily Aleocharinae, Tribe Hoplandriini (also put in Athetini) (5 species in US or Canada)

Tetrallus *fenyesei* Bernhauer, 1905 (= *Atheta* f. Casey, 1911) (epigean CA/ CA non-cave *Neotoma*

fuscipes woodrat nest)

Trichophya Mannerheim, 1830 (= *Eumitocerus* Casey, 1886) Staphylinidae beetles in Subfamily Trichophyinae (4 species in US or Canada)

Trichophya *pilicornis* (Gyllenhal, 1810) (*Trichopygus p.* Stephens, 1832) adventive European species in caves as well as above-ground litter/ epigeal BC to OR, e. to NF, VA/ Ac or Tx alien in MN (Fillmore Co.), MO (Camden Co.), & VA (Frederick Co.)

Trichophya or *Trichopygus* (= *Heterothops*) undet. sp. (Tp? in Travis, Val Verde, Williamson Cos., TX)

Trigonopselaphus subcoeruleus = *Flohria* s.

Xenota Mulsant & Rey, 1874 (*Mycota*, *Tetropla* M. & R., 1874; *Halobrecthina* Bernhauer, 1909; *Nemota*, *Rovalida*, *Delphota*, *Donesia*, Casey, 1910) Staphylinidae beetles in Subfamily Aleocharinae, Tribe Athetini, Subtribe Athetina (167-176 species in US or Canada)

Xenota *annexa* (= *Atheta (Atheta) annexa* Casey, 1910) (Tp in FL, IA, AL, GA (Bartow, Dade, Decatur, Walker Cos.), IL, IN, KY (Mammoth C.), MO, WV, VA/ VA T&E S1 rank; global G2G4 rank)

Xenota *occidentalis* (*Atheta o.* Bernhauer, 1906) (in CA non-cave *Neotoma fuscipes* woodrat nest)

Xenota undet. sp. or species (Ac or Tx in NS cave; Tp in Dade & Walker Cos., GA)

Xylodromus Heer, 1839 Staphylinidae beetles in Subfamily Omalinae, Tribe Omaliini (3 species in US or Canada)

Xylodromus undet. sp. (Ac in 1 seAK cave)

Zyras Stephens, 1835 (*Myrmoecia* Mulsant & Rey, 1873; *Platyusa* Casey, 1885; *Nototaphra* Casey, 1893) Staphylinidae beetles in Subfamily Aleocharinae, Tribe Lomechusini, Subtribe Lomechusina (19 species in US or Canada)

Zyras *obliquus* (*Myrmedonia o.* Casey, 1893) (PQ, MI, NY epigeal /Ac in 1 MO cave)

SYNCALYPTIDAE (subsumed in Byrrhidae)

TENEBRIONIDAE Latreille, 1802 (darkling (ground) beetles). Over 1200 sp. InNA, >80% restricted to swUS. Adults & larvae eat fungi & plants, esp. seeds. Adults have defensive glands with openings between 7th & 8th sternites. Ac, Tx or Tp undet. genera in Vancouver Island, BC).
Bibl.: Triplehorn 1965

Subfamilies incl.

Alleculinae Laporte, 1840 (comb-clawed bark beetles) (=Alleculidae (Latreille, 1802)

Tribe Alleculini (*Capnochroa*, *Hymenorus*, *Lobopoda*)

Tribe Gonoderini (*Pseudocistela*)

Coelometopinae Lacordaire, 1859 (*Cibdelis*) (now in Tenebrioninae)

Tribe Coelometopini (*Xylopinus*) (now in Tenebrioninae)

Diaperinae (*Platydema*) (now in Tenebrioninae)

Opatrinae

Eleodini (*Eleodes* - see Tenebrioninae),

Pimeliinae Latreille, 1802

Tribe Adesmiini (*Edrotes*)

Tribe Asidini (*Glyptasida*)

Tribe Coniontini (Coniontis, Eusattus) (both once in Tenebrioninae)

Tribe Cryptoglossini (*Cryptoglossa*, *Schizillus*)

Tribe Nyctoporini (*Nyctoporis*)

Tribe Stenosini (*Araeoschizus*,

Tribe Trimytini (*Trimytis*)

Tribe Triorophini (*Eschatomoxys*, *Stibia*, *Triorophus*)

Tribe Typhiusechini (*Typhlusechus*)

Tenebrioninae L., 1802 (typical darkling beetles)

Tribe Eleodini (*Eleodes* (also put in Opatrinae: Eleodini), *Embaphion*)

Tribe Helopini (*Helops*)

Tribe Pedinini (*Blapstinus*, *Nocibiotes*)

Tribe Platydemini (*Platydema*) (once put in Diaperinae)

Tribe Scaurini (*Argoporis*)

Tribe Tenebrionini (*Cibdelis*, *Tenebrio*, *Xylopinus*)

Tribe Ulomini (*Alphitobius*, *Tribolium*)

Absolus (put in Scarabaeidae)

Alphitobius Stephens, 1829 (*Heterophagus* Redtenbacher, 1845; *Cryptops* Solier, 1851)

Tenebrionidae beetles in Subfamily Tenebrioninae, Tribe Ulomini (2 species in US or Canada)

Alphitobius *diaperinus* (*Tenebrio d.* Panzer, 1797; *Uloma opatroides* Brulle, 1838; *Crypticus longipennis* Walker, 1858; *Phaleria rufipes* Walker, 1858) (BC to NF,E/ lesser mealworm/ Tp guanobic in Blanco, Comal, Mason, Medina, Uvalde, Val Verde Cos.,TX) **Bibl.:** Castrillo 1997;

Falomo 1986; Preiss 1969

Alphitobius *laevigatus* (*Opatrum l.* Fabricius, 1781) (black fungus beetle) (Tp guanobic in Blanco, Burnet, Menard, Uvalde Cos.,TX)

Araeoschizus LeConte, 1851 - Tenebrionidae beetles in Subfamily Pimeliinae, Tribe Stenosini (12 species in US or Canada)

Araeoschizus undet. sp. or species (Tx? in cave in Val Verde Co.,TX/ 15,680 & 10,300 to 10,070 years old in *Neotoma* woodrat nest in Tinajas Mts., Yuma Co,AZ))

Argoporis Horn, 1870 - Tenebrionidae beetles in Subfamily Tenebrioninae, Tribe Scaurini (4 species in US or Canada)

Argoporis oxypoda = *Aleocara taeniata*? in Staphylinidae,

Argoporis *rufipes* Champion, 1885 *nitida* (A.n. Casey, 1890) (TTx in cave in Pecos Co., TX)

Argoporis undet. sp. (14,100 - 7,600 year old fossil in *Neotoma* woodrat midden, Puerto Blanco Mts.,Pima Co., sAZ; 15,680, 11,600 to 10,000 & 8,000 to 7,000 years old in *Neotoma* woodrat nest in Tinajas & Butler Mts., Yuma Co,AZ; 20,500 to 14,500 years old in *Neotoma* nest, Ajo Mts., Pima Co., AZ)

Blapstinus Sturm, 1826 (*Pedonoeces* Waterhouse, 1845; *Tessarome* Boheman, 1858; Lachnodere Mulsant & Rey, 1859) - Tenebrionidae beetles in Subfamily Tenebrioninae, Tribe Pedinini (28 species in US or Canada)

Blapstinus *fortis* LeConte, 1878 (TTx in Bexar, Val Verde Cos., TX)

Blapstinus (*E.*) *hispidabris* (*Blaps h.* Say, 1824; *E. sulcata* Leconte, 1852 Homo.; *E. connexa* L.1857; *E. lecontei* Gemminger, 1870; *E. compositus* Casey, 1891; *E. laevis*, *elongata*, *sculptilis*, Blaisdail, 1909 Unav.; *E. attenuata*, *imitabilis* B., 1918; *E. immunda* B.1925)

Blapstinus (*E.*) *hispidabris nuptus* (*E.n.* LeConte, 1858) (Tx in cave in Pecos Co., TX)

Blapstinus nr. *metallicus* Fabricius, 1801 (4,200 to 11,400 yrs. BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM)

Blapstinus *pratensis* LeConte, 1859 (2,000 to 4,000 and 10,900 to 11,900 yrs. BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM)

Blapstinus undet. sp. (10,950 years old in *Neotoma* woodrat nest in Tinajas Mts., Yuma Co,AZ))

Capnochroa LeConte, 1862 - Tenebrionidae beetles in Subfamily Alleculinae, Tribe Alleculini (1 species in US & Canada)

Capnochroa *fuliginosa* (= *Cistela f.* Melsheimer, 1846) (ON, PQ, NB epgiean /Tx in MO),

Centrioptera Horn, 1870 - put in Carabidae

Cibdelis Mannerheim, 1843 - Tenebrionidae beetles in Subfamily Tenebrioninae, Tribe Tenebrionini (also put in Coelometopinae) (5 species in US or Canada)

Cibdelis *blaschkii* Mannerheim, 1843 (in CA non-cave *Neotoma fuscipes* woodrat nest)

Coniontis Eschscholtz, 1829 - Tenebrionidae beetles in Subfamily Pimeliinae, Tribe Coniontini (once in Tenebrioninae) (48 species in US or Canada)

Coniontis undet sp. (Ac or Tx in woodrat nest in Kaetan Cave, Grand Canyon, Coconino Co., AZ; *Neotoma* woodrat midden in Canyonlands, UT/ 10,900 to 11,440 and 18,000 to 19,700 yrs. BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM))

Coniontis *subpubescens* LeConte, 1851 (in CA non-cave *Neotoma fuscipes* woodrat nest)

Eleodes Escholtz, 1829 (*Amphidora* Eschscholtz, 1829; *Cratidus*, *Promus* LeConte, 1862; *Discogenia* L. 1866; *Blapyllis* Horn, 1870; *Melaneleodes*, *Litheleodes*, *Tricheleodes*, *Pseudeleodes*, *Heteropromus*, *Metablapyllis*, *Steneleodes* Blaisdell, 1909; *Trichderulus* B., 1923; *Arpeleodes*, *Holeleodes* B., 1937; *Eleodopsis* B., 1939; *Caverneleodes* Triplehorn, 1975) - Tenebrionidae beetles in Subfamily Tenebrioninae, Tribe Eleodini (121 species in US or Canada). **Bibl.:** Krehoff 1975; Somerby 1972; V. Tanner, 1961; Triplehorn, 1975; Whicker 1983

Eleodes *armata* LeConte, 1851 (7,530 years old in *Neotoma* woodrat nest in Butler Mts., Yuma Co., AZ)

Eleodes *californica* Blaisdell, 1929 (Tp in CA)

Eleodes (*Melaneleodes*) *carbonaria* (*Blaps* c. Say, 1824; *E. glabra* Blaisdell, 1909 (Unav.)) (SW, CO, ID/carbon beetles/Tx in TX),

Eleodes *caudata* LeConte, 1870 (740 years old in *Neotoma* woodrat nest in Butler Mts., Yuma Co., AZ)

Eleodes contractum = *Embaphion* c.?

Eleodes (*Blapyllis*) *consobrinus* LeConte, 1851 (Tx or Ac in CA),

Eleodes *delicata* Blaisdell, 1929 (Tx or Ac in Coconino Co., AZ)

Eleodes (*E.*) *dentipes* Eschscholtz, 1833 (*E. elegans*, *prominens* Casey, 1890; *E. confinis* Blaisdell, 1895; *E. sublitorialis*, *elongata* (Unav.), *punctata* (Unav.), *laevis* (Unav.); *pertenuis* (Unav.); *robustus* (Unav.) B., 1909; *E. percunctata* B., 1918; *E. montana* B., 1925; *E. paradoxa* B., 1931; *E. sordida* B., 1935) (dentate eleodes/W epigeal /Tx? in CA)

Eleodes (*Caverneleodes*) *easterlai* Triplehorn, 1975 (*cave in Big Bend Natl. Park, Brewster Co., TX/bat guano Tp or Tb)

Eleodes *eschsoltzei* Solier, 1848 (*E. lucae* LeConte, 1866; *E. wickhami* Horn, 1901; *E. ecaudata* & *grandis* Blaisdell, 1909 (Unav.)) (Carlsbad C.,NM/TTx?)

Eleodes (*Litheleodes*) *extricata* (Blaps Say, 1824; *E. cognata* Haldeman, 1852; *E. arizonensis*, *convexicollis*, *elongata*, *punctata* Blaisdell, 1909; *E. utahensis* B., 1921; *E. frigida* La Rivers, 1943) (TTx in Culberson Co., TX)

Eleodes (*Blapylis*) *fuchsi* Blaisdell, 1909 (Tx? in CA)

Eleodes (*Promus*) *fusiformis* LeConte, 1858(Tp, guanobic in Edwards Co., TX)

Eleodes (*Promus*) *goryi* Solier, 1848 (*E. seriata* LeConte, 1858) (Tx in TX/ 18,000 to 19,700 yrs. BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM)

Eleodes (*E.*) *grandicollis* Mannerheim, 1843 (*E. valida* Boheman, 1859) (Tx or Ac in CA)

Eleodes (*E.*) *hispidabris* (Blaps h. Say, 1824; *E. sulcata* LeConte, 1852 (Homo.); *E. connexa* L.1857; *E. nupta* L.1858; *E. lecontei* Gemminger, 1870; *E. compositus* Casey, 1891; *E. laevis*, *elongata*, *sculptilis* Blaisdell, 1909; *E. attenuata*, *imitabilis* B., 1918; *B. immunda* B., 1925)) (BC to TX/Tx in TX; Tx or Ac in AZ (1cave)

Eleodes (*Blapylis*) *horni* Blaisdell, 1909 (*E. monticola* B., 1918; *E. fenyesi* B., 1925) (Tx or Ac in CA)

Eleodes *knaussi* Blaisdell, 1909. (9,400 to 16,300 yrs. BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM)

Eleodes (*Promus*) *knollorum* Triplehorn, 1971 (Tx in Brewster, Kinney, Travis Cos., TX)

Eleodes (*Caverneleodes*) *labialis* Triplehorn, 1975 (deep limestone cracks,Santa Elena Canyon,Big Bend Natl.Park,TX/Tp or Tb)

Eleodes (*Caverneleodes*) *leptoscelis* Triplehorn, 1975 (***type locality& 2 other caves in Grand Canyon Natl. Park, Coconino Co., AZ/Tp or Tb)

Eleodes cf. *nigrina* LeConte, 1858 (Ac or Tx in woodrat nest in cave in Grand Canyon, Coconino Co.,AZ)

Eleodes (*Melaneleodes*) *omissus* LeConte, 1858 (*E. interrupta* Blaisdell, 1902; *E. borealis*, *catalinae*, *communis*, *emarginata*, *peninsularis*, *pygmaea* B., 1909 (Unav.); *E. borealis* B., 1925; *E. tumida* B., 1933) (Tx or Ac in CA)

Eleodes (*Blapylis*) *parvicollis* Eschscholtz, 1829 (*E. planatra* E., 1829; *E. farallonica* Blaisdell, 1909 (Unav.); *E. squalida* B., 1918; *E. farallonica* B., 1925) (Tx or Ac in CA; in CA non-cave *Neotoma fuscipes* woodrat nest)

Eleodes (*Blapyris*) *productus* Mannerheim, 1843 (*E. constricta* LeConte, 1858; *E. trita* Blaisdell, 1917; *E. alticola* B., 1925) (BC to CA/Tx or Ac in CA)

Eleodes *quadricollis* Eschscholtz, 1833 (in CA non-cave *Neotoma fuscipes* woodrat nest/ 0 to 16,300 yrs. BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM)

Eleodes undet. sp. or species (Tx in El Malpais Natl. Monument, nNM; Ac or Tx in woodrat nest in Kaetan Cave, Grand Canyon, Coconino Co., AZ; *Neotoma* woodrat midden in Canyonlands, UT; 15,680 & 19,950 years old in *Neotoma* woodrat nest in Tinajas Mts., Yuma Co, AZ; 9,120+-500 & 4,340 to 2,260 years old in scNM *Neotoma* woodrat nest)

Eleodes *suturalis* (*Blaps* s. Say, 1824; *E. texana* LeConte, 1858) (Tx in TX)

Eleodes (*Melaneleodes*) *tricostata* (*Blaps* t. Say, 1824; *Pimelia alternata* Kirby, 1837; *E. planata* Solier, 1848; *E. robusta* LeConte, 1858; *E. costata* & *ovalis* Blaisdell, 1909) (E to AB, SK, MB/Tx in TX/ *E. cf. tricostata* - 25,000 to 23,000 year old in *Neotoma* woodrat nest in Big Bend Natl. Park, wTX)

Eleodes *ventricosa* v. (*E.v.* LeConte, 1858) & v. *falli* (*E.f.* Blaisdell, 1909) (Tx in TX)

Embaphion Say, 1824 Tenebrionidae beetles in subfamily Tenebrioninae, Tribe Eleodini (7 species in US or Canada)

Embaphion *contractum* Blaisdell, 1909 (Carlsbad C., seNM/Tp)

Embaphion sp. nr. *contractum* Blaisdell, 1909 (Tx in TX),

Embaphion *contractum blaisdelli* (*E.b.* Benedict, 1927) (TTx in cave in Culberson Co., TX & Tx in Carlsbad Caverns, Eddy Co., NM)

Embaphion *contusum* LeConte, 1858 (*E. laminatum* Casey, 1890; *E. grandis* Blaisdell, 1909 (Unav.)) (Ac or poss. TTx in NM; Tx in TX)

Embaphion *easterlai* (*Eleodes e.* Triplehorn, 1975) (type locality cave in Big Bend Natl. Park, Brewster Co., TX) & Carlsbad(NM)/Tp in bat (*Leptonycteris*) guano)

Embaphion *glabrum* Blaisdell, 1909 (*E. blaisdelli* Benedict, 1927) (type locality in Carlsbad C., seNM/ Tp)

Embaphion *planum* Horn, 1870 (1,400 to 1,700 yrs. BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM)

Embaphion undet. sp. or species (NM/Tx; near *muricatum* m. (Say) (TX/Tx/ 7,500 to 6,500 year old in *Neotoma* woodrat nest in Big Bend Natl. Park, wTX)))

Embaphion *muricatum* (*Akis muricata* Say, 1824; *E. concavum* LeConte, 1853)) Tp, guanobic & Tp in TX),

Edrotes LeConte, 1851 (= *Endrotes*) Tenebrionidae beetles in Subfamily Pimeliinae, Tribe Adesmiini (4 species in US or Canada)

Edrotes *rotundus* (*Pimelia rotunda* Say, 1824) (1,400 to 1,700 & 14,300 yrs. BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM)

Eschatomoxys Blaisdell, 1935 - Tenebrionidae beetles in Subfamily Pimeliinae, *Eschatomoxys* (12 species in US)

Eschatomoxys undescr. sp. (*?cave in Grand Canyon, Coconino Co., AZ)

Eschatomoxys *wagneri* Blaisdell, 1935 (non-disjunct Tp in Grand Canyon, Coconino Co., AZ)

Eusattus LeConte, 1851 - Tenebrionidae beetles in Subfamily Pimeliinae, Tribe Coniontini (once in Tenebrioninae) (14 species in US or Canada)

Eusattus *phreatophilus* Doyen, 1984 (phreatophile)

Eusattus undet. sp. 9 (18,000 to 19,700 yrs. BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM)

Glyptasida Casey, 1912 - Tenebrionidae beetles in Subfamily Pimeliinae, Tribe Asidini (12 species in US or Canada)

Glyptasida *sordida* (*Pelecyporus s.* LeConte, 1853) (Tx or Ac in Coconino Co., AZ (1cave)),

Helops Fabricius, 1775 - Tenebrionidae beetles in Subfamily Tenebrioninae, Tribe Helopini (39 species in US or Canada)

Helops *convexus* LeConte, 1861 (*Steriphanus c.*) (Tx or Ac in Coconino Co., AZ (1cave))

Helops undet. sp. (Ac in cave in Travis Co., TX)

Hymenorus Mulsant, 1851 - Tenebrionidae beetles in Subfamily Alleculinae, subTribe Alleculini (100 species in US or Canada) **Bibl.:** Fall, 1931

Hymenorus *prolixus* Casey, 1891 (Tp in Comal, Kimble, Val Verde Cos., TX)

Hymenorus undet. sp. (Tp in Bexar, Uvalde, Val Verde Cos., TX)

Lobopoda Solier, 1835 - Tenebrionidae beetles in Subfamily Alleculinae, Tribe Alleculini (6 species in US & Canada) **Bibl.:** J. Campbell 1964

Lobopoda *opacicollis* Champion, 1888 (= *L. subcuneata* Casey, 1891) (Tp in Edwards, Uvalde Cos., TX)

Nocibiotes Casey, 1895 - Tenebrionidae beetles in Subfamily Tenebrioninae, Tribe Pedinini (6

species in US or Canada)

Nocibiotes undet. sp. (10,300 years old in *Neotoma* woodrat nest in Tinajas Mts., Yuma Co,AZ)

Noserus (put in Zopheridae)

Nyctoporis Eschscholtz, 1831 Tenebrionidae beetles in Subfamily Pimeliinae, Tribe Nyctoporini (8 species in US or Canada)

Nyctoporis *carinata* LeConte, 1851 (in CA non-cave *Neotoma fuscipes* woodrat nest)

Phloeodes (put in Zopheridae)

Platydema Laporte & Brulle, 1831 (*Typhobia* Paascoe, 1869; *Hyisteropsis* Chevrolat, 1878) Tenebrionidae beetles in Subfamily Tenebrioninae, Tribe Platydemini (once in Diaperinae) (23 species in US or Canada)

Platydema *micans* Horn, 1870 (TTx in Hays, Medina, Val Verde Cos., TX)

Pseudocistela Crotch, 1873 (= *Chromatia* LeConte, 1861; *Cistela* Fabricius; *Telacis* Poey) Tenebrionidae beetles in Subfamily Alleculinae, Tribe Gonoderini (7 species in US or Canada)

Pseudocistela *brevis* (*Cistela b.* Say, 1824; *P. erythroptera* (Ziegler)) (ON, PQ epigean/Tx in MO)

Schizillus Horn, 1874 - Tenebrionidae beetles in Subfamily Pimeliinae, Tribe Cryptoglossini (6 species in US or Canada)

Schizillus *laticeps* H., 1874 (CA/Tp?,epigean)

Schizillus *nunenmacheri* Blaisdell, 1921 (NV/CA Tp on woodrat dung?)

Steriphanus convexulus = *Helops c.*

Stibia Horn, 1870 (*Eutriorophus* Casey, 1924) - Tenebrionidae beetles in Subfamily Pimeliinae, Tribe Triorophini (5 species in US or Canada)

Stibia *imperialis* Blaisdell, 1936 (occasional Tx in CA)

Tenebrio *Linnaeus*, 1758 (= *Menedrio* Motschulsky, 1872; *Tenebrionellus* Crotch, 1873) Tenebrionidae beetles in Subfamily Tenebrioninae, Tribe Tenebrionini (2 species in US or Canada)

Tenebrio *molitor* L., 1758 (cosmopolitan epigean/ yellow mealworm/ Ac? in Uvalde Co., TX)

Tenebrio undet. sp. (fungivore on ON bat guano)

Tribolium Macleay, 1825 - Tenebrionidae beetles in Subfamily Tenebrioninae, Tribe Ulomini (2 species in US or Canada)

Tribolium undet. sp. 9 (18,000 to 19,700 yrs. BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM)

Trichophya Mannerheim, 1831 - Now = *Staphylinus* in Staphylinidae

Trimytis LeConte 1851 - Tenebrionidae beetles in Subfamily Pimeliinae, Tribe Trimytini (8 species in US or Canada)

Trimytis *pruinosa* LeConte, 1851 (0 to 10,800 years BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM; 27,000 to 500 year old in *Neotoma* woodrat nest in Big Bend Natl. Park, wTX)

Triorophus LeConte, 1851- Tenebrionidae beetles in Subfamily Pimeliinae, Tribe Triorophini (21 species in US or Canada)

Triorophus cf. *politus* Casey, 1907 (18,00 to 19,000 years BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM)

Triorophus undet. sp. (9,120+- 500 years old in scNM *Neotoma* woodrat nest)

Triorophus cf. *terebratulus* Casey, 1907 (10,000 to 8,000 year old in *Neotoma* woodrat nest in Big Bend Natl. Park, wTX)

Typhlusechus Linell, 1897 - Tenebrionidae beetles in Subfamily Pimeliinae, Tribe Typhlusechini (3 species in US or Canada)

Typhlusechus *chemehuevii* Aalbu & Andrews, 1985 (type locality cave in Mitchell C., San Bernardino Co., CA/Tp, endogean, pholeophile)

Typhlusechus undet. sp. (Tp in cave in Val Verde Co., TX)

Xylopinus LeConte, 1862 (*Taenobates* Motschulsky, 1872) Tenebrionidae beetles in Subfamily Tenebrioninae, Tribe Tenebrionini (also put in Coelometopinae, Tribe Coelometopini) (2 species in US or Canada)

Xylopinus undet. sp. (Tp or Tx in Terrell Co., TX)

Zopherus - put in Zopheridae

TETRATOMIDAE (also subsumed in Melandryidae) (polypore fungus or false darkling beetles)

Subfamily Tetratominae

Tribe Tetratomini (*Tetratoma*)

Tetratoma Fabricius, 1790 - Tetratomidae beetles in Subfamily Tetratominae, Tribe Tetratomini (2 species in US or Canada)

Tetratoma *concolor* LeConte, 1879 (2,000 year old remains in entrance pit in AB cave)

Tiger beetle family - See Cincidelidae

Toed-winged beetle family - See Ptilodactylidae

TROGIDAE MacLeay, 1819 (also subsumed in Scarabaeidae as Subfamily Troginae) (skin or hide beetles) **Bibl.:** C.Scholtz 1980

Glaresis - Now put in Glaresidae

Trox Fabricius, 1775 (= *Omorgus* Erichson, 1848; *Pseudotrox* Robinson, 1949) (also put in Scarabaeidae) Trogidae beetles (46 species in US or Canada)

Trox *aequalis* Say (Tp gaunobic in *Myotis grisescens* bat guano in Walker Co., GA)

Trox *atrox* LeConte, 1854 (AB, W, MI, IN, Mex., IL/ Tx or Tp in Ward Co., TX)

Trox *carinatus* Loomis, 1922 (NM, TX/ Ttp?, bird nests)

Trox *punctatus* Germar, 1824 (= *O. morsus* & *integer* LeConte, 1854) (East/Tx in MO vulture nest), Tp in guano in cave each in Medina & Sutton Cos., TX)

Trox *scabra* (*Silpha s.* Linnaeus, 1767; *T. barbatus* Laicharting, 1781; *T. arenarius* Fabricius, 1787; *T. arenosus* Gmelin, 1788; *T. hispidus* Paykull, 1798; *T. trisulcatus* Curtis, 1845; *T. niponensis* Lewis, 1895)) (East/Tx in MO vulture nest)

Trox *spinulosus* Robinson, 1940 (= *T. dentibius*, *simi* R.1940) (NJ s.to VA, w. to AZ,nMex./Tp? in cave in Medina Co., TX)

Trox *suberosus* Fabricius, 1775 (= *T. gibbus* Olivier, 1789; *T. crenatus* O., 1790; *T. denticulatus* Beauvois, 1805; *T. nobilis* Wollaston, 1807; *T. alternatus* Say, 1835; *T. tuberosus* Laporte, 1840; *Omorgus punctatus* LeConte, 1854) (NA except NW, nNew England, Canada/Tp, gaunobic, in scTX)

TROGOSSITIDAE (bark gnawing or trogossitid beetles) **Bibl.:** Barron 1971
Subfamily Trogossitinae (*Temnochila*, *Tenebrioides*)

Temnochila Westwood, 1830, emend. By Erichson, 1844 - Trogossitidae beetles, Subfamily Trogossitinae (10 species in US or Canada)

Temnochila undet. sp. (Ac? in Blanco Co., TX)

Tenebrioides Piller & Mitterpacher, 1783 - Trogossitidae beetles, Subfamily Trogossitinae (18 species in US or Canada)

Tenebrioides undet. sp. (Ac? in cave in Bandera Co., TX)

Toed-winged beetles family - See Ptilodactylidae

Tiger beetles family - See Cincidelidae

True weevil family - See Curculionidae

Water scavenger beetles family - See Hydrophilidae

ZOPHERIDAE Solier, 1834 (ironclad beetles) (also subsumed into Tenebrionidae)

Zopherinae Solier, 1834

Tribe Zopherini (*Noserus*, *Phloeodes*, *Zopherus*)

Noserus LeConte, 1862 Zopheridae beetles in Subfamily Zopherinae, Tribe Zopherini (6 species in US or Canada)

Noserus *emarginatus* Horn, 1878 (Ac? in cave in Edwards Co., TX)

Phloeodes LeConte, 1866 Zopheridae beetles in Subfamily Zopherinae, Tribe Zopherini (8 species in US or Canada) (also put in Tenebrionidae, Subfamily Asidinae)

Phloeodes *pustulosus* (*Nesoderma p.* LeConte, 1859) (CA/ironclad beetle/Tx or Ac in CA)

Zopherus Gray, 1832 (*Zopherodes*, *Megazopherus*, *Zopherinus* Casey, 1907) (also put in Tenebrionidae) Zopheridae beetles in Subfamily Zopherinae, Tribe Zopherini (11 species in US or Canada)

Zopherus *nodulosus* Solier, 1841 (*Z. variolosus* Haldeman, 1852; *Z. haldemani* Salle, 1870; *Z. verrucosus* & *sallaei* Champion, 1884) (Tx? In Bexar, Blanco, Williamson Cos., TX)

behavior (see also adaptations, dispersal, feeding, reproduction) –

Breder 1943; Dickson 1978; Dickson & Kirk, 1975; Nixon, 1974; Parzefall 1991, 1986

agonistic (see also competition)

Bechler 1980, 1981, 1981a, 1983, 1985; Heckenlively 1970; Parzefall 1982

burrowing - Grow 1981

chaetotaxy - Crow & Christiansen 1977

comparisons between troglobites & non-troglobites –

Banta 1910; Bechler, 1977; Bosnak, 1984; Caine (1974, 1978; Franz 1978; Hadley et al. 1981

cryptic - Dickson 1977

effects of abiotics (see abiotics) - Williams & Moore 1982

evasive - Mason 1989; Studier et al 1988b

home range - Hazlet et al 1974

jumping - Mason, Studier & Lavoie 1988

light aversion - Noble & Pope 1928; Vawter, Fong, & Culver 1987;

Reynierse 1967, 1967a; Walter 1907; Wells 1957, 1959; Williams 1958

maternal-offspring - Bechler 1981

benthic - Bottom-dwelling **area type** species who live on the bed of rivers, lakes, or seas. Incl. Epipsammon, endopsammon & mesopsammon (interstitial).

Bibliographies - Blatchley 1897; Cooper & C. 1975; Dickson & Kirk 1976; Hart & Clark 1987; Maa 1971; T. Miller & Waldron 1988; Reddell & Mitchell 1969; Suman 1964; J. Thompson 1970; R. Thompson 1979; Wolf, 1934-7

biochemical (see genetics) - Luiszer 1991; Palmer, J. 1975; Steiner, et al. 1977; Swofford 1982; Thurow 1962

biochemical oxygen demand - Abbrev. BOD. The amount of oxygen removed by metabolism.

biodiversity - The variety of lifeforms. Polluted caves can have large numbers of earthworms or rotifers but with low biodiversity overall while less polluted caves may be isopod dominated yet have high biodiversity. Incl. indices of biologic integrity, persistence, species richness, resilience & Shannon-Wiener index. See also biogeography, speciation. Culver (1986, 1992, 1995-7; Culver & Holsinger (1992, 1995; Elliot (1992a, 1995; Fong, 1997; Haugen & Culver 1998; Holsinger (1995; Longley (1981a; Marmonier & Vervier (1993; Northup, Hardy & Ingham (1991; Hobbs, III 1992, 1995; Marmonier, P., Vervier, et al. 1993; Northup 1989; N., Hardy & Ingham 1991; N. & Welbourn 1991; Peck 1997a; Poulson (1978, 1992a, 1997, 1997a; P. & Culver (1969; Poulson & Kane (1981; Stoch 1995; Sweet (1978, 1979

cave entrances - Culver & Poulson 1970; Olson, R. 1973; Poulson & Culver 1981

genetic - Cockley, Gooch & Weston 1977

indices of biological integrity - T. Jones 1997; Poulson 1992

seasonality - Northup & Welbourn (1991;

bioenergetics (see also biomass, feeding, metabolism) - Barr & Stoneburner; Bashor (1974; A. Brown, Pierson & Brown 1994; Crawford (1975; Hobbs III (1977; Poulson, 1978-a, 1987; Poulson, Griffith & Schmidt (1992; Streever, 1996; Studier & Lavoie (1991; Studier, Lavoie & Linn (1985; Studier, Lavoie, Wares & Linn (1986, 1987, 1987a; Turquin & Bouvet,

bighorn sheep - See **mammal**

bioerosion - Includes **organic** boring, scraping, chewing, clawing by bats, & secretion of algae acids that dissolve speleothems. Incl. **bedrock (biokarst)**. See also trace, biokarst & bioerosion.

biogeography (see also dispersal, habitat, microclimate, twilight zone) - Barr & Holsinger 1971; Carpenter 1973; Chippindale 1992; Christiansen & Culver 1968, 1969, 1987; Crawford 1981; Culver 1971a; Culver & Ehlinger 1980; Culver, Holsinger, & Baroody 1973; Culver, Jernigan, O'Connell & Kane 1994; Culver, Kane & Fong 1995; Deeleman-Reinhold 1981; Fong & Culver 1994; Franz et al. 1977; Geluso 2000; Gooch 1980; Hobbs III 1994; Holsinger 1966b, 1983, 1985, 1986b, 1994a, 1995a; Holsinger, Hubbard & Bowman 1994; Howarth 1980a, 1982; Hutchison 1958; Kane 1991; Kane & Brunner 1986a; Merkle & Guttman 1977; Ortmann 1905; Peck 1981; Pennack 1958; Poulson & White 1971; Richards 1968; Russell 1976; Wagner 1988, 1990; Culver, Holsinger & Baroody 1973;

adaptive shift theory – Howarth 1986, 1987, 1987a, 1991; Stone 1991; Stone & Howarth 1991

allopatry - Badaracca 1986; Peck 1975

comparisons

deep sea - Poulson 1971

troglobite vs other types - Culver & Fong 1994; Stone 1991a; Sweet, 1982

entrances: Lavoie, Helf & Poulson 1996;

glacial effects (see relicts) - Chauvin 1992; Campbell & Peck 1990; Holsinger 1981

island analogy - Crawford 1981; Culver 1970a, 1987/8; May 1977; Culver 1985

marine - Harmelin et al. 1985; Iliffe 1986; Iliffe et al 1984; Notemboom, J. 1991

Parzefall 1986a; Pennak, R.W. 1950; Stock, Illife & Williams 1986

microclimate - Poulson 1984a

parapatry - Beachy 1990

refugia - Barr, 1973, 1977; Holsinger 1980, 1981; Autrey & Baichtal, 1992;

Ball, 1963; Clifford & Bergstrom, 1976; Harmelin et al., 1985; Noonan 1985;

Peck 1974; Smith, D., 1984; Peck 1967-8; Rouch & Danielopol 1987

relicts & relict theory - Reddell 1985; Stone 1991; Westcott 1968

species concept - Christiansen & Culver 1967.

sympatry - Steiner et al. 1977

biokarst - **Karst** produced by **organic** agents. Incl. **phytokarst**. Cunningham, Northup, Pollastro, Wright & Larock 1995

bilateria – A clade of Eumetazoa animals that differ from the coelenterate eumetazoans in that

their bodies are bilatereal. Divided into Protostomia and Deuterostomia.

biological clock - See temporal

biomonitoring - See monitoring, protocols

bioluminescence - Barr 1949, 1949a, 1951; Bamber 1975; Slacik 1977, 1977a

biomass (see bioenergetics) - Feldhake & Vestal 1984/5; Hobbs III 1977

biospeleology - See history, terminology

biothem - A biologically assisted speleothem.

biolithites - Syn: boundstone.

biological clock - Inherited time-measuring process which governs a species' responses to certain externalities.

biomass - The total weight of living matter, whether in an entire community, at a particular trophic level, or of a particular kind of organism in the community. A measure of **production**. Incl. microbial. Findlay, Meyer & Smith 1984, 1986

biomicrite - A limestone with bedrock **fossils** as grains.

biosparite - A limestone with bedrock **fossils** as cement.

biospeleology - The study of subterranean lifeforms, particularly in caves.

biota - Species in a particular biotope.

biothem - Speleothems associated with or in part formed by biological activity.

biotope - A region characterized by a certain community and abiotic conditions.

Birds

Vertebrate of Class Aves, subclass Neornithes (the only surviving subclass out of eight), superorders Neognathae & Palaeognathae. Have feathers & hollow bones. Owls: Grady 1988a; **Areas**: **AZ**: S. Swift et al. 2000; **ID**: Arvey 1947; **TX**: Fedduccia 1971; R. Peterson 1960; W. Thonrton 1951; Van Tyle & Sutton 1937; **OR**: Brogan 1976; **TX**: Biaggi 1942; **US**: Anon. 1957a; **World**: Clements 1974. **WV**: Grady 1988a

Superorder Neognathae

Order **Anseriformes** (waterfowl)

Suborder Anseres

Anatidae (ducks & geese)

Subfamily Anserinae (*Aix*)

Order **Galliformes**

Suborder Galli

Superfamily Cracoidea

Meleagrididae (Megapodes) (*Meleagris*)-now in Phasianidae

Superfamily Phasianoidea

Phasianidae (grouse, pheasants, quail)

Subfamily Phasianinae (*Meleagris*)

Series 3: Cranes, rails, gulls, herons, and pigeons

Order **Charadriiformes**

Suborder Alcae

Alcidae (auks, murres, puffins & guillemots)

Subfamily Alcinae (*Alca*, *Alle*, *Cephus*)

Order **Apodiformes**

Suborder Apodi

Apodidae (black swifts; swifts)

Subfamily Cypseloidinae (*Cypseloides*)

Order **Columbiformes** (pigeons & doves)

Suborder Columbae

Columbidae (pigeons & doves)

Subfamily Columbinae (*Columba*)

Series 5: diurnal birds of prey, and owls

Order **Falconiformes** (= Accipitres) (diurnal birds of prey; diurnal raptors)

Suborder Falcones

Accipitridae (Old World vultures, eagles, hawks, buzzards, kites, harriers)

Subfamily Buteoninae (*Buteo*)

Falconidae (falcons & caracaras)

Subfamily Falconinae (*Falco*)

Suborder Cathartae

Superfamily Cathartoidea

Vulturidae (=Cathartidae) (American vultures)

Subfamily Vulturinae? (=Cathartinae) (*Breagyps*, *Cathartes*, *Coragyps*, *Gymnogyps*)

Order **Strigiformes** (owls) **AZ**: S. Swift et al. 2000

Strigidae (typical owls)

Subfamily Buboninae (typical owls) (*Bubo*, *Otus*)

Subfamily Striginae (wood owls) (*Strix*)

Tytonidae (barn owls)

Subfamily Tytoninae (barn & grass owls) (*Tyto*)

Series 7: kingfishers, woodpeckers & perching birds

Order **Passeriformes** (perching birds)

Parvorder Passerida

Suborder Oscines (= Passeriformes, Passeri)

Superfamily Muscicapoidea

Cinclidae (dippers) (*Cinclus*) :

Subfamily Drepanidinae (Hawaiian honeycreepers)
(*Chloridops*, *Ciridops*, *Hemignathus*)

Subfamily Carduelinae (Cardueline finches)

(*Leucosticte*) (also put in Ploceidae), *Telespiza* (now in Falconidae)

Muscicapidae (Old World flycatchers & allies) (*Sayornis*, *Turdus* (now in Turdidae))

Turdidae (thrushes)

Subfamily Turdinae (*Catharus*, *Turdus*)

Superfamily Passeroidea

Fringillidae (Old World finches & allies)

(*Aidemia*, *Orthospiza*, *Xestospiza*, *Vangulifer*)

Subfamily Drepanidinae: *Himatione*, *Junco*, *Pipilo* (both once in Emberizidae)

Subfamily Certhiinae (Certhiine finches)

(*Leucosticte*, *Petrochelidon* (also put in Hirundinidae, Tyrannidae), *Pipilio*)

Superfamily Sylvioidea

Paridae (chickadees, titmice)

Subfamily (*Parus*)

Suborder Tyranni

Superfamily Tyranoidea

Hirundinidae (swallows)

Subfamily Hirundininae (*Hirundo*, *Petrochelidon*, *Progne*)

Troglodytidae (Thrashers, mockingbirds, catbirds, wrens)

Subfamily Troglodytinae (wrens) (*Catherpes*, *Salpinctes*, *Troglodytes*)

Tyrannidae (tyrant flycatchers)

(*Petrochelidon* (now in Hirundinidae), *Salpinctes* (now in Troglodytidae))

Subfamily Fluvicolinae (flycatchers, peewees, phoebes) (*Empidonax* & *Sayornis*)

Aix Boie, 1828 (wood ducks) - Anatidae birds (1 species in US or Canada)

Aix sponsa (Linnaeus, 1758) (East, seCanada, NW, s. to CA Sierras/ wood duck/ Ttx in MN)

Bibl.: Gilmer et al. 1978

Alca Linnaeus, 1758 - Alcidae birds (1 species in US or Canada)

Alca *torda* Linnaeus, 1758 (razorbill/ sGreenland to e.New England along coastal cliffs/ TTX in NB),

Alle Link, 1806 - Alcidae birds (7 species in US or Canada)

Alle *alle* (*Plautus a.* Linnaeus, 1758) (dovekie/ sGreenland to e.New England along coasts in summer/TTX in NB)

Bubo (Dume'ril, 1806) (horned owls) Strigidae birds (1 species in US |& Canada)

Bubo *virginianus* (Gmelin, 1788) (great horned owl/ NA/ TTx in NM,OK, PA, TX, WA, WV)

Bibl.: Guilday 1976e; Caire & Ports 1981

Buteo Lacepede, 1799 - Accipitridae birds (12 species in US or Canada)

Buteo *jamaicensis* (j.) (Gmelin, 1788) (Red-tailed hawk/ NA except nCanada & nAK/ TTx? in CA)

Cathartes Illiger, 1811 - Cathartidae birds (1 species in US or Canada)

Cathartes *aura* (Linnaeus, 1758) (turkey vulture/NA except nCanada,AK/ TTx in CA, KY, OH, OK, TX, WV) Coles 1944

Catharus Bonaparte, 1851 (verrys) - Turdidae birds, Subfamily Turdinae (4 species in US or Canada)

Catharus *ustulatus* (*Hylocichla u.* Nuttall, 1840) (NA except nCanada & nAK/ Swainson's thrush/ rare TTx in WA)

Catherpes Baird, 1858 (canyon wrens) - Troglodytidae birds (1 species in US or Canada)

Catherpes *mexicanus* (Swainson, 1829) (wUS, Mex., n. to sBC/ Swainson or canyon wren/TTx in CA,TX; TTx or Ac in NM)

Cepphus Pallas, 1769 (guillemots) Alcidae birds (2 species in US or Canada)

Cepphus *grylle* (Linnaeus, 1758) (Arctic coasts & nAtlantic coasts/ black guillemot/ TTx in NB)

Cinclus Borkhausen, 1797 (dippers) Cinclidae birds (7 species in US & Canada)

Cinclus *mexicanus* Swainson, 1827 (AK to wMex./ dipper or ouzel/TTx in BC, CA)

Columba Linnaeus, 1758 (pigeons) - Columbidae birds (4 species in US or Canada)

Columba *livia* Gmelin, 1789 (NA except AK, nCanada/ rock dove/TTx in AR,OK)

Coragyps Geoffroy, 1853 (black vultures) Cathartidae birds (1 species in US or Canada)

Coragyps *atratus* (Bechstein, 1793) (black vulture/ SE, Mex., n. to MD, w. to sSW/ TTx in FL, PA, TX, WV) **Bibl.:** Grube 1953

Cypseloides Streubel, 1848 (black swifts) Apodidae birds (1 species in US & Canada)

Cypseloides *niger* (Gmelin, 1789) (nBC to sCA, Great Basin/ black swift/ Ttx in one sCA cave)
Bibl.: M. Marin 1997

Empidonax Cabanis, 1855 (empidonax flycatchers) - Tyrannidae birds (9 species in US or Canada)

Empidonax *difficilis* Baird, 1858 (extreme seAK to nMex, e. towTX, wSD/ western flycatcher/ Ttx in NV)

Falco Linnaeus, 1758 (falcons) Falconidae, Subfamily Falconinae birds (8 species in US or Canada)

Falco *mexicanus* Schlegel, 1851 (w.of Rockies, BC,AB to Mex./ prairie falcon/ Ac or TTx in TX, WA)

Falco *peregrinus* Tunstall, 1771 (NA/ peregrine falcon/ Ac in TX; prey on *Tadarida b.* bats)

Gymnogyps Lesson, 1842 (condors) Cathartidae birds (1 species in US or Canada) **Bibl.:** Emslie 1987

Gymnogyps *californianus* (*Cathartes c.* Shaw, 1798) (Pleistocene fossil in Howell's Ridge C., nNM; Vulture, Shrine, Skull (12,210 B.P.), Tse'an Kaetan (16,290 B.P.), Sandblast (13,110-9,580 B.P.), Stevens (12,540 B.P.), Five Windows, Bridge (11,140 B.P.), Midden (22,180 B.P.) Skylight (11,345 B.P.), Luka, Three Springs, Tooth & Stanton C., AZ) & Mule Ears Peak C. #1 (12,580 B.P.), & Burnet C. (both in TX)/ now in cCA & nAZ(reintroduced)/ CA condor/ Ttx in AZ, CA) **Bibl.:** Wetmore 1931a.

Himatione Cabanis, 1851 ('apapanes) Fringillidae birds, Subfamily Drepanidinae (1 species in US)

Himatione *sanguinea* (Gmelin, 1788) ('Apapane/TTx in HI)

Hirundo Linnaeus, 1758 (barn swallows) Hirundinidae birds (2 species in US or Canada)

Hirundo *fulva* Vieillot, 1807 (= *Petrochelidon f.*) (cave swallow/ sCA,seNM,scTX,nMex./ TTx in CA, NM, TX; TTx or Ac in TN?) **Bibl:** Anon. 1956; J. Baker 1966a,b,e,d; Martin et al (1977; Kincaid & Prasil 1956; Oberholser (1974; O'Brien & Taitt (1974; Selander & Baker 1957; West 1986; R.Eads 1956; R. Johnston 1960; R. Martin 1983; R. Martin & Martin 1978; R. Martin, Miller et al. 1977; S. West 1983, 1986, 1990-1; West, Poole & Gill 1995

Hirundo pyrrhonota = *Petrochelidon p.*

Hirundo *rustica* Linnaeus, 1758 (NA except nAK,ncCanada/ barn swallow/ TTx in CA, AR, OR, PA, WV),

Junco Wagler, 1831 (juncos) Fringillidae birds (5 species in US or Canada)

Junco *hyemalis* (Linnaeus, 1758) (NA except sSW, Mex.,ncCanada, sFL/ slate-colored junco/ Ac or TTx in WA)

Leucosticte Swainson, 1832 - Fringillidae birds, Subfamily Carduelinae (3 species in US or

Canada)

Leucosticte *arctoa* (Pallas, 1811) (incl. *L. tephrocotis*, *L. atrata*, *L. australis*) (NW to cCanada,sRockies/gray-crowned rosy finch/TTx in CA)

Meleagris Linnaeus, 1758 (turkeys) Phasianidae birds (1 species in US or Canada)

Meleagris *gallopavo* L.1758 (turkey/ sNA/ TTx in PA)

Otus Pennant, 1769 (scops-owls) Strigidae birds (3 species in US or Canada)

Otus *asio* (Linnaeus, 1758) (eastern screech-owl/NA/ TTx in MN (preys on *Eptesicus fuscus* bats), WV; TTx or Ac in PA, KY)

Otus *kennicottii* (=O. *asio* k., *O.o.k.*) (seAK to cen.Mex./screech owl/TTx in AZ) **Bibl.:** Beer 1953; Duguay et al. 1997

Parus Linnaeus, 1758 (chickadees, titmice) - Paridae birds (11 species in US or Canada)

Parus *bicolor* Linnaeus, 1766 (SE, n. to sPA, sON, sMI/ tufted titmouse/ Ac in TX)

Petrochelidon Cabanis, 1850 - Hirundinidae birds (2 species in US or Canada)

Petrochelidon *pyrrhonota* (*Hirundo p.* Vieillot, 1817) (cliff swallow/ NA except nAK, neCanada/ TTx in CA, ME, nwTX,WV(one cave)) **Bibl.:** Anon.1956; Kohls & Ryckman 1962; Thayer 1915

Pipilo Vieillot, 1816 (towhees) Fringillidae birds (3 species in US or Canada)

Pipilo *fuscus* Swainson, 1827 (brown towhee/ SW, coast from Baja to nOR/ Ac in TX)

Progne Boie, 1826 (purple martins) Hirundinidae birds (1 species in US or Canada)

Progne *subis* (Linnaeus, 1758) (US(except AK,Great Basin,noncoast NW),scCanada, Mex./ purple martins/TTx in CA,TX) **Bibl:** Prescott 1977; Martin 1982

Salpinctes Cabanis, 1847 (rock wrens) Tyrannidae birds (1 species in US or Canada)

Salpinctes *obsoletus* (Say, 1823) (swBC,wUS (except AK)/ rock wren/ TTx in CA, NV, OK, TX, WA)

Sayornis Bonaparte, 1854 (phoebes) Tyrannidae birds (1 species in US or Canada)

Sayornis *nigricans* (Swainson, 1827) (CA, SW/ black phoebe/ TTx in CA, KY, TX; AC or TTx in TN, PA)

Sayornis *phoebe* (Latham, 1790) (eastern phoebe/ eUS & Mex. to scCanada/ TTx in AL, AR, CA, KY, MS, MO (Carter Co.), OH, OK, PA, TN, TX, WV)

Sayornis *saya* (Bonaparte, 1825) (W to scAK/ Say's phoebe/ TTX in OK, PA, TX)

Strix Linnaeus, 1758 (earless owls) Strigidae birds (3 species in US or Canada)

Strix *occidentalis* (Xantus de Vesey, 1860) (coastal W,seBC to eMex.,scAZ,swNM/ spotted owl/ TTx in CA,wTX)

Troglodytes Vieillot, 1808 (house wrens) Troglodytidae birds (3 species in US or Canada)

Troglodytes aedon Vieillot, 1808 (house wren/US to sCanada/TTX in TX)

Troglodytes troglodytes Linnaeus, 1758 (winter wren/E,CA to seAK/ TTx in OR,WA)

Turdus Linnaeus, 1758 (robins) Turdididae birds, Subfamily Turdinae (1 species in US or Canada)

Turdus migratorius Linnaeus, 1758 (NA except far nCanada /robin/ Ac or TTx in WA)

Tyto Billberg, 1828 (barn-owls) Tytonidae birds (1 species in US or Canada)

Tyto alba (Scopoli, 1769) (s,cUS,coastal NW/ barn owl/ TTx in OK,TX; w.mines; prey on *Tadarida m.* bats/ Ttx or Ac in PA).

Bird Fossils - Brodkorb 1964; Parmalee 1992, 1993; Parmalee & Klippel 1982; Wetmore 1927, 1931b, 1959a, 1962. **Areas:** **AZ:** Miller 1960; **CA:** Howard 1962; Miller & DeMay 1942; **FL:** 1959; **GA:** S. Olson 1984a; **HI:** James 1987, J.et al (1982, 1982a, 1987, Olson & J. 1991; Paxinos 1998; Pratt 1979; **ID:** Sadek 1965; NM: Howard 1971; **VA:** Eshelman & Grady 1986; **NV:** Grayson 1985; **TN:** Parmalee & Klippel 1982; **TX:** McKusick 1983; Wetmore & Friedmann 1933; Feduccia 1972; HA: Giffin 1993

Subclass Anseres

Order **Anseriformes** (screamers & waterfowl; ducks, geese & swans)

Anatidae (magpie geese) (*Anabernicula*)

Subfamily Anatinae (*Anas*, *Ptaiochen*, *Thambetochen*)

Subclass Neornithes

Order **Galliformes** (gallinaceous birds)

Odontophoridae (New World quails)

Subfamily Odontophorinae (*Colinus*)

Phasianidae (pheasants, grouse & quail)

(*Colinus* (now in Odontophoridae), *Neortyx*)

Subfamily Tetraoninae (*Bonasa*, *Centrocerus*, *Dendragapus*, *Lagopus*, *Tympanuchus*)

Series 2: Pelicans and albatrosses

Order Pelecaniformes (totipalmate swimmers)

Phalacrocoracidae (cormorants) (*Phalacrocorax*)

Order Procellariiformes (tube-nosed swimmers)

Procellariidae (shearwaters, fulmars & petrels) (*Pterodroma*)

Series 3: Cranes, rails, gulls, herons, and pigeons

Order Charadriiformes (shorebirds, bulls & alcids)

Suborder Charadrii

Superfamily Burhioidea

Burhinidae (thick-knees) (*Burhinus*)

Superfamily Charadrioidea

Order Columbiformes (pigeons & doves)

Suborder Columbae

Columbidae (pigeons & doves)

Subfamily Colubinae (*Ectopistes*)

Order Gruiformes (rails, cranes & allies)

Suborder Grues

Rallidae (rails, gallinules & coots; rails, cranes, coots & moorhens or gallinules)

125 species in 41 genera) (*Porzana*, *Laterallus*)

Series 4: Storks and allies

Order Ciconiiformes (herons, ibises & storks)

Plataleidae (ibises & spoonbills) (*Apteribis*: also put in Threskiornithidae)

Teratornithidae (teratorns) (*Teratornis*)

Threskiornithidae (ibises & spoonbills) (*Apteribis*: also put in Plataleidae))

Charadriidae (*Dorypaltus*)

Series 6: Nighthawks and swifts

Order Apodiformes

Suborder Apodi

Apodidae (typical swifts)

Subfamily Cypseloidinae (*Cypseloides*)

Order Caprimulgiformes (goatsuckers & allies)

Superfamily Caprimulgoidea

Caprimulgidae (night hawks)

Subfamily Chordeilinae (nighthawks) (*Chordeiles*)

Series 5: diurnal birds of prey, and owls

Order Falconiformes (diurnal birds of prey)

Suborder Accipitres

Accipitridae (hawks, kites & eagles) (also put in Suborder Falcones)

Neogyps (also in Cathartidae), *Neophrontops* (also in Embenizidae) *Spizaetus*)

Subfamily Pandioninae (*Buteogallus*, *Caracara* (put in Falconidae))

Cathartidae (*Cathartes*, *Coragyps*, *Gymnogyps*, *Neogyps*, *Teratornis*
(in Teratornithidae))

Falconidae (falcons & caracaras)

Subfamily Polyborinae (= Daptriinae) (caracaras, laughing & forest falcons)

(*Caracara* (also in Accipitridae) *Polyborus*)

Subfamily Falconinae (caracaras & falcons) (*Buteogallus* (now in Accipitridae)

Order Strigiformes (owls)

Strigidae (typical owls) (*Grallistrix*)

Series 7: kingfishers, woodpeckers & perching birds

Order Coraciiformes (rollers, kingfishers & allies)

Suborder Alcedines (= Alcedini)

Infraorder Alcedinides

Superfamily Alcedionoidea

Alcedinidae (*Megaceryle*)

Superfamily Ceryloidea

Cerylidae (*Ceryle*)

Order Cuculiformes (cuckoos & allies) (not placed in series)

Suborder Cuculi

Parvorder Neomorphida

Superfamily Cuculoidea

Cuculidae (cuckoos & allies) (*Geococcyx* - now in Neomorphidae)

Neomorphidae (roadrunners & ground-cuckoos) (*Geococcyx* (once in Cuculidae)

Order Passeriformes (perching birds)

Suborder Oscines (= Passeres)

Corvidae (jays, magpies & crows)

Subfamily Corvinae (*Corvus*, *Protocitta*)

Drepanididae (also subsumed in Fringillidae) (Hawaiian honeycreepers)

Subfamily Drepanidinae (in Fringillidae) (Hawaiian honeycreepers)

Tribe Hemignathini (*Hemignathus*, *Telespiza*) (both put in Fringillidae)

Emberizidae (*Cremaster*, *Neophrontops*)

Subfamily Icterinae (*Euphagus*, *Pandanaris*)

Fringillidae (Old World finches & allies) (*Aidemia*, *Orthospiza*, *Xestospiza*, *Vangulifer*),

Drepanidinae (Hawaiian honeycreepers)

Tribe Hemignathini (*Chloridops*, *Ciridops*, *Hemignathus*, *Telespiza*),

Carduelinae (Cardueline finches) (*Leucosticte*) (also put in Ploceidae), *Telespiza*
(now in Falconidae)

Hirundinidae (swallows) (*Tachycineta*)

Families incl.

Anatidae (swans, geese & ducks)

(*Anabernicula*)

Subfamily Anatinae (*Anas*, *Ptaiochen*, *Thambetochen*)

Accipitridae (hawks, kites & eagles)

(*Buteogallus*, *Caracara*, *Neogyps*, *Neophrontops*, *Spizaetus*)

Alcedinidae (kingfishers) (*Megaceryle*)

Apodidae (*Cypseloides*)

Burhinidae (thick-knees) (*Burhinus*)

Caprimulgidae (night jars) (*Chordeiles*)

Cathartidae (American vultures)

(*Cathartes*, *Coragyps*, *Gymnogyps*, *Neogyps*, *Teratornis* (now in Teratornithidae))

Charadriidae (plovers) (*Dorypaltus*)

Columbidae (pigeons & doves) (*Ectopistes*)

Corvidae (jays, magpies & crows) (*Corvus*, *Protocitta*)

Cuculidae (cuckoos & allies) (*Geococcyx* - now in Neomorphidae)

Drepanididae

(=Drepanidinae in Fringillidae) (Hawaiian honeycreepers) (*Hemignathus*, *Telespiza*)

Falconidae (falcons & caracaras)

Subfamily Polyborinae (= Daptriinae) (*Polyborus*)

Fringillidae (Old World finches & allies) (*Aidemia*, *Orthospiza*, *Xestospiza*, *Vangulifer*),

Drepanidinae (Hawaiian honeycreepers) (*Chloridops*, *Ciridops*, *Hemignathus*),

Carduelinae (Cardueline finches) (*Leucosticte*) (also put in Ploceidae), *Telespiza*
(now in Falconidae)

Hirundinidae (swallows) (*Tachycineta*)

Icteridae (now in Emberizidae Subfamily Icterinae)

Neomorphidae (*Geococcyx* - once in Cuculidae)

Odontophoridae (*Colinus*)

Phalacrocoracidae (cormorants) (*Phalacrocorax*)

Phasianidae (pheasants, grouse & quail)

(*Colinus* (now in Odontophoridae) *Neortyx*)

Subfamily Tetraoninae (*Bonasa*, *Centrocerus*, *Dendragapus*, *Lagopus*, *Tympanuchus*)

Procellariidae (shearwaters, fulmars & petrels) (*Pterodroma*)

Plataleidae (ibises & spoonbills) (*Apteribis*: also put in Threskiornithidae)

Rallidae (rails, gallinules & coots; rails, crakes, coots & moorhens or gallinules) 125 species in 41 genera) (*Porzana*, *Laterallus*)

Strigidae (typical owls) (*Grallistrix*)

Teratornithidae (teratorns) (*Teratornis*)

Threskiornithidae (ibises & spoonbills) (*Apteribis*: also put in Plataleidae))

Tetraonidae (grouse) = Tetraoninae in Phasianidae (*Bonasa*)

Aidemia James & Olson, 1991 - Fringillidae birds

Aidemia *chascax* Olson & James, 1991 (extinct/ cave or sink at Barber's Point,Oahu)

Aidemia *lutetiae* Olson & James, 1991 (extinct/cave or sink at Barber's Point,Oahu)

Aidemia *zanclops* Olson & James 1991 (extinct/cave or sink at Barber's Point,Oahu)

Anabernicula Ross, 1935 - Anatidae birds, Subfamily Anatinae

Anabernicula *gracilentia* Ross, 1935 (extinct/ 2 caves in Dona Ana Co. NM & cave in White Pine Co.,NV)

Anabernicula cf. *oregonensis* Howard, 1964 (Extinct Sheldgoose/Dark Canyon C.,NM)

Anabernicula undet. sp. (extinct in Pleist. caves in Grant & Dona Ana Cos., NM)

Anas Linnaeus, 1758 (dabbling ducks) Anatidae birds (12 species in US or Canada)

Anas *schneideri* Emslie, 1985 (extinct teal/*type locality cave in WY)

Apteribis Olson & Wetmore, 1976 - Threskiornithidae birds

Apteribis *brevis* O. & W., 1976 (type locality cave in Maui, HI)

Apteribis *glenos* O. & W., 1976 (paratype from cave in Maui, HI),

Bonasa Stephens, 1819 (ruffed grouse) Phasianidae birds, Subfamily Tetraoninae (1 species in US or Canada)

Bonasa *umbellus* (Linnaeus, 1766) (nUS to cAK,cCanada/ruffed grouse/extralimital in Cumberland C.,MD)

Branta Scopoli, 1769 (brent geese) Anatidae birds (4 species in US or Canada)

Branta *hylobadistes* Olson & James, 1991 (type locality cave in Maui, HI)

Breagyps L. Miller & Howard, 1938 - Cathartidae birds. **Bibl.:** Emslie, 1987

Breagyps *clarki* L. Miller, 1910 (extinct condor in cave in White Pine Co., NV)

Bubo (Dume'ril, 1806) (horned owls) Strigidae birds (1 extant species in US or Canada)

Bubo *sinclair* L. Miller, 1911 (extinct in Upper Pleistocene Potter Cr. (type) & Samwell C., CA)

Buteogallus Lesson, 1830 (black-hawks) Accipitridae birds (1 extant species in US or Canada)

Buteogallus undescr. sp. (*cave in Big Horn Co., WY)

Buteogallus *anthracinus* (Ddippe, 1830) (now in n.Mex., extreme sSW/ Black Hawk/ Pleist, extralimital? in Dry Cave?, NM)

Burhinus Illiger, 1811 (thick knees) Burhinidae birds

Burhinus undescr. sp. (extinct thick-knee sp./Thicknee/ cave in Eddy Co., NM)

Caracara Merrem, 1826 (= *Polyborus*) (caracaras) Falconidae birds, Subfamily Polyborinae

Caracara *plancus* (Miller, 1777) (*Caracara p.*) (now in Mexico, s. to SA/ Pleist. extralimital in Eddy Co., NM)

Cathartes californianus = *Gymnogyps c.*

Catharista Vieillot = *Coragyps*

Ceryle Boie, 1828 (kingfishers) Cerylidae birds

Ceryle alcyon = *Megaceryle. a. a*

Centrocerus Swainson, 1832 (sage grouse) Phasianidae birds (1 species in US or Canada)

Centrocerus *urophasianus* (Bonaparte, 1827) (NW(except coast), sAB & BC/sage grouse/extralimital in Stanton C., AZ) Parmalee 1969

Chloridops Wilson, 1888 (kona finches) Fringillidae birds, Subfamily Drepanidinae

Chloridops *regiskongi* Olson & James, 1991 (extinct/cave or sink at Barber's Point, Oahu)

cf **Chloridops** or **Psittirostra** undescr. sp. (Holocene extinct in Puu Naio Cave, Maui, HI)

Chloridops *wahi* Olson & James, 1991 (extinct/ type locality in cave or sink in Oahu/ cave in Maui)

Chordeiles Swainson, 1832 (nighthawks) Caprimulgidae birds (2 species in US or Canada)

Chordeiles *minor* (Forster, 1771) (NA except AK & far nCanada/ nighthawk/ Pleist. extralimital in Llano Co., TX)

Ciridops Newton, 1892 (Ciridopses) Fringillidae birds, Subfamily Drepanidinae

Ciridops undescr. sp. (extinct/c. or sink in HI)

Colinus Goldfuss, 1820 (bobwhites) Odontophoridae birds (once put in Phasianide)

Colinus *suilium* Brodkorb, 1959 (extinct quail in Pleist. (latest Blancan or earliest Irvingtonian) Haile filled-in FL sinkhole or cave)

Coragyps Geoffroy, 1853 (= *Catharista*) (black vultures; carrion crows) Cathartidae birds (1 extant species in US or Canada)

Coragyps *occidentalis mexicanus* (C.o. L. Miller, 1909) Howard, 1968 (extinct Pleist. western black vulture in Potter Cr. & Samwel (Shasta Co., CA), Smith Cr. (White Pine, NV), Conkling (Dona Ana Co.,NM), Lower Sloth (wTX), Howells Ridge (Grant Co.,NM) & Friesenhahn (CA) & San Josecito (Mexico) C. & FL Haile filled-in sink or cave)

Coragyps *shastensis* (*Catharista* s Miller, 1911) (extinct black vulture in Potter Cr. Cave (type locality), Samwel? & Hawver? C.,CA)

Corvus Linnaeus, 1758 (crows) Corvidae birds (5 extant species in US or Canada)

Corvus *impluviatus* Olson & James, 1991 (extinct Holocene in flooded cave near Barber's Point, Oahu, HI)

Corvus *viriosus* Olson & James, 1991 (extinct Holocene in cave at Barber's Point, Oahu)

Cremaster Brodkorb, 1959 - Emberidae bird (once in Icteridae)

Cremaster *tytthus* Brodkorb, 1959 (hangnest/ extinct Pleist. Fossil in Haile sink or cave)

Dendragapus Elliot, 1864 (= *Dendrogapus*) (blue grouse) Phasianidae birds (2 extant species in US or Canada)

Dendragapus *gilli milleri* Jehl, 1969 (extinct Upper Pleistocene type fossil in Shasta Co.,CA),

Dorypaltus Brodkorb, 1959 (plovers) Charadriidae birds

Dorypaltus *prospatus* Brodkorb, 1959 (mid- to late Pleist./ extinct Pleist. lapwing in Haile sinkhole, FL)

Ectopistes Swainson, 1827 (passenger pigeons) Columbidae birds

Ectopistes *migratorius* (Linnaeus, 1766) (extinct passenger pigeon/ cave in Bighorn Co., (WY), Jaguar (TN), Trout (WV), Dark Canyon (NM) & Charlie Lake (10K in BC: Driver 1996) Caves

Euphagus Cassin, 1867 (American blackbirds) Icteridae (=Emberizidae, Subfamily Icterinae) birds (2 extant species in US or Canada)

Euphagus *magnirostris* L.H. Miller, 1929 (extinct blackbird/* cave in Bighorn Co., WY)

Falco Linnaeus, 1758 (falcons) Falconidae birds, Subfamily Falconinae (6 extant species in US or Canada)

Falco *sparverius* Linnaeus, 1758 (*F.s.s.*) (NA except nAK, nCanada/ American Kestrel or Sparrow Hawk/ Wisconsinian fossil in cave in Llano Co.,TX)

Falco *swarthi* Miller, 1927 (extinct/ CA Pleisto. tar pits, & 2 caves in Eddy Co.,NM)

Geococcyx Wagler, 1831 (roadrunners) Neomorphidae birds (1 extant species in US or Canada)

Geococcyx *californianus conklingi* (*G. conklingi* Howard, 1931) (extinct Conkling's roadrunner; Conkling (type locality) & Dark Canyon (NM) & Pratt C. (TX))

Geococcyx *conklingi* Howard, 1931 (see above) (extinct Pleistocene Shelter (type locality) & Conkling C., NM)

Grallistrix Olson & James, 1991 - Strigidae birds

Grallistrix *erdmani* O. & J., 1991 (extinct Holocene “long-legged owl” in cave in Maui, HI)

Grallistrix *orion* O. & J., 1991 (extinct Holocene in cave or sink, Oahu, HI),

Gymnogyps Lesson, 1842 (condors) Cathartidae birds (1 extant species in US or Canada)

Gymnogyps *amplus* Miller, 1911 (= *G. californianus a.*) (extinct condor in cave (type locality) in Shasta Co., CA, Stanton (AZ), 3 caves in Eddy Co. (seNM) & cave in Grant Co., NM) Parmalee 1969

Gymnogyps *californianus* (*Cathartes c.* Shaw, 1798) (CA condor/extralimital in Stanton (AZ) Emslie, 1986, Smith Cr.(NV) & Burnet C.(NM)) Bibl.: McMillan, 1968

Hemignathus Lichtenstein, 1839 (‘amakihi’) Fringillidae birds, Subfamily Drepanidinae

Hemignathus *upupirostris* Olson & James, 1991 (cave or sink, Barbers Point, Oahu, HI)

Honocitta Holman, 1959 - Corvidae birds, Subfamily Garrulinae

Honocitta *brodkorbi* Holman, 1959 (Extinct in filled sinkhole or cave in Williston area, Levy Co., FL)

Lagopus Linnaeus, 1758 – Phasianidae birds, Subfamily Tetraoninae subfamily (1 species in US or Canada)

Lagopus undet. sp. (ptarmigan/>10,000BP extralimital in Clark's C., VA)

Laterallus Gray, 1855 (black rails) Rallidae birds (1 extant species in US or Canada)

Laterallus *guti* Brodkorb, 1952 (Pleist. Extinct black rail in filled-in Haile sink or cave, FL)

Bibl.: Brodkorb 1954

Megaceryle Kaup, 1848 – Cerylidae birds (2 species in US or Canada)

Megaceryle *alcyon* (Linnaeus, 1785) (= *Ceryle a. a.*) (belted kingfisher, Pleist. extralimital in Miller C., Llano Co., TX)

Neogyps L. Miller, 1916 - Cathartidae birds

Neogyps *errans* L. Miller, 1916 (extinct, Smith Cr. C.(NV))

Neophrontops L. Miller, 1916 - Embenizidae birds

Neophrontops *americanus* L. Miller, 1916 Little Box Elder (WY) & Dark Canyon (NM) C.)

Neortyx Holman, 1961 - Phasianidae birds

Neortyx *peninsularis* Holman, 1961 (Extinct quail in Pleist. Haile sinkhole, FL)

Orthospiza Olson & James, 199 - Fringillidae birds

Orthospiza *howarthi* Olson & James, 1991 (type & two other caves of extinct bird in Maui)

Pandanaris Miller, 1947 - Embenizidae birds (also put in Icteridae)

Pandanaris *floridana* Brodkorb, 1957 (mid- to late Pleist./ extinct Pleist. in FL sinkhole at Haile)

Phalacrocorax Brisson, 1760 (cormorants) Phalacrocoracidae birds (5 extant species in US or Canada)

Phalacrocorax *auritis* H. Howard, 1958 (Pleist. extinct in Crypt C.,NV)

Polyborus Vieillot, 1816 (caracaras) Falconidae birds, Subfamily Polyborinae

Polyborus plancus = *Caracara p.*

Polyborus *prelutosus* Howard, 1935 (= *Caracara p.*) (Mex./extinct caracara/Conkling & prob. Shelter C.(NM) & Haile FL sinkhole or cave)

Porzana Vieillot, 1816 (soras) Rallidae birds (7 species in US or Canada)

Porzana *keplerorum* Olson & James, 1991 (Holocene extinct in Maui, HI),

Porzana *auffenbergi* Brodkorb, 1954 (sinkhole near Haile, Alachua Co.,FL/ Extinct Pleist. rail)

Porzana *ralphorum* Olson & James, 1991 (Holocene extinct in caveor sink,Barbers Point,Oahu, HI)

Porzana *severnsi* O. & J., 1991 (Holocene extinct in *cave in Maui, HI)

Porzana *ziegleri* O. & J., 1991 (Holocene extinct in caveor sink,near Barbers Point,Oahu, HI)

Protocitta Brodkorb, 1957 - Corvidae birds

Protocitta *dixi* Brodkorb, 1957 (extinct jay, Pleist. in Miller's C.,TX) Weigel 1967

Psittirostra Temminck, 1820 ('o'us) Fringillidae birds

cf **Psittirostra** undescr. sp. (sinkhole near Barber's Point, Oahu, HI)

cf **Psittirostra** or Chloridops undescr. sp. (Holocene extinct in Puu Naio Cave, Maui, HI)

Ptaiochen Olson & James, 1991 - Anatidae birds

Ptaiochen *pau* O. & J., 1991 (Holocene extinct in *cave in Maui, HI)

Pterodroma Bonaparte, 1856 - Procellariidae birds

Pterodroma *jugabilis* Olson & James, 1991 (cave at Barber's point,Oahu/extinct)

Rhodacanthis Rothschild, 1892 (koa-finches) Fringillidae birds

Rhodacanthis aff. *flaviceps* Rothschile, 1892 (extinct (last seen in 1891) /Puu Naio C.Maui) & c.or sink, Barber's Point,Oahu)

Rhodacanthis aff. *palmeri* Rothschild, 1892 (extinct/ type locality cave in Maui, HI)

Spizaetus Vieillot, 1816 - Accipitridae birds

Spizaetus *willetti* Howard, 1935 (extinct in Smith Cr. C. (Type locality), NV & cave in Little Hatchet Mts, Grant Co.,NM)

Tachycineta Cabanis, 1850 (tree swallows) Hirundinidae birds (1 extant species in US or Canada)

Tachycineta *speleodytes* Brodkorb, 1957 (mid- to late Pleist./ extinct Pleist. swallow in FL sinkhole)

Telespiza Wilson, 1890 (laysan finches) Fringillidae birds

Telespiza *persecutrix* Olson & James, 1991 (extinct/cave or sink at Barber's Point, Oahu)

Telespiza *ypsilon* Olson & James, 1991 (extinct/ cave or sink at Barber's Point,Oahu)

Teratornis L. Miller, 1909 - Teratornithidae birds

Teratornis *incredibilis* Howard, 1952 (early to late Pleist./extinct, type in Smith Cr. C.,NV)

Teratornis *merriami* L. Miller, 1909 (early to late Pleist./extinct Pleist. teratorn in CA,FL,NM (Dry C.))

Thambetochen Olsen & Wetmore, 1976 - Anatidae birds

Thambetochen *xanion* Olson & James, 1991 (extinct in cave? at Barbers Point,Oahu, HI)

Titanis Brodkorb, 1963 - Phorushacidae, Subfamily Phorushacinae

Titanis *walleri* Brodkorb, 1963 (phorushacid/ early Irvingtonian in Inglis sinkhole, Citrus Co.,FL)

Tympanuchus Gloger, 1841 (prairie-chickens) Phasianidae birds, Subfamily Tetraoninae (3 species in US or Canada)

Tympanuchus *cupido* (Linnaeus, 1758) (Greater Prairie Chicken/Pleist. extralimital s. in FL sinkhole)

Vangulifer James & Olson, 1991 - Fringillidae birds

Vangulifer *mirandus* Olson & James, 1991 (type locality & one othe cave in Maui, HI)

Vangulifer *neophasis* Olson & James, 1991 (type locality & 1 other cave in Maui, HI)

Xestospiza James & Olson, 1991 - Fringillidae birds

Xestospiza *fastigialis* Olson & James, 1991 (extinct/ type locality & 1 other cave Maui, HI)

bison - See **mammal**, **ungulate**.

bivalve (= Lamellibranchia(ta), Pelecypoda) - Class Bivalvia of the **mollusk** phylum. Incl. cephalopods, **clams** and **mussels**, **limpets**, **rock borers**, cockles, scallops, & oysters. > 20,000

species. Shells have two valves. Fairly common as fossils in cave bedrock.

Bivalvia (clams or bivalves)

blastoids - Fossils in Bilbo Baggins C.(GA)

blastomycosis - Airborn **fungus** disease contacted by breathing spores in dirt. Not know from caves. Symptoms vary from colds, exhaustion & flu-like symptoms to problems with bones & other organs.

blindcat - See fish.

blindfish - Syn: **cavefish**.

bobcat - See cat.

bone beds - Small geologic formations consisting largely of bone breccia and usually formed by shallow flowing water in fissures, etc.

bonitation - A scale of ecological success from I to V in which V is the lowest.

booklice - See Psocoptera

bottleneck, (biologic) - A drop in population size and, therefore, in the genetic variability of a population.

bottleneck, (energy) - Where energy flow is restricted at some point in the energy pathways.

Bovidae - See **mammal** (**antelope, bison, goat, musk-ox, & sheep**).

Brachiopods

Lamp shells. Of the animal phylum Brachiopoda, typified by a lophophore (feeding frame also found in Bryozoa & Phoronida) & by two bilaterally symmetrical valves that may be calcareous or of chitinophosphate. Salvini-Planen 1986. About 300 living species and 12,000 fossil ones esp. in Paleozoic bedrock, incl. Bilbo Baggins C.(GA) & cave in Bath Co.,VA (*Rhipidomella*, *Leptaena*, *Stenochisma* genera) & Paxton C., VA (*Spirifer concinnus*, *Atrypa reticularis*, *Meristella cata*, *Rennsedaeria marlandica*, *Spirifer murchisoni*, *Edriocrinus sacculus*. Bibl.: Dowell 1967.

Phylum Brachiopoda

Class or Suborder Articulata

Family Crisiidae (*Crisia*, *Bicrisia*)

Subphylum Rhynchonelliformea

Class Rhynchonellata

Order Orthida

Suborder Orthidina

Superfamily Enteleteacea (*Rhipidomella*)

Order Atrypidida or Spiriferida

Superfamily Atrypacea

Atrypidae (*Atrypa*)

Order Spiriferida

Suborder Spiriferidina

Superfamily Spiriferacea

Spiriferidae (*Neospirifer*, *Spirifer*)

Class Strophomenata

Order Strophomenida

Oldhaminidae (*Leptodus*)

Superfamily Strophomenoidea

Leptaenidae (*Leptaena*)

Order Terebratulida

Suborder Terebratellidina

Superfamily Cancellothridacea

Cancellothyrididae (*Terebratulina*)

Superfamily Terebratellacea

Family Laqueidae (*Terebratalia*)

Class Inarticulata

Order Lingulida

Suborder Lingulacea

Family Lingulidae (*Glottidia*)

Atrypa Dalman, 1828 – Atrypidae brachiopod Order Atrypidida or Spiriferida

Atrypa reticulatris (extinct Paleozoic fossil in bedrock in Paxton C., VA)

Glottidia Dall, 1870 - Lingulidae brachiopods

Glottidia albida (Hinds, 1844) (CA marine infauna)

Glottidia pyramidata (Stimpson, 1860) (wFL Gulf of Mex. marine infauna)

Leptaena Dalman, 1828 – Leptaenidae brachiopod

Leptaena undet. sp. (extinct fossil in Bilbo Baggins C.(GA) & Clark's C.,Bath Co.,VA)

Leptodus – Oldhaminidae brachiopods

Leptodus undet. sp. (extinct Permian fossil in Lechuguilla C., Eddy Co., NM)

Meristella Hall, 1859 – Atrypidae brachiopod Order Atrypidida or Spiriferida
Meristella cata (extinct Paleozoic fossil in bedrock in Paxton C., VA)

Neospirifer – Spiriferidae brachiopods
Neospirifer undet. sp. (Permian fossil in Lechuguilla C., Eddy Co., NM)

Rennsedaeria marlandica (extinct Paleozoic fossil in bedrock in Paxton C., VA)

Rhipidomella - Superfamily Enteletacea undet. sp. (extinct Permian fossil in Lechuguilla C., Eddy Co., NM)

Spirifer – Spiriferidae brachiopods
Spirifer concinnus (extinct Paleozoic fossil in bedrock in Paxton C., VA)
Spirifer murchisoni (extinct Paleozoic fossil in bedrock in Paxton C., VA)

Stenochisma undet. sp. (extinct fossil in Bilbo Baggins C.(GA) & Clark's C., Bath Co., VA)

Terebratalia Beecher, 1893 - Laqueidae brachiopods
Terebratalia transversa (Sowerby, 1846) (AK marine infauna)

Terebratulina D'orbigny, 1847 - Cancellothyrididae brachiopods
Terebratulina unguicula (Carpenter, 1864) (WA marine infauna)

Branchiopods

Primitive, aquatic **crustacean** of aquatic Class Branchiopoda (or as subclass). Mostly closely aligned with the Remipedia. Mostly a few mm. long. Segments many or few (Cladocera). About 600 species. Carapace of two shell valves. Movement by large antennae. Mostly freshwater, a few marine. Mostly in small, freshwater pools globally. Lay desiccation-resistant eggs. Larvae turn into adults in two days to several weeks. Hermaphroditic to clonal or non-sexual reproduction. Often parthenogenic. First fossils in Devonian. Syn.: Phyllopoda.

Subclass or Superorder Diplostraca

Order Anomopoda (=Cladocera) (water fleas) (few segments) (400 species)

Bosminidae (*Bosmina*, *Eubosmina*),
Daphniidae (*Daphnia*, *Ceriodaphnia*, *Simocephalus*)

Chydoridae (Stebbing) (*Eurycercus* (now in own family)

Subfamily Chydorinae

(*Alona*, *Alonella*, *Monospilus*, *Picripleuroxus*, *Pleuroxus*)

Subfamily Aloninae

(*Acroperus*, *Alona* (see above), *Camptocercus*, *Chydorus*, *Leydigia*,
Pseudochydorus)

Macrothricidae - now in Radopoda
Moinidae (*Moinodaphnia*)

Superfamily Sidoidea (once in order Ctenopoda)
Holopedidae (*Holopedium*) (also put in order Ctenopoda)
Sedidae (also put in order Ctenopoda) Baird (*Latona*)

Order Ctenopoda
Holopedidae (*Holopedium*) (now in order Anomopoda)
Sididae (*Latona*) (now in order Anomopoda)

Order Radopoda
Superfamily Eurycercoidea
Chydoridae (once in order Anomopoda/Cladocera)
Undet. Genus in AZ shallow hyporheic)

Eurycericidae (*Eurycercus*) (once in Chydoridae)

Superfamily Macrothricoidea
Acantholeberidae (*Acantholeberis*) (once in Macrothricidae),

Macrothricidae (once in Anomopoda) (*Drepanothrix*, *Ilyocryptus*, *Macrothrix*),
Orphryoxidae (*Orphryoxus*) (also put in Macrothricidae)

Acantholeberis Lilljeborg, 1835 (*Acanthocereus* Schoedler, 1846) Acantholeberidae
branchiopods

Acantholeberis *curvirostris* (O. F. Mueller, 1776) (epigeal in US littoral, esp. Sphagnum bogs/
CO hyporheic)

Acroperus Baird, 1843 - Chydoridae branchiopods, Subfamily Alolinae
Acroperus *harpae* (Baird, 1834) (epigeal in US aquatic vegetation/ Tx? in MN)

Alona Baird, 1843, emend. N.N. Smirnov - Chydoridae branchiopods, Subfamily Aloninae or
Chydorinae

Alona affinis (Leydig, 1860) (MI lake benthic)

Alona circumfimbriata Megard, 1967 (AB lake benthic; OK hyporheic)

Alona *guttata* Sars, 1862 (epigeal in aquatic vegetation in US/ hyporheic in MN),

Alona *quadrangularis* (O. F. Miller, 1785) (epigeal in benthic and littoral vegetation in US/
hyporheic in NY; MI, MN, Europe intertidal, burrower in stream silt in MN)

Alona *rustica* Scott, 1895 (epigeal in US/ NY, OK hyporheic)

Alona *rustica americana* Flossner & Frey, 1970 (NY hyporheic)

Alona *setulosa* Megard, 1967 (epigeal in WI, IN, FL, GA, MN/ NY hyporheic)

Alonella Sars, 1862 - Chydoridae branchiopods, Subfamily Chydorinae

Alonella *excisa* (Fischer, 1854) (OK hyporheic)

Alonella undet. or undescr. sp. (Fischer, 1854) (TX,NY hyporheic; Tx? in MN; MI lake benthic)

Bosmina Baird, 1845 - Bosminidae branchiopods

Bosmina (*B.*) *longirostris* (Muller, 1785) (AB, TX lake benthic, aquatic epigeal in US/ Ac in IN/S5G5/water flea)

Bosmina undet. sp. or species (interstitial in VA freshwater tidal marsh; MN hyporheic)

Camptocercus Baird, 1843 - Chydoridae branchiopods, Subfamily Alolinae

Camptocercus *oklahomensis* Mackin (OK hyporheic)

Camptocercus undescr. (MI interstitial; Tx? in MN?),

Ceriodaphnia Dana, 1855 - Daphniidae branchiopods

Ceriodaphnia undet. sp(s). (CO/hyporheic in CO; Tx in IN)

Chydorus Leach, 1843 - Chydoridae branchiopods, Subfamily Alolinae

Chydorus *faviformis* Birge, 1893 (epigeal in NE, ON/MI interstitial),

Chydorus *piger* Sars, 1861 (Holarctic/hyporheic in NY; interstitial in MI),

Chydorus undet. sp(s). (hyporheic in CO, NY)

Chydorus *sphaericus* (Mueller, 1785) (epigeal in US/ AB lake benthic; OK hyporheic; Tx in IN)

Chydorus unispinus Henry, 1922 (MS marine interstitial)

Daphnia Muller, 1785 - Daphniidae branchiopods

Daphnia *parvula* Fordyce, 1901 (lakes & ponds in US except Rockies/Tp in cave in Sutton Co.,TX; MT hyporheic)

Daphnia *pulex* Leydig, 1860, Emend. Richard, 1896 or undet. sp. (Tx or Ac in IN; interstitial in MI,MT; AB lake benthic)

Daphnia undet. sp. or species (hyporheic, Pb, Tp? in CO; interstitial in MI; NC marine infauna; Ac, Tp or Tx in GA caves)

Drepanothrix Sars, 1862 - Macrothricidae branchiopods

Drepanothrix *dentata* (Eure'n, 1861) (Holarctic,lake bottoms/MI interstitial?)

Eubosmina Seligo, 1900 - Bosminidae branchiopods

Eubosmina undet. sp. (Tx? in MN)

Eurycerus Baird, 1843 - Euryceridae branchiopods (once put in Chydoridae)

Eurycercus *lamellatus* (O.F. Muller, 1785) (shallow silt benthic & hyporheic? in MN; MI lake benthic) **Bibl.:** Burchsted 1980

Holopedium Zaddach, 1855 - Holopedidae branchiopod. **Bibl.:** Montvilo 1978; Hegyi 1973

Holopedium *amazonicum* Stigelin, 1904 (E,SE/Tx or Tp in NM?)

Ilyocryptus Sars, 1862 - Macrothricidae branchiopods

Ilyocryptus *sordidus* (Lievin, 1848) (MI? interstitial; Tx? in MN; MN lake infauna; MI lake benthic; mostly epibenthic burrowers through the surface of muddy bottoms),

Latona Straus, 1820 - Sididae branchiopods

Latona *setifera* (O.F. Muller, 1785) (weed beds in lakes & ditches/ MI interstitial)

Leydigia Kurz, 1874 - Chydoridae branchiopods, Subfamily Alolinae

Leydigia quadrangularis (Leydig, 1860) = *L. leydigi*

Leydigia *leydigi* (Schoedler, 1863) (AB lake benthic silt/Tx? in MN; MI, OK interstitial; MI lake benthic; seVA hyporheic)

Macrothrix Baird, 1843 - Macrothricidae branchiopods

Macrothrix *laticornis* (Fisher, 1851) (Jurine) (Europe, aquatic epigeal in US/ hyporheic in NY?; MN lake interstitial ; epibenthic burrowers through the surface of muddy bottoms)

Moinodaphnia Herrick, 1887 - Moinidae branchiopods

Moinodaphnia undet. sp. (sandy hyporheic in TX),

Monospilus Sars, 1861- Chydoridae branchiopods, Subfamily Chydorinae

Monospilus *dispar* Sars, 1862 (bare littoral/MI interstitial),

Orphryoxus Sars, 1862- Orphryoxicae branchiopods

Orphryoxus *gracilis* Sars, 1861 (benthic/MI interstitial; MT aquatic),

Picripleuroxus Frey, 1993 - Chydoridae branchiopods, Subfamily Chydorinae

Picripleuroxus *striatus* (*Pleuroxus* s. Schoedler, 1863) (vegetation/hyporheic in NY?; epibenthic burrowers through the surface of muddy bottoms)

Pleuroxus Baird, 1843 - Chydoridae branchiopods, Subfamily Chydorinae

Pleuroxus *denticulatus* Birge, 1877(OK hyporheic)

Pleuroxus striatus = *Picripleuroxus* s.

Pseudochydorus Fryer, 1968 - Chydoridae branchiopods, Subfamily Alolinae

Pseudochydorus *globosus* (Baird, 1893) (epigeal in aquatic vegetation in US/ shallow silt hyporheic in MN)

Simocephalus Scho(e)dler, 1858 - Daphniidae branchiopods

Simocephalus *vetulus* (O.F. Mueller, 1776) (Europe, uncommon but widespread in US/ shallow

silt hyporheic in MN) **Bibl.:** Frank 1952; W. Green 1919

breeding season - The season beginning with courtship and ending with weaning. See mating, parturition.

bristletail - See **thysanurans**.

brittle star - **Echinoderm** of Subclass or Class Ophiuroidea (ophiuroids, brittle stars, serpent stars). Bodies with compressed central disk and five long arms. No hindgut or anus. About 1,900 species in Ophiuroidea. Common in submarine caves but no cavernicoles known.

bryophyte - Incl. **mosses & liverworts**.

Bryzoans and allies

Of phylum Entoprocta (formerly included in Phylum Bryozoa), typified chiefly by colonial growth, a calcareous skeleton, & a U-shaped alimentary canal with mouth & anus) & corals. Bibl.: Dehashti & Blinn 1986.

Phylum Entoprocta (4,000 species)

Order Pedicellinida

Family Pedicellinidae (*Pedicellina*, *Barentsia*) (also put in Barentsiidae)

Class Gymnolaemata

Order Cheilostomatida

Candidae (*Scrupocellaria*)

Class Stenolaemata

Order Cyclostomata

Suborder Rectangulata

Family Lichenoporidae (*Disporella*)

Suborder Tubuliporina

Family Tubuliporidae (*Tubulipora*)

Subclass Alcyonaria

Order Cheilostomata

Suborder Anasca

Family Alderinidae = Calloporidae

Family Beaniidae (*Beania*)

Family Bicellariellidae (*Dendrobaeania*)

Family Bugulidae (*Bugula*, *Caulibugula*)

Family Calloporidae (= Alderindae) (*Callopora*, *Tegella*)

Family Cellariidae (*Cellaria*)

Family Chaperiidae (*Chapperia*)
Family Cupuladriidae (*Discoporella*)

Family Membraniporidae (*Conopeum*, *Membranipora*)
Family Scrupocellariidae (*Scrupocellaria*)

Suborder Ascophora

Family Celleporidae (Celleporina)
Family Hippothoidae (*Celleporella*, *Hippothoa*)

Family Microporellidae (*Microporella*)
Family Savigneyellidae (*Savigneyella*)

Family Schizoporellidae (*Schizoporella*)
Family Smittinidae (Porella)

Class Gymnolaemata

Order Ctenostomida (=Ctenostomata) (once in Class Phylactolaemata)

Suborder Carnosa

Superfamily Paludicelloidea

Family Nolellidae (*Anguinella*, *Nolella*)

Family Victorellidae (*Sundanella*)

Superfamily Vesicularioidea

Family Vesiculariidae (*Amathia*, *Bowerbankia*)

Suborder Stolonifera

Family Valkeriidae (*Aeverrilia*)
Family Alcyonidiidae (*Alcyonidium*)
Family Triticellidae (*Triticella*)

Superfamily Arachnidioidea

Monobryozoontidae (*Monobryozoon*)

Class Phylactolaemata

Order Plumatellida

Plumatellidae (*Plumatella*)

Alcyonidium Lamouroux, 1913 - Alcyonidiidae bryozoans

Alcyonidium *diaphanum* (Hudson, 1788) (PQ Gulf of St. Lawrence sandy marine interstitial)

Alcyonidium *gelatinosum* var. *Pachydermatum* Kluge, 1962 (PQ Gulf of St. Lawrence sandy marine interstitial)

Alcyonidium *polyoum* (WA marine infauna)

Aeverillia – Valkeriidae bryozoan

Aeverillia setigera (Carolinian marine infauna)

Amathia Lamouroux, 1812 – Vesiculariidae

Amathia alternata Lamouroux, 1812 (Carolinian marine infauna)

Amathia distans Busk, 1886 (Carolinian marine infauna)

Amathia vidovici (Carolinian marine infauna)

Anguinella Van Beneden, 1845 - Nolellidae bryozoans

Anguinella palmata Van Beneden, 1845/ Virginian marine infauna)

Archimedes – Fenestellidae bryozoan

Archimedes undet. sp. (bedrock fossil in Mississippian Pitkin & PA Hal Fm., Buffalo National River, AR)

Barentsia Hincks, 1880 – Pedicellinidae entoprocta (also put in Barentsiidae)

Barentsia undet. sp. (WA marine infauna)

Beania Johnston, 1840 - Beaniidae bryozoans

Beania klugei (Carolinian marine infauna)

Bicrisia D'orbigny, 1853 – Crisiidae bryozoans

Bicrisia undet. sp. (WA marine infauna)

Bowerbankia Farre, 1837 - Vesiculariidae bryozoans

Bowerbankia gracilis Leidy (Carolinian marine infauna)

Bowerbankia imbricata (Adams, 1899) (Carolinian marine infauna)

Bowerbankia maxima (Carolinian marine infauna)

Bowerbankia undet. sp. (WA marine infauna)

Bugula Oken, 1815 Bugulidae bryozoans (also put in Scrupocellariidae)

Bugula neritina (Linnaeus, 1758) (Carolinian marine infauna)

Caberea Lamouroux, 1816 – Candidae bryozoans

Caberea undet. sp. (WA marine infauna)

Callopora Gray, 1848 – Calloporidae bryozoans (once in Alderiniidae)

Callopora undet. sp. (WA marine infauna)

Cellaria Ellis & Solander, 1986 – Cellariidae bryozoans

Cellaria diffusa (Robertson, 1905) (WA marine infauna)

Costazia – Celleporidae bryozoans

Costazia costazi (WA marine infauna)

Celleporella Gray, 1848 – Crisiidae bryozoans
Celleporella hyalina (Linnaeus, 1767) (WA marine infauna)

Chaperia Jullien, 1881 – Chaperiidae bryozoans
Chaperia patula = *Chaperiopsis* p.

Chaperiopsis Jullien, 1881 – Chaperiidae bryozoans
Chaperiopsis patula (Hincks, 1881) (WA marine infauna)

Conopeum Gray, 1848 - Membraniporidae bryozoans
Conopeum tenuissimum (Canu, 1928) (Carolinian marine infauna)

Dendrobeatia Levinsen, 1909 – Bicellariellidae bryozoans (also included in Bugulidae)
Dendrobeatia murrayana (Johnston, 1847) (WA marine infauna)

Crisia Lamouroux, 1912 – Crisiidae bryozoans
Crisia undet. sp. (WA marine infauna)

Discoporella d'Orbigny, 1852 – Cupuladriidae bryozoans
Discoporella undet. sp. (FL Gulf of Mex. marine infauna)
Discoporella umbellata (Carolinian marine infauna)

Disporella Gray, 1848 - Lichenporidae bryozoans
Disporella fimbriata (Busk, 1875) (WA, HA (cf *D.f.*) marine infauna)

Hippothoa Lamouroux, 1821 – Hippothoidae bryozoans
Hippothoa hyalina (Linnaeus, 1867) (WA marine infauna)

Loxosoma Keferstein, 1862 – Loxosomatidae entoprocta
Loxosoma davenporti Nickerson, 1898 (WA marine infauna)

Membranipora de Blainville, 1830 - Membraniporidae bryozoans
Membranipora arborescens (Canu & Bassler, 1928) (Carolinian marine infauna)

Membranipora membranacea (Linnaeus, 1767) (WA marine infauna)
Membranipora undet. sp. (wFL Gulf of Mex. marine infauna)
Membranipora tuberculata (Bosc, 1802) (Carolinian marine infauna)

Microporella Hincks, 1877 – Microporellidae bryozoans
Microporella undet. sp. (Carolinian marine infauna)

Monobryozoon Remane, 1936 - Monobryozoontidae bryozoans
Monobryozoon bulbosum Remane, 1936 (NC marine interstitial)
Monobryozoon sandersi d'Hondt J.L. & P.J. Hayward, 1981 (Atlantic marine interstitial)

Nolella Gosse, 1855 – Nolellidae bryozoans
Nolella undet. sp. (Carolinian marine infauna)

Pedicellina Sars, 1835 - Pedicellinidae entoprocta
Pedicellina cernua (WA marine infauna)
Pedicellina undet. sp. (PQ Gulf of St. Lawrence sandy marine interstitial)

Plumatella Lamark, 1852 - Plumatellidae bryozoans
Plumatella repens (Linnaeus, 1758) (epigeal in MI/ Tp in Montezuma Well, AZ) **Bibl.:**
Bushnell 1961

Porella Gray, 1848 – Smittinidae bryozoans (also put in Mucronellidae)
Porella undet. sp. (WA marine infauna)

Savignyella - Savignyellidae bryozoans
Savignyella lafontii (Audouin, 1826) (Carolinian marine infauna)

Schizoporella Hincks, 1877 - Schizoporellidae bryozoans
Schizoporella unicornis (Johnston, 1874) (Carolinian, WA marine infauna)

Scrupocellaria Van Beneden, 1845 – Scrupocellariidae bryozoans (also put in Candidae)
Scrupocellaria undet. sp. (Carolinian marine infauna)

Sundanella Victorellidae bryozoans
Sundanella sibogae (Carolinian marine infauna)

Tegella Levinsen, 1909 – Alderinidae bryozoans
Tegella undet. sp. (WA marine infauna)

Tricellaria Fleming, 1828 – Candidae bryozoans
Tricellaria undet. sp. (WA marine infauna)

Triticella Dalyell, 1847 – Triticellidae bryozoans
Triticella pedicellata (Alder, 1857) WA marine infauna)

Tubulipora Lamarck, 1916 – Tubuliporidae bryozoans
Tubulipora undet. sp. (WA marine infauna)

Umbonula Hincks, 1880 – Umbonulidae bryozoans
Umbonula undet. sp. (WA marine infauna)

bubonic plague - Sometimes carried by Ttx rodents. Kartman, 1962;

Bugs

Insect, true bugs of Order Hemiptera (= Heteroptera). Of Subdivision Pareneoptera, Division Neoptera, Subdivision Acercaria, Section Condylgnatha. Some authors combine Hemiptera and Homoptera into one order with two suborders. The name from hemi, “half” and pteron, “wing|,” referring to the basal part of the wing being thickened as a wing cover and the apical part thin, membranous and usually transparent. The triangular part of the body exposed between the wing bases is shared with beetles. Mouth is bent down and mouthparts are beaked for piercing and sucking mostly plant juice but sometimes blood and body fluids. Mostly on land but many species aquatic. 1-50 mm (rarely larger in tropics). Soft to hard bodied with many colors but mostly dark. Antennae short and slender, with at most 4-5 segments. Slender legs with front ones sometimes raptorial and hind ones sometimes enlarged for jumping. Larvae resemble adults except for lack of wings. They are paurometabolous, with terrestrial eggs, larvae and adults. Tridecane from glands in abdomen of larvae and metathorax of adults can dissolve waxy cuticles of predators. Male “penis” inserted into female’s genital opening except in Cimicidae, Polycetenidae, and Anthocoridae where males puncture the female’s abdomen. About 3834 species and 677 genera in US and Canada, >50,000 worldwide. For other groups called bugs, see **beetles, caddisfly, hellgrammites, Homoptera**. Mouthparts adapted for piercing & sucking & no true pupal stage).

Bibl.: Botosaneanu (1986a; Henry & Foreschner 1988; Hungerford 1959; Slater & Baranowski 1978; Areas: **CT** Britton et al. 1923; **NA** Blatchley 1926; de la Torre-Buenop 1939, 1941; Slater & Baranowski 1978; **World:** Carvalho 1957

Suborder Cimicomorpha

Superfamily Cimicoidea

Cimicidae (red bugs or bedbugs; bat, bed & bird bugs) (undet. genus & sp. (Tx? In MO)

Subfamily Cimicinae (*Cimex*, *Oeciacus*)

Subfamily Haematosiphoninae (*Haematosiphon*, *Hesperocimex*)

Polycetenidae (bat bugs) (*Hesperoctene*)

Superfamily Reduvioidea

Reduviidae (assassin and thread-legged bugs; assassin, ambush, wheel, soldier, kissing, pirate & thread-legged bugs)

Undet. Tx genus & sp. in Coconino Co.,AZ

Subfamily Emesinae (*Microvelia*, *Nesidiolestes*, *Rhagovelia*) (put in Veliidae)

Tribe Metapterini (*Barce*, *Emesaya*)

Subfamily Harpactorinae (*Arilus*, *Sinea*, *Zelus*)

Subfamily Peiratinae (*Melanolestes*)

Subfamily Reduviinae (*Reduvius*)

Subfamily Triatominae **Bibl.:** Usinger 1944

Tribe Triatomini (*Paratriatoma*, *Triatoma*)

Suborder Dipsocoromorpha

Superfamily Dipsocoroidea

Ceratocombidae (= Cryptostemmatidae) (ceratocombids) (also subsumed in Dipsocoridae)

Subfamily Ceratocombinae (also subsumed in Dipsocoridae)

Tribe Ceratocombini (*Ceratocombus*)

Dipsocoridae (incl. Ceratocombidae according to some authors) ((jumping) ground bugs)
(= Cryptostemmatidae) (Undet. genus & sp. (Tx or Ac in MO)

Subfamily Ceratocombinae

Tribe Ceratocombini (*Ceratocombus*)

Suborder Gerromorpha (= Amphibiocorisae) (all three orders combined into Geocorisae
(terrestrial bugs)

Superfamily Gerroidea

Gerridae (= Hermatobatidae) (water striders; pond skaters)

Undet. genera (OK/Tx). Hungerford & Matsuda, 1960

Subfamily Gerrinae

Tribe Gerrini (*Gerris*)

Subfamily Rhagodotarsinae (*Rheumatobates*)

Mesoveliidae (now in Mesovelioidae)

Veliidae (now in Hebroidea)

Superfamily Hebroidea

Velidae (once in Gerroidea) (ripple bugs, smaller water striders; shortlegged striders)]
(also put in Reduviidae)

Subfamily Microveliinae

Tribe Microveliini (*Microvelia*)

Subfamily Rhagoveliinae (*Rhagovelia*)

Superfamily Hydrometroidea

Macrovelidae (subsumed in Mesovelidae)

Superfamily Mesovelioidae

Mesovelidae (once in Gerroidea) (water treaders; water treader bugs)

Subfamily Mesoveliinae (*Cavaticovelia*)

Subfamily Mesoveliinae

(*Macrovelia* (also put in Mesovellidae & Lygaeidae), *Mesovelia*)

Suborder Nepomorpha (= Cryptocerata; Hydrocorisae) (aquatic bugs)

Superfamily Corixoidea

Corixidae

Superfamily Nepoidea

Belostomatidae (giant water bugs; electric light bugs)

Subfamily Belostomatinae (*Belostoma*)

Nepidae (water scorpions)

Subfamily Ranatrinae (*Ranatra*)

Suborder Pentatomomorpha

Superfamily Coreoidea

Coreidae (squash bugs; leaf-footed bugs)

Subfamily Coreinae

Tribe Acanthocephalini (*Acanthocephala*)

Tribe Anisoscelini (=Anisoscelidini) (*Leptoglossus*, *Narnia*)

Tribe Coreini (*Scolopocerus*)

Tribe Nematopodini (*Mozena*)

Rhopalidae (scentless plant bugs)

Subfamily Rhopalinae

Tribe Harmostini (*Harmostes*)

Subfamily Serinethinae (*Jadera*)

Superfamily Lygaeoidea

Lygaeidae (seed bugs; chinch, plant bugs)

Undet. Genus (>15,680 years old in *Neotoma* woodrat nest in Tinajas Mts., Yuma Co, AZ)

Subfamily Lygaeinae (*Lygaeus*, *Oncopeltus*)

Subfamily Orsillinae

Tribe Nysiini (*Nyseus*)

Subfamily Rhyparochrominae (elevated to family by Henry 1997)

Tribe Drymini (*Eremocoris*)

Tribe Gonianotini (*Atrazonotus*)

Tribe Myodochini (*Cnemodus*)

Tribe Ozophorini (*Ozophora*)

Rhyparochromidae (once Rhyparochrominae in Lygaeidae) (elevated to family; Henry 1997)

Tribe Drymini (*Eremocoris*)
Tribe Gonianotini (*Atrazonotus*)

Superfamily Pentaomoidea

Cydnidae (cydnid, burrower or shield bug; negro & burrower bugs)
Subfamily Cydninae (*Dallasiellus*, *Ectinopus*, *Pangaeus*, *Rhytidoporus*,
Tominotus)

Pentatomidae (stink bugs; shield bugs)
Subfamily Pentatominae

Tribe Halyini (*Brochymena*)
Tribe Mediceini (*Mecidea*)
Tribe Pentatomini (*Hymenarcys*, *Moromorpha*, *Prionosoma*, *Thyanta*)

Subfamily Scutellerinae (also put in own family)
Genus 10.3K to 8.97K years in *Neotoma* woodrat nest in Tinajas Mts., Yuma Co, AZ)

Scutelleridae
Thyreocoridae

Superfamily Pyrrhocoroidea

Largidae (red bugs and ant mimic bugs; largid bugs) (also put in Pyrrhocoridae)
Subfamily Larginae (*Largus*)

Pyrrhocoridae (see Largidae) (red bugs or stainers)
Undet. Genus. (9,790 yrs. in *Neotoma* woodrat nest in Tinajas Mts., Yuma Co,
AZ)

BELOSTOMATIDAE (giant water bugs; electric light bugs)
Subfamily Belostomatinae (*Belostoma*)

CERATOCOMBIDAE Fieber, 1861 (= Cryptostemmatidae) (ceratocombids) (also subsumed in
Dipsocoridae)

Subfamily Ceratocombinae
Tribe Ceratocombini (*Ceratocombus*)

CIMICIDAE Latreille, 1802 (red bugs or bedbugs; bat, bed & bird bugs).

Undet. genus & sp. (Tx? In MO) **Bibl.:** Usinger 1966
Subfamily Cimicinae (*Cimex*, *Oeciacus*)
Subfamily Haematosiphoninae (*Haematosiphon*, *Hesperocimex*)

DIPSOCORIDAE ((jumping) ground bugs) (= Cryptostemmatidae)
Undet. genus & sp. (Tx or Ac in MO)

Subfamily Ceratocombinae

Tribe Ceratocombini (*Ceratocombus*)

COREIDAE (squash bugs; leaf-footed bugs)

Subfamily Coreinae

Tribe Acanthocephalini (*Acanthocephala*)

Tribe Anisoscelini (=Anisoscelidini) (*Leptoglossus*, *Narnia*)

Tribe Coreini (*Scolopocerus*)

Tribe Nematopodini (*Mozena*)

CORIXIDAE (water boatmen)

Subfamily Corixinae

Tribe Corixini (*Arctocorisa*, *Trichocorixa*) **Bibl.:** Hungerford 1948, 1977

CRYPTOSTEMMATIDAE Mcatee & Malloch, 1925 = Dipsocoridae

CYDNIDAE Mulsant & Rey, 1866 (cydnid, burrower or shield bug; negro & burrower bugs)

Subfamily Cydninae (*Dallasiellus*, *Ectinopus*, *Pangaeus*, *Rhytidoporus*, *Tominotus*)

Bibl.: Froeschner 1960

GERRIDAE (water striders; pond skaters)

Undet. genera (OK/Tx). Hungerford & Matsuda, 1960

Subfamily Gerrinae

Tribe Gerrini (*Gerris*)

Subfamily Rhagodotarsinae (*Rheumatobates*)

LARGIDAE (red bugs and ant mimic bugs; largid bugs) (also put in Pyrrhocoridae)

Subfamily Larginae (*Largus*)

LYGAEIDAE (seed bugs; chinch, plant bugs)

Undet. Genus in (>15,680 years old in *Neotoma* woodrat nest in Tinajas Mts., Yuma Co, AZ)

Subfamily Lygaeinae (*Lygaeus*, *Oncopeltus*)

Subfamily Orsillinae

Tribe Nysiini (*Nyseus*)

Subfamily Rhyparochrominae (elevated to family by Henry 1997)

Tribe Drymini (*Eremocoris*)

Tribe Gonianotini (*Atrazonotus*)

Tribe Myodochini (*Cnemodus*)

Tribe Ozophorini (*Ozophora*)

MACROVELIIDAE (macroveliid shore bugs) (subsumed in Lygaeidae or Mesovellidae)

MESOVELLIDAE (water treaders; water treader bugs) Douglas & Scott, 1852

(*Cavaticovelia*)

Subfamily Mesoveliinae (*Macrovelia* (also put in Mesovellidae & Lygaeidae), *Mesovelia*)

NEPIDAE (water scorpions)

Subfamily Ranatrinae (*Ranatra*)

PENTATOMIDAE (stink bugs; shield bugs)

Subfamily Pentatominae

Tribe Halyini (*Brochymena*)

Tribe Mediceini (*Mecidea*)

Tribe Pentatomini (*Hymenarcys*, *Moromorpha*, *Prionosoma*, *Thyanta*)

Subfamily Scutellerinae (also put in own family)

Genus 10.3K to 8.97K years in *Neotoma* woodrat nest in Tinajas Mts., Yuma Co, AZ)

POLYCTENIDAE (bat bugs) (*Hesperoctene*)

PYRRHOCORIDAE (see Largidae) (red bugs or stainers)

Undet. Genus. (9,790 years old in *Neotoma* woodrat nest in Tinajas Mts., Yuma Co, AZ)

REDUVIIDAE Latreille, 1807 (assassin and thread-legged bugs; assassin, ambush, wheel, soldier, kissing, pirate & thread-legged bugs) (Readie (1927)

Undet. Tx genus & sp. in Coconino Co., AZ

Subfamily Emesinae (*Microvelia*, *Nesidiolestes*, *Rhagovelia*) (put in Veliidae)

Tribe Metapterini (*Barce*, *Emesaya*)

Subfamily Harpactorinae (*Arilus*, *Sinea*, *Zelus*)

Subfamily Peiratinae (*Melanolestes*)

Subfamily Reduviinae (*Reduvius*)

Subfamily Triatominae **Bibl.:** Usinger 1944

Tribe Triatomini (*Paratriatoma*, *Triatoma*)

RHOPALIDAE (scentless plant bugs) **Bibl.:** Chopra 1967

Subfamily Rhopalinae

Tribe Harmostini (*Harmostes*)

Subfamily Serinethinae (*Jadera*)

RHYPAROCHROMIDAE (once subfamily Rhyparochrominae in Lygaeidae)

(elevated to family by Henry 1997)

Tribe Drymini (*Eremocoris*)

Tribe Gonianotini (*Atrazonotus*)

SCUTELLERIDAE (jewel bugs) (subsumed in Pentatomidae, Subfamily Scutellerinae)

THYREOCORIDAE (negro bugs) = Corimelaenidae

VELIIDAE Amyot & Serville, 1843 (ripple bugs, smaller water striders; shortlegged striders) (also put in Reduviidae). **Bibl.** Smith & Polhemus 1978

Subfamily Microveliinae

Tribe Microveliini (*Microvelia*)

Subfamily Rhagoveliinae (*Rhagovelia*)

Acanthocephala Laporte, 1811 - Coreidae bugs, Subfamily Coreinae, Tribe Acanthocephalini (5 species in US or Canada)

Acanthocephala undet. sp. (1,400 to 10,300 & >26,000 years BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM)

Acantholomidea Sailer, 1945 - Scutelleridae bugs, Subfamily Pachycorinae (also put in Pentatomidae, Subfamily Pachycorinae)

Acantholomidea porosa = *Camirus p.*

Arctocorisa Wallengren, 1894 (= *Arctocorixa*) Corixidae bugs, Subfamily Corixinae, Tribe Corixini (5 species in US or Canada)

Arctocorisa undet. sp. (PQ Gulf of St. Lawrence sandy marine interstitial)

Arilus Hahn, 1831 - Reduviidae bugs, Subfamily Harpactorinae (1 species in US or Canada)

Arilus *cristatus* (*Cimex c.* Linnaeus, 1763; *Reduvius novenarius* Say, 1825; *A. denticulatus* Westwood, 1837)) (NJ to FL, SW/Tx in Comal Co., TX)

Atrazonotus Slater & Ashlock, 1966 - Rhyparochromidae bugs (formerly in Lygaeidae, Subfamily Rhyparochrominae, Tribe Gonianotini (1 species in US or Canada)

Atrazonotus *umbrosus* (*Aphanus u.* Distant, 1893) (ON to FL, w. to SW, KS, CO/Ac in cave in Sutton Co., TX)

Barce Stal, 1866 - Reduviidae bugs, Subfamily Emesinae, Tribe Metapterini (6 species in US or Canada)

Barce Banks, 1909 (*Metapterus uhleri*) (Ac in Edmonson Co., KY) Sullivan 1962

Belostoma Latreille, 1807 - Belostomatidae bugs, Subfamily Belostomatinae (10 species in US or Canada)

Belostoma undet. sp. (MI lake benthic)

Brochymena Amyot & Serville, 1843 - Pentatomidae bugs, Subfamily Pentatominae, Tribe Halyini (21 species in US or Canada)

Brochymena *quadripustulata* (*Cimex q.* Fabricius, 1775; *Halys serrata* Beauvois, 1818; *H. pupillata* Herrich-Schaffer, 1839; *B. quadrinotata* Provancher, 1872)) (PQ to NC, KS, CO, SW/ Ac in John's Guano Mine, Presidio Co., TX)

Brochymena undet. sp. (Ac in Devil's Sinkhole, Edwards Co., TX)

Camirus Stal, 1862 - Scutelleridae bug, Subfamily Pachycorinae (once in Pentatomidae) (2 species in US or Canada)

Camirus cf. *moestus* (*Zophoessa m.* Stal, 1862) (epigeal in AZ, Mex./ >43,300 years old in *Neotoma* woodrat nest in Tinajas Mts., Yuma Co., AZ)

Camirus cf. *porosus* (*Pachycoris p.* Germar, 1839; *Acanthlomidea p.* Dallas, 1851) (epigeal in AZ & Mex./ 1,200 years old in *Neotoma* nest, Ajo Mts., Pima Co., AZ)

Cavaticovelia N.M. Andersen & Polhemus, 1980 - Mesovellidae bugs

Cavaticovelia *aaa* (*Speovelia a.* Esaki, 1929) M.A. & P. 1980 (cave bug, aaa water treader bug/ type locality in Kazamura C./ cave in HI Volcanoes Natl. Park/Tb/ HI & federal Species of Concern, S1S2, global G1G3 rank) Gagne & Howarth, 1975,

Ceratocombus Signoret, 1852 (= *Xylonannus* Reuter, 1891) Ceratocombidae bug, Subfamily Ceratocombinae, Tribe Ceratocombini (also subsumed in Dipsocoridae) (3 species in US or Canada)

Ceratocombus (*Ceratocombus*) poss. undescr. sp.#1 (Tx in two caves in Crawford Co. & one in WA Co.), WA)

Cimex Linnaeus, 1785 (= *Acanthia* Fabricius, 1771; *Clinocoris* Fallen, 1829; *Klinophilus* Kirkaldy, 1899; *Clinophilus* Blanford, 1903)) Cimicidae bugs, Subfamily Cimicinae (7 species in US or Canada, all (except *C. lectularius*) bat ectoparasites)

Cimex *adjunctus* Barber, 1939 (epigeal in AL, CO, DE, FL, GA, IA, IN, KY, MD, MO, NM, NY, NJ, NE OH, PA, SC, TX, VA, WV/ ectoparasite on SC *Myotis austroriparius*, OH *Myotis sodalis* (rare), MI, MN, ND, PA *Myotis lucifugus*; IA *Nycticeius humeralis*; IN (rare), OH (rare), IN, NH *Myotis septentrionalis* (probably), MI, MN, ND *Eptesicus fuscus* & IN *Myotis keeni* & *Lasionycteris noctivagans* bats)

Cimex *antennatus* Usinger & Ueshima, 1965 (ectoparasite on CA *Antrozous pallidus* & NV bats)

Cimex *brevis* Usinger & Ueshima, 1965 (ectoparasite on IL, MI, MN bats)

Cimex *incrassatus* Usinger & Ueshima, 1965 (*C. pilosellus* Bradshaw & Ross, 1961; *C. p.* strain

B U.1963) (Guatemala to UT/ ectoparasite on CA (Tx) *Antrozous pallidus Corynorhinus r.* & AZ *Eptesicus f.*, *Myotis velifer*, *M. yumanensis* & NV, UT bats)

Cimex *latipennis* Usinger & Ueshima, 1965 (ectoparasite on CA, ID, MT, OR bats)

Cimex *pilosellus* (*Clinocoris p.* Horvath, 1910) (NA, incl. AB, AZ, BC, CA, CO. ID, MT, NB, NV, OR, WA/ ectoparasite on NC *Nycticeius humeralis*, AZ, sNM, OR, wTX *Pipistrellus hesperus*; BC *Myotis californicus* & *M. septentrionalis*, OR *Myotis volans*; BC *Myotis volans longicrus*; AZ, BC, CA *Myotis yumanensis*; BC, IN, ON *Myotis lucifugus*; AZ (Tx), wTX *Myotis velifer incautus*; TN, WI *Lasiurus borealis*; AZ, AR, BC, KS, NY *Eptesicus fuscus*; IN, BC *Lasionycteris nivalis*; BC, NB, ON *Lasionycteris noctivagans*, AZ, CA (accidental), CA, NM, TX *Antrozous pallidus*, & AZ (Tx) *Myotis thysanodes* bats/ bat bug)

Cimex undet. sp. or species (Tx *Myotis* bat ectoparasite in WA; ectoparasite on ON bat guano))

Cnemodus Herrich-Schaeffer, 1850 - Rhyparochromidae bugs (formerly in Lygaeidae, Subfamily Rhyparochrominae, Tribe Myodochini) (6 species in US or Canada)

Cnemodus *mavortius* (*Astemma m.* Say, 1832; *C. brevipennis* Herrich-Schaeffer, 1850; *Thaumastopus alacris* Walker, 1872; *Cnemodus mavortus* Davis & Leng, 1912 (missp.); *C. inflatus* Van Duzee, 1915) (ME to FL, w.to TX,IN,MO/Ac in Edwards Co., TX)

Dallasiellus Berg, 1901 - Cydnidae bug, Subfamily Cydninae (5 species in US or Canada)

Dallasiellus (*Pseudopangaesus*) *californicus* (*Pangaesus c.* Blatchley, 1929) (epigeal in AZ, CA, NM, Mex.?! 1,200 years old in *Neotoma* nest, Ajo Mts., Pima Co., AZ)

Dallasiellus (*Pseudopangaesus*) *discrepans* (*Pangaesus d.* Uhler, 1877) (epigeal in AZ, CA, CO, ID, NM, OK, OR, PA?, TX, UT, WA/ 9,400 to 10,300 years BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM)

Ectinopus Dallas, 1851 - Cydnidae bug, Subfamily Cydninae (also put in Pentatomidae)

Ectinopus undet. sp. (Ac or Tx in TX)

Emesaya McAtee & Malloch, 1925 - Reduviidae bugs, Subfamily Emesinae, Tribe Metapterini (5 species in US or Canada)

Emesaya *brevipennis* (*Ploiaria b.* Say, 1828; *Cimex longipes* De Geer, 1773 (Homo.); *Emesa pia* Amyot & Seville, 1843; *Emesaya australis* & *occidentalis* McAtee & Malloch, 1925) (MA,CT to FL,SW/ thread-legged bug/ ?Tx in Edwards Co., TX)

Eremocoris Fieber, 1860 - Lygaeidae bugs, Subfamily Lygaeinae, Tribe Drymini (12 species in US or Canada)

Eremocoris *inquilinus* Van Duzee, 1914 (epigeal in CA/ probable woodrat parasite in CA non-cave *Neotoma fuscipes* woodrat nest)

Galgupha Amyot & Serville, 1843 (= *Gyrocnemis* & *Nothocoris* McAtee & Malloch, 1928; *Orocoris* M. & M., 1933) Thyreocoridae bugs (4 species in US or Canada)

Galgupha undet. sp. (Tp? in Valdina Farms Sinkhole, Medina Co., TX)

Gerris Fabricius, 1794 (= *Limnotrechus* & *Hydrotrechus* Stal, 1868; *Aquarius* Schellenberg, 1800; *Macrogerris* Andersen, 1993) Gerridae bugs, Subfamily Gerrinae, Tribe Gerrini (15 species in US or Canada)

Gerris (*Aquarius*) *remigis* Say, 1832 (*Gerrisi orba* S. 1859; *Hydrotrechus robustus* Uhler, 1871; *G. calaregon* Calabrese, 1974) (NA, Central Amer./common water strider, skater, Jesus Bugs/Tx in CA, AR, MO, TX)

Gerris undet. sp. or species (TTx or Ac in TN (1 cave); PQ Gulf of St. Lawrence sandy marine interstitial)

Haematosiphon Champion, 1900 - Cimicidae bugs, Subfamily Haematosiphoninae (1 species in US or Canada)

Haematosiphon *inodorus* (*Acanthia i.* Duges, 1892) (OK to CA, nMex, AZ, KS, NM, TX./ Tx in Socorro, NM/ on condors, barn & horned owls & golden eagles)

Harmostes Burmeister, 1835 - Rhopalidae bugs, Subfamily Rhopalinae, Tribe Harmostini (7 species in US or Canada)

Harmostes (*Harmostes*.) *reflexulus* (*Syromates r.* Say, 1832; *H. costalis* Herrich-Schaffer, 1851; *H. virescens* Dallas, 1852; *H. bicolor* Distant, 1881; *H. bruesi* Bergroth, 1913; *H. mirificus* & *caurus* Bliven, 1956) (US/Ac in cave in Sutton Co., TX)

Hesperocimex List, 1925 Cimicidae bugs, Subfamily Haematosiphoninae (2 species in US or Canada)

Hesperocimex *coloradensis* List, 1925 (epigeal in AZ, CA, KS, NM, OK, TX, Mex. ?/ in AZ *Neotoma* woodrat nest)

Hesperoctenes Kirkaldy, 1906 - Polytectenidae bugs (2 species in US or Canada)

Hesperoctenes *eumops* Ferris & Usinger, 1939 (= *H. longiceps*) (ectoparasite on CA *Eumops californicus* & CA, wTX *Eumops perotis* bats)

Hesperoctenes *hermsi* Ferris & Usinger, 1939 (ectoparasite on TX *Tadarida macrotis* bats)

Hesperoctenes *longiceps* Waterhouse, 1880 (ectoparasite on Guatemala *Eumops californicus* & Guatemala, Brazil, CA *E. perotis* bats)

Hymenarcys Amyot & Serville, 1843 - Pentatomidae bugs, Subfamily Pentatominae, Tribe

Pentatomini (4 species in US or Canada)

Hymenarcys *nervosa* (*Pentatoma n.* Say, 1832) (PQ to FL, w. to TX,SD,NB,OK/Ac in cave in Edwards Co., TX)

Jadera Stal, 1862 - Rhopalidae bugs, Subfamily Serinethinae (2 species in US or Canada)

Jadera *haematoloma* (*Leptocoris h.* Herrich-Schaeffer, 1847) (FL to KS,SW/Ac in Devil's Sinkhole, Edwards Co., TX)

Largus Hahn, 1831 (= *Euryopthalmus*) Largidae bugs, Subfamily Larginae (= Euryoptholminae)(12 species in US or Canada)

Largus *cinctus* (*Euryopthalmus c.* Herrich-Schaeffer, 1842)(SW to OR, Neotropics/Tx or Ac in CA)

Leptoglossus Guérin-Meneville, 1831 (= *Theognis* Stal, 1862) Coreidae bugs, Subfamily Coreinae, Tribe Anisoscelini (11 species in US or Canada)

Leptoglossus *clypealis* Heidemann, 1910 (SW to IA, OR, CO epigeal/ Ac in cave in Hays Co., TX)

Ligyrocoris Stal, 1872 - Rhyparochromidae bugs (formerly in Lygaeidae, Subfamily Rhyparochrominae, Tribe Myodochini) (12 species in US or Canada)

Ligyrocoris undet. sp. (Ac in Sutton Co., TX)

Lygaeus Fabricius, 1794 (= *Graptolomus* Stal, 1868) Lygaeidae bugs, Subfamily Lygaeinae (6 species in US or Canada)

Lygaeus *kalmi* (= *L. (Graptolomus) k.* Stal, 1874; *L. malanmodermus* Montandon, 1893; *L. angustomarginatus* Parshley, 1919) (NA epigeal/ Ac in Edwards Co., TX)

Macrovelia Uhler, 1872 - Mesoveliidae bugs (also put in Lygaeidae & Macroveliidae) (1 species in US or Canada)

Macrovelia *hornii* Uhler, 1872 (epigeal in SW/ TTx or TTp in Kings Canyon Natl. Park, Tuolumne Co., CA) **Bibl.:** V. Lee 1985

Mecidea Dallas, 1851 - Pentatomidae bugs, Subfamily Pentatominae, Tribe Mediceini (2 species in US or Canada)

Mecidea *minor* Ruckes, 1946 (Ac in Edwards Co., TX)

Melanolestes Stal, 1866 - Reduviidae bugs, Subfamily Peiratinae (3 species in US or Canada)

Melanolestes *abdominalis* (*Pirates a.* Herrick-Schaefer, 1846) (epigean in CT, s. to NC, w. to SD, TX/ Tx? in Edwards & Medina Co.s, TX)

Mesovelgia Mulsant & Rey, 1852 - Mesovellidae bugs, Subfamily Mesoveliinae. (3 species in US or Canada) Bibl.: Hoffmann 1932; C. Richmond 1932

Mesovelgia *amoena* Uhler, 1894 (= *M. douglasensis* Gungerford, 1924) (HI Volcanoes Natl. Park/ Tp)

Microvelia Westwood, 1898 (= *Hydroessa* Burmeister, 1835; *Kirkaldya* Torre-Bueno, 1910) (pond bug). Veliidae bugs, Subfamily Microveliinae, Tribe Microveliini (once put in Reduviidae, Subfamily Emesinae) (19 species in US or Canada) **Bibl:** Smith 1980; Drake & Hussey 1955

Microvelia (*Kirkaldya*) *americana* (Uhler, 1884) (E, w. to CO, NB, SW, TX/ American veliid/ Tx or Ac in AR, MO; Ac in GA (Dade Co.))

Microvelia (*Microvelia*) *austrina* Torre-Bueno, 1924 (= *M. parallela* Blatchley, 1925) (Tx or Ac in AR)

Microvelia (*Kirkaldya*) *beameri* McKinsty, 1937 (AK, SW, CA, Canada, FL?/ Tx or Ac in TX),

Microvelia undet. sp. or species (Tx in nMS, MO, TX)

Moromorpha Rolston, 1978 - Pentatomidae bugs, Subfamily Pentatominae, Tribe Pentatomini (1 species in US or Canada)

Moromorpha *tetra* (*Mormidea t.* Walker, 1868) (7,300 to 15,500 years BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM)

Mozena Amyot & Serville, 1843 (= *Rhombogaster* Dallas, 1852) Coreidae bugs, Subfamily Coreinae, Tribe Nematopodini (7 species in US or Canada)

Mozena (*M.*) *lunata* (*Archimerus l.* Burmeister, 1835; *M. rufescens* Ruckes, 1955) (epigean in Mex., NM, AZ/ Ac in Edwards Co., TX)

Narnia Stal, 1862 (= *Xerocoris*) - Coreidae bugs, Subfamily Coreinae, Tribe Anisoscelini (7 species in US or Canada)

Narnia *femorata* S. 1862 (SW, OK, Mex./ Ac in cave in Edwards Co., TX)

Nesidiolestes Kirkaldy, 1902 (wingless thread bugs) Veliidae bugs (once put in Reduviidae, Subfamily Emesinae)

Nesidiolestes *ana* Gagne & Howarth, 1975 (type locality & one other caves HI Volcanoes Natl. Park/ Ana wingless thread bug/ Tb/HI Species of Concern, S1S3, global G1G3 rank)

Nysius Dallas, 1852 - Lygaeidae bugs, Subfamily Orsillinae, Tribe Nysiini (12 species in US or Canada)

Nysius raphanus Howard, 1872 (epigean in most of US & sCanada, s. to Mex./ 20,500 & 13,500 years old in *Neotoma* nest, Ajo Mts., Pima Co., AZ)

Oeciacus Stal, 1873 - Cimicidae bugs, Subfamily Cimicinae (1 species in US or Canada)

Oeciacus *vicarius* Horvath, 1912 (swallow bug/ ectoparasite on TX *Myotis velifer* bats)

Oncopeltus Stal, 1868 (= *Erythriscius* Stal, 1874) Lygaeidae bugs, Subfamily Lygaeinae

Oncopeltus (*Erythriscius*) *fasciatus* (*Lygaeus* f. Dallas, 1852) (MA to IN, SW/ Ac in Sutton Co., TX)

Ozophora Uhler, 1871 (= *Davila* Distant, 1893 (Homo.); *Peggichisme* Kirkaldy, 1904) Lygaeidae bugs, Subfamily Rhyparochrominae, Tribe Ozophorini (14 species in US or Canada)

Ozophora undeter. sp. (Ac or Tx in CA)

Ozophora sp. nr. *depicturata* Barber, 1928 (epigean in AZ, CA/ Ac in Val Verde Co., TX)

Pangaesus Stal, 1862 - Cydnidae bugs, Subfamily Cydninae (5 species in US or Canada)

Pangaesus (*Homaloporus*) *bilineatus* (*Cydnus* b. Say, 1825) (epigean in PQ to FL, w. to Midwest, SW, s. to Guatemala/ 2,000 to 19,700 years BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM/ 8,000 to 3,000 year old woodrat nest in Big Bend Natl. Park, wTX)

Pangaesus (*Homaloporus*) *congruus* (*Homaloporus* c. Uhler, 1877) (epigean in AZ, CA, CO, KS, N M, TX, Mex./ 2,000 to 19,700 years BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM)

Pangaesus undet. sp. (Ac in El Malpais Natl. Monument, nNM)

Paratriatoma Barber, 1938 - Reduviidae bugs, Subfamily Triatominae, Tribe Triatomini (1 species in US or Canada)

Paratriatoma hirsuta hirsuta Barber, 1938 (obligate ectoparasite on AZ, CA, NV *Neotoma lepida* woodrats)

Paratriatoma hirsuta kamiensis Ryckman, 1967 (obligate ectoparasite on CA *Neotoma fuscipes macrotis* woodrats)

Paratriatoma hirsuta papagoensis Ryckman, 1967 (obligate ectoparasite on sAZ, nMex. *Neotoma* woodrats)

Paratriatoma hirsuta pima Ryckman, 1967 (obligate ectoparasite on cAZ. *Neotoma* woodrats)

Primicimex Barber, 1941 - Cimicidae bugs, Subfamily Primicimicinae (1 species in US or Canada)

Primicimex *cavernis* Barber, 1941 (type locality in cave in Medina Co., TX / epigean from TX to Guatemala/ Tp in TX, Guatemala & Mex. c.). Bibl.: Ueshima, 1968.

Prionosoma Uhler, 1863 (= *Neurohalys* Bliven, 1960) Pentatomidae bugs, Subfamily Pentatominae, Tribe Pentatomini (1 species in US or Canada)

Prionosoma *podopioides* Uhler, 1863 (= *P. villosum* Provancher, 1888; *N. buculatus* B. 1960) (BC to SW/Ac in Presidio Co., TX)

Ranatra Fabricius, 1790 - Nepidae bugs, Subfamily Ranatrinae

Ranatra *montezuma* Poolhemus, 1976 (*Montezuma well and adjoining submerged cave/ Ttx)
Bibl.: Blinn 1982; Runck & Blinn 1990

Reduvius Fabricius, 1775 (assassin bugs) Reduviidae bugs, Subfamily Reduviinae (4 species in US or Canada)

Reduvius undet. sp. (NY to NC, w. to SW, OK, CA/ Tx in Val Verde Co., TX; predator on ON bat guano)

Rhagovelia Mayr, 1865 - Veliidae bugs, Subfamily Rhagoveliinae (once put in Reduviidae, Subfamily Emesinae) (9 species in US or Canada)

Rhagovelia undet. sp. (Tx or Ac in Comal Co., TX)

Rheumatobates Bergroth, 1892 - Gerridae bugs, Subfamily Rhagodotarsinae (8 species in US or Canada)

Rheumatobates undet. sp. (Tx in OH; IL river benthic)

Rhytidoporus Uhler, 1877 - Cydnidae bugs, Subfamily Cydninae (2 species in US or Canada)

Rhytidoporus (*Rhytidoporus*) *indentatus* Uhler, 1877 (s. from CA to FL, Mex./ rare Ac or Tx alien in Kazumura C., HI Island, HI)

Scolopocerus Uhler, 1875 - Coreidae bugs, Subfamily Coreinae, Tribe Coreini (3 species in US or Canada)

Scolopocerus *granulosus* Barber, 1914 (epigean in AZ, TX/ Ac in Presidio Co., TX)

Sinea Amyot & Serville, 1843 - Reduviidae bugs, Subfamily Harpactorinae (11 species in US or Canada)

Sinea undet. sp. (Ac or Tx in Edwards Co., TX)

Speovelia (see *Cavatocovelia*)

Thyanta Stal, 1860 - Pentatomidae bugs, Subfamily Pentatominae, Tribe Pentatomini (7 species in US or Canada)

Thyanta *pallidovirens* (*Pentaloma* p. Stal, 1859; *T. setosa* Ruckes, 1857)) (CT to NC, TX/Ac in cave in Sutton Co., TX)

Tominotus Mulsant & Rey, 1866 (= *Trichocoris* Uhler, 1876; *Psectrocephalus* Van Duzee, 1922) - Cydnidae bugs, Subfamily Cydninae (4 species in US or Canada)

Tominotus undet. sp. (Tx or Tp in cave in Williamson Co., TX)

Triatoma Laporte, 1832 - Reduviidae bugs, Subfamily Triatominae, Tribe Triatomini (11 species in US or Canada)

Triatoma *gerstaeckeri* (*Conorhinus* g. Stal, 1859) (epigean in TX, Mex./ Ttx in TX)

Triatoma *indictiva* Neiva, 1912 (TTx in San Saba Co., TX)

Triatoma *neotomae* Neiva, 1911 (*Neotoma* ectoparasite in *Neotoma* woodrat nests in AZ, CA, NM, TX)

Triatoma *protracta* (Uhler, 1894) (epigean in SW/ woodrat ectoparasite in CA non-cave *Neotoma fuscipes* woodrat nest/ western bloodsucking conenose)

Triatoma undet. sp. (TTx in TX; *Neotoma* woodrat midden in cave in Glen Canyon area, UT; *Neotoma lepida* nest (Toole Co., UT); (fossil in *Neotoma* woodrat midden, Puerto Blanco Mts., Pima Co., sAZ)

Trichocorixa Kirkaldy, 1908 - Corixidae bugs, Subfamily Corixinae, Tribe Corixini (11 species in US or Canada)

Trichocorixa *verticalis* (Fieber, 1851) undet. sp. (PQ Gulf of St. Lawrence sandy marine interstitial)

Trichocorixa *verticalis fenestrata* Walley, 1930 (PQ Gulf of St. Lawrence sandy marine interstitial)

Zelus Fabricius, 1803 (= *Pindus* Stal, 1862; *Diplacodus* Kirkaldy, 1900) Reduviidae bugs, Subfamily Harpactorinae (7 species in US or Canada)

Zelus (*Pindus*) *tetracanthus* Stal, 1862 (= *P. Socius* Uhler, 1872; *Z. audax* Banks, 1910; *Z. occiduus* Torre-Bueno, 1913; *Z. angustatus* Hussey, 1925) (US/Ac or Tx in Presidio Co., TX)

burrow - See trace fossil

Caddisflies

Insect of Order Trichoptera (=Phryganoidea), Subclass Pterygota, Division Neoptera, Subdivision Endopterygota (=Holometabola), Section Panorpidia, Subsection Amphiesmenoptera. Name from *trichos*, “hair” and *pteron* “wing. From Cretaceous or possibly Jurassic (ancestral form to both Trichoptera & Lepidoptera?).

Large wings in adults are held tentlike over the abdomen. Both wing pairs are similar (vestigial or absent in a few rare females) but the hind one is frequently wider. Legs are slender and often long, with rather long and stout spurs on the tibia. No cerci on the abdomen. No scales on antennae or wings. Mouthparts are fly-like (lapping, sponging) but are poorly developed.

Only holometabolous insects (complete metamorphosis: egg, larvae, pupae, adults) with totally aquatic larvae (a few live in streamside mosses). Larvae are somewhat caterpillar like but with terminal hooklike prolegs. True legs used for walking under water, or in some species for swimming. Some species have external gills. Some larvae are filter feeders and scavengers; others are predators. Most live in cases made from wood, leaves, stones, sand, or shells and held together by silk from salivary glands. They spin a net to trap food particles, form a silken tube from which they rush out to gather prey, or carry their case with them. Mating may be preceded by a mating dance centered around a log, stump, rock, etc. Females lay eggs in aquatic substrates, drop egg balls into water or by forming an egg mass over or beside water. 7,000 named species, with 1,261 species in 141 genera in the U.S. Adults are rare in caves; larvae are more common, especially as epigeic and hyporheic in cave streams.

Bibl: Betten, 1934; McCafferty & Provonsha 1981; Merritt & Cummins 1978; Schmid, 1980; Ross, 1944; Wiggins 1996; **Areas:** **AR:** Moulton 1994; **MTs.:** H. Ross 1956; **IL:** H. Ross 1972; **MO:** Moulton 1994; **OK:** Moulton 1994; **NA:** Wiggins 1977; **NY:** Betten 1934; **OR:** N. Anderson 1976

Suborder Annulipalpia (grub-like larvae) (Glossosomatidae, Hydroptilidae, Rhyacophilidae)
Infraorder Curvipalpia

Superfamily Hydropsychoidea (net makers)
(Hydropsychidae, Philopotamidae, Polycentropodidae, Psychomyiidae)

Suborder Interpalpia (caterpillar-like larvae) (now subsumed in Integripalpia)

Suborder Integripalpia (tube-case makers)

Infraorder Brevitentoria

Superfamily Leptoceroidea (purse makers)
(Leptoceridae) (once put in Interpalpia), Melanidae)

Superfamily Sericostomatoidea (Helicopsychidae, Sericostomatidae)

Infraorder Planitentoria

Superfamily Limnephiloidea (saddle makers, changeable larvae & free living forms)
(Brachycentridae, Lepidostomatidae, Limnephilidae, Uenoideae) (once put in Interpalpia)

APATANIIDAE (*Allomyia*) (put in Limnephilidae, Subfamily Apataniinae)
BORBORIDAE (*Limosina*) (now in Leptoceridae)

BRACHYCENTRIDAE (humpless case makers or brachycentrids) (*Brachycentrus*, *Micrasema*)
ECNOMIDAE (in NA?) (*Austrotinodes*)

GLOSSASOMATIDAE (tortoise-case or saddle-case makers)
Subfamily Agapetinae (*Agapetus*, *Cheumatopsyche* (now in Hydropsychidae),

Subfamily Glossosomatinae *Glossosoma* (once in Polycentropodidae)
Subfamily Protoptilinae (*Protoptila*)

HELICOPSYCHIDAE (snail casemaker caddisflies) (*Helicopsyche*)

HYDROPSYCHIDAE ((common) netspinning caddisflies; common netspinners)
Bibl.: Rhame 1973 (*Ceratopsyche*)

Subfamily Diplectroninae (*Diplectrona*)
Subfamily Hydropsychinae *Cheumatopsyche*, *Hydropsyche*, *Potamyia*)

HYDROPTILIDAE (Micro caddisflies, purse-case makers or microcaddice flies)
Ac undet. genus & sp. in OH

Subfamily Hydroptilinae
Tribe Hydroptilini (*Hydroptila*)
Tribe Ochrotrichini (*Ochrotrichia*)

LEPIDOSTOMATIDAE (lepidostomatids (bizzare caddisflies; case makers))
(*Clostoecca*, *Ecclisomyia*, *Lepidostoma*, *Psychoglypha*, *Theliopsyche*) Bibl.: Weaver 1988

Lepidostomatidae eggs are laid in masses or strings of several hundred in the water or on objects near water. Larvae are aquatic, caterpillarlike, with abdomen bearing filamentous gills. Most species are case makers and many build nets under water. Few are free-living. They undergo a complete metamorphosis. Most larvae pupate in their case after they have completed their growth. Pupae are usually attached to some object in the water. When they are fully developed, they leave their cases, swim to the surface, crawls out of the water onto a stone or other objects and emerge as adults. Larvae construct their cases by fastening rock or plant fragments with silk. Adults are mostly nocturnal, often attracted at light. Larvae live in any kind of aquatic habitat, from rivers, lakes to marshes. Adults are found flying around these habitats.

LEPTOCERIDAE (longhorned caddisflies or case makers)

Subfamily Leptocerinae

(*Ceraclea*, *Leptocera*, *Leptocerus*, *Limosina* (both in Sphaeroceridae **flies**), *Mystacides*, *Oecetis*, *Triaenodes*)

LIMNEPHILIDAE (northern caddisflies; northern casemaker caddisflies) **Bibl.:** Flint 1960

(*Allomyia* (now in Apataniidae)

Subfamily Limnephilinae

Tribe Chilostigmini (*Frenesia*)

Tribe Limnephilini (*Hesperophylax*, *Limnephilus*)

Tribe Stenophylacini (*Pycnopsyche*)

MOLANNIDAE (elevated from subfamily status Dipseudopsinae) (hood casemakers)
(*Molanna*)

ODONTOCERIDAE (mortarjoint casemakers)

Subfamily Odontocerinae (*Nerophilus*, *Parthina*)

PHILOPOTAMIDAE (fingernet caddisflies)

(*Chimarra*, *Dolophilodes*, *Wormaldia*; undet. genera (Tp in cave in AR)

PHRYGANEIDAE (giant casemaker caddisflies; cased caddis)

Subfamily Phryganeinae (*Ptilostomis*)

POLYCENTROPODIDAE (tubemaking & trumpet-net or nettube caddisflies)(*Cheumatopsyche* (put in Hydropsychidae),

Subfamily Dipseudopsinae (*Phylocentropus*)

(also put in Dipseudopsidae, Subfamily Hyalopsychinae)

Subfamily Polycentropodinae

(*Cyrnellus*, *Neureclipsis* (also put in Hydropsychidae), *Imania* (= *Allomyia* in Limenphilidae), *Glossosoma* (now in Glossosomatidae), *Hydroptila* (now in Hydroptilidae), *Neophylax* (now in Uenoidea) (once = *Limnephilus* in Limenphilidae), *Nyctiophylax*, *Polycentropus* (also put in Psychomyiidae), *Polypsectropus*, *Psychomyia* (now in Psychomyiidae)

PSYCHOMYIIDAE (tube-net or nettube caddisflies)

Subfamily Hyalopsychinae (*Phylocentropus*)

Subfamily Psychomyiinae (*Lype*, *Polycentropus* (now in own family) *Psychomyia*)

RHYACOPHILIDAE (primitive or freeliving caddisflies)

Subfamily Rhyacophilinae

(*Agapetus* & *Glossosoma* (both now in Glossosomatidae), *Rhyacophila*)

SERICOSTOMATIDAE (bushtailed caddisflies; cased caddis)

Subfamily Sericostomatinae (*Agarodes*)

UEONOIDEAE (*Neophylax*) (once put in Polycentropodidae & = *Limnephilus* in Limenophilidae)

Agapetus Dejean, 1834 (*Synagapetus*, *Pseudagapetus* MacLachlan, 1879; *Myspoleo* Barnard, 1934; *Tagapetus* Ross, 1951) Glossasomatidae caddisflies, Subfamily Agapetinae (31 species in US or Canada)

Agapetus undet. sp. (Tx in MO)

Agarodes Banks, 1899 - Sericostomatidae Trichoptera (caddisflies), Subfamily Sericostomatinae (11 species in US or Canada)

Agarodes libalis Ross & Scott, 1974 (seVA hyporheic)

Allomyia Banks, 1916 (*Imania* Martynov, 1935) Limnephilidae caddisflies, Subfamily Apataniinae (also put in Apataniidae) (12 species in US or Canada)

Allomyia acanthis (= *Imania a.* Ross, 1950) (Tx in Paradise Ice C., WA)

Austrotinodes F. Schmid, 1955 - Ecnomidae caddisflies

Austrotinodes undescr. sp. (Edwards Plateau, TX/Pb?)

Brachycentrus Curtis, 1834 (*Pogonostoma*, *Dasystema* Rambur, 1842; *Hydronautia* Kolenati, 1848; *Oligoplectrum* MacLachlan, 1868; *Sphinctogaster* Provancher, 1877; *Oligoplectrodes* Martynov, 1909; *Brachycentriella* Iwata, 1927) Brachycentridae caddisflies (14 species in US or Canada)

Brachycentrus undet. sp. or species (Tx in BC (Vancouver Island), sON & VA; CO & NC? hyporheic; NC stream benthic)

Ceraclea Leach, 1815 – Leptoceridae caddisflies, Subfamily Leptocerinae (39 species in US or Canada)

Ceraclea undet. sp. VA, MD brackish benthic

Ceratopsyche Ross & Unzicker, 1977 - Hydropsychidae caddisflies (27 species in US or Canada)

Ceratopsyche bronta (Hydropsyche b. Ross, 1938) (PA hyporheic)

Ceratopsyche slossonae (*Hydropsyche s.* Banks, 1905) (IL karstic sprs.; PA hyporheic)

Cheumatopsyche Wallengren, 1891 (*Ulmeria* Navas, 1918; *Cheumatopsychodes*, *Achirocentra*, *Abacarioides*, *Ethiopsyche*, Marlier, 1961; *Hydrocheumatopsyche* Marlier, 1962) Hydropsychidae caddisflies, Subfamily Hydropsychinae (also put in Polycentropodidae) (44 species in US or Canada) **Bibl.:** A. Gordon 1973; R. Miller 1965; Moulton 1994

Cheumatopsyche *flinti* (Gordon, 1974 (Edwards Plateau, TX/Pb?))

Cheumatopsyche *minuscule* (*Hydropsyche m.* Banks, 1907; *C. montrealensis* Nimmo, 1966) (nCanada to VA,MO/Ac or Tx in sON),

Cheumatopsyche undet. sp. or species (CO, IL, ON, PA, PQ, TX, seVA hyporheic larvae; VA, MD brackish benthic)

Chimarra Stephens, 1929 emend. Burmeister, 1839 (*Curgia* Walker, 1860; *Chimarrhodes* Muller, 1887) Philopotamidae caddisflies (20 species in US or Canada). **Bibl.:** Trivette 1969

Chimarra *obscura* (*Beraea o.* Walker, 1852) (E/TX hyporheic)

Chimarra undet. sp. (Ac or Tx in sON; IL river benthic)

Clostoeca Banks, 1943 - Lepidostomatidae caddisflies (2 species in US or Canada)

Clostoeca undet. sp. (Ac or Tx in Vancouver Island, BC)

Cyrnellus Banks, 1913 - Polycentropodidae caddisflies, Subfamily Polycentropodinae (1 species in US or Canada)

Cyrnellus *fraternus* (*Cymus f.* Banks, 1905) (PA hyporheic; Carolinian, Virginian marine infauna)

Cyrnellus undet. sp. (VA, MD brackish benthic)

Diplectrona Westwood, 1840 (= *Aphelocheira* Stephens, 1836) Hydropsychidae caddisflies, Subfamily Diplectroninae (4 species in US or Canada)

Diplectrona *modesta* Banks, 1908 (ON phreatic larvae.)

Diplectrona *marianae* Reeves, 1999 in Reeves & Paysen, 1999 (*type locality cave in Dade Co., GA/ Tx)

Dolophilodes Ulmer, 1909 - Philopotamidae caddisflies (9 species in US or Canada).

Dolophilodes undet. sp. or species (Ac or Tx in Vancouver Island, BC; NC hyporheic? & stream benthic & meiofauna)

Ecclisomyia Banks, 1907 - Lepidostomatidae caddisflies (1 species in US and Canada)

Ecclisomyia *scylla* (*Ecclisomyia s.* Milne, 1935) (Ac or Tx in Vancouver Island, BC)

Frenesia Betten & Mosely, 1940 - Limnephilidae caddisflies, Subfamily Limnephilinae, Tribe Chilostigmini (2 species in US or Canada)

Frenesia *missa* Milne, 1935 (PQ to VA,MO/ AR,PA spr.)

Glossosoma Curtis, 1834 (once in Polycentropodidae) (*Mystrophora* Klapalek, 1892 (homo.) *Diploglossa*, *Eomystra* Martynov, 1934; *Mystrophorella* Kloet & Hincks, 1944; *Klapalekia* Botosaneanu, 1955; *Anseriglossa*, *Ripaeglossa*, *Muroglossa*, *Protoglossa*, *Sinoglossa* Ross,

1956; *Mystroglossa* Kobayshi, 1982) Glossosomatidae caddisflies, Subfamily Glossosomatinae (23 species in US or Canada)

Glossosoma *intermedia* (*Mystrophora i.* Klapalek, 1892) (Holarctic, E to Yukon, AK/IL,PA spr.)
Glossosoma undet. sp. or species (CO, PA hyporheic)

Helicopsyche von Siebold, 1856 (= *Pikea*, *Thelidomus*) Helicopsychidae caddisflies (4 species in US or Canada)

Helicopsyche (*Feropsyche*) *borealis* H.A.Hagen, 1861 (ON fall hyporheic)
Helicopsyche *borealis* H.A. Hagen, 1861 (PQ hyporheic)

Helicopsyche *mexicana* Banks, 1901 (AZ hyporheic)
Helicopsyche undet. sp. (MI lake benthic)

Hesperophylax Banks, 1916 - Limnephilidae caddisflies, Subfamily Limnephilinae, Tribe Limnephilini (6 species in US or Canada)

Hesperophylax *designatus* (*Limnephilus d.* Walker, 1852) (IL sprs.),

Hydropsyche Pictet, 1834 - Hydropsychidae caddisflies, Subfamily Hydropsychinae (48 species in US or Canada). **Bibl.:** G.Shuster 1977

Hydropsyche *betteni* (*Goerita b.* Ross, 1962) (IL, PA hyporheic)
Hydropsyche *delrio* (Edwards, 1973) Ross (Edwards Plateau, TX/Pb?),
Hydropsyche kansensis = *Potamyia flavum*

Hydropsyche *skissibae* (Banks) (valid species?) (PA hyporheic)
Hydropsyche undet. sp(p). (Ac or Tx in sON,TN; CO,TX hyporheic),

Hydroptila Dalman, 1819 (*Phrixocoma* Eaton, 1873; *Hydropneuma* Enderlein, 1929; *Hydroptilina*, Martynov, *Oxydroptila* M., 1935; *Oeceotrichia*, *Pasiotrichia*, *Sumatranotrichia* Ulmer, 1951) Hydroptilidae caddisflies, Subfamily Hydroptilinae, Tribe Hydroptilini (61 species in US or Canada)

Hydroptila *icona* Mosely, 1957 (wTX hyporheic)

Hydroptila undet. sp. or species (CO, IL, ON, TX hyporheic; TTx in nests of *Hirundo fulva* in cave in Edwards Co., TX; MI lake benthic; MD, VA brackish benthic) **Bibl.:** Keiper

Lepidostoma Rambur, 1842 (= *Mormonia* Curtis, 1834 (Homo.); *Nosopus* MacLachlan, 1871; *Olemira* Banks, 1897; *Pristosilo* Banks, 1899; *Atomyia*, *Notiopsyche* B., 1905; *Mormomyia* B., 1907; *Alepomyia* B., 1908; *Phanopsyche* B., 1911; *Alepomyiodes* Sibley, 1926; *Arcadopsyche* Banks, 1930; *Neuropsychyche*, *Oligopsyche* Carpenter, 1933; *Jenortha*, *Flura* Milne, 1936) Lepidostomatidae caddisflies (69 species in US or Canada)

Lepidostoma *aporna* Denning, 1949 (TTx in nAZ),
Lepidostoma *astaneum* Denning, 1949 (= *L. goedeni* D.1971) (Tx or Ac in OR)

Lepidostoma *liba* Ross, 1941 (karstic sprs. in IL), &
Lepidostoma undet. sp. or species (Tx in BC, MO; CO, WV hyporheic; PA spr.; MI lake benthic)

Leptocerus Leach, 1815 (= *Leplocerus*) – Leptoceridae (1 species in US or Canada)
Leptocerus *americana* (*Setodes a.* Banks, 1899) (rare hyporheic in PQ)

Limnephilus W.E. Leach, 1815 (= *Neophylax* in Uenoidae) Limenphilidae caddisflies,
Subfamily Limnephilinae, Tribe Limnephilini (93 species in US or Canada)

Limnephilus undet. sp. (rare PQ hyporheic)
Limnephilus *tarsalis* (Banks, 1920) (PQ Gulf of St. Lawrence sandy marine interstitial)

Lype McLachlan, 1878 - Psychomyiidae caddisflies, Subfamily Psychomyiinae (1 species in US)
Lype *diversa* (*Psychomyia d.* Banks, 1914 (seVA hyporheic)

Micrasema MacLachlan, 1876 (= *Micrasemodes* Lestage, 1936) Brachycentridae caddisflies (17 species in US or Canada)

Micrasema *onisca* Ross, 1947 (TTx in nAZ)
Micrasema undet. sp. (nCA hyporheic)

Molanna Curtis, 1834 – Molannidae caddisflies (6 species in US or Canada)
Molanna *blenda* Sibley, 1926 (shallow VA (rare) hyporheic)
Molanna undet. sp. (Virginian marine infauna)

Mystacides Berthold, 1827 - Leptoceridae caddisflies, Subfamily Leptocerinae (3 species in US or Canada)

Mystacides *sepulchrealis* (= *Leptocerus s.* Walker, 1852) (N,E/Tx in TX)
Mystacides undet. sp. (MI lake benthic)

Neophylax MacLachlan, 1871 (once put in Polycentropodidae & = *Limnephilus* in Limenphilidae) (= *Acronopsyche* Banks, 1939) Uenoidae caddisflies (25 species in US or Canada)

Neophylax *aniqua* Ross, 1947 (PA spr.)
Neophylax undet. sp. or species (Tx in MO; PA hyporheic)

Nerophilus Banks, 1899 - Odontoceridae Trichoptera (caddisflies), Subfamily Odontocerinae (1 species in US or Canada)

Nerophilus *californicus* (*Silo c.* Hagen, 1861) (nCA hyporheic)

Neureclipsis Wallengren, 1891 (also put in Hydropsychidae) Polycentropodidae caddisflies, Subfamily Polycentropodinae (6 species in US or Canada)

Neureclipsis undet. sp. or species (Ac or Tx in sON; IL river benthic)

Nyctiophylax Brauer, 1865 - Polycentropodidae caddisflies, Subfamily Polycentropodinae (10 species in US or Canada)

Nyctiophylax undet. sp. or species (PA? hyporheic)

Ochrotrichia Mosely, 1934 (*Polytrichia* Sibley, 1926 (Homo.); *Metrichia* Ross, 1938; *Argentritrichia* Jacquemart, 1963) Hydroptilidae caddisflies, Subfamily Hydroptilinae, Tribe Ochrotrichini (6 species in US or Canada)

Ochrotrichia *felipe* Ross, 1944 E. (Edwards Plateau, TX/Pb?),

Ochrotrichia *riesi* Ross, 1944 (IL sprs.),

Ochrotrichia *spinosa* (*Polytrichia s.* Ross, 1938) (MB,NT to PA,MO/Tx in AR),

Ochrotrichia undet. sp. (MI lake benthic)

Oecetis MacLachlan, 1877 (= *Aetesis*, *Allotrigametis*, *Pleurograpta* Wallengren, 1891; *Oecetina* Banks, 1899; *Pseudosetodes*, 1905; *Oecetodes* Ulmer, 1909; *Firga*, *Yrula* Milne, 1934; *Potamoryza* Barnard, 1934) Leptoceridae caddisflies, Subfamily Leptocerinae (20 species in US or Canada). Bibl. Floyd 1994

Oecetis *inconspicuus* (*Leptocerus i.* Walker, 1852) (Virginian (rare), Carolinian freshwater infauna)

Oecetis undet. sp. or species (CO, PQ (rare) hyporheic; MI lake benthic; MD, VA brackish infauna)

Parthina Denning, 1954 – Odontoceridae Trichoptera (caddisflies), Subfamily Odontocerinae (1 species in US or Canada)

Parthina undet. sp. (CA hyporheic (seasonal resident),)

Phylocentropus Banks, 1907 – Psychomyiidae caddisflies, Subfamily Dipseudopsinae (also put in Dipseudopsidae, Subfamily Hyalopsychinae)

Phylocentropus undet. sp. (Virginian marine infauna)

Polycentropus Curtis, 1835 - Polycentropodidae caddisflies, Subfamily Polycentropodinae (42 species in US or Canada). **Bibl.:** S. Hamilton 1986

Polycentropus *barri* Ross & Yamamoto, 1965 (Tx or Tp in cave in Jackson Co., AL)

Polycentropus *elarus* Ross, 1944 (Tx or Ac in KY)

Polycentropus proditus = *Polyplectropus p.*

Polyplectropus Ulmer, 1905 - Polycentropodidae caddisflies, Subfamily Polycentropodinae (2 species in US or Canada)

Polyplectropus *proditus* (Edwards, 1973 *Polycentropus p.*) (Edwards Plateau, TX/Pb?)

Polyplectropus undet. sp. (MD, VA brackish benthic)

Potamyia Banks, 1900 - Hydropsychidae caddisflies, Subfamily Hydropsychinae (1 species in US)

Potamyia *flavum* Hagen, 1861 (*Hydropsyche kansensis* Banks, 1905) (E to SD, TX/Tx or Ac in nMS)

Protoptila Banks, 1904 - Glossasomatidae caddisflies, Subfamily Protoptilinae (23 species in US or Canada)

Protoptila *arca* Edwards & Arnold, 1961 (Edwards Plateau, TX/Pb?)

Ptilostomis Banks, 1907 - Phryganeidae caddisflies, Subfamily Phryganeinae (5 species in US or Canada)

Ptilostomis undet. sp. (Ac or Tx in Vancouver Island, BC)

Psychoglypha Ross, 1944 - Lepidostomatidae caddisflies (14 species in US or Canada)

Psychoglypha undet. sp. (Ac or Tx in Vancouver Island, BC)

Psychomyia Latreille, 1829 (once in Polycentropodidae) (= *Anticyra* Curtis, 1834; *Quissa* Milne, 1936) Psychomyiidae caddisflies, Subfamily Psychomyiinae (3 species in US or Canada)

Psychomyia *flavida* Hagen, 1861 (= *P. pullchella* Banks, 1899; *P. moesta* B., 1907) (NA to edge of Arctic/CO, PA hyporheic; IL sprs.),

Pycnopsyche Banks, 1905 (*Allegophylax*, *Eustenace* Banks, 1916) Limnephilidae caddisflies, Subfamily Limnephilinae, Tribe Stenophylacini (15 species in US or Canada) . Bibl.: Wojtowicz 1982

Pycnopsyche *antica* (*Neuronia a.* Walker, 1852), (MI, IL sprs.),

Pycnopsyche *gentilis* (*Stenophylax g.* MacLachlan, 1871) (E/PA sprs.),

Pycnopsyche undet. sp. or species (MO Tx/ PA, TX, seVA, WV hyporheic)

Pycnopsyche *scabripennis* (*Limnephila s.* Rambur, 1842) (hyporheic in seVA)

Rhyacophila Pictet, 1834 (= *Polycentropus* in Polycentropodidae) (= *Crunophila* Kolenati, 1859;

Doliocypta Banks, 1939; *Hyporhyacophila*, *Pararhyacophila* Doehler, 1943; *Hyperhyacophila*, *Metarhyacophila*, *Prosrhyacophila* D., 1950; *Hyporhyacophila*, *Metarhyacophila*, *Parahyacophila* Fischer, 1971) Rhyacophilidae caddisflies, Subfamily Rhyacophilinae (124 species in US or Canada)

Rhyacophila *carolina* Banks, 1911 (shallow hyporheic (top 5 cm.) in seVA)

Rhyacophila *nigrita* Banks, 1907 complex (Tx or Ac in KY)

Rhyacophila undet. sp. or species (Ac or Tx in sON/ WV, CO(rare) hyporheic larvae; NC hyporheic? & stream benthic)

Theliopsyche Banks, 1911 (= *Quisilo* Milne, 1936) Lepidostomatidae caddisflies (5 species in US or Canada)

Theliopsyche undet. sp. (MO/Tx);

Triaenodes MacLachlan, 1865 (= *Triaena* M.1865 Homo.; *Triaenodella* Mosely, 1932) Leptoceridae caddisflies, Subfamily Leptocerinae (25 species in US or Canada)

Triaenodes *baris* Ross, 1938 (IL sprs.)

Triaenodes undet. sp. (MI lake benthic)

Wormaldia MacLachlan, 1865 (*Dolophilus* M.1868; *Paragapetus* Banks, 1914; *Dolophiliella* B., 1930) Philopotamidae caddisflies (15 species in US or Canada).

Wormaldia *moestus* (= *Paragapetus m.* & *Dolophilus breviatus* Banks, 1914) (E/Tx or Ac in WV,KY)

Calcicoles – Plants that prefer or are restricted to high carbonate soils. Chalk or limestone improves soil crumb structure, drainage and warming although carbonates with very high calcite content may leave little soil after solution and what soil is produced may be lost to cave systems, thus increasing soil aridity. Syn.: alkali plants.

Camel - See **mammal**, **camel**

campodeiform larva - Insect larva with long abdomens, well developed legs, biting mouthparts, antennae and cerci. Named for resemblance to *Campodea*, a genus of dipluran]s. Incl. larva of various beetles (staphylinids, carabids, tiger beetles).

canine - **Carnivora** of family Canidae. Incl. coyotes, dogs, foxes, & wolves.

capacity, carrying - Limit of **human** activities beyond which the system irreversibly changes.

carapace - A shell of many crustaceans, formed of a dorsal, chitinized skin fold coming from the back border of the head.

carbon dioxide - Howarth, 1983

caribou - See **mammal**

Carnivora - **Mammal** order. J. White et al., 1984. Incl. **bear**, canines (**dog & fox**), **cat** (bobcat, mt. lion, & lynx), insectivores, mustilids (**badger, ferret** (fossil only), **fisher, marten, mink** (fossil only), **otter, skunk, weasel & wolverine**), pinnipeds, procyonidae (**raccoon & ringtail**). Cf. carnivores.

carnivore - Meat eaters, incl. carnivora, certain insects, etc.

carrying capacity - See **capacity**.

Castoridae - See **beaver**.

cast - Infilling of a natural mold, esp. of a fossil. See trace fossil.

casual - **Population** absent in some years, but a low number present several times each decade.

cave slime (see microbe) - Crawford, 1975a; Lavoie & Northrup 1994; Staley & Crawford, 1975.

cat - See **mammal, Carnivora**.

catharobionts - inhabitants of low organic water as in high mountain streams or some caves.

cavefish - Syn. for U.S. troglobitic **fish**. Some may be relicts from Mississippian marine transgressions.

cavernicole - 1. Referring to a species in a cave without implying any dependence on, association with or % of time spent in such a habitat. Incl. obligate & facultative (Def.#1). 2. Any animal that can complete its life cycle in a cave, ie. a stygobite, troglobite, troglophile or stygophile.

cavernicolous - The habit of living in a cave. (in title) - Baldwin & Beatty 1941; Bareth 1974; Barnard 1977; Barnett D. 1970; Barr 1959e, 1960, 1963a-c, 1981; Barr & Lawrence; Beatty 1941 1949; Bellinger & Christiansen. 1975; Benedict & Malcolm 1973-a, 1974; Besuchet 1982; Bonet 1931; Bourne, 1977-8; Bousfield & Howarth 1976; Brandon & Rutherford 1967; Briggs & Hom 1972; Briggs & Ubick; 1981; Brindle 1980; Buckett & Gardner 1967; Carlson K.R. 1994; Carmody et al. 1972; Causey 1959, 1964, 1973; Chamberlin, J. & Malcolm 1960; Chapman 1988; Chappuis 1929; Christiansen 1962; Clergue-Gazeau 1974-5; Conde' 1948-9; Cooper, M. 1969; Crabill 1952; Cyr et al. 1991; Decu et al. 1978; Deharveng 1988; Delamare-Deboutteville 1949; Dresco-Derouet 1969; Elliott 1976a; Fennah 1973; Ferguson 1974-a; Gagne & Howarth 1975-a; Gertsch 1973; Gittleson & Hoover 1969; Gurney & Rentz 1978; Hamilton-Smith 1971; Henrot 1949; Hobbs Jr. 1975, 1981; Hobbs, III 1975, 1987; Hoff, C. 1956a; Holsinger 1963b, 1965a, 1975a, 1976a; Howarth 1972-3; Hyman 1945; Jarrige 1960; Jeannel 1928; Jeannel & Henrot 1949; Kamp 1970; Klimaszewski & Peck 1986; Krejca et al. 1994; Krekeler 1959; Lamprecht et al. 1985; Larimer 1966; L. et al. 1966; Magniez 1981; Maguire 1960; Matilde 1970; Mitchell R. 1970; Muchmore 1962-3, 1965, 1968-70a, 1973-4a, 1976, 1979c, 1980-1a, 1983-4, 1989, 1992; Muegge 1992; Nicholas 1962a, 1963, 1979; Park 1951, 1953a, 1960; Peck 1966, 1975, 1982-b, 1983-4, 1986, 1997; Reddell 1982; Relyea 1976-7; Robaux et al. 1976; Schultz G. 1973; Scott W. & Holland 1958; Shoemaker 1942; Stiner 1989; Strandtmann 1962;

Studier & Lavoie 1990-1a; Thibaud 1986; Thines 1969; Valentine J. 1931, 1945; Vandel, Albert 1965-a; Vial 1975; Warren R. 1961; Wiley 1973; Wolfe & Cornwell 1964; Yeatman 1964; Zacharda 1980

cavernophile - Syn: **troglophile**.

cavernophobe - One who shuns caves or other dark/enclosed spaces.

cavesnail - See **snail**.

cecophagy - The passing of food twice through the digestive system. Syn.: cecophagy. Cf. coprophagy.

center of diversity - Area of highest genetic diversity. Due to it being the center of origin of the taxon, a refugium or to other cases where speciation is high and/or extinction is low. Allopatric speciation is more likely to occur at the edges & not at the center of diversity.

Centipedes

("100-legged" worms) Carnivorous myriapodous arthropods of Class Myriaploda (or Class Chilopoda), subclass Chilopoda, characterized by a terminal genital opening, one pair of legs per pedal segment and pincer-like forcipules, or prehensors, with poison ducts that underly the head and are actually appendages of the first segment. They retain the second maxillae as paired organs, and not as a fused labium (as in insects). Mostly closely aligned with symphylids. From 19-181 segments, each with a pair of spiracles but absent in some segments in some species. The sternite of the first segment and the large coxae of the forcipules form a plate beneath the mouthparts. More or less wormlike with a flattened body and distinct head with a pair of long antennae. All species have jaws containing poison glands located on the first body segment immediately behind the head. Occasionally, humans may be bitten by centipedes, but the poison in the US or Canada usually produces only a moderate reaction similar to a bee sting. 3 mm to 27 cm when mature. Most species of centipedes feed on small creatures such as insects. Centipedes are found in a variety of habitats, but prefer dark, moist, protected areas such as under stones, rotted logs, leaves and bark. They overwinter as adults and lay eggs in the soil during the spring and summer. A few species give birth to living young. Centipedes are relatively long-lived; some species have been known to live up to 6 years. About 2,900 species known in about 20 families. First known from Pennsylvanian. **Bibl.:** CO: Reams 1985

Subclass Pleurostigmophora (= Anamorpha in part)

Order Lithobiomorpha (stone centipedes; alternating long and short plates, 20-50 antennal segments, 15 pairs of legs (hatchlings with 6-8) & only 6-7 sets of spiracles)

(Undet. family (*0-9 Well, Crocket Co.,TX/Tb; unidentified Tp genus & sp. or genera & species in Amador, Calaveras & Mariposa Cos.,CA; Tb in cave in Tuolumne Co.,CA; Ttx? in Pima Co.,AZ)

Family **Henicopidae** (*Lamyctes*)

Family **Lithobiidae** -Undet. Tx or Ac genera & sp. In El Capitan area cave, Prince of

Wales Island, seAK, *Bothropolys*, *Ethopolysn*, *Eulithobius*, *Garibius*, *Gosibius*,
Lithobius Leach, *Nadabius*, *Nampabius*, *Neolithobius*, *Nuevobius*, *Oabius*,
Paitobius,
Pampibius, *Sozibius*, *Tidabius*, *Typhlobius*

Order Craterostigmomorphora - absent from North America.

Order Scolopendromorpha (also put in Subclass Epimorpha)
(tropical centipedes; plate segments more or less uniform; 21 or 23 pairs of legs
& 17-
30 antennal segments)

(unidentified genus & sp. in Calaveras & Tuolumne Cos., CA/poss. Tb)

Family **Cryptopidae** - *Cryptops* Leach, *Theatops* Newport.

Family **Scolopendridae** - *Hemiscolopendra* Kraepelin, *Scolopendra* Linnaeus.

Family **Scolopocryptopidae** - *Scolopocryptops* Newport, *Thalkethops* Crabill.
(Undet. Genus in Kartchner C., Cochise Co., AZ)

Order Geophilomorpha (also put in Subclass Epimorpha) (snail centipedes; >29 pairs
of legs, 14 segments in the antennae & a spiracles on every segment except the first
& last) (Dignathodontidae, Geophilidae, Himantariidae, Schendylidae),
Himantariidae (sp.#1 (*cave in San Saba Co.), sp. #2 (*?cave in Williamson Co.,

TX/Tb?; sp. #3 (*?cave in Williamson Co., TX/Tb?) Crabill 1959

Family **Chilenophilidae** - *Pachymerium* C. L. Koch, *Taiyuna* Chamberlin.

Family **Dignathodontidae** - *Strigamia* Gray.

Family **Geophilidae** - *Arctogeophilus*, *Arenophilus* Chamberlin, *Geophilus* Leach.

Family **Himantariidae** - *Empherozoster* Crabill, *Gosiphilus* Chamberlin,
Meinertophilus.

Family **Mecistocephalidae** - no cave representatives.

Family **Schendylidae** - *Escaryus* Cook and Collins, *Nyctunguis* Chamberlin.

Family **Watobiidae** - *Watobius*

Subclass Notostigmophora (= Anamorpha in part)

Order Scutigeromorpha

(house centipedes; 15 pairs of legs (hatchlings with 4) & spiracles on the first 7
segments

only; only group with compound eyes; very long legs and antenna, fusion of plates
(tergites) resulting in <15 plates)

Family Scutigeridae - introduced) (*Scutigera* Lamarck)

Arctogeophilus Attems, 1909 - Geophilidae centipedes

Arctogeophilus undet. sp. (Tx or Ac in CA)

Arenophilus Chamberlin, 1912 - Geophilidae centipedes

Arenophilus *bipuncticeps* (Wood, 1862) (Tx in GA (Chatooga Co.) & MO (Pettis and Phelps Cos.) Holsinger and Peck 1971

Arenophilus *psednus* Crabill, 1969. (type locality cave in Boyle Co., KY/ Tb)

Arenophilus undet. sp. (Tx in Calaveras & Tuolumne Cos.,CA)

Bothropolys Wood, 1862 - Lithobiidae centipedes

Bothropolys *multidentatus* (Newport, 1845). (Tx in AR & MO (Barry, Christian, Howell, Ozark, Pulaski, Shannon, & St. Louis Cos.) Gardner 1986

Cryptops Leach, 1815 - Cryptopidae centipedes

Cryptops *leucopodus* (Rafinesque, 1820) (*C.hyalinus*) (Ac or Tx in cave in WV)

Cryptops undet.or undescrib. sp. (*?Tb cave in Travis Co., TX)

Cryptops *leucopodus* (Rafinesque, 1820). (Ac or Tx in MO (Barry & Howell cos.) & TX (Bell, Blanco, Travis, & Williamson Cos.)

Empherozoster Crabill, 1959 - Himantariidae centipedes

Empherozoster *antaeus* Crabill, 1959 (**type locality cave & Carlsbad C. in Carlsbad Caverns Nat. Pk., Eddy Co., NM) Barr & Reddell 1967

Escaryus Cook & Collins, 1891- Schendylidae centipedes

Escaryus *missouriensis* Chamberlin, 1942. (Tp in cave in IN) Crabill 1953; Pereira and Hoffman 1993

Ethopolys Chamberlin, 1955 - Lithobiidae centipedes

Ethopolys undet. sp. (Ac or Tx in WA)

Ethopolys *bipunctatus insulatus* Chamberlin, 1955 (*cave in Toole Co., UT/ ?Tb)

Eulithobius Stuxberg (originally treated as subgenus of Lithobius) - Lithobiidae centipedes

Eulithobius *sphactes* Crabill 1958a (type locality cave in Muskogee Co.,OK & cave each in Burnet & Irion Cos., TX/ S1G1?/Tb?)

Garibius Chamberlin, 1913. - Lithobiidae centipedes

Garibius *georgiae* Chamberlin, 1913 (Ac in OH)

Garibius *opicolens* Chamberlin, 1913 (=G. *pagoketes*). (Ac or Tx in Shannon & Washington Cos., MO) Gardner 1986

Geophilus Leach, 1814 - Geophilidae centipedes
Geophilus mordax Meinert, 1886. (Ac in MO)
Geophilus undet. sp. (Ac in Barry Co., MO) Gardner 1986

Gosibius Chamberlin 1912 . - Lithobiidae centipedes
Gosibius undet. sp. (Ac in Calaveras Co., CA)

Gosiphilus Chamberlin, 1922 - Gosibiidae centipedes
Gosiphilus laticeps (Wood, 1862) (Tp in Uvalde Co., TX)

Hemiscolopendra Kraepelin, 1903 - Scolopendridae centipedes
Hemiscolopendra marginata (Say, 1821) (Tp in Bell, Comal Co. & Coryell Cos.,TX)

Lamyctes Meinert, 1868 - Henicopidae centipede
Lamyctes fulvicornis Meinert, 1868 (alien Ac or Tx in NS)

Himantarium Koch, 1847 - See *Meinertophilus*

Lithobius R. Chamberlin 1925a - Lithobiidae centipedes

Lithobius atkinsoni Bollman, 1887. (Ep in NC, SC; Tp in TN, GA (Randolph Co.) FL (Jackson Co.) & 5 caves in AL) **Bibl.:** Peck 1970; Holsinger and Peck 1971

Lithobius undescr. sp. (*c. in Kamalo Quad.,Molakai, HI,/Tb?)
Lithobius undet. sp. (Mauis & Kazumura Lava Tube (Hawaii Island),HI)

Meinertophilus Silvestri, 1897 - Himantariidae centipedes
Meinertophilus californicus Chambelin, 1930 (*type locality cave in Shasta Co.,CA/Tb?)

Meinertophilus superbis (*Himantarium s.* Meinert, 1879) (Tp or Tx or Ac in Shasta Co., CA)

Nadabius Chamberlin, 1944- Lithobiidae millipedes
Nadabius ameles Chamberlin, 1944. (Tp? in MO (Camden, Carter, and Ste. Genevieve cos.) Peck and Lewis 1977; Gardner 1986).

Nadabius iowensis (Meinert, 1886) (Ac in Pulaski Co., MO) Gardner 1986
Nadabius pullus (Bollman, 1887) (Tx in IN (Harrison & Jennings Cos./S4/G4)

Nadabius undet. sp. (Ac or Tx in IL (Hardin, Monroe cos.), MO (Barry, Carter, and Phelps cos.) & CA (Calavaras Co.) **Bibl.:** Peck and Lewis 1977; Gardner 1986

Nadabius poss. undescr. sp. (1 cave each in Hardin & Monroe Co.s, IL/Tp?/ G1?)

Nampabius Chamberlin, 1913 - Lithobiidae centipedes
Nampabius parienus Chamberlin, 1913. (Tp in Atwell's Tunnel Cave, Smythe Co., VA) Hoffman 1995

Nampabius turbator Crabill, 1952 ** (type locality & one other cave in Alleghany Co., VA/Tb?/T&E VA S1, global G1). **Bibl.:** Hoffman 1995

Nampabius undet. sp. (sON/Tx or Ac)

Neolithobius Stuxberg, 1875 (originally treated as subgenus of *Lithobius*) - Lithobiidae centipedes. **Bibl.:** Chamberlin, 1925a

@Neolithobius suprenus (*type locality cave in Menard Co., TX/Tb)

Neolithobius undet. sp. (Tp in Burnet, Coryell, Mason, Cos., TX)

Neolithobius voracior (Chamberlin, 1912) (Ac or Tx in GA (Decatur Co.), MO (Phelps Co.), MS) **Bibl.:** Holsinger & Peck 1971, Gardner 1986

Nuevobius Crabill, 1960- Lithobiidae centipedes

Nuevobius cottus Crabill, 1960. (*Tuckaleechee Caverns, Blount Co., TN/ Tb)

Nyctunguis Chamberlin, 1914 - Schendylidae centipedes

Nyctunguis pholeter Crabill, 1958 (*type locality cave in De Kalb Co., AL/Tb or Tp) Crabill 1961

Oabius Chamberlin, 1917 - Family Lithobiidae

Oabius patonius (Chamberlin, 1911) (Ac in >4 caves in Calaveras Co., CA)

Pachymerium C.L. Koch, 1847 - Family Chileneophilidae

Pachymerium ferrugineum (C. L. Koch, 1835). (Ac in MO (Phelps Co.) Gardner 1986

Paitobius Chamberlin, 1912b - Lithobiidae centipedes

Paitobius adelus Chamberlin, 1922 (Ac or Tx in AL, GA(prob.))

Paitobius juvenis (Bollman, 1887). MO, Carter Co., Ac (Gardner, 1986).

Paitobius undet. sp. or species (Ac or Tx in GA (Dade Co.) & TN (Warren Co.) Holsinger & Peck 1971; Barr 1957

Pampibius Chamberlin, 1922 - Lithobiidae centipedes

Pampibius undet. sp. (Ac in GA (Walker Co.) Holsinger and Peck, 1971

Scolopendra Linnaeus, 1759 - Scolopendridae centipedes

Scolopendra polymorpha Wood, 1861 (Ac in Sutton, Val Verde Cos., TX)

Scolopendra subspinipes Leach, 1815 (Ac in Kazumura C., HI Island, HI)

Scolopendra viridis Say, 1821 (Ac in Hays Co., TX) Chamberlin, 1944; Reddell, 1970

Scolopendra undet. sp. or species (Ac or Tx in Bexar & Burnet Cos., TX & El Malpais Natl. Monument, nNM)

Scolopendra viridis Say, 1821 (Ac in Hays Co., TX).

Scolopocryptops Newport, 1844 - Scolopocryptopidae centipedes

Scolopocryptops sexspinosus (Say, 1821) (Tx in AL; GA (Dade & Walker cos.); TN (Grundy, DeKalb & Claiborne Cos.); MO (Oregon, Ozark, Pettis, Shannon, & WA cos) **Bibl.:** Shelley 1997; Holsinger & Peck 1971; Gardner 1986

Scutigera Lamarck, 1801 Scutigeridae centipedes

Scutigera undet. sp. or species (Tp? in cave in Seminole Co.,OK & cave in Wagoner Co.,OK; Tx? in 1 IL cave)

Scutigera coleoptrata (Linnaeus, 1758). (Tx in IL, Hardin Co. , MO, Camden, Crawford, Pettis, and Phelps cos.) OH, OK, TX/ house centipede) **Bibl.:** Peck and Lewis 1977; Gardner, 1986

Sozibius Chamberlin, 1912 - Lithobiidae centipedes

Sozibius pennsylvanicus Chamberlin, 1922 (Ac in OH)

Sozibius proridens (Bollman, 1887). (Ac in Washington Co., MO) Gardner 1986

Strigamia Gray, 1847 - Dignathodontidae centipedes

Strigamia bothriopa Wood, 1862 (Ac in Washington Co., MO) Gardner 1986

Strigamia branneri (Bollman, 1888) (Ac or Tx in MO (Laclede and Texas cos.) & IA)

Strigamia undet. sp. (Tx or Ac in MO (Carter and Pulaski cos.) & sON) Gardmer 1986

Taiyuna Chamberlin, 1912 - Chilenophilidae centipedes

Taiyuna undet. sp. (Ac in Calaveras Co.,CA)

Thalkethops Crabill, 1960b - Scolopocryptopidae centipedes

Thalkethops grallatrix Crabill, 1960b. (Carlsbad Caverns (TL) and other caves in Carlsbad Caverns National Park, Eddy Co., NM/ Tb) **Bibl.:** Barr & Reddell 1967; Crabill 1960; Shelley in press).

Theatops Newport, 1844 - Cryptopidae centipedes

Theatops phanus Chamberlin, 1951 complex? (type locality cave in Sutton Co.,+

Bexar, Burnet, Crockett, Menard, Terrell, Travis, Williamson Cos.,seTX/ Tb in this 3-5 apparent sp. complex; also known from epigean in eTX) Shelley 1997

Theatops spinicaudus (Wood, 1862) (Ac or Tx in MO (Camden, Dent, Howell, Ozark, and Phelps cos.) Gardner, 1986

Tidabius Chamberlin, 1913 - Lithobiidae centipedes

Tidabius undet. sp. (Tx or Tp in KY (Mammoth C.) & TN (Hamilton Co.); Ac in MO (Carter & Phelps Cos.), Tx? in AR)

Tidabius *tivius* (Chamberlin, 1909) (*Typhlobius t.*) (Ac or Tx in Mammoth Cave System, Edmondson Co.,KY)

Typhlobius Chamberlin 1922 - Lithobiidae centipedes

Typhlobius *coecus* (Bollman, 1888) (Ep in AL, NC, TN; Tp in cave (or related undescr. species), in Walker Co.,GA & in cave in Lee Co.,VA)

Typhlobius tivius = *Tidabius t.*

Watobius Chamberlin, 1911 - Watobiidae centipedes

Watobius *anderisus* Chamberlin, 1911 (Tx or Tp in DeKalb Co.,TN)

centrifugal speciation - Occurring at the center of range of the present species. Primitive species often occur at the edges of a species-group or genus range.

Cephalocarids

Of Subphylum Crustacea, Class or Order or Subclass Cephalocarida. Included in Phyllopoda by Meglitsch & Schramm. Most primitive order of crustaceans. No carapace or eyes. Elongated, worm-like body with head, 19 body segments and the telson with a caudal furca. Thorax segments (1-8) with appendages. Limb rudiments present on the first pleomere and used for carrying eggs. 4 known species.

Order or Suborder Brachypoda

Family Hutchinsoniellidae (*Hutchinsoniella*)

Family Lightiellidae (*Lightiella*)

Hutchinsoniella Sanders, 1955 - Hutchinsoniellidae cephalocarid crustaceans

Hutchinsoniella macracantha Sanders, 1955 (NY, VA marine interstitial)

Lightiella Jones, 1961 - Lightiellidae cephalocarid crustaceans

Lightiella serendipita leiti (CA marine soft bottom interstitial)

cephalopod - Marine **mollusk** with a definite head, with the mouth surrounded by a part of the foot modified into lobelike processes with tentacles or armlike processes with hooklets or suckers or both. Incl. **ammonoid & nautiloid.**

Cestoda - See **worm**, tapeworm.

cercus - Paired appendage of the last segment of the abdomen. Plural - cerci.

chaetotaxic – Referring to how bristles are positioned.

chasmoliths - Species that live inside preformed cavities within rock. Cf. endoliths & epiliths.

chelation - Chemical reaction in which a complexing agent (usually organic) combines with metallic ions & remove them from the system. Chelation of hydrochloric acid with carbonates may be harmful to cave life.

Chelicerata (= Cheliceriformes of Meglitsch & Schramm) – A subphylum of Arthropoda. Includes Pycnogonida, Merostomata, & Arachnida.

chemotaxis - Change in locomotion due to changes in amounts of certain chemicals in the environment.

chemolithotroph - An organism which obtains its energy from oxidation of inorganic compounds.

chemoorganotroph - An organism which obtains its energy from oxidation of organic compounds

chemo-autotrophs - Syn: chemotroph.

chemo-autotroph, chemoorganotrophic, chemotroph - See bacteria, microbe

chemoheterotrophs – Organisms which derive energy from oxidation/reduction reactions and use organic electron donors.

chemolithoautotrophs – Organisms which derive energy from oxidation/reduction reactions and use inorganic electron donors.

chemolithotrophic - Chemotroph that gets its food oxidizing inorganics.

chemoorganotrophic - Organism that gets its food by oxidizing organic compounds. Incl. decomposer.

chemotroph - Organism which gets metabolic energy from chemical reduction or oxidation of inorganics, such as sulphur or iron. Syn.: chemoautotrophs. Incl. chemolithotrophic.

chemosynthesis - Synthesis of complex organic molecules from simpler molecules using chemical energy.

Chitons

Class Polyplacophora (= Amphineura), Order Neoloricata. **Mollusk** shell of which consists of eight (sometimes seven) overlapping calcareous valves or plates. Mantle is thick and fleshy and extends beneath the plate all around to form a girdle; and in many groups the girdle extends back over the edge of the plates or even covers them entirely. They have a radula, many ctenidia (with six to more than 80 pairs) but have only a pair of nephridia and have no eyes, tentacles or crystalline styles. About 600 species. Rare in sea caves or as cave bedrock

Order Neoloricata

Suborder Acanthochitonina

Acanthochitonidae (*Acanthochitona*)

Suborder Ischichitonina

Ischnochitonidae (*Lepidozona*)

Acanthochitona Gray, 1821 – Acanthochitonidae chitons

Acanthochitona pygmaea (Pilsbry, 1893) (striate glass-hair chiton/ wFL Gulf of Mexico infauna)

Lepidozona – Ischnochitonidae chitons

Lepidozona interstinica (AK marine infauna)

Chordates

Phylum Chordata

Subphylum **Vertebrata** (=Craniata)

(See mammals, birds, alligators, frogs, toads, snakes, lizards, turtles, salamanders)

Subphylum Urochordata (lancelets)

Subphylum Cephalochordata (cephalochordates) (about 25 species)

(Sister group to Chordates, but asymmetry in juveniles indicate they are not direct ancestors)

Family Branchiostomidae (*Branchiostoma*)

Branchiostoma Costa, 1834 (= *Amphioxides*; *Amphioxus*) Branchiostomidae chordates

Branchiostoma caribaeum (LA, MA, NC, VA marine infauna)

Branchiostoma floridae (Florida Lancelet/ FL marine infauna)

Branchiostoma undet sp. (FL marine benthic)

Branchiostoma virginiae Hubbs, 1922 (Virginian marine infauna)

chorology - The study of the factors that influence where species live.

circadian (Relating to a period of approx. 24 hours) - See temporal

cladocera - See branchiopod

cladogram - A classification system usually in the shape of a branching diagram with the closest species having the most shared characteristics and presumably the closest evolutionary relationships.

Clams & Allies (Cockles, Conchs, Mussels & Oysters, etc.)

Bivalves (= Pelecypoda or Lamellibranchaita) of Phylum Mollusca, Class Bivalvia

(=Pelecypoda)

About 8,000 species.

Class Bivalvia

Subclass Anomalodesmata

Subclass Anomalodesmata

Order Pholadomyoidea

Superfamily Pandoroidea

Family Lyonsiidae (*Lyonsia*)

Family Pandoridae (pandoras) (*Pandora*)

Order Pholadomyoidea

Superfamily Thracioidea

Periplomatidae (*Periploma*)

Thraciidae (thracias) (*Asthenothaerus*, *Thracia*)

Superorder or Subclass Cryptodonta

Order Arcoida

Superfamily Limopsoidea

Family Glycymerididae (*Glycymeris*)

Subclass Palaeoheterodonta

Order Myoidea

Superfamily Myoidea

Corbulidae (*Corbula*)

Myidae (*Cryptomya*, *Myia*, *Sphenia*, *Paramya*)

Superfamily Hiatelloidea

Family Hiatellidae (*Hiatella*)

Superfamily Pholadoidea

Pholadidae (*Barnea*)

Order Veneroidea

Superfamily Astartoidea

Astartidae (*Astarte*)

Superfamily Carditoidea

Cardiidae (*Laevicardium*, *Nemocardium*, *Serripes*)

Carditidae (*Carditamera*, *Cyclocardia*)

Superfamily Crassatelloidea

Crassatellidae (*Crassocardia*, *Crassinella*)

Superfamily Galeommatoidea

Lasaeidae (*Kellia*, *Mysella*, *Naeromya*)

Superfamily Lucinoidea

Cyrenoididae (*Cyrenoida*)

Lucinidae (*Lucina*, *Lucinoma*, *Parvilucin*)

Thyasiridae (*Axinopsida*, *Thyasira*)

Ungulinidae (*Diplodonta*)

Superfamily Corbiculoidea

Corbiculidae (*Corbicula*, *Polymesoda*)

Dreissenidae (*Mytilopsis*)

Superfamily Corbiculacea

Pisidiidae (fingernailclams) (*Pisidium*, *Musculium*) (both still placed in Sphaeriidae)

Sphaeriidae (fingernailclams)

(*Pisidium*, *Musculium*, *Sphaerium*) (put into Pisidiidae by Burch 1991)

Superfamily Mactroidea

Mactridae (*Anatina*, *Mulinia*, *Macra*, *Rangia*, *Spisula*, *Tresus*)

Superfamily Tellinacea

Psammobiidae (*Tagelus*) (also put in Solecurtidae)

Pteroconchidae (undet. genus in brackish beach sediment at Lake Pontchartrain, LA)

Superfamily Tellinoidea

Donacidae (*Donax*)

Pharidae (*Ensis*, *Siliqua*)

Psammobiidae (*Gari*)

Semelidae (*Abra*, *Cumingia*, *Ervilia*, *Semele*, *Semelina*)

Tellinidae - (*Macoma*, *Tellina*, undet. genus in LA brackish beach sediment)

Superfamily Veneroidea

Petricolidae (*Petricola*)

Turtoniidae (*Turtonia*)

Veneridae

(*Agriopoma*, *Anomalocardia*, *Compsomyax*, *Dosinia*, *Humilaria*, *Macrocallista*,
Mercenaria, *Parastarte*, *Pitar*, *Protothaca*, *Psephidia*, *Saxidomus*, *Transennella*)

Subclass Protobranchia (= Nuculoidea)

Order Nuculoida

Superfamily Nuculoidea

Family Nuculidae (nutclams) (*Nucula*)

Superfamily Nuculanoidea

Family Nuculanidae (nutclams) (*Nuculana*) (once in Nuculidae)

Family Sareptidae (yoldias) (*Yoldia*) (also put in Yoldiidae)

Family Yoldiidae (yoldias) (*Yoldia*) (put in Sareptidae)

Superorder Filibranchia (= Superorder or Subclass Pteriomorpha)

Order Mytiloidea

(also put in Subclass or Superorder Eulamellibranchia (=Heterodonta)

(mussels)

Superfamily Veneroidea (also put in Superorder Isofilibranchia)

Mytilidae (also put in Mytiloidea)

(*Amygdalum*, *Brachidontes*, *Geukensia*, *Ischadium*, *Modiolus*,

Musculus,

Mytilis, *Villosa*, *Vilasina*, undet. genus in brackish LA beach)

Subclass Palaeoheterodonta

Order Unionoidea (naiads, clams, mussels)

Superfamily Unionacea

Unionidae (freshwater mussels) (*Unio*, *Villosa*)

Subclass Pteriomorpha

Superorder Eupteriomorpha

Order Ostreoida

Suborder Ostreina

Superfamily Ostreoidea

Ostreidae (*Crassostrea*)

Suborder Pectinina

Superfamily Anomioidea

Anomiidae (*Anomia*)

Superfamily Pectinoidea

Pectinidae (*Chlamys*)

Superorder Prionodonta

Order Arcoida

Superfamily Arcoidae
Arcidae (*Anadara*)

Macridae (*Anatina*, *Mulinia*, *Macra*, *Rangia*, *Spisula*)

Semelidae (*Abra*, *Cumingia*, *Ervilia*, *Semele*, *Semelina*)

Abra Lamarck, 1818 – Semelidae clams

Abra aequalis (Say, 1822) (Atlantic abra/ Carolinian, Gulf of Mexico (wFL, TX) infauna)

Agriopoma Dall, 1902 - Veneridae clams

***Agriopoma* texasiana** (Dall, 1892) (Texas venus/ wFL Gulf of Mexico infauna)

Aligena I. Lea, 1843 – Lasaeidae clams (also put in Kelliidae)

Aligena elevata (Stimpson, 1851) (eastern aligena/ Virginian, Carolinian marine infauna)

Aligena texasiana Harry, 1969(Texas aligena/ Virginian marine infauna)

Amygdalum Megerle von Muhfeld, 1811 – Mytilidae clams

Amygdalum papyrium (Conrad, 1846) (Carolinian, Virginian, wFL, TX Gulf of Mex. marine infauna)

Anadara Gray, 1847 (= *Arginarca*) – Arcidae clams or mussels

Anadara ovalis (Bruguiere, 1789) (blood ark/ TX Gulf of Mexico, Carolinian infauna)

Anadara transversa (Say, 1822) (transverse ark/ Carolinian, Virginian, wFL Gulf of Mexico infauna)

Anatina Schumacher, 1817 Macridae snails

Anatina anatina (Spengler, 1802) (smooth duckclam/ wFL Gulf of Mexico infauna)

Anomalocardia Schumacher, 1817 - Veneridae clams

Anomalocardia auberiana (d'Orbigny, 1842) (pointed venus/ Carolinian, wFL, TX infauna)

Anomalocardia cunemeris (wFL marine infauna)

Anomia Linnaeus, 1758 – Anomiidae clams

Anomia simplex D'Orbigny, 1842 (Virginian, wFL Gulf of Mex. marine infauna)

Astarte J. Sowerby, 1816 – Astartidae clams

Astarte castanea (Say, 1822) (smooth astarte/ Carolinian, Virginian marine infauna)

Astarte nana Dal, 1886(dwarf astarte/ Carolinian, Virginian marine infauna)

Asthenothaerus Carpenter, 1864 – Thraciidae clams

Asthenothaerus hemphilli Dall, 1886 (square thraciid/ wFL Gulf of Mex., Carolinian marine infauna)

Asthenothaerus undescr. sp. (wFL Gulf of Mex. marine infauna)/ wFL Gulf of Mexico infauna)

Axinopsida Keen & Chavan, 1951 – Thyasiridae clams

Axinopsida serricata (Carpenter, 1864) (East Pacific/ silky or lenticular axinopsis/ AK, BC marine infauna)

Barnea Risso, 1826 – Pholadidae clams

Barnea truncata (Say, 1822) (Atlantic mud-piddock/ Virginian marine infauna)

Brachidontes Swainson, 1840 - Mytilidae mussels. **Bibl.:** Kenk Y Blanco 1967

Brachidontes exustus (Linnaeus, 1758) (Ttp in anchialine cave in Pinellas Co.,FL/ scorched mussel/ wFL, TX Gulf of Mex ., Carolinian marine infauna)

Carditamera Conrad, 1838 – Carditidae clams

Carditamera floridana Conrad, 1838 (broad-ribbed carditid/ wFL , LAGulf of Mex. marine infauna)

Chlamys Roding, 1798 –Pectinidae clams

Chlamys rubida (Hinds, 1845) (AK marine infauna)

Clinocardium Keen, 1936 – Cardiidae cockles

Clinocardium californiense (Aleutian or California cockle/ AK, BC, CA, OR, WA marine infauna?)

Clinocardium ciliatum (Fabricius, 1780) (hairy cockle/ AK marine infauna)

Clinocardium nuttallii (Conrad, 1837) (Nuttall cockle/ AK, BC, OR, WA marine infauna)

Compsomyax Stewart, 1930 - Veneridae clams

Compsomyax subdiaphana (Carpente, 1864) (East Pacific/ milky venus) (AK marine infauna)

Congeria Partsch, 1835 - Dreissenidae mussels

Congeria leucophaeta (Conrad, 1831) (/ dark false mussel)

Corbicula Megerle, 1811- Corbiculidae clams

Corbicula fluminea (O.F.Muller, 1774) (WA,epigeal/ alien Tp? in cave each in Columbia, Lafayette & Suwanee Cos., FL; Tp or Tx in nAL (one cave); hyporheic in MD, OK; rarely found in hyporheic of SC coastal blackwater stream; Virginian marine infauna/ Asian clam). **Bibl.:** Bell-McCaulou 1993; Doherty 1986; Foe 1985; Hakenkamp 1997; Lauritsen 1985; Streever, 1992b

Corbicula manilensis Philippi (OR, WA, Virginian (rare) marine infauna)
Corbicula undet. sp. (likely in a OK cave & OK hyporheic)

Corbula Bruguiere, 1797 – Corbulidae clams
Corbula barattiana C.B. Adams, 1852 (truncate corbula/ Carolinian marine infauna)

Corbula contracta Say, 1822 (contracted corbula/ wFL, TX Gulf of Mex., Carolinian marine infauna)
Corbula swiftiana C.B. Adams, 1852 (radial-ridged corbula/ wFL Gulf of Mex. , Carolinian marine infauna)

Crassocardia Conrad, 1838 – Carditidae clams
Crassocardia crassidens (Broderip & Dowerb, 1829) (thick carditid/ AK marine infauna)

Crassinella Guppy, 1874 - Crassatellidae clams
Crassinella dupliniana (Dall, 1903) (pointed crassinella/ Carolinian infauna)

Crassinella lunulata (Conrad, 1834) (lunate crassinella/ wFL, TX Gulf of Mexico, Carolinian infauna)

Crassinella martinicensis (d'Orbigny, 1842) (Martinique crassinella/ Carolinian infauna)

Crassostrea Sacco, 1897 – Ostreidae oysters
Crassostrea virginica (Gmelin, 1791) (eastern oyster/ TX, LA Gulf of Mexico, Pacific States (alien), Carolinian infauna)

Cryptomya Conrad, 1848 – Myidae clams
Cryptomya californica Conrad, 1848 (East Pacific/ California softshell clam/ AK, CA marine infauna)

Cumingia G.B. Sowerby I, 1833 – Semelidae clams
Cumingia tellinoides (Conrad, 1831) (telling semele/ wFL Gulf of Mex. marine infauna)
Cumingia tellinoides vanhyningi Rehder, 1939 (telling semele/ wFL Gulf of Mex. marine infauna)

Cyclinella Dall, 1902 - Veneridae clams
Cyclinella tenuis (Recluz, 1852)(thin cyclinella/ Carolinian marine infauna)

Cyclocardia Conrad, 1867 - Carditidae clams
Cyclocardia crassidens (Broderip & G.B. Sowerby I., 1829 (thick cyclocardia/ AK marine infauna)

Cyrenoida Joannis, 1835 –Cyrenoididae clams
Cyrenoida floridana (Dall, 1896) (wFL marine infauna)

Cyrtopleura Tryon, 1862 - Pholadidae clams
Cyrtopleura costata (Linnaeus, 1758)(anglewing/ Carolinian marine infauna)

Diplodonta Bronn, 1831 – Ungulinidae clams
Diplodonta orbella (Gould, 1851) (BC marine infauna)

Diplodonta punctata (Say, 1822) (Atlantic diplodon/ LA, NC marine infauna)
Diplodonta semiaspera Philippi, 1836 (pimpled diplodon/ East Pacific & wFL, LA Gulf of Mex. marine infauna)

Donax Linnaeus, 1758 – Donacidae coquina or bean clam
Donax fossor Say, 1822 (fossor coquina/ Virginian marine infauna)
Donax variabilis Say, 1822 (variable coquina/ Virginian, Carolinian marine infauna)

Dosinia Scopoli, 1777 - Veneridae clams
Dosinia discus (Reeve, 1850) (disk dosinia/ wFL Gulf of Mexico, LA, VA, Carolinian infauna)

Ensis Schumacher, 1817 – Pharidae clams
Ensis directus Conrad, 1843 (Virginian, NC marine infauna)
Ensis minor Dall, 1900 (wFL, TX Gulf of Mex. marine infauna)

Ervilia Turton, 1822 – Semelidae clams
Ervilia concentrica (Holmes, 1860) (cocentric ervilia/ wFL Gulf of Mex. marine infauna)

Gari Schumacher, 1817 – Psammobiidae clams
Gari californica (Conrad, 1849) (California sunsetclam/ AK, BC, CA, OR marine infauna))

Gemma Deshayes, 1853 - Veneridae clams
Gemma gemma (Totten, 1834) (amethyst gemclam/ Virginian, MA marine infauna)

Glycymeris Da Costa, 1778 - Glycymerididae clams
Glycymeris subobsoleta (Carpenter, 1864 (AK, WA marine interstitial)

Geukensia Van de Poel, 1959 – Mytilidae mussels
Geukensia demissa (Dillwyn, 1817) (ribbed or marsh mussel/ wFL, MA, TX, Virginian marine infauna))

Hiatella Bosc, 1801 - Hiatellidae clams
Hiatella arctica (Linnaeus, 1767) (Arctic rock borer/ ME sea cave; AK, TX, Carolinian marine

infauna)

Humilaria Grant & Gale, 1931 - Veneridae clams

Humilaria kennerleyi (Reeve, 1863) (Kennerly's venus/ AK marine infauna)

Ilyanassa Stimpson, 1865 = *Nassarius*

Ischadium Jukes-Browne, 1905 – Mytilidae mussels

Ischadium recurvum (Rafinesque, 1820) (hooked mussel/ MD, wFL Gulf of Mex. marine infauna)

Kellia Turton, 1822 – Lasaeidae clams

Kellia suborbicularis (*Chironia s.* Montagu, 1803; *K. laperousii*) (AK marine infauna)

Laevicardium Swainson, 1840 Cardiidae cockles

Laevicardium mortoni (Conrad, 1830) (Morton or yellow eggcockle/ wFL, TX marine infauna)

Lucina Lamarck, 1799 – Lucinidae clams

Lucina nassula (Conrad, 1846) (woven lucine/ wFL Gulf of Mex. marine infauna)

Lucinoma Dall, 1901 – Lucinidae clams

Lucinoma annulatum (Reeve, 1850) (East Pacific/ western ringed lucina/ AK marine infauna)

Lyonsia Turton, 1822 – Lyonsiidae clams

Lyonsia californica Conrad, 1837 (California lyonsia/ AK, CA, Virginian marine infauna)

Lyonsia hyalina Conrad, 1831 (glassy lyonsia/ Virginian marine infauna)

Lyonsia hyalina floridana (*L.f.* Conrad, 1849) (TX, wFL marine infauna)

Macoma Leach, 1819 (= *Cydippina*) - Tellinidae clams

Macoma balthica (Linnaeus, 1758) (AK, BC, Virginian (rare), Labrador, MA, MD, OR, WA marine infauna)

Macoma brevifrons (Say, 1834) (short macoma/ TX, wFL marine infauna)

Macoma calcarea (Gmelin, 1791) (AK marine infauna)

Macoma carlottensis Whiteaves, 1880 (AK, BC marine infauna)

Macoma constricta (Bruguiere, 1792) (wFL marine infauna)

Macoma inquinata (DeShayes, 1855) (Irus clam; pointed macoma/ AK, BC, OR, WA marine infauna)

Macoma lama (Bartsch, 1929) (Aleutian macoma/ AK marine infauna)

Macoma mitchelli Dall, 1895 (MD, MA, NC, Virginian (rare) marine infauna)

Macoma nasuta (Conrad, 1837) (bent-nose macoma or clam/ AK, BC, WA marine infauna)

Macoma obliqua (J. Sowerby, 1817) (oblique or oval macoma/ AK marine infauna)

Macoma secta (Conrad, 1837) (BC, OR, WA, CA marine infauna)

Macoma tenta (Say, 1834) (Virginian (rare), MA, wFL, TX infauna)

Macoma yoldiformis Carpenter, 1864 (yoldi macoma/ AK marine infauna)

Macrocallista Meek, 1876 – Veneridae clams

Macrocallista nimbosa (Lightfoot, 1786) (sunray venus/ wFL Gulf of Mex. marine infauna)

Mactra Linnaeus, 1767 – Mactridae clams

Mactra fragilis Gmelin, 1791 (fragile surfclam/ wFL, TX Gulf of Mex. marine infauna)

Mercenaria Schumacher, 1817 – Veneridae clams

Mercenaria campechiensis (Gmelin, 1791) (southern quahog/ Virginian marine infauna)

Mercenaria mercenaria Linnaeus, 1758 (northern quahog/ Virginian, RI marine infauna)

Modiolus Lamarck, 1799 – Mytilidae clams

Modiolus flabellatus (Linnaeus, 1758) (East Pacific/ fan horsemussel/ BC marine infauna)

Modiolus modiolus (Gould, 1850) (Linnaeus, 1758) (East Pacific/ northern horsemussel/ AK, BC, OR, WA, CA marine infauna)

Mulinia Gray, 1837 – Mactridae clams

Mulinia lateralis (Say, 1822) (dwarf surfclam; coot clams/ Virginian, MA, NC, RI, wFL, TX Gulf of Mex. marine infauna)

@***Mulinia maculata*** (Virginian marine infauna)

Musculium Link, 1807 (fingernailclam) Sphaeriidae clams (also put in Pisidiidae)

Musculium undet. sp. or species (2 caves om Monroe Co., MO/Tp?; Virginian marine infauna)

Musculium securis (Prime, 1852)(= *S. securis*) (E/Ac or Tx in sON/ pond fingernailclam)

Musculium transversum (Say, 1829) (= *M. (Sphaerium) t.*; *Sphaerium (M.) t.*) (long fingernailclam/ hyporheic in Great Lakes; Tp in MO)

Musculus Roding, 1798 - Mytilidae mussels

Musculus *lateralis* (Say, 1822) (LA marine infauna)

Mya Linnaeus, 1758 – Myidae clams

Mya arenaria Linnaeus, 1758 (softshell clam/ AK, BC, Labrador, MD, MA, OR, WA marine infauna)

Mya pseudoarenaria Schless, 1931 (false softshell clam; soft softshell/ AK marine infauna)

Mya truncata Linnaeus, 1758 (truncate softshell clam/ AK marine infauna)

Mysella Angas, 1877 – Lasaeidae mussels

Mysella planulata (Stimpson, 1851) (plate mysella/ Virginian, FL, TX Gulf of Mex. marine infauna)

Mysella tumida (Carpenter, 1864) (robust mysella/ AK marine infauna)

Mytilis Whitelegge, 1889 undet. sp. (CA marine caves)

Mytilis edulis Linnaeus, 1758 (ME sea cave/ blue mussel/ marine infauna)

Mytilis trossulus (blue mussel/ AK marine infauna)

Mytilopsis Conrad, 1857 - Dreissenidae mussels

Mytilopsis leucophaeata (Conrad, 1831) (Ttp in anchialine cave in Pinellas Co.,FL; MA, Virginian marine infauna/ dark false mussel)

Naeromya Gabe, 1873 – Lasaeidae clams

Naeromya compressa (Dall, 1899) (AK marine infauna)

Nemocardium Meed, 1876 – Cardiidae cockles

Nemocardium centifilosum (Carpenter, 1864) (hundred-line cockle/ AK marine infauna)

Noetia Gray, 1857– Noetiidae clams (once in Arcidae)

Noetia ponderosa (Say, 1822) (ponderosa arc; , Carolinian marine infauna)

Nucula Lamarck, 1799 - Nuculidae clams

Nucula crenulata A. Adams, 1856 (LA, wFL marine infauna)

Nucula proxima Say, 1822 (Virginian, MA marine infauna)

Nucula tenuis (Montagu, 1908) (AK, BC marine infauna)

Nuculana Link, 1807 - Nuculanidae clams (once in Nuculidae)

Nuculana acuta (Conrad, 1832) (LA, TX, wFL Gulf of Mex. marine infauna)

Nuculana concentrica Say, 1824 (TX Gulf of Mex. marine infauna)

Nuculana fossa (Baird, 1863)(AK marine infauna)

Nuculana minuta (Muller, 1776)(AK marine infauna)

Pandora Chemnitz, 1795 - Pandoridae clams

Pandora grandis Dall, 1877 (AK marine infauna)

Pandora trilineata Say, 1822 (threeline Pandora/ AK, TX marine infauna)

Panopea Menard, 1807 – Hiatellidae clams

Panopea abrupta (Conrad, 1849) (geoduck/ BC, WA marine infauna)

Paramya Conrad, 1860 – Myidae clam

Paramya subovata (Conrad, 1845) (sobovate softshell clam/ NC, TX marine infauna)

Parastarte Conrad, 1862 Veneridae clams

Parastarte triquetra (Conrad, 1846) (brown gemclam/ wFL Gulf of Mex. marine infauna)

Parvilucina Dall, 1901 – Lucinidae clams

Parvilucina multilineata (Tuomey & Holmes, 1857) – Lucinidae many-lined lucine/ rare Virginian, FL & Gulf of Mex. marine infauna)

Parvilucina tenuisculpta (Carpenter, 1864) (fine-lined lucine/ AK marine infauna)

Periploma Schumacher, 1817 – Periplomatidae clams

Periploma fragile (Totten, 1835) (fragile spoonclam/ Virginian marine infauna)

Periploma margaritaceum (Lamarck, 1801) (unequal spoonclam/ TX marine infauna)

Periploma orbiculare Guppy, 1878(/ TX marine infauna)

Petricola Lamarck, 1801 – Petricolidae clams

Petricola pholadiformis Lamarck, 1818 (Virginian, NC marine infauna)

Pisidium Pfeiffer, 1821 (pill clams) Sphaeriidae clams (also put in Pisidiidae)

Pisidium casertanum (Poli, 1791) (ND,sON to BC/Ac or Tx in sON/ ubiquitous peaclam/ PA spr.)

Pisidium compressum Prime, 1852 rare Virginian marine infauna

Pisidium undet. sp. (CO, seVA hyporheic/ Virginian marine infauna)

Pitar Romer, 1857 – Veneridae clams

Pitar undet. sp. (pitar/ wFL Gulf of Mexico infauna)

Pleuromeris Conrad, 1867 – Carditidae clams

Pleuromeris tridentata (Say, 1826)threetooth carditid/ Carolinian marine infauna)

Polymesoda Rafinesque, 1820 – Corbiculidae clams

Polymesoda caroliniana (wFL marine infauna)

Protothaca Dall, 1902 - Veneridae clams

Protothaca straminea (Conrad, 1837) (East Pacific/ Pacific littleneck/ AK, BC, WA marine infauna)

Protothaca tenerrima (Carpente, 1857) (Thin-shelled or native littleneck; steamer clam/ BC, CA, OR, WA marine infauna)

Psephidia Dall, 1902 – Veneridae clams

Psephidia lordi (Baird, 1863) (lord dwarf-venus/ AK, BC marine infauna)

Rangia Desmoulins, 1832 – Mactridae clams

Rangia cuneata (G.B. Sowerby I., 1831) (Atlantic rangia/ Virginian (rare), MA, NC, TX marine infauna)

Saxidomus Conrad, 1837 – Veneridae clams

Saxidomus giganteus DeShayes, 1839 (butter clam/ AK, OR, BC, CA, WA marine infauna)

Semele Schumacher, 1817 - Semelidae clams

Semele nuculoides (*Semelina n.* Conrad, 1841) (nut semele/ wFL Gulf of Mexico infauna)

Semele bellastrata (*Semelina b.* Conrad, 1837) (cancelate semele/ wFL Gulf of Mexico infauna)

Semele proficua (Pulteney, 1799) (Atlantic semele/ Carolinian infauna)

Semelina Dall, 1900- Semelidae clams

Semelina nuculoides (Conrad, 1841) (*Semele n.*) (nut semele/ wFL Gulf of Mexico infauna)

Serripes Gould, 1841 – Cardiidae cockles

Serripes groenlandicus (Mohr, 1786) (AK marine infauna)

Serripes laperosii (Deshayes, 1839) (AK marine infauna)

Siliqua Megerie von Muhlfeld, 1811 – Pharidae clams

Siliqua patula (Dixon, 1789) (northern or Pacific razor/ AK, BC marine infauna)

Solemya Lamarck, 1818 – Solemyidae clams

Solemya occidentalis Seshayes, 1857 (West Indian awningclam/ wFL Gulf of Mex.marine infauna)

Solemya velum Say, 1822 (Atlantic awningclam/ NC, Virginian marine infauna)

Solen Linnaeus, 1858 – Solenidae clams

Solen sicarius (Gould, 1850) (sickle jackknife clam/ AK marine infauna)

Solen viridis (Say, 1822) (green jackknife; green jackknife clam/ GA, NC, TX marine infauna)

Sphaerium Scopoli, 1777- Sphaeriidae clams (also put in Pisidiidae)

Sphaerium securis = *Musculium s.*,

Sphaerium *simile* (Say, 1817) (epigeal in NA/ grooved fingernailclam/ Ac or Tx in Manitoba,TN)

Sphaerium undet. sp. (OK hyporheic)

Sphaerium undesr. sp.#1 (*cave in Kendall Co., TX). See snail.

Sphaerium undet. sp. (Tx or Ac in MN?; Tx in OH; Tx or Ac in IN; ON hyporheic)

Sphaerium (Musculium) transversum = *Musculium transversum*

Sphenia Turton, 1822 – Myidae clams

Sphenia antillensis Dall & Simpson, 1901 (Antillean sphenia/ wFL Gulf of Mexico, Carolinian infauna)

Spisula Gray, 1837 – Mactridae clams

Spisula polynyma (Stimpson, 1860) (AK marine infauna)

Spisula solidissima Dillwyn (Virginian, NC marine infauna)

Tagelus Gray, 1847 – Psammobiidae clams (also put in Solecurtidae)

Tagelus divisus (Spengler, 1794) (purplish tegelus/ Virginian, TX marine infauna)

Tagelus plebius (Lightfoot, 1786) (stout tegelus / rare Virginian, wFL, TX marine infauna)

Tapes Muhlfeld, 1811 – Veneridae clams

Tapes philippinarum (Adams & Reeve, 1850) (Manila clam; Japanese littleneck/ BC, CA, OR, WA marine infauna)

Tellidora Morch, 1856 – Tellinidae clams

Tellidora tampaensis = *Tellina t.*

Tellina Linnaeus, 1758 – Tellinidae clams

Tellina aequistriata Say, 1824 (striate tellin/ LA marine infauna)

Tellina agilis Stimpson, 1857 (northern dwarf tellin/ MA, NC marine infauna)

Tellina alternata Say, 1822 (alternate tellin/ wFL, LA Gulf of Mex., Carolinian marine infauna)

Tellina carpenteri Dall, 1900 (carpenter tellin/ AK marine infauna)

Tellina iris Say, 1822 (rainbow tellin/ wFL Gulf of Mex., Carolinian marine infauna)

Tellina modesta (Carpenter, 1864) (East Pacific/ plain tellin/ AK marine infauna)

Tellina symbaritica Say, 1881 (sybaritic tellin/ Carolinian marine infauna)

Tellina tampaensis Conrad, 1866 (Tampa tellin/ wFL, TX Gulf of Mex. ,
Carolinian marine infauna)

Tellina tenella A.E. Verrill, 1874 (delicate tellin/ wFL Gulf of Mex. marine
infauna)

Tellina tenera Say, 1822 = *T. agilis*

Tellina texana Dall, 1900 (Texas tellin/ wFL Gulf of Mex. , Carolinian marine
infauna)

Tellina versicolor (man-colored tellin/ FL Gulf of Mex. , Carolinian marine infauna)

Thracia Blainville, 1824 - Thraciidae clams

Thracia trapezoides Conra, 1849 (AK marine infauna)

Thyasira Lamarck, 1818 – Thyasiridae clams

Thyasira flexuosa (Montagu, 1803) (BC marine infauna)

Thyasira gouldi (Philippi, 1845) (AK marine infauna)

Transennella Dall, 1883 - Veneridae clams

Transennella conradina Dall, 1884 (colorful transennella/ LA, wFL Gulf of Mexico infauna)

Tresus Gray, 1853 - Mactridae snails

Tresus nuttallii (Conrad, 1837) (fat gaper/ WA infauna)

Tresus capax (Gould, 1850) (fat gaper; horse or gapper clam/ AK, OR, CA, WA infauna)

Turtonia Alder, 1848 – Turtoniidae clams

Turtonia minuta (Fabricius, 1780) (minute turton/ AK marine infauna)

Unio Conrad, 1853 - Unionidae mussels

Unio carolinianus (Bosc, 1801) (=U. obesus) (Lea, 1831) (fossil in Little Salt Spr., swFL;
Tx? in FL)

Vilasina Bartsch, 1960 – Mytilidae clams

Vilasina vernicosa (Middendorff, 1849) (AK marine infauna)

Villosa Frierson, 1927 - Unionidae mussels

Villosa iris (Lea, 1829) (rainbow or rainbow mussel/ East/ Tx in Lee Co.,VA)

Yoldia Moller, 1842 – Sarpetidae clams (also put in Yoldiidae)

Yoldia amygdalea Valenciennes, 1846

Yoldia beringianus (AK marine infauna)

Yoldia hyperborean (Gould, 1841) (NE Pacific/ northern yoldia/ AK marine infauna)

Yoldia limatula (Say, 1831) (rare Virginian marine infauna)

Yoldia myalis (Couthouy, 1838) (AK marine infauna)

Yoldia thraciaeformis (Storer, 1838) (AK, BC marine infauna)

class - 1. See **protection**. 2. The taxonomic group ranked above family.

claustrophobia - Abnormal fear of being in confined spaces. Likely accentuated by rapid breathing caused by high CO₂ in caves.

climate (see also biogeography, weather) - Durrant 1970; B. Gilbert et al. 1980; Grayson 1977a, 1979; Guilday 1967; Howarth 1980a, 1982; Keith 1984; Peck 1980; Poulson 1992c; Rouse 1996

clinal speciation - **Allopatric speciation** in which geography separates a species already with some variation. The populations continue to diverge but are now isolated one from another.

cline - A geographic gradation in traits.

Clubmosses – These pteridophytes, unlike mosses, are sporophytes. About 400 species.
Incl. **spikemosses**.

Cnidaria

Most ancient phylum of the eumetazoan animals (= Coelenterata) and simplest in body form. Syn: coelenterate. From late Precambrian. Basic body form is a simple sac, a stomach (= coelenteron) with walls 2 cells thick and tentacles around opening that serves as both mouth and anus. See also anemone (8-9,000 species). This mostly marine **animal** phylum incl. hydroid pseudometes, Hydroida, jellyfish, sea anemones, & corals. Rare as bedrock fossils or as live species except in sea caves. Fossil corals on cave walls & live freshwater colonial corals. They and the phylum Ctenophora (comb jellies) are both radially symmetrical and thus are differentiated from the other group of eumetazoans, the bilaterians. See also **anemones & corals**.

Phylum Cnidaria

Class (or Phylum) Anthozoa

Subclass or Class Zoantharia (= Hexacorallia)

Subclass Nynantheae (anemones):

Order Actiniaria (= Thenaria)

Suborder Endomyaria: Actiniidae (*Aulctinia*, *Tealia*)

Subclass Athecatae-Anthomedusae (Gymnoblastera)

(or in Hydroidomedusae):

Order Capitata (= Scleractinia)

Superfamily Tubularioidea

Corymorphidae (*Euphysa*)

Superclass Tesserazoa

Class Hydrozoa

Order Anthoathecata (Gymnoblastera)

Suborder or Order Filifera (see also corals)
Bougainvilliidae (*Garveia*, *Perigonimus*, *Bougainvillia*)

Order Hydroida (hydroids)

Suborder Anthomedusae (Tx? in CO)

Eudendriidae (*Eudendrium*)

Tubulariidae (*Tubularia*)

Pandeidae (*Stomotoca*)

Corynidae (*Coryne*, *Sarsia*)

Clavidae (*Cordylophora*, *Pelmatohydra*) & Eudendriidae (*Eudendrium*)

Corymorphidae (*Corymorpha*, *Thecatae*)

Suborder Hydrida

Hydriidae (*Hydra*)

Protohydriidae (*Protohydra*)

Suborder Leptomedusae

Aglaopheniidae (*Aglaophenia*)

Calycellidae (*Calycella*)

Phialidium) Campanulinidae (*Cladonema*, *Clytia*, *Cuspidella*, *Obelia*, *Orthopyxis*,

Haleciidae (*Halecium*)

Sertularidae

Thularia) (*Abietinaria*, *Diphasia*, *Hydrallmania*, *Selaginopsis*, *Sertularella*,

Lafoeidae (*Lafoea*)

Plumulariidae (*Plumularia*)

Subclass Actinulidae

Order Halammohydrida

Halammohydriidae (*Halammohydra*)

Phylum or Class Myxozoa (once considered protozoans)

Class Myxosporea

Order Myxosporida

Myxidiidae (*Myxidium*)

Order Pelobiontida

Pelomyxidae (*Pelomyxa*)

Abietinaria Kirchenpauer, 1884 – Sertularidae cnidaria

Abietinaria undet. sp. (WA marine infauna)

Aglaophenia Mamouroux, 1812 – Aglaopheniidae hydrozoan

Aglaophenia undet. sp. (WA marine infauna)

Aulactinia Verill, 1864 - Actiniidae anemones

Aulactinia stella (Patella s. F.C. Muewcher, 1987) (silver spotted anemone/ TTp in ME)

Bougainvillia Lesson, 1836 – Bougainvilliidae hydrozoan

Bougainvillia undet. sp. (WA marine infauna)

Calycella Hincks, 1864 - Calyculidae hydrozoans

Calycella syringa (Linnaeus, 1867) (WA marine infauna)

Cladonema Dujardin, 1843 - Campanulinidae hydrozoan

Cladonema undet. sp. (WA marine infauna)

Clytia Lamouroux, 1812 - Campanulinidae hydrozoan

Clytia undet. sp. (WA marine infauna)

Corymorpha Sars, 1835 - Corymorphidae hydrozoan

Corymorpha undet. sp. (sCA marine infauna)

Coryne Gaertner, 1774 – Corynidae hydrozoan

Coryne undet. sp. (WA marine infauna)

Cordylophora Allman, 1844 - Clavidae cnidarians

Cordylophora lacustris Allman, 1844 in Little River Spring, FL/Pp?)

Cuspidella Schornikov & Michailova, 1990 Campanulinidae cnidarians

Cuspidella grandis (Hincks, 1868) (WA marine infauna)

Diphasia Agassiz, 1862 – Sertularidae cnidaria

cf *Diphasia* undet. sp. (WA marine infauna)

Eutonina - Eirenidae hydrozoan

Eutonina undet. sp. (WA marine infauna)

Eudendrium Ehrenberg, 1834 - Eudendriidae cnidarians

Eudendrium cf. *carneum* Clarke, 1882 (red stickhydroid/ Crystal Beach Spr., near Crystal Beach, FL/Tb)

Eudendrium undet. sp. (WA marine infauna)

Euphysa Forbes, 1848 - Corymorphidae Hydrozoan

Euphysa ruthae Norenburg & Morse, 1983 (interstitial marine in San Juan Islands, WA)

Garveia Wright, 1859 – Bougainvilliidae hydrozoan

Garveia franciscana (Torrey, 1902) (in brackish cave, Pinellas Co, FL)

Grammaria Stimpson, 1854 – Lafoeidae hydrozoan

Grammaria undet. sp. (WA marine infauna)

Halammohydra Remane, 1927 - Halammohydridae hydrozoan

Halammohydra schulzei Remane, 1927 (MA marine sublittoral interstitial)

Halecium Oken, 1815 – Haleciidae cnidaria

Halecium undet. sp. (WA marine infauna)

Hydra Kubbaeys, 1758 - Hydridae cnidarians

Hydra undet. sp. (TX hyporheic & TX Tx or Ac; common in submarine caves)

Hydrallmania – Sertularidae cnidaria

Hydrallmania distans Nutting, 1899 (WA marine infauna)

Lafoea Lamouroux, 1821 – Lafoeidae hydrozoan

Lafoea fruticosa (Sars, 1851) (WA marine infauna)

Obelia Peron & Lesueur, 1810 - Campanulinidae hydrozoan

Obelia bidentata Clarke, 1875 (WA marine infauna)

Obelia dichotoma (Linnaeus, 1758) (WA marine infauna/ sea thread hydroid)

Orthopyxis Agassiz, 1862 - Campanulinidae hydrozoan

Orthopyxis undet. sp. (WA marine infauna)

Pelmatohydra Schulze, 1914 - Clavidae cnidarians

Pelmatohydra undet. sp. (MI benthic)

Pelomyxa Greef, 1874 - Pelomyxidae cnidarian or protist

Pelomyxa palustris (Greef, 1870) (MI benthic)

Perigonimus Sars, 1846 – Bougainvilliidae hydrozoan

Perigonimus undet. sp. (WA marine infauna)

Phialidium Leuckart, 1856 - Campanulinidae hydrozoan

Phialidium gregarium (WA marine infauna)

Plumularia Lamarck, 1816 - Plumulariidae hydrozoan

Plumularia undet. sp. (WA marine infauna)

Protohydra Greef - Protohydridae cnidaria

Protohydra leuckarti Greef (East Coast intrstitial marine sands)

Sarsia Lesson, 1843 – Corynidae hydrozoan

Sarsia undet. sp. (WA marine infauna)

Selaginopsis Allman, 1876 – Sertularidae cnidaria

Selaginopsis mirabilis (Verrill, 1872) (WA marine infauna)

Sertularella Gray, 1848 – Sertularidae cnidaria

Sertularella tenella (Adler, 1857) (WA marine infauna)

Stomotoca L. Agassiz, 1862 – Pandeidae hydrozoan

Stomotoca undet. sp. (WA marine infauna)

Tealia Gosse, 1858 (= *Urticina* Marenzeller, 1977) - Actiniidae anemones

Tealia felina (Linnaeus, 1767) (dahlia anemone/ME sea cave)

Thecatae - Corymorphidae hydrozoan

Thecatae undet. sp. (sCA marine infauna)

Tubularia Linnaeus, 1758 – Tubulariidae hydrozoan

Tubularia undet. sp. (WA marine infauna)

coati(mundi) - See **mammal, procyonid**

coccidiomycosis - **Microbe** hazard. See *Coccidioides immunitis* in fungi. Incl. **CA**: Inyokern C.

Bibl.: Lewis 1992; Lacy & Swatek, 1974. See valley fever

Cockroaches & Mantids

Of Insect Order Dictyoptera, (once put in Order Orthoptera (=Blattodea), Superorder (or Division) Neoptera, Subdivision Exopterygota) About 3,500 species, mostly tropical. **Bibl.:** Cornell 1968; Helfer 1963; McKittrick, 1964; Rehn 1950; Roth, 1970; Stone, 1991a.

Suborder Mantodea (mantids) none known from US or Canadian caves
(also put in Order Mantoptera)

Suborder Blattaria (cockroaches)

Undet. genus, species (Tx in OK, WI)

Superfamily Blattoidea

Blattidae (=Blattoptera) (American cockroaches)

Subfamily Blattinae (*Periplaneta*)

Superfamily Blaberoidea

Blattellidae

Subfamily Plectopterinae (*Euthlastoblatta*)

Subfamily Blattellinae (*Parcoblatta*, *Pseudomops*)

Polyhagidae (desert cockroaches) (=Corydiidae)

Subfamily Polyphaginae (*Arenivaga*)

Arenivaga Rehn, 1903 (= *Psammoblatta*, *Heterogamisca* Bey-Bienko, 1950; *Homoeogamia*)
Polyhagidae cockroaches, Subfamily Polyphaginae (7 species in US or Canada)

Arenivaga bolliana (*Homoeogamia b.* Saussure, 1893) (Boll's sand cockroach/ woodrat nests)

Arenivaga erratica (*Homoeogamia e.* Rehn, 1903) (SW, Mex. epigeal/erratic roach/TTx in TX)

Arenivaga tonkawa Hebard, 1920 (TTx in TX)

Arenivaga undet. sp. (TTx in OK, TX; 20,500. 14,500 & 1,200 years old in *Neotoma* woodrat nest, Ajo Mt., Pima Co, AZ)

Euthlastoblatta Hebard, 1917 (= *Aglaopteryx* H., 1917) Blattellidae cockroaches, Subfamily Plectopterinae (2 species in US or Canada)

Euthlastoblatta undet. sp. (Ac or Tx in Bexar Co., TX)

Parcoblatta Hebard, 1917- Blattellidae cockroaches, Subfamily Blattellinae (12 species in US or Canada)

Parcoblatta americana (*Loboptera a.* Scudder, 1900) (in CA non-cave *Neotoma fuscipes* woodrat nest)

Parcoblatta undet. sp. or species (Ac in Kendall, Medina Cos., TX; Ac or Tx in Mammoth C., KY)

Periplaneta Burmeister, 1838 (*Cacerlaca* Saussure, 1864) Blattidae cockroaches, Subfamily Blattinae (4 species in US or Canada)

Periplaneta australasiae (Fabricius, 1775) (NA alien/ Tx in FL (preys on baby bats/ Australian cockroach)

Periplaneta americana (Linnaeus, 1758) (NA/ Tx alien in HI; Tx in FL (preys on baby bats))

Periplaneta undet. sp. (Ac in Robber cave in Bexar Co., TX)

Pseudomops Seville, 1831- Blattellidae cockroaches, Subfamily Blattellinae (1 species in US or Canada)

Pseudomops septentrionalis Hebard, 1917 (Ac in cave in Hays Co., TX)

coendou - see **mammal, rodent**

cohort - 1. A group of individuals of the same age. 2. A group of animal orders.

cohort life table - A life table constructed from a mortality schedule of individuals that started life together.

cold water bacteria - Ones that grow optimally between 0 and 10° C.

colonization - See dispersal

Colorado Tick Fever - Virus caused & transmitted by **ticks**. Symptoms include acute fever with remission. Second bout of fever 2-3 days later. Not known from caves.

Cometabolism - The process by which certain compounds are degraded by microbes but which are not a sole source of energy or carbon.

commensalism (see branchiopod, branchiobdellid, ostracod) - Allen, S. 1933; Hart & Hart 1966; Hart & Hobbs 1961; Hobbs, Jr. 1955, 1975; Hobbs, III 1973c/d, 1975; Sprague & Couch 1971

communication (see senses) - Bechler 1986; Howarth, Hoch & Asche 1990

community structure (see also competition, population structure) - Bechler 1985; Brown, B. 1976; Culver 1968; Gooch & Hetrick 1979; Howarth 1981; Jones, Thomas G., et al. 1995; Keith 1975, 1977; Martin, B. 1980a, 1981; Northup 1988; N. et al. 1988; Pimm 1979; Poulson 1978; P. & Kane 1981; Richards, Paul 1991; Rudolph 1979; Starr 1968

community classification - Culver 1991.

compartiment souterrain superficial - Syn.: superficial underground compartment.

comparisions between troglobites & non-troglobites

behaviour - Banta 1910; Caine 1978

genetic - Bechler, 1977

habitat - Caine 1974, 1974a; Franz, 1978

competition/niche separation - Bechler 1985; Culver 1970, 1970a, 1971, 1973, 1974; 1975, 1976, 1981/a; Culver & Ehlinger 1980; Culver, Fong, & Jernigan 1987; Eberly 1958; 1960; Hairston 1951; Heaton & Grady 1994; Highton 1971; Howarth 1981; Jaeger 1972; Kane & Van Zant 1977; Laing, Carmody & Peck 1976; Lee & Poulson 1989; Levins & Culver 1971; McKinney 1975; Poulson, Griffith & Schmidt 1992; Penn et al. 1973; Rudolph 1979, 1980, 1981. Absence in caves can lead to high population densities if food is not limited.

complexity - Poulson & Helf 1998

commensal - Ecological type where the relationship between two organisms is such that the first benefits from the second & the second is neither benefited nor harmed.

comminution - Breakdown of organisms into smaller particles. Largely done by earthworms and macro-arthropods such as diplopods & isopods.

community - All the plants & animals in a particular habitat & bound together by food chains & other interrelations.

conchology - The study of shells

conservation/ mitigation/ restoration (see also endangered, human impact\&s) - D. Anderson 1977; Anon 1980; Barr 1954; Benedict 1976h; Crawford 1976b; Benedict 1976d; Byers, A 1983; Culver 1986, 1992; Culver & Fong 1991; De Broyer 1994; Edwards & Longley et al 1989; Elliott 1979, 1992a/b, 1993/a; Gehlbach 1971; Grady & McEachern 1977; C. Hall 1997a; Hamilton-Smith 1999; Holsinger 1995; Howarth 1981; Howarth & Stone 1982; Northrup & Wellbourn 1995; Poulson 1976; P.&. Kane 1977; Proudlove 1997; Ko 1987; J. Roth 1993; Sasowsky, Fong & White 1997; Tercaps 1988a; Kay 1991; Nicholas 1955-6.

Areas: **AL:** Hobbs III & Bagley 1991; Van Sweaeringen 1997; **AR:** USFWS 1989; **AZ:** Snow et al. 1996; **CA:** Brode 1978; Elliott 1978-9; ; **Canada:** C.Taylor et al. 1996; **HI:** Howarth 1981b; H. & Stone 1982; Howarth 1991; **IN:** Lewis 1993a; Lewis & Lewis 1995; Pender 1986, 1990; **KY:** R. Wilson 1981b; **MA:** Plante 1983, 1991;; **MO:** Missouri Dept. 1992; Nordstrom et al. 1977; **NA:** Elliott 1995; **NM:** Northup, Beck & Mallory, 1997; **NV:** Howells & Pister 1972; Pister 1972, 1974, 1985, 1991; Poulos 1981; **OZARKS:** Koppleman & Figg 1995; **TX:** Bowles & Arsuffi 1993; Chambers & Jahrsdoerfer 1988; Davis 1971; Elliott 1992a/b, 1993a; Elliott & Reddell 1989; McCann 1988-9; Pease & Grzybowski 1991; **US:** Hall, C. 1997; Powell 1970; C.Taylor et al. 1996; Lenz 1990; **WV:** Bradshaw 1992

cave diving - Bozanic 1992

transplants - Briggs 1975; Elliott 1978a; Rudolph 1979; Hendrickson & Brooks 1991
collecting - See protocols

gating - Powers 1991; Tuttle 1977

conserved name - Name which must be used instead of all earlier synonyms and homonyms.
Abbrev. as nom. cons. (nomina conservanda)

consumer - Any species unable to make food from non-living matter, but depends instead on energy stored in organics. See feeding

convergent evolution - The independent evolution of similar traits in two or more genetically distinct taxa by different genetic & developmental pathways.

Copepods

Crustacean of Subclass or Order Copepoda or class if crustaceans are a subphylum) & Class Maxillopoda, typified by lack of both a carapace & compound eyes. About 5,600 described species. Most marine but some freshwater interstitial or in wet mosses. Head fused with first segment in thorax and sometimes with second one. Filter feeders in plankton. Thorax up to six segments; 5 in abdomen. Telson with two caudal rami. First pair of thorax limbs modified to maxillipeds. Biramous limbs cause jerky movements.

Bibl.: T. Bowman, 1986; Chappuis 1929, 1931, 1932; Rouch 1968; Schminke 1981; Strayer 1988a, 1989a; M. Wilson & Yeatman 1959; Yeatman 1969; Evolution: Huys & Boxshall 1991; **Areas:** CO: Pennak & Ward 1985a; **FL:** Furtos 1936; **IL:** Hoff 1942; **IN:** Kiefer 1929, 1931; M. Wilson & Yeatman 1959; **KY:** Geiling 1962; M. Wilson & Yeatman 1959; **MS:** Harris 1973, 1978; **NC:** Coker 1938; Furtos 1936; **NA:** Chappuis 1933; **NC:** J. Reid 1970; **NY:** Strayer 1989, 1989a; **OH:** Furtos 1933; **ON:** Crocker & Barr 1968; **TN:** Green 1933; **TX:** Kiefer, 1929; **VA:** Palmer 1990, 1990a; **WA:** Dobbin 1941; **WI:** Marsh, 1893; **US:** Chappuis 1929; C. Wilson 1944; **World:** Lescher-Moutoue' 1986; Rouch 1986; **WV:** Starr 1968. Orders incl.

Order **Calanoida** (or Suborder if Copepoda is an order)
(anterior part of body much broader than posterior, first antennae long with 22-5 segments)

Diaptomidae (*Arctodiaptomus*, *Diaptomus*, *Leptodiaptomus*, *Skistodiaptomus*)
Pseudodiaptomidae (*Pseudodiaptomus*)

Suborder Amphascandira
Calanidae (*Eurytemora*) **Bibl.:** Mauchline 1998

Suborder Heterarthrandria
Centropagidae (*Osphranticum*)

Order **Cyclopoida** (or Suborder if Copepoda is an order) ((anterior part of body much broader than posterior, first antennae with no more than 17 segments)

Clausiididae (*Clausidium*, *Hemicyclops*, *Saphirella*)

Cyclopidae
(*Halicyclops*, *Graeteriella*; *Thermocyclops*, undet. copepodite genus in LA brackish beach) **Bibl.:** ; J. Price 1955

Cyclopinidae (undet. family in hyporheic and parafluvial in AZ;
undet genus rarely found in SON hyporheic & groundwater)

Subfamily Cyclopininae (*Cyclopina*, *Metacyclopina*)

Order **Gelyelloida** (order previously only known from Switzerland & France)
undet. genus & family in hyporheic of SC coastal blackwater stream

Order **Harpacticoida** Sars, 1903 (anterior part of body not much wider than posterior part, antennae short) undet genus rarely found in SON hyporheic & groundwater

Ameiridae (*Ameira*, *Nitocra*, *Nitocrella*, *Interleptomesochra*, *Nitocrellopsis*,
Praeleptomesochra, *Protosammotopa*, *Psammotopa*. *Pseudoleptomesochra*,

AZ *Pseudoleptomesochrella*, *Parapseudoleptomesochra*, *Stygonitocrella*; undet. genus in shallow phreatic & parafluvial)

Arenopontiidae (*Arenopontia*)

Canthocamptidae (*Attheyella*, *Bryocamptus*, *Canthocamptus*, *Elaphoidella*, *Epactophanes*, *Maraenobiotus*, *Mesochra*, *Moraria*, *Psammonitocrella*; undet. genus in brackish beach sediment at Lake Pontchartrain, LA & in OK hyporheic)

Canuellidae (*Scottolana*)

Cletodidae

(*Cletocamptus*, *Enhydrosoma*, *Heteropsyllus*, *Huntemannia*, *Nannopus*, *Rhizothrix*, *Tryphoema*, undet. genus in LA brackish beach)

Cylindropsyllidae (*Arenopontia* (now in Arenopontiidae); undet. genus in brackish LA beach)

Subfamily Cylindropsyllinae

Cylindropsyllus, *Evansula*, *Leptastacus*, *Paraleptastacus*, *Stenocaris*

Subfamily Leptopontinae: *Arenopontia*, *Leptopontia*

Darcythompsoniidae (*Goffinella*, *Leptocaris*)

Diosaccidae

(*Amphiascus*, *Pseudostenhelix*, *Robertsonia*, *Schizopera*, *Stenhelix*, *Typhlamphiascus*)

Ectinosomidae

(*Arenosetella*, *Halectinosoma*, *Hastigerella*, *Pseudobrayda*, undet. genus in LA brackish beach)

Harpacticidae (*Harpacticus*, *Zausodes*, *Tigriopus*)

Laophontidae (*Arenolaophonte*, *Asellopsis*, *Heterolaophonte*, *Laophonte*, *Laophontina*, *Normanella*, *Novolaophonte*, *Paralaophonte*, *Onychocamptus*, *Paronychocamptus*, *Stygolaophonte*; undet. genus in LA brackish beach)

Lernaeopodidae (also put in own order) **Bibl.:** C. Wilson 1910 (*Cauloxenus*)

Longipedidae (*Longipedia*)

Paramesochridae

(*Apodopsyllus*, *Diarthrodella*, *Kliopsyllus*, *Paramesochra*, *Remanea*, *Scottopsyllus*)

Parastenocarididae (undet. genus in nonkarst hyporheic in NM; *Parastenocaris*)

Phyllognathopodidae (*Phyllognathopus*).
Tachidiidae (*Microarthridium*, *Thompsonula*)
Tegastidae (*Parategastes*)

Thalestridae (undet. genus in LA brackish beach. *Dactylopodia*, *Diarthrodes*)
Tetratgonicepsidae (*Phyllopodopsyllus*)
Tisbidae (*Tisbe*)

Order Lernaepodoidae **Bibl.:** C. Wilson 1910
Spiophanicolidae (*Spiophanicola*)

Families incl.

Ameiridae Monard, 1927 (*Ameira*, *Nitocra*, *Nitocrella*, *Interleptomesochra*, *Nitocrellopsis*, *Praeleptomesochra*, *Protosammotopa*, *Psammotopa*. *Pseudoleptomesochra*, *Pseudoleptomesochrella*, *Parapseudoleptomesochra*, *Stygonitocrella*; undet. genus in AZ shallow phreatic & parafluvial)

Arenopontiidae (*Arenopontia*)
Calanidae (*Eurytemora*)

Canthocamptidae Sars, Monard, Lang, 1906 (*Attheyella*, *Bryocamptus*, *Canthocamptus*, *Elaphoidella*, *Epactophanes*, *Maraenobiotus*, *Mesochra*, *Moraria*, *Psammonitocrella*; undet. genus in brackish beach sediment at Lake Pontchartrain, LA & in OK hyporheic) (likely Pangean origin; most primitive genera & highest diversity is Holarctic-Laurasian)

Canuellidae (*Scottolana*)
Centropagidae (*Osphranticum*)
Clausidae (*Clausidium*, *Hemicyclops*, *Saphirella*)

Cletodidae - (*Cletocamptus*, *Enhydrosoma*, *Heteropsyllus*, *Huntemannia*, *Nannopus*, *Rhizothrix*, *Tryphoema*, undet. genus in brackish beach sediment at Lake Pontchartrain, LA)

Cyclopidae
(*Halicyclops*, *Graeteriella*, *Thermocyclops*; undet. copepodite genus in brackish LA beach)
Bibl. E. Forbes, 1897; J. Price 1955

Subfamily Cyclopinae
(*Acanthocyclops*, *Cyclops*, *Diacyclops*, *Macrocyclops*, *Megacyclops*, *Mesocyclops*, *Microcyclops*, *Orthocyclops*, *Stolonicyclops*, *Tropocyclops*)

Subfamily Eucyclopinae Kiefer, 1927) (*Eucyclops*, *Paracyclops*)

Cyclopinidae (undet. family in hyporheic and parafluvial in AZ;
undet genus rarely found in SON hyporheic & groundwater)

Subfamily Cyclopininae (*Cyclopina*, *Metacyclopina*)

Cylindropsyllidae (*Arenopontia* (now in Arenopontiidae); undet. genus in brackish beach at Lake Pontchartrain, LA)

Subfamily Cylindropsyllinae
(*Cylindropsyllus*, *Evansula*, *Leptastacus*, *Paraleptastacus*, *Stenocaris*)

Subfamily Leptopontinae (*Arenopontia*, *Leptopontia*)

Darcythompsoniidae (*Goffinella*, *Leptocaris*)

Diaptomidae (*Arctodiaptomus*, *Diaptomus*, *Leptodiaptomus*, *Skistodiaptomus*)

Diosaccidae
(*Amphiascus*, *Pseudostenhelia*, *Robertsonia*, *Schizopera*, *Stenhelia*, *Typhlamphiascus*)

Ectinosomidae
(*Arenosetella*, *Halectinosoma*, *Hastigerella*, *Pseudobrayda*, undet. genus LA brackish beach)

Harpacticidae (*Harpacticus*, *Zausodes*, *Tigriopus*)

Laophontidae (*Arenolaophonte*, *Asellopsis*, *Heterolaophonte*, *Laophonte*, *Laophontina*, *Normanella*, *Novolaophonte*, *Paralaophonte*, *Onychocamptus*, *Paronychocamptus*, *Stygolaophonte*; undet. genus in LA brackish beach)

Lernaeopodidae (*Cauloxenus*)

Longipediidae (*Longipedia*)

Paramesochridae (*Apodopsyllus*, *Diarthrodella*, *Kliopsyllus*, *Paramesochra*, *Remanea*, *Scottopsyllus*)

Parastenocarididae Chappuis, 1933 (undet. genus in nonkarst hyporheic in NM;
(*Parastenocaris*) **Bibl.:** Schminke 1981

Phyllognathopodidae Gurney, 1932 (*Phyllognathopus*). **Bibl.:** Dumont & Maas, 1988.

Pseudodiaptomidae (*Pseudodiaptomus*)

Spiophanicolidae (*Spiophanicola*)

Tachidiidae (*Microarthridium*, *Thompsonula*)

Tegastidae (*Parategastes*)

Tetratgonicepsidae (*Phyllopodopsyllus*)

Thalestridae (undet. genus in LA brackish beach. *Dactylopodia*, *Diarthrodes*)

Tisbidae (*Tisbe*)

COPEPOD species incl.:

Acanthocyclops Kiefer, 1927 - Cyclopidae copepods, Subfamily Cyclopinae

Acanthocyclops brevispinosus (Herrick, 1884) (Tp? in NS; hyporheic in MI, ON) **Bibl.:** Dahms & Fernando 1997

Acanthocyclops exilis (*Cyclops e.* Coker, 1934) (hyporheic in AL, OK, & Mammoth C., KY),

Acanthocyclops capillatus (Sars, 1892) (Pp? in 1 seAK cave)

Acanthocyclops montana Reid & Reid, 1991 (MT/nonkarst stygophile; Pb)

Acanthocyclops parasensitivus J.W. Reid, 1998 (hyporheic in KY)

Acanthocyclops parvulus Strayer, 1988a (hyporheic in NH, NY, OH, PA/ eurytopic),

Acanthocyclops pennaki Reid, 1992 (hyporheic in South Platte River, CO)

Acanthocyclops plattensis Pennak & Ward, 1995 (hyporheic & Pb in South Platte River, CO)

Acanthocyclops robustus (*Cyclops r.* Sars, 1863; *A. vernalis r.*) (East/ Tx or Tp in Harrison & WA Cos., IN & NS; Tp in GA (Bartow Co., assoc. with mammal feces)/ robust copepod)

Acanthocyclops undet. sp. or species (Tx or Ac in Crawford & WA Cos., IN; shallow, deep, & dry channel hyporheic in Sycamore Cr. 32 km ne of Phoenix (Maricopa Co.), AZ))

Acanthocyclops undescr. sp.# (*A.* AC@ hyporheic in VA)

Acanthocyclops sp.#2 (*A.* AD@ hyporheic in TN)

Acanthocyclops sp.#3 (*A.* AF@ hyporheic in TN)

Acanthocyclops sp.#4 (*A.* AE@ hyporheic in AL)

Acanthocyclops sp.#5 or more (OK hyporheic)

Acanthocyclops sp.#6 or more (Vancouver Island, BC/ Tb &/or Pb)

Acanthocyclops venustoides (= *Bryocamptus v.* Coker, 1934) (hyporheic, eurytopic in NY; Tx? in Harrison Co., IN (Harrison Co.) & NS)

Acanthocyclops (*Acanthocyclops*) *vernalis* (*Cyclops v.* Fischer, 1853) (hyporheic in CO, Europe, GA (cf.), KY (Mammoth C.), MT, NY, OK (*vernalis* group), PA, TN, TX, se, ne VA; Tx? in MN; Tp in Culberson & Sutton Cos., TX) **Bibl.:** Chen 1988; Fryer 1985; Aycock 1942

Ameira Boeck 1865 - Ameiridae copepods

Ameira parvuloides Lang, 1965 (SC interstitial salt marsh)

Amphiascus G.O. Sars, 1905 - Diosaccidae copepods

Amphiascus debilis (Giesbrecht, 1881) (PQ Gulf of St. Lawrence sandy marine interstitial)

Apodopsyllus Kunz, 1962 - Paramesochridae copepods

Apodopsyllus unguiformis Coull & Hogue, 1978 (SC marine sublittoral interstitial)

Apodopsyllus vermiculiformis Lang, 1965 (CA, France marine sublittoral interstitial; BC tidal pool interstitial; CA marine beach interstitial)

Arctodiaptomus Kiefer, 1932 – Diaptomidae copepods
Arctodiaptomus floridanus (Marsh, 1926) (seFL stigoxene)

Arenolaophonte Lang, 1965 - Laophontidae copepods
Arenolaophonte arenophila Lang, 1965 (CA marine beach interstitial)

Arenolaophonte Lang, 1965 - Laophontidae copepods
Arenolaophonte stygia Lang, 1965 (CA marine beach interstitial)
Arenopontia Kunz, 1937 - Arenopontiidae copepods (also put in Cylindropsyllidae, Subfamily Leptopontinae)

Arenopontia (*Neoleptostacusa*) *acantha acantha* Chappuis, 1954 (Atlantic & Mediterranean Europe, India, CA, NC marine beach interstitial)

Arenopontia (*Arenopontia*) *arenarida* (Pennak, 1942) (MA, NC sublittoral & marine beach interstitial)

Arenopontia (*Arenopontia*) *dillonbeachia* Lang, 1965 (Japan, CA marine beach interstitial)
Arenopontia (*Arenopontia*) *riedli* Lindgren, 1976 (NC marine beach interstitial)
Arenopontia (*Arenopontia*) *stygia* Noodt, 1965 (Atlantic & Mediterranean Europe, NC sublittoral & marine beach interstitial)

Arenopontia (*Arenopontia*) *subterranea* Kunz, 1937 (Atlantic, Indian, NC brackish, sublittoral & marine beach interstitial)

Arenosetella Wilson, 1932 (= *Ectinosoma*) Ectinosomatidae copepods
Arenosetella fissilis Wilson, 1932 (WA, MA marine beach interstitial)

Arenosetella kaiseri Lang, 1965 (CA marine beach interstitial)
Arenosetella spinicauda Wilson, 1932 (SC, MA, Bermuda marine beach & sublittoral interstitial)

Arenosetella undet. sp. or speciesb (TX estuary benthic; SC marine infauna)

Asellopsis Brady & Robinson, 1873 - Laophontidae copepods
Asellopsis undet. sp. (marine episammonic and endopsammonic)

Attheyella Brady, 1880 - Canthocamptidae copepods
Attheyella *americana* Herrick (VA hyporheic)
Attheyella (*Mrazekiella*) Holarctic & prob. among most primitive in family) **Bibl.:**Chappuis 1932

Attheyella (*Mrazekiella*) *carolinensis* Chappuis, 1932 (NA epigeal/Tp or Tx on WV crayfish)

Prins, 1964

Attheyella *idahoensis* Marsh, 1903 (CO hyporheic)

Attheyella (*Brehmiella*) *illinoisensis* (nec S.A. Forbes, 1882) Chappuis, 1927 (*Canthocamptus* i.) (eUS to GA, MI, MN, DC, NY/ hyporheic,eurytopic, Tx or Tp in GA (WA Co.), IN, VA, WV; hyporheic? & benthic in NC streams; OK hyporheic)

Attheyella *nordenskioldi* (Lilljeborg, 1900) (NY, ON epigean/ hyporheic,eurytopic in NY, OK, VA; ON groundwater interstitial/ Tx or Ac in Crawford & Harrison Cos.,IN; Ac in GA (Dade, Walker Cos.))

Attheyella *northumbricoides* Willey, 1925 (= *A. (Brehmiella) northumbrica americana* (Herrick)) (MN/ MI interstitial groundwater)

Attheyella *obatoagamis* (Willey, 1925) (NY, NC? hyporheic, eurytopic; benthic in NC streams)

Attheyella (*Brehmiella*) *pilosa* Chappuis, 1929 (Mammoth C.,KY (type locality/ GA,IN,KY,TN epigean/ commensal on Tp *Cambarus* crayfish in GA, IN(Crawford, Harrison & WA Cos.) & KY (Mammoth C.; OK hyporheic)

Attheyella undet. sp. (OK hyporheic)

Bryocamptus Chappuis, 1929 (= *Limocamptus*) - Canthocamptidae copepods

Bryocamptus (*Artiocamptus*) *cuspidatus* (B.C. Schmeil, 1893) Chappuis, 1929 (NY hyporheic)

Bryocamptus (*Limocamptus*) *hiemalis* Pearse, 1905 (OK hyporheic)

Bryocamptus (*L.*) *hiemalis brevifurca* (DC epigean; MI lake interstitial)

Bryocamptus (*Limnocalanus*) *morrisoni* m. (*B.m.* Chappuis, 1928; *Echinocalanus* (*Limnocalanus*) m. C., 1929) (type locality cave in Lawrence Co.,IN/ Mammoth C.,KY?/ St/ OK hyporheic/ IN T&E)

Bryocamptus *morrisoni elegans* (*Echinocalanus* (*Limnocalanus*) m. ssp. e. Chappuis, 1929) (*type locality cave in Hart Co.,KY/Tb?/KY State T&E/subsumed under *B.m.m.*?)

Bryocamptus (*Limnocalanus*) *nivalis* Willey, 1925 (Europe, E, NY hyporheic,eurytopic, Tx or Tp in WV; Tx in Harrison Co.,IN)

Bryocamptus (*Bryocamptus*) *pygmaeus* (Sars, 1833) (NC hyporheic? & stream benthic)

Bryocamptus undescr. sp.#1 near *B.morrisoni* (**Tp? in Organ C.(Greenbrier Co.)/Tp),

Bryocamptus undescr. sp. (hyporheic of SC coastal blackwater stream)

Bryocamptus undet. sp. or species (CO, OK hyporheic; Pp? In stream below seAK cave;

interstitial in VA freshwater tidal marsh; MI lake benthic)

Bryocamptus *typhlops* Mrazek, 1893 (hyporheic)

Bryocamptus *vej dovskyi* Mrazek, 1893 (Tx in WV/ MN, NY hyporheic,eurytopic)

Bryocamptus *vej dovskyi* forma *minutiformis* OK hyporheic)

Bryocamptus venustoides = *Acanthocyclops* v.

Bryocamptus (B.) *zschokkei* z. (Schmeil, 1893) (hyporheic in GA, MN, NC, NY, PQ, VA; AB lake benthic)

Bryocamptus (B.) *zschokkei alleghaniensis* Coker (DC epigeal/Tx in WV)

Bryocamptus (B.) *zschokkei frigidus* Will (hyporheic? in Canada)

Canthocamptus Westwood, 1836 (Holarctic & prob. among the most primitive genus in the family) Canthocamptidae copepods

Canthocamptus *assimilis* Kiefer, 1929 (NY/hyporheic,eurytopic),

Canthocamptus *cavernarum* Packard, 1879 (Mammoth C.,KY), (*incertae sedis*, may = *Attheyella pilosa*)

Canthocamptus illinoisensis = *Attheyella* i.

Canthocamptus *staphylinoides* Pearse, 1905 (MI,NY hyporheic,eurytopic; MI lake benthic)

Canthocamptus undet. sp. or species (interstitial in VA freshwater tidal marsh; MI lake benthic)

Canthocamptus *vagus* Coker et Morgan, 1940 (DC,NC,NF epigeal; CO hyporheic)

Cauloxenus Cope,1872 - Lernaeopodidae copepods

Cauloxenus *stygius* (Cope, 1872) (type locality cave in Crawford Co. & caves in Harrison & Orange Cos., IN)/ S1G1/ Tb /commensal on cavefish *Amblyopsis spelaea*)

Clausidium Kossmann, 1875 – Clausidiidae copepods

Clausidium *vancouverense* (*Hersilia* v. Haddon, 1912) (CA marine infauna?)

Cletocamptus Schmankevitch, 1875 (= *Godetella*, *Marshia*) Cletodidae copepods

Cletocamptus *dietersi* (Richard, 1897) (sporadic in top 1 cm of sediment in LA estuarine pond; Salton Sea (CA) benthic; FL freshwater infauna)

Cletocamptus *helobius* J.W.Fleege, 1980 (LA, SC marine infauna)

Cyclopina Claus, 1863 - Cyclopinidae ostracods, Subfamily Cyclopininae

Cyclopina *gracilis* Claus, 1863 (PQ Gulf of St. Lawrence sandy marine interstitial)

Cyclops O.F. Muller, 1785 sensu Kiefer, 1939 - - Cyclopidae copepods, Subfamily Cyclopinae

Cyclops agilis = *Eucyclops* a. (= *C. serrulatus*?),

Cyclops albidus = *Macrocyclops* a.

Cyclops (Diacyclops) bicuspidatus = *D. b.*
Cyclops (Diacyclops) bicuspidatus thomasi = *Diacyclops t.*
Cyclops bicuspidatus nanus = *D. n.*

Cyclops *cavernarum* Ulrich, 1902 - incertae sedis - not currently a recognized sp. (Edwards Aquifer, scTX/ Pb)

Cyclops *chrisae* Reid, 1992 (Wye Isl., MD/well, Pb)
Cyclops crassicaudis brachycercus = *Diacyclops c. b.*
Cyclops (Megacyclops) donaldsoni - See *Megacyclops*

Cyclops edax - see *Mesocyclops*
Cyclops elegans = *Eucyclops e.*
Cyclops exilis = *Acanthocyclops e.*

Cyclops jeanneli putei = *Diacyclops j. p.*
Cyclops learii Ulrich, 1902 - incertae sedis - not recognized sp. TX/Tx or Tp)
Cyclops nearcticus = *Diacyclops n.*

Cyclops *prasinus* S. Fischer, 1860 (= *Eucyclops p.*) (Tx or Ac in KY (Mammoth C.), IN)
Cyclops robustus = *Acanthocyclops robustus*

Cyclops undescr. sp. 1-2 (*Artesian well at San Marcos, TX/Tb/may be = *C. cavernarum* &/or *learii*)

Cyclops *serrulatus* (*Eucyclops s.* S. Fischer, 1851; *C. macruroides* & *varius* Lilljeborg; *C. anophthalmus*) (Tx in Europe, IN, KY (Mammoth C.); MI lake benthic)

Cyclops *varicans* G.O. Sars, 1863
Cyclops *varicans* var. *rubellus* Lilljeborg (Pb/Tp in Edwards Aquifer, scTX)

Cyclops (*Acanthocyclops*) *vernalis* (= *Diacyclops v.* Fischer, 1853) (epigeal in GA, VA; AB lake benthic; Tp in KY (Mammoth C.), NM, TX, Europe) **Bibl.:** Aycock 1942; Dupraw 1958; Rio 1971

Cyclops viridis = *Megacyclops v.*

Cylindropsyllus Brady, 1880 - Cylindropsyllidae copepods, Subfamily Cylindropsyllinae
Cylindropsyllus laevis Brady, 1889 (Atlantic Europe, ME brackish, marine sublittoral & beach interstitial)

Dactylopodia Lang, 1948 - Thalestridae copepods
Dactylopodia paratisboides Lang, 1965 (CA marine benthic)

Diacyclops Kiefer, 1927 (see also *Cyclops*) - Cyclopidae copepods, Subfamily Cyclopinae

Diacyclops *alabamensis* Reid, 1992 (well near Gadsen,AL/Pb?)

Diacyclops *albus* Reid, 1991 (hyporheic in Goose Cr. (TL), Loudon Co., nVA + NY & OH)

Diacyclops *bicuspidatus* (*Cyclops* (D.) b. Claus, 1857 (Tp in IN,KY(Mammoth C.),Europe; MN lake interstitial burrower) **Bibl.:** P. Patrick 1984; Stemberger 1982

Diacyclops clandestinus = *D. yeatmani*

Diacyclops *crassicaudis* (G.O. Sars, 1863) (MT/nonkarst stygophile in MT; Tp? In NS) **Bibl.:** Reid 1992

Diacyclops *crassicaudis brachycercus* (Kiefer, 1927) (hyporheic in eCanada, CO, NY, OK, ON, VA; Tp in TX; Tx in Harrison Co.,IN) Reid, 1992

Diacyclops *dimorphus* Reid & Strayer, 1994 (hyporheic in nFL)

Diacyclops *harryi* Reid, 1992 (hyporheic in DC, MD, NY, NC, PA, VA)

Diacyclops *jeanneli j.* (*Cyclops* (D.) j. Chappuis, 1929) (type locality in Marengo C., Crawford Co., IN/ well,Floyd Co., + one cave each in WA, Harrison & Orange Cos.,IN/ IN T&E; G1S1 Pb)

Diacyclops *jeanneli putei* (*Cyclops j. p.* Yeatman, 1943) (NC,Orange Co./well, Pb in NC; OK hyporheic /NC T&E NC S1?, NC & Federal Species of Concern),

Diacyclops nr. *jeanneli* (hyporheic in AL; seFL stigobiotic; Pb)

Diacyclops *languidoides l.* (Lilljeborg, 1901) (MT/nonkarst stygophile), cf.

Diacyclops *languidus* LeBlanc, Sutherland & Aubin, 1981 (NE to PQ/Tx in NY, hyporheic, eurytopic)

Diacyclops *nanus* (Sars, 1862) (LA/bottom debris/NC well)

Diacyclops *nearcticus* (*Cyclops n.* Kiefer, 1934) (NY streaml/ Pb?/ hyporheic & stygophile in AL, CO, FL, NY, OH, OK, ON, TN, VA/ phreatobia, wells, stygophile)

Diacyclops *sororum* Reid, 1992 (hyporheic in KY, TX, VA/ Pb? in Crawford Co.,IN/S4G4)

Diacyclops undet. sp. (Tp in Crawford Co.,IN; Pp? In 1se AK cave)

Diacyclops undescr. sp. #1 (*D.* AH@ hyporheic in PA)

Diacyclops undescr. sp. #2 (*D.* AG@ hyporheic in AL)

Diacyclops undescr. sp. #3-4 (OK hyporheic)

Diacyclops *thomasi* (S.A. Forbes, 1897) (= *Cyclops bicuspidatus thomasi*) (NA/ Ac, Tx or Tp in IN, KY (Mammoth C.),TX; MI interstitial; CO hyporheic; AB lake benthic; epigean in Manitoba, MI, MN, ON) **Bibl.:** Allison 1995; M. Graham 1997; Leblanc 1992

Diacyclops *yeatmani* (*D. clandestinus* Yeatman, 1964) (type locality cave in Grundy Co.,TN)

+drain tile (Vermillion Co.,IL) & cave in St.Charles Co.,MO; OK hyporheic / Pb)

Diacyclops nr. *yeatmani* (hyporheic in AL, OK)

Diacyclops *virginianus* Reid, 1993 (Goose Cr., Loudon Co., VA/hyporheic)

Diaptomus Westwood in Partington, 1830 - Diaptomidae copepods

Diaptomus (Diaptomus) undet. sp. or species (Mammoth C., KY/MI interstitial; MT nonkarst stygobite; NC hyporheic? & stream benthic)

Diarthrodella Klie, 1949 - Paramesochridae copepods

Diarthrodella *secunda pacifica* Kunz, 1954 (HI marine beach interstitial)

Diarthrodes Thompson, 1883 - Thalestridae copepods

Diarthrodes *dissimilis* (Lang, 1965) (CA marine benthic)

Diarthrodes *aegideus* (Brian, 1927) SC marine infauna

Ectinosoma = *Arenosetella*

Ectocylops - Brady, 1904 - Cyclopidae copepods

Ectocylops *agilis* (Koch, 1838) (NC epigeal; AB lake benthic)

Ectocylops *phaleratus* (Koch, 1838) (NC epigeal; AB lake benthic; FL freshwater infauna)

Echinocamptus (*Limnocamptus*) *morrisoni* = *Bryocamptus* m.

Echinocamptus (L.) *morrisoni* ssp. *elegans* = *Bryocamptus* e.

Elaphoidella Chappuis, 1928 - Canthocamptidae copepods

Elaphoidella *bidens* (C.B. Schmeil, 1894) (global, VA, MN, FL, NC, PA, LA, OH hyporheic; Tx or Tp in cave in Orangeburg Co., SC; Ac, Tx or Tp in GA (WA Co.))

Elaphoidella *bidens* var. *coronata* (Sars) (epigeal in DC; hyporheic, eurytopic in NY)

Elaphoidella *marjoryae* (Bruno & Reide, 2000) (seFL stigmatopoda)

Elaphoidella *shawangunkensis* Strayer, 1988a (hyporheic & eurytopic in NY)

Elaphoidella undet. sp. (OK hyporheic)

Epactophanes Mrazek, 1893 - Canthocamptidae copepods

Epactophanes *richardi* Mrazek, 1893 (VA hyporheic)

Enhydrosoma Boeck, 1873 - Cletodidae copepods

Enhydrosoma *baruchi* Coull, 1975 (burrower? in SC marine muds)

Enhydrosoma *curticauda* Boeck, 1872 (PQ Gulf of St. Lawrence sandy marine interstitial)

Enhydrosoma *propinquum* (Brady & Robertson, 1876) (interstitial? or burrower in LA, SC marine muds)

Enhydrosoma undet. sp. (TX estuary benthic)

Enhydrosoma woodini Thistle, 1980 (in top 1 cm of sediment in LA estuarine pond)

Epactophanes Mrazek, 1893 - Canthocamptidae copepods

Epactophanes richardi M., 1893 (AK,PQ epigeal /hyporheic,eurytopic in MN, NY)

Eucyclops Claus, 1893 - Cyclopidae copepods, Subfamily Eucyclopinae

Eucyclops agilis Koch, 1838 (= *Cyclops a.*) (East/ hyporheic in KY, NH, MI, NY, OH, OK, ON, TN, TX, VA/ AB, MI lake benthic; Tp in NS, SC (Orangeburg Co.) & Europe)

Eucyclops agilis var. or ssp. *montanus* (Brady) (hyporheic in MI, NC, ON/ Tp in NM, KY, IN),

Eucyclops conrowae Reid, 1992 (Tx in Harrison & Orange Cos.,IN; Ac, Tp or Tx in GA (Bartow Co.) /Congrow's copepod/S4G4)

Eucyclops (Eucyclops) elegans (*E. serrulatus* var. *elegans* Herrick, 1884) (Mammoth C.,KY (type locality)/ Tx? in MN; Tx in IN, KY; Tx or Tp in SC (Orangeburg Co.); Tp in GA (Dade Co.)/ hyporheic in MI, VA & OH)

Eucyclops (Tropocyclops) prasinus = *T.p.*

Eucyclops (E.) serrulatus (Fischer, 1851) (Tx? in Mammoth C.(KY) & Europe),

Eucyclops speratus (Lilljeborg, 1901) (= *E. serrulatus* var. *speratus*) (MT nonkarst stygobite; TX hyporheic)

Eucyclops undet. sp. or species (hyporheic in CO, NY; Tx in IN; shallow, deep, & dry channel hyporheic in Sycamore Cr. 32 km ne of Phoenix (Maricopa Co.), AZ)

Eurytemora Giesbrecht, 1881 - Calanidae copepods

Eurytemora affinis (Poppe, 1880) (Europe, cosmopolitan, estuarine /hyporheic in NY) **Bibl.:** R. Davis 1986; C. Lee 1993; Roddie 1988; Tepper 1986

Evansula T. Scott, 1906 - Cylindropsyllidae copepods, Subfamily Cylindropsyllinae

Evansula arenicola Nicholls, 1939 (PQ marine sublittoral interstitial)

Evansula incerta (T. Scott, 1892) (Atlantic Europe, Baltic, NC brackish, beach & marine sublittoral interstitial)

Graeteriella Brehm, 1926 - Cyclopidae copepods (freshwater specis derived from marine ancestors)

Graeteriella undet sp. (freshwater mesopsammon)

Halicyclops Norman, 1903 - Cyclopidae copepods

Halicyclops coulli Herbst (SC salt marsh infauna)

Halicyclops fosteri Wilson, 1958 (most abundant in top 1 cm of sediment in LA estuarine pond)
Halicyclops undet. sp. (TX estuary benthic)

Harpacticus Milne-Edwards, 1838 - Harpacticidae copepods
Harpacticus undet. sp. (TX estuary benthic)

Hastigerella Nicholls, 1935 - Ectinosomatidae copepods
Hastigerella leptoderma (Klie, 1924) (interstitial in SC marine sands)

Halectinosoma Lang, 1965 - Ectinosomatidae copepods
Halectinosoma winonae Coull, 1975 (interstitial in SC marine sands & burrower? in SC marine muds)

Hemicyclops Claus, 1893 – Clausidiidae copepods
Hemicyclops thysanotus Wilson, 1935 (CA marine infauna?)

Heteropsyllus T. Scott, 1894 - Cletodidae copepods
Heteropsyllus nunni Coull, 1975 (interstitial in SC marine sands)

Heterolaophonte Lang, 1948 - Laophontidae copepods
Heterolaophonte capillata (*Lalophonte c.* Wilson, 1932; *H. noncapillata* Lang, 1948) (MA, SC marine interstitial)

Huntemannia Poppe, 1885 - Cletodidae copepods
Huntemannia jadensis Poppe, 1885 (WA marine infauna)

Heterolaophonte stromi (Baird) (SC marine interstitial)

Interleptomesochra Lang, 1965 - Ameiridae copepods
Interleptomesochra reducta Lang, 1965 (CA marine beach interstitial)

Kliopsyllus Kunz, 1962 - Paramesochridae copepods
Kliopsyllus californicus Kunz, 1962 (CA marine beach interstitial)

Kliopsyllus constrictus constrictus Noodt, 1958 (Mediterranean & Atlantic Europe, NC, SC marine beach, sublittoral & brackish estuary interstitial)

Kliopsyllus debilis Kunz, 1981 (HI marine beach interstitial)
Kliopsyllus gracilis (Wilson, 1932) (MA marine beach interstitial)

Kliopsyllus laurenticus (Nicholls, 1939) (PQ, England marine beach & sublittoral interstitial)
Kliopsyllus spiniger ornatus Kunz, 1981 (HI marine beach interstitial)

Laophonte Philippi, 1840 - Laophontidae copepods
Laophonte undet. sp. (TX estuary benthic)

Laophontina Norman & T. Scott, 1905, emended - Laophontidae copepods
Laophontina reducta Coull & Zo, 1980 (GA, SC marine sublittoral interstitial)

Laophontina triarticulata Coull & Zo, 1980 (GA, SC marine sublittoral interstitial)
Laophontina variabilis Coull & Zo, 1980 (GA, SC marine sublittoral interstitial)

Leptastacus T. Scott, 1892 - Cylindropsyllidae copepods, Subfamily Cylindropsyllinae
Leptastacus aberrans Chappuis, 1954 (France, FL?, NC marine sublittoral & beach interstitial)
Leptastacus constrictus Lang, 1965 (WA & CA marine sublittoral & tidal pool interstitial)

Leptastacus incurvatus Lang, 1965 (CA marine sublittoral interstitial)
Leptastacus jenneri Lindgren, 1975 (Panama, NC marine beach interstitial)

Leptastacus laticaudatus laticaudatus Nicholls, 1935 (Atlantic Europe, NC marine sublittoral & beach interstitial)

Leptastacus macronyx (T. Scott, 1892) (Atlantic Europe, Mediterranean, Bermuda, SC, MA, SC brackish, marine sublittoral & beach interstitial)

Leptastacus wieseri Chappuis, 1957 (WA marine beach interstitial)

Leptocaris T. Scott, 1899 - Darcythompsoniidae copepods
Leptocaris doughertyi Lang, 1965 (CA marine beach interstitial)
Leptocaris doughertyi Lang, 1965 (CA marine beach interstitial)

Leptocaris kunzi (Fleeger & Clark, 1980) (LA marine interstitial)
Leptocaris macronyx (Scott) (SC marine interstitial)
Leptocaris pori Lang, 1965 (CA marine beach interstitial)

Leptopontia T. Scott, 1902 - Cylindropsyllidae copepods, Subfamily Leptopontinae
Leptopontia T. Scott, 1902 (Atlantic & Mediterranean Europe, NC brackish, sublittoral & marine beach interstitial)

Leptodiaptomus Light, 1938 - Diaptomidae copepods
Leptodiaptomus sicilis (Forbes) (AB lake benthic)
Limocamptus - see *Bryocamptus*

Longipedia Claus, 1863 - Longipediidae copepods
Longipedia americana Wells, 1980 (TX estuary marine benthic)

Longipedia helgolandica Klie (SC marine infauna)
Longipedia minor (T. Scott & A. Scott, 1893) (CA marine benthic)

Macrocyclus Claus, 1893 - Cyclopidae copepods, Subfamily Cyclopinae

Macrocyclus albidus (Jurine, 1820) (NA epigeal/ hyporheic in AL, CO, KY, NY, OK, TN, TX,

VA / Tp in GA (Bartow Co.), KY (Mammoth C.), NS, TX; AB lake benthic)

Macrocyclus *fuscus* (Jurine, 1820) (Mammoth C., KY (type?) & Harrison Co., IN/S4G4),
Macrocyclus fimbriatus poppei = *Paracyclus poppei*

Macrocyclus undet. sp. (CO hyporheic)

Maraenobiotus Mrazek, 1893 - Canthocamptidae copepods

Maraenobiotus *brucei* (Mosochra b. Richard, 1898) (NY/hyporheic, eurytopic; AB lake benthic)

Maraenobiotus *brucei* b. Borutzky, 1950 (epigeal, Holarctic, Russia, AK, Europe)

Maraenobiotus *insignipes* (Lilljeborg, 1902) (CO, VA hyporheic)

Megacyclus Kiefer, 1927 - Cyclopidae copepods, Subfamily Cyclopinae. Bibl. Reid 1995

Megacyclus *donnaldsoni* d. (*Cyclops* (M.) d. Chappuis, 1929; *C. gigas* Claus, 1857; *C. latipes* Lowndes, 1927; *C. mangnus* Marsh; *C. viridis* Jurine, 1820) **** (type locality cave in Lawrence Co. & one cave in Crawford Co., IN + Mammoth C. (KY) & small cave in McMinn Co., TN? / Tb/IN T&E) Delorme 1969

Megacyclus undescr. sp. (M. AB@/ hyporheic in AL, TN, VA)

Megacyclus *viridis viridis* (*Cyclops viridis* Jurine, 1920; *Acanthocyclus* (*Megacyclus*) *viridis* v.) (hyporheic in NH, OH; Tx in Vancouver Island, BC)

Megacyclus *viridis* var. *americanus* (Marsh, 1910) (= *C. robustus* G.O. Sars; *C.a.* Marsh, 1893; *C.v.* var. *brevispinosa* Herrick; *C.b.*; *C.r. f. setiger* Thallwitz) (Tx in Germany, IN, KY (Mammoth C.); MI interstitial)

Mesochra Boeck, 1865 - Canthocamptidae copepods - Canthocamptidae copepods

Mesochra mexicana Wilson, 1971 (TX marine infauna; SC interstitial salt marsh)

Mesochra pygmaea (Claus, 1863) (SC meiofauna marine infauna)

Mesocyclus G.O. Sars, 1863 - Cyclopidae copepods, Subfamily Cyclopinae

Mesocyclus *edax* (S.A. Forbes, 1891) (*Cyclops e.*; *M.* (M.) *leuckarti* ssp. *edax*) Coker, 1943 (hyporheic in eUS from NH, KY, OH to VA, FL/ epigeal in hyporheic/Tx in IN (Crawford Co.), KY (Mammoth C.); MN lake interstitial burrower), /S4?/G4) **Bibl.:** Wyngaard 1981; C. Williamson 1981

Mesocyclus (M.) *leuckarti* (Claus, 1859) (Tx or Tp in Mammoth C., KY),

Mesocyclus (M.) *leuckarti* ssp. *edax* = *M. e.*

Mesocyclus *longisetus* (Thie'baud, 1915) (Tp in Sutton Co, TX)

Mesocyclus undet. sp. (shallow, deep, & dry channel hyporheic in Sycamore Cr. 32 km ne of

Phoenix (Maricopa Co.), AZ)

Metacyclops Lindberg, 1953 - Cyclopidae ostracods, Subfamily Cyclopinae

Metacyclops improvisa Herbst & Zo, 1981 (SC, GA marine sublittoral interstitial)

Microarthridion Lang, 1948 - Tachidiidae copepods

Microarthridion littorale (*Tachidus l.* Poppe, 1881) (interstitial? in SC marine & salt marsh muds; most abundant in tp 1 cm of sediment in LA estuarine pond)

Microarthridion undet. sp. or species (hyporheic? in stream near seAK cave; TX estuary benthic)

Microcyclops Claus, 1893 - Cyclopidae copepods, Subfamily Cyclopinae

Microcyclops pumilis Pennak & Ward, 1995 (hyporheic & Pb in South Platte River, CO)

Microcyclops rubellus (Lilljeborg, 1900) (*M. varicans r.*) (East/hyporheic in AL, KY, PA, TN, VA/ Tp in Ezell's Cave, Hays Co., TX; Pb in Crawford Co., IN; FL freshwater infauna /S4G4)

Microcyclops undescr. sp.#1 or more (OK hyporheic)

Microcyclops varicans (Sars, 1863) (weedy ponds, hypogean; FL freshwater infauna)

Microcyclops varicans rubellus = *M.r.*

Microcyclops undet. sp. or species (hyporheic in CO, OK; Tx in Harrison Co., IN)

Moraria T. & A. Scott, 1893 (Holarctic) - Canthocamptidae copepods

Moraria affinis Chappuis, 1927 (AK meltwater?/hyporheic & eurytopic in NY)

Moraria (*Moraria*) *cristata* Chappuis, 1931 (type locality cave in Lawrence Co., IN/ OK hyporheic/ Pp? in Yucatan/ DC, OH, ON epigean)

Moraria laurentica Willey, 1927 (hyporheic in NY; DC, GA epigean; NY, NC? hyporheic; benthic & meiofauna in NC streams)

Moraria mrazeki (Scott, 1903) (Europe, MN stream hyporheic)

Moraria undet. sp. or species (Tx in WV; OK hyporheic)

Nitocra Boeck, 1865 - Ameriridae copepods

Nitocra lacustris (*Transfuga lacustris* Schmankevitch, 1875) (LA, SC marine infauna; OK hyporheic (rare))

Nitocra typica (Boeck, 1865) (SC marine infauna)

Nitocrella Chappuis, 1924 - Ameriridae copepods

Nitocrella aestuarina Coull & Bell, 1979 (SC interstitial salt marsh)

Nitocrella incerta (Chappuis, 1933) (CO hyporheic)

Nitocrellopsis Petkovski, 1976 - Ameriridae copepods

Nitocrellopsis texana Fiers & Iliffe, 2000 (*type locality cave in inComal Co.,TX/ Pb)

Nannopus Brady, 1880 - Cletodidae copepods

Nannopus palustris Brady, 1880 (LA, SC marine mud interstitial?)

Normanella Brady, 1880- Laophontidae copepods

Normanella bolini (Lang, 1965) (CA marine benthic)

Normanella undet. sp. (SC marine interstitial? infauna)

Novolaophonte V. Cottarelli, P.E. Saporito & A.C. Puccetti, 1983 - Laophontidae copepods

Novolaophonte viatorum V. Cottarelli, P.E. Saporito & A.C. Puccetti, 1983 (MA marine beach interstitial)

Onychocamptus Daday, 1903 - Laophontidae copepods

Onychocamptus *mohammed* (*Laophonte m.* Blanchard & Richard, 1891) (LA marine infauna)

Osphranticum S.A. Forbes, 1883? - Centropagidae copepods

Osphranticum *labronectum* S.A. Forbes, 1882 (epigean in AL swamp/ CO hyporheic; seFL stigoxene; AR crayfish burrows) D. Anderson 1995

Orthocyclops Forbes, 1893 - Cyclopidae copepods, Subfamily Cyclopinae

Orthocyclops *modestus* (Herrick, 1883) (epigean in DC/ Pb? in Crawford Co.,IN/S4/G4)

Paracyclops Claus, 1893 - Cyclopidae copepods, Subfamily Eucyclopinae

Paracyclops *canadensis* (Willey) (Tx in Crawford Co.,IN/S4/G4)

Paracyclops *chiltoni* (*P. fimbriatus c.* Thomson, 1882) (Europe,NA/ Tx in Harrison & WA Cos.,IN/ hyporheic in OH, PA, KY,TN; FL freshwater infauna / S4/G4)

Paracyclops *fimbriatus* (S. Fischer, 1853) (NA,Europe/hyporheic in CO, NY, ON; MI lake benthic; Tp? in ON; Tp in KY (Mammoth C.), TX)

Paracyclops *fimbriatus poppei* (*P.f.* Rehberg, 1880) (eurytopic/NY hyporheic; Tp in KY, TX; Ac or Tx in NS)

Paracyclops *fimbriatus finitimus* Kiefer, 1929 (*P. finitimus*) (Tx or Tp in Europe, Mammoth C.(KY)

Paracyclops finitimus = *P. fimbriatus finitimus*

Paracyclops poppei = *P. fimbriatus poppei*

Paracyclops *smileyi* Strayer, 1988a (NY/hyporheic,eurytopic)

Paracyclops undescr. sp. (*P.* AA@ hyporheic in nFL)

Paracyclops undescr. sp.#2 or more (OK hyporheic)

Paralaophonte Lang, 1944 - Laophontidae copepods
Paralaophonte pacifica Lang, 1965 (CA marine benthic)
Paralaophonte undet. sp. (SC marine interstitial? infauna)

Paraleptastacus Wilson, 1932 - Cylindropsyllidae copepods, Subfamily Cylindropsyllinae
Paraleptastacus brevicaudatus Wilson, 1932 (MA marine beach interstitial)
Paraleptastacus katamensis Wilson, 1932 (MA marine beach interstitial)

Paraleptastacus laurenticus Nicholls, 1939 (PQ marine beach interstitial)
Paraleptastacus longicaudatus Nicholls, 1939 (PQ marine beach interstitial)

Paraleptastacus spinicauda spinicauda (T. & A. Scott, 1895) (Atlantic & Mediterranean Europe, SC brackish, marine beach & sublittoral interstitial)

Paramesochra T. Scott, 1892 - Paramesochridae copepods
Paramesochra acutata hawaiiensis Kunz, 1981 (HI marine beach interstitial)

Parastenocaris Kessler, 1913 - Parastenocarididae copepods (freshwater species derived from saltwater ancestors)

Parastenocaris *brevipes* Kessler, 1913 (nVA hyporheic)

Parastenocaris *delamarei* Chappuis, 1957 (lakeshore interstitial groundwater)
Parastenocaris *palmerae* Reid, 1991 (Goose Cr., Loudon Co., nVA/nonkarst meiofauna)

Parastenocaris undet. sp. or species (nonkarst stygobite/ hyporheic in AZ (also parafluvial & phreatic), CO (uncommon), MT, NY, SC (coastal blackwater); TX; hyporheic? & benthic in NC streams)

Parastenocaris undet. sp. or species (AZ, OK hyporheic)
Parastenocaris *starretti* Pennak, 1939 (groundwater interstitial in WI sandy WI beach; PQ hyporheic)

Parastenocaris *texana* Whitman, 1984 (interstitial sandy hyporheic in TX stream)
Parastenocaris *wilsoni* Borutzky, 1952 (MA lakeshore & brackish groundwater interstitial)

Parategastes Sars, 1904 - Tegastidae copepods
Parategastes undet. sp. (SC marine interstitial? infauna)

Paronychocamptus Lang, 1948 - Laophontidae copepods
Paronychocamptus *huntsmani* (Willey) (most abundant in top 1 cm of LA estuarine pond)
Paronychocamptus *wilsoni* Coull, 1976 (interstitial? or burrower in SC marine muds)

Phyllognathopus Mrazek, 1893 - Phyllognathopodidae copepods
Phyllognathopus undet. sp. (NY hyporheic)

Phyllognathopus *viguieri* (Maupas, 1892) (common CO hyporheic; Tx? in MN; seFL stigoxene or stygophile)

Phyllognathopus *viguieri coelomomyciasis*. (Pb, groundwater in WA) **Bibl.:** G. Mueller 1990

Phyllopodopsyllus T. Scott, 1906 - Tetratgonicepsidae copepods

Phyllopodopsyllus undet sp.(interstitial in marine shell gravels)

Praeleptomesochra Lang, 1965 - Ameiridae copepods

Praeleptomesochra similis Lang, 1965 (interstitial in CA tidal pools)

Protosammotopa Geddes, 1968 - Ameiridae copepods

Protosammotopa wilsoni Wells, 1977 (MA, NC, England, Israel marine beach interstitial; SC marine interstitial)

Psammotopa Pennak, 1942 - Ameiridae copepods

Psammotopa Pennak, 1942 *vulgaris* (MA, NC, England, Israel marine beach interstitial)

Psammonitocrella Rouch, 1992 - Canthocamptidae copepods

Psammonitocrella *boultoni* Rouch, 1992 (* Sycamore Cr. 32 km ne of Phoenix (Maricopa Co.), AZ/ hyporheic)

Pseudobrayda Sars, 1904 - Ectinosomatidae copepods

Pseudobrayda pulchella Sars, 1920 (interstitial in SC marine sands)

Pseudodiaptomus Herrick, 1884 - Pseudodiaptomidae copepods

Pseudodiaptomus undet. sp. (TX estuary benthic)

Pseudoleptomesochra Lang, 1965 - Ameiridae copepods

Pseudoleptomesochra typica Lang, 1965 (CA marine beach interstitial)

Pseudoleptomesochrella Lang, 1965 - Ameiridae copepods

Pseudoleptomesochrella bisetosa Lindgren, 1975 (NC marine beach interstitial)

Pseudostenhelis Wells, 1967 - Diosaccidae copepods

Pseudostenhelis wellsi Coull & Fleeger (most abundant in top 1 cm of sediment in LA estuarine pond)

Remanea Klie, 1929 - Paramesochridae copepods

Remanea plumosa Pennak, 1942 (MA marine beach interstitial)

Rheocyclops Reid & Strayer, 1999 - Cyclopidae copepods, Subfamily Cyclopinae.

Rheocyclops *carolinianus* Reid 1999 (hyporheic in AL)

Rheocyclops *hatchiensis* Reid & Strayer 1999 (hyporheic in AL)

Rheocyclops *indiana* Reid, 1999 (Ladder C., WA Co., IN & epigeal? In Great Smoky

Mountains Natl.Park, TN /Pb, S1G1)

Rheocyclops *hatchiensis* Reid & Strayer 1999 (hyporheic in Blount Co., AL)

Rheocyclops *talladega* Reid & Strayer 1999 (hyporheic in Cleburne Co.,AL)

Rhizothrix Brady & Robertson, 1865 - Cletodidae copepods

Rhizothrix curvata Brady & Robertson, 1880 (Atlantic & Mediterranean Europe, WA marine beach & sublittoral interstitial)

Rhizothrix gracilis (T. Scott, 1903) (Atlantic Europe, NC brackish, marine beach & sublittoral interstitial)

Rhizothrix minuta (T. Scott, 1903) (Atlantic Europe, ME, PQ brackish, marine beach & sublittoral interstitial)

Rhizothrix scotti (T. Scott, 1903) (NC marine sublittoral interstitial)

Rhizothrix spinosa Coull, 1971 (NC marine sublittoral interstitial)

Rhizothrix tenella (Wilson, 1932) (MA, SC marine beach interstitial)

Robertsonia Brady, 1880 Diosaccidae copepods

Robertsonia glomerata Fliers, 1996 (NC estuary interstitial?)

Robertsonia propinqua (T. Scott, 1894) (LA, SC marine infauna)

Saphirella T. Scott, 1894 - Clausiidae copepods

Saphirella undet. sp. (TX estuary benthic)

Schizopera (G.O. Sars, 1805) Diosaccidae copepods

Schizopera knabeni Lang, 1965 (mesopsammon in SC salt marsh; LA marine infauna)

Scottolana Por, 1967 - Canuellidae copepods

Scottolana canadensis (*Canuella c.* Willey, 1923; *C. elongata*) (most abundant in top 1 cm of sediment in LA estuarine pond; TX estuary benthic; SC meiofauna infauna)

Scottopsyllus Kunz, 1962 - Paramesochridae copepods

Scottopsyllus minor (T. & A. Scott, 1895) (PQ, NC, Atlantic & Mediterranean Europe marine beach & sublittoral interstitial & brackish (Baltic) interstitial)

Scottopsyllus pararobertsoni Lang, 1965 (CA, Bermudae marine ublittoral interstitial)

Scottopsyllus robertsoni (T. & A. Scott, 1895) (SC, Atlantic & Mediterranean Europe marine beach & sublittoral interstitial)

Skistodiaptomus Light, 1939 - Diaptomidae copepods

Skistodiaptomus (*Diaptomus*) *pallidus* (Herrick, 1879) (Europe, E,BC/Tx in two caves in Harrison Co.,IN/pallid copepod/S4/G4)

Spiophanicola Ho, 1984 – Spiophanicolidae copepods

Spiophanicola spinulosus Ho, 194 (CA marine infauna?)

Stenhelia Boeck, 1864 - Diosaccidae copepods

Stenhelia (*Delavelia*) *bifida* Coull, 1976 (SC salt marsh benthic & LA, SC marine infauna)

Stenhelia (*Delavelia*) *longipilosa* (Lang, 1965) (CA marine benthic)

Stenhelia (*Stenhelia*) *proxima* (G.O. Sars, 1907) (CA marine benthic)

Stenhelia undet. sp. (TX estuary benthic)

Stenocaris Sars, 1909 - Cylindropsyllidae copepods, Subfamily Cylindropsyllinae

Stenocaris arenicola Wilson, 1932 (MA marine sublittoral interstitial)

Stenocaris kliei Kunz, 1936 (Great Britain, NC marine sublittoral interstitial)

Stenocaris minor (T. Scott, 1892) (Atlantic ocean & NC marine sublittoral & beach interstitial)

Stolonicyclops Reid & Spooner, 1998 - Cyclopidae copepods, Subfamily Cycloppinae

Stolonicyclops *heggiensis* Reid & Spooner, 1998 (Pb & interstitial in GA, TN)

Stygonitocrella Petkovski, 1976 - Ameriridae copepods

Stygonitocrella undescr. sp. or species (Pb in WA; hyporheic in OK)

Thermocyclops Kiefer, 1927 – Cyclopidae copepods

Thermocyclops parvus (Reid, 1989) (seFL stigophile)

Thompsonula T.Scott, 1905 - Tachidiidae copepods

Thompsonula hyaenae (J.C. Thompson, 1889) (interstitial? or burrower in SC marine muds)

Tigriopus Norman, 1868 - Harpacticidae copepods

Tigriopus brevicornis (O.F. Muller, 1776) (PQ Gulf of St. Lawrence sandy marine interstitial)

Tisbe Lilljeborg, 1853 - Tisbidae copepods

Tisbe holothuriae Humes, 1957 (SC marine infauna)

Tropocyclops Kiefer, 1927 (also = subgenus of *Eucyclops*) Cyclopidae copepods, Subfamily Cycloppinae

Tropocyclops *extensus* Kiefer, 1929 t (Tx in Harrison Co., IN/S4/G4)

Tropocyclops *prasinus* (Fischer, 1860; *Eucyclops* (*T.*) *p.*) (Europe, East US/Tx in KY (Mammoth C.)/ hyporheic in NH, Europe)

Tropocyclops *prasinus mexicanus* (Kiefer, 1931) (East/ Tp in cave in Hays Co., TX; Tx in WA Co., IN; nVA hyporheic)

Tropocyclops undet. sp. (OK hyporheic)

Tryphoema Monard, 1926 - Cletodidae copepods

Tryphoema ramabula (Pennak, 1942) (MA marine beach interstitial)

Tryphoema riedli Coull, 1971 (NC marine sublittoral interstitial)

Typhlamphiascus Lang, 1965 - Diosaccidae copepods

Typhlamphiascus undet sp. (CA marine benthic)

Zausodes Wilson, 1932 - Harpacticidae copepods

Zausodes arenicolus Wilson, 1931 (TX estuary benthic; SC marine infauna)

Zausodes sextus (Lang, 1965) (CA marine benthic)

coprocenosis - Bone assemblage from feces or pellets.

coprolite - **Organic trace**, Fossil dung of ground sloths (Guadalupe Mts Natl. Park (wTX), Carlsbad C.(NM) & Gypsum C. (NV: Hofreiter et al. 2000)), humans (Big Bone C. (TN)), pronghorns, raccoon (Mammoth C.), & woodrats. Human dung in TX smells foul compared to other dung of similar age. Mammoth C. ones indicate cultivation of chenopodium, knotweed, sunflowers, & possibly may grass & sumpweed. **Human** - Blair 1991; Faulkner 1989, 1991; Fry, 1985; Heizer & Knapton 1969; Holloway 1983; Murry 1980; Poovalah et al. 1977; Sobolik 1988, 1991; Sobolik & Gerick 1992. See trace fossil

coprophage - Detritivore feeding on animal feces. Incl. guanobia. Cf. cecotrophy.

Corals and Sea Pens

Phylum or Class Anthozoa (sea anemones, true corals, black corals, tube anemones).

Some members in both groups produce external skeletons of CaCO_3 . See also **Cnidaria** and **anemone**.

Subclass Alcyonaria (= Octocorallia) (sea fans, sea whips, sea pens, sea pansies)

Order Pennatulacea (sea pens & pansies)

Suborder Sessiliflorae

Renillidae (*Renilla*)

Suborder Subselliflorae

Pennatulidae (*Pennatulacea*, *Ptilosarcus*)

Virgulariidae (*Acanthoptilum*, *Stylatula*, *Virgularia*)

Subclass Ceriantipatharia (sister to all other hexacorallians)

Order Ceriantharia (also put in Subclass Zoantharia)

Cerianthidae (*Ceriantharia*, *Pachycerianthus*)

Subclass Hexacorallia (=Zoantharia) (sea anemones, true corals, black coarls, tube anemones)

Order Actiniaria ('true' sea **anemones**)

Suborder Athenaria

Edwardsiidae (*Edwardsia*)

Halcampidae (also put in Suborder Nynantheae)

(*Athenaria*, *Halcampa*, *Halcampoides*)

Suborder Thenaria

Actiniidae (=Cribrinidae) (*Actiniaria*, *Urticina*)

Diadumenidae (*Diadumene*)

Metridiidae (*Metridium*)

Order Rugosa

Lithostrotionidae (*Lithostrotion*)

Streptelasmataceae (*Streptelasma*)

Order Zoanthidea (zoanthids) or Scleractinia ('true' or stony corals)

Suborder Filifera

Superfamily Hydractinioidea

Hydractiniidae (*Stylactis*, *Hydractinia*)

Suborder Dendrophylliina

Dendrophyllidae (*Balanophyllia*)

Acanthoptilum Kolliker, 1870 - Virgulariidae sea pen

Acanthoptilum undet. sp. (CA marine infauna/ trailtip sea pen)

Athenaria Carlgren, 1899 – Halcampidae corals

Athenaria undet. sp. (WA marine infauna)

Balanophyllia Wood, 1844 - Dendrophyllidae corals

Balanophyllia undet. sp. (solitary cup coral/CA marine)

Campophyllum *gasperence* (Mississippian wallrock fossil perhaps in Russel C., AL)

Ceriantharia Perrier, 1893 – Cerianthidae corals

Ceriantharia undet. sp. (WA marine infauna)

Diadumene Stephenson, 1920 - Diadumenidae corals

Diadumene undet. sp. (WA marine infauna)

Diadumene leucolena (Verrill, 1866) (rare Virginian marine infauna)

Edwardsia de Quatrefages, 1841 – Edwardsiidae corals

Edwardsia californica (McMurrich, 1913) (WA marine infauna)

Edwardsia elegans (Verrill, 1869) (rare Virginian marine infauna)
Edwardsia sipunculoides (Stimpson, 1853) (AK, WA marine infauna)

Glyptophora punctipora (Mississippian wallrock fossil in Russel C., AL)

Halcampa – Halcampidae corals
Halcampa decemtentaculata Hand, 1954 (WA marine infauna)

Hydractinia van Beneden, 1844 – Hydractiniidae corals
Hydractinia undet. sp. or species (wFL, WA marine infauna)

Halcampoides Danielssen, 1890 – Halcampidae corals
Halcampoides purpurea (Studer, 1878) (WA marine infauna)

Lithostrotion Fleming, 1828 - Lithostrotionidae cerioid corallum, Order Rugosa
Lithostrotion prolifera? (Carboniferous AL fossil in Madison Co. caves)

Metridium Oken, 1815 – Metridiidae corals
Metridium senile (Linnaeus, 1767) (WA marine infauna)

Pachyercianthus – Cerianthidae corals
Pachyercianthus fimbriatus McMurrich, 1910 (WA marine infauna)

Renilla Lamarck, 1816 Renillidae corals
Renilla reniformis (Pallas, 1766) (Carolinian marine infauna)

Streptelasma Hall, 1847 - Streptelasmataceae rugose or horn coral
Streptelasma strictum (Devonian fossil in Porter C., VA)

Stylatula - Virgulariidae sea pen
Stylatula elongata Verrill, 1864 (WA marine infauna)

Stylactis Allman, 1871 – Hydractiniidae hydrozoan
Stylactis undet. sp. (WA marine infauna)

Urticina Ehrenberg, 1834 – Actiniidae corals
Urticina coriacea (WA marine infauna)

Virgularia Lamarck, 1816 - Virgulariidae sea pen
Virgularia bromleyi (WA marine infauna)

coyote - See **mammal, carnivore.**

CPOM –Abbrev. For coars particulate organic matter such as twigs and large pieces of leaves.
Cf. FPOM.

Crabs

Kingdom Animalia

Phylum Arthropoda

Subphylum Crustacea

Class Malacostraca

Superorder Eucarida

Order Decapoda

Suborder Pleocyemata (=Natantia)

Infraorder Brachyura (true crabs)

Superfamily Majoidea

Majidae (*Libinia*, *Pelia*, *Pitho*)

Superfamily Ocypodoidea

Ocypodidae (*Uca*)

Superfamily Portunoidea

Portunidae (*Callinectes*, *Ovalipes*, *Portunus*)

Superfamily Raninoidea

Leucosiidae (*Persephona*)

Superfamily Xanthoidea

Xanthidae (mud crabs)

(*Dyspanopeus*, *Eurypanopeus*, *Hexapanopeus*,

Lophopanopeus,

Neopanope, *Panopeus*, *Rhithropanopeus*)

Section Cancridea

Superfamily Crancroidea

Cancridae (*Cancer*)

Section Brachyrhynca

Superfamily Grapsidoidea

Family Grapsidae (shore, marsh & talon crabs)

(*Hemigrapsus*, *Geograpsus*)

Family Parthenopidae (*Heterocrypta*)

Superfamily Pinnotheroidea

Family Pinnotheridae (*Dissodactylus*, *Pinnixa*, *Pinnotheres*,

Scleroplax)

Infraorder Anomura (also put in Suborder Reptantia)
(hermit, porcelain, mole & sand crabs; crab-like decapods)

Superfamily Galatheoidea
Family Galatheidae (squat lobsters) (*Pleuroncodes*)
Family Porcellanidae (*Euceramus*, *Petrolisthes*,

Polyonyx)

Superfamily Paguroidea
Diogenidae (*Paguristes*)
Family Paguridae (*Pagurus*)

Superfamily Thalassinidea
Upogebiidae (*Upogebia*)

Callinectes Stimpson, 1960 – Portunidae crabs

Callinectes sapidus Rathbun, 1896 (blue crab/ Virginian, MA marine infauna)

Cancer Linnaeus, 1758 – Cancridae crabs

Cancer gracilis Dana, 1852 (AK, CA marine infauna)

Dispanopeus

Dispanopeus texanus (Texas mud crab/ LA, TX marine infauna)

Dissodactylus Smith, 1870 - Pinnotheridae crabs

Dissodactylus mellitae (Rathbun, 1900) (sand-dollar pea crab/ FL Gulf of Mex. marine infauna)

Dyspanopeus J.W. Martin & L.G. Abele, 1986 – Xanthidae crabs

Dyspanopeus sayi (Smith, 1869) (Virginian marine infauna)

Dyspanopeus texanus (Stimpson, 1859) (rare Virginian, FL & Gulf of Mex. marine infauna)

Euceramus Stimpson, 1860 – Porcellanidae crabs

Euceramus praelongus Stimpson, 1860 (rare Virginian, FL & Gulf of Mex. marine infauna)

Eurypanopeus Milne-Edwards, 1880 – Xanthidae crabs

Eurypanopeus depressus (Smith, 1869) (Flatback mud crab/ wFL, Virginian marine infauna)

Geograpsus Stimpson, 1858 - Grapsidae crabs

Geograpsus undet. sp. (exoskeletons in HI cave)

Hemigrapsus Dana, 1851 - Grapsidae crabs

Hemigrapsus estellinensis Creel, 1964 (TX/extinct?/* type locality gypsum cave & spr. in Hall Co.,TX/G1G2). **Bibl.:** Reddell, 1988; W. Russell & Elliott, 1994

Heterocrypta Stimpson, 1871 - Parthenopidae crabs

Heterocrypta granulata (Gibbes, 1850) (smooth elbow crab/ wFL Gulf of Mexico infauna)

Hexapanopeus Rathbun, 1898 – Xanthidae crabs

Hexapanopeus angustifrons (Benedict & Rathbun, 1891) smooth mud crab/ wFL Gulf of Mexico infauna)

Libinia Leach, 1815 – Majidae crabs

Libinia dubia H. Milne-Edwards, 1834/ Virginian marine infauna)

Lophopanopeus Rathbun, 1898 – Xanthidae crabs

Lophopanopeus undet. sp. (AK marine infauna)

Neopanope Milne-Edwards, 1880 – Xanthidae crabs

Neopanope sayi (Smith, 1869) Virginian marine infauna)

Ovalipes – Rathbun, 1898 – Portunidae crabs

Ovalipes ocellatus/ Virginian marine infauna)

Paguristes Dana, 1851 – Diogenidae crabs

Paguristes hummi Wass, 1955 wFL Gulf of Mexico infauna)

Pagurus Fabricius, 1775 – Paguridae crabs

Pagurus aleuticus (Benedict, 1892) (WA marine infauna)

Pagurus armatus (Dana, 1851) (WA marine infauna)

Pagurus beringanus (Benedict, 1892) (WA marine infauna)

Pagurus capillatus (Benedict, 1892) (WA marine infauna)

Pagurus caurinus Hart, 1971 (WA marine infauna)

Pagurus dalli (Benedict, 1892) (WA marine infauna)

Pagurus gymnodactylus Lemaitre R., 1982 (wFL Gulf of Mex. marine infauna)

Pagurus longicarpus Say, 1817 (NC, rare Virginian marine infauna)

Pagurus macLaughlinae Garcia-Gomez, 1982 (wFL Gulf of Mex. marine infauna)

Pagurus ochotensis (Brandt, 1851) (New England marine benthic)

Pagurus pollicaris Say, 1817 (New England, Virginian (rare) marine infauna)

Pagurus setosus (Benedict, 1892) (WA marine infauna)

Pagurus stevensae Hart, 1971 (WA marine infauna)

Panopeus Milne-Edwards, 1834 - Xanthidae crabs

Panopeus bermudensis Benedict & Rathbun, 1891 (strongtooth mud crab/ wFL Gulf of Mex. marine infauna)

Panopeus herbstii Milne-Edwards, 1834 (Virginian marine infauna)

Pelia Bell, 1836 – Majidae crabs

Pelia mutica (Gibbes, 1850) (cryptic teardrop crab/ LA, wFL Gulf of Mexico infauna)

Persephona Leach, 1817 - Leucosiidae crabs

Persephona mediterranea (Herbst, 1794) (mottled purse crab/ wFL Gulf of Mexico marine infauna)

Petrolisthes Stimpson, 1858 – Porcellanidae lobsters

Petrolisthes armatus (Gibbes, 1850) (wFL Gulf of Mexico marine infauna)

Pinnixa White, 1846 – Pinnotheridae crabs

Pinnixa chaetopterana Stimpson, 1860 (rare Virginian, wFL Gulf of Mex. marine infauna)

Pinnixa cristata Rathbun, 1900 (NC marine infauna)

Pinnixa* cf. *floridana Rathbun, 1918 (wFL Gulf of Mex. marine infauna)

Pinnixa schmitti Rathbun, 1918 (AK, CA marine infauna)

Pinnotheres Latreille, 1802 – Pinnotheridae crabs

Pinnotheres undet. sp. (/ wFL Gulf of Mexico infauna)

Pitho Bell, 1836 – Majidae crabs

Pitho undet. sp. (/ wFL Gulf of Mexico infauna)

Pleuroncodes Stimpson, 1860 (pelagic red crab) Galatheididae crabs

Pleuroncodes undet. sp. (Ttx? in CA marine)

Polyonyx Stimpson, 1858 – Porcellanidae crabs

Polyonyx gibbesi Haig, 1956 (Eastern tube crab/ wFL Gulf of Mexico infauna)

Portunus Weber, 1795 – Portunidae crabs

Portunus undet. sp. wFL Gulf of Mex. marine infauna)

Rhithropanopeus Rathbun, 1898 – Xanthidae crabs

Rhithropanopeus harrisii (Gould, 1841) (MA, Virginian (rare) & FL Gulf of Mex. marine infauna)

Scleroplax Rathbun, 1893 - Pinnotheridae crabs

Scleroplax granulata Rathbun, 1893 (East Pacific/ burrow pea crab/ AK marine infauna)

Uca Leach, 1814 – Ocypodidae crabs

Uca undet. (NC marine infauna)

Uca panacea Novak & Salmon, 1974 (wFL marine infauna)

Uca speciosa (Ives, 1891) (wFL marine infauna)

Upogebia Leach, 1814 – Upogebiidae crabs

Upogebia affinis (Say, 1818) (Virginian, wFL Gulf of Mex. marine infauna)

Upogebia pugettensis (CA, OR, WA marine infauna)

Crayfish

Phylum Arthropoda

Subphylum Crustacea

Class Malacostraca

Subclass Eumalacostraca

Superorder Eucarida

Order Decapoda

Suborder Pleocyemata (= Dendrobranchiata) (see also shrimp)

Infraorder Astacidea (=Stenopodidea)

Superfamily Astacoidea

Family Cambaridae.

Subfamily Cambarellinae (*Cambarellus*)

Subfamily Cambarinae

(*Cambarus*, *Orconectes*, *Procambarus*,

Troglocambarus)

Freshwater **decapod** crustacean resembling a lobster but much smaller. Assoc. with **ostracods** & **branchiobdellid** annelids. Bouchard 1976, 1977; Brown 1961; Burbanck, Edwards & Burbanck 1948; Caine 1974; Cooper 1969, 1975, 1977; Cooper & Cooper 1978; Dickson & Giesey 1981; Dickson, Briese, & Giesey 1981; Erichson 1846; Faxon 1884, 1885a-b, 1889, 1890, 1914; Fingerman & Mobberly 1969; Fitzpatrick 1983a; Galeano 1976; Girard 1852; Hagen 1870; Hay 1893, 1899; Hobbs, Jr. 1973, 1968, 1988; Hobbs III 1972, 1973, 1987; Hobbs, Hobbs, & Daniel 1977; Hobbs & Barr 1960, 1972; Hobbs & H. 1977; Hobbs & Barr 1960; Hobbs, Jr. & Bursdall 1973; Holthuis 1964, 1986; Jegla 1963-5, 1969; Jegla & Poulson 1968; Mellong 1977; Mellon & Lnenicka 1980; Momot et al 1978; Nemeth & Tracey 1979; Ortmann 1902; Parker 1890; Ricker, 1959; Tierney & Dunham 1984; Weingartner 1979; Wilkens 1986; Wolfe & Cornwell 1964.

Growth, longevity, reproduction: J. Cooper & Cooper 1979;

Biogeography: Hobbs III 1994;

Biorhythms: F. Brown 1965; Jegla 1968; Chemical response: Bell 1906

Conservation: Bouchard 1978; C.Taylor et al. 1996; Convergence: Hobbs Jr. 1975;

Energetics: A.Gannon et al. 1999; Weingartner 1979;

Genetics: Creaser 1962;

Eyes: Mellon 1977a

Physiology: Wells 1959; Burbanck et al. 1947; Crandall & Hillis 1997; Vision: D. Thompson

1974; Welsh 1934;

Population dynamics: Hobbs III 1973d

Areas: **AR:** Williams 1954; **AL:** Cooper 1975; Cooper & C.1977-8; Rhoades 1941; Wells, 1952, 1957, 1959; Welsh 1934 Rhoades 1962; **Americas:** Hobbs, Jr. 1972, 1974a; Hobbs III 1994; Hobbs, Hobbs & Daniel 1977; **Allgeghanies:** Ortmann 1931; **s.Appalachian:** Ortmann 1931; **CA:** Riegel 1959; **Canada:** C.Taylor et al. 1996; **FL:** Caine 1974; Franz 1978, 1982b; Franz & Houha 1977a; Franz & Hobbs, Jr. 1945, 1983, Franz & Lee 1982; Hobbs Jr. 1937, 1940-2, 1945; Hobbs & Hart 1959; Hobbs & Means 1972; Relyea et al 1976; Hobbs Jr. 1963, 1975; Hobbs & Hart 1959; Villalobos 1982; **GA:** Hobbs Jr. 1981a; Lee et al. 1977; Ortmann 1931; **IL:** Anon. 1978; P. Brown 1955; Forbes 1886, Jegla 1964; Rietz 1912; **IN:** Hay 1896; Eberly 1954a, 1960; Hobbs III 1971, 1972a-d, 1973d, 1975, 1975a, 1976, 1984; Hobbs III & Burdsall 1972; Weingartner 1977; Fage 1931; Hagen, 1872; W. Hay, 1892, 1894, 1896; Kingsley, 1888; Ortmann 1902; D. Thompson 1974; **KS:** Faxon 1885b; A. Williams & Leonard 1954; Fage 1931; A. Williams & Leonard 1952; **KY:** Glasco 1992; Rhoades 1944; Ortmann 1931; F. Brown 1965; Calman 1928; Hagen, 1872; Hovey 1904; Kingsley, 1888; Ortmann 1902; Wyman, 1851; **LA:** Penn 1959; **MD:** Meredith & Schwartz 1960; **MI:** Creaser 1931; Pearce 1910; **MO:** Anon. *1999; Faxon 1889; Steele 1902; Pflieger 1996; Burbanck et al. 1947; Hershey 1964; Larimer 1966; **MS:** Lyle 1938; **New England:** Crocker 1979; **NA:** Hobbs, Jr. 1976; **NY:** Crocker 1957; **OH:** Rhoades 1944a; Turner 1926; Williamson, 1899; **OK:** Creaser & Ortenburger 1933; Mehlhop-Cifelli 1990; Oklahoma Dept. 1990-a; Reimer 1969a; A. Williams 1954; **Ozarks:** A.W.1954; Bedinger & Hobbs 1965; **ON:** Crocker & Barr 1968; Guiasu 1997; Huntsman 1915; **PA:** Ortmann 1906; F. Schwartz 1962; **SC:** Hobbs II, Throp & Anderson 1976; **SE:** S. Smith, 1873; **TN:** Hay 1899; Fleming 1938-9; **TX:** Penn & Hobbs 1958; Villalobos 1982; **US:** C.Taylor et al. 1996; J. Cooper & Cooper 1978-9; Faxon, 1886; **WI:** Creaser 1932; Hobbs II & Jass 1988; **WV:** Van Luik 1981; Van Luik & Holsinger 1979; Ortmann 1931; F. Schwartz 1962

Aviticambarus - subgenus of *Cambarus* but recommended by Cooper for elevation to genus level to incl. *C. hamulatus*, *C. jonesi*, *C. sheltae*, *C. veitchorum*

Cambarellus Ortmann, 1905 - Cambaridae crayfish, Subfamily Cambarellinae. **Bibl.:** Hobbs 1942; Fitzpatrick 1983

Cambarellus (*Pandicambarus*) *schmitti* Hobbs, 1942 (AL,FL/Tp?) Fitzpatrick, Jr. 1983a,

Cambarellus (*Dirigicambarus*) *schufeldtii* (*Cambarus* s. Faxon, 1884) (U.S./Tp?) **Bibl.:**

Fingerman 1955, 1957; Lowe 1956

Cambarus Erichson, 1846 - Cambaridae crayfish, Subfamily Cambarinae.

Bibl.: Aley & A. 1990; Bouchard 1973; K. Brown 1981; Faxon 1884, 1885; Fitzpatrick 1983; Guiasu 1997; Harris 1902-4; Hobbs Jr. 1942, 1969; Hobbs Jr. & Barr 1960; Koppleman 1990; Melhlhop-Cifelli 1990; Ortmann 1905; Turner 1935; Vaugh & Certain 1992; J. Harris 1903; Mehlhop-Cifelli 1990; W. Miller, 1895; Ortmann 1902; Reimer 1966

Cambarus (*Jugicambarus*) *aculabrum* Hobbs, Jr. & A. Brown, 1987 (***type locality & 2 other caves in Benton Co.,AR/T&E Tb federally listed as endangered). **Bibl.:** Jacobson 1995; USFWS 1993, 1995, 1995a; US Fish & Wildlife 1995a

Cambarus (*Puncticambarus*) *acuminatus* Faxon, 1884 (Ac, Tx or Tp in cave in Orangeburg Co.,SC)

Cambarus (*Cambarus*) *angularis* H.H. Hobbs, Jr. & R. W. Bouchard, 1994 (stygophile, surface waters/ stygophile in cave in Russell, Co., VA)

Cambarus ayersii = *C. setosus*

Cambarus *barbatus* (*Astacus b.* Le Conte, 1856) (epigean/Tx? in IN?,KY)

Cambarus (*C.*) *bartonii b.* (Fabricius, 1798) (MS R.e.except FL/stygophile in AL, GA (Dade Co.), MD, OH, VA, WV; Tp or Tx in MD/spr.,cr./Appalachian brook crayfish/ harmed by copper and zinc) **Bibl.:** Cox & Beauchamp 1982; Meredith 1967; Merrill 1977; Mwangi 1990; W.Reid 1977; VanLuik 1981; Zipf 1959

Cambarus (*C.*) *bartonii carinirostris* Hay, 1902 (surface streams, springs/ stygophile in WV)

Cambarus (*C.*) *bartonii cavatus* Hay, 1902 (surface streams, springs/ stygophile, Tp in GA, OH, KY, TN, VA)

Cambarus cahni Rhoades, 1941 = *C. tenebrosus*

Cambarus (*Jugicambarus*) *cryptodytes* Hobbs, 1941 (well 2mi.s of Graceville; *15 caves in nc.Jackson Co.+WA Co. in Apalachicola-Chattahoochee-Flint hydrologic subregion, FL & adjacent cave in Decatur Co.,GA/ Tb,Tm/ Dougherty Plain cave or Apalachicola cave crayfish/ T&E special concern; federally threatened, FL T&E, G3G4)

Cambarus (*Lacunicambarus*) *diogenes d.* (*C.(L.)d.* Girard, 1852) (E of Rockies/ Tp in IL(prob.)/ devil crayfish) **Bibl.:** Grow 1981; Marlow 1959

Cambarus (*Jugicambarus*) *dubius* Faxon, 1884 (epigean in KY, MD, NC, PA, TN, VA, WV/burrows; stygoxene? & Tx or Ac in VA,WV)

Cambarus (*Avitacambarus*) *hamulatus* (*Orconectes h.* Cope in Cope & Packard, 1881) Faxon, 1884 (*O.h.*) (type locality in Nickajack C.,Marion Co. & caves in Blount, Jackson & Marshall

Cos.,AL +Bledsoe & Franklin Cos.,TN/ Tb,Tm/ AL Species of Concern, G3G4)

Cambarus (*Erebicambarus*) *hubbsi* Creaser, 1931 (neAR,seMO/epigean, surface burrows; stygoxene? in neAR, seMO)

Cambarus (*E.*) *hubrichti* Hobbs, 1952 (type locality cave in Ripley Co. + caves in Carter, Dent, Oregon, Phelps, Pulaski, Reynolds, Ripley, Shannon, Texas Cos., mostly in upper Eleven Point, Current & Meramec R. drainages (incl. Carter Co.) +Colbert Co.,OK/ Tb,Tm/ Salem Cave Crayfish/ MO T&E watchlist) **Bibl.:** Wells 1957a; P. Wells & Witt 1957

Cambarus (*Avitacambarus*) *jonesi* Hobbs & Barr, 1960 (type locality cave in Morgan Co. +Colbert, Limestone, Marshall Cos., *TN R. basin, neAL/Tb,Tm/AL Species of Concern, G3/Alabama cave crayfish) **Bibl.:** Cooper & C. 1978

Cambarus (*Erebicambarus*) *laevis* Faxon, 1914 (lotic epigean & Tp in sIL,IN (Crawford, Harrison, Orange,WA Cos.), nKY, swOH/ S3(IN)/G4)

Cambarus (*Depressicambarus*) *latimanus* (Le Conte, 1856) (surface burrows and streams /Tp? or Tx in AL, FL, GA (Chatooga, Dade, Walker Cos.)

Cambarus (*Puncticambarus*) *nerterius* Hobbs, 1964 (type locality cave in *Greenbrier & Elk R.? basins (Pocohontas & Greenbrier Cos.),WV/Tb,Tm/WV T&E S1 rank & global G2G3 rank) **Bibl.:** VanLuik 1981

Cambarus (*Erebicambarus*) *ornatus* Rhoades, 1944 (sIL,KY/ lotic,Tp)

Cambarus punctimanus = *Orconectes p.*

Cambarus (*Puncticambarus*) *robustus* Girard, 1852 (ON,NY to IL, s.to TN,NC,VA,MI/ stygoxene? & Tx or Ac in NY/ IN T&E G5)

Cambarus (*Cambarus*) undet. sp. (stygoxile? in seVA) **Bibl.:** Holsinger 1964

Cambarus undet. sp. (Ac or Ttx in 1 NY cave)

Cambarus (*Jugicambarus*) *setosus* (= *C. ayersii* Faxon in Garman, 1889) (type locality cave in Barry Co.,MO/ swMO (Barry, Christian, Dade, Greene, Jasper, Lawrence, McDonald, Newton, & Stone Cos.), Breakdown C.(AR?), & Delaware & Mayes Cos.,neOK/ St, Tb, Tm/ OK T&E; MO T&E R, G3G4/ Bristly Cave Crayfish) **Bibl.:** Figg & Lister 1990; Fingerman et al 1964; F. & Mobberly 1960; Hobbs et al. 1977; Spurgeon 1915; Steele, Hobbs & Barr 1960; P. Wells 1952

Cambarus shufeldtii = *Cambarellus s.*

Cambarus (*Depressicambarus*) *striatus* (*C.latimanus s.* Hay, 1902) Hobbs, 1956a (nAL,sKY,cTN/ stygoxene? in nAL, nGA (Tp in Chattooga, Walker Cos.)

Cambarus (*Jugicambarus*) *subterraneus* Hobbs III, 1993 *** (type locality cave in Delaware Co., OK/stream Tb/OK T&E, G1G2)

Cambarus (*J.*) *tartarus* Hobbs & Cooper, 1972 (type locality & 2 other caves in Delaware Co., OK/Tb/OK T&E, G1G2/Oklahoma cave crayfish) **Bibl.:** Hobbs & Cooper 1972; Looney 1974-5

Cambarus (*Erebicambarus*) *tenebrosus* (*C. bartoni* t. Hay, 1902; *C. cahni* Rhoades, 1941) Garman, 1920 (Mammoth C., KY (type locality) +IL, Ohio R. below Salt R. s.to TN R. in AL & e. to Cumberland Plateau in KY (Rockcastle Co.), GA (Dade Co.), TN (Marion & Franklin Cos.) & IL/lotic epigean, Tp) **Bibl.:** Cooper & C.1978; Dickson & Giesey 1981; Hobbs 1969a; Prins 1965, 1968; Wolfe & Cornwell 1964

Cambarus (*Aviticambarus*) *veitchorum* Cooper & Cooper, 1997 (*type locality cave in Limestone Co., AL/ AL Species of Concern/ Tb,Tm)

Cambarus (*Jugicambarus*) *zophonastes* Hobbs & Bedinger, 1964 (*type locality cave in Stone Co., AR/ Federal T&E, G1G2/ Tb/ Hell Cr. cave crayfish) **Bibl:** Aley & Aley 1985; Hobbs 1987; K. Smith 1984; J. Stewart 1988; US Fish & Wildlife 1984c, 1987, 1988f

Faxonius (not currently recognized as a genus; see *O.l.*),

Orconectes Cope, 1872 - Cambaridae crayfish, Subfamily Cambarinae
Bibl.: Bechler 1979a; Dickson, Gary & Giesey 1982; Fitzpatrick 1987; Hobbs 1948, 1972; Hobbs & Barr 1972; Rhoades 1962 Rhoades 1962

Orconectes (*Orconectes*) *australis a.* (= *O. pellucidus australis* Rhoades, 1941) Barr, 1967 (*O. pellucidus a.*) (type locality cave in Madison Co.+Jackson CO., AL ne.to near KY(Wayne Co.) & TN(Coffee, Fentress, Franklin, Gundy, Overton, Putnam, Warren, White, Van Buren Cos.) line/ St/ KY State T&E, G3G4T3T4/ Tm,Tb)

Bibl: Cooper & C.1978; Dickson & Giesey 1981; Fetzner 1996; Fitzpatrick 1987; Larimer, Trevino & Ashby 1966; R. Matthews et al 1975, 1977; R. Matthews et al. 1977

Orconectes (*O.*) *australis packardii* (*O.pellucidus packardii* Rhoades, 1944) Barr, 1967 (type locality cave in Pulaski Co. + Rockcastle, McCreary & Wayne Cos., KY; intergrades with *a.a.* near KY/TN line/ St/ KY Species of Concern, G3G4T3) **Bibl.:** Fitzpatrick 1987

Orconectes (*Procericambarus*) *hylas* (*C.h.* Faxon, 1890; *C. (Faxonius) h.* Ortmann, 1905b, *F.h.* Creaser, 1933; *O.h.* Hobbs, 1941) Fitzpatrick, 1987 (MO/Tx)

Orconectes (*Gremicambarus*) *immunis* (*C. i.* Hagen, 1870; *C. signifer* Herrick, 1882; *C. (Faxonius) i.* Ortmann, 1905; *F.i.* Williamson, 1970; *O.i.i.* Hobbs, 1942; *O.i.* Penn, 1950; *O.(O.)i.* Hobbs, 1959; *O. (Gremicambarus) i.* Fitzpatrick, 1987) (also put in subgenus *Trisellescens*) Bouchard & Bouchard 1995 (MA to WY, MT, ON to AL/ stygoxene? & Tx or Ac in IN (Lawrence Co.) & Canada/ calico crayfish) **Bibl.:** Bovbjerg 1952; Crawshaw 1974;

Goellner 1943; Tack 1941; Wiens & Armitage 1961; Suppl.: Wiens & Armitage 1961

Orconectes (*O.*) *incomptus* Hobbs & Barr, 1972 (**type locality & 1 other cave in Jackson Co. + possibly in cave or caves in Putnam Co.,TN/ Pb/ TN cave crayfish/ TN State T&E, S1 G1G2/ Tb,Tm) **Bibl.:** F. Price 1900; Fitzpatrick 1987

Orconectes (*O.*) *inermis i.* Cope, 1872 (type locality cave in Crawford Co.,IN/ IN (Crawford, Harrison, Lawrence, Martin, Orange, Washington Cos.) to Hart, Breckenridge, Meade & Green Cos.,KY, intergrades with *i.t.* n. to Monroe Co.,IN/Tb/KY Threatened T&E; IN T&E S3 G5T4/ TN or northern cave crayfish)

Bibl.: Bechler 1981a; Fitzpatrick 1987; Hobbs, III 1976, 1976a-b, 1977a, 1978, 1978b,c,d, 1980, 1981a; Jegla 1966; D. Morris, Wilson & Jegla 1977

Orconectes (*O.*) - distinct Tb subgenus suggests monophyly. **Bibl.:** Fetzner 1996

Orconectes (*O.*) *inermis testii* (*C. pellucidus i.* Hay, 1891, 1893; *O.i.t.* Hobbs, 1942) Fitzpatrick, 1987 (type locality cave in Monroe Co.,IN/ IN (Greene, Monroe & Owen Cos.)Tb/IN T&E) **Bibl.:** Hobbs III 1976, 1976a, 1977a, 1981b

Orconectes (*Procericambarus*) *luteus* (*Faxonius l.* Creaser, 1933a) Fitzpatrick 1987 (surface lotic/ stygoxene? & Tp, Tx or Ac in KS, MO)

Orconectes (*Buannulifictus*) *meeki brevis* (*O.m.b.* Williams, 1952; *O.(O.) m.b.* Hobbs, 1959; *Faxonius m.b.* Creaser, 1962) Fitzpatrick, 1987 (Tp or Tx in AR,OK/ *O.m.* - MO State T&E)

Orconectes (*Gremicambarus*) *nais* (*Cambarus n.* Faxon, 1885; *C. pilosus* Hay, 1899; *C. (Faxonius) n.* Ortmann, 1905; *F.n.* Creaser, 1933; *O.(O.) n.* Hobbs, 1942) Fitzpatrick, 1987 (Tx in MO)

Orconectes (*Procericambarus*) *neglectus n.* (Faxon, 1885; *O.n.n.* Williams, 1954) Fitzpatrick 1987 (CO, KS, NE surface rocky-bottomed streams/ stygophile in AR (Benton Co.), swMO, OK (Delaware Co.) /CO T&E S2, global G4 rank)

Orconectes (*P.*) *neglectus chaenodactylus* (*O.n.c.* Williams, 1952) Fitzpatrick, 1987 (Tx or Tp in AR,MO) **Bibl.:** Price 1982; Price & Payne 1984

Orconectes (*P.*) *ozarkae* (*O.o.* Williams, 1952) Fitzpatrick, 1987 (AR epigean/ Tx in MO)

Orconectes (*Buannulifictus*) *palmeri longimanus* (*O.p.l.* Faxon, 1884 Fitzpatrick, 1987 (stygoxene?, Tp & stygophile in OK & TX Tx/*O.p.* T&E in KY)

Orconectes (*Orconectes*) *pellucidus* (*Astacus p.* Tellkamp, 1845; *C.p.* Girard, 1852) Hobbs, 1942 (Mammoth C. (type locality) /nKY(Baren, Christian Edmonson, Hart, Logan, Trigg, Warren Cos.), TN(Montgomery Co.)/ Tb/ KY Special Concern T&E, TN S3G3)

Orconectes *pellucidus* **Bibl:** Bechler 1981a; Eberly 1958; Hobbs & Barr 1972; Jegla, Poulson & Cooper 1965; Price 1900; Putnam, 1874a, 1875, 1875a-b; Spurgeon 1915; Wolfe & Cornwell 1964; O. Park, Roberts & Harris 1941

Orconectes pellucidus packardi = *O. australis packardi*

Orconectes (*Crockerinus*) *propinquus* (Girard, 1852) Fitzpatrick, 1987 (Great Lakes, NY, ON, IL, MI, OH/ stygoxene? & Tp, Tx or Ac in IN (Lawrence Co.), WI & MN?/ rare in WI) **Bibl.:** Capelli 1975

Bibl: Berrill, et al. 1985; Bovbjerg 1952; Budd et al 1979; Corey 1987; Fitzpatrick 1967; Gillespie, Reisine & Massaro 1977; Roldman & Shivers 1987; Tierney, Thompson & Dunham 1984; Van Deventer 1937; R. Wright 1884

Orconectes (*Procericambaus*) *punctimanus* (Creaser, 1933; *O.p.* Hobbs, 1942) Fitzpatrick, 1987 (stygoxiphile in AR (Benton Co.), MO; Ttx or Ac in MO (Carter Co.))

Orconectes (*Orconectes*) *sheltae* Cooper & Cooper, 1997 (*type locality cave in Madison Co.,nAL/ Tb,Tm/ AL T&E)

Orconectes undescr. sp. (*cave in Ozark Co.,MO/ Tb)

Orconectes (*Gremicambarus*) *validus* (Faxon, 1914 (Tx or Ac in 2 caves, Madison Co.,nAL)

Orconectes (*Gremicambarus*) *virilis* Hagen, 1870 (NE,CA,MT,ON, & SE(alien)/stygoxene or Tp in AL, IN (Lawrence Co.),. MO; Tx? in MN?/virile crayfish/ harmed by cadmium, zinc & DDT) **Bibl.:** Aiken 1967; Caldwell 1969; Gorell 1970; W. Reid 1977; Somers 1967

Bibl.: Dake 1996; Diggins 1971; Gorell 1970; Headon 1994; Mirenda 1985; W. Reid 1977; Aiken 1967-8; Anderson 1968; Bovbjerg 1953, 1970; Burggren & McMahon 1983; Chambers et al 1990; Claussen 1980; I. Davies 1984, 1989; France 1984, 1985, 1985a; France & Graham 1985; Guyselman 1957; Hanson et al 1990; Hazlet 1985; H.& Rittschoff 1985; Hazlett et al. 1974; Heckenlively 1970; Larimer, Trevino & Ashby 1966; McMahon, Burggren & Wilkens 1974; McWhinnie & O'Connor, 1967; Momot & Gowing 1972, 1977, 1977a; Peck 1985; T. Roberts 1944; Tierney & Atema 1986, 1988; Vermeer 1972; Threinen 1958,

Procambarus Ortmann, 1905 (once treated as subgenus of *Cambarus*) Cambaridae crayfish, Subfamily Cambarinae

Bibl.: K. Brown 1981; Caine 1974, 1974a, 1975; Busack 1989; Hobbs, Jr. 1947, 1962; Hobbs III 1972a; Huner 1988; Hobbs Jr. 1984

Procambarus (*Lonnbergius*) *acherontis* (= *Cambarus a.* Lonnberg, 1894) Hobbs 1972
(underground rivulet (near Lake Brantley, Seminole Co.) & cave *by Wekiva R. in Orange & Seminole Cos.,Orange Co.,FL/ Pb,spr.,sinks,caves/ Orange-Seminole Crayfish; Orlando or Palm Springs cave crayfish / Federal T&E review status; FL T&E S1 global G3 (six sites)). **Bibl.:

Hobbs 1942, 1972; Hobbs et al. 1977

Procambarus (*Ortmannicus*) *acutus a.* (*C.a.* Girard, 1852) Hobbs, 1967; Tierney & Atema (1986), (ME to FL, MN to TX/lentic,lotic; Tp or Tx in TX/intergrades with *P.a.c.* in swTX & n.Mexico) **Bibl.:** Allbaugh 1962; Dickson & Giesey 1981

Procambarus (*O.*) *acutus cuevachicae* Hobbs, 1941 (n.Mexico,TX/surface lentic, stygoxene?)
Procambarus (*Leonticambarus*) *alleni* (Faxon, 1884) (Tx in FL) Hobbs 1972

Procambarus (*O.*) *attiguus* Hobbs III & Franz, 1992 (type locality cave in *Marion Co.,*St. Johns R. Basin,FL/ Tb?, Pb? /Silver Glen Sprs. Cave Crayfish/FL T&E S1 global G1G2)

Procambarus blandingii (Harlan, 1830) = *P.(O.) acutus a.*

Procambarus (*Scapulicambarus*) *clarkii* (*Cambarus c.* Girard, 1852) Hobbs, 1972 (IL to TX,alien in CA, ID, NV, OR, VA, UT/ lentic, lotic, Tp or stygoxene? in TX/ red swamp crayfish) **Bibl.:** Ameyaw-Akumfi & Hazlett 1975; Lusk 1993; Mellon 1977; Penn 1943; Okada 1948; Pollard & Latimer 1977; Takahata, Masakazu & Hisada 1981

Procambarus (*Ortmannicus*) *delicatus* Hobbs Jr. & Franz, 1986 (type locality spring and Lake Co.,FL/ St/ Big Cheek(ed) or Ale. Spr. Cave Crayfish/ FL T&E S1 global G1/Tb,Tm)

Procambarus (*O.*) *erythropros* Relyea & Sutton, 1975 (type locality cave & 4 other caves in s.Suwannee Co., in Aucilla-Suwannee hydrologic subregion, +ncFL/ Tb, Pb, Tm/ Santa Fe, Red-eyed or Sim Sink Cave Crayfish/ Federal T&E special concern; FL Species of Special Concern S1, state listed, global G1 5 sites))

Procambarus (*O.*) *fallax* (*C. f.* Hagen, 1870; *P. f.* Hobbs, 1942) Hobbs, 1972 (GA surface; burrows/ Tx, stygoxene? in FL)

Procambarus (*O.*) *franzi* Hobbs & Lee, 1976 (type locality cave in n.Marion Co., St. Johns hydrologic subregion, neFL/Pb near *Orange Lake/ Orange Lake Cave Crayfish/ Federal T&E special concern; FL T&E S1 global G1 (4 sites)/ Tb,Tm)

Procambarus (*O.*) *horsti* Hobbs & Means, 1972 (type locality cave in Jefferson Co. + caves I Leon & Wakulla Cos.,*St. Marks Fm. In Ochlockonee & Aucilla-Suwannee hydrologic subregions, ncFL/ well, spr.,Pb/ Big Blue Sprs. or Horst's Cave Crayfish/ Federal T&E special concern; FL T&E S1 global G1 or G3 (4 sites?) /Tb,Tm) **Bibl.:** Caine 1975

Procambarus (*O.*) *leitheuseri* Franz & Hobbs, 1983 (type locality cave in wHernando Co. + wPasco Co., west coastal hydrologic subregion, wcFL/ Tb,Tm/ Coastal Lowland(s) cave crayfish/ FL T&E S1 global G2 or G3 (8 sites))

Procambarus (*O.*) *lucifugus alachua* (*Cambarus l. a.* Hobbs, 1940; *P. l. a.* Hobbs, 1942) Hobbs, 1972 (type locality cave in wAlachua Co.)+w.Gilchrist, ne.Levy & Marion Cos., Aucilla-Suwannee hydrologic subregion, ncFL/ (Alachua) Light Fleeing Cave Crayfish/ St/ T&E

special concern; G2G3 T3 (13 sites))

Procambarus (*O.*) *lucifugus* *l.* (Hobbs, 1940) (*C. acherontis* Faxon, 1898; *C. l. l.* Hobbs, 1940; *O.l.l.*) Hobbs, 1942 (type locality cave in Citrus Co. +Hernando, Gilchrist & Marion Cos., west coastal hydrologic subregion, FL/Tb/ (Withlacoochee) light-fleeing or Florida cave crayfish/ TL T&E G2G2, S2S3)

Procambarus (*O.*) *lucifugus* *l.* X *P. (O.) lucifugus alachua* (integrate population) (16 sites in Aucilla-Suwannee & St. Johns hydrologic subregions, neFL)

Procambarus (*Leonticambarus*) *milleri* (*P.m.* Hobbs, 1971) Hobbs, 1972 (5 wells or other locations in or near Miami & Homestead, Dade Co.,FL/ Pb,Tm,Tb/ Miami or golden cave crayfish/ Federal T&E species of concern; FL T&E S1 global G1) Bibl.: Hobbs & Franz 1992; Franz 1994; Radice & Loftus 1995

Procambarus (*L.*) *morrissi* Hobbs, III & Franz, 1991 (*Devil's Sink,Putnam Co. in St. John's hydrologic subregion, neFL/ Tb, Tm/ Putnam Co. Crayfish/ G1S1)

Procambarus (*Ortmannicus*) *orcinus* Hobbs & Means, 1972 (type locality cave in Leon Co. & 2 caes in Wakulla Co.,*w.Woodville Karst,St Marks Fm., Ochlockonee hydrologic subregion, western FL Panhandle/ St Woodville Karst cave crayfish/ T&E special concern, G1 or G3 (15 sites)/ Tb, Tm) Bibl.: Caine 1975

Procambarus (*Scapulicambarus*) *paeninsulanus* (*C.clarki* *p.* Faxon, 1914; *P.c.p.* Hobbs, Jr., 1937) Hobbs, 1972 (GA epigean/ FL Tx or stygophile?) Bibl.: Caine 1975

Procambarus (*O.*) *pallidus* (Hobbs, 1940) (*C. acherontis* Hobbs, 1937) Hobbs, 1942 (type locality cave in nw.Alachua & other caves in sw.Columbia, w.Suwannee, Gilchrist, Hamilton, Lafayette, Levy, Madison & Suwannee Cos., Aucilla-Suwannee hydrologic subregion, ncFL/ St, Tb, Tm/ Pallid Cave Crayfish/ state T&E special concern, S2S3, global G2G3 (>20 sites)) Bibl.: Lonnberg, 1895a; Relyea & Sutton 1973a, 1974

Procambarus (*Remoticambarus*) *pecki* Hobbs, 1967 (type locality cave in Colbert Co. & cave each in Morgan & Lauderdale Cos. +Lauderdale & Morgan Cos., nAL/ St/ AL Special Concern)

Procambarus (*Giardiella*) *simulans* (*G.s.* Faxon, 1884; *P.(G.) s.s.* Hobbs, 1972) Hobbs & Robison,1988 (AR, CO, KS, LA, NM epigean; stygophile in OK (Greer, Major, Murray, Washita, Woodward Cos.) & TX (Burnet Co.)) Bibl.: Koepp 1973; Larimer, Trevino & Ashby 1966

Procambarus undescr.? sp. (*lucifugus* group) (*cave in Pinellas Co.,FL/ Tb)
Puncticambarus nerterius (see *Cambarus n.*)

Procambarus undescr.? sp. (one site in St. John's hydrologic subregion, ncFL/ "Hawthorne Cave Crayfish")

Troglocambarus Hobbs, 1942 - Cambaridae crayfish, Subfamily Cambarinae. Bibl. Bouchard 1978

Troglocambarus *baveri* (*type locality cave in , Orange Co.,FL/FL T&E/Orlando Spider Cave Crayfish or Apo. Cave Crayfish) Bibl.: Deyrup & Franz 1994. **Bibl.:** Mike Wisenbaker -

Troglocambarus *maclanei* Hobbs, 1942 (type locality cave in (Alachua Co.,FL +s.Suwannee Co. sw to Pasco Co.+Citrus, Hernando, Levy, Marion Cos., Aucilla-Suwannee, St. Johns & west coastal area hydrologic subregions, nc, cFL/ Tb,sinks/ (Northern (Florida)) Spider or MacLane's Cave crayfish/ Federal T&E Special Concern Species, FL T&E,G3). **Bibl.:** D. Jackson & Muller 1984

Troglocambarus undescr. sp.#1 (*cave in Pinellas Co., FL/ Tb)

crenobiology - The study of the biology of springs and spring brooks.

crevicular – Referring to finer cracks and crevices in bedrock or semi-consolidated sediment.

Crickets, Grasshoppers & Katidids

Part of Order Orthoptera (grasshoppers, locusts) (=Saltatoptera, Saltatoria), phylum Arthropoda, subphylum Chelicerata, class Insecta, Subclass Pterygota, Division Neoptera, Subdivision Exopterygota.

Order name derived from Greek orthos and pteron, meaning “straight wings. About 15,500 species, 1222 species and 256 genera in the US and Canada.

Bibl.: R. Alexander & Otte; Benedict 1976d; Caccone 1988; H. Garman, 1894, 1893; Hand 1995; J. Helfer 1963; Karny 1930, 1937; Lavoie, Hoey & Poulson 1998; Nicholas 1974; Barr & Stoneburner; Hubbell 1978; Nicholas 1969; Nielermayer 1967; Park & Barr 1961; Princis 1961-7; Simms 1993; Studier & Lavoie 1990. : Blatchley 1920; Caudell 1916; Otte 1979; Packard, 1889; Ragge 1955; Rehn & Hebard 1912;; **Areas:** **AZ:** E. Ball et al. 1942; **FL:** Blatchley 1920; **HI:** Gurney & Rentz 1978; Perkins, 1899; Stone 1991a; Otte 1990; **IA:** Froeschner 1954; **IL:** Hebard 1934; **IN:** Blatchley 1920; Richards 1965-6; 1969; **KS:** Hebard 1931; **KY:** Helf 1998; Helf & Lavoie 1998; Lavoie et al.; Leja & Poulson 1985; **NA:** D. Otte 1997; **NE:** Blatchley 1920; **TN:** Matthews 1979; **US:** Scudder, 1859; Leroy 1967; E. Walker 1922. For ice cricket, see **grylloblattid**.

5-150 mm. (most 10-50 mm, a few under 5 mm). Leathery bodied, sometimes hard, elongate and cylindrical. They are paurometabolous, with terrestrial eggs, larvae and adults. Antennae usually long. Biting mouthparts; most species are plant eaters but some are predators. The sometimes thickened front wings cover the hind wings and may have scrapers and files, spines or teeth used for making sounds. Some are wingless as adults. Front legs may have scooplike spines used in digging. Back legs are enlarged. Female ovipositor may be greatly elongated. Most larvae resemble adults except for lack of wings. Males attach a spermatophore to the female's body. Grasshoppers hear on the first tergum of the abdomen while katydids and crickets have auditory

organs on the anterior tibiae near the tibial-femoral joint.

Crickets represent an intermediate stage in the evolution of insects. They do not show the complicated development shown by a more advanced group known as Neoptera, which includes flies, beetles, ants, bees, lacewings and wasps. The first neoptera, the scorpion flies and the lacewings, first appear on earth about 260 million years in the middle Permian. Cave crickets may even show regressive evolution, a return to a moist life characteristic of the earliest insects to appear on land. Camel and cave crickets are the more primitive members of the order and hunt at night.

Suborder Caelifera (short-horned grasshoppers, grouse locusts and others)

Superfamily Acridoidea

Acrididae - undet. genus (2,000 to 3,000 & 9,400 to 10,300 years BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM; Undet. Genus 7,530 years old in *Neotoma* woodrat nest in Butler Mts., Yuma Co, AZ)

Suborder Ensifera (=Order Grylloptera) (cave crickets, katydids and true crickets)

Infraorder Grylloptera

Superfamily Stenopelmatoidea (=Gryllacridoidea)

Gryllacrididae (=Subfamily Gryllacridinae) (leaf-rolling crickets)

(*Hemiudeopsylla*, *Tachycines*) (now in Rhabdophoridae)

Bibl.: Crawford 1977; Niedermayer 1967, 1974

Superfamily Rhabdophoroidea:

Rhabdophoridae (camel cricket family)

Subfamily Ceuthophilinae (= Tribe Ceuthophilini)

(*Ceuthophilus*, *Pristoceuthophilus*, *Styracosceles*)

Subfamily Dolichopodinae (= Tribe Dolichopodini) (true cave crickets)

(*Euhadenoecus*, *Hadenoecus*, *Farallonophilus*)

Subfamily Tropidischinae (stone crickets) (*Tachycines*, *Tropidischia*)

Camel crickets are wingless and have a noticeable hump-backed appearance. Their hind legs are long and they are excellent jumpers (as they would have to be, without wings to depend on!). They have long antennae sometimes up to six inches long. They are called cave crickets because they are often found in dark and damp locations, and are common in caves. In fact, there are eyeless cave crickets known only from the depths of some caves in North America. They spend their entire life in darkness—depending on their long antennae and sense of smell to get about and feed. Cave or camel crickets feed on decaying organic matter, and prefer damp and dark locations. Camel Crickets are commonly parasitized by Horse-hair Worms (Nematomorpha)

Infraorder Tettigoniidea

Superfamily Tettigonioidae (= Prothalangopsoidea)

(katydid, bush crickets) & long-horned grasshoppers) **Bibl.:** D. Otte (in prep.)

Tettigoniidae (long-horned grasshoppers; katydids)

Subfamily Tettigoniinae (shield-backed katydids) (*Algaothorax*, *Pediodes*)

Haglidae (hump-winged crickets; primitive katydids)

(= Prophalongoidea) (*Cyphoderris*)

Order Saltatoria or Infraorder Gryllidea

Superfamily Gryllotalpoidea (= Grylloidea) **Bibl.:** D. Otte 1994

Gryllidae (=Achetidae) (mole (& ant) crickets)

Subfamily Gryllinae (field and house crickets) (*Gryllus*, *Cycloptiloides*)

Subfamily Nemobiinae (ground crickets)

Thetellini (*Caconemobius*)

Subfamily Oecanthinae (=Eneopterinae)? (white tree, bush or tree crickets)

(*Oecanthus*) Forms complex of species largely differentiated by mating

calls

Tribe Xabini (*Thaumtogryllus*)

Aglaothorax Caudell, 1907 - Tettigoniidae crickets, Subfamily Tettigoniinae (7 species in US or Canada)

Aglaothorax *ovatus* (*Tropizaspis o.* Scudder, 1899) (Tx or Ac in Tuolumne Co.,CA)

Caconemobius Kerby, 1906 - Gryllidae crickets, Subfamily Nemobiinae, Tribe Thetellini

Caconemobius *albus* Otte, 1994 (*type locality cave in Big Island, HI/Tx?)

Caconemobius *fori* A.B.Gurney & D.C. Rentz D. C., 1978 (Tx in lava tubes, HI)

Caconemobius *sandwichensis* Otte, 1994 (Ac or Ttx in lava tube coast caves, HI)

Caconemobius *schauinslandi* (*Paranemobius s.* Alfken, 1901) Kirby, 1906 (Schauinsland's bush cricket) (type locality uncertain,Molokai, HI/ Schauinsland=s bush cricket/ federal Species of Concern/ Tb?)

Caconemobius *howarthi* Gurney & Rentz, 1978 (type locality & 1 other cave in Maui, HI/ Howarth's cave cricket; blind cricket Tb/ HI & federal Species of Concern (C2), S1S2, global G1G3 rank)

Caconemobius undescr. sp. (HI/Tb) **Bibl.:** Stone 1991a

Caconemobius *paralbus* Otte, 1994 (*type locality cave in Big Island, HI/Tx?)

Caconemobius *uuku* Otte, 1994 (Kazumura & one other cave in Big Island, HI/Tx?/ G1?)

Caconemobius *varius* Gurney & Rentz, 1978 (Kaumana cave cricket/ type locality & othe

nearby cave, & caves at 300-1200 m. elevation on Mauna Loa & Kilauea, HI Volcanoes Natl. Park + Kazumura C. & nearby cave /Tb/HI & federal Species of Concern, S1S2, global G1G3 rank) **Bibl.:** Stone 1991a; Stone & Howarth 1991

Ceuthophilus Scudder, 1862 (= *Rhaphidophora*, *Ceuthophilus*) Rhaphidophoridae crickets, Subfamily Ceuthophilinae, Tribe Ceuthopilini. (89 species in US or Canada) **Bibl.:** Crampton 1923; Hubbell 1934; Leja & Poulson 1985; Northup, Hardy & Ingham 1991; Robaux, et al. 1976, 1977

Mating may be helped by a chemical substance on the female antennae and by the setae on the cerci of the male touching the female abdomen. The males of some species touch the females with their antennae as a preliminary to copulation. After this exchange, males turn around and waggle their posteriors at the female. If she is receptive she will turn around, and presumably by feeling with his cerci, the male fuses to the female after turning his abdomen over 180 degrees. The matings observed last approximately 3-5 minutes. Transfer of sperm is by means of a spermatophore, a glutinous ball of sperm (Northrup, 1988). Where crickets deep in the cave get their food is still somewhat puzzling. Cricket remains occur in cricket stomachs but this can only account for part of the food supply. Bacteria such as actinomycetes may consume organic material in rainwater entering the cave. Bacteria on sand grains may in turn become food for the crickets.

Ceuthophilus (*Geotettix*) *alpinus* Scudder, 1894 (= *C. Vinculatus* S., 1894) (BC to NB,IA, s. to CO/ TTx in SD)

Ceuthophilus californianus = *Hemiudeopsylla* c.

Ceuthophilus *baboquivariae* Hubbell, 1936 (epigean & Tx in Baboquivari Mts, AZ)

Ceuthophilus *brevipes* Scudder, 1862 (= *C. terrestris* S., 1891)(forests from Ontario to Newfoundland, s. to VA, w. to MI/ short-legged camel cricket/ Tx in IN (Crawford, Harrison, Monroe, WA Cos.(S2/G4)), KY, NS, OH, VA, seON)

Ceuthophilus (*Geotettix*) *carlsbadensis* Caudell, 1924 (Carlsbad C./seNM +adjacent TX to Fort Davis) . **Bibl.:** Bouley 1928; Northup 1991; N., Lavoie, & Studier 1991; Northup & Kuper 1987, Northup, Hardy & Ingham 1989

Ceuthophilus *chiricahuae* Hubbell, 1936 (Chiricahua & Graham Mts.,AZ epigean/ Tx in C. Mts.,AZ)

Ceuthophilus *conicaudus* H., 1936 (Carlsbad C.(NM)/epigean in wOK,Edwards Plateau & trans-Pecos; TX/ Tx in nwTX, wTX, seNM) **Bibl.:** Northup, Lavoie et al.1991 Northup 1991; Northup & Kuper 1987; Northup, Hardy & Ingham 1989,

Ceuthophilus *conicaudatus* H., 1936 (Tx in seNM,OK,wTX) **Bibl.:** Campbell 1976, 1976a; Northup 1991; Northup & Kuper 1987

Ceuthophilus (*Geotettix*) *cunicularis* H.1936 (scTX epigean/ Tx in TX (Kimble & San Saba

Cos.)) **Bibl.:** Elliott 1997

Ceuthophilus *divergens* Scudder, 1862 (*C. bicolor*, *caecus*, *sallei* S., 1894) (MS Valley, AL, GA, n.to MI/ Tx in Mammoth C. (KY), MN?)

Ceuthophilus *elegans* Hubbell, 1934 (IA, IN, WI epigean/ Tx in IL,MO)

Ceuthophilus *ensifer e.* (*C. e.* Packard, 1881; *C. saxicola* Hubbell, 1936 (now a subspecies)) (Nickajack C., Marion Co.(s.Cumberland Plateau & Sequatchie Valley,TN) +nGA/ Tx, talus, cliffs)

Ceuthophilus *ensifer* n. ssp. *ap* Hubbell MS (Tx in AL,GA,TN)

Ceuthophilus *ensifer saxicola* Hubbell, 1936 (Cumberland Plateau, nTN/ Tx in cave each in Cumberland, Marion, Warren, Grundy Cos. & poss. cave in Fentress Co.),TN)

Ceuthophilus *gracilipes g.* (*Phalangopsis g.* Haldeman, 1850 & *scabripes* H.1853; *C. grandis* & *heros* Scudder, 1894) S.1863 (New England to sIL & Ozarks, s. n Appalachians & central lowlands to wFL/ Tx in AL, AR, FL, GA (Walker Co.), IL, KY (1 cave), MA, MD, MO, MS, NJ, OH, ON, OK, PA, TN, VA, WV). **Bibl.:** Cockley, Gooch & Weston 1977; Hubbell 1936

Ceuthophilus *gracilipes apalachicola* Hubbell, 1936 (nFL incl. Alachua Co./Tx)

Ceuthophilus *guttulosus* Walker, 1869 (*C. nigricans* Scudder, 1894; *C. thomasi* Hubbell, 1936; *C. angulosus* Eades, 1962)

Ceuthophilus *guttulosus g.* Hubbell, 1936 (Tx in NS)

Ceuthophilus *guttulosus nigricans (C.n.* Scudder, 1894) (New England to VA, w.across Alleghenies to IN,KY/Tx in IL)

Ceuthophilus cf. *hebardii* Hubbell, 1936 (Tx in cave in Inyo Co.,CA/ *C.h.* in Salt Lake region, UT to sNV) (see undescr. sp.)

Ceuthophilus *inyo* Hubbell, 1936 (Tx in CA,NW)

Ceuthophilus cf. *inyo* (Tx or Ac in Mariposa & Santa Cruz Cos.,CA)

/

Ceuthophilus *isletae* Hubbell, 1936 (NM/Tx in TX)

Ceuthophilus *latens* Scudder, 1862 (epigean in NE to IO, IN, MI, MN, TN, VA/ Black-sided camel cricket/ Tx in AL, IL, IN, KY, OH, TN) **Bibl.:** C. Turner 1915

Ceuthophilus *latibuli* Scudder, 1894 (epigean,Tx in Fl (n.& c.peninsular) & sGA)

Ceuthophilus *longipes* Caudell, 1924 (Carlsbad (NM) caves/Tx). **Bibl.:** Northup 1991; N. L.& S. 1991, Northup, Hardy & Ingham 1989; Northup & Kuper 1987

Ceuthophilus maculatus (*Rhaphidophora m.* Harris, 1841; *C. latebricola* & *bicolor* Scudder; *Machamala armata*, *C. scriptus* Walker, 1869) S.1862 (epigeal in prairie region (incl. IA, Manitoba, eNM, SD, s.along MS bluffs to AR), e. north of OH R. to e.Canada & neUS/ spotted camel cricket/ Tx in IN, KS, MA, MN, NY, PQ, VA)

Ceuthophilus meridionalis Scudder, 1894 (MI to sON, e.to OH, NY, ePA, s.to OH River, sIN/ striped camel cricket/ Tx in IN (Crawford, Harrison, Orange, WA Cos.(S3/G4)), OH)

Ceuthophilus mesalero Hubbell, 1936 (epigeal & Tx or Tp? in White Mts., Lincoln Co.,NM)
Ceuthophilus nigricans = *C. guttulatus* n.

Ceuthophilus nitens Hubbell, 1936 (Tx in Hickman, Perry & Wayne Cos.,TN)

Ceuthophilus oregonensis = *Styracosceles o.*

Ceuthophilus ozarkensis H., 1936 (epigeal in AR, MO, OK, Ozark Highlands/ Tx in MO?)

Ceuthophilus pallescens Bruner, 1891 (epigeal from Alberta to Manitoba s.to neCO, MT, wNB, ND, Sask., WY) Tx? in well, NB)

Ceuthophilus pallidipes E.M. Walker, 1905 (ON & Great Lakes to ME & ePA, s. in Appalachians to GA/ pale-legged camel cricket/ Tx in KY, OH, VA)

Ceuthophilus (*C.*) *pallidus* Thomas, 1872 (= *C. bruneri*, *discolor*, *inquinatus* Scudder, 1894; *C. tuckeri* Rehn, 1907) (epigeal from Great Plains (IA,NB,W, Sask. & Manitoba), s. to NM,TX, W except CA, OR, WA/ Tx in NM, KS, KY(Barren, Edmonson, Rockcastle Cos.), OK, TX)

Ceuthophilus palmeri Scudder, 1894 (Tx in 2 caves in Hays Co. & cave in Williamson Co.,TX)

Ceuthophilus papago Hubbell, 1936 (Tx in Huechuca Mts., AZ)

Ceuthophilus paucispinosus Rehn, 1905 (NM/Tx in Huachuca, Santa Rita & Catalina Mts.,sAZ)

Ceuthophilus perplexus Hubbell, 1936 (Tx & epigeal in Willamette Valley,wOR/G1S2 OR T&E tracked)

Ceuthophilus pima Hubbell, 1936 (Santa Rita, Whetstone & Catalina Mts, AZ/(new poss. ssp. Tx in Kartchner C., AZ)

Ceuthophilus pinalensis Hubbell, 1936 (epigeal & Tx in mine in Pinal Mts, Gila Co.,AZ)

Ceuthophilus rehni Hubbell, 1936 (mts. of trans-Pecos TX/Tx? in wTX)

Ceuthophilus seclusus Scudder, 1894 (Tx in AR, IL, MO, OK/ Ep (IN to IA, s. to AR,OK, w. to KS, NB)

Ceuthophilus secretus Scudder, 1894 (Ep, Tx in TX) **Bibl.:** Elliott 1997

Ceuthophilus (*Geotettix*) *silvestris* Bruner, 1885 (= *C. marshallii* Caudell 1926) (epigeal in MN to MI, s. to AR,KS/ woodland camel cricket/ Tx in AR, MO, OH)

Ceuthophilus sloanii = *C. stygius*

Ceuthophilus undescr. sp.#1 (Tx/cTX) **Bibl.:** Shasy & Biesele 1968

Ceuthophilus "undescr." sp.#2 (*ph*) MS Hubbell (sides of TN R., Marshall Co., AL/Tx)

Ceuthophilus undescr sp.#3 (*di*) MS Hubble (nAL/Tx)

Ceuthophilus undescr. sp.#4 (cave in Terrell Co., +other parts of Balcones Fault Zone, cTX/ Tx)

Ceuthophilus undescr sp.#5 (*?cave in Pima Co.,AZ/ closely allied with *C. pinalensis*)

Ceuthophilus undescr sp.#6 or #6-7 (cave (cf. *C. hebardii*?) & cave (cf. *C. utahensis*) in Inyo Co.,CA/Tp or Tx) **Bibl.:** Ubick & B.1992

Ceuthophilus undescr sp.#8 (*?cave in Utah Co., UT)

Ceuthophilus undet. sp. or species (Tx (cf. *apache* H.) in TX; Tx in NC (Blount Co.) & NS (one cave); Ttx or Ac in AZ; Tx in 1 OK cave)

Ceuthophilus *stygius* (*R. stygia* Scudder, 1859; *C. sloani* Packard, 1873) (type locality cave in Barren Co., KY/Tx in AL, KY (Barren, Edmonson (Mammoth C.), Rockcastle Cos.), IN (Crawford, Harrison, Orange, WA Cos.(S4/G4)), MI, MO, OH,TN/ caves & talus from s.Oh & sIN to cKY & n.Cumberland Plateau & Highland Rim in nTN)

Bibl.: Poulson & Lavoie 1990; Poulson, Lavoie & Chandler 1990; Studier & Lavoie 1990, 1990a, 1991a; S., L.& Chandler 1991 Studier, Lavoie, Wares & Linn 1987, 1988a; Studier, Wares, Lavoie & Linn 1987; Studier et al. 1991; Gerace 1994

Ceuthophilus *tenebrarum* Scudder, 1894 (epigean in sOH, sIN?, NC/ Tx in nMS & cave in, KY)

Ceuthophilus *uhleri* Scudder, 1862 (= *C. blatchleyi* Scudder, 1894; *C. latisulcus* Blatchley, 1894) (MI ,ON, s. of nIL, OH, sNY to MS, FL/ Ttx in MO) **Bibl.:** Hubbell 1963

Ceuthophilus *umbratilis* Hubbell, 1936 (epigean in sOK, nTX/ Tx in MO, nOK)

Ceuthophilus *utahensis* Thomas, 1876 (*C. uniformis* & *valgus* Scudder, 1894) (epigean in Rockies (nAZ,CO,sID,NM,eUT) to wOK & transPecos TX/ Tx in CO, nwOK (Murray Co.), nNM (El Malapis Natl. Monument) & UT) **Bibl.:** Simon 1973

Ceuthophilus cf. *utahensis* (see undescr. sp.#4-5)

Ceuthophilus *variegatus* Scudder, 1894 (*C. mexicanus*, *pinguis* S.1894)(Tx in TX)

Ceuthophilus *virgatipes* Rehn, 1904 (epigean in nFL(e. of Apalachicola R.),sGA/Tx or Ac in nFL)

Ceuthophilus *wasatchensis* Hubbell, 1936 (Tx & epigean in Wasatch Mts, UT)

Ceuthophilus *wichitaensis* Hubbell, 1936 (epigean in Wichita Mts,OK/Tx in mines)

Ceuthophilus *williamsoni* Hubbell, 1934 (Onondaga C.,MO/epigeal in Prairie & Ozarks, n. to IA, e. to sIL/ common Tx in AR, IL, IA, MI, MN, MO, OH, OK, ON),

Ceuthophilus *yavapai* Hubbell, 1936 (epigeal in sCO Plateau, AZ/ Tx in Coconino Co., AZ)

Cycloptiloides Sjoestedt, 1909 - Gryllidae crickets, Subfamily Gryllinae (16 species in US or Canada)

Cycloptiloides *americanus* (Saussure, 1870) (alien & Tx or Ac in HI (one cave))

Cyphoderris Uhler, 1864 - Haglidae katydids (2 species in US or Canada)

Cyphoderris *monstrosus* Uhler, 1864 (WA to OR/Tx or Ac in WA)

Euhadenoecus Hubbell, 1978 - Rhaphidophoridae crickets, Subfamily Dolichopodinae (3 species in US or Canada). **Bibl.:** Caccone & Sbordoni 1987; Lamb & Willey 1987

Euhadenoecus *adelphus* Hubbell, 1978 (sAppalachians & rocky epigeal incl. neGA,swNC,eTN/ Tx in NC (Henderson, Macon Cos.))

Euhadenoecus barri = *Hadenoecus b.*

Euhadenoecus cumberlandicus = *Hadenoecus c.*

Euhadenoecus *fragilis* Hubbell & Norton, 1978 (type locality cave in Giles Co.) +Bath, Lee Cos., VA; neTN (Claiborne & Hancock Cos.) + eKY(5cos.) & seWV (Greenbrier Co.)/Tx, no epigeans)

Euhadenoecus insolitus, jonesi, opilionides, puteanus, subterraneus = *Hadenoecus i.,j.,o.,p.,s.*
Euhadenoecus utahensis = *Ceuthophilus u.*,

Farallonophilus Rentz, 1972 - Rhaphidophoridae crickets, Subfamily Dolichopodinae (1 species in US)

Farallonophilus *cavernicolus* R., 1972 (sea cave, Farallon Islands, San Francisco Co., CA/Tp/one site under a rock near cave) **Bibl.:** Steiner 1989

Gryllus Linnaeus, 1758 (*Homaloblemmus* Saussure, 1877; *Lenigryllus* Chopard, 1961) Gryllidae crickets (16 species in US or Canada)

Gryllus *assimilis* (*Acheta a.* Fabricius, 1775; *G. aztecus* Saussure, 1859; *G. neglectus* Scudder, 1862; *G. pallida* S., 1897; *G. collocatus* Walker, 1869) (Central Amer. to TX epigeal/ field cricket/ Ac in cave in Hays Co., TX)

Gryllus undet. sp. or species (Tx in Calaveras & Tuolumne Cos., CA; Ac in Bexar & Culberson Cos., TX)

Hadenoeocus Scudder, 1862 (= *Euhadenoeocus* in part) Raphidophoridae crickets, Subfamily Dolichopodinae (6 species in US or Canada) **Bibl.:** Caccone & Sbordoni 1987; Lamb & Willey 1987

Hadenoeocus *barri* Hubbell & Norton, 1978 (*E.c.*) (Tx in Warren, Franklin, Grundy & Marion Cos., cTN)

Hadenoeocus *cumberlandicus* Hubbell & Norton, 1978 (*E.c.*) (Milk C., Wayne Co., eKY/Tx in 13 cos., KY). **Bibl.:** Caccone 1985; Hubbell & Norton 1978; Norton 1978

Hadenoeocus *insolitus* Hubbell & Norton, 1978 (type locality cave in Jefferson Co. (AL) + caves in scKY, cTN (Macon, D3Kalb, Sumner Cos./ Tx) **Bibl.:** Lamb & Willey 1986, 1989

Hadenoeocus *jonesi* Hubbell & Norton, 1978 (type locality cave in Jackson Co., AL) + Madison & Marshall Cos., neAL, + Franklin, Lincoln & Marion Cos., sTN/Tx) **Bibl.:** Cooper & C. 1978

Hadenoeocus *opilionides* Hubbell & Norton, 1978 (cave in Buffalo Cove (Fentress Co.) + Clay, Fentress, Overton, Pickett, Putnam, Van Buren & White Cos., ncTN/Tx)

Hadenoeocus *opilionides* ssp. *australis* Hubbell & Norton, 1978 (type locality cave in White Co. (*w. edge of Cumberland Plateau & Highland Rim in n&cTN)/Tx)

Hadenoeocus *opilionides* ssp. *o.* Hubbell & Norton, 1978 (Tx in TN)

Hadenoeocus *puteanus* (= *Raphidophora p.* Scudder, 1877) Hubbell & Norton, 1978 (epigean in eastern Appalachian & Interior Lowland Plateau), sLA, sGA/ Tx (mostly Ttx) in neAL, nGA (Walker, Dae & Polk Cos.), eKY (Carter, McCreary, Rockcastle, Russell, Wayne Cos.), neLA, wMD, wNC, NJ, w, sNY, seOH (Hocking Co.), PA (Fayette, Meigs, Centre Cos.), eTN, wVA, WV (Grant, Pendleton Cos.) Caccone 1985,

Hadenoeocus undet. sp. (Tp? in VA, WV; Tx in NC (Blount Co.),

Hadenoeocus *subterraneus* (*Raphidophora s.* Scudder, 1861) (type locality in Mammoth Cave, Edmonson Co. + caves and epigean in *?Pennyroyal Plateau, scKY (Simpson, Warren, Hart, Bulter, Barren, Logan Cos.)) + AR? & MI?/ HTx)

Bibl: Barr 1967; Barr & Kuehne 1971; Caccone 1985; Call 1897; Cyr 1989; Cyr et al. 1991; DeLong 1989; Downing 1989; Downing & Kurt 1989; Griffith 1988-a; Helf & Lavoie 1996; Helf, Poulson & Lavoie 1996; Hellman 1989; Hubbell & Norton 1978; Husson 1964a; Kane 1981; Lamb 1973; Lavoie et al 1988; Lavoie, Cyr et al. 1991; Lavoie, Phillpotts, et al. 1991; Lavoie, Studier & Cyr 1990; Lavoie, Studier, Edwards & Apgar 1985; Lavoie, Studier & Kennedy 1988; Leja & Poulson 1985; Levy 1976, 1977, 1981a; Norton 1984; Studier, Lavoie, Wares & Linn 1986; Levy 1976, 1981; Mason 1989; Neilson 1989; Nicholas 1962, 1974; N. & Reichle 1963, 1964; Norton 1978; N., Kane & Poulson 1975; Park 1964; P. & Reichle 1963; Phillpotts 1989; Poulson & Lavoie 1990; Poulson, Lavoie & Chandler 1990; Poulson, Lavoie & Helf 1995; Reichle 1963; R., Palmer & Park 1965; Simon 1973; Studier & Lavoie 1988b, 1990,

1990a-b, 1991a; Studier, Lavoie & Linn 1985; Studier 1996; Studier, Lavoie, Nevin & McMillin 1988-a; Studier, Lavoie, Wares & Linn 1986, 1987, 1987a, 1988a; Studier et al. 1988, 1988a, 1988b; W.Thompson 1844; Tucker 1963; White 1989; Wildfang 1989; Lavoie, King & Simonovic 1985; Lavoie, Studier & Kennedy 1988; Mason, Studier & Lavoie 1988; Nicholas 1964; A. Palmer 1980; O. Park & Barr 1960; O. Park & Reichle 1964; Riley, 1884

Hemiudeopsylla Saussure, 1897 - Rhaphidophoridae crickets (7 species in US or Canada).

Hemiudeopsylla *californianus* (*Ceuthophilus c.* Scudder, 1862; *C. castaneus* Thomas, 1872; *C. denticulatus* S., 1896) (epigeal from BC to CA, UT, AZ/ TTx in CA, OR)

Oecanthus Serville, 1831 (= *Acanthus* Brulle, 1835; *Gryllomyia* Seidl, 1837) (tree crickets). Gryllidae crickets (14 species in US or Canada)

Oecanthus *exclamationis* Davis, 1907 (ON to FL/ Ac in OH)

Pediocetes Rehn & Hebard, 1916 - Tettigoniidae crickets, Subfamily Tettigoniinae (7 species in US or Canada)

Pediocetes *stevensonii* (*Anbrus s.* Thomas, 1870) (Ac in cave in Hays Co., TX)

Raphidophora = See *Hadenoeus*

Pristoceuthophilus Rehn, 1903 - Rhaphidophoridae crickets, Subfamily Ceuthophilinae, Tribe Ceuthophilini. (12 species in US or Canada)

Pristoceuthophilus *gaugei* Hubbell, 1925 (epigeal in BC/ Tx in WA)

Pristoceuthophilus *celatus* (*Ceuthophilus c.* Scudder, 1894; *C. henshawi* S.1891; *Hemiudeopsylla californiana* Saussure, 1897)) (epigeal from BC, AB s. to OR/Tx in OR, WA)

Pristoceuthophilus *cercalis* Caudell, 1916 (Tx in WA)

Pristoceuthophilus *pacificus* (*Ceuthophilus p.* Thomas, 1872) Caudell, 1916 (BC s. to NV, CA/Tx in BC, CA, WA)

Pristoceuthophilus undescr. sp. #1 (*?cave in Plumas Co., CA/Tx)

Pristoceuthophilus undescr. sp. #2 (*?cave in Tulare Co., CA/Tx)

Pristoceuthophilus undescr. sp. #3 (*?cave in Plumas Co., CA/prob. Tp)

Pristoceuthophilus undescr. sp. #4 (*?cave in Plumas Co., CA/prob. Tp)

Pristoceuthophilus undet. sp. or species (Tx in Skamania Co., WA & OR C., OR)

Styracosceles Hubbell, 1936 - Rhaphidophoridae crickets, Subfamily Ceuthophilinae, Tribe Ceuthophilini. (4 species in US or Canada)

Styracosceles *oregonensis* (= *Phryxocnemis o.* Caudells, 1916; *Ceuthophilus o.*) Tx in OR

C.,OR)

Tachycines Adelung, 1902 - Rhaphidophoridae crickets, Subfamily Tropidischinae (1 species in US or Canada)

Tachycines *asynamorous* Adelung, 1903 (MW, MI to NE, Europe/ greenhouse came cricket/ alien Tx in IL, IN (Harrison, Co.(SE/G5), OH)

Thaumtogryllus Perkins, 1899 (common name: thaumat)- Gryllidae crickets, Subfamily Oecanthinae Tribe Xabini (Common name: xabine(s)) (also put in Subfamily Eneopterinae)

Thaumtogryllus *cavicola* Gurney & Rentz, 1978 (type locality cave & Thurston Lava Tube, Volcanoes Natl.Park & 2 other caves; intervening caves between HI Volcanoes & Kealahou Ranch/ Tb/HI & federal Species of Concern, S1S2, global G3 rank/ volcanoes cave cricket)

Thaumtogryllus undescr. sp. (*cave in HA/Tb)

Tropidischia Scudder, 1869 - Rhaphidophoridae crickets, Subfamily Tropidischinae (1 species in US or Canada)

Tropidischia *xanthostoma* (*Rhaphidophora* x. Scudder, 1861) (BC to CA epigeal, especially coastal/ yellow camel cricket/Tx in BC, OR C.(OR) & Mt.St. Helens area, Skamania Co.,WA; Tp or Tx in Trinity, Santa Cruz & Tulare Cos. (CA)) **Bibl.:** Fulton 1928

Crinoids (sea lilies & feather stars)

Class Crinoidea of the Phylum Echinodermata - Fossils in Bilbo Baggins C.(GA) & *Agassizocrinus coniens* in Mississippian wallrock in Russell C., AL. **Bibl.:** Keeler 1983. Oral side upwards like an upside-down starfish (but gutcoils back on itself and anus also is upwards) and the side opposite the mouth attached to the sea bottom by a stalk (lost in feather stars and some sea lilies). Feather stars walk on the tip of their arms or by moving arms alternately during swimming. About 625 living species.

Edriocrinus Hall, 1859

Edriocrinus *sacculus* (extinct Paleozoic fossil in Paxton C., VA)

crocodylid - Irvingtonian fossil in Cumberland C.,MD.

Crustacea - The only class of the subphylum Branchiata. Arthropods with two pairs of antennae and 3 pairs of mouth appendages (chewing mouthparts in primitive forms). <1mm to 60 cm. Head, thorax and abdomen (or pleon). Head fused, nonsegmented with presegmental region (acron). Usually 1 or more thoracic segments included in the head, which then is a cephalothorax). Rear of the abdomen is a telson, which may have jointed appendages or caudal rami (furca). Most have a shell or carapace. Breathing by gills. About 32,000 species. Mostly marine, but incl. **amphipods, branchiopods, cephalocarida, copepods, decapod (shrimp, crabs,**

crayfish), **isopods**, mystacocarids, **ostracods**, remipedia, & **syncarid**. KY: Cole 1959; TX: Elliot 1971; Elliott & Mitchell 1973; US: Underwood, 1886

cryophilic - Adjective applied to a **type** of organism which is adapted to cold conditions, is unable to tolerate warm conditions, & which therefore actively seeks out a cool microclimate. See temperature.

cryptobiont - Species living beneath stones, rotten logs, tree bark, caves, etc. Incl. cryptozoa.

cryptobiosis - A latent or dormant state in which metabolism has slowed down but can be reversed. Syn.: anabiosis, abiosis.

cryptococcosis - **Fungus hazard** contacted by breathing spores in the dirt. Symptoms resemble those of **blastomycosis**. Pulmonary infection is common. See microbe.

cryptozoa - 1. Epedaphic litter & soil invertebrates visible to the unaided eye and which live in daylight concealed beneath stones, bark or in the soil. 2. Syn: animal cryptobiont.

culture of microorganisms - Microbes grown or maintained in a nutrient medium.

Cumacean - See **Syncarids**

An order of marine malacostracan crustaceans, superorder Syncarida

current - **LIFE** presently living in caves. Incl. **fungi**, **macroinvertebrate**, **microbe**, **plant**, population, **substrate** , type, & **vertebrate**.

cyanobacteria - See bacteria. Non-nucleated, single cell bacteria species of Phylum. The most common green or black **microbe** near lights. Syn: blue-green **algae**. Some species can synthesize their pigments without light. Various Chroococcacea help form moonmilk & tufa.

cyobionts - Species who live in or on snow or ice. Mostly dinoflagellates, green algae, and bacteria.

cytoecology - The study of relationships of a cell with its intraspecies environment.

cytology - The study of cells. Bibl.: Veshima 1968

cytostatic agents - Substances that inhibit the growth of cells.

daily energy budget (DEB) - Amount of energy assimilated or expended daily to sustain free-living existence.

damselfly & darner - See Odonata.

dark zone – Part of cave in perpetual darkness.

Decapoda - Order of crustaceans of Class Malacostraca. About 8,650 known species, about 33% of all known crustaceans. Incl. **crab**, **crayfish**, lobster, & **shrimp**.

decomposer - Chemoorganotroph, usually a microbe, that breaks down organic matter. Generally syn.: microconsumer. See guano.

deep (zone) cave environment – Part of cave with a constant temperature within a timespan of years and humidity close to or at 100%. Many troglomorphs are restricted to this zone and/or associated crevices.

deer - See **mammal, ungulate** .

degenerate - Form or life stages that have been reduced in size or duration during evolution.

delayed development - A condition where the blastocyst implants without delay after entering the uterus but subsequent embryonic development ceases temporarily or proceeds slowly.

delayed implantation - A condition where the blastocyst remains in the uterine lumen for a variable period before it implants.

delayed ovulation - A condition in which ovulation is postponed for a period of time following copulation and where spermatozoa are stored in the female reproductive tract. In temperate regions this period is prolonged by hibernation. Syn. delayed fertilization.

deme - A local randomly breeding population.

demic - Pertaining to demes. A suffix may indicate a cause, such as topodemic referring to one isolated by topography.

demography - See population & biogeography

denitrification - Change of nitrate or nitrite to gases, mainly nitrogen or nitrous oxide.

depigmentation - Loss of coloured pigment from the body surface due to genetic change.

dermatophytes - Fungi which can cause skin lesions ('ringworm' type) in man & bats. Ten species found in U.S. bat guano caves but not yet reported as hazard.

detritivore - Species which feeds on detritus (decaying organics): the dead bodies & waste products of animals, & the dead tissues of plants. Incl. coprophage (guanobia) & scavenger.
Bibl.: A. Brown; & Schram 1982

Deuterostomia – One of the two clades of Bilateria animals. All animal embryos form a hollow gastrula with an indentation (blastophore) that sometimes becomes the mouth in Protostomia but never in Deuterostomia. Includes Pterobranchia, Echinodermata, Enteropneusta (acorn worms) and chordates.

deutonymph - The second nymphal instar and the only active, free-living nymphal instar in the life cycle of a water mite.

diapause - Genetically determined period of greatly decreased metabolism and development in the life cycle of some insects. May be critical for normal development. **Bibl.:** Kambysellis & Heed 1974

Diatoms – See algae

dichopatric - Referring to two populations or species that are separated geographically such that gene flow does not occur.

Dicondylia - Subclass of Insecta that includes Infraclass Thysanura and Infraclass Pterygota (most insects). The other subclass of Insecta is Archaeognatha.

Dictyoptera - A Subdivision of Division Neoptera of Class Insecta. Incl. Orders Blattodea (cockroaches), Isoptera (termites) and Mantodea (mantids)

dimorphic - Adj. for morphologic differences between groups within a species, as in sexual differences.

dinoflagellates - Of order Dinoflagellida. Heterotrophic **protozoans (diatoms)** closely related to brown algae & diatoms.

diplopod - See millipede.

Diplurans

Order Diplura, (from *diplo*, two or double, and *ura*, tail) of Superclass Hexapoda, Class Entognatha (= Entotrophi) (from *ento*, within and *troph*, food, in reference to the mouthparts) Wingless, ectognathus apterygote **hexapod** or (less often) insect of Class Elliplura, with bristlelike posterior cerci or forceps (2 in entotrophs, 3 in bristletails). Viewed by a few authors as an order of the Class Insecta.

Diplurans are small (2-50 mm, usually less than 10 mm), eyeless arthropods considered to be among the most primitive of all hexapods. They are soft-bodied shape elongate, slender, slightly fattened, without scales. Pale brown, with the end of the abdomen of some species darkened. Head large; antennae longer than the head and stout, with an indefinite number of segments. Eyeless. They have a pair of long, beaded antennae on the head and a pair of segmented sensory structures (cerci) that protrude like tails at the rear. In one common family (Japygidae), these cerci are developed into strong pincers. The cerci (tails) of some diplurans are designed to break off near the base if they are mishandled. This spontaneous autotomy is probably an adaptation for avoiding predation.

Diplura are tiny, cryptozoic animals that live in moist soil, leaf litter, or humus. About 659 described species are widely distributed throughout the world. Only about 64 species in 19 genera have been found in the U.S. and Canada. They have small, eversible vesicles on the ventral side of most abdominal segments that seem to help regulate the body's water balance,

perhaps by absorbing moisture from the environment.

Most Diplura are predators; their diet probably includes a wide variety of other soil-dwellers, including collembola, mites, symphyla, insect larvae, and even other diplurans. They may also survive on vegetable debris and fungal mycelia, but most species seem to prefer animal prey.

Diplurans are common inhabitants of forest leaf litter. They are part of the community of decomposers that help break down and recycle organic nutrients. A few species are reported as minor economic pests in gardens.

The sexes are separate and fertilization is external. Like springtails, males produce sperm packets (spermatophores) and glue them to the substrate on the end of little stalks. Females use their genital opening to gather spermatophores and then lay their eggs on little stalks inside a crevice or small cavity in the ground.

Male Diplura produce large numbers of spermatophores — up to 200 per week. This large number is probably necessary because sperm only remain viable in the spermatophore for about two days. Diplura and some walkingsticks (Phasmatodea) are the only terrestrial arthropods known to be able to regenerate lost body parts. Legs, antennae, and cerci can be regenerated over the course of several molts. Some crustaceans (e.g. crabs and lobsters) can also regenerate missing legs or claws. The oldest fossil considered as Archaeognatha is from the Devonian (390 million years old) from Gaspé, Québec (Labandeira et al., 1988). However, there is little evidence that this fossil is a member of Archaeognatha; it may instead be a member of the stem-group of insects or of stem-Dicondylia.

Bibl.: Ferguson 1990; Pacit 1957; **Areas:** **Appalachia:** Conde' 1949, 1956.1973; Hoffman 1969; **CA:** Conde' & Thomas, 1957; Pages, 1964; **IN:** Chandler 1956; **KY:** Packard, 1886; Pages, 1964; **NV:** Ferguson 1995-6; **SE:** Conde 1955; North America: Reddell 1983; **TX:** Muegge 1992; **VA:** Ferguson 1974, 1981, 1981a, 1997, 1999; **West:** Ferguson 1992; **World:** Baret 1994; Botosaneanu 1986; Palct 1957; Remington 1954

Suborder Dicellurata (= Japygoidea)

Superfamily Campodeoidea

Campodeidae (slender entotrophs or diplurans)) **Bibl.:** R. Allen 1994

Undet. genus or genera (IA/Tp & CA)

Undescr. sp. (neOK/Tb)

Undescr. Genus A/ seNM, swTX/ Tb)

Undescr. genus C

(Tuckaleechee Cave & two other caves in Blount Co., TN/ Tb)

Subfamily Campodeinae (*Allocampa*, *Condeicampa*, *Eumesocampa*, *Haplocampa*, *Litocampa*, *Metriocampa*, *Plusiocampa*) **Bibl.:** R. Allen 1994

Subfamily Plusiocampinae (*Plusiocampa*)- subsumed in Campodeinae

Superfamily Japygoidea

Japygidae (earwiglike entotroph or diplurans; forcipate dipluran).

Ed & Tp? undet. genus or genera in (AL (Jefferson Jackson Cos.) KY (Hart Co.), GA
&
(Comal Co.,TX)

poss. 2 undescr. Tb sp. (Culberson, Menard, Medina Cos. (extirpated?) & 2 caves
in
Travis Co.) TX);

Subfamily Evalljapyginae (*Evalljapyx*) **Bibl.:** Conde 1953, 1956, 1962

Subfamily Japyginae (*Japyx*, *Metajapyx*, *Occasjapyx*) (last 2 also put in
Evalljapyginae)

Subfamily Parajapyginae (*Mixojapyx*)(also put in Evalljapyginae)

Parajapygidae (*Parajapyx*) **Bibl.:** L. Smith 1960

Allocampa Silvestri, 1931 - Campodeidae diplurans. in Subfamily Campodeinae (1 species in
US)

Allocampa? undescr. sp. (cTX/Tb)

Campodea Westwood, 1842 - Campodeidae diplurans, Subfamily Campodeinae.. (27 species in
US) **Bibl.:** Allen 1994, 1995; Conde 1949; Conde & Thomas 1957; Hilton 1932, 1936

Campodea cookei = *Litocampa c.*

Campodea plusiochaeta Silvestri, 1912 (epigean in nUS, Europe, nAfrica/ prob. Ac or poss. Tp
in cave in in Lee Co., VA)

Campodea undescr. sp.#1 (Jewel C.,Custer Co.,SD/Tb?)

Campodea sp.#2 (2 caves in IA)

Campodea (*Podocampa*) - see *Podocampa*

Condeicampa Ferguson, 1996 - Campodeidae diplurans, Subfamily Campodeinae. (1 species in
US)

Condeicampa langei Ferguson, 1996 (*cave type locality in Lincoln Co.,NV/ Tb)

Eumesocampa Silvestri, 1933 - Campodeidae diplurans, Subfamily Campodeinae..(3 species in
US or Canada) **Bibl.:** Ferguson 1978, 1989

Eumesocampa undescr. sp.#1 (*?cave in Monroe Co.,WV+ NY?, PA?, OH?/ Tb or Tp, syntopic
with *Litocampa fieldingi*)

Eumesocampa undescr. sp.#2 (ncCO/ epigean, Tx?)

Eumesocampa undescr.sp.#3? (Pike, Monroe & Union Cos.,(IL) & Jefferson, St. Genevieve & Perry Cos.(MO)/ Tb)

Eumesocampa undescr. sp.#4? (*?cave in Harrison Co., IN)/ Tb)

Evalljapyx Silvestri, 1949 - Japygidae dipluran, Subfamily Evalljapyginae (4 species in US or Canada)

Evalljapyx apparently undescr. sp. (*?cave in Val Verde Co.,TX/ Tp)

Haplocampa Silvestri, 1912 - Campodeidae diplurans, Subfamily Campodeinae..(4 species in US or Canada) **Bibl.:** Ferguson 1983

Haplocampa (*Haplocampa*) *chapmani* Silvestri, 1933 (WA endogean/Tp or Tx (probable) in Skagit Co., WA)

Haplocampa (*H.*) *drakei* Silvestri, 1933 (epigean in Alberta/ Tx or Tp in Alberta)

Haplocampa (*H.*) *rugglesi* Silvestri, 1933 (NW endogean/Tx or Tp, poss. in Snowpatch (Klickitat Co., WA) & Lava River C. (cOR))

Haplocampa undescr. sp. #1 (Ape & at least 4 other caves in Skamania Co.seWA & possibly in Horne Lake Caves, BC/ Tb/ G1?)

Haplocampa undescr. sp. #2 (Monroe (one cave), Crawford (2 caves) & WA (2 caves) Co.s , MO/ Tb) Craig 1977/Tb)

Haplocampa undescr sp.#3 (Crawford & WA Cos.,MO/Tb/ G1)

Haplocampa undescr sp.#4? (*?cave in Uinta Mts., Duchesne Co., UT/Tb)

Haplocampa undescr sp.#5 (*cave in Uinta Mts., Duchesne Co., UT/Tp)

Haplocampa undescr sp.6 (Klickitat (3 caves) & Skamania (7 aves) Cos., scWA & possibly in , BC/ Tb)

Haplocampa undescr sp.#7 (*cave type locality in Siskiyou Co.,CA/Tb)

Haplocampa undescr sp.#8 (*cave in Plumas Co., ncCA/ Tb)

Haplocampa undescr sp.#9 (*cave in Lake Co.,ecOR/Tb)

Haplocampa undescr sp.10-11 (*cave in Deschutes Co., cOR/ Tb)

Haplocampa undet. sp. (BC?)

Japyx Meinert, 1865 (See isopod: *Ligidium k*) - Japygidae diplurans, Subfamily Japyginae (5 species in US or Canada)

Japyx undet.sp. (Ac or Tx in Kazumura C., HI)

Japyx subterraneus = *Metajapyx s.*

Litocampa Silvestri, 1933 - Campodeidae dipluran in Subfamily Campodeinae (5 species in US or Canada) **Bibl.:** Ferguson 1981, 1991, 1997

Litocampa (L.) *Abarringerorum*@ in Ferguson, 1981 (= *undescr. sp. D2*) (type locality & four other caves in *Tazewell Co.,VA/Tb/VA S1 T&E rank/ G1)

Litocampa (L.) *Abarryi*@ in Ferguson, 1981 (type locality cave in Unicoi Co. one other cave in Carter Co.,TN / Tb/ G1)

Litocampa (L.) *Abifurcata*@ in Ferguson, 1981 (type locality & 1 one other cave in Pulaski Co. + WA Co. (7 caves in *area se of Walker Mt, nw of IronMTs & other foothills of Blue Ridge Mts. to the n.), VA/Tb)

Litocampa (*Litocampa*) D3 (*Acherokeensis*@ in Ferguson, 1981) (type locality cave in Maury Co., TN + Colbert, Dekalb, Jefferson Cos., AL, Dade & Walker Cos., nwGA/ Tb)

Litocampa (*Campodea*) *cookei* (*Campodea c.* Packard, 1871; *Plusiocampa nearctica* Conde, 1949; *P. & L. (Litopocampa) n.* Silvestri, 1934; *C. staphylinus* var. *c.* Packard, 1871; *P.c.* (Packard) Chandler, 1956; *Campodea c.*) (Nickajack (type) (Marion Co.), Anderson, Bledsoe, Campbell, Cannon, Claiborne, Coffee, Cumberland, Grainger, Grundy, Hancock, Marion , Rutherford Cos., TN +AL (Jackson Co.) + Edmonson (Mammoth C.), Barren, Green, Hart, Rockcastle, Pulaski, Warren & Wayne Cos.(KY) & wVA (Lee, Scott, Wise Cos.)/ Tp or Tb)
Bibl.: Packard 1874a

Litocampa (*Litocampa*) F1 (*Adavisi*@ in Ferguson, 1981) (Cumberland C., Warren Co. + Bedford Co.,TN & Blount, DeKalb, Jackson Cos., AL & Dade & Walker Cos., GA/ Tb or Tp)

Litocampa (*Plusiocampa*) *fieldingi* (*Plusiocampa f.* Conde', 1949) (type locality & > 7 other caves in Greenbrier Co., >3 caves in Pocahontas Co. & > 3 caves in Monroe Co. , all WV /Tb/ WV T&E S2 rank & global G3)

Litocampa (*Litocampa*) *Ahawksleyi*@ in Ferguson, 1981 (type locality cave in Taney Co. + Pulaski & TX Cos., MO + Boone, Newton, Searcy & Stone Cos., neAR/ *White & Gasconada River drainages/ Tb)

Litocampa (L.) *henroti* Conde', 1949 (*Tychocampa* & *P.h.*) (type locality & 2 other caves in Madison Co.,AL/ Tb/ G1)

Litocampa (L.) *Aholleri*@ in Ferguson, 1981 (type locality + probably 2 other caves in Swain Co. & one cave in Hederson Co., both NC / Tb)

Litocampa (L.) undesc. Sp. E4 *Aholsingeri*@ in Ferguson, 1981 (type locality & 2 other caves in Scott Co.,VA + one cave in Letcher Co.,KY/ Tb/VA S1S2 T&E rank)

Litocampa (L.) *Cl* (*Ainexpectata*@ in Ferguson, 1981) (*type locality cave in Hancock Co.,neTN/ Tb)

Litocampa (L.) *jonesi* Conde, 1949 (type locality cave in Montgomery Co. & one cave in Christian Co., both TN / Tb)

Litocampa (L.) *Akeithi*@ in Ferguson, 1981 (type locality cave in Orange Co. + Crawford, Harrison, WA Cos.,Blue River area, IN/ Tb)

Litocampa (L.) *Aozarkensis*@ in Ferguson, 1981 (type locality cave in Newton Co. + Boone, Independence & Searcy Cos.,AR/ Tb)

Litocampa (L.) *Apecki*@ in Ferguson, 1981 (type locality in Chattooga Co. & other cave in Walker Co. + Dade Co., GA/ Tb/ G1)

Litocampa (L.) *puckettii* Conde & Bareth 1996 (= *Plusiocampa p.*) (***type locality & 1 other cave in Tazwell Co. & cave in Bland Co.,VA/Tb?) **Bibl.:** Bareth 1974

Litocampa undescr.. sp? (*cave in Wythe Co.,VA/Tb/VA S1 T&E rank)

Litocampa undescr. sp. C2 or two sp. (<10 caves in Blue and Lost river basins of & single cave in eastern edge of Crawford Upland, sIN)

Litocampa undescr. sp.#D1 (cave in Mercer Co.,WV & cave in Giles Co., both sw VA/ Tb/ WV & VA S1 T&E, G1 global rank)

Litocampa undescr. sp. (*?cave in Eddy Co.,NM/ G1)

Litocampa undescr. #G2 (part of *valentinei* group) (near streams which drain into Coosa River, AL/ Tb?)

Litocampa undescr. sp. #P (6 caves in Walker Co. & one in Chattooga Co., GA/ Tb)

Litocampa undet. sp.? (cave in Jackson Co.,AL/Tb)

Litocampa (L.) *Asperkai*@ in Ferguson, 1981 (type locality cave in Pulaski Co. + cave or caves in Rockcastle Co.,VA/Tb)

Litocampa (L.) *valentinei* (*Plusiocampa v.* Conde, 1949; *Cocytocampa v.*) (type locality cave in Madison Co. + caves in Marshal, DeKalb (only cave not in Cumberland Plateau n.of TN River) & Jackson Cos.,neAL & Franklin & Grundy Cos.(sTN), sCumberland Plateau/ Tb)

Litocampa (L.) *Awelbourni*@ in Ferguson, 1981 (*type locality cave in San Miguel Co.,NM/ Tb)

Metajapyx *Silvestrii*, 1932 - Japygidae diplurans, Subfamily Japyginae (8 species in US or Canada) **Bibl.:** L. Smith & Bolton 1964

Metajapyx undescr. sp. or undescr. genus = *Mixojapyx reddelli*

Metajapyx undet. sp. (cave in DeKalb Co.,TN)

Metajapyx (*Japyx*) *subterraneus* (= *Japyx* s. Packard, 1874a) Silvestri, 1947 (type locality & 1 other cave in Edmonson Co.,KY +IN/ Ac or TTx) **Bibl.:** Young 1951

Metriocampa Silvestri, 1933 - Campodeidae diplurans, Subfamily Campodeinae. (9 species in US or Canada)

Metriocampa (*Metriocampa* or *Tricampa*) *remingtoni* = *Tricampa remingtoni* Conde & Geeraert, 1962)

Metriocampa (*Metriocampa* or *Tricampa*) *rileyi* = *Tricampa rileyi*

Metriocampa undescr. sp.#1 (*Wind Cave,Black Hills,SD/Tb)

Metriocampa undescr. sp.#2 (near *Tricampa remingtoni*) (cave each in Adams, Hardin & Saline Cos., IL/ Tb/ G1)

Metriocampa undet. sp.1-4 (ice caves in Malpais Natl Monument,nwNM/ Tp)

Metriocampa (*Tricampa*) undet. sp. #5 (Tx or Tp in 1 seAK cave)

Metriocampa undet. sp.#6 (OR C.,OR?/Tb or Tp)

Mixojapyx Silvestri, 1933 - Japygidae dipluran, Subfamily Parajapyginae (also put in Evalljapyginae) (2 species in US or Canada)

Mixojapyx *reddelli* Muegge, 1992 (type locality cave in Uvalde Co. + caves in Kimble, Travis, Menard, Bexar & Comal Cos.,TX/ Tb)

Mixojapyx undescr. sp. (cave in Rockingham Co.,VA/prob. Ac Edaphobite)

Occasjapyx Silvestri, 1948 - Japygidae dipluran, Subfamily Evalljapyginae. (5 species in US or Canada)

Occasjapyx (*Japyx*) *kofoidi* (*Japyx* k. Silvestri, 1928) was misidentified as to taxon & = isopod *Ligidium kofoidi*

Parajapyx Silvestri, 1903 - Parajapygidae diplurans, Subfamily Parajapyginae (3 species in US or Canada)

Parajapyx (*Parajapyx* or *Japyx*.) *isabellae* (*Japyx* I. Grassi, 1886) (Tp in Burnet & Travis Cos., TX)

Plusiocampa Silvestri, 1912 (= *Troglocampa* Denis, 1930; *Stygiocampa* Silvestri, 1934; *Paratachycampa* Wygodzinsky, 1944; *Didymocampa* Paclt, 1957) (see *Litocampa*) - Campodeidae diplurans in Subfamily Plusiocampinae (4? species in US)

Plusiocampa (*Campodea*) *cookei* (*Campodea c.* Packard, 1871; *P. nearctica* Silvestri, 1934) (type locality cave in Mammoth Cave, Edmonson Co., & caves in Barren, Warren, Green, Hardin, Hart, Edmonson Cos., KY & Campbell, Claiborne, Cannon, Coffee Cos. TN, sIN & VA (Lee, Scott & Wise Cos.)/Tb G4G5) **Bibl.:** Packard, 1874a

Plusiocampa fieldingi = *L. f.*; *Plusiocampa jonesi* = *Litocampa j.*
Plusiocampa nearctica = *Litocampa cookei*; *Plusiocampa pucketti* = *Litocampa p.*

Plusiocampa undet. sp. or species. (caves in Skamania Co., WA (Tb) & Siskiyou Co., CA/Tb?)

Plusiocampa undescr. sp.#1 (or undescr. genus) (Carlsbad & 1-4 other caves in Eddy Co., NM/Tb)

Plusiocampa undescr. sp.#2 (*cave in Butte Co., CA)

Plusiocampa undescr. sp.#3-? (Tb? in AL, GA, sAppalachians; Tb in Mercer Co., WV; Tb in MO + Newton Co., AR & Major Co., OK (Youngsteadt & Y. 1978); Tb possibly in Lancaster Co., PA)

Plusiocampa undet. sp. or species (6 cos. in eKY; Taney Co. in MO; Tb in Kartchner C., Cochise Co., AZ)

Podocampa Silvestri, 1932 (= subgenus of *Campodea* Silvestri, 1932) Campodeidae diplurans (6 species in US or Canada) **Bibl.:** Conde, 1956

Podocampa undet. sp. (OK, TX)

Podocampa undescr. sp.#1 (Tb or Tp in MO)

Podocampa undescr. sp.#2 (TX/ Tx)

Tricampa Silvestri, 1949 (= subgenus of *Metriocampa*) - Campodeidae diplurans in Subfamily Campodeinae (4 species in US or Canada) **Bibl.:** Bareth & Conde, 1958; Conde' & Geeraert, 1962; Paclt 1957

Tricampa *remingtoni* (= *Metriocampa r.* Conde & Geeraert, 1962) (Tp in CO)

Tricampa *rileyi* (*M. r.* Silvestri, 1933) (W, Alberta, IA to LA/Tp)

Tricampa undescr. sp. or species (Tb near *rileyi*, *remingtoni* in ***IL); Tp in IL, OK, NM)

Tychocampa - see *Litocampa*

directional selection - Where a population moves towards one phenotypic extreme, usually due to steady change in environmental conditions.

disjunct distribution - Where taxa occur in geographically separated areas. Syn.: Discontinuous distribution. If the areas are of very different size, the largest is an exclave.

dispersal - Active or passive geographic extension of a species. See also biogeography. Bibl.: Belles 1992; Butler & Hobbs 1982; Downing 1989; Downing & Kurt 1989; Fong 1991; Hobbs, Jr. 1973; Krekeler 1959, 1961; Lewis 1996; Liebherr 1988; Mason 1989; Peck 1978; Pederson 1990; Plafkin 1975; Waters 1981

barriers - Badaracca 1986; Barr 1988; Veni 1991
recolonization - Hobbs III 1989; Lewis 1996

dispersion - The distribution of a species in space or on a surface. The dispersion number is the difference between the actual and a uniform distribution.

distribution - The geographic area that a species occurs in.

distrophic – Referring to caves whose biomass is largely supplied by vegetation washed in during floods.

divergence - 1. A measure of how dissimilar in species composition are two communities. 2. Where dissimilar traits develop in different species with a common ancestor.

divergent evolution - Syn: divergence.

divide - Boundary between separate catchment areas of drainage basins.

DO - A **water quality** measurement of dissolved oxygen (DO). Incl. BOD, respiration, water column, & intergravel. Higher temperatures usually decrease solubility & increase BOD.

DOM – Abbrev. For dissolved organic matter, often less than one milligram per liter in groundwater not impacted by humans.

dobsonfly - See **Neuroptera**.

dog - See **mammal, carnivore**.

Dollo's law - Complex structures, once lost, are not regained in their original form.

dominance (see competition) - Bovbjerg 1953; Lowe, M.E. 1956

dragonfly - See **Odonata**.

drift - Bibl.: Pederson 1990;

dwarf fauna - A fossil grouping with many small individuals. Can result from environmental/genetic conditions (such as low food supplies on islands) and/or selective sorting of bones or corpses.

dysaerobic – Environments in which oxygen is between .1 and 1 milliliters per liter. Cf. anaerobic & aerobic.

earthworm - Oligochaeta annelids. See **worm**.

Earwigs

Insect of Order Dermaptera, Infraclass Pterygota, Division Neoptera Abdomen ends with pair of hardened, curved pincers. “Wig”, short for perwig .means “to scold” and refers to the untrue folklore that earwigs enter people’s ears. Dermaptera refers to the thickened or “skinlike” front wings. Species in the US are omnivorous. Body leathery to hard, shape elongate and somewhat flattened. Brown to black, sometimes with reddish markings. Simple antennae about half the length of the body, with 6-15 segments. Biting mandibles. Some are wingless but most have short front wings that do not cover the abdomen. When not in use, the hind wings fold fanlike beneath the front pair. Some females tend their egg clutches and young larvae in small ground nests and repel all intruders, including their mates. They lick the eggs, presumably to prevent fungus. They are paurometabolous, with terrestrial eggs, larvae and adults. Most of the 2,000 known species in the world are tropical but 20 species in 12 genera occur in the U.S. A few cave-evolved species in the tropics. Bibl.: Helfer 1963; Reichardt 1968; Steinmann 1989.

Suborder Forficulina

Superfamily Labiduroidea

Carcinophoridae

Subfamily Carcinophorinae

(*Anisolabis*, (also put in Anisolabididae, Subfamily Anisolabidinae) *Euborellia*)

Labiduridae (striped or long-horned earwigs)

Subfamily Psalinae

(*Anisolabis*, *Euborellia* (both now in Carcinophoridae, Subfamily

Carcinophorinae)

Anisolabis Fieber, 1853 (*Forcinella* Dohrn, 1862; *Labiduroides* Dubrony, 1879; *Lagicolabis*, *Horridolabis*, *Gelotolabis* Zacher, 1911; *Homoeolabis* Borelli, 1911; *Spondox*, *Apolabis*, *Paralabis* Burr, 1915; *Placolabis* Bey-Bienko, 1959) Carcinophoridae earwigs, Subfamily Carcinophorinae (once placed in Labiduridae; also put in Anisolabididae, Subfamily Anisolabidinae) (2 species in US) (‘aha (HI name))

Anisolabis *howarthi* Brindle, 1980 (**type locality cave & Kazumura C., Big Island, HI / Tb/G1G2)

Euborellia Burr, 1910 (= *Borellia* Burr, 1909; *Landex* Burr, 1915) Carcinophoridae earwigs, Subfamily Carcinophorinae (also put in Labiduridae) (3 species in US or Canada)

Euborellia *annulipes* (*Forficesila* Lucas, 1847; *F. equestris* Gene, 1837; *F. annulicornis* Blanchard, 1852; *F. variicornis* Smidt, 1876; *A. antennata* Kirby, 1891; *A. bormansi* Scudder, 1993; *A. fallax* Shiraki, 1905; *A. tripolitana* Werneer, 1908; *A. nana* Boeseman, 1954) L., 1847 (CA, AZ, NM, S/ ring-legged earwig/ Tx or Ac in AL, TX)

Ecdysozoa – See **worms** and Loricifera. Division of Protostomia Bilateria animals that

undergoes ecdysis (shedding of exoskeletons all at once). Includes Kinorhyncha, priapulids, **Loricifera**, hair worms (Nematomorpha), nematodes, velvet worms (Onychophora), tardigrades, and arthropods.

ecdysis - Periodic entire shedding of an exoskeleton or outer skin.

Echinoderms

(Starfish and brittle stars, sea urchins and sand dollars, sea lilies, sea daisies, and sea cucumbers)

Phylum Echinodermata of the Deuterostomia. Solitary marine floor (rarely free-swimming) invertebrates. Radially symmetrical as adults, usually with five radii (pentameral symmetry) and may be cup-, star-, spherical, disk or cylinder shaped. Incl. fossils (**blastoid** & **crinoid**) & current species (**brittle** star, **sea stars**, **sea cucumber**, & sea **urchin**). Kier & Grant, 1965

Kingdom Animalia

Clade Metazoa

Clade Eumetazoa

Clade Bilateria

Clade Deuterostomia

Phylum Echinodermata

Class Holothuroidea

Order Molpadiida

Family Mopadiidae (*Molpadia*)

Class Ophiuroidea

Order Ophiurida

Suborder Chilophiurina

Family Ophiactidae or Orphiuridae (*Ophiopholis*)

Molpadia Risso, 1826 - Molpadiidae echinoderms

Molpadia intermedia (AK, BC marine infauna)

Ophiopholis – Ophiactidae echinoderms

Ophiopholis aculeata (Linnaeus, 1767)(daisy brittle star/ AK marine infauna)

echolocation - Emitted sound & the intercepting of the reflected echoes to detect obstacles (and sometimes food items). Ultrasonic clicks used by bats, *Aerodramus* swiftlets, & the oilbird (*Steatornis caripensis*).

eco-ethology - The study of the behaviors that determine the relationships between individuals and those determined or regulated by the abiotic environment.

ecocline - A gradual boundary between two ecosystems.

ecological amplitude - Tolerance range of a species. **Indicator species** often have narrow ecological amplitudes.

ecological equilibrium - The long term stable state of a ecosystem that is self regulating. When environmental influences exceed this capacity (as is often the case) then a new equilibrium may be established with different species distributions.

ecological site equivalence - Similar niches in structured ecosystems that are similar.

ecological valency - The intensity range of factors (usually abiotic) within which an species can survive.

ecology (see also behavior, population ecology/structure) - Ashley 1996; Baichtal et al. 1995; Barnett 1970; Barr 1953b, 1963c, 1967b; Benedict 1967g, 1980a; B. & Gruber 1981; Berry 1943; Bouvbjerg 1951, 1970; Brenner & Kane 1981; Brigmon et al 1994; B., Martin & Zame 1994; Brunner & Kane 1981; Calder & Bleakney 1965, 1967; Carlson 1994; Carpenter 1970; Christiansen 1971; C., Willson, & Tecklin 1961; Claus 1963; Clifford 1966; Crowell, R.L. 1981; Crowell, R.M. 1961; Danielopol, Dan L. 1978; Conrads 1969; Cooper 1974, 1975; C. & C. 1971, 1974; Culver 1971c, 1982; Decu 1978; Davis, G. & Lopez 1988; Dearolf 1948; Des Marais et al. 1980/1; Dickson & Kirk 1975; Dowdy, W.W. 1968; Eberly 1954a; Edler & Dodds 1990; Elliott 1986, 1995a, 1993, 1997; Findley 1958; Fletcher 1984; Fliermans et al. 1974; Franz 1978; Gibert et al. 1994; Green et al. 1968; Greer 1985; Griffith 1988, 1990; Grove 1974; G. & Harvey 1977; Harris 1904; Hairston, N.G. 1949; Hart 1973; Hobbs, III. 1969, 1973b; Hoff 1959; Holsinger 1963b; H. & Bowman 1973; Holsinger, Hubbard & Bowman 1994; Howarth 1980; H. & Culver 1985; H., Hubbard, & Bowman 1994; H. & Leitheuser 1983; Howarth 1982a, 1983, 1987a; Husmann 1971; Hutchison 1956; Ives 1927, 1934; Jenio 1980; Job & Simons 1994; Juberthie, Christian & Delay 1981; Kane 1978, 1983; K., Norton, & Poulson 1975; Kane, Poulson & Ryan 1983; Keith 1979; Kuehne 1963; Lamprecht, Gunther & Weber 1985; Lee, G.F, et al. 1977; Leitheuser & Holsinger 1983; Lewis & Lewis 1980, 1983, 1993; Lisowski 1978; MacAlpine & Reynolds 1977; Marchant 1981; Marsh 1969; Michelbacher A.E. 1959; Minckley 1963; M. & Cole 1963; Muchmore 1973a; Nelson & Smith 1976; Newcombe 1929; Nixon 1975; Norton, R. 1984; N., Kane & Poulson 1975; Mitchell 1965; Mohr 1948; Olson 1995; Park & Reichle 1964; Parzefall 1991, 1986; Peck 1966. 1974c, 1988; P. & Richardson 1976; Pennak 1950; Poulson 1976, 1984b; P. & Kane 1977; Prins 1968; Reichle, Palmer & Park 1965; Reisen 1975; R. et al. 1976; Relyea & Sutton 1973; Resetarits 1986. R. & Aldrige 1988; Relsen et al. 1976; Reynolds 1959; Scott 1909; Seidenberg 1973; Simmons 1975; Stanford & Simons 1992; Stanford, Ward & Ellis 1994; Story & Bryant 1966; Tack 1941; Taylor, D.W. 1988; Thibaud 1970, 1975; Thorp & Covich 1991; Turanchik & Kane 1979; Van Luik 1981; Weingartner 1977; Weise 1953; Welch 1973; Wong 1975; Zacharda 1979, 1980

paleoecology - Barnosky et al. 1988; Benton 1991; Coats 1996; Duffield 1970; Eshelman, R. E. 1971; Estes 1978; Foley & H.A. Semken 1992; Griffin & Semken 1976; Guilday, Cotter et al. 1984; A. Harris 1985; Heaton 1985; Logan 1983; Martin, Sabels & Shutler 1961; Mead, Bell & Murray 1992; Morlan 1989; Robbins et al. 1984; Schubert 1996; Semken 1969, 1984; Smartt

1977; Van Devender & Worthington 1977; Wang 1988

ecology type - See commensal, inquilism, mutualism, parasite (hyperparasite), phoretic, predator & symbiosis.

ecomorphology - Inferential relationships between morphology and ecology. Study of how the environment affects the shape and structure of organisms.

ecotone - (Narrow) boundary between two communities or habitats.

ecotope - A species' habitat.

ecotype - A species' genetic variant adapted to a local habitat, especially climatic or edaphic.
Syn.: ecological race.

ectognathus - Mandibles & maxillae fully exposed & labium is a free appendage.

edaphic - Ecology affected by local soils or substrate.

edaphobite - Abbrev. as Eb. 1. Deep soil inhabitant. 2. Species restricted to microcaverns such as small crevices around tree roots & in talus piles. See soil animals.

edaphon – Biota living within soil or substrate. Cf. psephan, edaphobite, infauna.

edaphophile - Abbrev. as Ed. Species adapted for euedaphon (deep soil) conditions such as low O₂ & high CO₂. May lack eyes & pigment but tend to be more compact, with less attenuated appendages than cave species. Abbrev. as Ep. Cf. hemiedaphon. Syn: euedaphophile. See **springtail** & Catopidae & Carabidae **beetles**.

edaphophytes - Microscopic soil flora.

Edentata - **Mammal** order; incl. **armadillo**, **glyptodonts** (fossil), & **ground sloths** (fossil).

edge effect - Ecologic conditions, such as higher biodiversity in a particular area, resulting from the interaction of two ecotopes.

Ediophthalma – Order by Meglitch & Schramm that includes amphipods & isopods.

ehrlichiosis - Gram-negative intracellular rickettsia disease. More common in south, east, south-central states than Rocky Mountain spotted fever. Symptoms incl. Fever, headache, vomiting. Usually no rash. Death in 1% of cases. Suspected transmission by Ixodes scapularis, a tick known from caves.

elephants - See **mammal**, **elephants**.

elk - See **mammal**, **ungulate**.

Elliplura - Class of Insecta or Hexapoda that includes proturans (Order Protura) and springtails (Order Collembola)

embryonic genesis – Development from an ovum. Syn.: embryogenesis.

Embryophyta - A phylum of Plantae that includes all land plants.

emendation - Abbrev. is emend. If an alteration of the diagnostic characters or of the circumscription of a taxon modifies the nature of the taxon, the author responsible may be indicated by the addition to the author citation of the abbreviation Aemend.@: (emendavit) followed by the name of the author responsible for the change.

endangered - A **T&E** defined in the ESA as any species in danger of extinction throughout all or a significant portion of its range. Aley & Aley 1979a; Anon 1977; C.Belson 1999; Bouchard 1976; Culver & Holsinger 1995; Elliott 1989, 1998, 1990; Hobbs III 1987a; Holsinger 1979; McFarlane 1988, 1992, 1992a, 1993; McReynolds 1976; McFarlane 1988; Wilson 1984; **AL**: Mount 1976; Ramsey 1976; Stein 1976;; Byers 1983; J. Cooper 1979; Thorne 1988; **AR**: Buchanan 1974; Hobbs III 1987; H. Robinson & Smith 1982; **CA**: Elliot 1978a; Gray 1975; Muchmore & Cokendolpher 1995; **FL**: Humphrey 1978-a, 1992a; D. Wood 1993; **HI**: McCormick 1978; **IN**: J. Lewis 1993b; Whitaker & Gammon 1988; **MO**: Aley & Aley 1979; Nordstrom, Gary R., W.L. Pflieger, Kenneth C. Sadler & Lewis. 1977; Wilson 1984; **MO** Dept. 1991; **NC**: Cooper, 1977a; Cooper & Cooper 1977; Coyle 1977; Holsinger & Cooper 1977; Martof 1977; **NV**: Benedict 1976, 1978; Dudley & Larson 1975; Fiack 1976; Sharpe et al 1973; **OH**: H. Smith et al. 1973; **OK**: Canaday & Vitello 1996; **TN**: Simmons 1976; **TX**: Chambers & Jahrsdoefer, 1988; J. Clark 1998; Edwards & Longley et al 1989; Elliott, 1984b; 1989, 1990, 1991, 1992a. 1993, 1993a; Reddell 1995; Reddell & Elliot 1995 Karnei 1978, 1979; Longley 1978; O=Donnel & Elliott 1994; Veni 1991; Chambers 1993; Chambers & Jahrsdoefer 1988; Croteau 1992-3; Crumley 1989; Drewry 1985; W. Elliott 1985. Golz 1994; 1989; Haurwitz 1993, 1995-6; McCann 1988-9; Tazik et al. 1992; Texas Parks 1993; Tilton & Johnston 1990; Todd 1993; USFWS 1992; Veni 1991; **US**: Ashton 1976; Lera 1981; USFWS 1970, 1974-80, 1983, 1990-1; **VA**: Linzey 1979; **WV**: Buckelew, 1990

endemic - Population only from a particular area. Paleoendemics once had more extensive distribution. See diverse, rare, endangered, threatened. Due to genetic drift & high extinction rates, small, isolated carbonates tend to have a small number but high % of cave endemics. Larger carbonate areas tend to have a larger number but lower % of endemics. Large populations & migrations tend to dampen genetic drift & so reduce the number of new/endemic species.

endemism - See **evolution**

endobenthos – Species living within the substratum as in rock or sediment.

endobiosis - Symbiosis in which one species lives inside of another.

endogean - Pertaining to the soil or rock extending to the limit of epigeal roots and sediment

under epigeal bodies of water.

endogean, endogena, edaphobite (see soil, troglodyte) - Aalbu & Andrews, 1985; Peck, 1997b; Reddell, 1986a, 1992

endogena - Meiofauna in soil or rock just below Earth's surface. Usually sporadic in caves. Partial syn: edaphobite. Incl. edaphophile (Ep).

endogenous - Occurring inside a species, as in synthesized rather than being acquired from outside the organism.

endogenous zone – Area immediately beneath the Earth's surface.

endoliths - Species that actively bore their own tunnels into rock. Cf. **chasmoliths & epiliths**.

endopsammic – Referring to biota of water-saturated sand.

Endopterygota - A subdivision of Class Insecta that includes orders Strepsiptera, Megaloptera, Raphidioptera, Neuroptera, & Coleoptera (beetles) & Superorders Antliophora (Orders Mecoptera, Siphonaptera (fleas), Diptera (flies) & Amphiesmenoptera (Orders Trichoptera (stoneflies), Lepidoptera (moths and butterflies) and Hymenoptera (wasps, bees and kin)

endopsammon - Benthic burrowing species that are too large to live in interstitial spaces.

endosymbiosis - Internal symbiosis, as in cyanobacteria taking up residence within certain eukaryote cells, making food in return for a home.

energetics - See **metabolism**.

energy - Concerning energy flow among **current** species. Incl. decomposition rates, nutrient pools, productivity, & trophic structure. Bibl. - See bioenergetics, feeding, metabolism.

energy budget - Ratio of energy input/output of a taxon or trophic level.

Entognatha - Superorder of insects with eversible mouthparts contained within a small pouch or pocket. Incl. **springtails, proturans and diplurans**.

entomophagus - Feeding on the tissues of an insect. Bibl. - See feeding

Entoprocta - Phylum of marine animals (see bryozoa)

entrance zone of cave – Area where outside influences such as light, weathering, and organics dominate the physical and biological environment. Cf. **twilight zone**.

entropy - The increase in disorder in a system. Species are a temporary decrease in entropy at the expense of increasing entropy in the larger system.

environmental variance - The amount of phenotypic variety due to differences in the environment of a taxon.

Ep - Syn: **edaphophile**

epedaphic - Adj. for species living on the soil surface.

epibenthic –Living on the surface of the floor of a body of water or an area periodically flooded by water, as in a tidal flat.

epibionty & epibiont - Syn.: **paleoendemic**.

epibiosis - Symbiosis in which one species lives on another. Cf. endobiosis.

epidemiology - The study of how diseases are transmitted.

epigean - The land surface, including plants and bodies of water. Syn: epigeic. Cf. endogean, hypogean.

epigean, epigeic, epizooic - Barr, 1967a, 1968a; Bechler, 1977; Bosnak, 1984; Caine, 1974, 1978; Hadley et al., 1981; Holt, 1973a; Loomis, 1943; Minckley, 1961; Parzefall, 1985; Sweet, 1982; Williams, W.D. 1970.

epigenetic - The interaction of genetic and developmental factors that lead to the expression of the genotype.

epilithon - A biofilm that converts organics into food for larger species.

epiliths - Species that live purely on the surface of rocks. Cf. chasmoliths & endoliths.

epineuston – Species which live just above the surface film of water.

epipsammon - Benthic surface-dwelling, generally motile macrofauna.

epizoic - Most common **substrate** is the outer surface of an animal. Often applied only to non-parasites. Incl. algae, mites, fungi, etc.

E.P.T - Three groups that indicate relative health in streams. Generally the more Ephemeroptera (**mayflies**), Plecoptera (**stoneflies**) and Trichoptera (**caddisflies**) the better the water quality and the less challenging the environment.

equilibrium density - When factors promoting and limiting population growth are balanced.

equilibrium species - Where competition rather than dispersal, maintenance, or high-reproduction is the main survival strategy. Common in environments with stable resources.

ermine - See **mammal**, **Mustelid**.

estrus - A period when females allow males to mate with them (specifically near the time of ovulation, except in temperate zone hibernators- but excluding *Miniopterus* bats)

eubacteria - True bacteria, essentially all bacteria with a single cell and a rigid cell wall.

eucladioliths - See **organic sinter**.

eucenic or eucoenic - Species who have low ecological amplitude tolerances.

eucrenon - The spring source zone.

euedaphobite - 1. Syn: endogean. 2. Species in cave litter or humus.

euedaphon - Of the interior soil layer. Cf. hemiedaphon.

euedaphic - Referring to living inside soil.

euedaphophile - Syn: **edaphophile**.

Eumetazoa – A clade that includes all animals except the Porifera and Placozoa. Unlike the latter two groups, eumetazoan cells tightly coordinate functions. Divided into the Cnidaria, Ctenophora and Bilateria.

euryece – Inhabiting a wide range of habitats.

euryoecic - Species which can tolerate a wide range of habitats.

eutroglobionts - European term for troglobionts that are largely or entirely unpigmented and which often have reduced eyes or wings and well-developed touch organs.

eutrophic - Refers to nutrient rich areas, especially an adj. for a body of water characterized by a high level of plant nutrients, with correspondingly high primary productivity and/or where productivity is no longer limited by nutrient levels. Most eutrophic waters in NA karst are human-caused. **Bibl.** - See **human impacts**.

eutrophication - An increase in the amount of plant nutrients.

evenness - The relative abundance of a species.

evolution, (biologic) - Change in gene frequencies over time. Incl. convergent, divergent, punctuated & regressive. **Bibl.** - see also natural selection, speciation, taxonomy. Acorn & Ball 1991; Barr 1963b, 1968-9, 1985b, 1990; Bechler, 1983a; Breder 1943, 1953; Brown, 1976, 1979; Caccone, 1985a, 1988; Calow & Read 1986, Christiansen 1963, 1965, 1971, 1992; Christiansen & Culver 1968, 1969, 1987; Culver 1970, 1971, 1976, 1978, 1982, 1985a, 1987a; Culver,

Holsinger & Baroody 1973; Culver, Kane & Fong 1995; G. Davis, 1989; Deeleman-Reinhold 1981; Ebbets, 1986; Elliott 1976, 1986; Eberly 1958, 1960; Fage 1931; Ferguson, 1974, 1981a; Fleming 1972a, 1973; Fong 1989, 1995; Foster 1980; Franz & Lee 1982; de Gama 1973; Goodnight & G., 1981; Griffith, 1988a, 1990; Grubbs & Chippendale, 1995; Hart & Hart 1969; Hobbs, Jr., 1958, 1988; Hobbs & Barr 1972; Hoch & Howarth, 1993; Holsinger 1966b, 1988; Howarth 1982, 1986-7, 1987, 1991; Hueppop, 1985; Hurst 1976, 1977; Iliffe, 1986; Jernigan et al., 1994; Kane 1978; Kane & Culver, 1991; Kane & Richardson, 1990-1; Laing, Carmody & Peck 1976a; Lamb & Riley 1986, 1989; L. Martin 1984; Martin & Prince, 1990; Milstead, 1959; Mitchell & Smith, 1972; Nicholas & Peters, 1973; Notenboom 1991; Park 1953a-b; Peck 1973b, 1978a, 1980, 1981a,b,c, 1981a 1984, 1986a, 1997b; Peck & Christiansen, 1990; Peck & Lewis, 1978; Poulson, 1973, 1985; W. Richards 1968; Rosen 1962; Simmons, 1975; Sbordonni 1982; Strenth 1991; Steeves 1966; D. Thompson & Jones, 1996; Wake, 1966; Wegele 1990; Westcott, 1968; Wilkins 1987; : Huys & Boxshall 1991

adaptive radiation - Stone & Howarth 1991

climate - Barnosky 1994a; Toomey 1993a; Howarth 1980;

co-evolution - Griffith 1988

convergence - Christiansen 1961, 1963; Culver & Fong 1986; Davis, G.M. 1989; Eigenmann 1903; Hobbs Jr. 1976; Langecker & Longley. 1993

divergence - Eigenmann 1903; Badaracca, 1986; Caccone, 1988; C. & Powell, 1987;

C. & Sbordonni, 1987; Hoch, 1992; Hoch & Howarth, 1993.

evolutionary history see also biogeography)

Holsinger 1995a; Jernigan & Fong 1994; Jernigan, Culver & Fong 1994; Kane 1985

geology - Howarth 1980;

macroevolution - Christiansen 1987.

marine comparisons - Parzefall 1986a

metabolism - Huppopp 1985

molecular - Caccone & Powell, 1987; C. & Sbordonni, 1987; Carson & Chippindale, 1993; Chippindale 1992;

non-relictual - Howarth 1988

punctuation - Culver 1987;

rates (gradualism & punctuation) - Culver 1987; Sbordonni, 1987

regressive (see also senses) - Bartkowiak, Tschardtke & Weber 1991; Chapman 1988; Charlton 1933; Christiansen 1985; Culver 1985; Eigenmann 1909; Fong 1983, 1985; Fong & Culver 1985; Ghaffar 1984; Green & Romero 1997; Heuts 1953; John 1957; Kane 1986; Kane & Richardson 1985; Langecker 1992; Lisowski 1979; Lundberg 1982; McNulty 1978; Maguire 1961, 1969; Parker 1890; Peters 1988, 1990; Poulson 1985, 1985a; Reddell, 1985; Romero 1985; Thibaud 1970; Thines 1960, 1969; Vandel 1961; Wilkens 1973, 1980-1, 1986-7; Christiansen 1985-6; Maguire 1961;. Poulson 1985a, 1986;

eyes - Besharse & Brandon 1973, 1974, 1974a; Besharse & Hollyfield 1976, 1977; Brandon 1968; Detwiler & Laurens 1921; Eigenmann 1899, 1903, 1905; Galeano 1976;

Green & Romero 1997; Kane 1986b; Larimer et al. 1966; Mellon 1977; Mellon & Lnenicka 1980; Peters 1990; Stone 1964; Thibaud 1967, 1976; Thibaud & Massoud 1973; Wells 1952, 1959; Kane & Culver 1986, 1991; Larimer 1966; Loeb 1915

phylogeny - Aalbu, 1985; Andersen & Polhemus 1980; Ball, 1974; Beier, 1940; Bousfield, 1978, 1983-4; Brusca & Wilson, 1991; Calow & Read, 1986; Chippindale, 1995; Coates, 1990; Cokendolpher & Reddell, 1992; Conde', 1953; Culver, Chang et al. 1995; Gelder, & Brinkhurst, 1990; Herman, 1970; Holsinger, 1989, 1992, 1995; Jones, C. A. et al., 1984; Kane & Chang, 1995; Kosswig, 1960; Lundberg, 1982; Northup et al., 1997; Peck, 1997b; Rowland, 1975; Thompson, D. & Jones, 1996; Tihen, 1958; Wilkens 1973, 1981;

non-selection - N. Peters 1990

pigmentation - Baldwin & Beatty 1941; Barret & Benjamin 1977; Beatty 1941, 1949; Chapman 1988; Kane 1986; Kosswig 1960; Lisowski 1979; Noble & Pope 1928; Williams & Howell 1979; Wolfe & Cornwell 1964

punctuated vs. gradualism - David 1987; Sbordoni 1987
selection - Jones 1990; Jones & Culver 1989
stress - Howarth 1993a

exogenous - Influence or effect originating from outside of a species.

evolutionary lineage - Line of descent of a taxon from its ancestors.

evolutionary niche - A way of life.

evolutionary tradeoff - The genetic elaboration or acquisition of a trait made possible by a loss or reduction of another trait.

evolutionary trend - A steady change in a evolutionary lineage or trait, as in attenuation in cave species.

exaptation - A trait that allows a taxon to occupy a habitat once unavailable to it. Loss of pigments, wings & eyes may help soil animals adapt to caves. Syn.: preadaptation.

excess baggage hypothesis - Active selection (rather than genetic drift) against form no longer needed.

exclave - A small disjunct area.

exogenous - Originating outside a species.

exoskeleton - An external skeleton. The hard body covering or shell of molluscs or other invertebrates.

exploitative competition – An interaction between biota in which one species benefits at the expense of the other.

extinct - **Population** of a particular species no longer present anywhere.

extinction - See conservation, endangered. Guilday 1967a

extirpation - Loss of a species from a particular area. See biogeography. Lewis 1996

extralimital - A fossil found in an area beyond the current range of that species.

facultative - Adj. For organisms able to adopt alternative lifestyles.

f. sp. - forma specialis. Taxonomic order below that of subspecies or variety.

facultative aerobe - An organism which is normally anaerobic but can also grow in the presence of oxygen.

facultative anaerobes - Bacteria that can grow in the presence or absence of free oxygen.

facultative cavernicoles - Incl. troglophile & troglaxene.

faculative troglophiles - Normal epigean not uncommon in caves but showing no special modifications associated with cave life. Cf. habitual.

false scorpions - Syn: **pseudoscorpions**.

feeding/predation - Acorn & Ball 1991; Allison et al., 1992; Anderson & Martino 1967; Bechler 1981b, 1985; Brandon 1967; A. Brown, Pierson & Brown 1994;; Budd et al., 1979; Caine, 1975; Childester, 1908; Christiansen, 1970b; Crowell, 1981; Culver 1973a, 1985; Culver, Fong, & Jernigan 1987; Cummins & Klug, 1979; Dickson 1978, 1978a-b, 1979; Dyer 1975; Engelmann, 1956; Griffith 1988; Griffith & Gates 1985; Hansen, 1978, 1980; L. Hill 1969; Jaeger, 1972; Kane 1974, 1981, 1984a; Kane, Norton & Poulson 1975; Kane & Poulson 1976; Lavoie, 1988; L., King & Simonovic, 1985, 1988; D.S. Lee, 1969, 1969b, 1979; Leja & Poulson 1985; Levy 1976, 1981a; Martin 1977; Man & Fong 1991; Mitchell 1968, 1971; Northup, Lavoie, & Studier 1991; Norton, Kane & Poulson 1975; Peck, 1973, 1974b; Peck & Richardson, 1976; Poulson, 1973, 1978, 1983, 1984a; Poulson & Kane, 1981; Poulson & Jegla 1966; Simon & Buikema, 1995; P.W. Smith 1948; Studier & Lavoie 1991; Uiska et al., 1994; Vuckem 1988; V. & Studier, 1990; White 1989; Wildfang 1989; Wratherred & Harvey 1971; Poulson 1979, 1981

Ferns

Filicopsida (= Filicatae), a class of Pteridophyta (vascular cryptograms). Unlike other pteridophytes, conspicuous sporophytes have monopodial, usually branched stems, mostly with large, abundantly veined, pinnate leaves (fronds). About 10,000 species. Rarely found as alien **plants** far in caves but common at cave entrances. Spores of extirpated sp. in Carlsbad C.(NM).
Bibl.: J. Peck 1982; A. Smith 1993; C. Richard, Smith & MacNeill 1995; . Incl. fern allies.

Division Polypodiophyta

Class Filicopsida

Subclass Polypoditae

Order Aspidiales

Family) Aspleniaceae (also put in Order Polypodiales & Aspleniales) (Spleenwort
(*Asplenium*, *Phyllitis*)

Order Dryopteridales (also put in Order Polypodiales)

Dryopteridaceae (Wood Fern Family)
(*Ctenitis*, *Cystopteris*, *Dryopteris*, *Lomariopsis*, *Notholaena*, *Polystichum*,
Tectaria)

Subclass Pteriditae

Order Dennstaedtiales

Dennstaedtiaceae (or in Order Polypodiales) (Bracken Family)
(*Odontosoria*, *Pteridium*)

Subclass Schizaeatae

Order Polypodiales (may also include families listed above & below)

Polypodiaceae (Polyploidy Family) (*Polypodium*, *Woodsia*)

Order Pteridales

Pteridaceae (or in Order Polypodiales) (Brake)

(*Argyrochosma*, *Aspidotis*, *Cheilanthes*, *Cryptogramma*, *Pellaea*
(also put in Polypodiaceae), *Pentagramma*, *Pteris*)

Vittariaceae (or in Order Polypodiales) (shoestring ferns) (Incl. *Vittaria*)

Adiantum Linnaeus, 1754 - Pteridaceae ferns

Adiantum *capillus-veneris* Linnaeus, 1753 (Cave entrances in nCA, likely entrances in BC, AB, AZ, AK, CA, CO, FL, GA, KY, MS, NV, VA, Mex. To Peru, epigeal in LA/ Venu=s-hair fern, southern maidenhair (fern))

Adiantum *jordani* Muller Halle, 1864 (likely in cave entrances in OR, CA)

Adiantum *ternerum* Swartz, 1788 (cave entrances in FL)

Argyrochosma (J. Smith) Windham, 1987 (= *Notholaena* R. Brown sect. *Argyrochosma* J.Smioth, 1841) Pteridaceae ferns

Argyrochosma *dealbata* (Cheilanthes d. Prush, 1814) Windham, 1987 (calciphile likely at cave entrances in AR, IL, KS, KY, MO, NB, OK, TX)

Argyrochosma *fendleri* (*Notholaena fendleri* Kunze, 1851) Windham, 1987 (likely in lava tube entrances in CO, NM, WY, Mex.)

Argyrochosma *jonesi* (*Notholaena j.* Maxon, 1917) Maxon, 1917 (calciphile on ledges and cliffs in AZ, CA, NV, UT to Mex.)

Argyrochosma *limitanea* (Maxon) Windham, 1993 ssp. *limitanea* Windham, 1993 (rocky ledges and cliffs, usually on calcareous or volcanic rock, in AZ, CA, NM, UT to Mex.)

Argyrochosma *limitanea* (Maxon) Windham, 1993 ssp. *mexicana* Windham, 1993 (rocky slopes and cliffs, usually on calcareous or volcanic rock, in AZ, NM, TX to Mex.)

Argyrochosma *microphylla* (*Pellaea m.* Mertenius ex Kuhn, 1869) Windham, 1987 (calciphile on rocky hillsides and cliffs in NM, TX to Mex.)

Aspidotis (Nuttall ex Hooker & Baker) Copeland, 1947 - Pteridaceae ferns

Aspidotis *californica* (Hooker) Nuttall ex Copeland, 1947 (likely in cave entrances in CA)

Aspidotis *densa* (Brakenridge in Wilkes) Lellinger, 1968 (likely in cave entrances in CA, BC, ID, MT, NV, OR, PQ, UT, WA, WY)

Asplenium Linnaeus, 1754 (*spleenwort*; spleenworts) - Aspleniaceae ferns

Asplenium *abscissum* (*Firmum a.* Willdenow, 1810.) (Calciphilie and likely in cave entrances in Appalachian Mts., wBC, PQ, s. to TN/ TTx in AL)

Asplenium *adulterinum* J. Milde, 1865 (limestone crevices in BC, Europe/ adulterated spleenwort)

Asplenium *x bicayneanum* A. rhizophyllum Linnaeus var. B. D.C.Eaton, 1887) (in sinks & likely in cave entrances, sFL/ Biscayne spleenwort)

Asplenium *cristatum* Lamark in Lamarck et al., 1786 (calciphile on moist limestone outcrops, cliffs & on boulders, likely in cave entrances in FL/ hemlock spleenwort)

Asplenium *x curtissii* L. Underwood, 1906 (calciphile on moist limestone boulders, likely in cave entrances in FL/Curtiss=s spleenwort)

Asplenium *heterochroum* Kunz, 1834 (sinks & limestone rocks in FL, GA, Mexico, Caribbean/ varicolored spleenwort)

Asplenium *heteroresiliens* W.H. Wagner, 1966 (limestone rocks in FL, NC, SC, likely in cave entrances/ Morzenti=s spleenwort)

Asplenium *x palmeri* Maxon, 1909) (likely in cave entrances in sAZ, sNM, wTX/ Palmer=s spleenwort)

Asplenium *pinnatifidum* Nuttall, 1818 (cliffs, ledges and boulders of sandstone and other acidic rocks, possible in rockshelter and cave entrances in AL, AR, DC, GA, IL, IN, KY, MD, MS, MO, NJ, NC, OH, OK, PA, SC, TN, VA, WV, WI/ lobed spleenwort)

Asplenium *x platyneuron* (*Acrostichum* p. Linnaeus, 1753) Britton, Sterns and Poggenburg 1888 (likely in cave entrances in east to ON, PQ & w. to eTX, NM/ Ebony spleenwort)

Asplenium *plenum* E.P. St. John ex Small, 1938 (calciphile on moist limestone boulders, likely in cave entrances in nFL/ ruffled spleenwort)

Asplenium *pumilum* Swartz, 1788 (calciphile on moist limestone boulders, likely in cave entrances in nFL/ hairy or triangle spleenwort)

Asplenium *x resiliens* Kunz, 1844 (SC sinks & cave entrances; likely in cave entrances in east US, w. to AZ/ black-stemmed spleenwort)

Asplenium *ruta-muraria* (Linnaeus, 1801 (*A. cryptolepis* Fernald; *A. cryptolepis* Fernald var. *ohionis* Fernald; *A.r.* var *c.* (Fernald) Wherry) (calciphile likely in cave entrances in AL, AR, CT, IN, KY, MD, MA, MI, MO, NJ, NY, NY, OH, ON, PA, PQ, RI, TN, VT, VA, WV, Europe, e Asia/ wall rue)

Asplenium undet. sp. (NV near cave lights)

Asplenium *rhizophyllum* (calciphile possible in cave entrances in AL, AR, CT, DC, GA, IA, IL, IN, KS, KY, MD, MA, ME, MI, MN, MO, NH, NJ, NC, NY, OH, OK, ON, PA, PQ, RI, TN, VT, VA, WI, WV/ walking fern)

Asplenium *scolopendrium* var. *americanum* (*Phyllitis* s.(Linnaeus) var. *a.* Fernald, 1935; *Scolopendrium vulgare*) Kartesz & Gandhi, 1991 (calciphile in cave entrances in AL, ON, MI, NY, TN, Mex./ American hart=s tongue) (Fernald, 1935) **Bibl.:** C. Richard et al. 1993; Cressler 1989; McGilliard 1936; J. Peck 1982

Asplenium *septentrionale* (cliffs, likely in cave entrances in AZ, CA, CO, NM, OK, OR, SD, TX, UT, WV, WY, Europe/ forked spleenwort)

Asplenium *trichomanes* (*Cheilanthes* t. Linnaeus, 1753) (Now east of MT to NY, PA, wNC, nGA/ disjunct Ttx in NM/ maidenhair spleenwort)

Asplenium *trichomanes-dentatum* (in sinks, likely in cave entrances in sFL)

Asplenium *trichomanes-ramosum* Linnaeus, 1753 (= *A. viride*) (calciphile likely in cave entrances in AB, AK, BC, CA, CO, ID, ME MI, MT,NB, NF, NS, NV, NWT, NY, ON, OR, SD, PQ, UT, VT, WA, WI, WY, Yukon/ green spleenwort)

Asplenium *trichomanes* subsp. *quadrivalens* Meyer, 1962 (calciphile likely in cave entrances in BC, CT, DL, IL, ME, MD, MA, MI, NH, NJ, NY, OH, ON, OR, PA, PQ, VT, VA, WA, WV, WI/ maidenhair spleenwort)

Asplenium *trichomanes* subsp. *t.* Linnaeus, 1753 (*A. melanocaulon* Willdenow) (likely in cave entrances in BC and most of US/ maidenhair spleenwort)

Asplenium *vespertinum* Maxon, 1900 (mesic, shaded canyon walls and beneath overhanging rocks, likely in cave entrances in sCA, Mex./ western spleenwort)

Asplenium *verecundum* Chapman ex L. Underwood, 1906 (*A. scalifolium* E.P. St. John; *A. suare* E.P. St. John; *A. subtile* E.P. St. John) (calciphile on limestone outcrops, grottoes, cliffs & on boulders, likely in cave entrances in FL)

Cheilanthes Swartz, 1806 (lip ferns, lipferns) Pteridaceae ferns

Cheilanthes *bonariensis* (Willdenow) Proctor, 1953 (likely at lava tube entrances in AZ, NM, TX./ Bonaire lip fern)

Cheilanthes *cooperae* D.C. Eaton, 1857 (calciphile likely in cave entrances in CA/ Cooper=s lip fern)

Cheilanthes *covillei* Maxon, 1918 (likely at lava tube entrances in AZ, CA, NV, UT, Mex./ Coville=s lip fern)

Cheilanthes *eatonii* Baker in Hooker & Baker, 1867 (likely in cave entrances in AZ, AR, CO, NM, OK, TX, UT, VA, WV, Mex./ Eaton=s lip fern)

Cheilanthes *feeii* Moore, 1857 (calciphile likely in cave entrances in AB, BC, AZ, AR, CA, CO, ID, IL, IA, KS, KY, MN, MO, MT, NB, NV, NM, OK, OR, SD, TX, UT, VA, WA, WI, WY, nMex./ slender lip fern)

Cheilanthes *gracillima* D.C. Eaton in Emory, 1859 (nCA twilight zone; likely in lava tube entrances in AB, BC, MT, NV, OR, UT, WA/ lace fern)

Cheilanthes *horridula* Maxon, 1918 (calciphile likely in cave entrances in OK, TX, nMex./ prickly lip fern)

Cheilanthes *intertexta* (Maxon) Maxon in Abrams, 1923 (likely at lava tube entrances in CA, NV, OR/ Coville=s lip fern)

Cheilanthes *lanosa* Maxon, 1918 (likely in cave entrances in AL, AR, CT, FL, GA, IL, IN, KS,

KY, LA, MD, MN, MS, MO, NJ, NY, NC, OH, OK, PA, SC, TN, TX, VA, WV, WI./ hair lip fern)

Cheilanthes *lendigera* (Cavanilles) Swartz, 1806 (likely at lava tube entrances in AZ, TX, Mex./ beaded lip fern)

Cheilanthes *leucopoda* Link, 1841 (calciphile likely at cave entrances in wTX, Mex./ white-footed lip fern)

Cheilanthes *lindheimeri* Hooker, 1852 (likely at cave entrances in AZ, NM, TX, Mex./ fairy swords)

Cheilanthes *microphylla* (Swartz) Swartz, 1806 (calciphile likely at cave entrances in FL / southern lip fern)

Cheilanthes *parryi* (D.C.Eaton) Domin, 1915 (likely in cave entrances in AZ, CA, NV, UT, Mex./ Parry=s lip fern)

Cheilanthes *tomentosa* Link, 1833 (likely in cave entrances in AL, AZ, AR, GA, KS, MO, NM, NC, OK, PA, SD, TN, TX, VA, WV, Mex./ wooly lip fern)

Cheilanthes *villosa* Davenport ex Maxon, 1918 (calciphile, likely in caves in AZ, NM, TX, nMex./ villous lip fern)

Cheilanthes *wootonii* Maxon, 1918 (likely at lava tube entrances in AZ, CA, CO, NV, OK, UT, Mex./ Wooton=s lip fern)

Cheilanthes *yavapensis* T.Reeves ex Windham, 1993 (likely at lava tube entrances in AZ, NM, TX/ Yavapai lip fern)

Cryptogramma R. Brown in Franklin, 1832 - Pteridaceae ferns

Cryptogramma *sitchensis* (*Allosorus* s. Ruprecht, 1845) T. Moore, 1857 (likely in caves in Yukon, AK, BC, NWT)

Cryptogramma undet sp. (AK freshwater pond interstitial)

Cryptogramma *stelleri* (*Pteris stelleri* S.G. Gmelin, 1768) (likely in cave entrances in Canada & nUS)

Ctenitis (C. Christensen) C. Christensen in Verdoorn et al. 1938 (laceferns) Dryopteridaceae ferns

Ctenitis *sloanei* (*Polypodium* s. Peoppig ex Sprengel, 1827) C.V.Morton, 1969 (wooded limestone ledges, likely in cave entrances from sFL to Peru)

Cystopteris *Bernhardi*, 1806 (bladder fern, bladderfern, brittle fern) Dryopteridaceae ferns

Cystopteris fragilis (Linnaeus, 1806) (Tx near lights in Lehman C., NV; near entrances in nCA; Ttx in Mariposa Co., CA)

Cystopteris reevesiana Lellinger, 1981 (possible in lava tube or carbonate caves entrances in AZ, CO, NM, TX, UT, Mex/ southwestern brittle fern)

Cystopteris tennesseensis Shaver, 1950 (likely in cave entrances in AL, AR, GA, IL, IN, IA, KS, KY, MD, MS, MO, NC, OH, OK, PA, TN, VA, WV, WI/Tennessee bladder fern)

Cystopteris tenuis (*Nephrodium tenue* Michaux, 1803; *C. fragilis* (Linnaeus) Bernhardt var. Mackayi G. Lawson) R.C. Moran, 1983 (likely in cave entrances in IA, IL, IN, MN, NV, OH, PA, UT, WI/ Mackay=s brittle fern)

Dennstaedtia Bernhardt, 1802 - Dennstaedtiaceae ferns

Dennstaedtia globulifera (*Polypodium globuliferum* Poiret in Lamarck et al., 1804) Hieronymus, 1904 (most caves or sinks in TX, West Indies, to South America/ beaded cuplet fern)

Dryopteris Adanson, 1763 (shield or wood fern, woodfern) Dryopteridaceae ferns

Dryopteris arguta (*Aspidium argutum* Kaulfuss 1824) Maxon, 1921 (Disjunct Near cave entrances in nCA/ coastal woodfern)

Dryopteris expansa (*Nephrodium expansum* C. Presl, 1825) Fraser-Jenkins & Jermy, 1977 (= *D. assimilis*) (Near cave entrances in nCA/ spreading woodfern)

Dryopteris filix-mas (L.) Schott (male fern/ twilight zone)

Lomariopsis Fee, 1845 (climbing holly fern) Dryopteridaceae ferns

Lomariopsis kunzeana (*Stenochlaena k. C. Presl ex. L. Underwood*) Holttum, 1939

Notholaena R. Brown, 1810 (Cloak fern) Pteridaceae ferns

Notholaena aschenborniana Klotzsch, 1847 (likely in cave entrances in AZ, TX, Mex.)

Odontosoria Fee, 1852 - Dennstaedtiaceae ferns

Odontosoria clavata (*Adiantum c. Linnaeus, 1753*) J. Smith, 1875 (in sinks in southern FL/ wedgelet fern)

Pellaea Link, 1841 (cliffbrakes; cliff brakes; cliff-brakes) Pteridaceae ferns (also put in Polypodiaceae)

Pellaea andromedifolia (*Pteris a. Kaulfuss, 1824*) Fee, 1852 (rocky slopes and ledges on basalts in CA, OR to Mex.)

Pellaea atropurpurea (*Pteris a. Linnaeus, 1753*) Link, 1841 (calciphile (usually) on cliffs and ledges in most of US to ON, CA, WY, SD)

Pellaea *gastonyi* Windham, 1993 (calciphile on cliffs and ledges in AB,BC,SK,MO,SD,WY)

Pellaea *glabella* Mettenius ex Kuhn ssp..*glabella* (*P.atropurpurea* (Linneaus) Link var. *bushii* Mackenzie (calciphile (usually) on cliffs and ledges in AR, CT, IL, IN, IA, KS, MD, MA, MI, MN, MO, NB, NY, OH, OK, PA, TN, TX, VT, VA, WV, WI)

Pellaea *glabella* Mettenius ex Kuhn ssp..*simplex* (Butters) A. Love & D. Love, 1977 (*P.atropurpurea* (Linneaus) Link var. *bushii* Mackenzie (calciphile (usually) on cliffs and ledges in AB, BC, AZ, CO, ID, MT, NM, UT, WA, WY)

Pellaea *glabella* Mettenius ex Kuhn ssp..*missouriensis* (G.J. Gastony) Windham, 1993 (calciphile on cliffs and ledges in MO)

Pellaea *glabella* Mettenius ex Kuhn ssp..*occidentalis* (E.E.Nelson) Windham, 1993 (calciphile (usually) on cliffs and ledges in AB, Manitoba, NWT,SK, MT, ND, SD, UT, WY)

Pellaea *intermedia* (*P. intermedia* var. *pubescens* Mettenius ex Kuhn, 1869) (rocky slopes and ledges on granite and limestone in TX)

Pellaea *ovata* (*Pteris o.* Desvaux, 1827) Weatherby, 1936 (rocky slopes and ledges on granite and limestone in TX)

Pentagramma Yatskievych, Windham & E. Wollenweber, 1990 (silverback or goldback fern) Pteridaceae ferns

Pentagramma *triangularis* (*Gymnogramma t.* Kaulfuss, 1824) Yatskievych, Windham & E. Wollenweber, 1990 (Cave entrances in nCA)

Phyllitis scolopendrium = *Asplenium s.* Linneaus, 1754)

Phyllitis scolopendrium var. *americana* = *Asplenium s.* var. *americana*

Polypodium Linneaus, 1754 - Polypodiaceae ferns

Polypodium *vulgare* (twilight zone)

Polystichum Roth, 1799 - Dryopteridaceae ferns

Polystichum *lonchitis* (L.) Roth (northern hollyfern/ twilight zone)

Polystichum *munitum* (*Aspidium m.* Kaulfuss, 1824) K.Presl., 1836 (Cave entrances in nCA/ western swordfern)

Pteridium Gleditsh ex Scop., 1760 - Dennstaedtiaceae ferns

Pteridium *aquilinum* (Linneaus) (Ttx in MO)

Pteridium undet. sp. or species (HI Volcanoes, Carlsbad (NM)

Pteris Linnaeus, 1754 (brake ferns) Pteridaceae ferns

Pteris *bahamensis* (*Pteris diversifolia* Swartz var. *b.* J. Agardh, 1839; *Pteris longifolia* var. *b.*) (likely in sFL caves/Bahama brake)

Pteris *cretica* Linnaeus, 1767 (non-native from Asia/ in cave entrances in FL/ epigean in LA/ Cretan brake)

Pteris *cretica* Linnaeus, 1767 var. *albolineata* Hooker, 1860 (non-native in cave entrances in nFL/ White-lined Cretan brake)

Pteris *vittata* Linnaeus, 1753 (non-native likely in caves in AL, CA, FL, GA, MS, SC/ epigean in DC, LA/ ladder brake, Chinese (ladder) brake)

Tectaria Cavanilles, 1799 (halberd ferns) Dryopteridaceae ferns

Tectaria *coriandrifolia* (*Aspidium coriandrifolium* Swartz, 1801) Underwood, 1906 (in sFL sinkholes, likely in cave entrances/ hairy halberd fern)

Tectaria *fimbriata* (*Aspidium fimbriatum* Willdenow, 1810) Proctor & Lourteig, 1990 (in sFL sinkholes, likely in cave entrances/ least halberd fern)

Tectaria *hieracleifolia* (*Aspidium hieracleifolium*, 1810) Underwood, 1906 (broad halberd fern) (cave entrances in FL, Mex., Caribbean)

Thelypteris Schmidel, 1703 - Thelypteridaceae ferns

Thelypteris *kunthii* (*Nephrodium k.* Desvaux, 1827) C.V. Morton, 1967 (sinks and cave entrances in SC)

Thelypteris *phegopteris* (*Dryopteris* & *Lastrea* p.) (Marsh fern Twilight zone)

Trichomanes Linnaeus, 1754 - Hymenophyllaceae ferns

Trichomanes *boschianum* Sturm, 1861 (on noncalcite rock in crevices, grottoes and/or caves entrances in AL, AR, GA, IL, IN, KY, NC, OH, SC, TN, VT, VA to Mex./ Appalachian filmy fern; Appalachian bristle fern)

Trichomanes *intricatum* Farrar, 1992 (on noncalcite rock in crevices, grottoes and/or caves entrances in AL, CT, GA, IL, IN, KY, MD, MA, NH, NJ, NY, NC, OH, PA, SC, TN, VT, VA, WV/ Appalachian trichomanes, weft fern)

Trichomanes *krausii* Hooker & Greville, 1830 (in limestone sinks in sFL/ Kraus=s bristle fern)

Trichomanes *lineolatum* (*Didymoglossum* l. Bosch, 1863) Hooker in Hooker & Baker, 1867 (on rock in limestone sinks in sFL to South America/ lined bristle fern)

Trichomanes *petersii* Farrar, 1992 (on noncalcite rock in deep, narrow gorges in AL, AR, FL GA, LA, MS, NC, SC, TN to Mex./ dwarf bristle fern; Peter=s bristle fern)

Trichomanes *punctatum* Poiret ssp. *floridanus* Wessels, 1962 (on rock in limestone sinks in sFL/ Florida bristle fern)

Vittaria Smith, 1793 (shoestring ferns) Vittariaceae ferns

Vittaria appalachiana Farrar & Mickel, 1991 (dark, moist cavities and rock shelters in noncalcite rocks in AL, GA, IN, KY, NY, NC, OH, PA, SC, TN, VA, WV)

Woodsia R. Brown, 1810 (cliff fern, woodsia, woodsia fern)- Polypodiaceae ferns

Woodsia oregana D.C. Eaton, 1865 (Cave entrances in nCA/ Oregon woodsia)

Woodsia scopulina D.C. Eaton, 1865 (Cave entrances in nCA/ Rocky Mountain woodsia)

fern ally - Bryophyte Lycopodiophyta Incl. club-moss, quillwort, spike-moss & horsetails.

ferret, black footed - - See **mammal**, **carnivore**

fetalization - The presence of embryonal or juvenile characters of an ancestral form in evolutionarily more recent species.

Fish

Aquatic vertebrates of Class Pisces, Phylum Chordata, Subphylum Craniata. **Bibl.** Barr 1956b; Greenwood 1967. Biogeography: Hocutt & Wiley 1986; Robinson 1986; Blindness; Loeb 1915 Conservation: Echelle 1991; Echelle & Echelle 1993; Echelle & Dowling 1992; Genetics: Echelle 1991; Echelle & Echelle 1993; Echelle & Dowling 1992; **agonistic behavior:** Bechler 1979c; **circadian:** Poulson & Jegla 1966; **colonization:** Romero 1985a; **evolution:** Bechler 1983a; Gren & Romero 1997; MacFarlane 1923; Thines 1956; Thines & Durand 1973;

Areas: **AK:** M. Bryant et al. 1998; **CA:** Catton, 1885; Hubbs 1927; **AL:** Cooper 1971; Boschung 1961; Smith-Vaniz 1968;; Mayden 1987; **Alberta:** Nelson & Paetz 1974; **AR:** Buchanan 1974; Robison & Buchanan 1988; F. Cross et al. 1986; **Canada:** Robins et al. 1991; **FL:** Carr & Goin 1955; Pruitt 1995; Relyea & Sutton 1972, 1974; **GA:** Cooper 1971; Dahlberg & Scott 1971; **ID:** Plew 1980; **IL:** S. Forbes & Richardson 1908; **IN:** Keith 1988; Eigenmann & Beeson, 1894; **KY:** Barr 1956b, 1963b; Burr 1980; Clay 1995; Cooper & Beiter 1972; Keith 1988; Kuehne 1965; J. Taylor, 1873; Wyman 1854; Packard, 1886; Putnam, 1872a, 1874a;; Clay 1975; Girard, 1859; Greenwood 1967; O. Hay, 1894; Jordan, 1888; Tellkamp, 1844a-b, **MO:** Jones 1983; Pfeiffer 1971, 1975; F. Cross et al. 1986; Greenwood 1967; Mason 1989; Ozarks: Sutton 1995a; **NA:** Eigenmann, 1892, 1897-8, 1900; Hocutt & Wiley 1986; Robinson 1986; **NV:** Deacon & Williams 1984; Jordan & Evermann, 1896; Jordan & Copelan, 1876-7; Jordan & Gilbert, 1882; Jordan, Evermann & Clark 1930; **NV:** LaRivers 1962; **OK:** Hall 1956; Robinson, Moore & Miller 1974; Suppl. Bibl: Branson 1967; **SW:** Deacon & Minckley 1973; **TN:** Armstrong & Williams 1971; Etnier & Starnes 1993; D. Lee et al. 1980; **TX:** Anon. 1948; Hubbs 1971; Jones & Hetler, 1959;; W. Brown 1959; F. Cross et al. 1986; Hubbs 1958; J. Nelson 1976; **US:** Benedict 1976c; Coe 1904; J. Cooper 1978; Robins et al. 1991; Conner & Suttikus 1986; J. Cooper 1978-9; Eddy 1957, 1969; Jordan, 1877; Jordan & Brayton, 1878; Knapp 1953; **UT:** fossil: J. Broughton et al. 2000; **World:** Proudlove 1989; Weber, Proudlove & Nalbant 1998; Weber et al. 1998; **WV:** Williams & Howell 1979. Agassiz 1851; Dana 1976;

Hubbs 1934, 1941, 1971; Poly & Boucher 1996; Zjinnd & Bailey 1947; Peters 1990; Tellkamp 1844a, 1845; Thines 1960; Wilkens 1973.

Subphylum Vertebrata

Superclass Osteichthyes (or as subclass) (teleosts or bony fish)

Class Actinopterygii

Subclass Neopterygii

Order Semionotiformes

Lepisosteidae (*Lepisosteus*)

Infraclass Teleostei

Superorder Acanthopterygii

Order Gasterosteiformes

Suborder Gasterosteioidi

Gasterosteidae (sticklebacks) (*Culaea*)

Order Cyprinodontiformes

Suborder Cyprinodontoidi

Cyprinodontidae (killifishes, pupfishes, toothcarps)
(*Cyprinodon*, *Fundulus* (now in Fundulidae))

Fundulidae (top minnows) (*Fundulus*)

Poeciliidae (*Gambusia*)

Order Perciformes

Centrarchidae (sunfishes)

(*Ambloplites*, *Centrarchus*, *Chaenobryttus*, *Lepomis*, *Micropterus*)

Suborder Gobioidei

Eleotridae (*Eleotris*)

Gobiidae (gobies) (*Lethops*, *Typhlogobius*)

Suborder Labroidei

Cichlidae (cichlids) (*Cichlasoma*)

Suborder Percoidei

Echeneidae (*Echeneis*)

Lutjanidae (*Lutianus*)

Percidae (perches) (*Etheostoma*, *Perca*, *Percina*)

Sciaenidae (*Cynoscion*, *Leiostomus*, *Sciaenops*)

Sparidae (*Lagodon*)

Superorder Pleuronectiformes

Suborder Pleuronectoidei
Achiridae (*Trinectes*)
Cynoglossidae (*Symphurus*)

Superorder Elopomorpha
Order Elopiformes (tarpons & tenpounders)

Suborder Elopoidei
Megalopidae (tarpons) (*Megalops*) (or put in Elopidae)

Superorder Ostariophysi (or in Superorder Paracanthopterygii)
Order Characiformes

Suborder Characoidei (or in Order Cypriniformes)
Characidae (characins) (*Astyanax*)

Order Cypriniformes (minnows and suckers)
Suborder Cyprinoidei
Catostomidae (suckers) (*Catostomus*)

Cyprinidae (carps & minnows)
(*Campostoma*, *Chrosomus*, *Clinostomus* *Cyprinella*, *Erimystax*,
Gila,
Hesperoleucus, *Hybognathus*, *Hybopsis*, *Luxilus*, *Margariscus*,
Nocomis
Notropis, *Phoxinus*, *Rhinichthys*, *Richardsonius*, *Semotilus*)
(undescribed Mid-Holocene sp. in Cheek Bend C., TN)

Order Percopsiformes
Suborder Aphredoderoidei
Superfamily Aphredoderoidea
Amblyopsidae
(*Amblyopsis*, *Chologaster*, *Speoplatyrhinus*, *Typhlichthys*,
Trogloglanis)

Aphredoderidae (pirate perches) (*Aphredoderus*)

Order Siluriformes
Suborder Siluropidei
Ariidae (hardhead catfishes) (*Arius*, *Bagre*)
Ictaluridae (bullhead catfishes) **Bibl.:** Lundberg 1970
(*Ameiurus*, *Ictalurus*, *Noturus*, *Satan*)

Superorder Elopomorpha
Order Anguilliformes
Suborder Anguilloidei

Anguillidae (freshwater or river eels) (*Anguilla*)

Superorder Paracanthopterygii (subsumed? in Superorder Ostariophysi)

Order Percopsiformes (in Superorder Ostariophysi)

Superorder Protacanthopterygii

Order Salmoniformes

Suborder Esocoidei

Esocidae (pikes & pickerels) (*Esox*)

Suborder Salmonoidei

Salmonidae (*Oncorhynchus*, *Prosopium*, *Salmo*, *Salvelinus*)

Class Chondrichthyes (or as subclass) (elasmobranchs or cartilaginous fish)

Subclass Cephalaspidomorpha

Order Petromyzontiformes

Petromyzontidae (Tx or Ac lamprey in one Al cave)

Subclass Elasmobranchii (= Selachimorpha) (**sharks & rays**)

(elasmobranchs or cartilaginous fish)

Superorder Selachimorpha

Order Pleurotremata (= Order Carcharhiniformes)

Suborder Galeiformes (= Scyliorhinoidei) (sharks or bullhead sharks)

Family Scyliorhinidae(=Atelomycteridae) (*Cephaloscyllium*)

Suborder Heterodontiformes (bullhead sharks) (or placed as Order)

Family Heterodontidae (*Heterodontus*)

Amblyopsidae (*Amblyopsis*, *Chologaster*, *Speoplatyrhinus*, *Typhlichthys*, *Trogloglanis*)

Bibl.: Bechler 1980, 1981a; Breder 1943; Cope, 1867; Eigenmann 1899, 1909; Forbes 1892; John 1957; Loeb 1915; Packard 1888; Palunas 1989; Parzefall 1986; Poulson 1958, 1961, 1964, 1967, 1969, 1985; Putnam 1872; Rosen 1962; Suttkus 1961; Swofford 1982; S., Branson & Sievert 1980; Wilson 1974; Woods & Inger 1957; Poulson 1959

Anguillidae (freshwater or river eels) (*Anguilla*)

Aphredoderidae (pirate perches) (*Aphredoderus*)

Ariidae (hardhead catfishes) (*Arius*, *Bagre*)

Catostomidae (suckers) (*Catostomus*, *Hypentelium*)

Centrarchidae (sunfishes) (*Ambloplites*, *Centrarchus*, *Chaenobryttus*, *Lepomis*, *Micropterus*)

Characidae (characins) (*Astyanax*)

Cichlidae (cichlids) (*Cichlasoma*)

Cottidae (sculpins) (*Cottus*)

Cynoglossidae (*Symphurus*)

Cyprinidae (carps & minnows) (*Campostoma*, *Chrosomus*, *Clinostomus*, *Cyprinella*, *Gila*, *Erimystax*, *Hesperoleucus*, *Hybognathus*, *Hybopsis*, *Luxilus*, *Margariscus*, *Nocomis*, *Notropis*, *Phoxinus*, *Rhinichthys*, *Richardsonius*, *Semotilus*) (undescribed Mid-Holocene sp. In Cheek Bend C., TN)

Cyprinodontidae (killifishes, pupfishes, toothcarps) (*Cyprinodon*, *Fundulus* (now in Fundulidae))

Eleotridae (*Eleotris*)

Esocidae (pikes & pickerels) (*Esox*)

Fundulidae (top minnows) (*Fundulus*)

Gasterosteidae (sticklebacks) (*Culaea*)

Gobiidae (gobies) (*Lethops*, *Typhlogobius*)

Ictaluridae (bullhead catfishes) (*Ameiurus*, *Ictalurus*, *Noturus*, *Satan*) **Bibl.:** W. Taylor 1969; H. Smith 1956.

Lepisosteidae (*Lepisosteus*)

Lutjanidae (*Lutianus*)

Petromyzontidae (Tx or Ac lamprey in one Al cave)

Percidae (perches) (*Etheostoma*, *Perca*, *Percina*)

Poeciliidae (*Gambusia*)

Salmonidae (*Oncorhynchus*, *Prosopium*, *Salmo*, *Salvelinus*)

Sciaenidae (*Cynoscion*, *Sciaenops*)

Sparidae (*Lagodon*)

Amblyopsis DeKay, 1842 (cavefishes) Amblyopsidae fish

Bibl.: Delamare-Deboutteville 1971; Eigenmann 1902; Jones 1983; Poulson 1961, 1969

Amblyopsis *rosae* (*Typhlichthys r.* Eigenmann, 1898; *Troglichthys r.* Eigenmann, 1899) (Ozark cavefish/ type locality & 1 other caves in Jasper Co., & one cave in Newton Co., swMO (Boone, Barry, Dade, Greene, Jasper, Lawrence, Newton, Polk, Stone Cos., & three sites in James River Basin) + 2 caves in DE Co. & caves in Delaware, Ottawa, Mayes Cos., neOK & Benton & WA Co. (nwAR) <20 sites, Springfield Plateau & Neosha Cos., KS/ Federal T&E; OK T&E; MO watch list T&E/ 5-7 cm long, white, with broad flattened head, small scales and eyeless. Postcleithrum are absent and sensory papillae on anal fin are in four to six rows. Anus migrates forward in adults. Unlike *A. spleaea*, pelvic fins are present/ Tb; G3G4)

Amblyopsis rosae **Bibl:** T. Aley 1982; T. Aley & C. Aley 1979; A. Brown et al 1982, 1984; Bechler 1981; A. Brown 1991; Brown & Todd 1987; Canaday & Vitello 1996; J. Cooper 1980; Eigenmann 1898, 1899, 1903; 1905; G. Hall 1956; Jones 1983; Jones & Taber 1985; Mason 1989; Sutton 1995; USFWS 1989; Willis 1984; 1986; Willis & Brown 1985; A. Brown 1991; A. Brown & Schram 1982; A. Brown & Willis 1984; J. Cooper 1978-9; Eigenmann 1901-2; S. Jones & Rimbach 1983; Means 1993; R. Miller 1969; Ramsey 1901; Species Cavefish; Tافانelli & Russell 1972; U.S. Fish and Wildlife Service 1989

Amblyopsis spelaea (*Typhlichthys* s. DeKay, 1842) (type locality in Mammoth C., Edmonson Co., KY/ scIN (Harrison, Lawrence, Orange & WA Cos.), Crawford & Barry Co., MO/ Tb/ cave livebearer, blindfish, northern cavefish, Mammoth Cave blindfish/ Federal & KY Special Concern T&E; OK T&E; MO T&E Watch list; IN T&E S1G3)

Amblyopsis spelaea **Bibl:** Agassiz; Alt 1910; C. Baker 1987; Barr & Kuehne 1962; Cooper 1980; Eigenmann 1900; Eigenmann & Denny, 1898; Frank 1984a; Green & Romero 1997; Keith 1988; Lonnberg 1894; Louis 1999; Mocquard 1908; Poulson 1967; Romero & Dennis 1998; J. Taylor 1873; Tellkamp 1844; Welch 1973; Whittaker & Zober 1978; Wyman, 1850-4, 1856; Zober 1976

Ameiurus Rafinesque, 1820 (bullhead and catfish) Ictaluridae fish

Ameiurus *catus* (Linnaeus, 1758) (white catfish/PA to FL, w. to CA, introduced in AR/Tx in FL),

Ameiurus *melas* (*Ictalurus m.* Rafinesque, 1820; *Ictalurus natalis* n. R., 1820) (black bullhead/Tx or Ac in AL(1 cave), KY(prob.), OK, TX)

Ameiurus *meridionalis* Gunther, 1864 (= *Potmocottus* & *Ictalurus m.*) (common blob/ Ttx or Ac in TN & Mammoth C., KY)

Ameiurus *natalis* (*Ictalurus natalis* n. LeSueur, 1819) (ON to FL, w. to OK, seNB, eKS, MN, IA, eTX/ yellow bullhead/Tx or Ac in OK, PA (Lancaster Co.); Tp in FL & Valdina Farms Sinkhole, Medina Co., TX). **Bibl.:** J. Jackson 1996; McCreedy 1996; Relyea & Sutton 1974a-b.

Ameiurus *nebulosus* (LeSueur, 1819) (se Canada to FL, w. to eOK, neTX, seOK, eND, eSD, eNB/ brown bullhead/Ac or Tx in FL, WV (one cave))

Ambloplites Rafinesque, 1820 - Centrarchidae fish

Ambloplites *repestris* (Rafinesque, 1817) (E, seCanada to VT, nGA, nAL, eAR/ rock bass/ Tx or Ac in WV)

Anguilla Schrank, 1798 (American eel) Anguillidae fish

Anguilla *rostrata* (LeSueur, 1817) (Prince Edward Island s. to sFL, w. to sTX, SD, NB/ American eel/Tx or Tp in nFL),

Aphredoderus LeSueur in Cuvier & Valenciennes, 1831 (pirate perch) Aphredoderidae fish

Aphredoderus *sayanus* (Gilliams, 1824) (nFL to TX/ Tp or Tx in FL/pirate perch) **Bibl.:** Boltz

1988

Arius Valenciennes in Cuvier & Valenciennes, 1840 - Ariidae fish

Arius felis (*Galeichthys f.* Linnaeus, 1766) (hardhead or Gaff-topsail catfish/ Tx in FL (Homosassa Springs) & ocean connections)

Astyanax Baird & Girard, 1854 (tetra) - Characidae fish

Astyanax mexicanus (Filippi, 1853) (= *A. fuscatus m.*) (nMex. to scOK, neOK, w.cTX, e NM/ Tp in San Antonio Spring, Bexar Co. & Valdina Farms Sinkhole, Medina co., TX)

Bagre Cloquet, 1816 (gafftopsail catfishes) Ariidae fish

Bagre marinus (Mitchill, 1815) (gafftopsail catfishes)/ Tx in FL (Homosassa Springs) & ocean connections)

Campostoma Agassiz, 1855 (stoneroller) Cyprinidae fish

Campostoma anomalum (Rafinesque, 1820) (E to sNY, cAL w. to wTX, neNM, sUT, eMT, eWY/ central stoneroller/ Tx or Ac in cave in Madison Co., AL)

Catostomus *ardens* Jordan & Gilbert, 1881 (Utah sucker/ extralimital latest Pleist. Lake Bonneville fossil in Homestead Cave, Tooele Co., UT)

Catostomus LeSueur, 1817 (suckers) Catostomidae fish

Catostomus commersonii (Lacepede, 1803) (N(except AK) to MT, UT, cNM, neOK, nAL, GA/ white sucker/ Tx or Ac in AL(1 cave), KY)

Catostomus discobolus Cope, 1872 (bluehead sucker/ extralimital latest Pleist. Lake Bonneville fossil in Homestead Cave, Tooele Co., UT)

Catostomus teres DeKay, 1842 (= *Clupea micropus*) (East, to Pit River, CA?/ sucker; red-eyed round herring/TTx or Ac in TN & Mammoth C., KY)

Centrarchus Bailey, 1938 - Centrarchidae fish

Centrarchus macropus (Lacepede, , 1801) (e.toMN, eNB, AR, eNM, ON to FL/Tx or Ac in FL)

Cephaloscyllium Gill, 1861 or 1862 (swell shark) Scyliorhinidae fish

Cephaloscyllium undet. sp. (Ac or TTx in CA marine)

Chaenobryttus Gill, 1864 1820 - Centrarchidae fish

Chaenobryttus coronarius (*Cyprinus c.* Bartram, 1791) (warmouth bass/Ac or Tx in TX),

Chaenobryttus gulosus (*Lepomis g.* Cuvier in Cuvier & Valenciennes, 1829) (warmouth sunfish; robalo) (FL to AZ/ Ac in TX)

Chologaster Agassiz, 1853 (swampfishes) - Amblyopsidae fish

Chologaster agassizi (= *Forbesichthys a.* Putnam, 1872; *C. papilliferus* Forbes, 1882) Cooper 1980 (spring cavefish or springfish) (type locality cave in Wilson Co., TN/Tp, spr., sink ponds in

sIL, seMO (single site), scTN & sw,sc,wKY (Mammoth Cave) / MO State T&E)

Chologaster agassizi **Bibl.:** Bechler 1981; Eigenmann, 1898; Forbes 1881; L. Hill 1969, 1971; Packard, 1880; Page et al. 1974; Weise 1953; J. Cooper 1979; L. Hill 1966, 1968; P. Smith & Welch 1978

Chologaster *cornuta* Agassiz, 1853 (swampfish/ Ac or TX in TN)

Chrosomus eos = *Phoxinus e.* (American cichlids) - Cyprinidae fish

Cichlasoma Swainson, 1839 (American cichlids) - Cichlidae fish

Cichlasoma *cyanoguttatum* (Baird & Girard, 1854) (Rio Grande perch or cichlid; mojarra del norte) (Mex.,swTX, introduced to cTX/ probable Ac in TX)

Clinostomus Girard, 1856 – Cyprinidae fish

Clinostomus *funduloides* Girard, 1856 (rosy dace; rosyside dace/ Tx or AC in VA)

Cottus Linnaeus, 1758 (sculpins) B Cottidae fish

Cottus *bairdi* Girard, 1850 (*C. b. punctulatus* (Gill); *C. semiscaber* (Cope); *C. ictalops*) (mottled sculpin; blob, Miller=s Thumb & Bull-head/ c,s.Appalachia/ Tx or Ac in KY, MD, MO, PA, VA, WV; Tx in IN; extralimital Pleist. Lake Bonneville fossil in Homestead Cave, Tooele Co., UT)

Cottus *carolinae* (Gill, 1861) (banded sculpin/Tx in AR, IN, KY, MO (cave adapted in Perry Co.), TN, VA, WV; Tp in nAL/Banded Sculpin) **Bibl.:** G.Adams 2000; Greenberg & Holtzman 1987; Krejca et al. 1994

Cottus *echinatus* Bailey & Bond, 1963 (Utah Lake sculpin/ extralimital Pleist. Lake Bonneville fossil in Homestead Cave, Tooele Co., UT)

Cottus *cognatus* (Richardson, 1836) (slimy sculpin/Tx? in VA/VA Species of Concern)

Cottus *marginatus* Bean, 1881 (= *Semotilus m.*) (margined sculpin/Tx? in VA/VA Species of Concern)

Cottus *pygmaeus* J.Williams, 1968 (pygmy sculpin) (cAL springs/threatened/Ac or Tx in AL)

Cottus undet. sp. Or speices (sculpins/central US/Tp?; Tx or Ac in AL, GA (Walker Co.), NY)
Bibl.: Buhlmann 2000

Culaea Whitley, 1950 - Gasterosteidae fish (sticklebacks)

Culaea *inconstans* (Kirtland, 1841) (brook stickleback/ Ac or Tx in Wood Buffalo Natl. Park, NWT, Canada)

Cynoscion Gill, 1861 (sea trout, weak fishes, seatrouts) Sciaenidae fish

Cynoscion *nebulosus* (Cuvier in Cuvier & Valenciennes, 1830) spotted squeteague or seatrout/

Tx in FL (Homosassa Springs) & ocean connections)

Cyprinella Girard, 1856 (shiners) Cyprinidae fish

Cyprinella *analostana* (*Notropis spilopterus* s. Cope, 1868) (spotfin or satinfin shiner/ Tx or Ac in KY)

Cyprinodon Lacepede, 1803 (pupfish) Cyprinodontidae fish. **Bibl.:** J.. Brown & Feldsmith 1971; Deacon & Minckley 1973; Deacon 1969; Deacon & Bunnell 1970; Dudley & Larson 1976; Echelle 1991; Echelle & Echelle 1993; Echelle & Dowling 1992; Lui 1969; McLane 1971; R. Miller 1950, 1964; Pister 1972; Poulos 1981

Cyprinodon *diabolis* (Wales, 1930) (Devil=s Hole pupfish/T&E/*Devils Hole,NV)

Bibl.: Anon 1980; Baugh & Deacon 1983; Benedict 1976i, 1978a; J. Brown 1971; Deacon & Deacon 1975; Dudley & Larson 1975; Dudley 1976; Fiack 1976; Howells & Pister 1972; McLane 1971; Sharpe et al 1973; Trusso 1972; Gruber 1976-7; A. Heller 1975; C.James 1969; Litton 1970; McNulty 1986; R. Miller 1948, 1968; Minckley & Deacon 1973; Minckley & Douglas 1991; Minckley, Hendrickson & Bond 1986; Mixon 1971; H. Rolston 1991; B. Turner 1974; Wales 1930

Cyprinodon *rubrofluvialis* Fowler 1916 (Red River pupfish/ Tx or Ac in TX)

Echeneis Linnaeus, 1758 - Echeneidae fish

Echeneis *naucrates* Linnaeus, 1758 (shark remora; sharksucker/ Tx in FL (Homosassa Springs) & ocean connections)

Eleotris Bloch & Schneider, 1801 (spinycheek sleepers) Eleotridae fish

Eleotris *sandwicensis* Vaillant & Sauvage, 1875 (HI anchialine caves)

Erimystax Jordan, 1882 undet. sp. (Tx or Ac in US)

Esox Linnaeus, 1758 (pike, pickerel & muskellunge) Esocidae fish

Esox undescr. sp. (extinct pike-like fish in Pleist. in Baker Bluff C.,TN)

Esox *masquinongy* Mitchill, 1824 (NE, Great Lakes to Upper MS Basin/ muskellunge/ extralimital Pleist. fossil in Cheek Bend C.,Maury Co.,TN),

Etheostoma Rafinesque, 1819 (perch) Percidae fish

Etheostoma *caeruleum* Storer, 1845 (Great Lakes & Mississippi River basins from sON, wNY to MN, s.to nAL,AR, disjunct in swMS,eLA,upper Potomac River in WV/ rainbow darter/ Tx or Ac in cave in AL)

Etheostoma (*Oligocephalus*) *nuchale* Howell & Caldwell, 1965 (cAL/watercress darter/ endangered/ Tx or Ac in karstic sprs.)

Forbesichthys agassizi Putnam, 1872 = *Chologaster a.*

Fundulus Lacepede, 1903 (topminnow, studfish and killifish) Fundulidae fish

Fundulus *kansae* Garman, 1895 (= *F. zebrinus* k.?) (NB, KS, WY, eNM, introduced into UT, AZ/ plains killifish/ Tx or Ac in TX)

Fundulus undet. sp. (Tx in nAL (abundant in one cave))

Galeichthys Valenciennes, 1840 - Ariidae fish

Galeichthys felis = *Arius* f.

Gambusia Poey, 1854 (mosquito fish) Poeciliidae fish

Gambusia *affinis* (Baird & Girard, 1853) (Mississippi River basin from cIN, IL s.to Gulf of Mexico and Gulf Slope west to Mexico/ western mosquito fish, guayacon mosquito/ Tx or Ac in nAL)

Gambusia *holbrooki* Girard, 1859 (= *G. affinis* h.) (eastern mosquitofish/ Tx in FL)

Gila Baird & Girard, 1853 (chub) Cyprinidae fish 1963

Gila *atraria* Girard, 1856 (extralimital latest Pleist. Lake Bonneville fossil in Homestead Cave, Tooele Co., UT)

Gila *bicolor* (Girard, 1856) (wID, eOR, neCA, nNV/ High Rock Springs tui chub/Tx? in CA/ *G.b. vaccaceps* candidate T&E/spr.)

Hypentelium Rafinesque, 1818 (hog suckers) – Catostomidae fish

Hypentelium *nigricans* (Lesueur, 1817) (hogmolly; northern hog sucker/ Ac or Tx in TN)

Hesperoleucis Snyder, 1913 (California roaches) Cyprinidae fish

Hesperoleucis *symmetricus* (Baird & Girard in Girard, 1854) (sOR, nw, e,nCA/ CA roach/Tx or Ac in CA)

Heterodontus Blainville, 1816 - Heterodontidae sharks

Heterodontus undet. sp. (spiny dog shark) (CA marine caves)

Hybognathus Agassiz, 1855 - Cyprinidae fishes

Hybognathus *placitus* Girard, 1856 (wMT se. to sIL, wAR, NN, nTX; introduced into sNM, wTX /plains minnow/Tx or Ac in TX)

Ictalurus Rafinesque, 1820 (forktail catfishes) - Ictaluridae fish

Ictalurus *furcatus* (LeSueur, 1840) (blue catfish) (Tp in Valdina Farms Sinkhole, Medina Co., TX) **Bibl.:** Whitehead 1994

Ictalurus melas = *Ameiurus* m.

Ictalurus natalis n. = *Ameiurus* n.

Ictalurus *nebulosus* (Lesueur, 1819) (ME and Great Lakes to FL, Mex., widely introduced)

elsewhere/ brown bullhead catfish/ Tx in FL)

Ictalurus (*Ameiurus*) *punctatus* (Rafinesque, 1818) (E w. to eMT,eNM; introduced to SW,CA/channel catfish/Tx in FL; Tx or Ac in TX) **Bibl.:** Simce & Cross 1966

Lagodon Holbrook, 1855 - Sparidae fish

Lagodon *rhomboides* (Linnaeus, 1766) (pinfish/ Tx in FL (Homosassa Springs) & ocean connections)

Leiostomus Lacepede, 1802 - Sciaenidae fish

Leiostomus *xanthurus* Lacepede, 1802 (spot/ NC marine infauna)

Lepisosteus Lacepede, 1803 (slender gars) Lepisosteidae fishes

Lepisosteus *osseus* (Linnaeus, 1758) (longnose gar/Tx or Ac in FL)

Lepomis Rafinesque, 1819 (common & eared sunfishes) Centrarchidae fishes

Lepomis *cyanellus* R., 1819 (Green Sunfish; Ac or Tx in AL(1 cave), IN, MO; Tp in TX (preys on *Tadarida mexicana* bats; Tx in WV)

Lepomis gulosus = *Chaenobryttus* g.

Lepomis *macrochirus* R., 1819 (MW, SE; introduced to NE, W/ Blue Gill or bluegill/Tx in FL,WV; Ac in AL,TX)

Lepomis undet. sp. (Ac or Tx in KY)

Lethops Hubbs, 1926 Gobiidae fishes

Lethops *connectens* Hubbs, 1926 (halfblind goby/marine rock crevices & crustacean burrows in sCA)

Lutjanus Bloch, 1790 - Lutjanidae fish

Lutjanus *apodus* (Linnaeus, 1758) (schoomaster; schoolmaster snapper/ Tx in FL (Homosassa Springs) & ocean connections)

Lutjanus *griseus* (Walbaum in Artedi, 1792) (gray snapper/ Tx in FL (Homosassa Springs) & ocean connections)

Luxilus Rafinesque, 1820 (shiners) Cyprinidae fishes

Luxilus *cornutus* (Mitchell, 1817)_ (common shiner / TTx or Ac in NY)

Margariscus Cockerell, 1909 - Cyprinidae fish

Margariscus *margarita* (Cope, 1868) (pearl dace/ BC to NF, s.to nNB, nVA/ Ac or Tx in Wood Buffalo Natl. Park, NWT, Canada)

Megalops Lacepede, 1803 – Megalopidae fish (or put in Elopidae)

Megalops undet. sp. (WA marine infauna)

Micropterus Lacepede, 1802 (black basses) - Centrachidae fish

Micropterus salmoides (Lacepede, 1802) (sFL to wNY, w. to eAZ/ introduced to most of rest of US/ largemouth bass

Nocomis Girard, 1856 (hornyhead chubs) Cyprinidae fish

Nocomis biguttatus (Kirtland, 1841) (NY to MB, s. to upper MS Basin, nOH Basin, ON, AR, MO/ redspot or horn(e)yhead chub extralimital Pleist. fossil in Cheek Bend C.,Maury Co.,TN)

Notropis Rafinesque, 1818 (eastern shiners) Cyprinidae fishes. **Bibl.:** Maurakis 1989

Notropis atherinoides R., 1818 (emerald shiner/Tx or Ac in KY)

Notropis cornutus = *Luxilus c.*

Notropis harperi Fowler, 1941 (= *Erimystax h.*) (redeye chub/Tx or Tp in FL)

Notropis spilopterus s. = *Cyprinella analostana*,

Noturus Rafinesque, 1818 (madtoms) Ictaluridae fishes. Bibl.: W. Taylor 1969.

Noturus flavus Rafinesque, 1818 (stonecat or stone cat or madtom/ MS river drainage, VA,NC/ undescr. form as Pleist. fossil in Cheek Bend C.,TN)

Noturus flavater Taylor, 1969 (checkered madtom now in MO & AR Ozarks/ extralimital mid-Holocene. fossil in Cheek Bend C.,Maury Co.,TN)

Oncorhynchus Suckley, 1861 (Pacifiuc salmon) Salmonidae fishes

Oncorhynchus clarki Richardson, 1936 (cf. *O.c.* extralimital latest Pleist. Lake Bonneville fossil in Homestead Cave, Tooele Co., UT)

Oncorhynchus mykiss (Walbaum, 1792) (= *Salmo gairdneri* Richardson, 1836) (rainbow trout/ alien? Tx? in MD; Tx or Ac in WV (one cave))

Perca Linnaeus, 1758 (perches) Percidae fish

Perca flavescens Mitchill, 1814 ((NE, Great Lakes to Upper MS Basin/ yellow perch extralimital Pleist. fossil in Cheek Bend C.,Maury Co.,TN)

Percina Haldeman, 1842 (roughbelly darters) - Percidae fishes

Percina cf. *caprodes* (Rafinesque, 1818) (St.Lawrence River & Great Lakes, Hudson Bay & Mississippi River basins from Quebec to Saskatchewan in Canada south to Gulf of Mexico and Atlantic and Gulf Slope drainages/ logperch/ Tx or Ac in nAL (one cave)

Percina undet. sp. (Tx or Ac in nAL (one cave)

Phoxinus Rafinesque, 1820 - Cyprinidae fish

Phoxinus *eos* (Cope, 1862) (Atlantic, Great Lakes, Hudson Bay, upper MS; MO & Peace-Mackenzie River drainages from NS w.to NW Territories, BC, s. to nPA,WI, NB, CO/ ninespine stickleback/ Tx or Ac in 1 NS cave)

Phoxinus *neogaeus* Cope, 1868 (finescale dace/ Ac or Tx in Wood Buffalo Natl. Park, NWT, Canada)

Pot(a)mocottus meridionalis = *Amiurus m.*

Prosopium Jordan, 1878 – Salmonidae fish

Prosopium *gemmifer* Snyder, 1919 (Bonneville cisco/ extralimital latest Pleist. Lake Bonneville fossil in Homestead Cave, Tooele Co., UT)

Prosopium *spilonotus* Snyder, 1919 or *P. abyssicola* Snyder 1919 (Bonneville or Bear Lake whitefish/ extralimital latest Pleist. Lake Bonneville fossil in Homestead Cave, Tooele Co., UT)

Pungitius Coste, 1848 - Gasterosteidae fish

Pungitius *pungitius* (Linnaeus, 1758) (Circumarctic, nEurasia: Atlantic drainages across Canada s. to Great Lakes, NJ, w. to BC,AK/ ninespine stickleback (Tx or Ac in 1 NS cave & Wood Buffalo Natl. Park, NWT, Canada)

Rhinichthys Agassiz, 1849 (daces) Cyprinidae fishes

Rhinichthys atronasmus = *R. atratulus*

Rhinichthys *atratulus* (Hermann, 1844) (epigeon in Atlantic, Great Lakes,Hudson Bay, Mississippi & upper Mobile Bay drainages from Nova Scotia to Manitoba, s.to nGA,nAL/ blacknose dace/ Tx or Ac in VA, cave each in AL & WV)

Rhinichthys *cataractae* (Valenciennes in Cuvier & Valenciennes, 1842) (longnose dace; minnow) (black-nosed dace/ Tx or Ac in WV)

Rhinichthys *osculus* (Girard, 1856) (Columbia R. in BC to CO River in AZ,NM/ speckled dace/ Tx or Ac in cave in Harney Co.,OR)

Richardsonius Girard, 1856 - Cyprinidae fish

Richardsonius *balteatus* Richardson, 1836 (redside shiner/ extralimital latest Pleist. Lake Bonneville fossil in Homestead Cave, Tooele Co., UT)

Salmo Linnaeus, 1758 - Salmonidae fishes

Salmo *gairdneri* Richardson, 1836 = *Oncorhynchus mykiss*

Salvelinus Richardson, 1836 - Salmonidae fishes

Salvelinus *confluentus* Suckley, 1858 (bulltrout/ cf. *S.c.* extralimital latest Pleist. Lake Bonneville fossil in Homestead Cave, Tooele Co., UT)

Satan Hubbs & Bailey, 1947 (widemouth blindcats) Ictaluridae fishes. **Bibl.:** W. Brown 1959; W.

Taylor 1969

Satan eurystomus Hubbs & Bailey, 1947 (widemouth blindcat or blind catfish) (T&E/artesian well near San Antonio/swTX/Pb) **Bibl:** Anon, 1948; Karnei 1978, 1979; Lambert & Ambler 1961; Longley & Karnei 1979; Moravec & Huffman 1988; R. Miller 1969

Sciaenops Gill, 1863 (red drums) Sciaenidae fish

Sciaenops ocellatus (Linnaeus, 1766) (sea catfish/ Tx in FL (Homosassa Springs) & ocean connections)

Semotilus Rafinesque, 1820 (creek chubs) Cyprinidae fishes

Semotilus atromaculatus (Mitchill, 1818) (eCanada to nwFL, etTX,eNM,MT,WY/creek chub/Ac or Tx in AL, KY, MO, TN; Tx in WV)

Semotilus marginata = *Cottus marginatus*

Speoplatyrhinus Cooper & Kuehne, 1974 (Alabama cavefishes) Amblyopsidae fishes

Speoplatyrhinus poulsoni Cooper & Kuehne, 1974 (Alabama cavefish/federal T&E/* type locality cave in Lauderdale Co.,AL/ Eyeless. Fins, integument, parst of cranial skeleton relatively transparent (skin contains microscopic, widely scattered melanophores, which are few in number). Fish=s head and branchial chamber are very large, comprising >33% of standard length. Snout is dorsoventrally depressed and laterally constricted, giving the back of the head a bill-like look. Nostirc have short tubular projections. Pectoral fins long and delicate /most Tb of U.S. cavefish/ Key Cave National Wildlife Refuge established 1997 on 1040 acres to protect fish & gray bats) **Bibl.:** J. Cooper 1980, 1982, 1985-a; Kuhajda & Mayden 1996; J. Orr 1934; J. Cooper 1978; USFWS 1990, 1996

Symphurus Rafinesque, 1810 – Cynoglossidae fish

Symphurus undet. sp. (straightmouth tonguefishes/ wFL Gulf of Mexico infauna)

Trinectes Rafinesque, 1832 – Achiridae fish, Suborder Pleuronectoidei, Order Pleuronectiformes

Trinectes maculatus (Bloch & Schneider, 1801) (hogchoker/ NC marine infauna)

Trogloglanis Eigenmann, 1919 (toothless blindcats) Amblyopsidae fishes

Trogloglanis pattersoni Eigenmann, 1919 (Toothless or Widemouth blindcat or blind catfish) (artesian well 2mi. ne of San Antonio, *Bexar Co.,scTX/Pb T&E). **Bibl:** Anon, 1948; Karnei 1978, 1979; Lambert & Ambler 1961; Langecker & Longley 1993, 1993a; Longley & Karnei 1979a; Lundberg 1982; Moravec & Huffman 1988; R. Miller 1969,

Typhlogobius Steindachner, 1879 (blind gobies) Gobiidae fishes

Typhlogobius californiensis Steindachner, 1879 (blind goby/marine rock crevices & crustacean burrows in sCA)

Typhlichthys Girard, 1859 (southern cavefishes) Amblyopsidae fishes

Typhlichthys subterraneus Girard, 1859 (= *T. osborni* Eigenmann 1905; *T. wyandotte*

Eigenmann, 1905; *T. eigenmanni* Hubbs, 1938) (Southern cavefish/ type in Corydon, IN (type locality destroyed) (new type? from Bowling Green, Warren Co., KY) + c+seMO (OR & Ripley Cos.), cKY, nwGA (Dade Cos.), cTN (Decatur, Overton, Van Buren & Wayne Cos.), OK (Ottawa Co.), neAR (Stone, Fulton & Randolph Cos.), nAL (Colbert, De Kalb, Jackson, Lauderdale, Lawrence, Limestone, Madison, Marshall, Morgan Cos.) / AL state T&E, KY Special Concern T&E, GA, TN & MO state T&E; IN T&E S1G3) /Tb)

Bibl.: Bechler 1975, 1976, 1981; Cooper 1971, 1974, 1980; Cooper & Beiter 1972; Frank 1984a; Mayden & Cross 1983; Green & Romero 1997; S. Jones & Taber 1985a; McNulty 1978; Mayden & Cross 1983; Orr 1934; Paige, Tumilson & McDaniel 1981; A. Schubert 1996; Schubert, Nielsen & Noltie 1993; Schubert & Noltie 1995; Simmons 1976; J. Cooper 1971, 1978

fisher - See **mammal, carnivore, mustelid**.

Fissipedia (terrestrial carnivores) – A suborder of the Carnivora (see **Mammal**)

flatworm – Refers to Phylum Platyhelminthes. See worms (**Turbellaria** (incl. planarians) & parasitic classes of **trematodes** & **tapeworms**)

Fleas

Insect of order (or class) Siphonaptera (=Aphaniptera, Suctoria), Subclass Pterygota, Division Neoptera, Subdivision Endopterygota (=Holometabola), Section Panorpida, Subsection Anthophora, Superorder Antliophora. Usually endoparasites associated with mammals & nests. Flattened from side to side, flightless, eyes with 2 simple ocelli, antennae short and stout. Piercing or sucking. Larvae caterpillar like. Ecotoparasites; itch from bites from anti-blood clotting saliva.. From Lower Cretaceous. Males have the most complex genital armature of any known animal. **Bibl.:** R. Eads 1950; R. Eads et al. 1979; Jameson 1985; R. Lewis 1993a-b, 1996; **Areas:** CA: Haas & Tomich 1983; **Canada:** Holland 1949; **East:** Benton 1980; Fox 1940; **FL:** Layne 1971; **KS:** El-Wailly 1960; **NA:** Ewing 1940; Ewing & Fox 1943; **IL:** Layne 1958; **NM:** Traub & Hoff 1951; **NV:** Nelson 1972; **West:** C. Hubbard 1947; **World:** Beaucournu, Suciú & Decu 1998; Hubbard 1947; **SW:** Augustson 1943; Incl. Suborders Suborder Fracticipita (broken-headed fleas) (also subsumed in Ceratophylloidea

Superfamily Ceratophylloidea
Ceratophyllidae

Subfamily Ceratophyllinae
(*Aetheca*, *Amalareus*, *Amaradix*, *Ceratophyllus*, *Eumolpianus*, *Jellisonia*,
Malaraeus,
Megabothris, *Monopsyllus* *Nosopsyllus*, *Odontopsyllus*, *Opisodasys*,
Orchopeas,
Oropsylla, *Thrassis*, *Traubella*)

Subfamily Dactylopsyllinae (*Foxella*)

Ctenophthalmidae (also put in Hystrichopsylloidea) (also subsumed in Hystrichopsyllidae)

Subfamily Anomiopsyllinae

Tribe Anomiopsyllini

(*Anomiopsyllus*, *Callistopsyllus*, *Megarthroglossus*, *Stenistomera*)

Subfamily Ctenophthalminae

Tribe Ctenophthalmini (*Ctenophthalmus*)

Tribe Neotyphloceratini (*Carteretta*)

Subfamily Neopsyllinae

Tribe Phalacropsyllini (*Catallagia*, *Delotelis*, *Epitedia*, *Meringis*, *Phalacropsylla*)

Subfamily Rhadinopsyllinae

Tribe Rhadinopsyllini (*Rhadinopsylla*)

Hystrichopsyllidae (also put in Hystrichopsylloidea) (hystrochopsyllid fleas)

Subfamily Hystrichopsyllinae

Tribe Hystrichopsyllini (*Atyphloceras*, *Conorhinopsylla*, *Hystrichopsylla*)

Ischnopsyllidae (bat fleas)

Subfamily Ischnopsyllinae

Tribe Nycteridopsyllini (*Nycteridopsylla*)

Tribe Sternopsyllini (*Hormopsylla*, *Ptilopsylla*, *Sternopsylla*)

Leptopsyllidae (leptopsyllid fleas)

Subfamily Amphipsyllinae

Tribe Amphipsyllini (*Ctenophyllus*)

Tribe Leptopsyllini (*Peromyscopsylla*)

Rhopalopsyllidae (marsupial or rodent fleas)

Subfamily Rhopalopsyllinae (*Polygenis*)

Superfamily Hystrichopsylloidea (also subsumed in Ceratophylloidea)

Ctenophthalmidae

Hystrichopsyllidae

Suborder Integricipita (=Pulicoidea) (unbroken-headed fleas)

Superfamily Pulicoidea

Pulicidae pulicid or common fleas)

Subfamily Pulicinae

Tribe Archaeopsyllini (*Ctenocephalides*)

Tribe Pulicini (*Echidnophaga*, *Pulex*)

Tribe Spilopsyllini (*Euhoplopsyllus*, *Hoplopsyllus*, *Spilopsyllus*)

Subfamily Tunginae

Tribe Hectopsyllini (*Rhynchopsyllus*)

Tungidae(subsumed in Pulicidae)

CERATOPHYLLIDAE Dampf 1908 (ceratophyllid or rodent fleas)

Subfamily Ceratophyllinae (*Aetheca*, *Amalareus*, *Amaradix*, *Ceratophyllus*, *Eumolpianus*, *Jellisonia*, *Malaraeus*, *Megabothris*, *Monopsyllus*, *Nosopsyllus*, *Odontopsyllus*, *Opisodasys*, *Orchopeas*, *Oropsylla*, *Thrassis*, *Traubella*)

Subfamily Dactylopsyllinae (*Foxella*)

CTENOPHTHALMIDAE Rothschild, 1915 (also subsumed in Hystrichopsyllidae)

Subfamily Anomiopsyllinae

Tribe Anomiopsyllini (*Anomiopsyllus*, *Callistopsyllus*, *Megarhroglossus*, *Stenistomera*)

Subfamily Ctenophthalminae

Tribe Ctenophthalmini (*Ctenophthalmus*)

Tribe Neotyphlocerati (*Carteretta*)

Subfamily Neopsyllinae

Tribe Phalacropsyllini (*Catallagia*, *Delotelis*, *Epitedia*, *Meringis*, *Phalacropsylla*)

Subfamily Rhadinopsyllinae

Tribe Rhadinopsyllini (*Rhadinopsylla*)

DOLICHOPSYLLIDAE (subsumed in Leptopsyllidae);

HECTOPSYLLIDAE (*Rhynchopsyllus* - in Pulicidae fleas, Tunginae, Tribe Hectopsyllini)

HYSTRICHOPSYLLIDAE Tiraboschi, 1904 (hystrochopsyllid fleas)

Subfamily Hystrichopsyllinae

Tribe Hystrichopsyllini (*Atyphloceras*, *Conorhinopsylla*, *Hystrichopsylla*)

ISCHNOPSYLLIDAE Tiraboschi, 1904 (bat fleas) **Bibl.:** Jameson 1985

Subfamily Ischnopsyllinae

Tribe Nycteridopsyllini (*Nycteridopsylla*)

Tribe Sternopsyllini (*Hormopsylla*, *Ptilopsylla*, *Sternopsylla*)

LEPTOPSYLLIDAE Baker, 1936 (leptopsyllid fleas)

Subfamily Amphipsyllinae

Tribe Amphipsyllini (*Ctenophyllus*)

Tribe Leptopsyllini (*Peromyscopsylla*)

PULICIDAE Billberg, 1820 (pulicid or common fleas)

Subfamily Pulicinae

Tribe Archaeopsyllini (*Ctenocephalides*)

Tribe Pulicini (*Echidnophaga*, *Pulex*)

Tribe Spilopsyllini (*Euhoplopsyllus*, *Hoplopsyllus*, *Spilopsyllus*)

Subfamily Tunginae

Tribe Hectopsyllini (*Rhynchopsyllus*)

RHOPALOPSYLLIDAE (marsupial or rodent fleas)

Subfamily Rhopalopsyllinae (*Polygenis*)

TUNGIDAE (subsumed in Pulicidae) (jiggers & sticktight) in superfamily Pulicoidea

Aetheca Smith, 1983 - Ceratophyllidae fleas, Subfamily Ceratophyllinae (2 species in US or Canada)

Aetheca *wagneri* (*Ceratophyllus w.* Baker, 1904; *C. peromyscia* Stewart, 1928; *C. systaltus* & *ophidius* Jordan, 1929; *Monopsyllus kylei* Hubbard, 1949; *M.w.*) (ectoparasite on AB, CO, ID, ND, NM, OR, SD, UT *Neotoma cinerea*, NM *Neotoma micropus*; NW *Neotoma fuscipes*; BC *Neotoma*; NV *Neotoma* & OR *Neotoma lepida* woodrats),

Amalareus Ioff, 1936 - Ceratophyllidae fleas, Subfamily Ceratophyllinae (2 species in US or Canada)

Amalareus *d. dissimilis* Jordan, 1938 (ectoparasite on BC *Neotoma cinerea* woodrat)

Amaradix Smith, 1983 - Ceratophyllidae fleas, Subfamily Ceratophyllinae (3 species in US or Canada)

Amaradix *b. bitterrootensis* (= *Ceratophyllus b.* Dunn, 1923; *C. isus* Jordan, 1925; *Malareus b.*) (parasite on CA, CO, ID, MT, OR, UT, WA, WY *Neotoma cinerea* woodrats)

Amaradix *euphorbi* (*Ceratophyllus euphorbae* Rothchild, 1905; *Malareus euphorbi*) (ectoparasite *Neotoma mexicana*; UT, WY *Neotoma lepida* & CO, OR *Neotoma cinerea* woodrats)

Amaradix *vonfintelis* Prince, 1959 (*A. bitterrootensis* v.) (ectoparasite on NM *Neotoma cinerea* woodrat),

Anomiopsyllus Baker, 1905 (parasite on CA *Neotoma cinerea*) Ctenophthalmidae fleas, Subfamily Anomiopsyllinae, Tribe Anomiopsyllini (once subsumed in Hystrichopsyllidae) (9 species in US or Canada)

Anomiopsyllus *amphibolus* Wagner, 1936 (ectoparasite on ID, NV, OR, UT, WY *Neotoma*

cinerea, AZ, NV, UT *N. albigula*, *fuscipes*, AZ, NV, UT, WY *Neotoma lepida* & UT *Neotoma desertorum*, woodrats)

Anomiopsyllus *falcicalifornicus* Fox, 1929 (ectoparasite on OR *Neotoma cinerea* & *fuscipes* & CA *Neotoma* woodrats)

Anomiopsyllus *falcicalifornicus congruens* (*A. c.* Stewart 1940) Hopkins, 1952 (ectoparasite on CA *Neotoma fuscipes macrotis* woodrats)

Anomiopsyllus *falcicalifornicus f.* (*A. californicus* Fox, 1926) (ectoparasite on CA *Neotoma fuscipes* woodrats)

Anomiopsyllus *hiemalis hiemalis* Eads & Menzies, 1948 (ectoparasite on OK, TX *Neotoma micropus* woodrats)

Anomiopsyllus *martini* Holland, 1965 (= *A. princei* Barnes, 1965) (NM *Neotoma c.* woodrat nest)

Anomiopsyllus *montanus* Collins, 1936 (ectoparasite on AB, MT *Neotoma cinerea* woodrat)

Anomiopsyllus *nidiophilus* Tipton & Mendez, 1968 (ectoparasite on CA *Neotoma albigula* & *Neotoma lepida* woodrats)

Anomiopsyllus *novomexicanensis* Williams and Hoff, 1951 (on NM *Neotoma micropus canescens* & AZ *Neotoma lepida* woodrats)

Anomiopsyllus *nudatus hiemalis* (A.h. Eads & Menzies, 1948) Barnes, Tipton & Wilde, 1977 (ectoparasite on AZ, CO, NM, TX *Neotoma albigula*, CA *Neotoma fuscipes macrotis* & *N. lepida intermedia*, TX *Neotoma micropus*, *floridana* & *mexicana*; & OK, KS *N. micropus* woodrats)

Anomiopsyllus *nudatus mexicanus* (*A. hiemalis m.* Holland, 1965) Barnes, Tipton & Wilde, 1977 (on AZ *Neotoma lepida*, *mexicana*, *micropus*, *albigula* & *cinerea* & UT *Neotoma* woodrats)

Anomiopsyllus *n. nudatus* (*Typhlopsylla n.* Baker, 1898; *A. californicus* Baker, 1904; *A. mexicanus* Holland, 1965 (= *A. nudatus mexicanus*)) ectoparasite on AZ, CO, MT, UT, WY *Neotoma cinerea*, AZ *Neotoma albigula*, *fuscipes*, *mexicana* & *lepida*; on CA *Neotoma*; in AB *Neotoma* nest)

Anomiopsyllus *walkeri* Barnes, 1965 (on CA *Neotoma fuscipes* woodrats)

Aptilopsylla Ewing, 1940 - Ischnopsyllidae fleas

Aptilopsylla carlsbadensis Ewing, 1940 = *Sternopsylla d.*

Atyphloceras Jordan & Rothschild, 1915 (= *Saphiopsylla* J., 1931) Hystrichopsyllidae fleas, Subfamily Hystrichopsyllinae, Tribe Hystrichopsyllini (4 species in US or Canada)

Atyphloceras *echis echis* Jordan & Rothschild, 1915 (Tx in rodent nests (likely from *Neotoma*

woodrats) in Twin Dig Pit, Travis Co., TX; ectoparasite on AZ, NM, NV, UT *Neotoma* woodrats),

Atyphloceras *felix* Jordan, 1933 (ectoparasite on CA *Neotoma fuscipes macrotis* and *N. lepida intermedia* & *N.l. gilva* woodrats)

Atyphloceras *longipalpus* (*A. echis* l. Stewart, 1940) (ectoparasite on *Neotoma fuscipes*; KS *Neotoma floridana osagensis* & CA coastal belt *Neotoma lepida gilva* & *N. lepida intermedia* woodrats)

Atyphloceras *multidentatus* (*Ceratophyllus m.* Fox, 1909; *A. felix* & *artius* Jordan, 1933) (ectoparasite on nCA, OR, UT *Neotoma cinerea* & OR *Neotoma fuscipes*)

Callistopsyllus Jordan & Rothschild, 1915 - Ctenophthalmidae fleas, Subfamily Anomiopsyllinae, Tribe Anomiopsyllini (once subsumed in Hystrichopsyllidae) (3 species in US or Canada)

Callistopsyllus *t. terinus* Rothschild, 1905 (ectoparasite on ID, OR *Neotoma cinerea* woodrat),

Carteretta Fox, 1927 - Subfamily Ctenophthalminae, Tribe Neotyphlocerati (2 species in US or Canada)

Carteretta *carteri* Fox, 1927 (ectoparasite on CA *Neotoma fuscipes* woodrats),

Catallagia R.1915 (also put in Hystrichopsyllidae) Ctenophthalmidae fleas, Subfamily Neopsyllinae, Tribe Phalacropsyllini (14 species in US or Canada)

Catallagia *chamberlini* Hubbard, 1940 (ectoparasite on AB, BC, OR *Neotoma cinerea* woodrats)

Catallagia *charlottensis* (*Typhlopsylla c.* Baker, 1898; *C. motei* Hubbard, 1940)) (ectoparasite on AB, BC, CO, WA *Neotoma cinerea* woodrat),

Catallagia *decipiens* Rothschild, 1915 (ectoparasite on AB, BC, CO, Manitoba, MT, NM, OR, SK, YT *Neotoma cinerea* woodrats (in nest in UT),

Catallagia *jellisoni* Holland, 1954 (ectoparasite on AB, BC, YT *Neotoma cinerea* & BC *Neotoma occidentalis* woodrats)

Catallagia *mathesoni* Jameson, 1950 (on BC, CA *Neotoma cinerea* woodrats)

Catallagia *sculleni* Hubbard, 1940 (= *C. vonbloekeri* Augustson, 1941) (on CA, OR *Neotoma cinerea*; on CA *Peromyscus maniculatus* & *crinitus*),

Catallagia *sculleni s.* (ectoparasite on BC, CA, OR *Neotoma cinerea* woodrats),
Catallagia sculleni chamberlini = *C. chamberlini*

Catallagia undet.sp. (ectoparasite on WA, Tx CA *Neotoma cinerea* woodrats)

Ceratophyllus Curtis, 1831 (= *Ctenopsyllus* Kolenati, 1856 (emend.)) Ceratophyllidae fleas, Subfamily Ceratophyllinae (18 species in US or Canada)

Ceratophyllus agilia = *Orchopeas agilis*

Ceratophyllus *canadensis* = *Nosopsyllus* (*N*) *fasciatus* (ectoparasite on CO *Neotoma cinerea* orolestes woodrats)

Ceratophyllus *celsus* Jordan, 1926 (TTx parasite on NV, TX *Petrochelidon pyrrhonota* & TX TTX on TX *P. fulva* swallow)

Ceratophyllus *ciliatus* Baker, 1904 (= *Monopsyllus* *c.*) (Tx on *Neotoma* in OR, WA; on CA *Neotoma* woodrats)

Ceratophyllus *ciliatus protinus* (*M.c.p.* Jordan, 1929) (ectoparasite on OR *Neotoma cinerea* woodrat),

Ceratophyllus *coahuilensis* Eads, 1956 (TTx on TX *Petrochelidon fulva* cliff swallow),

Ceratophyllus *petrochelidoni* Wagner, 1936 (parasite on NV TTx *Petrochelidon pyrrhonota* swallow)

Ceratophyllus terribilis = *Ctenophyllus armatus*

Ceratophyllus undet. sp. or species (Tp or Tx in NM, TX)

Conorhinopsylla Stewart, 1930 - Hystrichopsyllidae fleas, Subfamily Hystrichopsyllinae, Tribe Hystrichopsyllini (2 species in US or Canada)

Conorhinopsylla *nidicola* Jellison, 1945 (ectoparasite on KS, OK, MO *Neotoma* woodrats)

Ctenocephalides Stiles & Collins, 1930 (*Ctenocephalus* Kolenati, 1957 (homo.)) Pulicidae fleas, Subfamily Pulicinae, Tribe Archaeopsyllini (13 species in US or Canada)

Ctenocephalides *felis* (*Pulex f.* Bouche, 1835; *P. Canis* Duges, 1832 (homo.); *P serraticeps* Gervais, 1844; *Ctenocephalus enneodus* K.1859; *P. cati* Megnin, 1880; *Ceratophyllus rufulus*; *P. Nasuae*, *P. obscurus*, *concolor* Weyenbergh, 1881; *Ctenocephalus murina* Tiraboschi, 1904; *C. musculus* Sugimoto, 1933) (Tx in cave in Hays Co., TX)

Ctenophthalmus Kolenati, 1856 - Ctenophthalmidae fleas, Subfamily Ctenophthalminae, Tribe Ctenophthalmini (1 species in US or Canada)

Ctenophthalmus *pseudagyrtes* Baker, 1904 (ectoparasite on *Neotoma pennsylvanicus* & IN *Neotoma floridana* woodrats & in cave in Walker Co., GA)

Ctenophyllus Wagner, 1927 - Leptopsyllidae fleas, Subfamily Amphipsyllinae, Tribe Amphipsyllini (1 species in US or Canada)

Ctenophyllus *armatus* (*Ceratophyllus a.* Wagner, 1901 & *terribilis* Rothschild, 1903 & *rigidus* Darskaya, 1949) (on CO *Neotoma cinerea orolestis* woodrat)

Delotelis Jordan, 1937 (also put in Hystrichopsyllidae) Ctenophthalmidae fleas, Subfamily Neopsyllinae, Tribe Phalacropsyllini (2 species in US or Canada)

Delotelis *telegoni* (*Ceratophyllus t.* Rothschild, 1905) (WA parasite),

Echidnophaga Oliff, 1886 (= *Argopsylla* Enderlein, 1903; *Xestopsylla* Baker, 1904) Pulicidae fleas, Subfamily Pulicinae, Tribe Pulicini (21 species in US or Canada)

Echidnophaga *gallinacea* (*Sarcopsyllus gallinaceus* Westwood, 1875; *Pulex pullulorum* Johnson, 1890; *Sarconpsylla erinacea* Weiss, 1911)) (TTx on TX vulture; ectoparasite on NM *Neotoma micropus* & CA *Neotoma* woodrats)

Epitedia Jordan, 1928 - Ctenophthalmidae fleas, Subfamily Neopsyllinae, Tribe Phalacropsyllini (7 species in US or Canada)

Epitedia *cavernicola* Traub, 1957 (type locality in cave in Alleghany Co., VA/ ectoparasite on *Neotoma floridana* woodrats in caves (mostly) or rock crevices in AL (Tx), IN (Tx), KY, NY?, PA, TN (Tx?), VA (Tx), WV (Tx))

Epitedia *neotomae* Jameson, 1946 (ectoparasite on KS, OK, MO *Neotoma* woodrats)

Epitedia *stanfordi* Traub, 1944 (ectoparasite on BC *Neotoma cinerea* & UT, WY *Neotoma lepida* woodrats)

Epitedia *wenmanni testor* (*Neopsylla t.* Rothschild, 1915; *E. t. I.* Fox, 1940) Benton, 1955 ectoparasite on KS, OK *Neotoma floridana osagensis* & GA, KY (Tx in Mammoth C.) *Neotoma floridana* woodrats)

Epitedia *wenmanni w.* (*Ctenophthalmus w.* Rothschild, 1904; *Neopsylla testor* R. 1915; *N. similis* Chapin, 1919)) (ectoparasite on AB, BC, CO, KS, ID, Manitoba, NB, NF, NS, NWT, ON, PQ, SK, YT *Neotoma cinerea* woodrats)

Euhoplopsyllus Ewing, 1924 - Pulicidae fleas, Subfamily Pulicinae, Tribe Spilopsyllini (2 species in US or Canada)

Euhoplopsyllus *affinis* (*Pulex a.* Baker, 1904) (= *Pulex glacialis affinis*) (ectoparasite on NM *Neotoma micropus* woodrats)

Eumolpianus Smit, 1983 - Ceratophyllidae fleas, Subfamily Ceratophyllinae (6 species in US or Canada)

Eumolpianus *cyrturus* Jordan, 1929 (= *E. emolpi c.*) (ectoparasite on OR *Neotoma cinerea*)

woodrat),

Eumolpianus *eumolpi cyrturus* (*Monopsyllus e. c.* Jordan, 1929) (ectoparasite on OR *Neotoma cinerea* & UT, WY *Neotoma lepida* woodrats)

Eumolpianus *eumolpi e.* (*Ceratophyllus e.* Rothschild, 1905; *Monopsyllus canadensis, charlestonensis* Hubbard, 1950; *M.e.*) (ectoparasite on BC, OR *Neotoma cinerea* & NW *Neotoma fuscipes* woodrats)

Foxella Wagner, 1929 - Ceratophyllidae fleas, Subfamily Dactylopsyllinae (18 species in US or Canada)

Foxella *ignota* (*Pulex ignotus* Baker, 1895) (ectoparasite on OR *Neotoma cinerea* woodrats)

Foxella *ignota recula* Jordan & Rothchild, 1905) (ectoparasite on OR *Neotoma cinerea* woodrats)

Foxella *longa* (not a valid species) (ectoparasite on OR *Neotoma cinerea* woodrat)

Hoplopsyllus Baker, 1905 - Pulicidae fleas, Subfamily Pulicinae, Tribe Spilopsyllini (1 species in SW)

Hoplopsyllus (*Hoplopsyllus*) *anomalus* (*Pulex a.* Rothschild, 1905) Ewing & Fox, 1943 (ectoparasite on UT *Neotoma cinerea* & NM *Neotoma* woodrats)

Hormopsylla Jordan and Rothschild, 1921 - Ischnopsyllidae fleas, Subfamily Ischnopsyllinae, Tribe Sternosyllini (1 species in US or Canada)

Hormopsylla *trux* Jordan, 1950 (Peru, Mex./ectoparasite on TX *Eumops perotis* (Tx) & *Nyctinomops macrotis* bats)

Hystrihopsylla Taschenberg, 1880 - Hystrihopsyllidae fleas, Subfamily Hystrihopsyllinae, Tribe Hystrihopsyllini (11 species in US or Canada)

Hystrihopsylla *dippiei* Rothschild, 1902 (= *H. gigas dippiei*) (ectoparasite on WA, OR, CA, NM *Neotoma cinerea* & CO *Neotoma fuscipes* woodrats/ woodrat flea/Tx? in WA)

Hystrihopsylla *dippiei neotomae* Holland, 1957 (ectoparasite on CA *Neotoma fuscipes* woodrats)

Hystrihopsylla *dippiei spinata* (*H.s.* Holland, 1949) (epigeal in BC/ on woodrat in 2 WA caves)

Hystrihopsylla *dippiei truncata* Holland, 1957 (CO *Neotoma cinerea* parasite/woodrat flea; in CA non-cave *Neotoma fuscipes* woodrat nest)

Hystrihopsylla *linsdalei* Holland, 1957 (ectoparasite on UT (poss. Tx) *Neotoma cinerea* woodrat)

Hystrichopsylla *occidentalis* Holland, 1941 (WA parasite) Hystrichopsyllidae fleas
Hystrichopsylla *occidentalis sylvaticus* Campos & Stark, 1979 (ectoparasite on BC (Tx) mammal, UT (poss. Tx) *Neotoma cinerea* woodrat; Ttx ectoparasite on poss. *Peromyscus* mouse)

Jellisonia Traub, 1944 (*Pleochaetoides* Augustson, 1944) - Ceratophyllidae fleas, Subfamily Ceratophyllinae (2 species in US or Canada)

Jellisonia *bullisi* (P.b. Augustson, 1944) Tx in cave in Kerr Co., TX)

Malaraeus Jordan, 1933 (= *Trichopsylla* Ewing & Fox, 1943) - Ceratophyllidae fleas, Subfamily Ceratophyllinae (8 species in US or Canada)

Malaraeus bitterrootensis = *Amaradix b.*
Malaraeus euphorbi = *Amaradix e.*

Malaraeus *sinomus* Jordan, 1925 (parasite on UT, WA *Neotoma cinerea* woodrats)

Malaraeus *telchinum* (= *Ceratophyllus t.* Rothschild, 1905) (parasite on BC, CA, ID, MT, NM, OR, WA *Neotoma cinerea* & CA *Neotoma fuscipes macrotis* & *N.f. intermedia* woodrats)

Megabothris Jordan, 1933 - Ceratophyllidae fleas, Subfamily Ceratophyllinae (11 species in US or Canada)

Megabothris *abantis* (*Ceratophyllus a.* Rothschild, 1905) (ectoparasite on BC, ID, MT *Neotoma cinerea* & CA *N. fuscipes macrotis* & *N. lepida intermedia* woodrats)

Megabothris *quirini* (*Ceratophyllus q.* Rothschild, 1905) (ectoparasite on AB, BC, Manitoba, ON, NS, NWT, PQ, SK, YT *Neotoma cinerea* woodrats)

Megarhoglossus Jordan & Rothschild, 1915 - Ctenophthalmidae fleas, Subfamily Anomiopsyllinae, Tribe Anomiopsyllini (once subsumed in Hystrichopsyllidae) (13 species in US or Canada)

Megarhoglossus *becki* Tipton & Allred, 1952 (type locality in Buckley's Mine, Utah Co., UT, from *Neotoma cinerea* nest/ ectoparasite on UT *Neotoma cinerea* woodrats)

Megarhoglossus *bisetus* Jordan & Rothchild, 1915 (type locality in Buckley's Mine near Provo, Utah/ ectoparasite on UT *Neotoma cinerea acraia* & NM *Neotoma cinerea* & *Neotoma micropus* woodrats)

Megarhoglossus *cavernicolus* Me=ndez & Haas, 1972 (Type locality in cave in South Mt., Jemex Mts., Sandoval Co., NM/ Tx ectoparasite on NM *Neotoma cinerea* woodrats)

Megarhoglossus *divisus divisus* (*Pulex divisus* Baker, 1898; *Ceratophyllus d.* C.Fox, 1914) Jellison & Good, 1915 (ectoparasite on AB, BC, ID, MB, MT, NM, OR, UT, WY *Neotoma cinerea* & NM *Neotoma albigula* woodrats)

Megarhoglossus *divisus exsecatus* (M.e. Wagner, 1936) (ectoparasite on BC *Neotoma cinerea* & CO *Neotoma mexicana* woodrats)

Megarhoglossus *jamesoni* Smit, 1953 (ectoparasite on CA, NV, UT *Neotoma cinerea* woodrats)

Megarhoglossus *proculus* p. Jordan & Rothschild, 1917 (ectoparasite on BC, OR, UT *Neotoma cinerea* woodrats)

Megarhoglossus *proculus oregonensis* Hubbard, 1946 (ectoparasite on OR *Neotoma cinerea* woodrats)

Megarhoglossus *pygmaeus* Wagner, 1936 (ectoparasite on BC *Neotoma* woodrats)

Megarhoglossus *sicamus* Jordan & Rothschild, 1915 (ectoparasite on BC, UT *Neotoma cinerea* woodrats)

Megarhoglossus *similis* Wagner, 1936 (ectoparasite on BC *Neotoma* woodrats)

Megarhoglossus *smiti* Mendez, 1956 (ectoparasite on UT *Neotoma cinerea* & *N. lepida* woodrats)

Megarhoglossus undet. sp. (ectoparasite on CA (Tx) *Neotoma cinerea* woodrats & *Peromyscus maniculatus* mice)

Megarhoglossus undescr. sp. (ectoparasite on UT, WY *Neotoma lepida* woodrats)

Megarhoglossus *spenceri* Wagner, 1936 (ectoparasite on BC, CA, OR, UT *Neotoma cinerea* woodrat)

Megarhoglossus *weaveri* Eads & Campos 1977 (ectoparasite on CO *Neotoma mexicana* woodrats)

Megarhoglossus *wilsoni* Mendez & Haas, 1973 (ectoparasite on CO *Neotoma mexicana* woodrats)

Meringis Jordan, 1937 (= *Atheropsylla* Stewart, 1940) Ctenophthalmidae fleas, Subfamily Neopsyllinae, Tribe Phalacropsyllini (17 species in US or Canada)

Meringis *arachis* (Phalacropsylla a. Jordan, 1929) Jordan, 1937 (ectoparasite on AZ *Neotoma lepida harteri* woodrats)

Meringis *bilsingi* Eads & Menzies, 1949 (ectoparasite on NM *Neotoma micropus* woodrats)

Meringis *dipodomys* Kohls, 1938 (ectoparasite on NM *Neotoma micropus* woodrats)

Meringis *hubbardi* Kohls, 1938 (ectoparasite on NW *Neotoma fuscipes* woodrats)

Meringis *jamesoni* Hubbard, 1943 (ectoparasite on UT, WY *Neotoma lepida* woodrats)

Meringis *parkeri* Jordan, 1937 (ectoparasite on OR *Neotoma cinerea* & TX *Neotoma micropus* woodrats)

Meringis *rectus* Morlan, 1953 (ectoparasite on NM *Neotoma micropus* woodrats)

Meringis *shannoni* (*Phalacrotopsylla* s. Jordan, 1929) (ectoparasite on Tx WA *Neotoma cinerea* woodrats)

Monopsyllus ciliatus = *Ceratophyllus* c.

Monopsyllus eumolpi = *Eumolpianus* e.

Monopsyllus wagneri = *Aetheca* w.

Myodopsylla Jordan & Rothschild, 1911 (= *Myodopsylloides* Augustson, 1941) -
Ischnopsyllidae fleas, Subfamily Ischnopsyllinae (6 species in US or Canada)

Myodopsylla *borealis* Lewis, 1978 (ectoparasite on MN, KY *Myotis* & BC, IL, MT, NW
Eptesicus fuscus bats)

Myodopsylla *collinsi* Kohls, 1937 (*M. diasi* Costa Lima, 1938) (ectoparasite on OK (Tx)
Corynorhinus townsendii, AZ *Idionycteris phyllotis* (one bat) & *Tadarida mexicana* (one bats),
AZ (Tx) *Myotis californicus*; AZ (Tx), CA, KS, OK, TX *Myotis velifer*; AZ (Tx), Mex., OK, TX,
Eptesicus fuscus; CA, TX *Antrozous pallidus*; CA, wTX *Myotis yumanensis*; KS *Myotis*
grisescens, CA *M. lucifugus*, & AZ (Tx), ID, KS, NV, TX *Myotis thysanodes* & *Eptesicus fuscus*
bats),

Myodopsylla *crosbyi* (*Ceratopsyllus* c. Baker, 1905) (OK to South America/ ectoparasite on OK
Myotis velifer, *Pipistrellus subflavus* (rare) & *Corynorhinus townsendii*, NW *Macrotis*
californicus, CA *Myotis yumanensis* & IN *Myotis lucifugus* bats)

Myodopsylla *gentilis* Jordan & Rothschild, 1921 (ectoparasite on *Leptonycteris nivalis*, AB, BC,
CA, MT, ON, OR, PQ *Myotis lucifugus*, BC *Myotis leibii*, CA *M. l. occultus*; BC, SD, NW
Myotis volans, OK (Tx) *Myotis velifer* (rare), WA *Corynorhinus rafinesquii*, *Eptesicus fuscus*,
Myotis californicus, CA, WA *Myotis evotis*; NW, wTX *Lasionycteris noctivagans*, CA, wTX
Tadarida brasiliensis, BC, CA, OR, wTX *Myotis yumanensis*; CA *Myotis thysanodes*, CA, TX
Antrozous pallidus, *Nyctinomops macrotis* & *Mormoops megalophylla* bats & NW *Neotoma*
fuscipes woodrats)

Myodopsylla *insignis* (*Ceratopsylla* i. Rothschild, 1903; *M. subulata* Chapin, 1919;
Ceratopsyllus crosbyi Baker, 1905) (ectoparasite on AB, BC, IA, IL, IN (Tx), KY (Tx in
Mammoth C.), MA, MD, MI, MN, MO, NB, ND, NY, OH, ON, PA, PEI, PQ, SK, TX(Tx), VT,
YT *Myotis lucifugus*, AB, KS, NS, OH, ON, PQ, YT *Eptesicus fuscus*, CT, NY *Myotis*
subulatus; AB, BC, ON, SK *Myotis septentrionalis*, BC *M. volans*; IN *Myotis grisescens*; KS,
OK (Tx) *Myotis velifer* & IN, OK (rare) *M. sodalis* bats; in buildings in much of E; likely Tx in
AB, BC, CO, SK, Yukon; ectoparasite on KY (Tx in Mammoth C.) *Neotoma* woodrats) **Bibl.:**
Smith & Clay 1985

Myodopsylla *nordina* Traub & Hoff, 1951 (Tx in CA, CO, NV)

Myodopsylla *palposa* (*Ceratopsyllus* p. Rothschild, 1904; *Myodopsylloides piercei* Augustson,

1941) (ectoparasite on CA, BC, KS, Mex., MT, OK (Tx), NW, TX *Antrozous pallidus*; CA *Antrozous pallidus pacificus*, *Myotis yumanensis*, *M. thysanodes*, *Corynorhinus rafinesquii intermedius* & CA, BC *Eptesicus fuscus* bats)

Myodopsylla piercei (*Myodopsylloides p.* Augustson, 1941) (not likely a valid species) (ectoparasite on CA *Antrozous pallidus* & *Corynorhinus rafinesquii intermedius* bats)

Myodopsylla undet. sp. or species (ectoparasite on NM (Tx) & CA *Myotis californicus* bats; TX bat guano (Tx); ectoparasite and detritivore or fungivore on ON bat guano)

Myodopsylla subulata = *M. insignis*

Myodopsylla sexdentatus pennsylvanicus = *Orchopeas s.p.*

Nosopsyllus Jordan, 1933 - Ceratophyllidae fleas, Subfamily Ceratophyllinae Tribe Sternosyllini (2 species in US or Canada)

Nosopsyllus fasciatus (*Pulex f.* Bose, 1800) (ectoparasite on CO *Neotoma cinerea orolestis*; PA *Neotoma* & CA *Neotoma* woodrats/ northern rat flea)

Nycteridopsylla Oudemans, 1906 (= *Eptescopysylla* Fox, 1940; *Aneptescopysylla*, *Dinycteridopsylla*, *Hexanycteridopsylla* Ioff, 1953) (also put in Pulicidae) - Ischnopsyllidae fleas, Subfamily Ischnopsyllinae, Tribe Nycteridopsyllini (3 species in US or Canada)

Nycteridopsylla chapini Jordan, 1929 (*Eptescopysylla c.* (Jordan, 1929)) (ectoparasite on on *Lasiurus borealis* (occasional), KY (Green Co. & Colossal Cave in Mammoth Cave Natl. Park) *Myotis sodalis*, IN, KY, NY, OH, VA *Pipistrellus subflavus*, IN *M. lucifugus*, & *Lasionycteris noctivagans* & AR, DC, IN, KY, NY, MD, MO, OH, OK, WV, VA *Eptesicus fuscus* bats)

Nycteridopsylla intermedia Lewis & Wilson, 1982 (type locality cave in Brewster Co., TX/ ectoparasite on CO, TX *Corynorhinus townsendii* & UT *Euderma maculatum* bats; likely Tx in CO, NV)

Nycteridopsylla undet. sp. (ectoparasite on TN *Lasiurus borealis* bats)

Nycteridopsylla vancouverensis Wagner, 1936 (*Eptescopysylla v.* (Wagner) Ewing & Fox, 1943) ectoparasite on BC, CA, OR, WA *Myotis californicus caurinus* & *M. californicus*, CO, CA *Corynorhinus townsendii pallescens*, CA *Eptesicus fuscus* & *Eumops perotis*, NV *Euderma maculatum*, OR *Myotis lucifugus* & BC, IL (rare) *Lasionycteris noctivagans* bats)

Odontopsyllus Baker, 1905 - Ceratophyllidae fleas, Subfamily Ceratophyllinae (2 species in US or Canada)

Odontopsyllus dentatus (*Ceratophyllus d.* Baker, 1904) (ectoparasite on CA *Neotoma fuscipes* woodrats)

Opisodasys Jordan, 1933 - Ceratophyllidae fleas, Subfamily Ceratophyllinae (6 species in US or Canada)

Opisodasys *keeni* (*Pulex k.* Baker, 1896) (ectoparasite on AB, BC, CA, UT, WA *Neotoma cinerea* & NW *Neotoma fuscipes* woodrats & NW *Antrozous pallidus* bats)

Opisodasys *nesiotus* Augustson, 1941 (ectoparasite on CA *Neotoma fuscipes macrotis* woodrats)

Orchopeas Jordan, 1933 (= *Bakerella* Wagner, 1930 (unav.)) - Ceratophyllidae fleas, Subfamily Ceratophyllinae (18 species in US or Canada)

Orchopeas *agilis* (*Ceratophyllus a.* Rothschild, 1905; *O. sexdentatus a.*) (ectoparasite on AB, BC, CA, CO, MT, OR, SD, UT, WA, WY, YC *Neotoma cinerea* , NW, WA *Neotoma cinerea* & UT. WY *Neotoma lepida* woodrats)

Orchopeas *caedens c.* (*Ceratophyllus c.* Jordan, 1925; *C. durus* Jordan, 1929) (ectoparasite on CA *Neotoma c.*; BC *Neotoma cinerea* & CA *Neotoma fuscipes macrotis* woodrats)

Orchopeas *howardi* (*Pulex h.* Baker, 1895) (= *O. h. h.*) (ectoparasite on GA *Neotoma floridana* & UT *Neotoma* woodrats)

Orchopeas *illinoiensis* Lewis, 1998 (ectoparasite on IL *Neotoma floridana* woodrats)

Orchopeas *leucopus* (*Ceratophyllus l.* Baker, 1904; *C. aeger* Rothschild, 1905)) (ectoparasite on MO (Tx) *Pipistrellus subflavus* bats & in sON & ectoparasite on UT, WY *Neotoma lepida* woodrats)

Orchopeas *nepos* Rothchild, 1904 (ectoparasite on OR *Neotoma cinerea*, UT *Neotoma* & NW *Neotoma cinerea* woodrats)

Orchopeas sexdentatus agilis = *O.a.*

Orchopeas *sexdentatus cascadiensis* Jordan, 1929 (ectoparasite on CA, OR, WA *Neotoma cinerea* & NW *Neotoma fuscipes* woodrats & NW *Myotis californicus* & *Myotis yumanensis* bats)

Orchopeas *sexdentatus* ssp. *cascadiensis* (= *O.c.* Jordan, 1939; *O. reevesi* Vargas, 1960) (ectoparasite on WA (Tx) & AB, MT, OR (all likely Tx or Ac) *Neotoma cinerea* woodrats)

Orchopeas *sexdentatus nevadensis* Jordan, 1929 (ectoparasite on ID *Neotoma cinerea*, OR *Neotoma cinerea* & NW *Neotoma fuscipes* & *N. lepida* woodrats)

Orchopeas *sexdentatus intermedius* Hubbard, 1943 (ectoparasite on *Neotoma* woodrats)

Orchopeas *sexdentatus neotomae* Augustson, 1943 (= *O. a.*) (ectoparasite on NM *Neotoma cinerea* & *Neotoma micropus* & AZ *Neotoma* woodrats)

Orchopeas *sexdentatus nevadensis* Jordan, 1929 (ectoparasite on NV *Neotoma* woodrats)

Orchopeas *sexdentatus pennsylvanicus* Jordan, 1928 (= *Myoxopsylla* s.p. Wagner) (ectoparasite on PA, KS *Neotoma cinerea*, SC *Neotoma floridana* & PA *Neotoma magister* woodrats/ Tx or Ac in KY, WV; Tx or rock crevices in AL, GA, IL, KY, IN, MD, NY, PA, TN, VA)

Orchopeas *sexdentatus schisintus* (Jordan, 1929) (ectoparasite on CA *Neotoma albigula albigula* & AZ *Neotoma* woodrats)

Orchopeas *sexdentatus sexdentatus* (O.s. Baker, 1904) (ectoparasite on CA (Tx), CO, ID, NM, OR, SD, UT, WY *Neotoma cinerea*, CA, TX *Neotoma fuscipes*, CA *Neotoma fuscipes macrotis* AL, GA, IN, KY (Tx in Mammoth C.), MD, NY, PA *Neotoma floridana*; CA, OR, UT, WY *Neotoma lepida*; CA *Neotoma lepida lepida*, N.l. *gilva* & N.l. *intermedia* & OK *Neotoma micropus* woodrats; 1,200 years old in *Neotoma* woodrat nest, Ajo Mt., Pima Co, AZ)

Orchopeas undet. sp. or species (Tx in cave each in Kerr Co., TX & Crater Co., KY)

Oropsylla Wagner & Ioff, 1926 (= *A etheopsylla* Stewart & Holland, 1940) - Ceratophyllidae fleas, Subfamily Ceratophyllinae (5 species in US or Canada)

Oropsylla (*Thrassis*) f. = *Thrassis* f.

Oropsylla (*Thrassis*) *petiolata*. = *Thrassis* p.

Oropsylla *idahoensis* (*Ceratophyllus* i. Baker, 1904; *C. poeantis* Rothschild, 1905; *C. bertholffi* Fox, 1927) (ectoparasite on MT, OR *Neotoma cinerea* woodrat),

Oropsylla *labis* (*Ceratophyllus* l. Jordan & Rothschild, 1922; *Opisocrostis* l.) (ectoparasite on CO *Neotoma cinerea* woodrat),

Oropsylla *montana* (= *Pulex montanus* Baker, 1895, *Ceratophyllus acutus* Baker, 1904; *C. mandarinus* J.&R., 1911; *Diamanus hopkinsi* Vargas, 1955; *Diamanus* m.) (CA/ground squirrel flea/ ectoparasite on CA, CO, OR, UT *Neotoma cinerea* & CA. *N. fuscipes macrotis* woodrats),

Oropsylla (*Diamanus*) *tuberculata* (*Ceratophyllus tuberculatus* Baker, 1904; *O. ornatus* Fox, 1940; O.t.) (ectoparasite on WA *Neotoma cinerea* woodrats)

Peromyscopsylla Fox, 1939 (also put in Ceratophyllidae) - Leptopsyllidae fleas, Subfamily Amphisyllinae, Tribe Leptopsyllini (12 species in US or Canada)

Peromyscopsylla *ebrighti* C. Fox, 1925 (ectoparasite on CA *Neotoma* woodrats)

Peromyscopsylla *hamifer* Rothschild, 1906

Peromyscopsylla *hamifer vicens* Jordan, 1937 (ectoparasite in MT *Neotoma cinerea* woodrat nest),

Peromyscopsylla *hesperomys* (*Ctenopsyllus* h. Baker, 1904; *P. spinifrons* Fox, 1939) (SON & parasite on *Peromyscus crinitus* & *maniculatus*; ectoparasite on ID, OR *Neotoma cinerea*, UT *Neotoma* & IN *Neotoma floridana* woodrats)

Peromyscopsylla *ravalliensis* (*Ctenopsyllus* r. Dunn, 1923) (ectoparasite on AB, BC, ID, MT, OR, UT *Neotoma cinerea* woodrats)

Peromyscopsylla *selenis* (*Ctenopsyllus* s. Rothschild, 1906; *P. duma* Traub, 1944) (parasite on *Peromyscus crinitus* & *maniculatus*)

Phalacropsylla Rothschild, 1915 - Ctenophthalmidae fleas, Subfamily Neopsyllinae, Tribe Phalacropsyllini

Phalacropsylla *allos* Wagner, 1936 (*P. monticola* Augustson, 1942) (ectoparasite on BC, CA (Tx), CO, ID, MT (Tx), NM, OR, UT (Tx), WY *Neotoma cinerea* woodrats)

Phalacropsylla *oregonensis* Lewis & Maser, 1978 (ectoparasite on OR *Neotoma lepida nevadensis* woodrats)

Phalacropsylla *paradisea* Rothschild, 1915 (ectoparasite on Mex., AZ *Neotoma* & NM *Neotoma mexicana* woodrats)

Polygenis Fox, 1914 - Rhopalopsyllidae, Subfamily Rhopalopsyllinae (2 species in US or Canada)

Polygenis *gwyni* Fox, 1914 (ectoparasite on NW *Neotoma micropus* & GA *Neotoma floridana* woodrats)

Ptilopsylla Jordan & Rothschild, 1923 - Ischnopsyllidae fleas, Subfamily Ischnopsyllinae, Tribe Sternopsyllini

Ptilopsylla undet. sp. (Tx in Carlsbad C., Eddy Co., NM)

Pulex Linnaeus, 1758 - Pulicidae fleas, Subfamily Pulicinae, Tribe Pulicini (6 species in US or Canada)

Pulex *irritans* Linnaeus, 1758 (= *P. vulgaris* De Geer, 1778; *P. hominis* Duges, 1832; *P. conepti*, *bahiensis* Cunha, 1914; *P. fulva* Ioff, 1929; *P. orientalis* Kishida, 1939) (cosmopolitan epigean/ human flea/ Tx in Culberson, Irion Cos., TX)

Pulex *simulans* Baker, 1895 (= *P. dugesii* B. 1899) (SE, NW, SW epigean/ Tx prob. on goats or raccoons in TX (San Saba Co.))

Pulex undet. sp. (Tx in TX)

Rhadinopsylla Jordan & Rothschild, 1912 - Ctenophthalmidae fleas, Subfamily Rhadinopsyllinae, Tribe Rhadinopsyllini (12 species in US or Canada)

Rhadinopsylla *arborea* Smit, 1957 (ectoparasite on AB, BC *Neotoma cinerea* woodrats)

Rhadinopsylla *difficilis* Smit, 1957 (ectoparasite on BC *Neotoma cinerea* woodrats)

Rhadinopsylla *fraterna* (*Typhlopsylla* f. Baker, 1895; *Neopsylla hamiltoni* Dunn, 1923) (ectoparasite on AB, BC, MT, NM, SK *Neotoma cinerea* woodrat (in nest in UT))

Rhadinopsylla *goodi* (*Micropsylla* g. Hubbard, 1941; *R. sectilis* g.) (ectoparasite on OR *Neotoma cinerea* & *N. fuscipes* woodrats)

Rhadinopsylla *heiseri* (*Ctenophthalmus* h. McCoy, 1911) (ectoparasite on UT, WY *Neotoma lepida* woodrats)

Rhadinopsylla *linta* Smit, 1957 (ectoparasite on BC, NWT, YT *Neotoma cinerea* woodrats)

Rhadinopsylla *multidenticulatus* Morlan & Prince, 1954 (ectoparasite on NM *Neotoma micropus* woodrats)

Rhadinopsylla *orama* Smit, 1957 (ectoparasite on TN, VA *Neotoma magister* woodrats)
Rhadinopsylla sectilis goodi = *R.g.*

Rhadinopsylla (*Micropsylla*) *sectilis* s. Jordan & Rothschild, 1923 (ectoparasite on BC, CA, ID, NM *Neotoma cinerea* & UT *Neotoma lepida* woodrats)

Rhynchopsyllus Haller, 1880 (= *Maxilliopsylla* Schreiter & Shannon, 1927) (stick-tight fleas) Pulicidae fleas, Subfamily Tunginae, Tribe Hectopsyllini (also put in Hectopsyllidae) (1 species in US or Canada)

Rhynchopsyllus *pulex* Haller, 1880 (= *Maxilopsylla lilloi* Schreiter & Shannon, 1927; *R. megastigmata* Traub & Gammons, 1950) (sticktight flea) (ectoparasite on TX *Tadarida brasiliensis* (Tx in Frio Bat Cave), *Eumops perotis* & *Nyctinomops macrotis* (rare) bats)

Spilopsyllus Baker, 1905 (= *Cediopsylla* Jordan, 1925; *Acediopsylla* Ewing, 1940) Pulicidae fleas, Subfamily Pulicinae, Tribe Spilopsyllini (2 species in US or Canada)

Spilopsyllus *inaequalis* (*Pulex* i. Baker, 1895)

Spilopsyllus *inaequalis interrupta* Jordan, 1925 (ectoparasite on OR *Neotoma cinerea* woodrat & NW *Antrozous pallidus* bats),

Stenistomera Rothschild, 1915 (*Miochaeta* Good, 1942) Ctenophthalmidae fleas, Subfamily Anomiopsyllinae, Tribe Anomiopsyllini (once subsumed in Hystrichopsyllidae) (3 species in US or Canada)

Stenistomera (*Stenistomera*) *alpina* (*Typhlopsylla* a. Baker, 1895; *Delotelis mohavensis* Augustson, 1942) (ectoparasite on AB, CO, ID, MT, NM, OR, UT, WY *Neotoma cinerea*, NW *Neotoma fuscipes*, CO, NM *Neotoma mexicana* & *N. albigula* & AZ, CA, UT, WY *Neotoma lepida* woodrats (also in nest in AB,OR)),

Stenistomera *macroductyla* Good, 1942 (= *Miochaeta* (S.) m.) (ectoparasite on UT, WY *Neotoma lepida* woodrats)

Stenistomera *mohavensis* (Delotelis m. Augustson, 1942) (may not be currently accepted species) (ectoparasite on CA *Neotoma lepida lepida* & ID *Neotoma cinerea* woodrats)

Sternopsylla Jordan & Rothschild, 1921 (= *Aptilopsylla* Ewing, 1940) Ischnopsyllidae fleas, Subfamily Ischnopsyllinae, Tribe Sternosyllini (1 species in US or Canada)

Sternopsylla *distincta* (*Ceratopsylla d.* Rothschild, 1903)

Sternopsylla *distincta texana* (*Ischnopsyllus t.* C.Fox, 1914; *Aptilopsylla carlsbadensis* Ewing, 1940) (ectoparasite on OK (Tx) *Tadarida brasiliensis*, TX *Leptonycteris nivalis*, FL *Myotis austroriparius*, AZ *Antrozous pallidus*, CA, SW *Eumops perotis californicus* & CA, GA, KS, NM, NV, OK, SC, TX, UT *Tadarida brasiliensis* bats)

Sternopsylla texana = *S. distincta t.*

Thrassis Jordan, 1933 (*Thrassoides* Hubbard, 1947; *Pandoropsylla*, ?*Nomadopsylla* Stark, 1970) Ceratophyllidae fleas, Subfamily Ceratophyllinae (29 species in US or Canada)

Thrassis *acamantis* Rothschild, 1905 (ectoparasite on ID *Neotoma cinerea* woodrats)

Thrassis *acamantis utahensis* (ectoparasite on MT, UT *Neotoma cinerea* woodrat)

Thrassis *aridis* (*Thrassoides aridis* Prince, 1944) (ectoparasite on AZ *Neotoma* woodrats)

Thrassis *campestris* Prince, 1944 (*T. aridis campestris*) (ectoparasite on NM *Neotoma micropus* woodrats)

Thrassis *fotus* Jordan, 1925 (*T. aridis campestris*) (ectoparasite on NM *Neotoma micropus* woodrats)

Thrassis *francisi* f. (*Ceratophyllus p.* Fox, 1927; *Oropsylla (t.) f.*) (ectoparasite on OR *Neotoma cinerea* woodrat)

Thrassis *gladiolis gladiolis* Jordan, 1925 (ectoparasite on NV *Neotoma* woodrats)

Thrassis *petiolata* (*Ceratophyllus petiolatus* Baker, 1904; *Oropsylla (t.) p.*) (ectoparasite on MT, UT, WA *Neotoma cinerea* woodrats)

Thrassis *setosis* Prince, 1944 (ectoparasite on AZ *Neotoma* woodrats)

Thrassis *howelli* (*Ceratophyllus h.* Jordan, 1925) (ectoparasite on ID, OR *Neotoma c.* woodrat)

Thrassis *stanfordi* Wagner, 1936 (ectoparasite on CO *Neotoma cinerea* woodrat)

Thrassoides aridis = *Thrassis aridis*

Traubella Prince, Eads & Barnes, 1976 - Ceratophyllidae lice, Subfamily Ceratophyllinae (29 species in US or Canada)

Traubella neotomae (Fox, 1940) Prince, Eads & Barnes, 1976 (ectoparasite on *Neotoma lepida* woodrats)

Flower

Uncommon **plant** beyond twilight, even around showcave lights. Many seeds brought in esp. by rodents germinate but rarely flower. Incl.

Litsea Lamarck, 1792 – Lauraceae plants

Litsea aestivalis (*Laurus a.* Linnaeus, 1753) Fernald, 1945 (pond spice/ (sinks and cave entrances in SC)

Scirpus Linnaeus Cyperaceae sedges, Order Cyperales, Subclass Commelinidae, Class Liliopsida, Division Magnoliophyta

Scirpus ancistrochaetus Schyler (barbed bristle, northeastern or barbedbristle bulrush/ MD,WV sinkhole ponds/ endangered) Bartgis 1992

Poaceae (Grass Family)

Andropogon Linnaeus

Andropogon *gua* (HI Volcanoes Natl. Park)

Amaranthaceae

Chenopodium Linnaeus (goosefoot)

Chenopodium undet. sp.(fossil domesticated seeds in Mammoth C.,KY) Bibl.: Smith, 1984. See pollen.

Asteraceae (Composite or Aster Family)

Solidago Linnaeus (goldenrod)

Solidago *albopilosa* E.L. Braun (white-haired or whitehair goldendrod in KY rockshelters & cave entrances)

Caryophyllaceae (Pink Family)

Silene Linnaeus (catchfly)

Silene *rotundifolium* in KY rockshelters & cave entrances)

Ranunculaceae (Buttercup Family)

Thalictrum Linneaus (meadowrue)

Thalictrum *mirabile* Small (Little mountain meadowrue in KY rockshelters & cave entrances)

Ericaceae (Heather Family)

Rhododendrum

Rhododendrum undet. sp. (in KY rockshelters & cave entrances)

Saxifragaceae (Saxifrage Family)

Heuchera Linneaus (alumroot)

Heuchera *parviflora* Bartl. (In KY rockshelters & cave entrances)

fluke - See trematode

Flies

Diptera & orders **Hymenoptera** (sawflies), Ephemeroptera (**mayfly**), Plecoptera (**stonelives**), **Neuroptera** (spongillafly), Megaloptera (antlion, dobsonfly, lacewing, hellgrammites, mantispid), & **Odonata** (damselflies, dragonfly).

Diptera

Insects order of true flies, Subclass Pterygota, Division Neoptera, Subdivision Endopterygota, Section Neuropterida, Subsection Anthophora, Superorder Antiliophora. Name from di, “two” & pteron, “wing” referring to the group having only one pair of wings, unlike most other insects. The second pair either are absent or have been modified into small balancing organs called halteres.

5-40 mm (rarely up to 75 mm). Usually soft-bodied or leathery; surface with spines, setae and sometimes scales. Head more or less rounded. Thorax more or less oval and humpbacked; abdomen is elongate, cylindrical or oval. Most dull in color, black, brownish or pale with a few metallic blue or green. Compound eyes and often ocelli. Some mouthparts greatly elongated for blood sucking, others short for sponging, others for stabbing, sucking nectar or nonfunctional. Varied antennae; Small prothorax, large mesothorax (winged). Metathorax smaller. Distinctive wing veins. Legs of moderate size except greatly elongated in mosquitoes and crane flies and in others fitted for grasping prey. Tarsi of most flies have 5 segments. Tarsal claws and pads in many shapes and sizes.

Complete metamorphosis (holometabolism: egg, larvae, pupae, adults). Many pupae live in a protective case, the puparium. Larvae usually < 14 segments, often with head or with dark mouth-hooks at one end. Many groups are predators, scavengers, pollinators, parasites, aquatic, some are marine; Fairly common fungus flies/**gnats**, some Tbs) & larvae in decaying meat & dung in caves.

Bibl.: Crampton 1934; McAlpine 1987; Natilde 1994; Oldroyd 1965; Senger 1990; B. Travis et al. 1969; **Area:** **CA:** C. Alexander 1974; **GA:** Reeves 1998-9; **HI:** Evenhuis 1989; **IL:** Lisowski 1994; **IN:** Aldrich, 1896; Lisowski 1994; Mertins 1976; Vaillant & Botosaneanu 1966; **KY:** D.

Conn & Marshall 1991; Lisowski 1994; Mertins 1976; **MO**: Ashley 1995; **nNA**: G. Griffiths 1996; **NA**: Crampton 1934; Curran 1934; McAlpine, 1981, 1987, 1989; Poole & Gentili 1996; Stone et al. 1965; S. Williams, 1886-8; **TN**: Barr 1949b, 1949e; Ives 1949, 1951; **US**: Say, 1823-6; **West**: F. Cole 1960; **WI**: Mertins 1976; **Yukon**: Danks & Downes 1997; **World**: : Bezzi 1911; Matilde, 1970.

Suborder Netamtocera

Infraorder Tipulomorpha

Tipulidae (sON undet genus in groundwater & rare in hyporheic_

Subfamily Cyindrotominae (*Cylindrotoma*)

Subfamily Limoniinae

Tribe Eriopterini

(*Chionea*, *Cryptolabis*, *Empedomorpha*, *Erioptera*, *Esperoconopa*,

Gnophomyia,

Molophilus, *Ormosia*)

Tribe Hexatomini

(*Austrolimnophila*, *Dactylolabis*, *Hexatoma*, *Limnophila*, *Pilaria*,

Polymera)

Tribe Limoniini (*Antocha*, *Dicranoptycha*, *Limonia*, *Megarhina*)

Tribe Pediciini (*Dicranota*, *Pedicia*, *Ula*)

Subfamily Tipulinae

Tribe Tipulini (*Dolichopeza*, *Tipula*)

Infraorder Bibionomorpha

Superfamily Bibionoidea

Bibionidae (March or march flies)

Subfamily Bibioninae (*Bibio*)

Pleciidae (incl. Parapleciidae & Paraxymyiidae; also subsumed in Bibionidae)

(*Plecia*)

Sciaroidea (=Mycetophiloidea)

Cecidomyiidae (gall midges or gnats; cecidomyiids) (about 4,000 species)

(Ac, Tx or Tp undet. genera in Vancouver Island, BC)

Subfamily Cecidomyiinae

Tribe Cecidomyiini (*Clinodiplosis*, *Diadiplosis*)

Subfamily Lasiopteridi

Tribe Cecidomyiini (*Karshomyia*)

Subtribe Lestodiplosini (*Lestodiplosis*)

Tribe Oligotrophini (*Janetiella*)

Subfamily Lestremiinae (*Aprionus*)

Tribe Campylomyzini (*Campylomyza*) (now put in Micromyini)

Tribe Lestremiini (*Lestremia*)

Tribe Micromyini (*Campylomyza*, *Corinthomyia*, *Monardia*, *Mycophila*)

Subfamily Porricondylinae

Tribe Asynaptini (*Camptomyia*)

Tribe Heteropezini (*Henria*)

Tribe Winnertziini (*Winnertzia*)

Keroplastidae (also subsumed in Mycetophilidae)

Subfamily Keratoplatinae (*Euceroplatus*, *Keroplatus*, *Macrocera*, *Orfelia*)
(also treated as subfamily of Mycetophilidae)

Mycetophilidae

undet. Ac or TTx genera in NWT & Tx in OH

undet. sp. (Ac, Tx or Tp in Vancouver Island, BC))

Subfamily Bolitophilinae (*Bolitophila*)

Subfamily Keratoplatinae (put in own family)

Subfamily Mycetophilinae

Tribe Exechiini

(*Anatella*, *Exechia*, *Exechiopsis*, *Pseudobrachypeza*, *Rymosia*, *Tarnania*
(also in Tarnanii))

Tribe Mycetophilini (*Cordyla*, *Mycetophila*, *Phronia*)

Tribe Tarnanii (Ac or Tx in 1 seAK cave; *Tarnania* (put in Exechiini))

Subfamily Sciophilinae

Tribe Gnortistini (*Boletina*, *Speolepta*, *Synapha*)

Tribe Sciophilini (*Allocotocera*, *Leptomorphus*, *Monoclona*, *Mycomya*,

Neuratelia)

Tribe Leiini (*Docosia*, *Leia*)

Sciaridae

Undet. Tx? sp. & genus in MO & NV *Nothrotheriops shastensis* ground

sloth dung)

Bradysia, *Corynoptera*, *Lycoriella*, *Pnyxia*, *Phytosciara*, *Sciara*

Oligotrophini (*Dasineura*, *Boletina* (now in Mycetophilidae))

Infraorder Psychomorpha

Superfamily Psychoidea

Psychodidae (moth & sand flies; owl midges)

Subfamily Phlebotominae (*Lutzomyia*)

Subfamily Psychodinae (*Maruina*, *Pericoma*, *Psychoda*, *Telematoscopus*)

Superfamily Trichoceroidea

Scatopsidae (= Cordyluridae) (also subsumed in Anthomyidae & put in Muscoidea-Schizophora-Calyptrata (dung flies)

Subfamily Delininae (or as Tribe Delinini) (*Americina*)

Subfamily Scathophaginae (*Scatophaga*)

Trichoceridae (= Petauristidae, Melusinidae)(winter crane flies or Trichocerid gnats)

(*Diazosma*, *Trichocera*, Undet. genus on domestic cat in WA)

Infraorder Ptychopteromorpha

Superfamily Ptychopteroidea

Tanyderidae (*Protanyderus*)

Ptychopteridae (*Bittacomorpha*)

Infraorder Culicomorpha

Superfamily Culicoidea

Chaoboridae (phantom midges)

Undet. genera & sp. in seAK.

Subfamily Chaoborinae (*Chaoborus*, *Mochlonyx*)

Subfamily Eucorethrinae (*Eucorethra*)

Corethrellidae

Subfamily Corethrellinae (*Corethrella*)

Culicidae (mosquitoes)

Subfamily Anophelinae. (*Anopheles*)

Subfamily Culicinae

Tribe Culicini (*Aedes*, *Culex*, *Culiseta*, *Mansonia*, *Uranotaenia*)

Dixidae (dixid midges)

(Undet genus rarely found in sON hyporheic & groundwater; *Dixa*, *Dixella*)

Thaumaleidae (*Trichothaumalea*)

Superfamily Chironomoidea

Ceratopogonidae (=Heleidae) ((biting) midges, no-see-ums, punkies)

(Tx? undet. genus in MN; undet genus rarely found in sON hyporheic & groundwater)

Subfamily Ceratopogoninae

Tribe Ceratopogonini (*Alluaudomyia*, *Ceratopogon*, *Monohalea*)

Tribe Culicoidini (*Culicoides*)

Tribe Palpomyiini: (*Bezzia*, *Palpomyia*)

Tribe Sphaeromiini (*Probezzia*)

Subfamily Forcipomyiinae (*Atrichopogon*, *Forcipomyia*, undet. genera (Tx or Ac in sON)

Chironomidae (=Tendipedidae)(midges)

Undet. genera & sp. (Tx? In MO,AK) & undet. genus in LA brackish beach sediment;

Undet genus in sON hyporheic & groundwater

Subfamily Chironominae
(*Paramerina* (now in Tanypodinae), *Stempellinella*, *Robackia*, *Saetheria*,
Sublettea
(all now in Telomatogetoninae)

Tribe Chironomini (*Cladoplema*, *Cryptochironomus*, *Chironomus*,
Demicryptochironomus, *Dicrotendipes*, *Endochironomus*, *Einfeldia*,
Glyptotendipes, *Harnischia*, *Lauterborniella*, *Lipiniella*, *Microtendipes*,
Nilothauma, *Parachironomus*, *Paracladopelma*, *Paralauterborniella*,
Paratendipes, *Pagastiella*, *Phaenopsectra*, *Polypedilum*,

Stenochironomus, *Stictochironomus*)

Tribe Coelotanypodini (*Coelotendipes*)

Tribe Tanytarsini

(*Cladotanytarsus*, *Micropsectra*, *Nimbocera*, *Paratanytarsus*,
Rheotanytarsus
Stempellina, *Tanytarsus*; Undet genus in sON hyporheic &
groundwater)

Subfamily Diamesinae (*Diamesa*, *Pagastia*, *Prodiamesa*, *Potthastia*)

Tribe Boreochlini (*Lasiodiamesa*)

Subfamily Orthocladiinae

(*Brillia*, *Cardiocladius*, *Chaetocladius*, *Clinotanypus*, *Corynoneura*,
Cricotopus,
Diplocladius, *Epoicocladius*, *Eukiefferiella*, *Heleniella*, *Halocladius*
Heterotrissocladius, *Hydrobaenus*, *Krenosmittia*, *Limnophyes*, *Lappodiamesa*
Lopescladius, *Metriocnemus*, *Microcricotopus*, *Nanocladius*, *Orthocladius*,
Parachaetocladius, *Paraphaenocladius*, *Parakiefferiella*, *Parametriocnemus*
Psectrocladius, *Pseudorthocladius*, *Pseudosmittia*, *Psilometriocnemus*
Rheocricotopus, *Rheosmittia*, *Smittia*, *Synorthocladius*, *Tethymia*,
Thalassosmittia,
Thienemanniella (now put in Tanypodinae), *Trichocladius*, *Tvetenia*)

Undet. genus in AZ shallow hyporheic (Maricopa Co.)
Undet genus in sON hyporheic & groundwater
Undet. genus (Ac, Tx or Tp in Vancouver Island, BC;)

Tribe Metriocnemini (*Parakiefferiella*)

Subfamily Podonominae

Tribe Boreochlini (*Boreochlus*, *Paraboreochlus*)

Subfamily Prodiamesinae (*Monodiamesa*)

Subfamily Tanypodinae (*Aspectrotanypus*, *Conchapelopia*, *Denopelopia* (now in Telomatogetoninae), *Procladius*)

Undet. genus in AZ shallow hyporheic
Undet genus in sON hyporheic & rarely in sON groundwater

Tribe Coelotanypodini (*Coelotanypus*)

Tribe Macropelopiini (*Alotanypus*, *Natarsia*, *Psectrotanypus*)

Tribe Pentaneurini

(*Ablabesmyia*, *Nilotanypus*, *Larsia*, *Labrundinia*, *Pentaneura*,

Trissopelopia

Zavreliomyia, *Paramerina* (also put in Chironominae) *Thienemannimyia*,
undet. genus in AZ shallow hyporheic)

Tribe Tanypodini (*Tanypus*)

Subfamily Telomatogetoninae

(*Denopelopia*, *Stempellinella*, *Robackia*, *Saetheria*, *Sublettea*, *Zavreliella*)

Simuliidae (black flies)

sON undet genus in sON groundwater & hyporheic (rare). Incl. Subfamilies:

Subfamily Parasimuliinae Smart, 1945

Tribe Gymnopaadini (*Gymnopais*) (now in Simuliinae)

Tribe Parasimulini (*Parasimulium*)

Subfamily Simuliinae Newman, 1834

Undet. Ac or Tx genus in Vancouver Island, BC
(*Gymnopais*) (once in Parasimuliinae)

Tribe Prosimuliini Enderlein, 1921

(*Cnephia*, *Prosimulium* (subgenus *P.* Rouchard, 1906 s.str.), *Stegopterna*)

Tribe Simuliini Newman, 1834 (*Simulium* (subgenus *S.* Latreille, 1802 s.str.)

Suborder Brachycera

Infraorder Stratiomyomorpha

Stratiomyidae: undet. genus rarely found in hyporheic of SC coastal blackwater stream

Subfamily Clitellariinae

Tribe Clitellariini (*Cyphomyia*)

Subfamily Stratiomyinae

Tribe Oxycerini (*Euparyphus*)

Infraorder Tabanomorpha

Athericidae (watersnipe or athericid flies) (incl. Rhagionidae)(=Leptidae
(*Atherix*)

Rhagionidae (snipe flies)

(*Ptiolina*, undet. genus (Ac, Tx or Tp in Vancouver Island, BC)

Tabanidae (=Larvaevoridae)

(horse & deer flies; peer & horse flies; gadflies, breezeflies, clegs & deerflies)

(*Chrysops*, *Tabanus*, undet. genus in LA brackish beach; TX sandy hyporheic)

Infraorder Muscomorpha

Superfamily Asiloidea

Scenopinidae (window flies) (=Omphralidae) flies)

(*Pseudatrichia*, undet. genus (Ac in cave in Edwards Co., TX)

Therevidae

Superfamily Empidoidea

Empididae (dance flies)

Undet. AC, Tx or Tp genus in Vancouver Island caves, BC)

Subfamily Clinocerinae (*Roederiodes*, *Trichoclinocera*)

Subfamily Empidinae (*Hilara*, *Oreogeton* (also put in Oreogetoninae),

Rhamphomyia)

Subfamily Hemerodromiinae

Tribe Hemerodromiini (*Chelifera*, *Hemerodromia*)

Subfamily Tachydromiinae (*Charadrodromia*, *Crossopalpus*, *Platypalpus*,

Tachypeza)

Dolichopodidae (long-legged flies)

Undet. Genera & species in 1st AK cave

Subfamily Aphrosylinae (*Aphrosylus*) (once in Diaphorinae)

Subfamily Diaphorinae (*Aphrosylus* (now in Aphrosylinae), *Chrysotus*)

Subfamily Dolichopodinae (*Dolichopus*)

Subfamily Hydrophorinae (*Liancalus*, *Thinophilus*)

Subfamily Nuerigoninae (*Neurigona*, *Neurigonella*)

Hybotidae (once part of Empididae) (*Charadrodromia*, *Leptopeza*)

Superfamily Muscoidea-Aschiza

Lonchopteridae (pointedwinged or spear-winged flies) (*Lonchoptera*)

Phoridae (humpbacked flies)

Undet. Tp sp. in MO; undet. Tx or Ac in NWT; undet. Ac, Tx or Tp in Vancouver Isl., BC)

Subfamily Metopininae

Tribe Metopinini (*Gymnophora*, *Megaselia*, *Puliciphora*, *Woodiphora*)

Subfamily Phorinae

(*Anevrina*, *Borophaga*, *Conicera*, *Diplonevra*, *Spiniphora*, *Triphleba*)

Pipunculidae (big-headed or big-eyed flies)

Undet. genus (Ac in cave in Irion Co., TX)

Syrphidae (syrphid, flower, sweat, drone or hover flies; rattailed maggots)

Subfamily Eristalinae

Tribe Eristaliini

Subtribe Eristaliina (*Eristalis*)

Tribe Chrysogastrini (*Chrysogaster*)

Subfamily Syrphinae

Tribe Syrphini (*Dasysyrphus*, *Eupeodes*, *Syrphus*)

Superfamily Muscoidea-Schizophora-Acalyptrata

Anthomyzidae (anthomyiid flies; dung flies; root maggots) (see also Scatophagidae)

Ac, Tx or Tp undet. genera in Vancouver Island, BC) **Bibl.** Griffiths, 1982-1996.

Subfamily Anthomyiinae

Tribe Anthomyiini (*Anthomyia*, *Eutrichota*, *Pegomya*, *Pegoplata*)

Subfamily Pegomyina

Tribe Pegomyini

(*Eutrichota*, *Pegomya*, *Pegoplata*) (all now subsumed in Anthomyiini)

Carnidae (carnid flies) (*Hemeromyia*)

Chloropidae (frit flies)

Subfamily Oscinellinae (*Gaurax*, *Hippelates*, *Liohippелates*)

Curtonotidae (humpbacked flies) (*Curtonotum*)

Drosophilidae ((small) fruit flies; pomace flies, vinegar flies)

Undet. AC, Tx or Tp genus in Vancouver Island caves, BC)

Subfamily Drosophilinae (*Drosophila*, *Mycodrosophila*)

Subfamily Steganinae (*Leucophenga*, *Stegana*)

Dryomyzidae (dryomyzid or seabeach & barnacle flies) (*Dryomyza*)

Ephydriidae (shore flies)

Undet. Tx genera in Malpais Natl. Monument, nNM)

Subfamily Psilopinae

Tribe Altisinni (*Allotrichoma*, *Pelignellus*)

Subfamily Ephydrinae

Tribe Ephydrini (*Ephydra*)

Tribe Scatellini (*Lamproscatella*, *Scatela*, *Scatophila*)

Subfamily Psilopinae

Tribe Altisinni (*Allotrichoma*)

Heleomyzidae

Undet. Ac, Tx or Tp genus in Vancouver Island, BC

Subfamily Heleomyzinae (*Schroederella*, *Tephrochlamys*)

Tribe Heleomyzini

(*Acantholeria*, *Amoebaleria*, *Heleomyza*, *Pseudoleria*, *Scoliocentra*)

Tribe Oecothelni (*Aecothea*)

Subfamily Suilliinae (*Suillia*)

Subfamily Trixoscelidinae (*Trixoscelis*)

Lonchaeidae (lonchaeid flies)

(new genus? in WA caves)

Milichiidae (=Phyllomyzidae) (milichid flies)

Subfamily Madizinae (*Desmometopa*, *Leptometopa*)

Oestridae (sheep bot flies; bot and warble flies)

Subfamily Cuterebrinae (*Cuterebra*)

Sarcophagidae (=Stephanostomatidae, Metopiidae) (*Sarcophaga*)

Sphaeroceridae (=Borboridae) ((small) dung flies)
(Tx undet. genera & sp. in OH)

Subfamily Copromyzinae (*Crumomyia*)

Subfamily Limosininae

(*Apteromyia*, *Leptocera*, *Limosina*, *Pseudocollinella*, *Rufolfina*, *Sclerocoelus*,
Spelobia, *Terrilimosina*, *Xenolimosina*)

Muscoidea-Schizophora-Calypttrata

Anthomyiidae (put in above Superfamily0

Calliphoridae (blow flies)

(Ac, Tx or Tp undet. genera in Vancouver Island, BC)

Subfamily Calliphorinae

Tribe Calliphorini (*Lucilia*)

Tribe Luciliini (*Calliphora*)

Fanniidae (*Fannia*)

Hippoboscidae (louse flies, flat flies)

Undet. CA ectoparasite genera on *Corynorhinus townsendii* bats)

Subfamily Nycteribiinae (also put in own family, see below)

Tribe Nycteribiini (*Basilia*)

Muscidae (house & stable flies or muscid flies)

Subfamily Cyrtoneurinae (*Neomuscina*)

Subfamily Muscinae

Tribe Muscini (*Limnophora*, *Musca*)

Tribe Reinwardtiini (*Muscina*, *Synthesiomyia*)

Subfamily Phaoniinae

Tribe Phaoniini (*Phaonia*)

Nycteribiidae (*Basilia* (put in Hippoboscidae, *Nycteribia* = *Basilia*

Nycterophilia - put in Streblidae)

Scatophagidae (now in Infraorder Psychomorpha, Superfamily Trichoceroidea)

Streblidae (batflies; webworms)

(also subsumed as Subfamily Streblinae in Hippoboscidae)

Undet. genera: Tx in AR

Subfamily Trichobiinae (*Nycterophila*, *Paratrichobius*, *Trichobius*)

Tachinidae (parasitic flies; tachinid or tachina flies) Subfamily Dexiinae

Tribe Eriothrixini (*Paradidyma*)

Subfamily Goniinae

Tribe Siphonini

Subtribe Siphonia (*Actia*)

Subtribe Nearina (*Phytomyptera*)

Subfamily Tachininae

Tribe Voriini (*Cyrtophleba*)

Tribe Tachinini (*Peleteria*)

ANTHOMYIIDAE (anthomyiid flies, incl. dung flies; root maggots) (see also Scatophagidae)
Suborder Brachycera, Infraorder Muscomorpha.

Members of the Anthomyiidae, commonly called root-maggot flies, occur worldwide and are comprised of approximately 1,100 described species in 50 or so genera. Adults of living species are primarily found in moist or wooded habitats where they feed on nectar and pollen of flowers. Others are predaceous on small flies. Larvae eat living and decaying plant matter and live in stems, roots, and other living or decaying plant matter. Other larvae are inquilines, commensals, or parasitic on hymenopterous insects, reptiles, and burrowing mammals. The fossil record of the family in the original 1994 version of the fossil Diptera catalog included twelve described species in two genera, all of Tertiary origin.

This group comprises several destructive pests including the onion fly (*Delia antiqua*), the wheat bulb fly (*D. coarctata*), the turnip root fly (*D. floralis*), the bean seed fly (*D. platura*) and the cabbage root fly (*D. radicum*).

Ac, Tx or Tp undet. genera in Vancouver Island, BC) **Bibl.** Griffiths, 1982-1996.

Subfamily Anthomyiinae

Tribe Anthomyiini (*Anthomyia*, *Eutrichota*, *Pegomya*, *Pegoplata*)

Subfamily Pegomyina

Tribe Pegomyini (*Eutrichota*, *Pegomya*, *Pegoplata*) (all now subsumed in Anthomyiini)

Anthomyia Meigen, 1803 - Anthomyiidae flies, Subfamily Anthomyiinae, Tribe Anthomyiini (3 species in US or Canada)

Anthomyia undet. sp. (OR C., OR/Tx)

Eutrichota Kowartz, 1893 (= *Eremomyia* Stein, 1898; *Pegomyza* Schnabl & Dziedzicki, 1911; *Eremomyioides* Malloch, 1918; *Hervebazinia* Seguy, 1923; *Arctopegomyia* Ringdahl, 1938) Anthomyiidae flies, Subfamily Anthomyiinae, Tribe Anthomyiini (also put in Pegomyinae, Tribe Pegomyini) (51 species in US or Canada)

Eutrichota *affinis* (*Pegomya a.* Stein, 1898) (WA to PQ, s.to SW, VA/Tx in AR, IN, NM, sON, TX)

Eutrichota undet. sp. (MO/Tx)

Eutrichota *tarsata* Wulp, 1867 (*Pegomya chrysida* & *cresca* H.1939) (OH, CA to SW/Tx in AR, OK)

Pegomyia Robineau-Desvoidy, 1830 in part; Mackquart, 1835 Emend. (= *Zabia*, *Phoraea*, *Chlorina*, *Phyllis* Robineau-Desvoidy; *Carduophila* Hendel, 1925; *Chaetopegomyia* Ringdahl, 1938; *Petrmyia* Albuquerque, 1954) Anthomyiidae flies, Subfamily Anthomyiinae, Tribe Anthomyiini (also put in Pegomyinae, Tribe Pegomyini) (96 species in US or Canada)

Pegomyia affinis = *Eutrichota a.*

Pegomyia dissecta = *Pegoplata infirma*

Pegoplata Schnabl & Dziedzicki, 1911 - Anthomyiidae flies, Subfamily Anthomyiinae, Tribe Anthomyiini (also put in Pegomyinae, Tribe Pegomyini) (19 species in US or Canada)

Pegoplata *infirma* (= *Pegomya dissecta*; *Anthomyia d.* Meigen, 1826) (circumboreal/Tx or Ac in sON),

ATHERICIDAE (watersnipe or athericid flies) (incl. Rhagionidae)(=Leptidae)) Suborder or Group Brachycera, infraorder Tabanomorpha. Incl.

Atherix Meigen, 1803 - Athericidae flies (4 species in US or Canada)

Atherix *pachypus* Bigot, 1887 (WA/CO hyporheic) (also put in Rhagionidae)

BIBIONIDAE (March or march flies) Suborder or Group Nematocera, infraorder Bibionomorpha

Subfamily Bibioninae (*Bibio*)

Bibio Geoffroy, 1762 (= *Pullata* Harris, 1776; *Hirtea* Fabricius, 1798; *Bibiophus* Bollow, 1954) Bibionidae flies, Subfamily Bibioninae (55 species in US or Canada)

Bibio *xanthopus* Wiedemann, 1828; *B. canadensis* Macquart, 1838; *B. humeralis*, *scita* Walker, 1848; *B. obscurus*, *lugens* Loew, 1864; *B. palliatus* McAtee, 1922; *B. macateei* James, 1936; *B. signatus* Hardy, 1937) (NA/Tx or Ac in sON)

Plecia Wiedeman, 1828 - now in Pleciidae

BOLITHOPHILIDAE - Suborder Nematocera, Infraorder Bibionomorpha

Bolitophila Meigen, 1818 (now in Mycetophilidae)

BORBORIDAE = Sphaeroceridae

CALLIPHORIDAE (blow flies) suborder Brachycera, infraorder Muscomorpha. **Bibl.:** R. Hall & Townsend 1977

(Ac, Tx or Tp undet. genera in Vancouver Island, BC)

Subfamily Calliphorinae

Tribe Calliphorini (*Lucilia*)

Tribe Luciliini (*Calliphora*)

Calliphoridae, commonly called blow flies, blue bottles, or green bottles, consist of fairly large, robust, often metallic-colored calyptrate flies found worldwide. Adults of living forms have been reported from flowers, decaying plant and animal matter, and vegetation. Larvae are varied in their feeding habits with some omnivorous, carnivorous, or parasitic. They can be scavengers and feed on carrion, excrement, or garbage waste, or parasitic or predaceous on various invertebrates. Blow flies have gained medicinal notoriety through their use in Maggot Debridement Therapy (MDT), the medical use of live maggots (fly larvae) for cleaning non-healing wounds. Historically, maggots have been known for centuries to help heal wounds. Many military surgeons noted that soldiers whose wounds became infested with maggots did better, and had a much lower mortality rate, than did soldiers with similar but non-infested wounds. William Baer, at Johns Hopkins University in Baltimore, Maryland, was the first physician (an orthopedic surgeon) in the U.S. to actively promote maggot therapy; his results were published posthumously by his colleagues in 1932. MDT was successfully and routinely performed in over 300 hospitals, until the mid-1940's, when its use was supplanted by the new antibiotics and surgical techniques that were believed to be superior to maggot therapy. Maggot therapy was occasionally used during the 1970's and 1980's, when antibiotics, surgery, and other modalities of modern medicine failed. In 1989, physicians at the Veterans Affairs Medical Center in Long Beach, CA, and at the University of California, Irvine, reasoned that if maggot therapy was effective enough to treat patients who otherwise would have lost limbs, despite modern surgical and antibiotic treatment, then we should be using maggot therapy BEFORE the wounds progress that far, and not only as a last resort. Thus was seen the rebirth of maggot debridement therapy, or MDT. Use of blowfly maggots continues with clinical studies, which began in 1989 at the Veterans Affairs Medical Center and the University of California, are still underway. Results thus far demonstrate that maggot therapy is more efficient at debriding (cleaning) infected and gangrenous wounds than any other non-surgical treatment prescribed by the hospital's wound care team. Additionally, wounds treated with MDT healed more quickly (by several-fold) than they had been healing.

The size of the species vary between 1 mm to more than 3.5 cm. Together with their often long and tall body shape and their great agility, they might be confused with larvae of different insects, with midges (Diptera) or especially with earwigs (Dermaptera).

Calliphora Robineau-Desvoidy, 1830 (= *Abonesia* Villeneuve, 1927; *Acronesia* Hall, 1948; *Aldrichiella* Rohdendorf, 1931; *Aldrichina* Townsend, 1934; *Steringomyia* Kokorny, 1889; *Neocalliphora* & *Arcrophaga* Brauer & Bergenstamum, 1891; *Eucalliphora* T., 1908; *Paracalliphora* T., 1916; *Stobbeola* Enderlein, 1933; *Australocalliphora*, *Papuocaliphora* Kurahashi, 1971; *Oceanocalliphora* K., 1972) Calliphoridae flies, Subfamily Calliphorinae, Tribe Calliphorini (16 species in US or Canada)

Calliphora *terraenovae* Macquart, 1851 (= *C. nigribarba* Hough, 1899; *C. vomitoria* n.; *C. nigribucca* Shannon, 1923) (epigeal AK to Greenland, s. to CA, CO, nFL/ Tx or Ac in IN, NM, NWT)

Calliphora *vicina* Robineau-Desvoidy, 1830 (*Musca carnivora* Fabricius, 1794 (Unav.), *M. erythrocephala* Meigen, 1826 (Homo.); *C. littoralis*, *spitzbergensis*, *monspeliaca*, *musca*, *nana* R., 1830; *C. scutellata* Macquart, 1834; *M. thuscia* Walker, 1849; *M. aucta* W., 1853; *C. insidiiosa* R., 1863; *C. turanica* Rohdendorf, 1926) (global/Tx in TX & GA (Dade & Walker Cos.); Tx or Ac in one cave each in IL & Camden Co., MO)

Calliphora *vomitoria* (*Musca* v. Linnaeus, 1758; *M. carnaria* Scopoli, 1763; *M. caerulea* DeGeer, 1776 (Univ.); *M. minimus* Harris, 1780; *M. obscoena* Eschscholtz, 1823; *Calliphora brunibarbis* & *fulvibarbis* Robineau-Desvoidy, 1830; *C. affinis* Macquart, 1835; *C. rubrifrons* Townsend, 1908; *C. pseudovomitoria* Baranov, 1943) (Greenland s. along coast to VA, sw to Mex, n. to AK/blue bottle fly/Tx egg laying on mammal carcass in NM & GA (Dade Co.); Tx or Ac in NWT)

Calliphora *lilaea* Walker, 1849 (= *C. latifrons* Hough, 1899; *Musca ilerda* Walker, 1849; *Eucalliphora l.*) (AK to ON, s. to nMex., CO/ Tx in OR)

Calliphora undet. sp. (Tx in TX)

Eucalliphora Townsend, 1908 = *Calliphora*

Lucilia Robineau-Desvoidy, 1830 (*Phaenicia* R. 1863; *Phumonesia* Villeneuve, 1914; *Bufolucilia* Townsend, 1919; *Francilia* Shannon, 1924; *Viridinsula* Shannon, 1926; *Roubaudiella* Sewguy, 1925; *Dasyllucilia*, *Caesariceps* Rohdendorf, 1926; *Luciliella* Malloch, 1926; *Chgaetophaenicia* Enderlein, 1936; *Acrophagella* Ringdahl, 1942; *Sinolucilia* Fan, 1965) Calliphoridae flies Subfamily Calliphorinae, Tribe Luciliini (12 species in US or Canada)

Lucilia undet. sp. (Tx or Ac in cave in Grundy Co., TN)

Lucilia *serricata* (*Musca* s. Meigen, 1826; *Chrysomya capensis*, *modesta*, *pubescens* Robineau-Desvoidy, 1830; *Musca tegularia* Wiedemann, 1830; *M. chloris* Haliday, 1833; *L. pruinoisa* Meigen, 1838; *L. flavipennis* Macquart, 1843; *L. fulgida* Zetterstedt, 1845; *L. galyra* Walker, 1849; *L. latrifrons* Schniner, 1862; *Phaenicia concinna* R. 1863; *L. sayi* Jaennicke, 1867; *L. barberi*, *griraulti* Townsend, 1908) (global/Tx in cave in Val Verde Co., TX)

Phaenicia = *Lucilia*

CARNIDAE (carnid flies) suborder Brachycera, infraorder Muscomorpha

Hemeromyia Coquillett, 1902 (*Paramadiza* Melander, 1913) Carnidae flies (2 species in US or Canada)

Hemeromyia undet. sp. (Ac in cave in Culberson Co., TX)

CECIDOMYIIDAE (gall midges or gnats; cecidomyiids) Suborder Nematocera, Infraorder Bibionomorpha (about 4,000) (Ac, Tx or Tp undet. genera in Vancouver Island, BC)

Subfamilies:

Cecidomyiinae

Tribe Cecidomyiini (*Clinodiplosis*, *Diadiplosis*)

Lasiopteridi

Tribe Cecidomyiini (*Karshomyia*)

Subtribe Lestodiplosini (*Lestodiplosis*)

Tribe Oligotrophini (*Janetiella*)

Lestremiinae (*Aprionus*)

Tribe Campylomyzini (*Campylomyza*) (now put in Micromyini)

Tribe Lestremiini (*Lestremia*)

Tribe Micromyini (*Campylomyza*, *Corinthomyia*, *Monardia*, *Mycophila*)

Porricondyliinae

Tribe Asynaptini (*Camptomyia*)

Tribe Heteropezini (*Henria*)

Tribe Winnertziini (*Winnertzia*)

Alluaudomyia (in Ceratopogonidae)

Aprionus undet. sp. (Ac in 1 seAK cave) Cecidomyiidae flies, Subfamily Lestremiinae (or Micromyidi, Tribe Micromyini (4 species in US or Canada)

Bremia Rondani, 1860 - Cecidomyiidae flies, Subfamily Lasiopteridi, Tribe Cecidomyiini (8 species in US or Canada)

Bremia *caricis* (*Mycodiplosis c.* Felt, 1907) (NE epigeal/ Tx or Ac in sON)

Bremia undet. or undesr. Sp. (*Tx, Tp or Tb in cave in Dade Co., GA)

Camptomyia Kieffer, 1894 (= *Prodirhiza* K., 1913; *Cecidophila rubsaamen*, 1916)

Cecidomyiidae flies, Subfamily Porricondyliinae, Tribe Asynaptini (8 species in US or Canada)

Camptomyia undet. sp. 1-2? (sON/Tx or Ac)

Campylomyza Meigen, 1818 - Cecidomyiidae flies, Subfamily Micromyidi, Tribe Micromyini (16 species in US or Canada)

Campylomyza undet. sp. (Ac, Tx or Tp in Vancouver Island, BC)

Clinodiplosis Kieffer, 1895 - Cecidomyiidae flies, Subfamily Cecidomyiinae, Tribe Cecidomyiini (48 species in US or Canada)

Clinodiplosis undet. sp. (Tx or Ac in sON, 1 seAK cave)

Corinthomyia Felt, 1911 - Cecidomyiidae flies, Subfamily Lestremiinae, Tribe Micromyini (also put in Tribe Campylomyzini) (1 species in US or Canada)

Corinthomyia *brevicornis* (*Capylomyza b.* Felt, 1907; *C. bryanti*, *luna*, *curreyi*, *hirsuta* Felt, 1908; *C. gracilis* Felt, 1912; *C. tumida* & *cocinna* Felt, 1913) (BC to NF, s. to MN, nFL/TTx or Ac in NWT (prob.))

Dasyhelea Kieffer, 1911 Cecidomyiidae flies (once in Ceratopogonidae, Subfamily Dasyheleinae (46 species in US or Canada)

Dasyhelea *mutabilis* (Coquillett, 1901) (epigeal in entire NA/ hyporheic in KS)
Dasyhelea undet. sp. or species (AZ, CO, OK, PA hyporheic; Tx in AR)

Diadiplosis Kieffer, 1898 - Cecidomyiidae flies, Subfamily Cecidomyiinae (5 species in US or Canada)

Diadiplosis undet. sp. (Tx or Ac in IN?)

Henria Wyatt, 1959 (= *Barnesina* Pritchard, 1960) - Cecidomyiidae flies, Subfamily Porricondyliinae, Tribe Heteropezini (2 species in US or Canada)

Henria undet. sp. (TTx in nests of *Hirundo fulva* in cave in Edwards Co., TX)

Janetiella Kieffer, 1898 - Cecidomyiidae flies, Subfamily Lasiopteridi, Tribe Oligotrophini (14 species in US or Canada)

Janetiella undet. sp. (Ac in 1 seAK cave)

Karshomyia Felt, 1908 (= *Metadiplosis*, *Lobodiplosis* Felt, 1908; *Plesiobremia* Kieffer, 1912; *Tristephanus* K., 1913; *Hiastatus* Marikovskij, 1956) - Cecidomyiidae flies, Subfamily Lasiopteridi, Tribe Cecidomyiini (6 species in US or Canada)

Karshomyia *viburni* (*Mycodiplosis v.* Felt, 1907) (NY/Tx or Ac in sON)

Lestodiplosis Kieffer, 1894 (= *Leptodiplosis* & *Coprodiplosis* K., 1894) - Cecidomyiidae flies, Subfamily Lasiopteridi, Tribe Cecidomyiini, subTribe Lestodiplosini (47 species in US or Canada)

Lestodiplosis *grassator* (*Diplosis* g. Fyles, 1883) (PQ/Tx or Ac in sON)

Lestodiplosis *satiata* Felt, 1920 (NY/Tx or Ac in sON)

Lestodiplosis undet. sp. (Tx or Ac in TX)

Lestremia Macquart, 1826 - Cecidomyiidae flies, Subfamily Lestremiidi, Tribe Lestremiini (3 species in US or Canada)

Lestremia *cinerea* M. 1826 (= *L. fusca* Meigen, 1830; *Catocha sylvestris* Felt, 1907; *S. dyari*, *franconiae*, *kansensis* F. 1908; *L. floridana* F. 1915; *L. garretti* F., 1926; *Zygoneura fenestrata* Malloch, 1914 (Europe, BC to NH, s. to FL/Tx or Ac in CA)

Lestremia undet. sp. (TTX in nests of *Hirundo pallida* in Edwards Co., TX)

Monardia Kieffer, 1895 - Cecidomyiidae flies, Subfamily Micromyidi, Tribe Micromyini (4 species in US or Canada)

Monardia undet. sp. (Tx or Ac in CA, 1 seAK cave)

Mycophila Felt, 1911 - Cecidomyiidae flies, Subfamily Micromyidi, Tribe Micromyini (4 species in US or Canada)

Mycophila undet. sp. (Ac 1 seAK cave)

Winnertzia Rondani, 1861 (= *Clinorhiza* Kieffer, 1861; *Prowinnertzia* K., 1911; *Winnertziola* K., 1913; *Parawinnertzia* Curran, 1934 Emend.; *Xylowinnertzia*, *Bolowinnertzia* & *Mycowinnertzia* Mamaev, 1963) - Cecidomyiidae flies, Subfamily Porricondylinae, Tribe Winnertziini (2 species in US or Canada)

Winnertzia undet. sp. (Tx or Ac in sON)

CERATOPOGONIDAE Suborder Nematocera, infraorder Culicomorpha

(=Heleidae) ((biting) midges, no-see-ums, punkies). **Bibl.:** Atchley et al. 1981; Wirth 1988 (Tx? undet. genus in MN; undet genus rarely found in sON hyporheic & groundwater)

Subfamily Ceratopogoninae

Ceratopogonini (*Alluaudomyia*, *Ceratopogon*, *Ceratopogonida*, *Monohelea*)

Culicoidini (*Culicoides*)

Palpomyiini: (*Bezzia*, *Palpomyia*)

Sphaeromiini (*Probezzia*)

Subfamily Forcipomyiinae (*Atrichopogon*, *Forcipomyia*, undet. genera (Tx or Ac in sON)

Subfamily Leptoconopinae (*Leptoconops*)

Alluaudomyia Kieffer, 1913 (= *Neoceratopogon* Malloch, 1915; *Prionognathus* Carter, Ingram & MacFie, 1921 (homo.); *Thysanognathus* Ingram & MacFie, 1922; *Isoecacta* Garrett, 1925) Ceratopogonidae flies, Subfamily Ceratopogoninae, Tribe Ceratopogonini (8 species in US or Canada)

Alluaudomyia undet. sp. (CO hyporheic)

Atrichopogon Kieffer, 1906 (*Gymnohelea* K., 1921; *Dolichohelea* Edwards, 1929; *Lophomyidium* Cordero, 1929; *Psilokempia* Enderlein, 1936; *Melohelea* Wirth, 1956; *Psammopogon*, *Rostropogon* Remm, 1979) Ceratopogonidae flies, Subfamily Forcipomyiinae (3 species in US or Canada)

Atrichopogon (*Ceratopogon*) *jacobsoni* de Meijere, 1907 (*A. immaculatus* Kieffer, 1917; *A. cavernarum* Edwards, 1942; *C. rarus* Johannsen, 1946 (seAsia, Pacific Islands/TTx? in HA)

Bezzia Kieffer, 1899 - Ceratopogonidae flies, Subfamily Ceratopogoninae, Tribe Palpomyiini. (42 species in US or Canada) **Bibl.:** Dow 1975

Bezzia undet. sp. or species (IL? hyporheic; dry channel hyporheic & shallow hyporheic in Sycamore Cr. 32 km ne of Phoenix (Maricopa Co.), AZ; VA, MD brackish benthic)

Bezzia or ***Palpomyia*** Meigen, 1814 undet. sp. (CO, IL?, OK hyporheic; Ac or Tx in 2 seAK cave; NC marine infauna)

Bezzia or *Probezzia* Kieffer, 1906 undet. sp. or species (IL?, PQ hyporheic; PQ Gulf of St. Lawrence sandy marine interstitial)

Ceratopogon Kieffer, 1895 - Ceratopogonidae flies Subfamily Ceratopogoninae, Tribe Ceratopogonini (22 species in US or Canada)

Ceratopogon undet. sp. (Tx or Ac in CA, 1seAK cave)

Ceratopogonida - Ceratopogonidae flies, Subfamily Ceratopogoninae, Tribe Ceratopogonini
Ceratopogonida undet. sp. (NC marine infauna)

Dasyhelea Kieffer, 1911 (now in Cecidomyiidae)

Culicoides Latreille, 1809 Ceratopogonidae flies Subfamily Ceratopogoninae, Tribe Culicoidini (sand flies) (116 species in US or Canada) **Bibl.:** Blanton & Wirth 1979

Culicoides undet. sp. or species (AZ (nr. *Culicoides*), CO, WV hyporheic; Ac or Tx in 1 seAK cave & Lehman C., NV; Ac, Tx or Tp in Vancouver Island, BC; Virginian & PQ Gulf of St. Lawrence sandy marine interstitial & infauna)

Forcipomyia Meigen, 1818 - Ceratopogonidae flies, Subfamily Forcipomyiinae. (73 species in US or Canada) **Bibl.:** Bystrak & Wood 1978

Forcipomyia pholeter Wirth & Howarth, 1982 (biting midge/Kazumura C., *lava tubes in e.HI/Tp)

Forcipomyia undet. sp. or species (HI/alien TP), (Tp in Bexar, Travis Cos., TX; Tx in 2 WA caves in Skamania Co.; Ac, Tx or Tp in Vancouver Island, BC)

Holoconops = *Leptoconops*

Leptoconops Skuse, 1889 - Ceratopogonidae flies, Subfamily Leptoconopinae (23 species in US or Canada)

Leptoconops undet. sp. (rare KS hyporheic)

Monohelea Kieffer, 1917 - Ceratopogonidae flies, Subfamily Ceratopogoninae, Tribe Ceratopogonini (15 species in US or Canada)

Monohelea undet. sp. (CO hyporheic)

Palpomyia Meigen, 1814 - Ceratopogonidae flies, Subfamily Ceratopogoninae, Tribe Palpomyiini (31 species in US or Canada). **Bibl.:** Grogan 1977

Palpomyia undet. sp. or species (PA, TX, seVA hyporheic; NC marine infauna)

Probezzia Kieffer, 1906 - Ceratopogonidae flies, Subfamily Ceratopogoninae, Tribe Palpomyiini. (23 species in US or Canada)

Probezzia undet. sp. or species (CO hyporheic; dry channel hyporheic & shallow hyporheic in Sycamore Cr. 32 km ne of Phoenix (Maricopa Co.), Santa Maria & Bridle Cr., AZ; VA, MD brackish benthic; Virginian marine infauna)

Probezzia Kieffer, 1906 or *Bezzia* undet. sp. (PQ Gulf of St. Lawrence sandy marine interstitial)

CHAOBORIDAE (phantom midges) Suborder Nematocera, infraorder Culicomorpha.

Undet. genera & sp. in seAK.

Chaoborinae (*Chaoborus*, *Mochlonyx*)

Eucorethrinae (*Eucorethra*)

Chaoborus Lichtenstein, 1800 (= *Corethra* Meigen, 1803; *Culicites* Heyden, 1862; *Sayomyia* Coquillett, 1903; *Corethrinda* Giles, 1904; *Schadonophasma* Dyar & Shannon, 1924; *Neochaoborus* Edwards, 1930; *Edwardsops* Lane, 1942; *Peusomyia* Saether, 1970) Chaoboridae flies, gnats in Subfamily Chaoborinae (10 species in US or Canada)

Chaoborus (*Sayomyia*) *albatus* Johnson, 1921 (epigeal in MN to PQ, s. to LA/ Tx or Ac in sON; NC marine infauna; VA, MD brackish benthic)

Chaoborus *punctipennis* (Say, 1823) (freshwater Carolinian infauna; VA, MD brackish benthic)

Chaoborus undet. sp. or species (Tx on porcupine dung in Frenchmen's Cave #2?, NS; NC marine infauna)

Eucorethra Underwood, 1903 - Chaoboridae flies, Subfamily Eucorethrinae (1 species in US or Canada)

Eucorethra *underwoodi* Underwood, 1903 (Tx or Ac in seAK cave)

Mochlonyx Loew, 1844 - Chaoboridae flies, Subfamily Chaoborinae (3 species in US or Canada)

Mochlonyx *cinctipes* (= *Corethra c.* Coquillett, 1903; *C. obscura* Dyar & Shannon, 1924) (WA, OR, e. to PQ, s. to AL/Tx or Ac in sON)

CHIRONOMIDAE (=Tendipedidae) (midges) **Bibl.:** Ferrington 1987; J. Ford 1962

Undet. genera & sp. (Tx? In MO, AK) & undet. genus in LA brackish beach sediment;
Undet genus in sON hyporheic & groundwater

Subfamily Chironominae (*Paramerina* (now in Tanypodinae), *Stempellinella*, *Robackia*, *Saetheria*, *Sublettea* (all now in Telmatogetoninae)

Tribe Chironomini (*Cladoplema*, *Cryptochironomus*, *Chironomus*, *Demicryptochironomus*,

Dicrotendipes, *Endochironomus*, *Einfeldia*, *Glyptotendipes*, *Harnischia*,

Lauterborniella, *Lipiniella*, *Microtendipes*, *Nilothauma*, *Paracladopelma*, *Paralauterborniella*, *Paratendipes*, *Pagastiella*, *Parachironomus*, *Phaenopsectra*, *Polypedilum*, *Stenochironomus*, *Stictochironomus*)

Tribe Coelotanypodini (*Coelotendipes*)

Tribe Tanytarsini (*Cladotanytarsus*, *Micropsectra*, *Nimbocera*, *Paratanytarsus*, *Rheotanytarsus*, *Stempellina*, *Tanytarsus*; Undet genus in sON hyporheic & groundwater

Subfamily Diamesinae (*Diamesa*, *Pagastia*, *Prodiamesa*, *Potthastia*)

Tribe Boreochlini (*Lasiodiamesa*)

Subfamily Orthocladiinae (*Brillia*, *Cardiocladius*, *Chaetocladius*, *Clinotanypus*, *Corynoneura*,

Cricotopus, *Diplocladius*, *Epoicocladius*, *Eukiefferiella*, *Heleniella*, *Halocladius*, *Heterotrissocladius*, *Hydrobaenus*, *Krenosmittia*, *Limnophyes*, *Lappodiamesa*, *Lopescladius*,

Metriocnemus, Microcricotopus, Nanocladius, Orthocladius, Parachaetocladius, Paraphaenocladius, Parakiefferiella, Parametriocnemus, Psectrocladius, Pseudorthocladius, Pseudosmittia, Psilometriocnemus, Rheocricotopus, Rheosmittia, Smittia, Synorthocladius, Tethymia, Thalassosmittia, Thienemanniella (now put in Tanypodinae), *Trichocladius, Tvetenia*)

Undet. genus in AZ shallow hyporheic (Maricopa Co.)

Undet genus in sON hyporheic & groundwater

Undet. genus (Ac, Tx or Tp in Vancouver Island, BC;)

Tribe Metriocnemini (*Parakiefferiella*)

Subfamily Podonominae

Tribe Boreochlini (*Boreochlus, Paraboreochlus*)

Subfamily Prodiamesinae (*Monodiamesa*)

Subfamily Tanypodinae

(*Aspectrotanypus, Conchapelopia, Denopelopia* (now in Telomatogetoninae), *Procladius*)

Undet. genus in shallow hyporheic, Sycamore Cr. 32 km ne of Phoenix (Maricopa Co.), AZ

Undet genus in sON hyporheic & rarely in sON groundwater

Tribe Coelotanypodini (*Coelotanypus*)

Tribe Macropelopiini (*Alotanypus, Natarsia, Psectrotanypus*)

Tribe Pentaneurini (*Ablabesmyia, Nilotanypus, Larsia, Labrundinia, Pentaneura, Trissopelopia, Zavreliomyia, Paramerina* (also put in Chironominae) *Thienemannimyia,*

Undet. genus in AZ shallow hyporheic)

Tribe Tanypodini (*Tanypus*)

Subfamily Telomatogetoninae

(*Denopelopia, Stempellinella, Robackia, Saetheria, Sublettea, Zavreliella*)

Ablabesmyia Johannsen, 1905 - Chironomidae flies, Subfamily Tanypodinae, Tribe Pentaneurini (18 species in US or Canada)

Ablabesmyia *annulata* (*Tanypus a.* Say, 1823) (Carolinian, Virginian freshwater infauna)
Ablabesmyia auriensis Roback = *A. mallochi*

Ablabesmyia *mallochi* (Tanypus m. Walley, 1925; *A. auriensis* Roback; *A. ornata* Beck & Beck; *A. tarella* Roback) (VA, MD brackish benthic; seVA hyporheic)

Ablabesmyia *peleensis* (Tanypus p. Waley, 1926) (Carolinian freshwater infauna)

Ablabesmyia *rhamphe* Sublette, 1964 (Carolinian, Virginian freshwater infauna)

Ablabesmyia undet. sp. or species (Tx or Ac in sON, seAK; ON riffle hyporheic; IL river benthic)

Alotanypus Roback, 1971 - Chironomidae flies, Subfamily Tanypodinae

Alotanypus undet. sp. (Tx or Ac in seAK cave)

Apsectrotanypus Fittkau, 1962 - Chironomidae flies, Subfamily Tanypodinae

Apsectrotanypus undet. sp. (Ac in 1 seAK cave)

Axarus *festivus* (Chironomus f. Say, 1823) (VA, MD brackish benthic)

Boreochlus Edwards, 1938 - Chironomidae flies, Subfamily Podonominae, Tribe Boreochlini

Boreochlus undet. sp. (Ac in 1 seAK cave)

Brillia Kieffer, 1913 - Chironomidae flies, Subfamily Orthocladiinae (6 species in US or Canada)

Brillia cf. *flavifrons* (Joh.) (PA hyporheic)

Brillia undet. sp. or species (Ac in 1 seAK cave; AZ, BC, OR hyporheic; NC marine infauna)

Cardiocladius Kieffer, 1912 - Chironomidae flies, Subfamily Orthocladiinae (4 species in US or Canada)

Cardiocladius undet. sp. or species (Ac? in seAK cave resurgences; NC marine infauna)

Chaetocladius Kieffer, 1911 - Chironomidae flies, Subfamily Orthocladiinae

Chaetocladius *piger* Kieffer (valid species?) (nVA hyporheic)

Chaetocladius undet. sp. (Tx or Ac in sON)

Chironomus Meigen, 1803 - Chironomidae flies, Subfamily Chironominae, Tribe Chironomini (50 species in US or Canada)

Chironomus *anthracinus* Zetterstedt, 1860 (epigeal in CA to AB, e. to MA, Europe; interstitial larvae in NH lake sediment)

Chironomus *decorus* group Johannsen, 1905 (Tx or Ac in GA (WA Co.))

Chironomus *plumosus* (Tipula plumosa Linnaeus, 1758; *C. annularis* De Geer, 1776; *C. cristatus* Fabricius, 1805; *C. prasinus* Meigen, 18181; *C. ferrugineovittatus* Zetterstedt, 1850; *C. imperator* Walley, 1926)) (Europe, BC to Greenland, s. to CA, NC, Bermuda/ hyporheic in NY;

Carolinian infauna) **Bibl.:** A. Johnson 1955; Stoltz 1970

Chironomus undet. sp.#1 (Ezell's Cave & artesian well at San Marcos, Hays Co.,TX/
Tp(maybe), Pb?)

Chironomus undet. species (Tx or Ac in IN, KY, sON, TN; hyporheic CO, KS, OK; interstitial
or infaunal in SC salt marsh, NC marine & AB freshwater lakes; PEI & PQ Gulf of St. Lawrence
sandy marine interstitial)

Chironomus *stigmaterus* Say, 1823 (Virginian (rare), Carolinian marine infauna)

Cladopelma Kieffer, 1921 - Chironomidae flies, Subfamily Chironominae, Tribe Chironomini (7
species in US or Canada)

Cladopelma lateralis Kieffer (valid species?) (nVA hyporheic)

Cladopelma undet. sp. or species (VA, MD brackish benthic; Virginian marine infauna)

Cladotanytarsus Kieffer, 1921 - Chironomidae flies, Subfamily Chironominae, Tribe Tanytarsini
(11 species in US or Canada)

Cladotanytarsus *manus* (Walker, 1856) (larvae in NH, Carolinian lake sediments; (VA, MD
brackish & marine infauna))

Cladotanytarsus undet. sp. (larvae in AB, NH lake sediments & CO, Great Lakes, KS, OK, PQ,
OK, ON, TX,VA hyporheic; IL river benthic)

Cladotanytarsus *viridiventris* Malloch, 1915 (Carolinian freshwater infauna)

Clinotanypus Kieffer, 1913 - Chironomidae flies, Subfamily Orthocladiinae

Clinotanypus *pinguis* (*Tanypus p.* Loew, 1869; *C. thoracicus* Loew, 1866) (TX hyporheic; VA,
MD brackish benthic)

Coelotanypus Kieffer, 1913 - Chironomidae flies, Subfamily Tanypodinae, Tribe
Coelotanypodini (5 species in US or Canada)

Coelotanypus concinnus Coquillett, 1895 (Carolinian freshwater infauna)

Coelotanypus undet. sp. or species (TX, Great Lakes sandy hyporheic; NC, Virginian marine
infauna; VA, MD brackish benthic)

Conchapelopia Fittkau, 1957 - Chironomidae flies, Subfamily Tanypodinae

Conchapelopia undet. sp. (MO/ Tx? or Ac in MO, sON)

Corynoneura Winnertz, 1846 - Chironomidae flies, Subfamily (10 species in US or Canada)

Corynoneura *celeripes* Winnertz, 1852 (Europe, Greenland n.NA/ CO, PA hyporheic)

Corynoneura undet. sp. or species (hyporheic in TX,VA sand & BC detritus; Ac in 1 seAK c.;

shallow hyporheic in Sycamore Cr. 32 km ne of Phoenix (Maricopa Co.), AZ; IL river benthic)

Corynoneura *taris* Roback, 1957 (seVA hyporheic)

Corynoneura *valdicornis* (Winn.-Kieff.) (valid species?) (PA hyporheic)

Cricotopus van der Wulp, 1874 - Chironomidae flies, Subfamily Orthocladiinae (subgenera: *Isocladius* Kieffer, 1909; *Nostococladius* Ashe & Murray, 1980; *Pseudocricotopus* Nishida, 1987) (63 species in US or Canada)

Cricotopus (*C.*) *bicinctus* (= *Chronomus b.* Meigen, 1818) group (Europe, MI to ON, NY, s.to IL, FL/ AZ, CO hyporheic; Tx in KY, TN, MN; VA, MA, MD brackish infauna)

Cricotopus (*Cricotopus*) undet. sp. or species (KS, ON hyporheic; IL river benthic)

Cricotopus or *Orthocladius* undet. sp(p). (Tx in IL, KY ,s.ON, TN; CO, ON, PA, TX hyporheic larvae)

Cricotopus (*Isocladius*) *sylvestris* J.C. Fabricius, 1794 (PQ Gulf of St. Lawrence sandy marine interstitial)

Cryptochironomus Kieffer, 1918 - Chironomidae flies, Subfamily Chironominae, Tribe Chironomini (13 species in US or Canada)

Cryptochironomus *fulvus* (*Chironomus f.* Johannsen, 1905; *Cryptochironomus parvilamellatus* (Malloch), 1919, *Cryptochis mallochi* (Kieffer), 1919, new name for *Chronomus abbreviatus* Malloch, 1915, prescc. Kieffer, 1913) (MT to MB, PQ, s. to CA, FL/ Tx or Ac in sON, KY, TN; hyporheic in OK; Virginian marine infauna)

Cryptochironomus *fulvus* Johannsen, 1905 (Carolinian marine infauna)

Cryptochironomus undet. sp. or species (CO, IL?, KS, ON, TX & OK hyporheic; Ac in 1 seAK cave; NC marine infauna; VA, MD brackish infauna)

Demicryptochironomus Lenz, 1941 Chironomidae flies, Subfamily Chironomini

Demicryptochironomus undet. sp. (Virginian marine infauna)

Denopelopia Roback & Rutter, 1988 - Chironomidae flies, Subfamily Telmatogetoninae (once in Tanypodinae) (1 species in US or Canada)

Denopelopia *atria*. Roback & Rutter, 1988 (Ac in 1 seAK cave)

Diamesa Meigen, 1835 - Chironomidae flies, Subfamily Diamesinae (30 species in US or Canada)

Diamesea *nivicavernicola* Hansen & Cook, 1976 (AK to NH s.to NM, MD/ US hyporheic)

Diamesa undet. sp. (CO hyporheic)

Dicrotendipes Kieffer, 1913 (= *Limnochironomus* Kieffer, 1920) - Chironomidae flies, Subfamily Chironominae, Tribe Chironomini (16 species in US or Canada). **Bibl.:** J. Epler 1987-8

Dicrotendipes *leucoscelis* (*Tendipes l.* Townes, 1945)(ID to ON, s. to FL/ Tx? in MN?,ON?)

Dicrotendipes *modestus* (*Chironomus m.* Say, 1823) (Virginian marine infauna)

Dicrotendipes *neomodestus* Malloch, 1915 (SD to PQ, s. to TX,VA/Tx or Ac in sON; CO, PA hyporheic)

Dicrotendipes *simpsoni* Epler, 1987 (Virginian (rare), Carolinian freshwater infauna)

Dicrotendipes undet. sp. or species (OR, VA hyporheic; VA, MD brackish benthic; NC marine infauna)

Diplocladius Kieffer in K. & Thienemann, 1908 - Chironomidae flies, Subfamily Orthoclaadiinae (1 species in US or Canada)

Diplocladius *cultriger* Kieffer, 1908 (= *D. bilobatus* Brundin, 1956) (Germany, NY to VA/seVA hyporheic)

Einfeldia Kieffer, 1924 - Chironomidae flies, Subfamily Chironominae, Tribe Chironomini (5 species in US or Canada)

Einfeldia undet. sp. VA, MD brackish benthic

Endochironomus Kieffer, 1918 - Chironomidae flies, Subfamily Chironominae, Tribe Chironomini (3 species in US or Canada)

Endochironomus undet. sp. or species (Tx or Ac in KY, TN/ TX, VA sandy hyporheic/ Virginian marine infauna)

Endochironomus *subtendens* (*Tanytarsus s.* Townes, 1945) (VA, MD brackish benthic)

Epoicocladius Zavrel, 1924 Chironomidae flies, Subfamily Orthoclaadiinae

Epoicocladius *flavens* (Malloch, 1915) (Carolinian freshwater infauna)

Epoicocladius undet. sp. (Virginian marine infauna)

Eukiefferiella Thienemann, 1926 (= *Adactylocladius* Saether, 1968) - Chironomidae flies, Subfamily Orthoclaadiinae (5 species in US or Canada)

Eukiefferiella *brehmi* group Thienemann (valid species?) (ON riffle hyporheic)

Eukiefferiella *brevicalcar* (Kieff.) gr. sp. cf. *brevinervis* (*Orthocladus b.* Mall., 1915; *Nannocladius b.*) (PA hyporheic)

Eukiefferiella *devonica* (*Spaniotoma d.* Edwards, 1929) group (VA, MD brackish benthic)

Eukiefferiella *gracei* group Thienemann (valid species?) (ON riffle hyporheic)

Eukiefferiella *rectangularis* Thienemann (valid species?) (nVA hyporheic)

Eukiefferiella undet. sp. or species (Ac in 1 seAK cave & 5 caves resurgences/ CO, ON, TX (sandy) hyporheic/ VA, MD brackish benthic)

Glyptotendipes Kiefer, 1913 - Chironomidae flies, Subfamily Chironominae, Tribe Chironomini

Glyptotendipes undet. sp. or species (TX sandy hyporheic; IL river benthic/ VA, MD brackish infauna)

Halocladius Hirvenoja, 1973 - Chironomidae flies, Subfamily Orthoclaadiinae (2 species in US or Canada)

Halocladius (*Halocladius*) *variabilis* Stagger, 1839 (PQ Gulf of St. Lawrence sandy marine interstitial)

Harnischia Kieffer, 1921 - Chironomidae flies, Subfamily Chironominae, Tribe Chironomini

Harnischia undet. sp. or species (Carolinian, Virginian infauna/ VA, MD brackish benthic)

Heleniella Gowin, 1943 - Chironomidae flies, Subfamily Orthoclaadiinae (3 species in US or Canada)

Heleniella *parva* Saether, 1969 (KS hyporheic)

Heleniella undet. sp. (CO hyporheic)

Heterotrissocladius Spark, 1923 - Chironomidae flies, Subfamily Orthoclaadiinae (9 species in US or Canada)

Heterotrissocladius undet. sp. (CO hyporheic)

Heterotrissocladius *marcidus* (Chironomus m. Walker, 1856) (PA hyporheic)

Heterotrissocladius *subpilosus* (*Dactylocaldius s.* Kieffer in Kieffer and Lundbeck, 1911) (interstitial larvae in NWT lakes)

Heterotrissocladius undet. sp. (hyporheic in Great Lakes)

Hydrobaenus Fries, 1830 - Chironomidae flies, Subfamily Orthoclaadiinae (14 species in US or Canada)

Hydrobaenus undet. sp. or species (Tx in OR; Tp? in WA; Tx in WA/ VA, MD brackish benthic)

Krenosmittia Thienemann & Kruger, 1939 - Chironomidae flies, Subfamily Orthoclaadiinae

(3 species in US or Canada)

Krenosmittia undet. sp. or species (CO, KS, seVA hyporheic; seAK sink, cave resurgence; shallow hyporheic in Sycamore Cr. 32 km ne of Phoenix (Maricopa Co.), Bridle Cr. & Santa Maria River, AZ)

Labrundinia - Chironomidae flies, Subfamily Tanypodinae, Tribe Pentaneurini (6 species in US or Canada)

Labrundinia *pilosella* (*Tanypus p.* Loew, 1866) (PA hyporheic)

Lappodiamesa Serra-Tosio, 1968 - Chironomidae flies, Subfamily Orthocladiinae

Lappodiamesa undet. sp. (PA hyporheic)

Larsia Fittkau, 1962 - Chironomidae flies, Subfamily Tanypodinae, Tribe Pentaneurini (6 species in US or Canada)

Larsia undet. sp. or species (Tx in KY, TN; IL river benthic)

Larsia *decolorata* (*Tanypus decoloratus* Malloch, 1915) (Carolinian freshwater infauna)

Lasiodiamesa Kieffer, 1924 - Chironomidae flies, Subfamily Diamesinae, Tribe Boreochlini

Lasiodiamesa undet. sp. (Tx or Ac in sON)

Lauterborniella Bause, 1913 - Chironomidae flies, Subfamily Chironominae, Tribe Chironomini

Lauterborniella *agraylloides* (*Tanytarsus a.* Kiefer, 1911) (VA, MD brackish benthic)

Limnophyes Eaton, 1875 - Chironomidae flies, Subfamily Orthocladiinae (18 species in US or Canada)

Limnophyes undet. sp. or species (Tx or Ac in KY, TN/ VA, MD brackish benthic)

Lipiniella Shilova, 1961 - Chironomidae flies, Subfamily Chironominae, Tribe Chironomini

Lipiniella undet. sp. (VA, MD brackish benthic)

Lopescladius Oliveira, 1967 - Chironomidae flies, Subfamily Orthocladiinae

Lopescladius (*Cordelia*) *hyporheicus* Coffman & Roback, 1984 (hyporheic)

Lopescladius *inermis* Saether O., 1983 (hyporheic in KS)

Lopescladius undet. sp. (FL, CO & OK hyporheic)

Metriocnemus van der Wulp, 1874 - Chironomidae flies, Subfamily Orthocladiinae (16 species in US or Canada)

Metriocnemus undet. sp. (OR C.; Ac? in WA, 2seAK caves)

Metriocnemus possibly undescr. sp. (*?in cave in NS)

Microcricotopus Thienemann & Harnisch, 1932 - Chironomidae flies, Subfamily Orthocladiinae
Microcricotopus cf. *bicolor* (Zett.) (PA hyporheic)

Micropsectra Kieffer, 1909 (= *Opeklandia* Kieffer 1922) Chironomidae flies, Subfamily Chironominae, Tribe Tanytarsini (19 species in US or Canada)

Micropsectra *polita* (Tanytarsus p. Malloch, 1915) (*M. cf. p.*- PA hyporheic)
Micropsectra undet. sp. or species (Tx or Ac in sON, seAK/ AZ, BC, CO, PQ, TX, seVA hyporheic/ VA, MD brackish benthic)

Microtendipes Kieffer, 1915 - Chironomidae flies, Subfamily Chironominae, Tribe Chironomini (4 species in US or Canada)

Microtendipes *caducus* Townes, 1945 (seVA hyporheic)

Microtendipes *pedellus* (*Tipula p.* De Geer, 1776) (rare Virginian marine infauna; *M. cf. p.* - PA hyporheic)

Microtendipes undet. sp. or species (CO, ON, PQ, seVA hyporheic; larvae in NH lake sediments; IL river benthic; VA, MD brackish benthic / Tx in KY, MN, ON, TN)

Monodiamesa Kieffe, 1921 – Chironomidae flies, Subfamily Prodiamesinae
Monodiamesa undet. sp. (rare in ON sandy hyporheic)

Natarsia Fittkau, 1962 - Chironomidae flies, Subfamily Tanypodinae, Tribe Macropelopiini (2 species in US or Canada)

Natarsia *baltimoreus* (Macquart) (PA hyporheic)
Natarsia undet. sp. (CO, TX hyporheic)

Nanocladius Kieffer, 1913 (= *Microcricotopus* Thienemann & Harnisch, 1932; *Plecopteracoluthus* Steffan, 1965) Chironomidae flies, Subfamily Orthocladiinae (3 species in US or Canada)

Nanocladius (*N.*) *balticus* (Palmer, 1959) (VA, MD brackish benthic; rare Virginian marine infauna)

Nanocladius *crassicornus* Saether, 1977 (rare Virginian marine infauna)
Nanocladius *bicolor* (Zetterstedt, 1838) group (VA, MD brackish benthic)

Nanocladius *distinctus* (*Orthocladius d.* Malloch, 1915; *Trichocladius d.*; *O.d. basilis* & *bicolor* M., 1915) (IL, FL river benthic/ CO hyporheic?)

Nilotanypus Kieffer, 1923 - Chironomidae flies, Subfamily Tanypodinae, Tribe Pentaneurini (3 species in US or Canada)

Nilotanypus undet. sp. (Ac in 1 seAK cave; IL river benthic)

Nilothauma Kieffer, 1921 - Chironomidae flies, Subfamily Chironominae, Tribe Chironomini
Nilothauma undet. sp. or species (Carolinian freshwater interstitial; rare Virginian marine infauna)

Nimbocera Reiss, 1972 - Chironomidae flies, Subfamily Tanypodinae, Tribe Tanytarsini
Nimbocera undet. sp. (Carolinian freshwater interstitial)

Orthocladius van der Wulp, 1874 - Chironomidae flies, Subfamily Orthoclaadiinae. (51 species in US or Canada) **Bibl.:** Soptonis 1975

Orthocladius undet. sp. (Ac in 1 seAK cave; OR, ON, PQ hyporheic larvae; O. sensu strictu - nVA hyporheic)

Orthocladius or *Cricotopus* undet. sp. or species (Tx in IL, KY, s.ON, PQ, TN, BC, CO hyporheic/ (VA, MD brackish benthic))

Orthocladius undescr. sp. (*?cave in Jackson Co.,AL/Tx) Peck, 1995

Pagastia Oliver, 1959 - Chironomidae flies, Subfamily Diamesinae
Pagastia undet. sp. (CO hyporheic)

Pagastiella Brundin, 1949 - Chironomidae flies, Subfamily Chironominae, Tribe Chironomini
Pagastiella undet. sp. (rare Virginian marine infauna)

Paraboreochlus Thienemann, 1939 - Chironomidae flies, Subfamily Podonominae, Tribe Boreochlini

Paraboreochlus *stahli* Coffman, Ferrington & Seward 1988 (KS, NY, PA, NC hyporheic)
Paraboreochlus undet sp. (KS, NY hyporheic larvae)

Parachaetocladius Wulker, 1959 - Chironomidae flies, Subfamily Orthoclaadiinae (3 species in US or Canada)

Parachaetocladius hudsoni (*Hydrobaenus h.* Saether, 1977) (KS hyporheic)

Parachironomus Lenz, 1921 1941 - Chironomidae flies, Subfamily Chironominae, Tribe Chironomini

Parachironomus directus (*Tendipes d.* Dendy & Sublette, 1960) (Carolinian freshwater interstitial; Virginian marine infauna)

Parachironomus undet. sp. (VA, MD brackish infauna)

Paracladopelma Harnish, 1923 - Chironomidae flies, Subfamily Subfamily Chironominae, Tribe

Chironomini (11 species in US or Canada)

Paracladopelma undet. sp. or species (VA, MD marine infauna; seVA hyporheic)

Parakiefferiella Thienemann, 1936 - Chironomidae flies, Subfamily Orthocladiinae, Tribe Metriocnemini (5 species in US or Canada)

Parakiefferiella undet. sp. or species (n,seVA hyporheic)

Paralauterborniella Lenz, 1941 - Chironomidae flies, Subfamily Chironominae, Tribe Chironomini

Paralauterborniella undet. sp. or species (TX sandy hyporheic; IL river benthic; VA, MD brackish benthic; Virginian marine infauna)

Paramerina Fittkau, 1962 - Chironomidae flies, Subfamily Chironominae, Subfamily Tanypodinae, Tribe Pentaneurini (5 species in US or Canada)

Paramerina undet. sp. (Ac? in 1 seAK cave insurgences)

Parametriocnemus Goetghebuer, 1932 - Chironomidae flies, Subfamily Orthocladiinae (5 species in US or Canada)

Parametriocnemus lundbeckii (*Metriocnemus l.* Johannsen, 1905) (Greenland to MI,FL/Tx or Ac in sON)

Parametriocnemus undet. sp. or species (BC, CO, ON, PA hyporheic; Tx or Ac in seAK cave, resurgences, insurgences VA, MD brackish benthic)

Paraphaenocladius Thienemann, 1926 - Chironomidae flies, Subfamily Orthocladiinae

Paraphaenocladius undet. sp. (streams below seAK cave)

Paratanytarsus Thienemann & Bause, 1913 - Chironomidae flies, Subfamily Chironominae, Tribe Tanytarsini (12 species in US or Canada)

Paratanytarsus undet sp. or species (CO, se,nVA hyporheic; IL river benthic)

Paratendipes Kieffer, 1911 - Chironomidae flies, Subfamily Chironominae, Tribe Chironomini (8 species in US or Canada) **Bibl.:** Hayford 1998

Paratendipes albimanus Meigen, 1818 (OH likely hyporheic)

Paratendipes basidens Townes, 1945 (NJ, IA, AL/ Tx or Ac in KY?,TN?; hyporheic in KS)

Paratendipes undet. sp. (CO, OK, OH, TX, seVA hyporheic/Tx in TN; IL river benthic/ VA, MD brackish benthic)

Paratendipes *subaequalis* Malloch, 1915 (KS hyporheic) Bibl.: Goldhammer 1995

Pagastiella Brundin, 1949 - Chironomidae flies, Subfamily Chironominae Tribe Chironomini (2 species in US or Canada)

Pagastiella *ostansa* Webb, 1969 (nVA hyporheic)

Pentaneura Philippi, 1865 - Chironomidae flies, Subfamily Tanypodinae, Tribe Pentaneurini (4 species in US or Canada)

Pentaneura undet. sp. or species (E, esp. SE/Tx in MO; AK cave resurgences)

Phaenopsectra Kieffer, 1921 - Chironomidae flies, Subfamily Chironominae, Tribe Chironomini (9 species in US or Canada)

Phaenopsectra *dyari* (= *Tanytarsus d.* Townes, 1945) (CA, FL, MT/ prob. in CO hyporheic)

Phaenopsectra *flavipes* (*Chironomus f.* Meigen, 1818) (seVA hyporheic larvae)

Phaenopsectra undet. sp. (VA, MD brackish benthic)

Polypedilum Kieffer, 1912 (*Pentapedilum* Kiefer, 1913; *Tripodura* Townes, 1945)
Chironomidae flies, Subfamily Chironominae, Tribe Chironomini (40 species in US or Canada)
Bibl.: Maschwitz 1976

Polypedilum *convictum* (*Chironomus c.* Walker, 1856) group (Europe, WI to NY, s. to KS, FL/ Tx or Ac in TN; CO hyporheic; rare Virginian marine infauna)

Polypedilum *fallax* (*C. f.* Johannsen, 1905) group (MI to PQ, s. to TX, FL/ CO hyporheic/ VA, MD brackish benthic)

Polypedilum *halterale* (= *C. halteralis* Coquillett, 1901) group (CA, AZ, WI to NY, s. to OK, FL/ Tx or Ac in KY, TN; Carolinian freshwater infauna/ VA, MD brackish infauna; MA marine infauna)

Polypedilum *illinoensis* Malloch, 1915 (Virginian marine infauna)

Polypedilum *scalaenum* (*Tipula scalaena* Schrank, 1803) (Carolinian freshwater infauna; Virginian marine infauna)

Polypedilum undet. sp. or species (Tx in AL; BC (subgenus *Polypedilum*) ON, (2 species), TX(sandy), se,nVA hyporheic; larvae in AB, NH lake sediments; IL river benthic/ seVA hyporheic/ VA, MD, NC brackish infauna (subgenus *Polypedilum*))

Polypedilum *tritum* (*Chironomus tritus* Walker, 1856) (Virginian (rare), Carolinian freshwater infauna)

Potthastia Kieffer, 1922 - Chironomidae flies, Subfamily Diamesinae *longimana* Kieffer, 1922

Potthastia undet. sp. (CO hyporheic)

Procladius Skuse, 1889 (Subgenera *Psilotanypus* Kieffer, 1906; *Holotanypus* Roback, 1982)
Chironomidae flies, Subfamily Tanypodinae

Procladius bellus (*Tanypus b.* Loew, 1866) (Virginian (rare), Carolinian marine infauna; Tx in GA (Dade Co.))

Procladius undet. sp. or species (Tx in KY, PQ, TN; Ac in WA, AK insurgences & sinks; PQ Gulf of St. Lawrence sandy marine interstitial; PA, nVA hyporheic; IL river benthic; NC marine infauna/ VA, MD, NC brackish benthic)

Procladius sublettei rRoback, 1971 (rare Virginian marine infauna)

Prodiamesa Kieffer, 1906 - Chironomidae flies, Subfamily Diamesinae

Prodiamesa undet. sp. (ON, PQ hyporheic)

Psectrocladius Kieffer, 1906 - Chironomidae flies, Subfamily Orthocladiinae (20 species in US or Canada)

Psectrocladius undet. sp. or species (hyporheic in OR; PQ Gulf of St. Lawrence sandy marine interstitial)

Psectrotanypus Kieffer, 1909 - Chironomidae flies, Subfamily Chironominae, Tribe Macropelopiini (3 species in US or Canada)

Psectrotanypus undet. sp. (PA? hyporheic)

Psilometriocnemus Saether, 1969 - Chironomidae flies, Subfamily Orthocladiinae (1 species in US or Canada)

Psilometriocnemus triannulatus Saether, 1969 (KS hyporheic)

Pseudorthocladius Goetghebuer, 1939 - Chironomidae flies, Subfamily Orthocladiinae (18 species in US or Canada)

Pseudorthocladius undet. sp. (PA hyporheic)

Pseudosmittia Goetghebuer, 1932 - Chironomidae flies, Subfamily Orthocladiinae (7 species in US or Canada)

Pseudosmittia undet. sp. (rare KS hyporheic)

Rheocricotopus Thienemann & Harnisch, 1932 - Chironomidae flies, Subfamily Orthocladiinae
Rheocricotopus clavicornis Thienemann (nVA hyporheic)

Rheosmittia Brundin, 1986 - Chironomidae flies, Subfamily Orthoclaadiinae

Rheosmittia undet. sp. or species (CO, KS, ON?, seVA hyporheic)

Rheotanytarsus Bause, 1913 - Chironomidae flies, Subfamily Chironominae, Tribe Tanytarsini (5 species in US or Canada)

Rheotanytarsus *exiguus* (*Tanytarsus e.* Johannsen, 1905) (PA hyporheic)

Rheotanytarsus undet. species (Tx or Ac in ON; CO, ON & OK hyporheic; seAK insurgences & resurgences; IL river benthic/ VA, MD brackish benthic)

Robackia Saether, 1977 - Chironomidae flies, Subfamily Telmatogetoninae (once in Chironominae) (3 species in US or Canada)

Robackia *claviger* Townes, 1945 (Virginian marine infauna)

Robackia *demeijerei* (Kruseman, 1933) (TX sandy hyporheic)

Robackia undet. sp. or species (CO hyporheic; IL river benthic)

Saetheria Jackson, 1977 - Chironomidae flies, Subfamily Telmatogetoninae (once in Chironominae) (3 species in US or Canada)

Saetheria *reissi* Jackson 1977 (KS hyporheic)

Saetheria undet. sp. (CO, KS, ON hyporheic)

Saetheria *tylus* (*Harnischia t.* Townes, 1945) (KS, seVA hyporheic)

Smittia Holmgren, 1869 - Chironomidae flies, Subfamily Orthoclaadiinae

Smittia undet. sp. or species (Tx on porcupine dung in NS/ VA, MD brackish benthic)

Stempellina Thieneman in Bause, 1913 - Chironomidae flies, Subfamily Tanypodinae, Tribe Tanytarsini (3 species in US or Canada)

Stempellina undet. sp. or species (TX, CO, seVA hyporheic/ VA, MD brackish benthic)

Stempellina *montivaga* Goetghbuer group (ON riffle hyporheic)

Stempellina undet. sp. (seVA hyporheic)

Stempellinella Brudin, 1947- Chironomidae flies, Subfamily Telmatogetoninae (once in Chironominae) (3 species in US or Canada)

Stempellinella undet. sp. (nVA hyporheic)

Stenochironomus Kieffer, 1919 (Subgenera *Petalopholeus* Borkent, 1984; *Stenochironomus* Kieffer, 1922) Chironomidae flies, Subfamily Chironominae, Tribe Chironomini (8 species in US or Canada)

Stenochironomus undet. sp. or species (Tx or Ac in sON)

Stictochironomus Kieffer, 1919 - Chironomidae flies, Subfamily Chironominae, Tribe Chironomini (13 species in US or Canada)

@Stictochironomus *caffrarius* (Virginian (rare), Carolinian freshwater infauna)
Stictochironomus *devinctus* Say, 1829 (Virginian marine infauna)

Stictochironomus *flavicingulus* (*Chironomus flavicingula* Walker 1848) (Tx or Ac in cave in VA)

Stictochironomus undet. sp. or species (CO, nVA hyporheic; PQ Gulf of St. Lawrence sandy marine interstitial/ VA, MD brackish benthic)

Sublettea Roback, 1975 - Chironomidae flies, Subfamily Telmatogetoninae (once in Chironominae)(3 species in US or Canada)

Sublettea *coffmani* (*Tanytarsus c.* R., 1975) (Tx? in MN?)

Synorthocladius Thienemann, 1935 - Chironomidae flies, Subfamily Orthoclaadiinae
Synorthocladius *semivirens* (*Dactylocladius* Kieffer, 1909) (PA hyporheic)
Synorthocladius undet. sp. or species (BC, CO hyporheic)

Tanypus Meigen, 1803 - Chironomidae flies, Subfamily Tanypodinae, Tribe Tanypodini
Tribe Tanypodini (*Tanypus*)

Tanypus neopunctipennis Sublette, 1964 (Virginian, MA marine infauna)
Tanypus stellatus Coquillett, 1902 (Carolinian infauna/ VA, MD brackish benthic)

Tanytarsus van der Wulp, 1874 (*Calopsectra* Kieffer, 1909) (green midges) Chironomidae flies, Subfamily Chironominae, Tribe Tanytarsini (34 species in US or Canada)

Tanytarsus near *recurvatus* Brundin, 1947 (European epigeal/ alien? Tx in GA (Bartow Co.))

Tanytarsus undet. sp. or species (CO, OK, ON, PA, TX, se,nVA hyporheic; AB lake infauna; seAK insurges; PQ Gulf of St. Lawrence sandy marine interstitial; Carolinian, NC marine infauna; VA, MD brackish benthic)

Undescribed genus near **Tethymia**? Wirth, 1949 (marine genus) Chironomidae flies, Subfamily Orthoclaadiinae (6 species in US or Canada) (TTx in WA)

Thalassosmittia Strenzke & Remmert, 1857 - Chironomidae flies, Subfamily Orthoclaadiinae (3 species in US or Canada)

Thalassosmittia *clavicornis* (*Camptocladus c.* Saunders, 1928) (nVA hyporheic)
Thalassosmittia undet. sp. (Ac in 1 seAK cave)

Thienemanniella Kieffer, 1911 - Chironomidae flies, Subfamily Orthocladiinae

Thienemanniella undet. sp. or species (CO (prob.), PA & ON hyporheic/ Tx? in MN; Ac or TTx in 1 seAK cave; Carolinian freshwater infauna/ VA, MD brackish benthic)

Thienemannimyia Fittkau, 1957- Chironomidae flies, Subfamily Tanypodinae, Tribe Pentaneurini (3 species in US or Canada)

Thienemannimyia *norena* (*Pentaneura n.* Roback, 1957) (PA hyporheic)

Thienemannimyia undet. sp or species (BC, CO, ON, seVA hyporheic; Ac or TTX in 1 seAK cave; IL river benthic)

Tribelos Townes, 1945 - Chironomidae flies, Subfamily Chironominae, Tribe Chironomini

Tribelos (*Tribelos*) *jucundus* (*Chironomus j.* Walker, 1848) (AB to PQ, s. to OK, FL/ seVA hyporheic; rare Virginian marine infauna)

Tribelos undet. sp. or species (shallow hyporheic in Sycamore Cr. 32 km ne of Phoenix (Maricopa Co.), AZ/ VA, MD brackish benthic)

Trichocladius Kieffer, 1906 - Chironomidae flies, Subfamily Orthocladiinae

Trichocladius undet. sp. (Tx or Ac in 1 IL cave)

Trissopelopia Kieffer, 1923 - Chironomidae flies, Subfamily Tanypodinae, Tribe Pentaneurini (6 species in US or Canada)

Trissopelopia ogemawi Roback, 1971 (Ac in 1 seAK cave)

Tvetenia Kieffer, 1922 - Chironomidae flies, Subfamily Orthocladiinae

Tvetenia *discoloripes* Kieffer, 1922 gr. (CO hyporheic)

Zavreliella Kieffer, 1920 - Chironomidae flies, Subfamily Telmatogetoninae (also put in Tanypodinae) (1 species in US or Canada)

Zavreliella *varipennis* (*Chironomus v.* Coquillett, 1902) (seVA hyporheic)

Zavreliella undet. sp. or species (VA, MD brackish benthic; seVA hyporheic)

Zavrelimyia Fittkau, 1962 - Chironomidae flies, Subfamily Tanypodinae, Tribe Pentaneurini (3 species in US or Canada)

Zavrelimyia undet. sp. or species (Ac in 1 seAK cave; seVA hyporheic)

Zavrelimyia *sinuosa* (*Tanypus s.* Coquillett, 1905) (PA hyporheic)

CHLOROPIDAE (frit flies) suborder Brachycera, infraorder Muscomorpha. About 1,200 small, hairless black, yellow or green species

Subfamily Oscinellinae (*Gaurax*, *Hippelates*, *Liohippелates*)

Gaurax Loew, 1863 - Chloropidae flies, Subfamily Oscinellinae (25 species in US or Canada)
Gaurax undet. sp. (Tx or Ac in sON)

Hippelates Loew, 1863 (once in Chironomidae) Chloropidae flies, Subfamily Oscinellinae (6 species in US or Canada)

Hippelates *impressus* Becker, 1912 (AZ, CO, NM, Mex./ Tx in Irion Co., TX)

Liohippелates Duda, 1929 (= *Hippelates*) Chloropidae flies, Subfamily Oscinellinae (10 species in US or Canada)

Liohippелates undet. sp.(rare KS hyporheic)

CORETHRELLIDAE (once put in Chaoboridae, Subfamily Corethrellinae)

Corethrella Coquillett, 1902 (once put in Chaoboridae, Subfamily Corethrellinae) (4 species in US or Canada)

Corethrella undet. sp. (shallow hyporheic in Sycamore Cr. 32 km ne of Phoenix (Maricopa Co.), Bidle & Santa Maria River, AZ)

CORYLURIDAE = Scatophagidae

CULICIDAE (mosquitoes). **Areas:** **NA:** Carpenter & LaCasse, 1955; **IL:** H. Ross & Horsfall 1965; **S:** Gerhardt 1966; **SE:** W. King et al. 1939; **TN:** Breeland et al. 1961.

Subfamily Anophelinae. (*Anopheles*)

Subfamily Culicinae

Tribe Culicini (*Aedes*, *Culex*, *Culiseta*, *Mansonia*, *Uranotaenia*)

Aedes Meigen, 1818 (most Tx in sON) Culicidae flies, Subfamily Culicinae, Tribe Culicini (67 species in US or Canada)

Aedes (*Ochlerotatus*) *abserratus* (= *Culex a.* Felt & Young, 1904; *A. centrotus* Howard, Dyar & Knab, 1917; *A. dysanor* Dyar, 1921) (Labrador, NS, s. to IL, MN/ Tx in sON)

Aedes (*O.*) *atropalpus* (Coguiwett, 1902) (PQ Gulf of St. Lawrence sandy marine interstitial)

Aedes (*O.*) *aurifer* (*Culex a.* Coquillett, 1903), (Tx in sON)

Aedes *canadensis* (*Culex c.* Theobald, 1901) (N forests/Tx in sON)

Aedes (*Aedes*) *cinereus* (*Aedes c.* Meigen, 1818; *A. fuscus* Osten Sacken, 1877) (nNA/ TTx or Ac in NWT; Tx in sON)

Aedes (*Ochlerotatus*) *communis* (*Culex c.* DeGeer, 1776) (N forests/common snow m./Tx in sON)

Aedes (*O.*) *fitchii* (*Culex f.* Felt & Young, 1904) (AK to Labrador, s. to CA, IL, NY/Tx in sON)

Aedes (*O.*) *provocans* (*Culex p.* Walker, 1848; *C. trichurus* Dyar, 1904; *C. cinereoborealis* Felt & Young; *A. pagetonotum* Dyar & Knab, 1909; *A. poliochros* Dyar, 1919; maybe junior syn. Of *A. punctor* (*Culex p.* Kirby, 1837) (eCanada/Tx in sON)

Aedes (*O.*) *punctor* (*Culex p.* Kirby, 1837; *C. implacabilis* Walker, 1848; *C. fuscus* Zetterstedt, 1850; *Culicella auroides* Felt, 1905; *Culex wahlgreni* Theobald, 1910; *Culicada alineata* & *haplolineata* Schneider, 1913) (N forests circumboreal to UT/ Tx/ Tx in sON)

Aedes (*O.*) *sticticus* (floodwater m.) (*C. s.* Meigen, 1838) (Eurasia, NA/ Tx in sON)

Aedes (*O.*) *stimulans* (*C. s.* Walker, 1848) (AK to PQ, s.to MS/ Tx in sON)

Aedes (*Aedimorphus*) *vexans* (*C.s.* Meigen, 1830) (global/vexatious m./Tx in TX(poss.))

Aedes undet. sp. (TTx in nests of *Hirundo fulva* in cave in Edwards Co., TX; Ac or Ttx in 1 seAK cave)

Anopheles Meigen, 1818 - Culicidae flies, Subfamily Anophelinae.(14 species in US or Canada)
. **Bibl.:** G. Bradley & King, 1941

Anopheles (*A.*) *earlei* Vargas, 1943 (Tx in AB, sON)

Anopheles (*A.*) *punctipennis* (*Culex p.* Say, 1823) (E, NW, NM, sCanada, Mex./ woodland malaria mosquito /Tx in GA (Dade & Walker Cos.), IL, IN (4 cos., S5/G5), KY (Warren & Edmonson Cos.), MO (Carter Co.), NJ, OH, sON, TN)

Anopheles (*A.*) *quadrimaculatus* Say, 1824 (common malaria mosquito/ NA except far W/Tx in IL, IN, sON, TN)

Anopheles undet. sp. or species (Tx or Ac in nMS; Tx in NS; IL river benthic)

Culex Linnaeus, 1758 (=>50 genera) - Culicidae flies, Subfamily Culicinae, Tribe Culicini (23 species in US or Canada)

Culex (*Melanoconion*) *erraticus* (*Mochlostyrax e.* Dyar & Knab, 1906; *C. egberti*, *leprincei* Dyar & Knab, 1907; *C. invocator* Pazos, 1908; *C. trachycampa* D&K, 1909; *C. peribleptus*, *pose* D&K, 1918; *D. degustator* D, 1921; *C. homoepas* D & Ludlow, 1921; *C. borinqueni* Root, 1922; *C. tovari* Evans, 1924) (Labrador to Brazil/ TTx in MO (Carter Co.))

Culex impatiens = *Culiseta i.*

Culex (*C.*) *pipiens* (*Culex p.* Linnaeus, 1758; *C. consobrinus* Rob.-Desvoidy, etc.)) (Europe, NA/

(European or northern) house mosquito/ Tx In IL, IN (3 cos., S5/G5), NJ, NS, OH, TX)

Culex *quinquefasciatus* (Say, 1823) (Alien Tx or Ac in Kazumura C., HI/southern house mosquito)

Culex (*C.*) *restuans* (*Culex r.* Theobald, 1901) (E & BC to Mex./little black or white dotted m./Tx in sON, NS; Tx or Ac in 1 PA cave)

Culex undet. sp. (nMS/Tx or Ac in nMS; most species Tx in sON)

Culex (*C.*) *tarsalis* Coquillett, 1904 (*C. kelloggi* Theobald) (North/common m./HTx in AB, WA)

Culex (*C.*) *territans* Walker, 1856 (Tx in GA (Walker Co.) & NS (probable))

Culiseta Felt, 1904 (= *Theobaldia* Neveu-Lemaire, 1902 (homo.); *Culicella* F.1904; *Theobaldinella* Blanchard, 1905; *Pseudotheobaldia* Theobald, 1907; *Climacura* Howard, Dyar & Knab, 1915; *Allotheobaldia* Broelemann, 1919; *Theomyia* Edwards, 1930; *Austratheobaldia* Dobrotwrosky, 1954; *Neotheobaldia* D.1958) Culicidae flies, Subfamily Culicinae, Tribe Culicini (9 species in US or Canada)

Culiseta *impatiens* Walker, 1848 (= *Culex impatiens* Walker, 1848; *Culex pinguis* W.1866; *Culex absorbrinus* Felt, 1904) (N/snows mosquito/Tx in sON; HTx in WA; TTx in cave (prob.), Bexar Co., TX)

Culiseta *inornata* (*Culex i.* Williston, 1893; *Culex magnipennis* Felt, 1904; *Theobaldia i.*), (NA to nMex./ broad winged or unmarked slender m./ Tx in sON)

Culiseta *pipiens* Linnaeus, 1758 (= *Culex consobrinus*) (Circumpolar epigeal/ northern house mosquito/ Tx larvae in cave in Hart Co., KY)

Culiseta undet. sp. (Tx or Ac in CA)

Mansonia Blanchard, 1901 - Culicidae flies, Subfamily Culicinae, Tribe Culicini

Mansonia *perturbans* Walker, 1856 (sON/Tx or Ac)

Theobaldia = *Culiseta*

Uranotaenia Lynch Arriba=Izaga, 1891 - Culicidae flies, Subfamily Culicinae, Tribe Culicini (3 species in US or Canada)

Uranotaenia *sapphirina* (*Aedes s.* Osten Sacken, 1868) (winter Tx in Carter Co, MO)

crane flies - See Ptychopteridae, Trichoceridae & Tipulidae. **Bibl.:** **Areas:** AZ, NM, TX - C. Alexander, 1946b; **CO:** A.1943a; **Nearctic A. NC:** A., 1941; **TN:** A., 1940; **UT:** A., 1949. **WA:** A., 1949a; **WY:** A., 1943

CURTONOTIDAE (humpbacked flies) (*Curtonotum*)

Curtonotum Macquart, 1843 - Curtonotidae flies (1 species in US or Canada)

Curtonotum helvum (*Diplocentra h.* Loew, 1862) (Ac, Tx or Tp in Vancouver Island caves?, BC)

CUTEREBRIDAE (Bot Fly Fly Family) (now subsumed in Oestridae)

Cuterebra (now in Oestridae)

deer flies - See Phoridae

DIXIDAE (dixid midges) suborder Nematocera, infraorder Culicomorpha.

Undet genus rarely found in sON hyporheic & groundwater

Dixa Meigen, 1818 (= *Paradixa*) - Dixidae flies (22 species in US or Canada)

Dixa undet. sp(p). (Tx in AR,MO; WV hyporheic)

Dixella Dyar & Shannon, 1924 (also treated as subgenus of *Dixa*)- Dixidae flies (19 species in US or Canada)

Dixella undet. sp. (Tx or Ac in sON)

DOLICHOPODIDAE (long-legged flies) suborder Brachycera, infraorder Muscomorpha. **Bibl.:** Hurley, 1985, 1995.

Undet. Genera & species in 1se AK cave

Subfamily Aphrosylinae (*Aphrosylus*) (once in Diaphorinae)

Subfamily Diaphorinae (*Aphrosylus* (now in Aphrosylinae), *Chrysotus*)

Subfamily Dolichopodinae (*Dolichopus*)

Subfamily Hydrophorinae (*Liancalus*, *Thinophilus*)

Subfamily Nuerigoninae (*Neurigona*)

Aphrosylus Haliday, 1851(= *Paraphrosylus*) Dolichopodidae flies, Subfamily Aphrosylinae (once in Diaphorinae) (6 species in US or Canada)

Aphrosylus undet. sp. (Tx or Ac in Hamiton Co., TN & Monroe Co., WV)

Chrysotus Meigen, 1824 - Dolichopodidae flies, Subfamily Diaphorinae (107 species in US or Canada)

Chrysotus undet. sp. (rare KS hyporheic)

Dolichopus Latreille, 1796 - Dolichopodidae flies, Subfamily Dolichopodinae (311 species in US or Canada)

Dolichopus *fulvipes* Loew, 1861 (AB to NS, s. to IL,NJ/Tx or Ac in sON)

Dolichopus *pencillatus* Van Duzee, 1921 (= *Hygroceleuthus ciliatus* Aldrich, 1893) (BC to ME, s.to CA,NY,SD/ Tx or Ac in sON)

Dolichopus undet. sp. (MS tidal marsh epifauna)

Liancalus Loew, 1857 (= *Anoplomerus*, 1856 (homo.); *Anoplopus* R.1857 (homo.)
Dolichopodidae flies, Subfamily Hydrophorinae (5 species in US or Canada)

Liancalus *genualis* Loew, 1861 (= *Orthocerathium* g.) (MN to PQ, s. to GA/Ac in IN; Tx in GA (Bartow Co.))

Liancalus undet. sp. (MO/Tx)

Neurigona Rondani, 1856 (*Saucropus* Loew, 1857; *Dactylomyia* Aldrich, 1894)
Dolichopodidae flies, Subfamily Nuerigoninae (40 species in US or Canada)

Neurigonella Robinson, 1964 - Dolichopodidae flies, Subfamily Nuerigoninae
Neurigonella *sombrea* (*Neurigona* s. Harmston & Knowlton. 1945) (Ac, Tx or Tp in GA (Dade Co.))

Neurigona undet. sp. (Ac or TTx in IN)

Orthocerathium - See *Liancalus*

Paraphrosylus Becker, 1922 = *Aphrosylus*

Thinophilus Wahlberg, 1844 - Dolichopodidae flies, Subfamily Hydrophorinae (24 species in US or Canada)

Thinophilus undet. sp. (rare KS hyporheic)

DROSOPHILIDAE ((small) fruit flies; pomace flies, vinegar flies) Suborder Brachycera, infraorder Muscomorpha.

Undet. AC, Tx or Tp genus in Vancouver Island caves, BC)

Subfamily Drosophilinae (*Drosophila*, *Mycodrosophila*).

Subfamily Steganinae (*Leucophenga*, *Stegana*)

Drosophila Fallen, 1823 - Drosophilidae flies, Subfamily Drosophilinae (106 species in US or Canada)

Drosophila undet. sp. (TX in MO, TN)

Leucophenga Mik, 1886 Drosophilidae flies, Subfamily Steganinae (7 species in US or

Canada)

Leucophenga undet. sp. (TX/Tx)

Mycodrosophila Oldenberg, 1914 - Drosophilidae flies, Subfamily Drosophilinae (3 species in US or Canada)

Mycodrosophila *dimidiata* (*Brachydeutera d.* Loew, 1862) (ID to ME, s. to IL, TX, FL/ TTx in TN)

Stegana Meigen, 1830 - Drosophilidae flies, Subfamily Steganinae (5 species in US or Canada)

Stegana (*Steganina*) *coleoprata* (*Musca c.* Scopoli, 1763) complex (NWT to WA, MI, TN, PQ, VA/ Tx or Ac in sON)

DRYOMYZIDAE (dryomizid or seabeach & barnacle flies) suborder Brachycera, infraorder Muscomorpha

Dryomyza Fallen, 1820 - Dryomyzide flies, Subfamily Dryomyzinae (7 species in US or Canada)

Dryomyza anilis Fallen, 1820 (AK to Labrador, s. to OR, IL, WV/Tx or Ac in sON)

dung fly - See Sphaeroceridae.

EMPIDIDAE (dance flies) suborder Brachycera, infraorder Muscomorpha

Undet. AC, Tx or Tp genus in Vancouver Island caves, BC)

Subfamily Clinocerinae (*Roederiodes*, *Trichoclinocera*)

Subfamily Empidinae (*Hilara*, *Oreogeton* (also put in Oreogetoninae), *Rhamphomyia*)

Subfamily Hemerodromiinae

Tribe Hemerodromiini (*Chelifera*, *Hemerodromia*)

Subfamily Tachydromiinae (*Charadrodromia*, *Crossopalpus*, *Platypalpus*, *Tachypeza*)

Charadrodromia Melander, 1928 - Empididae flies (also put in Hybotidae, Subfamily Tachydromiinae) (3 species in US or Canada)

Charadrodromia undet. sp. (Ac in 1 seAK cave)

Chelifera Macquart, 1823 - Empididae flies, Subfamily Hemerodromiinae, Tribe Hemerodromiini (22 species in US or Canada)

Chelifera undet. sp. or species (CO, OR hyporheic; AK resurgences; IL river benthic)

Crossopalpus Bigot, 1857 - Empididae flies, Subfamily Tachydromiinae (also treated as subgenus of *Drapetis*)

Crossopalpus undet. sp. (rare KS hyporheic)

Drapetis (*Crossopalpus*) = *Crossopalpus*

Hemerodromia Meigen, 1822 - Empididae flies, Subfamily Hemerodromiinae, Tribe Hemerodromiini (16 species in US or Canada)

Hemerodromia undet. sp. or species (CO, OR, PA hyporheic; IL river benthic; VA, MD brackish benthic)

Hilara Meigen, 1822 - Empididae flies, Subfamily Empidinae (50 species in US or Canada)

Hilara undet. sp. (sON/Tx or Ac)

Leptopeza Macquart, 1827 - now in Hybotidae,

Oreogeton Schiner, 1860 - Empididae flies, Subfamily Empidinae or Oreogetoninae (8 species in US or Canada)

Oreogeton undet. sp. (Ac in 1 seAK cave resurgences & insurgences)

Platypalpus Macquart, 1827 - Empididae flies, Subfamily Tachydromiinae (100 species in US or Canada)

Platypalpus undet. sp. (Ac, Tx or Tp genus in Vancouver Island caves, BC)

Rhamphomyia Meigen, 1822 - Empididae flies, Subfamily Empidinae (150 species in US or Canada)

Rhamphomyia undet. sp. (Tx or Ac in sON)

Roederoides Collin, 1941 - Empididae flies, Subfamily Clinocerinae (5 species in US or Canada)

Roederoides undet. sp. (Ac in 1 seAK cave resurgence)

Trichoclinocera Collin, 1941 - Empididae flies, Subfamily Clinocerinae (16 species in US or Canada)

Trichoclinocera *cummingi* Sinclair, 1994 (*type locality cave in Latimer Co., OK/ Tx?)

Tachypeza Meigen, 1830 (= *Cormodromia* Zetterstedt, 1838) - Empididae flies, Subfamily Tachydromiinae (also put in Hybotidae, Subfamily Tachydromiinae) (17 species in US or Canada)

Tachypeza *humeralis* Melander, 1928 (PQ to DC/Tx or Ac in sON)

Tachypeza undet. sp. (Ac or Tx in Eddy Co., NM),

EPHYDRIDAE (shore flies) **Bibl.:** Mathis & Zarwarnicki 1995

Undet. Tx genera in Malpais Natl. Monument, nNM

Subfamily Psilopinae

Tribe Altisinni (*Allotrichoma*, *Pelignellus*)

Subfamily Ephydrinae

Tribe Ephydrini (*Ephydra*)

Tribe Scatellini (*Lamproscatella*, *Scatela*, *Scatophila*)

Subfamily Psilopinae

Tribe Altisinni (*Allotrichoma*)

Allotrichoma Becker, 1896 - Ephydridae flies, Subfamily Psilopinae, Tribe Altisinni (10 species in US or Canada)

Allotrichoma undet. sp. (rare KS hyporheic)

Ephydra Fallen, 1810 - Ephydridae flies, Subfamily Ephydrinae, Tribe Ephydrini (16 species in US or Canada)

Ephydra riparia Fallen, 1813 (Salton Sea benthic, CA)

Lamproscatella Hendel, 1917 - Ephydridae flies, Subfamily Ephydrinae, Tribe Scatellini.(5 species in US or Canada) Bibl.: Olafsson 1991

Lamproscatella undet. sp. (rare KS hyporheic)

Pelignellus Sturtevant & Wheeler, 1954 - Ephydridae flies, Subfamily Psilopinae, Tribe Altisinni

Pelignellus undet. sp. (rare KS hyporheic)

Parydra Stenhammar, 1844 - Ephydridae flies, Subfamily Parydrinae, Tribe Parydrini .(34 species in US or Canada)

Parydra undet. sp. (rare KS hyporheic)

Scatella Robineau-Desvoidyt, 1830 - Ephydridae flies, Subfamily Ephydrinae, Tribe Scatellini. .(15 species in US or Canada) Bibl.: Olafsson 1991

Scatella undet. sp. (rare KS hyporheic)

Scatophila Becker, 1896 - Ephydridae flies, Subfamily Ephydrinae, Tribe Scatellini.(24 species in US or Canada)

Scatophila undet. sp. or species (Ac in 1 seAK; rare KS hyporheic)

FANNIIDAE (also put in Muscidae) suborder Brachycera, infraorder Muscomorpha

Fannia Robineau-Desvoidy, 1830 (= *Philinta*, *Aminta* R.1830; *Homalomyia* Bouche, 1834; *Coelomyia* Haliday, 1840; *Rhizomyia* Zetterstedt, 1849; *Myantha* Rondani, 1856; *Eriopoda* Lioy, 1864; *Parmalomyia* Bigot, 1882; *Gymnochoristomma* Strobl, 1898; *Gymanchoristomma* S.1900; *Steinomyia* Malloch, 1912; *Faniosoma* Ringdahl, *Beckerinella* Enderlein, 1936; *Ivalomyia* Riensuu, 1938; *Hennigomyia* Mihalyi, 1973) (once in Muscidae, Subfamily Fanniinae) Fanniidae flies (101 species in US or Canada)

Fannia near *canicularis* (*Musca c.* Linnaeus, 1761) (Europe, AK to Greenland, s. to CA,FL,global/ little house fly/ Tx in TN,MO),

Fannia undet. sp. (Tx or Ac in 1 IL cave & 1 cave in Adair Co.,OK)

gnats - See gonidae (black gnats)

HELEIDAE = Ceratopogonidae

HELEOMYZIDAE Aldrich & Darlington, 1908 (=Helomyzidae). Suborder Brachycera, Infraorder Muscomorpha.

Bibl.: Gill 1962, 1965; Lisowski 1995; Garnett & Foote, 1966

There are over 500 described species of Heleomyzidae in about 65 genera and 22 tribes distributed throughout the world; the greatest number occur in the Holarctic Region (McAlpine 1985b).

Little is known of the biology of these flies. Adults of Diplogeomyza and related genera (McAlpine 1967) are frequently encountered in wet forest country, some being most prevalent in mountainous areas. Adults of *Borboroides* and *Heleomicra* are attracted to carcasses and feces. *Austroleria extensa* has been reared from the fungus *Boletus granulatus* (Polyporaceae). The larvae of the Holarctic *Suillinae* occur principally in fungi, as do those of *Tapeigaster*, whereas larvae of *Cairnsimyia* live in borer tunnels in trees.

Fungal infections are common among these insects and can take on spectacular forms. *Hirsutella guignardii* forms long white synnemata hanging down from dead flies attached to the ceiling of the cave. In addition to those fungi causing disease in cave insects there are a variety using insects to transport their spores. Many of the fungi isolated from heleomyzid flies and from beetles of the genus *Speonomus* belonged to the genus *Mortierella*.

Undet. Ac, Tx or Tp genus in Vancouver Island, BC

Subfamily Heleomyzinae (*Schroederella*, *Tephrochlamys*)

Tribe Heleomyzini (*Acantholeria*, *Amoebaleria*, *Heleomyza*, *Pseudoleria*, *Scoliocentra*)

Tribe Oecotheini (*Aecothea*)

Subfamily Suilliinae (*Suillia*)

Subfamily Trixoscelidinae (*Trixoscelis*)

Acantholeria Garrett, 1921- Heleomyzidae flies, Subfamily Heleomyzinae, Tribe Heleomyzini (3 species in US or Canada)

Acantholeria undet. sp. (Tx or Ac in NWT),

Aecothea Haliday, 1838 (= *Leria*) - Heleomyzidae flies, Subfamily Heleomyzinae, Tribe Oecotheini (3 species in US or Canada)

Aecothea fenestralis (*Heleomyza f.* Fallen, 1820; *Blepharoptera specus* Aldrich, 1896) (Europe, N/Tx in TN (cave in Grundy Co.); Tp in IN; Tp or Tx 4 caves in KY, 3 caves in WV, one cave in GA & 1 in VA)

Aecothea specus (*Blepharoptera s.* Aldrich, 1897; *A. canadensis* Garrett, 1921) (AK to ON, s.to GA, CA/ Tp or Tx in Alberta, AK, AL, CA, GA (Bartow & Dade Cos.), IA, KY, Manitoba, MO, OH, sON, OR, WA, WI; Tx in AR, IL, IN (6 cos., S4/G4) KY, MO, NC, OK; TTx or Ac in CA; Tp or Tx in CO, TN),

Amoebaleria Garrett, 1921 (= *Chaetomus* Czerny, 1924) Heleomyzidae flies, Subfamily Heleomyzinae, Tribe Heleomyzini (15 species in US or Canada)

Amoebaleria brachypterna = *Heleomyza b.*

Amoebaleria caesia (Meigen) (*Helomyza c.* Meigen, 1830) (Europe, NA/Tx? in CA),

Amoebaleria defessa (= *Leria d.* Osten Sacken; *Blepharoptera d.* Osten Sacken, 1877; *A. sackeni* Garret, 1925) (MI to PA, s. to MO, AL/ Tp or (T)Tx in AL, AR (Stone Co.), GA (Bartow & Walker Cos.), IL, IN, KY (Mammoth C., Edmonson, Pulaski Cos.), MD, MI, MO, NS (2 caves), OK, TN, VA, WI, WV; Tx in NC(prob.), MO, NS, PA; Tp in OH),

Amoebaleria flavotestacea (*Heleomyza f.* Zetterstedt, 1838) (circumboreal, s. to CA, NC/Tx or Ac in OR; Ac in WA)

Amoebaleria gigas = *Scoliocentra g.*

Amoebaleria gonea Garrett, 1925 (BC, UT, IL/ Tp in cave in Eddy Co., NM)

Amoebaleria helvola Loew, 1862 (SD to PQ, s. to AR, GA/Tx in IL)

Amoebaleria sackeni Garrett, 1925 (= *A. defessa*?) (E/Tx in AL, IL, NE, MO (Carter Co.), sON, TN (DeKalb, Lincoln Cos.); Tp? in Ar),

Blepharoptera - See *Oecothea*, *Heleomyza*,

Heleomyza Fallen, 1810 (= *Leria* Robineau-Desvoidy, 1830; *Blepharoptera* Macquart, 1835)-

Heleomyzidae flies, Subfamily Heleomyzinae, Tribe Heleomyzini (13 species in US or Canada)

Heleomyza *brachypterna* (*Blepharoptera b.* Loew, 1873; *B. latens* Aldrich, 1897; *Leria caccabata* Rucker, 1909; *L. serrataria* Garrett, 1924) (NA/Tp or Tx in AR,GA,IA,IL,IN (Crawford, Harrison cos., S3/G4),KY (Mammoth C.), MO (Carter Co.), OK, TN (Dickson Co.),WI; Tp in AL; Tx in NS?)

Heleomyza fenestralis - see *Aecothea*

Heleomyza flavotestacea = *Amoebaleria f.*

Heleomyza pectinata = *Pseudoleria p.*

Heleomyza *serrata* (*Musca s.* Linnaeus, 1758) (*Leria & Blepharoptera s.*; *Leria nigricana & vinus* Garrett, 1922; *Helomyza fuscana* Meigen, 1838; *Heleomyza tristissima* Garrett, 1921) (Europe,N/Tp or Tx in IN,MD,OR,SON,WA,WI; Tx in NS)

Heleomyza undet. sp. (Tp in PA)

Heleomyza *tincta* (see *Scoliocentra*),

Leria defessa - see *Amoebaleria*; *Leria fraterna* - see *Scoliocentra*

Leria serrata - see *Heleomyza*; *Leria tincta* = see *Scoliocentra*

Leria specus - see *Aecothea*; *Musca* - see *Heleomyza*, *Fannia*

Neoeothea specus = *Aecothea s.*; *Oecothea* = *Aecothea*

Parodinia = *Trixoscelis* in part

Pseudoleria Garrett, 1921- Heleomyzidae flies, Subfamily Heleomyzinae, Tribe Heleomyzini (12 species in US or Canada)

Pseudoleria *parvitaris* G.1925 (prob. Tx in NM)

Pseudoleria *pectinata* (*Blepharoptera p.* Loew, 1872; *P. pectinerata* Garrett, 1921; *Heleomyza p.*) (BC to DC, s.to CA,GA/Tx in NM)

Schroedella Enderlein, 1921 (= *Schroederia* E.1914; *Edioamoeba* Garrett, 1925)- Heleomyzidae flies Subfamily Heleomyzinae (2 species in US or Canada)

Schroedella *fuscipicea* Gill., 1962 (WA,ID,MD,VA/Tp or Tx in KY)

Scoliocentra Loew, 1862 (= *Achaetomus* Coquillett, 1907)- Heleomyzidae flies, Subfamily Heleomyzinae, Tribe Heleomyzini (3 species in US or Canada)

Scoliocentra *fraterna* (= *Scoliocentra f.* Loew, 1863; = *Leria f.*) L., 1872 (AK to Greenland, s. to CO, MN, NY/ Tx in IN & Frenchmen=s Cave, NS)

Scoliocentra undet. sp(p). (TTp in AR; Tx in IA),

Scoliocentra *tincta* (*Helomyza t.* Walker, 1849; *Actora ferruginea* Walker, 1849; *Helomyza p.* & *t.* (Loew), *Leria*, *Helomyza* & *Blephoroptera pubescens* Loew, 1862; *Amoebaleria gigas* Garrett, 1921; *Achaetomus pilosus* Coquillett, 1907) (AK to NS, s. to CA,PA/Tx in IN,sON,WI)

Suillia Robineau-Desvoidy, 1830 - Heleomyzidae flies, Subfamily Suillinae (8 species in US or Canada)

Suillia undet. sp. (Ac, Tx or Tp in Vancouver Island, BC)

Tephrochlamys Loew, 1862 - Heleomyzidae flies, Subfamily Heteromyzinae (2 species in US or Canada)

Tephrochlamys *rufiventris* (Meigen, 1830) (Tp in 2 NS caves)

Trixoscelis Rondani, 1856 - Heleomyzidae flies, Subfamily Trixoscelidinae

Trixoscelis *frontalis* Fallen, 1823 (in CA non-cave *Neotoma fuscipes* woodrat nest)

HIPPOBOSCIDAE (louse flies, flat flies) suborder Brachycera, infraorder Muscomorpha (See also Streblidae)

Undet. genera in CA on *Corynorhinus townsendii* bats

Subfamily Nycteribiinae

Tribe Nycteribiini (*Basilina*)

Basilina Miranda Ribeiro, 1903 (once put in Nycterbiidae) Hippoboscidae flies, Subfamily Nycteribiinae, Tribe Nycteribiini (5-8 species in US or Canada). **Bibl.:** Collins, 1931

Basilina *antrozoi* (*Nycteribia* & *Penicillidia a.* Townsend, 1893) (OR to KS, s.to CA, CO, LA, NM, Mex./ectoparasite on TX *Corynorhinus townsendii pallescens*, AZ, BC, CA, NM, OK (Tx), TX *Antrozous pallidus*, LA *Tadarida brasiliensis cynocephala* & AZ (Tx) & CA, Mex. *Myotis californicus* bats)

Basilina *boardmani* Rozenboom, 1934 (ectoparasite on GA (Tx) *Myotis lucifugus*, IN *Myotis sodalis*, & FL (Tx), GA (Tx), IL(Tx) *M. austroriparius*)

Basilina *calverti* Fox & Stabler, 1953 (ectoparasite on CO *Myotis volans* bats)

Basilina *corynorhini* (*Pencillidia c.* Ferris, 1916) F., 1924 (CA, UT, TX/ ectoparasite on OK (Tx), AZ (Tx) *Corynorhinus townsendii pallescens*; CA *Corynorhinus townsendii pallescens* & TX *Leptoncyteris nivalis* bats/ VA T&E S1 rank & global G3 rank)

Basilina *dunni* Curran, 1935 (cf. *B. d.* - ectoparasite on CA *Antrozous pallidus* bats)

Basilina *forcipata* Ferris, 1924 (*B. calverti* Fox & Stabler, 1933) (BC to CA, CO, WA, LA, Mex.,

NM, OR/ ectoparasite on LA, SK *Lasionycteris nivalis*; AZ, NM *Euderma maculatum*, SD *Tadarida brasiliensis*, LA *Tadarida brasiliensis cynocephala*; wTX *Myotis velifer*; AZ, BC, CA (Tx?), Mex. *M. californicus*, CA, NM, AZ (Tx), LA, Mex. *Myotis thysanodes*; BC *Myotis evotis*, CA, BC *M. lucifugus*; BC, LA, MT, OR, SD (Tx?) *Myotis volans*, & AZ *Eptesicus fuscus* (Tx) bats)

Basilia (*B.*) *jellisoni* Theodor & Peterson, 1964 (on MT *Myotis yumanensis*)

Basilia *rondanii* Guimaraes & D'Andretta, 1956 (TX to Honduras/ ectoparasite on TX *Tadarida brasiliensis*; CA?, TX *Myotis yumanensis*; TX *M. thysanodes* and less often on TX *Pipistrellus hesperus*, *Antrozous pallidus*, *Eptesicus fuscus* & *Myotis volans*)

Basilia undet. sp. (bat parasite in WA; ectoparasite on CO *Myotis evotis*, CA *Antrozous pallidus* minor & GA *Tadarida brasiliensis cynocephala* bats)

HYBOTIDAE (once part of Empididae) Suborder Brachycera, infraorder Muscomorpha (*Charadrodromia*, *Leptozepe*)

Charadrodromia Melander, 1928 - put in Empididae flies

Leptozepe Macquart, 1827 (once in Empididae) Hybotidae flies, Subfamily Ocydromiinae, Tribe Ocydromiini

Leptozepe *compta* Coquillett, 1895 (ID, WI to PQ, s.to TN/Tx or Ac in sON)

Tachypeza Meigen, 1830 - put in Empididae

horse flies - See Phoridae

KEROPLATIDAE - Suborder Nematocera, Infraorder Bibionomorpha
Subfamily Keratoplatinae (*Euceroptatus*, *Keroptatus*, *Macrocera*, *Orfelina*)
(also treated as subfamily of Mycetophilidae)

Euceroptatus Edwards, 1929 (also used as subgenus of *Keroptatus* & once placed in Mycetophilidae) Keroplatidae, Subfamily Keratoplatinae (1 species in US & Canada)

Euceroptatus *fasciatus* (*Cerotelion* f. Garrett, 1925) (Ac, Tx or Tp in Vancouver Island, BC)

Keroptatus Bosc, 1792 (once put in Mycetophilidae flies) Keroplatidae flies, Subfamily Keratoplatinae (8 species in US or Canada)

Keroptatus *clausus* Coquillett, 1901 (Tx or Ac in Nickajack C., TN),

Macrocera Meigen, 1803 (once in Mycetophilidae) (= *Euphrosyne* M., 1800) Keroplatidae flies
Subfamily Keratoplatinae (24 species in US or Canada)

Macrocera *hirsuta* Loew, 1869 (IN to ME, s.to NC/Tx, Tp or Ac in IN),

Macrocera *nobilis* Johnson, 1922 (= *Euphrosyne n.* Shaw & Fisher, 1952)) (epigeal in AB, ON, ME s. to seUS; MA, NH epigeal/Tp in AR, KY (Mammoth Cave), IN (prob. In 3 cos.; S4/G4), MA, MO, NH, OK, ON, TN, WV) **Bibl.:** Peck & Russell 1976; Vockeroth 1977

Macrocera undet. sp. (HTx in BC, WA, IN (fairly common))

Orfelia Costa, 1857 (once in Mycetophilidae) (= *Zelmira* Meigen, 1800; *Proceroplatus* Edwards, 1925; *Rutylapa* E. 1929; *Calliplatyura* & *Neoplatyura* Malloch, 1928) (darkwinged fungus gnats) Keroplatidae flies, Subfamily Keratoplatinae (34 species in US or Canada)

Orfelia *elegans* (*Platyura e.* Coquillett, 1895) (PQ to IA, TN & FL/Tx in sON)

Orfelia undet. sp. (Tx or Ac in 1 IL cave)

LARVAEVORIDAE = Tachinidae
no-see-ums - See gonidae

LONCHAEIDAE (lonchaeid flies)
new genus? in WA caves

LONCHOPTERIDAE (pointedwinged or spear-winged flies)
Lonchoptera Meigen, 1803 - Lonchopteridae flies (4 species in US or Canada)
Lonchoptera undet. sp. (Tp in NM)

long-legged flies - See *Dolichopodidae*

MILICHIIDAE (=Phyllomyzidae) (milichid flies) Suborder Brachycera, Infraorder Muscomorpha
Subfamily Madizinae (*Desmometopa*, *Leptometopa*)

Desmometopa Loew, 1866 (= *Platophrymyia* Williston, 1896; *Liodesmometopa* & *Liodesma* Duda, 1935) Milichiidae flies, Subfamily Madizinae (10 species in US or Canada)

Leptometopa Becker, 1903 (once in Phyllomyzidae) (= *Macrurus* Lioy, 1864 Homo.; *Hypapistomnyia* Hendel, 1907; *Prodesmometopa* H. 1914; *Paramadiza* Malloch, 1913; *Cnemoplegas* Enderlein, 1927; *Desmometopina* Curran, 1930; *Dicraeoptera* Duda, 1932) Milichiidae flies, Subfamily Madizinae (2 species in US or Canada)

Leptometopa *latipes* (= *Agromyza l.* Meigen, 1830; *Mallochiella orillia* Curran, 1927) (Europe,

AK to NS, s. to Cuba/Tp guanobic in TN, TX (Kimble Co.))

Leptomeltopa undet. sp. (2 caves in Edwards Co.,TX/Tp)

MUSCIDAE (house & stable flies or muscid flies) Suborder Brachycera, infraorder Muscomorpha

Subfamily Cyrtoneurinae (*Neomuscina*)

Subfamily Muscinae

Tribe Muscini (*Limnophora*, *Musca*)

Tribe Reinwardtiini (*Muscina*, *Synthesiomyia*)

Subfamily Phaoniinae

Tribe Phaoniini (*Phaonia*)

Fannia (put in Fanniidae)

Limnophora Robineau-Desvoidy, 1830 (placed by some authors in Chironomidae) (= *Cuculla* R.1830; *Melanochelia* Rondani, 1866; *Pseudolimnophora* Strobl, 1893; *Strobilia* Pokorny, 1893; *Calliophrys* Kowarz, 1893; *Limnophorites* Schnabl & Dziedzicki, 1911) CO & OK hyporheic) - Muscidae flies, Subfamily Coenosiinae, Tribe Limnophorini

Musca - Muscidae flies, Subfamily Muscinae, Tribe Muscini (3 species in US or Canada)

Musca *domestica* Linnaeus, 1758 (global/ house fly/ Ac in cave in Uvalde co., TX),

Muscina Robineau-Desvoidy, 1830 (*Blissonia* R.1863; *Pararicia* Brauer & Bergenstamm, 1891; Steelea Emden, 1965) - Muscidae flies, Subfamily Muscinae, Tribe Reinwardtiini

Muscina *prolapsa* (*Musca* p. Harris, 1780) (Tx in GA, Dade Co.)

Muscina *stabulans* (*Musca* s. Fallen, 1817; *Musca prodeo* Harris, 1780 (Unav.); *Anthomyia cinerascens* Wiedemann, 1817; *Muscina grisea*, *picaena* Robineau-Desvoidy, 1830; *Mydaea vomiturionis* R.1849) (circumboreal, s. to GA,AZ/Ac in cave in Uvalde Co., TX)

Neomuscina Townsend, 1919 (= *Spilopteromyia* Malloch, 1921) - Muscidae flies, Subfamily Cyrtoneurinae

Neomuscina *tripunctata* (*Muscina* t. Wulp, 1896; *M. texana* Hough, 1899; *N. caviticola* Townsend, 1919) (SW,nMex./Tx in AZ),

Phaonia Robineau-Desvoidy, 1830 (= *Fellaea*, *Trennia*, *Euphemia*, *Rohrella*, *Stagnia* R., 1830; *Wahlgrenia* Ringdahl, 1929; *Dialytina* R., 1945)- Muscidae flies, Subfamily Phaoniinae, Tribe Phaoniini (82 species in US or Canada)

Phaonia *soccata* (*Anthomyia* s. Walker, 1849) (Alberta to VT/Tx or Ac in SON)

Phaonia undet. sp. (Carlsbad C.,NM).

Synthesiomyia Bauer & Bergenstamm, 1893 - Muscidae flies, Subfamily Muscinae, Tribe Reinwardtiini (1 species in US)

Synthesiomyia *nudiseta* Van der Wulp, 1883 (sUS, tropics, HA/Tx in Edwards Co., TX & Alachua Co.,FL)

MYCETOPHILIDAE (fungus gnats, webworms (larvae)) Suborder Nematocera, Infraorder Bibionomorpha. **Areas:** US: G. Davis, 1966; Fisher (1937, 1938); Johannsen (1910, 1910a, 1912, 1912a); TN: Barr, 1949a,b, 1951b.

undet. Ac or TTx genera in NWT & Tx in OH
undet. sp. (Ac, Tx or Tp in Vancouver Island, BC))

Subfamily Bolitophilinae (*Bolitophila*)

Subfamily Mycetophilinae

Tribe Exechiini (*Anatella*, *Exechia*, *Exechiopsis*, *Pseudobrachypeza*, *Rymosia*, *Tarnania* (also in Tarnanii))

Tribe Mycetophilini (*Cordyla*, *Mycetophila*, *Phronia*)

Tribe Tarnanii (Ac or Tx in 1 seAK cave; Tarnania (put in Exechiini))

Subfamily Sciophilinae

Tribe Gnortistini (*Boletina*, *Speolepta*, *Synapha*)

Tribe Sciophilini (*Allocotocera*, *Leptomorphus*, *Monoclona*, *Mycomya*, *Neuratelia*)

Tribe Leiini (*Docosia*, *Leia*)

Allocotocera Mik, 1886 - Mycetophilidae flies, Subfamily Sciophilinae, Tribe Sciophilini

Allocotocera undet. sp. (Ac in 1 seAK cave),

Allodia Winnertz, 1863 (*Brachycamta* W. 1863; *Parallodia* Plassmann, 1969)- Mycetophilidae flies, Subfamily Mycetophilinae, Tribe Exechiini

Allodia undet. sp. (Tx in Kerr Co., TX)

Anaclinea = *Neuratelia*

Anatella Winnertz, 1863 - Mycetophilidae flies, Subfamily Mycetophilinae, Tribe Exechiini (5 species in US or Canada)

Anatella undet. sp. (Tx in sON, BC)

Boletina Staeger, 1840 - Mycetophilidae flies, Subfamily Sciophilinae, Tribe Gnortistini

Boletina undet. sp. #1-? (Tp? or Tx in WA/ Tx or Tp in OR C.; parietal Tx in NS)

Bolitophila Meigen, 1818 - Mycetophilidae, Subfamily Bolitophilinae (also put in olithophilidae)

Bolitophila undet. sp. (parietal Tx in sON & NS)

Brachypeza Winnertz, 1863 - Mycetophilidae flies, Subfamily Mycetophilinae, Tribe Exechiini

Brachypeza undet. sp. (Ac in WA),

Cerotelion - See *Euceropolatus*

Cordyla Meigen, 1800 - Mycetophilidae flies, Subfamily Mycetophilinae, Tribe Mycetophilini (10 species in US or Canada)

Cordyla undet. sp. (Ac, Tx or Tp in Vancouver Island, BC)

Docosia Winnertz, 1863 - Mycetophilidae flies, Subfamily Sciophilinae, Tribe Leiini

Docosia *paradichroa* Fisher, 1937 (Tx in NY,sON)

Euceroplatus Edwards, 1929 (also used as subgenus of *Keroplatus* & now placed in Keroplatidae)

Euceroplatus undet. sp. (Ac, Tx or Tp in Vancouver Island, BC)

Exechia Winnertz, 1863 - Mycetophilidae flies, Subfamily Mycetophilinae, Tribe Exechiini (48 species in US or Canada)

Exechia *attrita* Johannsen, 1912 (epigeal in sON,PQ,neUS/ Tx in sON)

Exechia *auxiliaria* Johannsen, 1912 (epigeal in ON to SC,WI/ Tx in sON)

Exechia bifurcata = *Exechiopsis b.*

Exechia nugax = *Exechiopsis n.*

Exechia *obediens* Johannsen, 1912 (Alberta,CA,sON,OR/Tx)

Exechia undet. sp. or species (Tx in BC, NS (2 sp. in 4 caves) ,CA., seAK (one cave), IL & Unita Mts (UT); 3 Tx sp. in WA; Tx or Tp 2 sp. in AR (Fulton Co.)

Exechia *umbratica* = *Mycetophila u.*

Exechiopsis Tuomikoski, 1966 - Mycetophilidae flies, Subfamily Mycetophilinae, Tribe Exechiini (4 species in US or Canada)

Exechiopsis *bifurcata* (*Exechia b.* Fisher, 1934) (Tx in AR, KY, NY, sON),

Exechiopsis *umbraticus* (*Mycetophila u.* Aldrich, 1897; *Exechia umbratica*) (BC to OR, NY to

SC/Tx in IN; Tx or Ac in 1 PA cave)

Exechiopsis *nugax* (Johannsen, 1912) (BC to PQ, s.to NY/Tx in sON)

Exechiopsis undet. sp.1-7? (Tx in AR, BC, CA, NC (2 caves), UT (Unita Mts.); Tx or Tp in OK (near *nugax* (=Exechia n. Johannsen, 1912))

Exechiopsis umbraticus = see *Mycetophila u.*

Keroplatus Bosc, 1792 - now in Keroplatidae flies

Leia Meigen, 1818 (= *Neoglaphyroptera* Osten Sacken, 1878; *Lejomya* & *Lejosoma* Rondani, 1856; *Glaphyroptera* Winnertz, 1863) Mycetophilidae flies, Subfamily Sciophilinae, Tribe Leiini

Leia *cuneola* (N.c. Adams, 1903) (CO, ID/Tx in AL, GA)

Leia *striata* Williston, 1893 (Tx in KY (Rockcastle Co.), TN Pickett, Putnam, Coffee, Bedford & Lincoln Cos.) & AL (Marshall Co.))

Leptomorphus Curtis, 1831 - Mycetophilidae flies, Subfamily Sciophilinae, Tribe Sciophilini

Leptomorphus undet. sp. (Ac, Tx or Tp in Vancouver Island, BC)

Macrocera Meigen, 1803 - now in Keroplatidae

Monoclona Mik, 1886 - Mycetophilidae flies, Subfamily Sciophilinae, Tribe Sciophilini

Monoclona undet. 2 species (Ac, Tx or Tp in Vancouver Island, BC)

Monardia - put in Cecidomyiidae

Mycetophila Meigen, 1803 (= *Fungivora* M., 1800; *Mycetiina* Rondani, 1856; *Mycozetaea* R. 1861; *Mycothera* Winnertz, 1863; *Opistholoba* Mik, 1891) Mycetophilidae flies, Subfamily Mycetophilinae, Tribe Mycetophilini

Mycetophila *analisis* (= *Exechia a.* Coquillett, 1901) Adams in Banta, 1907 (Tx or Ac in IN)

Mycetophila discoida Say, 1826 = *M. unipunctata*

Mycetophila exigua = *Phronia e.*

Mycetophila *fisherae* (*Fungivora f.* Laffoon, 1957) (epigeal sCanada to CO, GA, TX/ Tx in sON)

Mycetophila *ichneumonea* Say, 1823 (sCanada to MT, NC/ TTx or Ac in IN)

Mycetophila incerta Adams in Banta, 1907 = *Phronia i.*

Mycetophila *obscura* Walker, 1848 (Tx in IN) (listed by Laffoon as unrecognized)

Mycetophila *sordida* Wulp, 1874 (Europe, AK to nCA & PA/Tx in CA, PA, sON)

Mycetophila undet. sp(p). (Tx in sON; Tx in Uinta Mts.(UT), AZ; Tp or Tx in CA; HTx in WA;

Ac, Tx or Tp in OR C.,OR; group D in CA; cf. *fungorum* (*Tipula f.* DeGeer, 1776) (AK to Mex./ Tx in nAZ)

Mycetophila umbratica = *Exechiopsis u.*

Mycetophila *unipunctata* (= *M. discoida* Say, 1826) (Europe, MN to sPQ, s. to LA,SC/ Tx in IN),

Mycomya Rondani, 1856; emend. by Edwards, 1913 (= *Cnephaeophila* Philippi, 1865; *Mycomyopsis*, *Calomycomya*, *Cymomya*, *Tlingitmyia*, *Myacymo*, *Neomycomya*, *Lycomya*, *Mycoleia*, *Coheromyia* Vaisanen, 1984) Mycetophilidae flies, Subfamily Sciophilinae, Tribe Mycomyiini

Mycomya *nitida* (= *Sciophila n.* Zetterstedt, 1852; *S. exigua* Winnertz, 1863) (epigeal in AK, BC, CO, sON, SK, PQ, ME, s to NY/ Tx)

Mycomya undet. sp. (TTx in BC, WA)

Neuratelia Rondani, 1856 (= *Anaclinia* Winnertz, 1863; *Odontopoda* Aldrich, 1897) Mycetophilidae flies, Subfamily Sciophilinae, Tribe Sciophilini

Neuratelia undet. sp. or species (Tx in AR (Izard Co.), IN, BC (2 species))

Odontopoda = *Neuratelia*

Orfelia Costa, 1857 - now in Keroplatidae

Phronia Winnertz, 1863 (= *Telmaphilus* Becker, 1908) Mycetophilidae flies, Subfamily Mycetophilinae, Tribe Mycetophilini. **Bibl.:** Gagne 1975

Phronia *exigua* (*Mycetophila e.* Zetterstedt, 1852; *P. rustica & longipes* Winnertz, 1863; *P. venusta* Johannsen, 1912) (nNA, Europe/ Tx in AK, AR, CA, sON, PA, PQ; TTx in WA (near *exigua*))

Phronia *flavipes* Winnertz, 1863 (= *P. flabellata* Van Duzee, 1928) (BC to CA,Europe, ME, NC/ Tx in sON)

Phronia *incerta* (*Mycetophila i.* Adams, 1907) (Tx in IN)

Phronia undet. sp. or species (Tx in BC, IL; sON)

Pseudobrachypeza Tuomikoski, 1966 - Mycetophilidae flies, Subfamily Mycetophilinae, Tribe Exechiini (1 species in US or Canada)

Pseudobrachypeza *bulbosa* (*Allodia b.* Johannsen, 1912)

Pseudobrachypeza undet. sp. (Tx in sON)

Rhymosia Winnertz, 1863 = *Rymosia*

Rymosia (*Rhymosia* Winnertz, 1863) Mycetophilidae flies, Subfamily Mycetophilinae, Tribe

Exechiini (22 species in US or Canada)

Rymosia *filipes* Loew, 1869) (BC to NH epigeal/ Tx in IN)

Rymosia *inflata* Johannsen, 1912 (NY epigeal/ Tx in TN)

Rymosia *triangularis* Shaw, 1935 (NY, PA/ Tx in IL, sON, TX; Tx or Ac in PA)

Rymosia undet. species (Tp in mine near Hutchings Mine (Jo Daviess Co.), IL; Tx or Tp in GA (Walker Co.), Tx in BC, CA, TN, IL, MO, NM, sON, UT, TX; TTx in TN)

Speolepta Edwards, 1925 - Mycetophilidae flies, Subfamily Sciophilinae, Tribe Gnortistini

Speolepta *leptogaster* (*Polylepta l.* Winnertz, 1863) or new sp(p). (Europe, nNA/ Tx in CA, NH, ON, OR, WA)

Speolepta 2-3 undescr. species (TTx or TTp in Vancouver Island caves, BC)

Synapha Edwards, 1925 - Mycetophilidae flies, Subfamily Sciophilinae, Tribe Gnortistini

Synapha undet 2 species (Tx in BC)

Tarnania Tuomikoski, 1966 - Mycetophilidae flies, Subfamily Mycetophilinae, Tribe Exechiini (1 species in US or Canada)

Tarnania *tarnanii* (Dziedzicki, 1910) (Tx in AK, BC, NS, NWT, sON, PQ)

NYCTERIBIIDAE (wingless bat flies; bat spider or bat tick flies). **Bibl.:** Eads & Menzies , 1948; Eads, 1956; Maa, 1962; B. Peterson, 1963; Wenzel, 1965

Basilina Ribeiro, 1903 - put in Hippoboscidae

Nycteribia Latreille, 1976 = *Basilina*

Nycterophilia - put in Streblidae

OESTRIDAE (sheep bot flies; bot and warble flies)

Subfamily Cuterebrinae (*Cuterebra*)

Cuterebra Clark, 1815 - Oestridae flies, Subfamily Cuterebrinae (26 species in US or Canada)

Cuterebra *approximata* Walker, 1866 (ectoparasite in AZ *Neotoma albigula* woodrats)

Cuterebra *austeni* Sabrosky, 1986 (in AZ, NM *Neotoma albigula* & NM *Neotoma micropus* woodrats)

Cuterebra *buccata* (*Oestrus b.* Fabricius, 1776; *Bogeria scudderii*; *C. purivora*) (ectoparasite in CA (probably) *Neotoma fuscipes* woodrats)

Cuterebra *latifrons* Coquillett, 1898 (in AZ *Neotoma albigula* & CA *Neotoma fuscipes* woodrats)

Cuterebra undet. sp. (ectoparasite in IN (rare), OK *Neotoma floridana*, CO *Neotoma mexicana*)

fallax & WV *Neotoma magister* woodrats)

Cuterebra *tenebrosa* Coquillett, 1898 (in CA *Neotoma fuscipes* woodrats)

phantom crane flies - See Ptychopteridae

PHORIDAE (humpbacked or coffin flies) Suborder Brachycera, infraorder Muscomorpha.

Bibl.: Borgemeir 1968, 1971; Peterson 1987; Brues, 1903; Malloch, 1912. Larvae mostly feed upon decayed vegetable or animal matter, but some are parasitic on ants, bees, beetles, snails and so on. A few are myrmecophilous (live with ants)

Undet. Tp sp. in MO; undet. Tx or Ac in NWT; undet. Ac, Tx or Tp in Vancouver Isl., BC)

Subfamily Metopininae

Tribe Metopinini (*Gymnophora*, *Megaselia*, *Woodiphora*)

Subfamily Phorinae (*Anevrina*, *Borophaga*, *Conicera*, *Diplonevra*, *Spiniphora*, *Triphleba*)

Anevrina Lioy, 1864; Emend. by A. Scudder, 1882 (= *Chaetoneura* & *Stenophora* Malloch, 1909 Homologue; *Pseudostenophora* & *Chaetoneurophora* M.1912) Phoridae flies, Subfamily Phorinae
(11 species in US or Canada)

Anevrina *olympiae* (= *Phora o.* Aldrich, 1903 in Brues, 1904; *Aneurina o.* Brues, 1950; *Chaetoneurophora aureiventris* Brues, 1913) Borgmeier, 1963 (E/Tp in IL, sON)

Borophaga Enderlein, 1924 - Phoridae flies, Subfamily Phorinae (5 species in US or Canada)

Borophaga *verticalis* Borgmeier, 1962 (epigeal AB to PQ, s.to AZ, DC, MO/ Tp or Tx in IL)

Conicera Meigen, 1830 (*Hypocerina* Malloch, 1913; *Tritoconicera* Schmitz, 1953) Phoridae flies, Subfamily Phorinae (6 species in US or Canada)

Conicera *dauci* (*Phora d.* Meigen, 1830; *C. atra*, *P. albipennis* M., 1830; *P. nickerli* Kowarz, 1894) (Europe, Japan, OR to MA, s. to CA, TN/ Tp in Irion Co., TX; Ttx or Ttp in Edmonson Co., KY) **Bibl.:** Sullivan 1962

Diplonevra Lioy, 1864, (= *Diploneura*, Emend. by Enderlein, 1924 (= *Tristoechia* Schmitz, 1927) Phoridae flies, Subfamily Phorinae (6 species in US or Canada)

Diplonevra *nitidula* (*Phora n.* Meigen, 1830) Schmitz, 1926 (Tp or Tx in Europe, US)

Diplonevra *peregrina* (Wiedemann, 1830) (Tp in Kazumura C., HI Island, HI)

Gymnophora Macquart, 1835 (= *Capraeophora* Bezzi, 1922; *Cerocratia* Schmitz, 1929) Phoridae flies, Subfamily Metopininae, Tribe Metopinini (6 species in US or Canada)

Gymnophora *luteiventris* Schmitz, 1952 (WI to NH, s.to TX, GA/ Tx or Ac in sON)

Megaselia Rondani, 1856 (= *Obelosia* Lioy, 1864; *Aphiochaeta* Brues, 1903; *Plastophora* Brues, 1905; *Megaselidia* Becker & Alii, 1907 Emend.; *Byrsophrys* Enderlein, 1912; *Lioyella* & *Pogonopleura* E., 1924; *Stirocnemia* E. 1927; *Mallochina* Schmitz, 1918; *Epimegaselia* & *Quasipseudacteon* Beyer, 1959; *Hemiplastophora*, *Metaplastophora* & *Tarsophromyia* Beyer, 1965) 1929) Phoridae flies, Subfamily Metopininae, Tribe Metopinini. (187 species in US or Canada) **Bibl.:** Borgmeier 1965; Robinson 1970-1

Megaselia (*Aphiochaeta*) *breviterga* (*Aphiochaeta* b. Lundbeck, 1921; *A. similata* L. 1921) Schmitz, 1929 (Europe, US/ Tp in IL)

Megaselia (*A.*) *cavernicola* (*A. c.* Brues, 1906; *Phora*, *M.* & *Aphiochaeta nigriceps* Loew) (epigeal in MO to MA, s. to NM, AL/ (type locality in Wyandotte Co., Crawford Co., IN/ Tp habitat generalist in AL, AR, CT, GA (Dade & Walker Cos.), IL, IN (all s.cos. with caves), IA, KY (Mammoth (Edmonson Co.) & Carter & Hart Cos.), MD, NC, OK (potentially), NM, PA, VA, WA, WV; Tx? in MA & MD) **Bibl.:** Conn & Marshall 1991

Megaselia (*Megaselia*) *glabrifrons* (Wood, 1909) (Tx in Europe, US)

Megaselia (*Aphiochaeta*) *inornata* (*A.i.* Malloch, 1912) Brues, 1950 (nUS/ Tp or TTx in OR; TTx? in WA)

Megaselia (*A.*) *nigriceps* (Loew, 1866) (Augur Hole, IN/ Tp?)

Megaselia (*Aphiochaeta*) *meconicera* Speiser, 1925 (Tp? in NS)

Megaselia (*Aphiochaeta*) *rufipes* (= *Trineura r.* Meigen, 1804; *T. annulata* M. 1804; *Phora pallipes* Latreille, 1809; *T. vulgaris* Fallen, 1823; *Phora heracleellae* & *sphingicides* Bouche, 1834; *Phora semiflava* Hartig, 1837; *Phora coleopterorum* Brischke, 1869; *Phora omnivora* Hudson, 1892; *Lioiyella juanfernandezica* Enderlein, 1938) (cosmopolitan/ Tp or Tx in Carlsbad (NM) & Mammoth (KY) C.)

Megaselia *spelunciphila* Disney & Reeves, 1999 (Tp in GA ((Dade & Walker Cos.) & SC)

Megaselia undescr. sp. or species (Tp in WV)

Megaselia undet. species (Tp or Tx in GA, MO (raccoon feces), TN, Uinta Mts (UT), Kings Canyon Natl. Park (CA), Camden Co., MO, Lehman C. (NV) & Eddy Co. (NM); Tx or Ac in NWT; Tp in BC, TX)

Megaselia *spelophila* Borgmeier, 1966 (Tx or Tp in US)

Megaselia *spelunciphila* Disney, 1999 in Reeves & Disney, 1999 (type locality cave in Dade Co. & 2 caves in Walker Co., both GA & cave in Oconee Co., SC/ Tp or Tb/ G1)

Phytosciara Frey, 1942 - now in Sciaridae

Puliciphora Dahl, 1897 – Phoridae flies, , Subfamily Metopininae, Tribe Metopinini
Puliciphora virginensis Malloch, 1912 (epigean in VA, NS, SC, GA; Tp in GA (Walker Co.)

Spiniphora Malloch, 1909 - Phoridae flies, Subfamily Phorinae (5 species in US or Canada)
Spiniphora undet. sp. (Ac, Tx or Tp in Vancouver Island, BC)

Triphleba Rondani, 1856 (= *Palpimega* R., 1856; *Trupheoneura* Malloch, 1909; *Woodia* M., 1909 Homo.; *Parastenophora* M.1910; *Citrigo* Schmitz, 1924; *Paraneurina* & *Psilotriphleba* Enderlein, 1936; *Tonnoirina* Schmitz, 1939) Phoridae flies, Subfamily Phorinae (22 species in US or Canada)

Triphleba *fumipennis* Borgmeier, 1963 (US/TTp? in WA; Ac? in MO)
Triphleba *laticosta* Borgemeier, 1962 (Canada,US/Tp or Tx in OR C.,OR)
Triphleba undescr. sp. (Tx in OR C.,OR)

Woodiphora Schmitz, 1925 (= *Triemisticha* s., 1927) Phoridae flies, Subfamily Metopininae, Tribe Metopinini (1 species in US or Canada)

Woodiphora *magnipalpis* (*Phora* m. Aldrich, 1896; *Aphiochaeta pilosa* Malloch, 1914; *A. velutinipes*, *opaciventris* Brues, 1924)) (MO/ Tp in cave in Kendall Co., TX)

PHYLLOMYZIDAE

Leptometopa (now in Milichiidae)

PIPUNCULIDAE (big-headed or big-eyed flies)

Undet. genus (Ac in cave in Irion Co., TX)

PLECIIDAE (incl. Parapleciidae & Paraxymyiidae)- Suborder Nematocera, infraorder Bibionomorpha (*Plecia*)

Plecia Wiedeman, 1828 (once in Bibionidae) Pleciidae flies (2 species in US or Canada)
Plecia *nearctica* Hardy, 1940 (sUS to Central Amer./ love bug/ Ac in cave in Uvalde Co., TX)

PSYCHODIDAE (= Liriopidae) (moth & sand flies; owl midges) Suborder Nematocera, infraorder Psychodomorpha. Bibl.: Quate (1955). Undet. Tx? genus in BC, MO, AK)

Moth flies are commonly called Drain Flies because they are often observed lingering around the drains in kitchen and bathroom sinks. Adults are black with the body and wings densely covered with hairs thus giving them the appearance of a moth. Adults are small, usually not becoming much larger than the zeros (0) on this page. They are weak fliers, and are generally seen crawling on walls or other surfaces rather than flying. When they do fly, their flight is in short, jerky lines and for only a few feet at a time. They are attracted to lights, and are so small

that they can penetrate ordinary fly screens. Eggs are tiny, brown or cream-colored and are laid in irregular masses of 10 to 200. Larvae are legless, about 3/8 inch long, wormlike and gray, with both ends somewhat darker. The life cycle can be completed in one to three weeks. Adults live about two weeks, with old ones dying and new ones emerging. The adult diet consists of flower nectar and polluted water. Bronchial asthma can be caused by inhaling hair fragments and dust of living and dead moth flies.

Midges are a family of minute to moderately large species, the adults of which superficially resemble mosquitoes. The smaller species are believed by some people to be “young” mosquitoes. However, midges differ from mosquitoes in that the wings are not scaled and the mouthparts are short and not adapted for biting. Adult midges are slender, seldom more than 10 mm long, but usually less than 5 mm.

Midges oviposit on water in the same manner as mosquitos. The midge larvae are scavengers, and are aquatic or rarely terrestrial. Terrestrial species live in and on decayed vegetation, dung, fungi, mosses, under bark, and in the soil. Aquatic larvae are found in quiet or flowing water, and may become abundant in lakes, ponds, reservoirs, and tanks. Most are bottom-feeders, and are sometimes found at depths of nearly 1,000 ft (300 m). For most species, the food is thought to be particulate matter consisting of algae, other plant cells, and miscellaneous detritus. They possess a closed (apneustic) respiratory system and, unlike mosquito larvae, need not come to the surface for air. They absorb oxygen dissolved in the water by means of small “gills.” Some larvae are freeliving, and others make mud tubes or cases on stones, leaves, and pieces of wood.

Subfamily Phlebotominae (*Lutzomyia*)

Subfamily Psychodinae (*Maruina*, *Pericoma*, *Psychoda*, *Telematoscopus*)

Lutzomyia Franca, 1924 - Psychodidae flies, Subfamily Phlebotominae (13 species in US or Canada)

Lutzomyia undet. sp. (Ac or Tx in CA)

Maruina Mullerr, 1895 - Psychodidae flies, Subfamily Psychodinae (4 species in US or Canada)

Maruina undet. sp. (Ac in 1 seAK cave)

Pericoma Walker, 1856 (= *Phalaenula meigen*, 1800; *Clytocerus* Eaton, 190-4; *Desmioza*, *Synmormia*, *Syntomolaba*, *Didicrum*, *Podolepria*, *Mecysmia* Enderlein, 1937; *Leptopericoma* & *Pachypericoma* Vaillant, 1978; *Botosaneanuiella* V.1979) Psychodidae flies, Subfamily Psychodinae (24 species in US or Canada)

Pericoma *minuta* (*Psychoda m.* Banks, 1894) (Europe, MN to ME, s.to TX, MD/ Tx in IN)

Pericoma *signata* (*Psychoda s.* Banks, 1901) (Tx in in cave in Edmonson Co., KY) **Bibl.:** Sullivan 1962

Pericoma undet. sp. (MO/Tx; CO hyporheic)

Psychoda Latreille, 1796 (= *Trichoptera* Meigen, 1803) (sewer flies) - Psychodidae flies, Subfamily Psychodinae

Psychoda *cinerea* Banks, 1894 (= *P. prudens* Curran, 1924) (global/E Tx on rotting veg. & feces/ Tp in IN; Tp or Tx in KY(Edmonson Co.) & TN (Dickson, Smith, Grundy Cos.)

Psychoda minuta = *Pericoma m.*

Psychoda *phalaenoides* (*Tipula p.* Linnaeus, 1758; *P. pacifica* Kincaid, 1897; *P. horizontala* Haseman, 1907; *P. tonnoiri* Dyar, 1926; *P. angustafona* Rapp, 1944) (Tx or Ac in sON)

Psychoda *pusilla* Tonnoir, 1922 (epigeal Europe, WA to NY, s. to CA, TX, AL/ Tp in GA (Walker Co.))

Psychoda *reevesi* Quate, 2000 (type locality & 1 other cave in Dade Co. & cave? in Walker Co., nGA/ Tp (known only from caves))

Psychoda *satchelli* Quate, 1955 (Europe,US,Canada/Tx in sON,OR; Tx? in WA)

Psychoda undet. sp(p). (Tp? in AL; Tp or Tx in GA, NM; Tx in MO, NS, NV, WV; Tp in IL, IA, MO; TTx or Ac in sON, NWT)

Psychoda *umbracula* Quate, 1955 (WA to CA, MN to NH, s. to TN/Tp or Tx in IL,sON)

Telematoscopus Eaton, 1904 (*Xenapates* Eaton, 1904; *Sciria*, *Seoda* Enderlein, 1935; *Clogmia* E.1937; *Oroescopus* Quate & Q., 1967; *Krekiella* Vaillant, 19672; *Oscoreopus* Zezek, 1989) Psychodidae flies, Subfamily Psychodinae (17 species in US or Canada)

Telematoscopus undet. sp. (Tp in Burnet Co.?, TX)

PTYCHOPTERIDAE (phantom crane flies) suborder Nematocera, infraorder Ptychopteromorpha, Superfamily Ptychopteroidea .

Bittacomorpha Westwood, 1835 - Ptychopteridae flies, Subfamily Bittacomorphinae (4 species in US or Canada)

Bittacomorpha *clavipes* (*Tipula c.* Fabricius, 1781) (Manitoba to NF, s. to AZ,FL/phantom crane fly/ Tx or Ac in sON)

RHAGIONIDAE (snipe flies)

(*Ptiolina*, undet. genus (Ac, Tx or Tp in Vancouver Island, BC)

Ptiolina Zetterstedt, 1942 - Rhagionidae flies, Subfamily Rhagioninae (11 species in US or Canada)

/

Ptiolina undet. sp. (Ac, Tx or Tp in Vancouver Island, BC)

SARCOPHAGIDAE (=Stephanostomatidae, Metopiidae) (*Sarcophaga*)

Suborder Brachycera, infraorder Muscomorpha

Sarcophaga Meigen, 1826 - Sarcophagidae flies, Subfamily Sarcophaginae, Tribe Sarcophagini (82 species in US or Canada)

Sarcophaga quadrisetosa (*Helicobia q.* Coquillett, 1901; *Ravinia derelicta*) (Tx or Ac in cave in Alachua Co., FL)

SCATOPHAGIDAE (= Cordyluridae) (also subsumed in Anthomyidae) (dung flies) Suborder Brachycera, infraorder Muscomorpha.

Subfamily Delininae (or as Tribe Delinini) (*Americina*)

Subfamily Scathophaginae (*Scatophaga*)

Americina Malloch, 1923 - Scatophagidae flies, Subfamily Delininae (1 species in US or Canada)

Americina adusta (*Cordilura a.* Loew, 1863)(cON, s.to GA,KS/Tx or Ac in sON)

Scathophaga (= *Scopeuma* Meigen, 1800 (Unav.); *Scatophaga* (missp.) M., 1803; *Pyropa* Illiger, 1807; *Scatomyza* Fallen, 1810; *Amina*, *Scatina* Robineau-Desvoidy, 1830; *Scatophagella* Szilady, 1926) Scatophagidae flies, Subfamily Scathophaginae (29 species in US or Canada)

Scathophaga furcata (*Pyropa f.* Say, 1823; *Cleigastra suisterci* Townsend, 1891; *S. bicolor*, *pubescens* Walker, 1849; *S. canadensis* W. 1858 *S.* & *Cordylura fuscinervis* Zetterstedt; & *S. postilena* Harris, 1835 (unav.), *S. squalida* Meigen) (circumboreal, s. to CA, Mex., GA, MS/ Tx or Ac in NWT)

SCATOPSIDAE (minute black scavenger flies; dung-midges) suborder Nematocera, infraorder Psychodomorpha

Scatopse Geoffroy, 1762 (= *Ceria* Scopoli, 1763) Scatopsidae family, Subfamily Scatopsinae, Tribe Scatopsini (11 species in US or Canada)

Scatopse notata (= *Tipula* Linnaeus, 1758; *S. nitida* Harris, 1835 (Unav.); *S. femoralis* Meigen, 1838; *S. nitens* Walker, 1848) (global/Tx or Ac in IL)

Scatopsciara Edwards, 1927 - Scatopsidae flies (also put in Sciaridae)

Scatopsciara undet. sp. (Tx in BC & on porcupine dung in 2 NS caves)

SCENOPINIDAE (window flies) (= Omphralidae) flies) Suborder Brachycera, infraorder Muscomorpha.

Undet. genus (Ac in cave in Edwards Co., TX)

Pseudatrachia Osten Sacken, 1877- Scenopinidae flies, Subfamily Scenopininae (24 species in US or Canada)

Pseudatrachia *unicolor* Coquillett, 1900 (in CA non-cave *Neotoma fuscipes* woodrat nest)

SCIARIDAE (darkwinged fungus flies; (darkwinged) fungus or root gnats) Suborder Nematocera, infraorder Bibionomorpha. The term, fungus gnat, applies to a number of species in the insect order Diptera, family Sciaridae. Fungus gnat adults are a nuisance to greenhouse operators, interiorscapers as well as consumers. The larval stages can damage healthy roots, stunting or killing young plants even where there is no fungal food source (Lindquist 1994). Prolonged infestations may cause stunted, off-colored plants or foliage (Cole 1985). Adult fungus gnats are small (1/8 inch long), fragile grayish to black flies with long, slender legs and thread-like antennae. The adults are often confused with mosquitoes because of their long, slender dangling legs. Females can lay up to 200 small whitish eggs in the soil. Upon hatching, larvae will begin to feed immediately on the roots of plants. As soon as the larvae are mature, they pupate in the soil. In about four to seven days, the adults emerge and will live about one week. Larvae have the ability to damage plants by feeding on roots and root hairs. Seedlings and young plants are extremely vulnerable to this feeding. Fungus gnats develop through complete metamorphosis: egg; larva; pupa; and adult. Development occurs in 2 to 4 weeks. Larvae feed primarily on fungi, decaying organic matter and plant roots, particularly in very moist environments. Larval and pupal stages can also, however, survive periods of drought. Fungus gnats normally follow a predictable cycle of population development: The first two generations are the largest, followed by a leveling off or decline in numbers.

Undet. sp. And genus in MO & in NV cave *Nothrotheriops shastensis* ground sloth dung)
Bradysia, *Corynoptera*, *Lycoriella*, *Pnyxia*, *Phytosciara*, *Sciara*
Oligotrophini (*Dasineura*, *Boletina* (now in Mycetophilidae)

Bradysia Winnertz, 1867 (= *Neosciara* Pettey, 1918; *Fungivorides* Lengersdorf, 1926 & *Heterosciara* L. 1930; *Semnomysia* Frey, 1942; *Lamprosciara* Frey, 1948) Sciaridae flies (65 species in US or Canada)

Bradysia *coprophila* (*Sciara* c. Lintner, 1895) (Tx or Ac in cave in Grundy Co., TN)

Bradysia *forciculata* (*Sciara* f. Lundbeck, 1898) (epigeal NJ/ Tx or Tp in GA, Dade Co.)
Bradysia near *globosa* = *Sciaria*

Bradysia *luravi* (*Sciaria* l. Johannsen, 1929) (PA/Tx or Ac in Page Co., VA & Jefferson Cp., WV)

Bradysia undet. sp(p). (3 sp. in NS caves; Tp or Tx in BC, NM, NV, sON, WA; Tp in AR, IL, KY, MO, TN, TX?; TTx or Ac in NWT; seAK sink),

Corynoptera Winnertz, 1867 (= *Psilosciara* Kieffer, 1909; *Geosciara* K. 1919; *Orinosciara* Legersdorf, 1941) Sciaridae flies (5 species in US or Canada)

Corynoptera near *subtrivialis* (*Neosciara* s. Pettey, 1918; *Bradysia* s.) (CA/Tx in IL)

Corynoptera undet. sp. or species (Tx in IL; Tx or Tp in GA, Dade Co.)

Dasineura Rondani, 1840 (gall midges) Sciaridae flies, Subfamily Oligotrophini

Dasineura *mali* (*Molobrus* m. Fitch, 1856; *Perrisia* m. Kieffer; *Lycoriella pauciseta* Felt, 1898) (NY/ Ttp in WA; Ac, Tx or Tp in KY)

Lycoriella Frey, 1942 (= *Hemineurina* Frey, 1942; *Niadina* Rapp, 1946; *Bradysiopsis* & *Coelostylina* Tuomikoski, 1960) (mushroom flies) Sciaridae flies (14 species in US or Canada)

Lycoriella mali = *Dasineura* m.

Lycoriella undescr. sp. (Tx or Tp in GA, Dade, Walker & Bartow Cos.)

Lycoriella undet. sp. (TTx? in IL, MO; Tx or Tp in BC (2 species), UT (Uinta Mts.); Tp in WA; 3 sp. TTx? sp. in WA; on porcupine dung in 2 NS caves)

Molobius - See *Sciara*

Pnyxia Johannsen, 1912 (= *Allostoomma* Schmitz, 1915) Sciaridae flies

Pnyxia *scabiei* (*Epidapus* s. Hopkins, 1895) (Europe, MA to OH, MO/ potato scab gnat/ Tx in KY; Ac in 1 seAK cave)

Phytosciara Frey, 1942- Sciaridae flies (once put in Phoridae)

Phytosciara *vulcanata* Steffan, 1973 (Tp in Kazumura C., HI Island, HI)

Platosciara Berg, 1899- Sciaridae flies

Platosciara undet. sp. (rare KS hyporheic)

Scatopsiara Edwards, 1927 - put in Scatopsidae

Sciara Meigen, 1803 (= *Lycoria* M. 1800; *Molobrus* Latreille, 1805; *Planetes* Walker, 1836; *Planatella* Westwood, 1840; *Nowickia* Kjellander, 1943) - Sciaridae flies

Sciara coprophila = *Bradysia* c.

Sciara near *globosa* Pettey, 1918 (S.c. in CA/Tx in AR, MO)

Sciara *inconstans* (*Molobius* i. Fitch, 1856) (sCanada to CA, VA/fickle midge/Tx or Tp in KY)

Sciara undescr. sp. 1? (Carlsbad C.(NM) & sp. #2 (IN))

Sciara undet. species (Tp or Tx in AZ, IL, IA, IN, MN, NJ, sON, TN, TX, WI; Tp in AL, GA)

shore flies - See Ephydriidae

SIMULIIDAE Newman, 1834 (black flies) Crosskey, 1990; C. & Howard, 1996; Kim & Merritt, 1986

sON undet genus in sON groundwater & hyporheic (rare). Incl. Subfamilies:

Subfamily Parasimuliinae Smart, 1945

Tribe Gymnopauidini (*Gymnopaids*) (now in Simuliinae)

Tribe Parasimulini (*Parasimulium*)

Subfamily Simuliinae Newman, 1834 - Undet. Ac or Tx genus in Vancouver Island, BC (*Gymnopaids*) (once in Parasimuliinae)

Tribe Prosimuliini Enderlein, 1921

(*Cnephia*, *Prosimulium* (subgenus *P.* Rouchard, 1906 s.str.), *Stegopterna*)

Tribe Simuliini Newman, 1834 (*Simulium* (subgenus *S.* Latreille, 1802 s.str.)

Boophthora venustum = *Prosimulium* v.

Cnephia Enderlein, 1921 (= *Astega* E., 1930) (buffalo gnat)

Simuliidae flies, Subfamily Simuliinae, Tribe Prosimuliini. (4 species in US or Canada)

Cnephia mutata = *Stegopterna* m.

Cnephia *ornithophilia* Davies, Peterson & Wood 1962 (MD hyporheic)

Gymnopaids Stone, 1949 - Simuliidae flies, Subfamily Simuliinae (also put in Parasimulunae, Tribe Gymnopauidini) (5 species in US or Canada)

Gymnopaids undet. sp. (Canada hyporheic)

Parasimulium Malloch, 1914 (= *Astoneomyia* Peterson, 1977) Simuliidae flies, Subfamily Parasimulunae, Tribe Parasimulini (3 species in US or Canada)

Parasimulium *crosskeyi* Peterson, 1977 (OR, WA/Tx in WA; obligate hyporheic in OR, WA)

Parasimulium *esselbaughi* Sommerman, 1964 (occasional hyporheic in OR)

Parasimulium (*Astoneomyia*) *melanderi* Stone, 1963 (Tx? in Vancouver Island, BC) Bibl.: Borkent & Currie 2001

Parasimulium (*Parasimulium*) *stonei* Peterson, 1977 (CA, WA & OR hyporheic/Tx in WA)

Prosimulium Roubaud, 1906 - Simuliidae flies, Subfamily Simuliinae, Tribe Prosimuliini. **Bibl.:** Peterson 1970. Hyporheic retreat during hostile conditions

Prosimulium (*P.*) *esselbaughi* Summerman, 1964 (Canada, AK, OR, WA/ outlets of hyporheic

zone)

Prosimulium *hirtipes* (Fries, 1824) (considered by some authors as not Nearctic) (PA hyporheic)

Prosimulium (*P.*) *mixtum* Syme & Davies, 1958 (AK, eCanada, neUS to SC/ Tx or Ac in sON)
Prosimulium mutatum = *Stegopterna m.*

Prosimulium (*Helodon*) *onychodactylum* Dyar & Shannon, 1927 (epigeal in CO, AK, s. to nCA, CO/ Canada stream hyporheic)

Prosimulium (*Nevermanni*) *pugetense* (Dyar & Shannon, 1927) (Canada, AZ, CA, ID, ME, MI, NH, NM, OR, UT, WA, WY/ OR hyporheic)

Prosimulium *saltus* Stone & Jamnback, 1955 (epigeal in WV, NY/ Tx in GA cave stream, Dade Co.)

Prosimulium undet. sp. or species (CO, PA hyporheic; AK resurgence)

Prosimulium (*Helodon*) *susanae* Peterson, 1970 (likely hyporheic in BC for stationary, non-feeding stages)

Prosimulium tuberosum = *Simulium t.*

Prosimulium (*Parahelodon*) *vernale* Shewell, 1952 (epigeal in ON/ MD hyporheic) **Bibl.:** Tarshish & Stuht 1970

Prosimulium (*Boophthora*) *venustum* (= *Simulium v.* Say, 1823; *S. moletum* Harris, 1841; *S. minutum* & *irritatum* Lugger, 1897; *Boophthora rileyana* Enderlein, 1922) (complex) (likely all US & Canada/Tx or Ac in sON)

Simulium Latreille, 1802 (=>40 syns.) (Riffle Smut; gnats) (66 species in US or Canada) Simuliidae flies, Subfamily Simuliinae, Tribe Simuliini.

Simulium *arcticum* Malloch, 1914 (= *S. brevicercum* & *nigresceum* Knowlton & Rowe, 1934) (Tx in AK)

Simulium *parnassum* Malloch, 1914 (epigeal in mts. of eNA/ Tx in GA cave stream, Dade Co.)
Simulium *pugetense* Dyar & Shannon, 1927 (occasional hyporheic in OR)

Simulium *tuberosum* (= *Melusina t.* Lundstrom, 1911; *Parasimulium t.*; *S. perisum* & *vandalicum* Dyar & Shannon, 1927; *S. turmale* Twinn, 1938; *S. twinni* Stains & Knowlton, 1940) (complex) (Canada, US, Europe/ Tx or Ac in sON)

Simulium (*S.*) *tuberosum* s.str. ("AB" Landau, 1962 cytoform (Finland, Norway, Canada, US)

Simulium undet. sp. or species (CO, KS & TX hyporheic; Tx? in MN; seAK resurgences, insurgences)

Simulium venustum = *Prosimulium* v.

Stegopterna Enderlein, 1930 - Simuliidae flies, Subfamily Simuliinae, Tribe Prosimuliini. (2 species in US or Canada)

Stegopterna *mutata* (complex) (*Prosimulium m.* Malloch, 1914; *Eusimulium permutatum* Dyar & Shannon, 1927; *Cnephia mutata*) (eCanada, eUS to LA/ Tx or Ac)

Stegopterna undet. sp. (Ac in se AK cave/insurgences),

SPHAEROCERIDAE (=Borboridae) ((small) dung flies)

Suborder Brachycera, infraorder Muscomorpha.

Bibl.: Gapasin 1972; S. Marshall 1990; Marshall & Peck 1984; Marshall & Roha'ek 1986; O.

Richards 1967

(Tx undet. genera & sp. in OH)

Subfamily Copromyzinae (*Crumomyia*)

Subfamily Limosininae (*Apteromyia*, *Leptocera*, *Limosina*, *Pseudocollinella*, *Rufolfina*, *Sclerocoelus*,

Spelobia, *Telomerina*, *Terrilimosina*, *Xenolimosina*) **Bibl.:** S. Marshall 1982; Roha'ek & S. Marshall 1986

Sphaeroceridae (Guano or (small) dung Flies) are a worldwide family of small, usually dull-colored flies found in abundance wherever there is decomposing organic material in which larvae develop as microbial grazers. Some species, especially cavernicolous ones, are polysaprophagous, but most species appear to be associated with decaying plants or fungi. As the common name "small dung flies" suggests, many species are associated with various kinds of feces. Species that are necrophagous, though few, are extremely abundant and are important components of the carrion-insect community.

Despite their ubiquity and abundance, sphaerocerids have little direct economic impact. They have been implicated as the major means by which nematodes are disseminated among mushroom houses (Haglund & Milne 1973), and they occasionally reach nuisance levels in food-processing plants and other buildings. As their microbe-associated habits suggest, sphaerocerids carry many pathogenic microorganisms (Greenberg 1971), but their reclusive habits preclude a major role in disease transmission. One species listed here, *Poecilosomella angulata*, has been implicated in human intestinal myiasis (Micks & McKibbin 1956). Little work has been done on the importance of the sphaerocerids that abound in economically important decomposer communities such as compost and manure, but some decay cycles such as the wrack cycle (seaweed) are mediated by sphaerocerid-dominated insect communities.

Apteromyia Vimmer, 1929 (= *Aptilomyia* V.1929; *Vseteckiella* V.1931) Sphaeroceridae flies, Subfamily Limosininae (2 species in US or Canada)

Apteromyia *claviventris* (= *Limosina c.* Strobl, 1909) V. (Europe/Tx on NY fungi)

Crumomyia Macquart, 1835 (once placed as subgenus of *Copromyza*) - Sphaeroceridae flies, Subfamily Copromyzinae (9 species in US or Canada)

Crumomyia maculipennis (Spuler 1925) = *Spelobia m.*

Crumomyia *pilosa* Norrbom & Kim, 1985 (Ac or Tx in Vancouver Island, BC)

Leptocera Oliver, 1813 (= *Limosina* & *Heteroptera* Macquart, 1835; *Coproica*, *Elachisoma* & *Pteremis* Rondani, 1835; *Rachispoda* Lioy, 1864; *Collinella*, *Opacifrons*, *Stenhammaria*, *Scotophilella*, *Coprophila* Duda, 1924; *Paracollinella* D.1924; *Poecilosomella* D.1925; *Collinellula* Strand, 1928) Sphaeroceridae flies, Subfamily Limosininae. **Bibl.:** Marshall 1982, 1984 (48 species in US or Canada)

Leptocera (*Rachispoda*) *atra* (*Limosina a.* Adams, 1903) (WA to MD, s.to FL, Mex./ Tx or Ac in NM, TN)

Leptocera (*L.*) *caenosa* (*L. c.* Rondani, 1880) (epigeal in Europe, SK to MI & NS/ Tp detritivore in GA (Dade & Walker Cos.), IL, (Crawford, Harrison, WA cos., S4/G4), KY (Carter Co.) NM (Carlsbad C., Eddy Co.) & TX) **Bibl.:** Banta 1907; Conn & Marshall 1991; Marshall & Peck 1984)

Leptocera (*L.*) *fontinalis* (*Copromyza f.* Fallen, 1826) (circumboreal, US, Carib/Tx? in seNM)

Leptocera (*L.*) *pararoralis*? Duda, 1925 (ON/Tx? In Lee Co., VA)

Leptocera sciaspidis = *Pseudocollinella s.*

Leptocera tenebrarum - see *Speolobia*

Leptocera prob. undescr. sp. (OR C., OR/Tx or Ac)

Leptocera undet. sp. or species (Tp or Tx in AR, GA, NM (El Malpais), PA, TN?, UT (Uinta Mts.). VA, WV; Tp in IL, NS (2 caves), VA (cave in Rockcastle Co), KY (2 caves); Tx in Marion Co., TN (Marion Co.); Ac or Tx in 1 seAK cave; rare KS hyporheic)

Limomyza Marshall, 1997 - Sphaeroceridae flies, Subfamily Limosininae

Limomyza *cavernicola* Marshall, 1997 (epigeal type locality in Mammoth Cave Natl. Park, KY/ Tp in CO, KY, MO, OK) **Bibl.:** Marshall & Fitzgerald, 1997

Limosina atra = *Leptocera a.*

Limosina stygia = *Spelobia tenebrarum*

Limosina undet. sp. 1-? (Ac or Tx in TN, NWT)

Limosina tenebrarum = *Spelobia t.*
Megaselia cavernicola - see Phoridae
Opalimosina sordipes = *Sclerocoelus s.*

Pseudocollinella Duda, 1924 (= *Spinotarsella* Richards, 1929)
Sphaeroceridae flies, Subfamily Limosininae (14 species in US or Canada)

Pseudocollinella *sciaspidis* (= *Leptocera s.* Spuler, 1924) (epigeal in WA, ID/ Tx or Ac in OR; Ac in WA)

Rudolfina Rohacek, 1987 (*Rudolfia* R., 1982 Homo.)
Sphaeroceridae flies, Subfamily Limosininae (1 species in US)

Rudolfina *cavernicola* Marshall & Fitzgerald, 1997 (type locality cave in Larimer Co., CO/ Tp or Tx/Ep in AZ)

Sclerocoelus Marshall, 1995 - Sphaeroceridae flies, Subfamily Limosininae (1 species in US or Canada)

Sclerocoelus *sordipes* (*Limosina s.* Adams, 1904; *Opalimosina s.*) (Nearctic/ Tx in IA, NY, TX)

Spelobia Spuler, 1924 (= *Leptocera*; *Eulimosina* & *Bifronsia* Rohacek, 1983)
Sphaeroceridae flies, Subfamily Limosininae. (37 species in US or Canada) **Bibl.:** Marshall, 1985a

Spelobia *bumamma* Marshall, 1985 (Tx or Tp in Vancouver Island caves, BC)

Spelobia *clunipes* (*Borborus c.* Meigen, 1830; *Limosina crassimana* Haliday, 1836; *Copromyza pygmaea* Zetterstedt, 1838; *Limosina negrinervis* Dahl, 1909) (Tx in NA)

Spelobia *maculipennis* (*Leptocera m.* Spuler, 1925; *Crumomyia m.*) (AK to CA/ Tx or Ac in CO; Ac or Tx in Vancouver Island, BC)

Spelobia *semiculata* (*Leptocera s.* Richards, 1964) (surface in Alberta, e.Canada, Manitoba, nIN, NE/ Tp in Alberta, IA, IL, IN, Manitoba, MO, NY, sON, VA, WI)

Spelobia *pseudosetaria* (*Limosina p.* Duda, 1918; *L. penetralis* Collin, 1925) (Tp or Tx in CO)

Spelobia *tenebrarum* (*Limosina t.* Aldrich, 1897; *L. stygia* Coquillett, 1897) (type locality in Wyandotte C., Crawford Co., IN/ Tb in AL (Jackson, Madison Cos.), AR (Washington Co.), GA (Chattooga, Dade & Walker Cos.), IL (Calhoun, Clark, Jackson, Monroe, Pope, Saline, Union Cos.), IN (all s.cos. with caves, incl. Crawford, Jennings, Monroe, Orange Cos. - S5/G5 or G4G5), KY (Carter, Edmonson (Mammoth C.), Hart, Todd, Warren Cos.), MO (Barry, Carter, Franklin, Howell, Jefferson, Laclede, Oregon, Perry, St. Louis, Stone, Taney, Sullivan, NY, OH, PA (Mifflin Co.), TN (De Kalb, Dickson, Van Buren Cos.), VA (Lee Co.), WV (Greenbrier Co.)/ Tb guanobic) **Bibl.:** Conn & Marshall 1991; Marshall & Peck 1984, 1985; Peck, 1976

Spelobia *tuberculosa* Marshall, 1985 (Tp in CO)

Spelobia undet. sp. (Tp or Tx in Kings Canyon Natl. Park, CA; (subgenus *Spelobia*) Tx or Ac in Tulare Co., CA)

Terrilimosina Rohacek, 1983 - Sphaeroceridae flies, Subfamily Limosininae. (3 species in US or Canada) **Bibl.:** Marshall 1987; Marshall & Peck, 1985

Terrilimosina *pexa* Marshall, 1985 (Tp in ON, AR, OK)

Terrilimosina *racovitzai* (*Limosina* r. Bezzi, 1911) (Europe, NE, Mid-West/ Tp in IL, IA, NY, ON, PA, WI)

Telomerina Rohacek, 1983 - Sphaeroceridae flies, Subfamily Limosininae (8 species in US or Canada) **Bibl.** Marshall & Rohacek 1984.

Telomerina *cana* Marshall & Rohacek, 1984 (type locality cave in Marshall Co., AL/ Tp in AL, GA, OK, TN)

Telomerina *chillcotti* Marshall & Rohacek, 1984 (Tx in TN, TX)

Xenolimosina Rohacek, 1983 - Sphaeroceridae flies, Subfamily Limosininae. (2 species in US or Canada) **Bibl.:** Marshall 1985, 1999

Xenolimosina *phoba* Marshall, 1985 (Ontario, PQ/ Tp?)

Xenolimosina *sicula* Marshall, 1985 (CA, Ontario, PQ, AR/ Tp? in 1 cave each in CA & CO)

STRATIOMYIDAE (soldier flies) Suborder Brachycera, Infraorder Stratiomyomorpha

undet. genus rarely found in hyporheic of SC coastal blackwater stream

Subfamily Clitellariinae

Tribe Clitellariini (*Cyphomyia*)

Subfamily Stratiomyinae

Tribe Oxycerini (*Euparyphus*)

Cyphomyia Wiedemann, 1819 - Stratiomyidae flies, Subfamily Clitellariinae, Tribe Clitellariini (2 species in US or Canada)

Cyphomyia undet. sp. (fossil in *Neotoma* woodrat midden, Puerto Blanco Mts., Pima Co., sAZ)

Euparyphus Gerstaecker, 1857 Stratiomyidae flies, Subfamily Stratiomyinae, Tribe Oxycerini (23 species in US or Canada)

Euparyphus undet. sp. (uncommon AZ hyporheic)

STREBLIDAE (batflies; webworms) (also subsumed as Subfamily Streblinae in Hippoboscidae) Wingless, red, & flat bodied. Eads et al, 1957; Kessel, 1925; Maa, 1965, 1971; Jobling, 1949; Ma, 1962.

undet. genera: Tx in AR.

Subfamily Trichobiinae (*Nycterophilia*, *Paratrichobius*, *Trichobius*)

Brasilia (put in Nycteribiidae)

Nycterophilia Ferris, 1916 (also put in Nycteribiidae or Subfamily Streblinae in Hippoboscidae)) Streblidae flies, Subfamily Trichobiinae (2 species in US or Canada)

Nycterophilia *coxata* Ferris, 1916 (CA to Mex. (Tx), Brazil, Antilles/ ectoparasite on AZ, CA *Macrotus californicus* (Tx, normal host) & *Macrotus waterhousi* & AZ *Leptonycteris nivalis* bats)

Nycterophilia *mormoopsis* Wenzel, 1976 (on TX, Central America, SA *Mormoops megalophylla*)

Nycterophilia undet. sp. or species (Tx? on AZ bats; ectoparasite on wTX *Mormoops megalophylla* bats)

Paratrichobius Costa Lima, 1921 (also put in Nycteribiidae or Subfamily Streblinae, Tribe Trichobiini in Hippoboscidae)) Streblidae flies, Subfamily Trichobiinae (2 species in US or Canada)

Paratrichobius *americanus* B. Peterson & Ross, 1972 (*cave in Pima Co., AZ/ Tx ectoparasite on AZ *Choeronycteris mexicana* bats)

Paratrichobius *longicrus* (Ribiero, 1907) (Tx ectoparasite on AZ *Choeronycteris mexicana* bats)

Penicillidia antrozoi = *Nycterophilia a.*

Trichobius Gervais, 1844 (= *Kolenatia* Rondani, 1876; *Kesselia* Curran, 1934) (also put in Nycteribiidae or Subfamily Streblinae in Hippoboscidae)) Streblidae flies, Subfamily Trichobiinae (9 species in US or Canada)

Bibl.: Ross 1961; Jobling, 1938; H. Smith 1934; Whitaker 1957; Wilson 1946; Zeve 1958, 1959; Zeve & Howell 1962, 1963, 1963a; Overal 1980; Zeve & Howell 1963; **Areas:** **AZ:** Ross 1960; **E:** Whitaker & Easterla 1974; **OK:** Zeve 1954, 1958; **IN:** Busacca 1975; **TX:** Kohls & Jellison 1948; Whitaker & Easterla 1975.

Trichobius *adamsi* Augustson, 1943 (AZ, CA, Mex./Tx? on ectoparasite on *Tadarida brasiliensis* (accidental) & AZ (Tx), CA, Mex. *Macrotus californicus* (normal host) bats) **Bibl.:** Ross 1959

Trichobius *corynorhini* (Cockrell, 1910) (= *T. quadrisetosus* Kessel, 1925; *T. major* q. Kessel,

1925) (WA to Mex., CO, OK to WV/ obligate ectoparasite on AR, AZ, CA, MT, OR, wTX, WA?, WV on *Antrozus pallidus*; WV, UT on *Myotis evotis*, AR, AZ (Tx), CA, CO, KS, KY (Tx), Mex., MO (Tx), MT OK, OR, WV (Tx) on *Corynorhinus rafinesquii*; occas. on man, AZ, AR, CA, CO, KS, KY, Mex., MO, OK, OR, wTX, UT, WV(Tx) *Corynorhinus townsendii* (major/ normal host), AR (Tx), KS, KY (Tx), NM (Tx): OK (Tx, accidental), WV (Tx) on *Tadarida b.*; TX *Myotis volans* ; KS (Tx), OK (Tx) *Myotis velifer* bats; Tx in VA) **Bibl.:** Ressel, 1952; A. Ross 1960, 1961

Trichobius *leionotus* Wenzel, 1976 (ectoparasite on wTX *Mormoops megalophylla* bats)

Trichobius *longipes* (Rudow). (Tx ectoparasite on AZ *Choeronycteris mexicana*, non-US bats in Caribbean, Central Amer., nSA)

Trichobius *major* Coquillett, 1899 (FL, CA to KS, s. to Guatemala, TX, FL/ ectoparasite on TX FL, KS, Mex., NM, OK (Tx) (also on cave walls), TX (also on cave walls) *Myotis velifer incautus* (major host), FL (Tx), KS *Myotis grisescens*; FL (Tx, one bats) *M. austroriparius*; KS (Tx) ,OK (Tx) ,TX(Tx) *Corynorhinus townsendii* & *Tadarida b.*; Tx on AR, CO, KY, TX *Corynorhinus rafinesquii* & AZ bats) **Bibl.:** Caire & Hornuff 1986; Caire & Sohrabi, 1985; Caire & Hornuff 1982; Caire, Hornuff & Ports 1981

Trichobius *major quadrisetosus* (=T. q.) (Tx ectoparasite on TX *Myotis velifer* bats)

Trichobius *mixtus* Curran, 1945 (=Xylota m. & Heliophilus m. Curran, 1941? in Syrphidae?) (Tx on AZ *Choeronycteris mexicana* bats) Bradshaw & Ross, 1961

Trichobius *parasiticus* Gervais, 1844 (Tx on CA *Macrotis californicus* bats)

Trichobius *sphaeronotus* Jobling, 1939 (Tx ectoparasite on AZ, NM, OK (also on cave walls), Mex., TX *Leptonycteris nivalis* (normal host), AZ, NM, Mex. *L. sanborni*, KS, OK *Myotis velifer*, KS, Mex.,OK,TX (also cave walls) *Tadarida b.*, TX *Mormoops m.* & Mex. *Macrotus californicus* bats)

Trichobius *truncatus* Kessel, 1925 (valid sp.?) (AZ,TX/ Tx ectoparasite on AZ,TX *M. calif.* bat, other bats in PR, Cuba)

Trichobius undet. sp. or species (ectoparasite on BC bats)

SYRPHIDAE (syrphid, flower, sweat, drone or hover flies; rattailed maggots)

Subfamily Eristalinae

Tribe Eristaliini, subtribe Eristaliina (*Eristalis*)

Tribe Chrysogastrini (*Chrysogaster*)

Subfamily Milesiinae

Tribe Volucellini (*Copestylum*)

Subfamily Syrphinae

Tribe Syrphini (*Dasysyrphus*, *Eupeodes*, *Syrphus*)

Chrysogaster Meigen, 1803- Syrphidae flies, Subfamily Eristalinae, Tribe Brachyopini (also put in Chrysogastrini (12 species in US or Canada)

Chrysogaster undet. sp. (MI lake benthic)

Copestylum Macquart, 1846 - Syrphidae flies, Subfamily Milesiinae, Tribe Volucellini

Copestylum (*Volucella*) *vesicularium* (*Volucella vesiculana* Curran, 1947) (epigeal Tx in GA, Grady Co.)

Dasysyrphus Enderlein, 1938 (= *Conosyrphus* Matsumura, 1918 (Homo.); *Syrphella* Goffe, 1944; *Dendrosyrphus* Dusek & Laska, 1967) Syrphidae flies, Subfamily Syrphinae, Tribe Syrphini (17 species in US or Canada)

Dasysyrphus undet. sp. (sON/Tx or Ac)

Eristalis Latreille, 1804 (= *Tubifera* Meigen, 1800; *Elophilus* M.1803; *Elophila* M.1904; *Helophila* & *Helophilus* Fabricius, 1805 (misspelled); *Eristaloides* Rondani, 1844; *Eristalomya* R.1857; *Erliops* Lioy, 1863; *Lathrophthalmus* Mik, 1897; *Eoseristalis* Kanervo, 1938) Syrphidae flies, Subfamily Eristalinae, Tribe Eristaliini, Subtribe Eristaliina (23 species in US or Canada)

Eristalis *tenax* (*Musca t.* Linnaeus, 1758) (= *Conops vulgaris* & *fuscus* Scopoli, 1763; *M. procina* DeGeer, 1776; *M. obfuscata* Gmelin, 1790; *Eristalis campestris*, *vulpinus*, *sylvaticus*, *hortorum* Meigen, 1822; *E. sinensis* Wiedemann, 1824; *E. alpinus* Strobl, 1894) (NA, Europe/Tx or Ac in PA)

Eupeodes Osten Sacken, 1877 (= *Metasyrphus*, *Macrosyrphus* Matsumura, 1917; *Posthonia* Enderlein, 1938; *Scaevosyrphus* Dusek & Laska, 1967; *Beszella* Hippa, 1968) Syrphidae flies, Subfamily Syrphinae, Tribe Syrphini (27 species in US or Canada)

Eupeodes *volucris* Osten Sacken, 1877 (*Syrphus perpallidus* Bigot, 1884; Snow, 1892 (Homo.); *E. braggii*, *weldoni* Jones, 1917 (BC to ON, s. to CA, Mex., LA/ Ac in Irion Co., TX)

Eupeodes undet. sp. (Tx or Ac in sON)

Syrphus Fabricius, 1775 (= *Syrphidis* Goffe, 1933)

Syrphidae flies, Subfamily Syrphinae, Tribe Syrphini (13 species in US or Canada)

Syrphus *rectus* Osten Sacken, 1875 (= *S. transversalis* Curran, 1921) (MB to PQ, s. to CO, NC, MO/ Tx or Ac in sON)

TABANIDAE (=Larvaevoridae) (horse & deer flies; peer & horse flies; gadflies, breezeflies, clegs & deerflies) Suborder Brachycera, infraorder Tabanomorpha
(undet. genus in brackish beach sediment at Lake Pontchartrain, LA)

Chrysops Meigen 1803 (deer flies) Tabanidae flies, Subfamily Chrysopsinae, Tribe Chrysopsini
(101 species in US or Canada)

Chrysops undet. sp. (TX sandy hyporheic)

Tabanus Linnaeus, 1758 (horse flies) - Tabanidae flies, Subfamily Tabaninae, Tribe Tabanini
(101 species in US or Canada)

Tabanus atratus Fabricius, 1775 (MS tidal marsh epifauna)

Tabanus dorsifer Walker, 1860 (*T. intensivus* Townsend, 1897; *T. hyalinipennis* Hine, 1903)
(Rare as dry channel hyporheic in Sycamore Cr. 32 km ne of Phoenix (Maricopa Co.), AZ)

Tabanus undet. sp. or species (TX, seVA hyporheic; seAk insurgence)

TACHINIDAE (parasitic flies; tachinid or tachina flies) **Bibl.:** Arnaud 1978

Subfamily Dexiinae

Tribe Eriothrixini (*Paradidyma*)

Subfamily Goniinae

Tribe Siphonini

Subtribe Siphonia (*Actia*)

Subtribe Nearina (*Phytomyptera*)

Subfamily Tachininae

Tribe Voriini (*Cyrtophleba*)

Tribe Tachinini (*Peleteria*)

Actia Robineau-Desvoidy, 1830 (= *Thryptocera* Macquart, 1834; *Gymnophthalma* Lioy, 1864; *Gymnopareia* Brauer & Bergenstamm, 1889; *Actiopsis* Townsend, 1917 & *Setasiphona* T., 1934)
Tachinidae flies, Subfamily Goniinae, Tribe Siphonini, Subtribe Siphonia (9 species in US or Canada)

Actia diffidens Curran, 1933 (BC to NS, s.to MI, NY/ Tx or Ac in sON)

Cyrtophleba Rondani, 1856 (= *Eucyrtophloeoba* Townsend, 1916)

Tachinidae flies, Subfamily Tachininae, Tribe Voriini (3 species in US or Canada)

Cyrtophleba undet. sp. Townsend (Ac in cave in Irion Co., TX)

Elfia = *Phytomyptera*,

Eucyrtophloebe = *Cyrtophleba rhois*,

Paradidyma Brauer & Bergenstamm, 1891 (= *Ceratomyiella* Townsend, 1891; *Atrophopalpus*, *Lachnomma* T., 1892; *Phytoadmontia* T., 1916; *Micromintho* T., 1919) Tachinidae flies, Subfamily Dexiinae, Tribe Eriothrixini (16 species in US or Canada)

Paradidyma *apicalis* Reinhard, 1934 (NC,FL, SW to Guatemala/Ac in cave in Culberson Co., TX)

Paradidyma undet. sp. (Ac in cave in Sutton Co., TX)

Peleteria Robineau-Desvoidy (*Faurella* R.1830; *Cuphocera* Macquart, 1845; *Palpibraca* Rondani; *Cyphocera* R., 1856; *Sphyricea* Lioy, 1864 *Sphyromyia* Bigot, 1884; *Chaetopeleteria* Mik, 1894; *Popelia* Bezzi,1894; *Tetrachaeta* Brauer & Berg., 1894; *Tessarochaeta*, *Peletieria* B., 1906; *Panzeriopsis* Townsend, 1915; *Pedeteriopsis* T., 1916; *Oxydosphyria* T., 1926; *Aphriosphyria* T., 1927; *Paracuphocera* Zimin, 1935 *Hemipeletieria* Zimin, 1961) Tachinidae flies, Subfamily Tachininae, Tribe Tachinini (38 species in US or Canada)

Peleteria undet. sp. (Ac in cave in Irion Co., TX)

Phytomyptera (*Elfia* Robineau-Desvoidy, 1850; *Schizotachina* Walker, 1852; *Craspedothrix* Brauer & Bergenstamm, 1893; *Phytomyzoptera* Bezzi, 1906; *Acronarista* Townsend, 1908; *Phasiostoma* T., 1915; *Phytomyzoneura* Stein, 1924; *Schizactia* T., 1926; *Procraspedothrix* T., 1932; *Apheloglutus* Greene, 1934; *Lispideosoma* Reinhard, 1943) Tachinidae flies, Subfamily Goniinae, , Tribe Siphonini, Subtribe Nearina (23 species in US or Canada)

Phytomyptera undet. sp. (Ac in cave in Hays Co., TX),

TANYDERIDAE (primitive crane flies) Suborder Nematocera, infraorder Ptychopteromorpha, Superfamily Ptychopteroidea

Protanyderus Handlirsch, 1909 - Tanyderidae flies

Protanyderus margarita Alexander, 1948 (BC to ID,OR,UT, live in wet sandy soil along larger streams /CO hyporheic) (3 species in US or Canada)

Protanyderus vanduzeei (*Protoplasia* v. Alexander, 1918) (CA hyporheic & epigeal)

Protanyderus vipio (*Protoplasia* v. Osten Sacken, 1877) (CA & OR hyporheic & epigeal)

TENDIPEDIDAE (subsumed in Chironomidae)

THAUMALEIDAE (= Orphnephilidae) (solitary midges) Infraorder Culicomorpha, Superfamily Culicoidea

Trichothaumalea Edwards 1929 - Thaumaleidae flies (3 species in US or Canada)

Trichothaumalea undet. sp. (Ac or Tx in Vancouver Island, BC)

TIPULIDAE (crane flies)

Suborder Nematocera, infraorder Tipulomorpha. CA: C.Alexander 1967. sON undet genus in groundwater & rare in hyporheic

Subfamilies incl.:

Cylindrotominae (*Cylindrotoma*)

Limoniinae

Eriopterini (*Chionea*, *Cryptolabis*, *Empedomorpha*, *Erioptera*, *Esperoconopa*, *Gnophomyia*, *Molophilus*, *Ormosia*)

Hexatomini (*Austrolimnophila*, *Dactylolabis*, *Hexatoma*, *Limnophila*, *Pilaria*, *Polymera*)

Limoniini (*Antocha*, *Dicranoptycha*, *Limonia*, *Megarhina*)

Pediciini (*Dicranota*, *Pedicia*, *Ula*)

Tipulinae

Tribe Tipulini (*Dolichopeza*, *Tipula*)

Tipulids are confined to temperate and cool climates. Adults are on the wing in spring and/or autumn and, especially in temperate and warm-temperate regions, during winter or, in colder regions, in summer. Adults often occur in caverns, mine shafts, cellars, hollow trees, and other dark places, but they attract more attention by their habit of swarming. They commonly form swarms in mid-winter when there is generally low activity among other insects. They may even swarm in cold conditions when snow is on the ground. In fact, winter gnats are active throughout the year, but are least conspicuous during the summer when they typically seek out cool, shady areas. The swarms are a communal courtship display performed by the males: females are attracted by the same conditions that stimulate swarming behaviour and will be present nearby, each trying to pair up with a male for mating. Their pronounced activity during the winter is why this group of flies are commonly known as winter gnats.

Larvae are scavengers in moist or wet terrestrial biotopes such as decaying leaves and vegetables, manure, fungi, stored roots and tubers, and burrows of rodents. From the southern islands of New Zealand, larvae have been reported from penguin droppings and bird nests.

There are over 200 species of crane flies and over 1500 of them live in North America. Crane flies have one set of wings, unlike dragonflies. Crane flies are usually brown or grey, some have dark markings on their wings. Crane flies have big compound eyes, small short antennae and small structures on their sides called halteres. Crane flies are common near water where vegetation is plentiful. Often times they are mistaken for giant mosquitoes as you can see if you see my picture below, but they really don't bite at all. In England crane flies are called "daddy-long-legs," which is the name we give a long-legged arachnid. Most crane flies grow to 10mm.-25mm. long. Crane flies belong in the class Insecta, the order Diptera, and several families including Tipulidae.

Antocha Osten Sacken, 1859 - Tipulidae flies, Subfamily Limoniinae, Tribe Limoniini (7 species in US or Canada)

Antocha *saxicola* Osten Sacken, 1859 (Ac or Tx in Franklin Co.,PA)

Antocha undet. sp. or species (se AK cave exsurgence; PA, PQ hyporheic)

Archilimnophila = *Austrolimnophila*

Austrolimnophila Alexander, 1920 (= *Archilimnophila* A.1934; *Limnophilaspis* A.1950; *Mediophragma* A.1954; *Phragmocrypta* A.1956) Tipulidae flies, Subfamily Limoniinae, Tribe Hexatomini (3 species in US or Canada)

Austrolimnophila undet. sp. (TTx in WA)

Chionea Dalman, 1816 - Tipulidae flies, Subfamily Limoniinae, Tribe Eriopterini (16 species in US or Canada) **Bibl.:** Bitsch 1955; Byers 1960

Chionea alexandriana Garrett, 1922 (BC to Alberta/Tx or Tp in OR,WA; Tx in CA)

Chionea cancellata Linnaeus, 1767 (wFL Gulf of Mexico infauna)

/

Chionea macnabeana Alexander, 1946 (epigean in OR/ Tx or Ac in OR)

Chionea scita Walker, 1848 (= *C. primitiva* Alexander, 1917) (E/ TTP or Tx in KY, WV)

Cryptolabis Osten Sacken, 1859 - Tipulidae flies, Subfamily Limoniinae, Tribe Eriopterini

Cryptolabis undet. sp. (shallow hyporheic in Sycamore Cr. 32 km ne of Phoenix (Maricopa Co.), AZ)

Cylindrotoma Macquart, 1834 - Tipulidae flies, Subfamily Cylindrotominae (3 species in US or Canada)

Cylindrotoma undet. sp. (Ac in se AK cave/insurgences)

Dactylolabis Osten Sacken, 1859 (= *Rhincnoptila* Nowicki, 1867; *Eudatylolabis* Alexander, 1950; *Coenolabis* Savchenko, 1969; *Bothrophorus* S.& Plyushch, 1984) Tipulidae flies, Subfamily Limoniinae, Tribe Hexatomini (20 species in US or Canada)

Dactylolabis (*D.*) *hudsonica* Alexander, 1931 (NF to TN,SC/Tx in sON)

Dactylolabis (*D.*) *montana* (*Limnophila m.* Osten Sacken, 1859) (NF s. to SC, sw.to IL, MO/ Tp or Tx in MO, sON)

Dactylolabis (*D.*) *postiana* Alexander, 1944 (OR to ID/ Tx in CA)

Dactylolabis (*D.*) *supernumaria* Alexander, 1929 (NF to NY/ Tx in sON)

Dicranoptycha Osten Sacken, 1859 - Tipulidae flies, Subfamily Limoniinae, Tribe Limoniini

Dicranoptycha cf. *occidentalis* Alexander, 1927 (WA to CA/Tx in Santa Cruz Co.,CA)

Dicranoptycha undet. sp. (Tx in Shasta Co.,CA)

Dicranota Zetterstedt, 1838 (= *Astrolabis* Osten Sacken, 1865; *Plectromyia*, *Rhaphidolabis* O.S., 1869; *Polyangaeus* Doane, 1900; *Claduroides* Brunetti, 1911; *Amalopina* B.1912; *Rhaphidolabina* Alexander, 1916; *Eudicranota*, *Paradicranota* A.1934; *Amalopinodes*, *Euamalopina*, *Dicranotella* A.1949) - Tipulidae flies, Subfamily Limoniinae, Tribe Pediciini (61 species in US or Canada)

Dicranota (*Rhaphidolabina*) *flaveola* (*Rhaphidolabis* f. Osten Sacken, 1869) (NF to NC, MI/ Tx in sON)

Dicranota undet. sp. or species (ON, OR, PA, WV hyporheic/ Tx or Ac in MN, seAK; seAK insurgences, resurgences)

Dolichopeza Curtis, 1825 (= *Apeilesis* Macquart, 1846; *Oropeza* Needham, 1908; *Megistomastix* Alexander, 1912; *Nesopeza* A.1914; *Mitopeza* Edwards, 1916; *Trichodolichopeza* A.1917; *Eunesopeza* A.1934; *Sinoropeza* A.1935; *Afrodolichopeza*, *Eudolichopeza* A.1956; *Prodolichopeza* A.,1963 Byers, 1961) - Tipulidae flies, Subfamily Tipulinae, Tribe Tipulini. (2 species in US or Canada) **Bibl.:** G. Byers 1952

Dolichopeza (*Oropeza*) *dorsalis* (O.d. Johnson, 1909; *O. rogersi* Alexander, 1922; *D. sessilis* A.19410) (ME, YT to NS, s.to BC, FL/ Tx in sON)

Dolichopeza undet. sp. (CO hyporheic)

Dolichopeza (*Oropeza*) undet. or undescr. sp. (TTxc in cave in Edmonson Co., KY) **Bibl.:** Sullivan 1962

Dolichopeza *tridenticulata* Alexander, 1931 (MB to PQ, ME to MO, GA epigeal/ Tx in GA (Dade Co.) & sON)

Dolichopeza *venosa* (*Oropeza* v. Johnson, 1909) (BC to NF, s. to SC/ Tx in sON)

Dolichopeza *walleyi* (*Oropeza* w. Alexander, 1931) (epigeal AB to PQ, NS, s. to MO, FL; Tx in GA (Bartow Co.))

Empedomorpha Alexander 1917 - Tipulidae flies, Subfamily Limoniinae, Tribe Eriopterini
Empedomorpha empedoides = *Erioptera* e.

Erioptera Meigen, 1803 (= *Polymeda* Meigen, 1800 (Unav.); *Polyraphia* M.1818; *Helobia* Lepeletier & Serville, 1828; *Symplecta* M.1830; *Psiloconopa* Zetterstedt, 1838; *Octavia* Bigot, 1854; *Ilisia*, *Chemalida*, *Ilisophila*, *Limnoea* Rondani, 1856; *Trimicra* Osten Sacken, 1861; *Limnoica* R.1861; *Idioneura* Philippi, 1865; *Mesocyphona*, *Hoplolabis*, *Acyphona* O.1869; *Podoneura* Bergroth, 1888; *Empedomorpha* Alexander, 1916; *Hespereriptera* A.1927; *Eripterella* A.1929; *Teleneura* A.1931; *Meterioptera* A.1934; *Tasiocerodes* A.1957; *Ctenerioptea* A.1961; *Teucheriptera*, *Lepidocyphona* A.1972; *Pseudერიოტერა* A.1975; *Lunaria* Savchenko, 1982) - Tipulidae flies, Subfamily Limoniinae, Tribe Eriopterini (29 species in US or

Canada)

Erioptera *empedoides* Alexander, 1916 (Ac in El Malpais Natl. Monument, nNM)

Erioptera undet. sp. or species (CO hyporheic; Tx or Ac in cave in VA; VA, MD brackish benthic)

Gnophomyia Osten Sacken, 1859 (= *Eugnophomyia* Alexander, 1947; *Idioglyphomyia* A.1956) Tipulidae flies, Subfamily Limoniinae, Tribe Eriopterini

Gnophomyia (*G.*) *tristissima* Osten Sacken, 1859 (NWT to ME, WI, s. to FL, TX/ Tx in IL)

Helius = *Megarhina*

Hesperoconopa Alexander, 1948 - Tipulidae flies, Subfamily Limoniinae, Tribe Eriopterini

Hesperoconopa undet. sp. (CO hyporheic)

Hexatoma Latreille, 1809 (= *Anisomera*, *Nematocera* Meigen, 1818; *Caloptera* Guérin-Meneville, 1831; *Peronocera* Curtis, 1836; *Eriocera* Macquart, 1838; *Pterocosmus* Walker, 1848; *Oligomera* Doleschall, 1857; *Arrhenica* Osten Sacken, 1859; *Physecrania* Bigot, 1859; *Penthoptera* Schiner, 1863; *Cladolipes* Loew, 1865; *Androsclosma* Enderlein, 1912; *Globericera* Matsumura, 1916; *Euhexatoma* Alexander, 1936; *Trimacromera*, *Corezelia* E.1936) Tipulidae flies, Subfamily Limoniinae, Tribe Hexatomini (35 species in US or Canada)

Hexatoma undet. sp. (nCA, CO, OR, TX, WV hyporheic)

Limnophila Macquart, 1834 (= *Idioptera* M.1834; *Phylidorea* Bigot, 1854; *Eloeophila* Rondani, 1856; *Lasiomastix*, *Prionalabis*, *Dicranophragma* Osten Sacken, 1859; *Ephelia* Schiner, 1863; *Eutonia* Wulp, 1874; *Idiolimnophila* Alexander, 1934; *Trichephelia* A.1938; *Dendrolimnophila* A.1949; *Dasylimnophila* A.1965; *Hesperolimnophila*, *Brachylimnophila*, *Arctolimnophila* A.1966; *Habrolimnophila*, *Indolimnophila* A.1968; *Atopolomnophila*, *Euphylidorea* A.1972; *Microlabina* Savchenko, 1986; *Paraphylidorea* Savchenko, 1986) Tipulidae flies, Subfamily Limoniinae, Tribe Hexatomini (93 species in US or Canada)

Limnophila *pilosella* Osten Sacken, 1859 (*Ulomorpha* p.) (Tx in IN; TTP in KY)

Limnophila undet. sp. (CO, TX hyporheic/ TTx in TN)

Limonia Meigen, 1803 (=>45 syns.) Tipulidae flies, Subfamily Limoniinae, Tribe Limoniini (111 species in US or Canada)

Limonia (*Discobola*) *annulata* (*Tipula* a. Linnaeus, 1758) (Eurasia s. to New Guinea, BC To NF, s. to OR, TN, VA/ Tx in sON)

Limonia (*Metalimnobia*) *annulus* (*Limnobia* a. Meigen, 1818; *L.cinctipes* Say, 1823; *L.triphaea* Alexander, 1954)) ssp. *cinctipes* (= *L.a.* Say, 1823) (AB to NF, s. to MS, FL, MO/ Tx in NS (one cave), sON)

Limonia (*Limonia*) *badia* (*Limnobia* b. Walker, 1848; *L. humidicola* (authors, not Osten Sacken)) (NS/ Tx in sON; Tx or Ac in PA)

Limonia cinctipes = *L. annulus*

Limonia (*Lanatipula*) *grahamina* Alexander, 1963 (Tx in Plumas, Shasta & Trinity Cos.,CA)

Limonia (*Lanatipula*) *gertschi* Alexander, 1963 (Tx in Calaveras Co.,CA)

Limonia *humidicola* (*Dicranomyia* h. Osten Sacken, 1859) (BC to NS, s. to CT, TN, Central Amer.,CA/ Tx in sON)

Limonia (*L.*) *indigena* i. (*Limnobia* i. Osten Sacken, 1859; *L. jacksoni* Alexander, 1917; *Limonia loloensis* A.1958)) (NF s.to SC, sw to IA,WI,TN/Tx in sON)

Limonia cf. *jacoba* (Alexander, 1919) (endemic to Kauia,Oahu, Maioui,HI/ Tp in Kazumura C., HI Island, HI)

Limonia (*L.*) *maculicosta* (*Limnobia* m. Coquillett, 1905) (Japan, AK to CA, e.to VT, VA/ Tx in sON)

Limonia *neobeculosa* Alexander, 1924 (Tx in NA, Europe)

Limonia (*L.*) *nubeculosa* Meigen, 1804 ssp. *sciophila* (= *L.s.* Osten Sacken, 1877) (AK to CA, CO/ Tx in Kings Canyon Natl. Park, CA)

Limonia undet. species (TTx in AZ, BC (subgenus *Dicranomyia*), CA, OR, KY, WA, WV; Tp in HI)

Limonia *perkinsi* (Grimshaw, 1901) (adventive in Kauai, Oahu, Molokai, Lanai, Maui, HI/ rare Ac or Tx in Kazumura C., HI)

Limonia (*Dicranomyia*) *stulta* (*Dicranomyia* s. Osten Sacken, 1859; *Furcomyia monticola* Alexander, 1911)) (PQ to GA,WI/ TTx in AR, sON)

Megarhina (= *Helius* Lepeletier & St. Fargeau et Serville, 1828; *Prohelius* Alexander, 1975)- Tipulidae flies, Subfamily Limoniinae, Tribe Limoniini (2 species in US or Canada)

Megarhina *flavipes* (= *Rhamphidia* f. Macquart, 1855; *Limnobia prominens* Walker, 1856) Li), (NS to FL/ Tx in sON)

Molophilus Curtis, 1833 (= *Eumolophilus* Alexander, 1921; *Trichomolophilus* A.1936; *Archimolophilus* A.1940; *Rhynchomolophilus* A.1965; *Promolophilus* A.1966; *Austromolophilus*, *Lyriomolophilus*, *Superbomolophilus* Theischinger, 1988) Tipulidae flies, Subfamily Limoniinae, Tribe Eriopterini (40 species in US or Canada)

Molophilus (*Molophilus*) undet. sp. CO hyporheic)

Ormosia Rondani, 1856 (= *Illisomyia* Rondani, 1856; *Rhypholophus* Kolenati, 1860; *Gonomyiella* Meunier, 1899; *Oreophila* Lackschewitz, 1935; *Scleroprocta* Edwards, 1938; *Neserioptera* Alexander, 1956; *Paraormosia* A.1965) Tipulidae flies, Subfamily Limoniinae, Tribe Eriopterini

Ormosia (*Scleroprocta*) *manicata* (*R.manicatus* Doane, 1900) (Japan, WA to NF, s. to ID, CA, PA/ CO, WV & OK hyporheic)

Ormosia nr. *romanovichiana* Alexander, 1953 (*Erioptera nubila* Osten Sacken, 1859 Homo.) (Ac, Tx or Tp in Mammoth C., KY)

Ormosia undet. sp. (CO, WV & OK hyporheic)

Pedicia Latreille, 1809 (*Amalopsis* Haliday, 1856; *Daimiotipula* Matsumura, 1916; *Oleranopelma* Enderlein, 1936; *Eucyphona* Alexander, 1949; *Pentacyphona* A.1968; *Ludicia* Hutson & Vane-Wright, 1969; *Tricyphona* Zetterstedt, 1837) Tipulidae flies, Subfamily Limoniinae, Tribe Pediciini (11 species in US or Canada)

Pedicia undet. sp. or species (Tx or TTx in AK, IL, IA, MO, OR, WA)

Pilaria Sintenis, 1889 (= *Eulimnophila* A.1919) Tipulidae flies, Subfamily Limoniinae, Tribe Hexatomini (11 species in US or Canada)

Pilaria undet. sp. (CO hyporheic)

Polymera Windemann, 1820 (= *Polymerodes* Alexander, 1920) Tipulidae flies, Subfamily Limoniinae, Tribe Hexatomini

Polymera undet. sp. (CO hyporheic)

Pterelachisus = *Tipula*

Tipula Linnaeus, 1758 (=>50 syns.) - Tipulidae flies, Subfamily Tipulinae, Tribe Tipulini. (323 species in US or Canada)

Tipula (*Nippotipula*) *abdominalis* Say, 1823 (PA, WI to NF, s. to KS, FL/ seVA hyporheic; TTx in GA (Walker Co.))

Tipula (*Bellardina*) *albimacula* Doane, 1901 (AZ epigeal/ TTx in TX)

Tipula (*Trichotipula*) *algonquin* Alexander, 1915 (MI to ON, s. to TN, NC/ TTx in AR)

Tipula (*Yamatotipula*) *caloptera* Loew, 1863 (WI to Nfl, s. to MO, FL/Tx in sON; (hyporheic? in NB)

Tipula near (*Lunatipula*) *dorsimacula* d. Walker, 1848 (*T. nubilis* Harris, 1835; *T. angustipennis* Loew, 1863; *T. breaulieui* Dietz, 1921) (epigean in BC to NS, s. to CA, NJ/ Tx in KY?)

Tipula (*Trichotipula*) *gertschi* Alexander, 1963 (**?type locality & 1 other cave in Calaveras Co., CA/ Tx or Tp/ G1)

Tipula (*Trichotipula*) *grahamina* Alexander, 1963 (type locality & 1 other cave in Plumas Co. & one cave in Shasta Co., CA/ Tx or Tp/ G1)

Tipula (*B.*) *rupicola* Doane, 1912 (Tx in CA, OR, AZ)

Tipula (*B.*) *schizomera* Alexander, 1940 (AZ,CA, Mex., UT/ TTx in cave in Edwards Co., TX)

Tipula undet. sp. or species (PA, PQ (rare), WV hyporheic; TTx in CA, MO, NM, OR, TN, TX, UT, WA)

Ula Haliday, 1833 - Tipulidae flies, Subfamily Limoniinae, Tribe Pediciini (3 species in US or Canada)

Ula *elegans* Osten Sacken, 1869 (AK to NS, s. to WY, SC/ Tx in sON)

Ulomorpha - see *Limnophila*
Yamatipula = *Tipula*

TRICHO CERIDAE (= Petauristidae, Melusinidae) (winter crane flies or Trichocerid gnats)
Suborder Nematocera, infraorder Psychodomorpha..
(*Diazosma*, *Trichocera*, Undet. genus on domestic cat in WA)

Archilimnophila = *Austrolimnophila* in Tipulidae

Diazosma Bergroth, 1913 (= *Trichoptera* Strobl, 1880 (homo.); D.Wallengren, 1881 (homo.)
Trichoceridae flies (1 species in US or Canada)

Diazosma *hirtipennis* (= *Trichocera* h. Siebke, 1863; *T. subsinuatum* Alexander, 1916) (BC to sCA, e. to NB,NY/Tx in CA,OR),

Gnophomyia - Now in Tipulidae
Pedicia - Now in Tipulidae
Simulium - Now in Simuliidae

Trichocera Meigen, 1803 (= *Petaurista*, *Melusina* Meigen, 1800; *Atractocera* M.1803;
Paleopetaurista Seguy, 1940; *Metatrachocera* Dahl, 1966) Trichoceridae flies (27 species in US or Canada)

Trichocera *colei* Alexander, 1919 (AK, BC, OR, WA/ Tx? in WA?),

Trichocera *columbiana* Alexander, 1927 (AK to CA/ TTx in OR, Tx in CA,WA)

Trichocera *fattigiana* Alexander, 1927 (epigean in GA, IL, TN; Tx in GA (Dade Co.))

Trichocera *hiemalis* (*Tipula h.* DeGeer, 1776) (Europe, ME, BC, Greenland/ TTx in sON, NS?)

Trichocera *maculipennis* Meigen, 1818 (Tp in NS, larvae rely on porcupine dung)

Trichocera *regelationis* (*Tipula r.* Linnaeus, 1758) (Sweden, Canada, nUS/Tp or Tx in IL, IA, sON; Tp in WA)

Trichocera undet. species (Tx in BC, IL, IN, MO/ 2 Tx or Tp sp. in OR C.,OR; Tx in GA (Dade & Walker Cos.)

moth flies - See **Diptera**: Psychodidae.

mosquito - See **Diptera**: Culicidae.

flora - Cox & Marchant, 1977; Cubbon, 1976. See palynology.

food (see feeding, human impacts, succession)
storage - Lavoie, King & Simonovic (1988)

food chain - A series of species linked by their food relationships; the passage of energy & materials from producer through a succession of consumers. Green plants, plant-eating insects, & an insect-eating bat can form a simple food chain. Most food chains in low-energy caves are simple & short compared to those on the surface.

food pyramid - The normally diminishing number of individuals & amount of organic material produced at each successive level along a **food chain**. The declining productivity at each level results from the constant loss of energy in metabolism as the energy passes along the chain. Biomagnification of toxins up the food pyramid can occur in polluted caves. See trophic level.

food web - An interlocking system of **food chains**. Since few animals rely on a single food source & since no food source is consumed exclusively by a single species of animals, the separate food chains in any natural community usually interlock & form a web.

foraging - see feeding

foul air zone – Area of cave where low air flow keeps the concentration of carbon dioxide, hydrogen sulfide or sulfur dioxide high enough to effect cavers and/or cavernicoles.

FPOM - fine particulate organic matter. Important as food for aquatic sp. due to large numbers of bacteria and fungi associated with FPOM

Foraminifera (see protists) - Any protist of order Foraminiferida (=Foraminifera) in Rhizopodea. One or two chambers of calcite (rarely silica or aragonite) or of agglutinated particles. Average size is .5mm but fossil forms reach 19 cm. Cambrian to present. Current species in brackish drilled wells in Turkmenistan. Occur as fossils in Carlsbad C.(NM) & as

marine infauna. Incl. fusulinid.

forest floor - Highly organic surface layer of a forest soil, including litter, **duff**, & leaf mold. Use **duff**.

fossil - Word search for Pleist. & fossil, esp. taxa such as fish, mammals, bacteria, bryozoans, Foramanifera, ostracods, sponges, . See **trace** fossil. Pleist. Insects (see beetles): J.Mead,Hevly & Agenbroad 1990.

fox - See **mammal**, **carvinore**, **canine**.

Frogs

Adapted for jumping with long, muscular legs and an elongated ankle to give a ‘five-cranked’ limb, a front end adapted to absorb the shock of landing: a shortened body – with as few as four vertebrae in the trunk, no ribs and the posterior vertebrae fused to for a rod called the urostyle and an elongated pelvis. About 20 families. May be the only amphibians to survive the Mesozoic.

Amphibian of Class Lisamphibia
Subclass Apsidospondyli

Superorder Salientia

Order Anura (about 3,500 species, first frog from early Triassic)

Suborder Neobatrachia

Superfamily Bufonoidea (= Hyloidea)

Hylidae (hylid frogs & treefrogs) (*Acris*, *Hyla*, *Hylactophryne*,
Pseudacris)

Superfamily Microhyloidea

Microhylidae (microhylid frogs & narrow-mouth frogs) (*Gastrophyne*)

Superfamily Ranoidea

Ranidae (ranid & true frogs) (*Rana*)

Bibl.: Barr, 1953b; CA: Lange, 1951; **OH:** C. Walker, 1946.

Hylidae (hylid frogs & treefrogs) (*Acris*, *Hyla*, *Hylactophryne*, *Pseudacris*)

Leptodactylidae (*Eleutherodactylus*, *Syrrhophus*)

Microhylidae (microhylid frogs & narrow-mouth frogs) (270 species in 61 genera)
(*Gastrophyne*)

Ranidae (ranid & true frogs) (*Rana*) **Paleo:** Holman 1966. See also **Toad**.

Acris Dumeril & Bibron, 1841 (cricket frogs) Hylidae frogs (2 species in US or Canada)

Acris *crepitans* Baird, 1854 (US e.of Rockies (except extreme se part), sON & nMex./ TTx in OK; Ac in TX)

Acris *crepitans blanchardi* Harper, 1947 (= *Acris gryllus* of some authors) (S, MW/ northern cricket frog/Ac in TX; Ttx or Ac in cave in Seminole Co.,OK)

Acris *gryllus* g. (Le Conte, 1825) (seVA through inland GA to LA/ US/ southern cricket frog/ Tx or Ac in nMS)

Eleutherodactylus Dumeril & Bibron, 1841 (eleuths, coquis (and robber frogs)) (= *Syrrophus*)
Leptodactylidae frogs (18 species in US or Canada)

Eleutherodactylus angusti latrans = *Hylactophryne a.*

Eleutherodactylus *latrans* (Cope, 1878) (TTx in TX). **Bibl.:** D. Jameson, 1949

Eleutherodactylus *planirostris* p. (*Hylodes p.* Cope, 1862) (Cuba, Bahamas, alien in Mex., FL, LA/ Tx in FL/ greenhouse frog)

Gastrophryne Fitzinger, 1843 - Microhylidae frogs (2 species in US or Canada)

Gastrophryne *olivacea* (*Engystoma o.* Hallowell, 1857 "1856") (Great Plains narrow-mouthed Frog/eNb & wMO through OK & TX to n.Mex & sAZ/ Tx in TX)

Hyla Laurenti, 1768 - Hylidae frogs Hylidae (13 species in US or Canada)

Hyla undescr. sp. (Rancholabrean extinct in Arrendondo Site, Alacua Co.,FL),

Hyla *cinerea* (*Calamita c.* Schneider, 1792) (DE s. along coastal plain into FL, w. To s TX & n. to cAR & wTN to IL / green treefrog/ Tx or Ac in nMS)

Hyla *crucifer* Wied-Neuwied, 1838 (E to nFL & sCanada / spring peeper/ Ac in MD, NJ (1cave), OK)

Hyla *eximia* Baird, 1854 (mts. of cAZ & NM/ mountain treefrog/ Ac in nNM)

Hyla *gratiosa* LeConte, 1856 (coastal plain from seVA to sFL & LA; disjunct in nGulf states, TN & KY, introduced into sNJ/ barking treefrog/ Ac or TTx in FL)

Hyla pacifica & regilla = *Pseudoacris r.*

Hyla *versicolor* LeConte, 1825 (sON, ME to nFL, w. to cTN, n. to MB/common gray tree frog/Ac in TX; Tx or Ac in TN)

Hylactophryne Lynch, 1968 - Hylidae frogs (1 species in US)

Hylactophryne *augusti* (*Hylodes a.* Duge's in Brocchi, 1879) (se US to sMex./barking frog/ Tx in seTX) **Bibl.:** McAlister, 1954,

Pseudacris Fitzinger, 1843 (chorus frogs (and spring peepers)) (*Limnaeodius*) - Hylidae frogs (7

species in US or Canada)

Pseudacris *brachyphona* (Cope, 1889) (seOH, swPA to eKY, eTN, WV (except extreme e.), cAL, disjunct in WV, MS/ mountain chorus frog/ TTx or Ac in PA; Ac in OH)

Pseudacris *maculata* (*P. triseriata m.* Agassiz, 1850; *P. nigrata septentrionalis*, *Chrophilus s.*) (nwCanada near Great Bear Lake to nON, s. to nMI & nNM, w. to cUT, eIT, eCO to BC/ boreal chorus frog/ Ac or Tx in nCO (1cave))

Pseudacris *regilla* (*Hyla r.* & *H. pacifica* Baird & Girard, 1852) (sBC to wMT to sBaja/Pacific treefrog or chorus frog/ Tx? in CA; TTX in Vancouver Island, BC) **Bibl.:** Graham, 1961-3

Pseudacris *streckeri* H.Wright & Wright, 1923 (discontinuous in scUS, wcIL, seMO, OKs.to Gulf/ Pleist. in Miller's C.,TX; Ac in cave in Williamson Co., TX) **Bibl.:** Holman,1966

Pseudacris *triseriata* (Wied-Neuwied, 1838) (ncOK, wAR s.to Gulf ,disjunct IL, seMO,neAR/(western) chorus frog/Wisconsinan w. extralimital in Dry C., NM/ Ac or Ttx in cave in Seminole Co., OK)

Pseudacris triseriata maculata = *P. m.*

Rana Linnaeus, 1758 (true frogs) Ranidae frogs (26 species in US or Canada) **Bibl.:** Barr, 1953a; D.Brown, 1984

Rana *aurora* Baird & Girard, 1852 (coastal BC, s. to Baja CA/ red-legged frog/ TTx in WA)

Rana *berlandieri* Baird, 1854 (Rio Grande leopard frog) (seTX, sAZ,s eNM & adjacent Mex./Ttx in cTX)

Rana *boylii* Baird, 1854 (sBC to Baja/yellow-legged frog/ w.OR to n.Baja CA/TTx or Ac in CA)

Rana *catesbeiana* Shaw, 1802 (E (except sFL), n. to s.Canada, w. to central Plains, s. to Mex., / bullfrog/ cosmopolitan alien/ Tx or Ac in FL, IL, MO, TN, PA, SC, TN, TX, VA; Ac in AR, MO)

Rana *clamitans* Latreille, 1801

Rana *clamitans clamitans* Latreille, 1801 (green frog/ E to s.Canada, s. to c.FL & eTX, alien in BC, UT, HI/ Tx or Ac in MO (possibly), nMS, NJ (1cave), PA; TTx in IL, TX; Ac in AR, FL, GA (Walker Co.), IL, IN, KY) **Bibl.:** Buhlmann 2000

Rana *clamitans melanota* (Rafinesque, 1820) ((northern) green frog/ TTx in MD; TTx or Ac in PA,WV(one cave); Ac in GA)

Rana *grylio* Stejneger, 1901 (SC & eTX along coastal plain to peninsular FL/ pig frog/ Pleist. fossil in FL (Haile Pit; Tx or Ac in cave in Alachua Co.,FL)

Rana palustris Le Conte, 1825 (E from Quebec to AL,eTX/ pickerel frog/ Tx in AL, AR (Baxter Co.), KY, MS; TTx in AR, GA (Walker Co.), MD, MO, NY, OK, PA, TN, VA(1 cave), WV; Ac or TTx in GA, IL/ OK T&E) **Bibl.:** Brode 1960a; D.Brown 1984; Buhlmann 2000; Resetarits & Aldridge 1988: J. Brown & Boschung 1954; Resetaritis & Aldridge 1981

Rana pipiens Schreber, 1782 (northern leopard frog /n.AZ, wNV & WA to s.Canada, e.to seCanada, NJ/ TTx in AL, FL (feed on bats), IN, MS, NJ, OK, TX; TTx or Ac in AR, KY, MD, MO, OH, PA/ KY T&E Species of Concern). **Bibl.:** Creel 1963; Rand 1950

Rana sphenoccephala Cope, 1889 (sNY to sFL, w.to TX, eOK, n. to ecKS/ southern leopard frog/ Tx or Ac in cave in Alachua Co.,FL)

Rana sylvatica s. (*R.s.* LeConte, 1825) (AK & Labrador s. to n.ID, MN, nGA, MD/ wood frog/ Tx or Ac in AR, IN, KY, MD, NJ, NY, PA, WV; Ac in MD)

Rana utricularia u. Harlan, 1825 (= *R. spenoccephala* Cope, 1889) (sNY to Atlantic coastal plain to sFL, w.to eTX, n.to eKS,sIL,sOH (excludes most of Appalachians)/ Tx in AR, FL, MS/ southern leopard frog)

Syrrhophus Ciope, 1878 (chirping frogs) - Leptodactylidae frogs (3 species in US or Canada)

Syrrhophus marnocki Cope, 1878 (cliff (chirping) frog/ Edwards Plateau to edge of Stockton Plateau/ TTx in seTX) **Bibl.:** D. Jameson, 1952, 1955

fulvic - Mix of colourless organic acids that are soluble in weak acid, alcohol or water.

Fungi

(see also coccidiomycosis, histoplasmosis) - **Current** species of the Kingdom Mycophyta, Mycota (or Fungi). All fungi have cell walls with chitin (also found in animals) and have a distinct group of enzymes to metabolize the amino acid lysine; fungus-like kingdoms have cellulose cell walls more like that of plants and lack that group of enzymes. About 56,500 known species. Fewer than 2% aquatic, mostly freshwater. Main body usually made up of mass of threads(hyphae) that form the mycelium that penetrates its host (as a parasite or symbiot) or organics (as a saprophyte, the most common lifestyle) and secretes enzymes that digest its food. Some fungi are single celled and reproduce by budding ('yeasts'), especially 'true yeasts' in the Ascomyocota. Most species of Ascomycota and Basiomycota produce epigeous fruiting bodies (toadstools). Others are hypogeous (fruiting underground, like truffles). The 'lower fungi' include the presumably primitive chytridiomycotes and basidiomycotes. They lack hyphae cross-walls found in the 'higher fungi' (Ascomycota and Basidiomycota).

Cave microfungi usually are more important as macroinvertebrate food than are bacteria. Some are epizoic or parasitic. Bat guano fungi can support mites & flies with pseudoscorpions as main predator. Incl. **mushroom**, mold, **mycelium**. Barlocher & Kendrick, 1973; R. Crawford, 1976c; Cohen, 1985; Coumartin, 1963; Cunningham, et al.,1995; Griffiths,1978; Hasselbring et al., 1975; Hunter & Thomas,1975; Keith, 1973; Lavoie, 1981c; Scott & Holland,1961; Hunter &

Thomas 1977; Thaxter, 1893;. **Areas:** **BC:** A. Griffiths; **CO:** Hament 1996; **KY:** Brashear et al., 1967; Lavoie 1981c; Maheu, 1926-a ; Trepasso & Kaletsky 1994; **MI:** Volz & Yao, 1991; B. Patterson 1974; **VA:** G. Dickson & Kirk, 1976; Rutherford & Huang, 1994; W. Scott & Holland, 1958; **WA:** Crawford 1976c. Incl. Phylums/Divisions/groups incl.

Class Myxomycetes ((true, acellular or plasmodial) slime molds) (primitive fungi in which naked cells are amoeboid in vegetative state but during reproduction either fuse into multinucleate mass of protoplasm (plasmodium) or aggregate without fusing (aggregation plasmodium). Some cells become spores formed in sporangia.

Phylum or Division Ascomycota (=Eumycota, Ascomycotina)
(true yeasts, moulds, morels & truffles)

Subdivision or Subphyllum Ascomycotina (sac fungi)

Class Euascomycetes (=Perithecial Ascomycetes?)

Subclass Pyrenomycetes

Order Laboulbeniales Laboulbeniaceae (*Rhachomyces*)

Order Hypocreales

Hypocreaceae (*Gibberella*)

Niessliaceae (*Monocillium*)

Class Ascomycetes

Subclass Hemiascomycetidae

Order Endomycetales (yeasts)(or in Subclass Plectomycetidae)

Endomycetaceae (*Byssosclamyces*)

Melaconiaceae (once in Melaconiales) (*Aureobasidium*,)

Subphyllum Pezizomycotina

Class Eurotiomycetes

Subclass Plectomycetes

Order Eurotiales (blue molds) (*Gymnoascus*) (now in Onygenales)

Cephalothecaceae (*Cephalosporium*)

Order Onygenales (also put in Class Euascomycetes & Subclass Plectomycetes)

Anthrodermataceae (*Trichophyton*)

Gymnoascaceae (*Gymnoascus*)

Onygenaceae (*Coccidioides*, *Histoplasma*)

Order Sordariales

Chaetomiaceae (*Chaetomium*)

Class Leotiomycetes

Order Helotiales (also put in Class Euascomycetes, Subclass Discomycetes)

Sclerotiniaceae (*Botrytis*)

Class Pezizomycetes

Subclass Hymenoascomycetidae

Order Pezizales (morels & saddle fungi)

(also put in Class Euscomycetes, Subclass Discomycetes)

Pezizaceae (*Plectania*)

Class Sordariomycetes (=Pyrenomycetes, = Zygomycete in part)

Subclass Hypocreomycetidae

Order Microascales (also put in Class Euscomycetes & Subclass Plectomycetes)

Microascaceae (*Microascus*)

Order Sphaeriales (also put in Class Pyrenomycetes)

Amphisphaeriaceae (*Pestalotia*)

Sphaeriaceae (*Xylaria*)

Phylum or Division Basidiomycota (club fungi; smuts, rusts, jellies, mushrooms & brackets)

Subdivision Basidiomycotina

Class Basidiomycetes (or Class Homobasidiomycetes)

Subclass Phorianaes

Order Fomitopsidales

Fomitaceae (*Fomes*)

(also put in Order Aphyllophorales, Family Polyporaceae)

Subclass Holobasidiomycetidae

Order Agaricales (or in Subclass Agaricanaes)

Agaricaceae (*Coprinus* (now in Coprinaceae), *Cunninghamella*, *Hypholoma*)

Clavariaceae - now in Cantharellales

Corticaceae (*Merulius*)

Coprinaceae (*Coprinus*)

Entolomataceae (*Entoloma*)

Subclass Cantharellanaes

Order Cantharellales

Clavariaceae (*Pistillaria*)

Class Urediniomycetes

Order Sporidiales

Sporidiaceae

(*Rhodotorula*) (once put in Blastomycetes)

Chromista Group (or Division Phycomycetes) (algal fungi, lower fungi) incl. Chytridiomycetes, Oomycetes and Zygomycetes)

Class Zygomycetes

Order Mucorales

Family Mucoraceae (*Phycomyces*)

Phylum Eumycota or Omycota

Subdivision Mastigomycotina

Class Chytridiomycetes (or as Phylum Chytridiomycota)

Order Chytridiales

Series Inoperculatae

Achlyogetonaceae (also put in Oomycetes) (*Achyla*)

Class Oomycetes (also put in Chromista Group)

Order Peronosporales

Pythiaceae (*Pythium*)

Order Saprolegniales

Saprolegniaceae: *Saprolegnia*)

Fungi Imperfecti (= Deuteromycota) (sometimes treated as a phylum but is a grab bag of asexual species with uncertain relationships)

Order Agonomycetales

Agonomycetaceae (*Papulospora*)

Division Coelomycota

Class Coelomycetes

Section Peyronellaea

Order Sphaeropsidales (= Sordariales?)

Phomaceae (also subsumed in Sphaerioidaceae) (*Phoma*)

Sphaerioidaceae (*Peyronellaea*, *Phoma* (also put in Phomaceae))

Class Deuteromycetes

Subclass or Division Deuteromycotina

Torulopsidaceae (*Candida*, *Cryptococcus*, *Rhodotorula*))

Order Eutremellales

Auriculariaceae (*Drechslera*)

Order Hyphomycetales

Family Dematiaceae (put in Class Hyphomycetes, Order Moniliales)

Family Onygenaceae (now in Subphylum Pezizomycotina, Class

Eurotiomycetes)

Family Moniliaceae (now put in subclass Hyphomycetidae)

Family Stilbaceae (*Papulospora*)

Order Moniliales

Family Monilaceae

Subfamily Hyalosporae (*Doratomyces*)

Order Tuberculariales

Tuberculariaceae (*Fusarium*, *Epicoccum*)

Class Hyphomycetes

Order Moniliales

Dematiaceae (*Alternaria* (once put in Dothideales), *Cladosporium*, *Curvularia*, *Gliomastix*, *Helminthosporium*, *Humicola*, *Nigrospora*, *Rhynchosporium*, *Scopulariopsis*, *Tichocladium*, *Ulocladium*)

Moniliaceae (also put in Order Hyphomycetales

(*Cylindrocladium*, *Gliocladium*, *Hormiactis*, *Paecilomyces*, *Penicillium*, *Pithomyces*, *Sporotrichum*, *Trichoderma*, *Verticillium*)

Subfamily Hyalosporae: *Doratomyces*

Class Dothideomycetes

Order Dothideales (*Alternaria*) (see above)

Class Hyphomycetes (*Gliomastix*, *Alternaria* (now in Dothideomycetes),

Balansieae (*Acremonium*)

Lasiophaeriaceae (*Aspergillus*, *Gliomastix*, *Microsporium*)

Order Bacillariophyceae

Suborder Raphidineae

Nitzshiaceae

(*Chrysosporium*, *Cylindrocladium*, *Curvularia*, *Doratomyces*, *Drechslera*, *Gliocladium*, *Humicola*, *Hormiactis*, *Monocillium* (now in Niessliaceae),

Nigrospora,

Paecilomyces, *Penicillium*, *Pithomyces*, *Scopulariopsis*, *Trichophytum*)

Order Myxosporidia

Superfamily Myxosporidea

Alatasporidae (*Alataspora*)

Class Pneumocystidomycetes

Order Pneumocystidales

Saccharomycetaceae (*Saccharomyces*)

Division or Phylum Zygomycota (pin molds & allies; terrestrial fungi)

(appears polyphyletic and mixed up with chytrids)

Class Trichomycetes (<200 species, all parasites or commensals in arthropod guts)

Order Eccrinales

Eccrinaceae (*Enterobryus*)

Class Zygomycetes (900 species)

Order Entomophthorales (mostly parasites of insects)

Entomophthoraceae (*Basidiobolus*)

Order Mucorales (mostly saprophytes)

Cunninghamellaceae (*Cunninghamella*)

Mortierellaceae (*Mortierella*) (once placed in Mucoraceae)

Mucoraceae (*Mucor*, *Rhizopus*)

Syncephalastraceae (*Syncephalastrum*)

Achyla Nees, 1823 (water mold fungi) Achlyogetonaceae fungi in Subdivision Mastigomycetes, Class Oomycetes or Chytridiomycetes (*Achyla* once put in Saprolegniaceae, subfamily Saprolegniae in Order Vaucheriales)

Achyla undet. sp. (TX)

Acremonium Link, 1809 ex E. M. Fries, 1832 - Balansieae fungi, Class Hyphomycetes

Acremonium *cerealis* (Karst.) W. Gams, 1971 (WV cave)

Acremonium *strictum* W. Gams, 1971 (*Cephalosporium acremonium* Auct. Non Corda) (cosmopolitan epigeal/ in WV cave)

Actinomyces - Harz, 1877 - Actinomycetaceae - put in bacteria

Alataspora Ingold, 1942 - Alatasporidae - Myxosporidia, Myxosporidea - Aquatic hyphomycetes Ingoldian - mitosporic fungi

Alataspora undet sp. (hyporheic biofilm in NB?)

Alternaria Nees, 1816 (1817) - Dematiaceae fungi, Class Dothideomycetes

Alternaria *alternata* (Fr.) Kreissler or Keissl. (cosmopolitan epigeal/ in TX cave)

Alternaria undet. sp. or species (cave in WV (Jefferson Co.) & VA (Bath Co.))

Aspergillus Fries, 1832 (mitosporic fungi) - Class Hyphomycetes, Lasiophaeriaceae fungi

Aspergillus *aureolatus* Munt.-Cvetk. & Bata 1964 (in WV cave)

Aspergillus *caespitosus* Raper & Thom (SW epigeal/ in WV cave)

Aspergillus *candidus* Link (Cave near Victoria, BC)

Aspergillus *cremeus* Kwon-Chung & Fenell, 1965 (Cave near Victoria, BC)

Aspergillus *flavus* Link (Cave near Victoria, BC)

Aspergillus *fumigatus* Fresen., 1863 (Cave near Victoria, BC)

Aspergillus *glaucus* Fries, 1832 (Cave near Victoria, BC)

Aspergillus *niger* Van Tiegh. (cosmopolitan epigeal/ in MI, TX, WV, VA caves)

Aspergillus *ochraceus* G. Wilh., 1877 (Cave near Victoria, BC)

Aspergillus *sclerotiorum* Huber, 1933 (= *A. fumigatus* var. *s.*) (Global epigeal/ in WV cave),

Aspergillus undet. sp. or species (caves in MN, NY, VA, WV)

Aspergillus *ustus* (Bainier) Thom & Church (global, esp. (sub)tropics/ in TX cave)

Aspergillus *versicolor* (Vuill.) Tiraboschi (cosmopolitan epigeal/ in WV cave)

Aspergillus *wentii* Wehmer (cosmopolitan epigeal/ in TX cave)

Aureobasidium Viala & G. Boyer, 1891 (black yeast) Melaconiaceae fung in in Order Endomycetales (once in Melaconiales)

Aureobasidium *pullulans* (de Bary) Arnaud, 1918 (MI, VA, WV caves)

Basidiobolus Eidam, 1886 - Entomophthoraceae fungi, Order Entomophthorales

Basidiobolus *ranarum* Eidam, 1886 (in *Typhlotriton speleus* cavefish, many salamanders, frogs sp.)

Botrytis E.M.Fries, 1832 - Sclerotiniaceae fungi, Order Helotiales

Botrytis undet. sp. (cave in Bath Co., VA)

Byssoschlamys R. Westling, 1909 (holomorph of Paecilomyces) Endomycetaceae fungi in Order Endomycetales

Byssoschlamys *fulva* Oliver & Smith, 1933 (WV caves)

Candida Berkhout, 1923 - Torulopsidaceae fungi, Division Deuteromycotina

Candida *albicans* (C.P. Robin) Berkhout, 1923 (on dead *Hadenoeus subterraneus* crickets and *Neotoma magister* woodrats in Mammoth Cave, KY) **Bibl.:** Brashear, Wiseman and Barr 1967.

Candida undet. sp. (bat guano in seNM caves)

Cephalosporium Corda, 1839 - Cephalothecaceae, Class Hyphomycetes

Cephalosporium *lamellaecola* Smith (Lehman C., NV)

Cephalotrichum Link, 1809 (= *Stysanus* F.J.Morton & G.Smith, 1963) (uncertain family placement)

Cephalotrichum undet. sp. (cave in Jefferson Co., WV)

Chaetomium Kunze, 1817 - Chaetomiaceae, Order Sordariales:

Chaetomium *distortum* L.M. Ames, 1963 (TX cave)

Chrysosporium Corda, 1833 - Onygenaceae? Similar to *Trichopyton* in Class Hyphomycetes

Chrysosporium *indicum* (H.S. Randhawa & Sandhu (?) Garg, 1966 (MI cave)

Chrysosporium *pannorum* (Link) Hughes (= *Geomyces p.* Singler & Carmichael) (MI, WV)

Chrysosporium undet. sp. (caves in WV (Jefferson Co.) & VA (Bath Co.))

Cladosporium Link, 1816 - Order Moniliales, Dematiaceae fungi, Subfamily Didymosporae

Cladosporium *cladospripoides* (Fres.) de Vries (WV cave)

Cladosporium undet. sp. or species (VA, WV caves; bat guano in TX; bat guano in seNM caves)

Coccidioides G.W. Stiles in Rixford & Gilchris, 1896 - Onygenaceae fungi

Coccidioides *immitis* Rixford & Gilchr., 1896 (CA to Argentina/ in Indian middens in CA; in bat guano in TX; NM caves). One of the most common cause of serious pericarditis and coccidioidomycosis (incidences of coccidioidomycosis increased after dust storms in dry areas).

Bibl.: Lacy & Swatek, 1974

Coprinus (Persoon ex E.M. Fries, 1797) S.F. Gray, 1821 Coprinaceae fungi in Agaricales

Coprinus *micaceus* (Bull ex. Fries) Fries (PA, WV caves)

Cryptococcus Kuetzing, 1969 - Torulopsidaceae fungi, Division Deuteromycotina

Cryptococcus undet. sp. or species (bat guano in TX cave)

Cryptococcus *neoformans* (Sanfelice) Vuillemin (bat guano in NM caves)

Cunninghamella Matr., 1903 - Cunninghamellaceae fungin in Muscorales

Cunninghamella *echinulata* var. *elegans* (C.e. Lendn.) Lunn & Shipton, 1983 (TX cave)

Curvularia Boedijn, 1933 (mold, filamentous fungi) Dematiaceae fungi in Class Deuteromycetes

Curvularia *senegalensis* (Speg.) Subram, 1956 (TX cave)

Curvularia undet. sp. (caves in WV (Jefferson Co.) & VA (Bath Co.))

Cylindrocarpon H.W.Wollenweber, 1913 - Hypocreales

Cylindrocarpon undet. sp. (cave in Jefferson Co., WV)

Cylindrocladium Morgan, 1982 - Moniliaceae fungi in Class Hyphomycetes

Cylindrocladium undet. sp. (Lechuguilla C., NM)

Dictyostelium Brefeld, 1869 (dictyostelid cellular slime molds) (put in protists in Dictyoseliomycota)

Doratomyces Corda, 1837 - Monilaceae fungi in Class Hyphomycetes

Doratomyces undet. sp. (VA cave)

Drechslera S. Ito, 1930 - Auriculariaceae fungi, Class Hyphomycetes, Order Eutremellales
Drechslera *australiensis* (Bugnicourt) M.B. Ellis, 1971 (TX cave)
Drechslera *ex* M. Ellis, 1971 (TX cave)

Drechslera *halodes* (Drechsler) Subram. & Jain, 1966 (TX cave)
Drechslera *teres* (Sacc.) Shoemaker (TX cave)

Enterobryus Leidy, 1850 – Eccrinaceae fungi in Order Eccrinales
Enterobryus *oxidi* Lichwardt (in GA cave in Tp *Oxidus gracilis* millipedes)

Enterobryus undescr. (probably) (in GA caves in Tb *Cambala annulata*, *C. hubrichti*, *C. ochra*, *Pseudotremia eburnea* and *Scoterpes austrinus* millipeds & TB *Caecidotea richardsonae* isopod)

Entoloma Fr., 1836 Entolomataceae fungi in Agaricales
Entoloma *commune* Murrill (PA cave)

Epicoccum Link in Willdenow, 1825 Ex Schlechtendahl - Tuberculariaceae fungi, Order Tuberculariales, Class Hyphomycetes

Epicoccum *nigrum* Link (MI, TX caves)
Epicoccum undet. sp. or species (Lechuguilla C., NM; cave in Jefferson Co., WV))

Flagellospora - Ingold, 1942 - Aquatic hyphomycetes fungi
Flagellospora? undet sp. (hyporheic biofilm in NB)

Fomes (Fr.) Fries, 1849 (= *Polyporus*) Fomitaceae fungi in Order Fomitopsidales
(also put in Order Aphyllophorales, Family Polyporaceae)

Fomes *applanatus* (Pers.) Wallr. (KY cave)

Fusarium Link, 1809 - Tuberculariaceae fungi in Moniliales
Fusarium *moniliforme* J. Sheld., 1904 (IN, NV caves)

Fusarium undet. sp. or species (VA, NM, WV caves)
Fusarium *oxysporum* Schltdl., 1824 emend. Sny. & Hans. (MI, WV caves)

Gibberella Saccardo, 1877 - Hypocreaceae fungi in Class Hypocreales
Gibberella *fujikuroi* (J. Sawada) Wollenweber, 1931 (IN cave)

Gliocladium Corda, 1840 - Moniliaceae fungi in Class Hyphomycetes
Gliocladium *roseum* Bainier, 1907 (caves in WV & Bath Co., VA))

Gliomastix Gueguen, 1905 - Dematiaceae fungi, Class Hyphomycetes
Gliomastix *murorum* (Corda) Hughes, 1958 (WV cave)

Gymnoascus Baran., 1872 Onygenales: Gymnoascaceae fungi in Class Onygenales

Gymnoascus *setosus* Eidam, 1880 (KY cave)

Gymnoascus *uncinatus* Eidam, 1880 (WV cave)

Helminthosporium Link & Fries 1821 - Dematiaceae fungi, Class Hyphomycetes

Helminthosporium undet. sp. (Cave near Victoria, BC)

Herpomyces Thaxter - Hyalodidymae fungi in Class Ascomycetes

Herpomyces *arietinus* Thaxter (parasite on *Parcoblatta* cockroach in Mammoth C.,KY)

Histoplasma Darling, 1906 – Onygenaceae fungi in Hyphomycetes

Histoplasma *capsulatum* Darling, 1906 (see histoplasmosis) (caves in AR, AZ, CA, FL, GA, MO, OK, NC, NM, TN, TX, VA, WV)

Hormiactis Preuss, 1851 - Moniliaceae fungi in Class Hyphomycetes

Hormiactis *candida* Hohn. (WV cave)

Humicola Traaen, 1914 - Dematiaceae fungi, Class Hyphomycetes

Humicola *fuscoatra* Traaen (MI cave, a mycoparasite of *Aspergillus flavus sclerotia*)

Humicola *grisea* Traaen (WV cave)

Hypholoma (Fr.) P. Kumm., 1871 - Agaricaceae fungi in in Agaricales

Hypholoma *perplexum* (Peck) Sacc.(PA cave)

Isaria Pers., 1797 (=*Spototrichum*) Stilbaceae fungi in Order Moniliales

Isaria *densa* Link (KY cave)

Isaria *flavissima* (*S. flavissimum*) Link (KY cave)

Merulius E.M.Fries, 1821 - Corticiaceae fungi in Class Basidiomycetes

Merulius *lacrymans* (Jacq.) Fr. (WV cave)

Microsporium Coemans, 1863 - Class Hyphomycetes, Lasiophaeriaceae fungi

Microsporium *gypseum* (one cause of dermatophytosis (ringworm skin disease)) (bat guano in NM caves)

Microascus Zukal, 1885 - Sphaeriaceae fungi in Order Sphaeriales

Microascus *longirostris* Zukal, 1885 (KY cave)

Monocillium S.B. Saksena, 1955 – Niessliaceae fungi, Order Hypocreales

Monocillium undet. sp. (WV cave)

Mortierella E. Coemans, 1863 - Mortierellaceae fungi, Order Mucorales

Mortierella *alpina* Peyronel (WV cave)

Mucor Micheli ex E. Fries, 1832 - Mucoraceae fungi in Class Mucorales

Mucor undet. sp. (Lechuguilla C.,NM cave)

Mucor *globosus* Fischer (*M. plumbeus* var. *g.*?) (TX cave)

Mucor *pyriformis* Fischer (TX cave)

Mucor *racemosus* Fresenius, 1850 (MI cave)

Mucor undet. sp. or species (MO, NV caves)

"**Mycelia**" (unknown generic name) Phylum Deuteromycota fungi

"**Mycelia** *sterilia*" undet. genus (WV, NM caves)

Nigrospora Zimmerman, 1902 - Dematiaceae fung in in Class Hypomycetes

Nigrospora *sphaerica* (Sacc.) E.W.Mason, 1927 (TX cave)

Paecilomyces Bainier, 1907 - Moniliaceae fungi in Class Hypomycetes

Paecilomyces undet. sp. or species (Lechuiguilla C.,NM; caves in VA (Bath Co.) & WV (Jefferson Co.))

Paecilomyces *varioti* Bainier, 1907 (WV cave)

Papulospora Preuss, 1851 - Agonomycetaceae fungi in Agonomycetales (also put in Stilbaceae)

Papulospora undet. sp. (TX caves)

Penicillium Link, 1809 ex Fries, 1832 - Moniliaceae fungi in Class Hypomycetes

Penicillium *charlesii* G.Smith, 1933 (TX caves)

Penicillium *chrysogenum* Thom, 1910 (TX caves)

Penicillium *lanthinellum* (Cave near Victoria, BC)

Penicillium undet. species (13 species. in Lechuguilla C.,NM) (one in VA; 2 in WV caves)

Penicillium *verrucosum* var. *cyclopium* (P.c. Westling, 1911) Samson, Stolk & Hadlok, 1976 (Lehman C.,NV)

Penicillium *frequentans* Westling, 1911 (TX cave)

Penicillium *notatum* Westling, 1911 (WV cave)

Penicillium *purpurogenum* Stoll, 1923 (MI cave)

Penicillium *roqueforti* Thom (WV cave)

Penicillium *steckii* Zalewski, 1927 (WV cave)

Penicillium *verrucosum* var. *cyclopium* (P.c. Westling, 1911) Samson et al. (NV cave)

Pestalotia De Not., 1841 – Amphisphaeriaceae fungi

Pestalotia undet sp. (TX caves)

Peyronellaea Goidanich, 1952 = *Phoma*

Phycomyces Kze. & Schm., 1823 - Mucoraceae fungi of Order Mucorales, class Zygomycetes

Phycomyces undet. sp. (cave in VA)

Phoma Fr., 1846 em. Desm. Or Saccardo, 1880 - Sphaerioidaceae fungi, Order Sphaeropsidales
Fr., 1821 (Ascomycota) or Sacc., 1880 Coelomycetes: Phomaceae (mitosporic)

Phoma undet. sp. (TX cave)

Pistillaria Fries, 1821 - Clavariaceae fungi in Cantharellales

Pistillaria undet. sp. (HI cave)

Pithomyces Berkeley et Broome, 1875 - Moniliaceae fungi, Class Hyphomycetes

Pithomyces chartarum (Berk. & M.A. Curtis) M.B. Ellis, 1960 (TX cave)

Pithomyces undet. sp. (cave in Jefferson Co., WV)

Plectania Fuckel, 1870 - Pezizaceae fungi in Order Pezizales

Plectania coccinea (Jacq. Or Scop.) Fuckel (= *Sarcoscypha c.* (Scop.) Sacc.)(PA cave entrance)

Polysphondylium Olive (cellular slime molds) (now placed in protists)

Pythium Nees, 1823 - Phythiaceae fungi in Peronosporales

Pythium undet. sp. (WV cave)

Rhachomyces Thaxter – Laboulbeniaceae fungi in Laboulbeniales

Rhachomyces speluncalis Thaxter (parasite on WV *Pseudanopthalmus grandis* & *P. pusio* beetles)

Rhizopus Ehrenb., 1821- Mucoraceae fungi in Class Mucorales

Rhizopus oryzae G. Winter, 1895 (TX cave)

Rhizopus undet. sp. (Lechuguilla C., NM)

Rhodotorula F.C. Harrison, 1927 - Torulopsidaceae fungi, Order Urediniomycetes,
Sporobolomycetacea

Rhodotorula undet. sp. (WV cave)

Rhynchosporium E.Heinsen & A.B.Frank, 1897 – Dematiaceae fungi in Hyphomycetales

Rhynchosporium undet. sp. (cave in Jefferson Co., WV)

Saprolegnia Nees in Carus, 1823 - Saprolegniaceae fungi in Saprolegniales

Saprolegnia undet. Sp. (TX cave)

Scopulariopsis Bainier, 1907 - Dematiaceae fungi in Class Deuteromycetes

Scopulariopsis brumptii Salvanet-Duval, 1935 (MI cave)

Sporotrichum Link, 1809 - Moniliaceae fungi, Order Hyphomycetales

Sporotrichum undet. sp. (bat guano in NM caves)

Stysanus F.J.Morton & G.Smith, 1963 = *Cephalotrichum*

Syncephalastrum J. Schrot., 1886 - Syncephalastraceae fungi in Order Mucorales

Syncephalastrum *racemosum* E. Cohn ex Schroter (TX cave)

Trichocladium Harz, 1871 - Dematiaceae fungi in Class Deuteromycetes

Trichocladium undet. sp. (cave in Jefferson Co., WV)

Trichoderma Pers., 1797 - Moniliaceae fungi in Order Hyphomycetales

Trichoderma harzianum Rifaei, 1969 (MI, TX, VA caves)

Trichoderma undet. sp. (cave in Jefferson Co., WV)

Trichoderma viride Pers., 1829 (TX, VA caves)

Trichophyton Malmsten, 1848 (= *Arthroderma*, *Trichomyces*) – Anthrodermataceae fungi in Onygenales

Trichophyton mentagrophytes (C.P. Robin) Sabouraud, 1895 (bat guano in NM caves)

Trichophyton rubrum (Castellani) Sabouraud, 1911 (bat guano in NM caves)

Trichophyton terrestre Durie & Frey, 1957 (MI, TX caves; bat guano in NM caves)

Ulocladium Preuss, 1851 - Dematiaceae fungi in Class Deuteromycetes

Ulocladium botrytis Preuss, 1851 (TX, WV caves)

Verticillium Nees, 1816 - Moniliaceae fungi in Moniliales

Verticillium cinnabarinum Ravenel & Berk. (TX cave)

Verticillium undet. sp. (cave in Bath Co., VA)

Verticillium tenuissimum Corda (TX cave)

Xylaria Hill ex Schrank, 1789 - Sphaeriaceae fungi in Sphaeriales

Xylaria polymorpha (Persoon) Greville, 1824 (PA cave?)

Xylaria undet. sp. (VA cave)

Zasmidium Fries, 1849 - Physomycetes or Mucoraceae, Order Antennariei

Zasmidium cellare (*Rhacodium c.* Persoon ex. Fries) Fries, 1849 (TX cave)

fungivore - A **guild** type in which an animal feeds on fungi.

Bibl. - See fungi

fungus hazard - Incl. blastomycosis, cryptococcosis, dermatophytes, histoplasmosis, mycormycosis, & valley fever.

fusulinid - Extinct suborder (Fusulinidea) of large **forams** with a multichambered calcareous test commonly shaped like a grain of wheat and from .5 to a few cm. long.

gastropod - A **mollusk** of the Subphylum Conchifera, Class Gastropoda, typified by a distinct head with eyes & tentacles &, in most, by a single CaCO₃ shell closed at the top. About 10,000 species. Incl. **abalone, slug & snail**. Wallrock fossils - Porter's C., VA; *Bellerophon* sp. (Bellerophonacea) in Lechuguilla C., NM (Kues & DuChene 1990)

Platyceras - *Platyceratacea* gastropod

Platyceras trilobatum? (fossil in Porter's C., VA)

Gastrotricha (=Gastrotrichida) - Aschelminth worms in the psammon and hyporheos. An animal phylum most closely related to nematodes and usually thought to be a phylum of their own or a class of the phylum Aschelminthes or Nematelminthes. They lack a gut, vary from 2 mm. to almost 1 m. long. About 430 species. The two orders include the Macrodasyida (nearly all marine) and the Chaetonotida (some fresh).

Clade Bilateria

Clade Protostomia

Clade Lophotrochozoa

Phylum Gastrotricha

Order Macrodysida

Family Lepidodasyidae (*Cephalodasys*) (once in Macrodysidae)

Family Macrodysidae

(*Cephalodasys* (now in Lepidodasyidae), *Macrodasys*, *Mesodasys*, *Pleurodasys*, *Urodasys*)

Family Thaumastodermatidae

Subfamily Thaumastodermatinae

(*Platydasys*, *Pseudostomella*, *Tetranchyroderma*, *Thaumastoderma*)

Subfamily Diplodasyinae (*Diplodasys*)

Family Turbanellidae (*Turbanella*)

Order Chaetonotida

Family Xenotrichulidae (*Xenotrichula*)

Cephalodasys Remane, 1926 - Lepidodasyidae Gastrotricha (once in Macrodysidae)

Cephalodasys littoralis Renaud-Debyser, 1964 (Atlantic Europe, NC marine beach interstitial)

Diplodasys Remane, 1927 - Thaumastodermatidae Gastrotricha, Subfamily Diplodasyinae

Diplodasys ankeli ankeli Wilke, 1954 (Atlantic Europe, NC marine beach & sublittoral interstitial)

Macrodasys Remane, 1924 - Macrodysidae Gastrotricha

Macrodasys cunctatus Wieser, 1957 (NA Pacific marine subtidal interstitial)

Mesodasys Remane, 1951 - Macrodisidae Gastrotricha

Mesodasys laticaudatus (Remane, 1951) (Atlantic & Mediterranean Europe, FL marine beach interstitial)

Platydasys Remane, 1927 (= *Pseudostomella*) Thaumastodermatidae Gastrotricha, Subfamily Thaumastodermatinae

Platydasys cataphracta (*Pseudostomella c.* Ruppert, 1970) (NC marine sublittoral interstitial)

Platydasys plumosa (*Pseudostomella plumosa* Ruppert, 1970) (India, Atlantic Europe, NC marine sublittoral interstitial)

Platydasys roscovita (*Pseudostomella r.* Swedmark, 1956) (India, Atlantic Europe, NC marine beach interstitial)

Platydasys undet. sp. (CA marine beach interstitial)

Pleurodasys Remane, 1927 - Macrodisidae Gastrotricha

Pleurodasys undet sp. (CA marine beach interstitial)

Pseudostomella Swedmark, 1956 = *Platydasys*

Tetranhyroderma Remane, 1926 - Thaumastodermatidae Gastrotricha, Subfamily Thaumastodermatinae

Tetranhyroderma apus Remane, 1927 (Atlantic, Mediterranean Europe, FL marine beach interstitial)

Tetranhyroderma bunti (Thane-Fenchel, 1970) (FL, NC marine beach interstitial)

Tetranhyroderma pappi Gerlach, 1953 (Mediterranean, MA, NC marine beach interstitial)

Tetranhyroderma pugetensis Wieser, 1957 (WA marine beach interstitial)

Tetranhyroderma undet. sp. (CA marine beach interstitial)

Tetranhyroderma swedmarki Rao & Ganapati, 1968 (India, NC marine beach interstitial)

Tetranhyroderma thysanogaster Boaden, 1965 (Mediterranean, FL marine beach & sublittoral interstitial)

Thaumastoderma Remane, 1926 - Thaumastodermatidae Gastrotricha, Subfamily Thaumastodermatinae

Thaumastoderma heideri Remane, 1927 (Indian, Atlantic Europe, NC marine beach & sublittoral interstitial)

Turbanella Schultze, 1853 - Turbanellidae Gastrotricha

Turbanella undet. sp. (CA marine beach interstitial)

Urodasys Remane, 1926 - Macrodisidae Gastrotricha

Urodasys calicostylis Schoepfer-Sterr, 1974 (NC marine subtidal interstitial)

Urodasys cornustylis Schoepfer-Sterr, 1974 (FL, NC marine subtidal interstitial)

Urodasys remostylis Schoepfer-Sterr, 1974 (FL marine subtidal interstitial)

Urodasys spirostylis Schoepfer-Sterr, 1974 (NC marine subtidal interstitial)

Xenotrichula Remane, 1927 - Xenotrichulidae Gastrotricha

Xenotrichula undet. sp. (CA marine beach interstitial)

gecko - See lizard.

gene flow - The transfer of genes from one population to another.

genetic drift - Changes due to neutral mutations. Random changes in gene frequencies in a population. Most likely in small populations where such changes are not diluted as they might be in larger populations.

genetic load - The sum of disadvantageous genetics in a population.

genetics (see also adaptation, speciation & evolution) - Bechler 1977; Brenner & Kane 1981; Bruce 1976; Caccone 1985; Cockley, Gooch & Weston 1977; Davis & Lopez 1988; Dickson et al. 1979; Edward 1992, 1994; Fong 1983, 1985, 1989; Giuseffi, Kane & Duggley 1978; Gooch 1980; Gooch & Golladay 1981; Gooch & Hetrick 1979; Hetrick 1972-3, 1975; H. & Gooch 1981; Jernigan et al. 1994; H. Johnston 1972; J. & Carmody 1977; Jones 1989; Kane 1982, 1991; Kane, Barr & Badarracca 1992; Kane, Barr & Stratten; Kane & Culver 1991; Kane & Turanchik, 1981; Koppelman & Figg 1995; Laing, Carmody & Peck 1976a; Lamb 1975; Liebherr & Ross 1988; Lisowski 1978, 1992; Nicholas & Peters 1973; Parzefall 1985; Potter & Sweet 1981; Weet 1977; Swofford 1982; S. Branson & Sievert 1980; Sweet 1977; Turanchik & Kane 1979; Wilkens 1987

allopatrism - Badaracca 1986; Peck 1975

amino acids - Sperka 1974

biochemical - Swofford 1982; Thurow 1962

DNA - McCormick & Sarbu 1991

electrophoretics - Carmondy, 1974; C. Murphy & Peck 1972; Howard, J. et al. 1984

gene flow - Caccone 1985, 1985a; Caccone 1983

genetic/morphologic comparisons - Bechler 1977; Lisowski 1995; Kane & Culver 1991; Kane, Culver & Jones 1992

genotype - The genes possessed by an organism, all of the information as opposed to its expression. Cf. phenotype.

geology - Baichtal 1995; Bradley 1870; Euler 1984; Franz 1977; Haynes & Agogino 1960; Hendry et al. 1993; Howarth 1982; Jenkins 1972; Jones & Varnedoe 1968; Kane, Barr & Badaracca 1992; LaSalle 1984; McGill 1933; Malde & Schick 1964; Mangin 1994; Matthews 1971; Meek 1989; Peck 1981b; Powell 1961; Price & Heck 1939; Stovall & McAnulty 1950; Veni 1991; W. White 1976; Wilson 1974. See also **bacteria**.

gestation - Length of time from fertilization until birth.

glyph - An **art** & symbolic figure usually incised or engraved. Incl. mud & rock. Bibl.: Faulkner & Simek 1996

glyptodont - See **mammal, edentate**.

gnats (see **flies**, Chironomidae, Mycetophilidae, Sphaeroceridae)

goat - Artiodactyla **ungulate**.

gopher, (pocket) - See **mammal**, rodent.

Gordian (round) worms - Syn: horsehair **worms**.

ground sloth - See **mammal, edentate**.

groundwater - Water that occurs below ground level. See hyporheic. Bibl.: P. Wallis & Ladd 1983; J. Ward and Voelz 1994

ground water fauna - Species that habitually live in the groundwater. Partial syn.: stygobiont. See also hyporheic. Bibl.: Balkwill, D.L. and Ghiorse 1984;

graffiti - **Vandalism** by way of non-historic & non-archeological art, glyphs, etc. Pencil marks on smooth carbonates can be removed early on with water. Paint & smoke smudges (carbide lamps) can be removed with %5 sulfuric acid, crayon with grease emulsifiers. Difficult to remove if on igneous; blowtorch will remelt bedrock.

groundhog or marmot - See **mammal, rodent**

growth - Cooper & Cooper 1976, 1978a; Dickson 1978; Hazlett & Rittschoff 1985
metamorphosis - Brandon et. al. 1986
molting - Hobbs, III 1976a; Jegla 1964;
neoteny - Mitchel & Smith 1972
seasonality - Poulson 1969

Grylloblattids

(= ice insect or cricket; cricket-roach) - Of family Grylloblattidae (=Notoptera) (grylloblattid or

rockcrawlers), Order Grylloblattodea. Phylum Arthropoda, Subphylum Chelicerata, Class Insecta, Subclass Pterygota, Division Neoptera, Subdivision Exopterygota. Large, wingless, predaceous, primitive. **Bibl.:** Benedict 1974c; Caudell 1923-4; J.Chapman 1953; Gurney 1953, 1961; Henson 1957-a; Kamp 1963, 1970, 1973; Crawford 1991; Nieland 1978-9, 1993; Walker 1914.

The first Grylloblatid discovered in 1914 was given the genus and species name of *Grylloblatta campodeiformis* to imply its comparison with three other insects: crickets, cockroaches and bristletails. In comparison with crickets of the genus *Gryllus*, they are similar because they have a six-part ovipositor. In comparison with cockroaches (*Blatta*) they have five-segmented legs and segmented caudal cerci (tails), both of which are also characteristics of primitive insects. In comparison with the diplurans (bristletails) of the family Campodea, they share attributes of blindness, lack of wings and fragile skin all of which are adaptations to living under stones. They are primitive insects and some paleontologists consider them to be surviving members of the Protorthoptera making them most closely related to crickets.

In outside environments, the *Grylloblatta* are dark brown to black. In caves this coloration has been lost due to adaptations to living in darkness and hence they appear cream-colored to white. Their foods include both small invertebrates and plants. Their preferred habitat temperatures of 39°F (4° C) is unusually low and in mountainous habitats where winters are long and temperatures low, they may remain frozen for most of the year. It is for this reason they are often referred to as “Ice Insects” and it is because of their unusual need for icy conditions that these creatures escaped discovery until 1914 when several were found under rocks in the icy regions of the Canadian Rocky Mountains. The sensitivity of some species to heat is so delicate, they may perish in a few minutes if held for too long on a human hand. The nymph does not emerge from the egg for a year and larval development, comprising of eight molts, takes more than five years. As an imago (adult) it commonly lives for two years so the the animal enjoys altogether six to eight years of life, an exceptionally long time for an insect.

Other members of the grylloblattidae are found in the United States. They have also been found in Japan and Russia. There are only twelve species of *Grylloblatta* known worldwide. Grylloblatids are sometimes described as a “cockroach-cricket,” These insects were once thought to be extremely rare. Cave biologists have since found that they are more common than was first thought. Grylloblatids have body fluids that act as antifreeze. Most of the species may have moved into caves as the world’s climate became drier and warmer. These insects now live underground most of the year. They go outside only during the winter and early spring. They look for insects which have been numbed or killed by the cold and have fallen on the snow.

Grylloblatta Walker, 1914 - Grylloblattidae grylloblattids (10 species in US or Canada) **Bibl.:** Crawford, Edwards & Senger 1988

Grylloblatta *chandleri* Kamp, 1963 (*type locality cave in Lassen Co.,CA/ Ttx or Tp/ G1?)

Grylloblatta *chirurgica* Gurney, 1961 (**type locality & 2 other caves in Skamania Co.,WA/ obligate Tx/ G1?)

Grylloblatta *gurneyi* Kamp, 1963 (type locality & 3 other caves in Siskiyou (or 1 cave in Modoc Co.),CA/ Tp or Tx/ G1?)

Grylloblatta *rothi* Gurney, 1953 (subalpine & cave near near Bend, Deschutes Co., OR/Tx?)

Grylloblatta undescr. sp.#1 (OR C.,OR/Tx)

Grylloblatta undescr. #2 (near *sculleni* Gurney/ 2 caves near Bend, Deschutes Co.,OR/Tx)

Grylloblatta undescr.sp.#3 (cave on w.Mt. St. Helens)

Grylloblatta undescr. sp.#4 (2 caves in Siskiyou Co.,CA & poss. undescr. in epigean in Marble Valley, Shasta Co.,/Tx)

Grylloblatta undescr. sp.#5 (cave each in Lassen & Plumas Cos,CA)

Grylloblatta undescr. sp.#6 (*Mary's Peak, Benton Co.,OR/Tx or rock crevices/G?S2 OR T&E tracked)

Grylloblatta undescr. sp.#7 (epigean & Tx from Mt Baker s. to Mt Rainier,WA),

Grylloblatta undet. sp. (Kings Canyon Natl. Park,CA/Tp or Tx).

guanine - Phosphate from the reaction of bat feces & urine.

guano - 1. Syn: **scat.** Scat piles from bats, birds, & crickets. The most important organics in many caves are bat guano & carrion, cricket guano & eggs, or pack rat nest litter & feces. **bat:** Bashor, 1974; Bingham, 1986; Des Marais, 1980; E. Franklin, 1978; Gnaspini, 1992; Horst, 1972; B. Martin, 1977, 1980a; Northup & Welbourn, 1991; W. Phillips, 1901; Strinati, 1982; D. Ward, 1983; **raccoon:** Grady, 1991; **woodrat:** Lavoie, 1981; Poulson & Lavoie, 1983. Def.#2. Phosphate or nitrate deposit from leaching of bird feces in arid areas.

guano mineral - See **phosphate**. See also urea (NH₂)CO & uricite, both from Australian caves.

guanobia - **Coprophages** which feed on piled feces of bats, crickets, rodents, or birds. Syn: gaunobious.

guanobite – Biota whose entire life cycle takes place on or immediately adjacent to guano. The guano equivalent of troglobite and phreatobite.

gaunobic - The association of cave life largely dependent on guano.

guanophages – Biota that feeds on guano or species growing on guano.

guanophile – 1. Biota that may reproduce both in guano or other cave habitats. The guano equivalent of troglophile and phreatophile. 2. An animal, like guano moths, ultimately dependent

during at least part of its life cycle on guano. See **fill & fungi**.

guanoxene – 1. Biota that may reproduce both in guano but which requires other cave or non-cave habitats to complete its life cycle. The guano equivalent of troglaxene.

guild - What a **type** of animal does. Incl. **bandit, detritivore (guanobia & scavenger), fungivore, heterotroph, parasite (hyperparasite), phoretic, predator, & xylophage.**

gymnosperm - A **plant** with seeds commonly in cones & never enclosed in an ovary, Incl. ginkgo, conifers, & cycads.

gypsum caves - Black, 1970; Harrington, 1933; Laudermick & Munz, 1934; Reddell 1986; Stock, 1931

habitat & microhabitat - Bell, 1978; Benedict & McEvoy 1995; Brandon 1971; Caine 1974; Canaday & Vitello 1995; Clark, C. & Leslie 1994; Conn & Demoss 1984; Crowell 1981; Culver & Fong 1994; Culver, Fong & Jernigan 1987; Dickson 1975-6, 1977-a, 1978, 1981-2; Dickson & Holsinger 1981; Herrington & Larsen 1989; Fong & Culver 1994; Hobbs Jr. 1937; Howarth 1979a; Kane & Poulson 1976; Keith 1977; Liebherr 1988; Lisowski 1983; Maguire 1961; Marshal 1947; Miller 1974; Mitchell 1968; Page 1974; Peck 1975d; Schubert et al. 1993; Schubert & Noltie 1995; Sheps 1972; Stark 1969; Ward & Holsinger 1981; Willis & Brown 1985

entrances - Lavoie, Cyr et al. 1990; Olsen 1973; Peck 1976

microhabitat - Culver & Ehlinger 1980; Hemerly 1967; Holler 1992; Miller 1974; Olyslager & Williams 1997

Habitual Tp - Troglophile known only from caves but with comparatively large eyes (Barr 1960). Partial syn: Tb.

Habitual Tx - Troglaxene which enters a cave at some point in its life cycle. Syn: Obligate Tx.

haematophagy – Feeding on blood, as in most lice and some mites and flies.

halocline – Abrupt change in salinity with depth in water column.

halotolerant - A species capable of growing in the absence of table salt (NaCl) but not requiring it.

hantavirus - Rare **microbe** hazard of Family Bunyaviridae. Not yet known from caves. Carriers for Muerto Canyon Hantavirus in 1993 in SW incl. deer mice, chipmunk, cotton rat (SE), & woodrat. The airborne virus enters via lungs, skin, & eyes but can be killed by most household disinfectants. Fatal infections from this virus family in Asia, Eastern Europe, Africa, & the US. Other genera include *Bunyavirus*, *Phlebovirus*, & *Nairovirus*.

hantavirus pulmonary syndrome (HPS) - A serious, often deadly, respiratory disease found mostly in rural western U.S. Contracted by exposure to rodent scat, saliva or urine, especially from deer mice. Breathing in the virus is the most common way of becoming infected but infection from touching the mouth or nose after handling materials with hantavirus can occur. Symptoms usually appear within 2 weeks of infection but can appear as early as 3 days or as late as 6 weeks. Main symptoms are breathing difficulty, headache, abdominal, joint, & lower back pain, & sometimes nausea & vomiting.

hare - Lagomorph of Family Leporidae (see **mammal**).

Harvestmen

Arachnid of Order Opiliones (=Phalangida). Order divided into three suborders: Cyphophthalmi, Laniatores, and Palpatores. The Cyphophthalmi are small and have a mite-like appearance. Many species occur in caves and some show varying degrees of troglomorphy; but none of the species known from the USA have been observed in caves. The long-legged Opiliones commonly observed in cave entrances are members of the Palpatores and the smaller short-legged species found deeper in the caves are often members of the Laniatores. Some of the Palpatores found in caves also have shorter legs and smaller body size like the Laniatores. The common name of daddy-long-legs correctly belongs only to the long-legged species of the Palpatores. Harvestmen is a common name applied to all members of the order. Unlike spiders, harvestmen have no venom or silk. The body is generally egg-shaped, about 1 to 12 mm long, and divided into a prosoma and a broad, segmented opisthosoma. Legs short or long (up to 120 mm). Ovipositor of female and penis of male often very long in Palpatores and shorter in Laniatores. About 7,000 described species. Prey upon or scavenge small insects, mites, spiders, and some plants. Defend by feigning death, shedding legs which often continue to twitch, and releasing repugnatory chemicals. A few species overwinter in caves.

Harvestmen become most prevalent in the fall (around October) when they migrate into the cave and gather in large cluster that can be seen throughout the winter and into the late spring (May).

About 1900 species of harvestmen are distributed over the world in forests, fields and other land habitats, although they can and do walk on water. Some of those in the tropics and our southern states do not have such long legs. Of the 60 or more American kinds, adults of all but one of these die with the coming of winter. They mate in late summer and autumn. While the smaller male drives away rivals, the female lays a few eggs at a time in the soil, some crevice, or rotten wood. This is repeated until she becomes merely an empty shell. In spring the newly-hatched young are white miniature editions of the adults. They soon darken and, as they grow, shed their skins like many insects do. They eat a wide variety of animal food, both dead and alive, as well as vegetable matter and juices.

Unlike the spiders, the abdomen of the harvestman is divided into segments and it has no "waist". Instead, the head, thorax and abdomen are grown together into a compact oblong body. Neither do they spin webs or build nests. On top of the head is a black dot which, under a lens, is seen to be a knob with a little shiny eye on each side. Apparently these primitive eyes can detect a moving object several feet away. Underneath is a pair of little lobster-like pincers used to grasp, tear and stuff food into its mouth, to fight other harvestmen, and to frequently clean its legs.

Although all legs of a harvestman are sensitive, the second pair of legs is so vital that the loss of one is a serious matter, and the loss of both is quickly fatal. These legs, and to a lesser degree all the others, are the animal's main sources of information, serving as ears, nose, tongue, and perhaps even as supplementary "eyes." In other words, the legs are loaded with nerves and literally thousands of tiny sense organs that lie inside microscopic slits which open to the outside world. When there is motion nearby, a harvestman energetically waves its second pair of legs in the air, picking up scent and vibration, or taps nearby surfaces, sampling the "taste." And instead of elaborate courtship rituals found in spiders, harvestmen touch each other gently with the same two legs, exchanging chemical messages unknown to us. Even the male sex organ is uniquely associated with the legs, having a location found in no other arachnid.

Daddy-long-legs are often thought to be spiders, while in fact they are only distant cousins. Like spiders they have eight legs, but where a spider has a pair of "fangs," a harvestman has a pair of minute pincer-like claws and no venom. A pair of short, spiny leglike appendages extending out in front help with the feeding process. So even with feeble jaws, harvestmen are able to pick up food and pluck it apart into smaller pieces. Local species feed mostly on dead insects, but will kill very small insects and mites whenever possible. They also suck juice from soft berries and fruits.

Harvestmen are vulnerable and have only a few effective means of protecting themselves. Speed and detachable legs are obvious advantages. Detached legs usually twitch for several minutes, an adaptation that may distract a predator while the Harvestman escapes. Detached legs are known to twitch spasmodically for up to 21 minutes. Legs of these spiders are believed to regenerate.

Another defense is the secretion of an odorous fluid. This substance, described as smelling like walnuts or horse radish, emerges from a pair of pores on each side of the front of the body, just above the first pair of legs.

There is a common untrue rumor concerning the venom of Harvestmen. Some people claim this venom to be one of the most lethal in the world but no one has actually been killed by this venom because the "fangs" of the Harvestmen are too small to penetrate human skin. The opiliones do not possess poison glands nor do they possess fangs. Many people observe "fang-like" structures on the Sabacon of Oregon Caves but these are actually pinchers, similar to crab pinchers, that are used to grasp and hold prey. Their strategy for capturing prey is to position themselves over their prey with their widely displaced legs helping them to escape detection by insects that use sensors to detect air movement or ground vibrations of approaching predators. Essentially, they attack from above, grasping victims with their pinchers in much the same way crabs grasp their prey.

In the tropics, some species of Harvestmen gather in great enough numbers to cover a small bush. If disturbed, all the daddy longlegs will shake violently, causing the entire bush to move. In England, crane flies are called daddy longlegs.

It is common to find other insects riding on Harvestmen. Often, small, red colored mites can be seen as minute clinging to legs and body parts. These mite are parasites on Harvestmen and attack the host in the same way as ticks, their close relative, attacks mammal hosts. Other insects found on Harvestmen include pseudoscorpions. They hitch hike a ride by grasping the legs of the Harvestmen with one of their claws.

Bibl.: Angerilli & Homberg 1985; Banks, 1892, 1894b; Bragg 1972; Briggs 1975; Crosby & Bishop 1924a, 1924b, 1928; Elliott 1978a, 1979; Goodnight & Goodnight 1945, 1960, 1963, 1966; McConnel 1976; Rambla 1994; Roewer 1917, 1923, 1930, 1931, 1957, 930, 1952; Rudolph 1979; Ubick & Briggs, 1992; Causey 1973. Parasites: Cokendolpher 1993
Areas: **AL:** Banks 1900; **CA:** Banks 1911; Briggs 1974a; Rudolph 1979b; **IL:** Weed, 1889; **ID:** Benedict 1974a; **IN:** Edgar 1966; Kingsley, 1888; **IN:** Banks, 1893a; **KY:** Banks, 1893a; **NA:** Cokendolpher & Lee 1993; **NW:** Briggs 1971a; **OH:** Walker 1928; **TX:** Goodnight 1967, 1969; **US:** Banks, 1893b; **VA:** Banks, 1893a; **WA:** Banks, 1894c; Benedict 1974a; Crawford 1974a;

Kingdom Animalia

Clade Metazoa

Clade Eumetazoa

Clade Bilateria

Clade Protostomia

Clade Ecydsozoa

Phylum Arthropoda

Subphylum Chelicerata

Class Archnida

Subclass Dromopoda

Superorder Cryptoerculata

Order Opiliones

Suborder Laniatores

Superfamily Trauvunioidea

Cladonychiidae

(*Erebomaster* (once in Erebonastriidae), *Speleomaster* (once in Travuniidae),
Theromaster)

Travuniidae (*Speleomaster* (now in Cladonychiidae))

Trienonychidae (*Cryptobunus*, *Paranonychus*, *Sclerobunus*, *Zuma*)

Superfamily Gonyleptoidea

Cosmetidae (put in Superfamily Ischyropsalidoidea)

Suborder Palpatores

Superfamily Caddoidea

Caddidae (*Caddo*)

Superfamily Ischyropsalidoidea

Ceratolasmatidae (*Crosbycus* (misidentification), *Hesperonemastoma*)

Cosmetidae (also in Superfamily Gonyleptoidea) (*Vonones*)

Ischyropsalidae (*Sabacon*, *Taracus* (now in Sabaconidae))

Nemastomatidae (*Ortholasma*, some other species now in Ceratolasmatidae)

Sabaconidae (*Sabacon*, *Taracus*)

Stygnopsidae (*Hoplobunus*)

Superfamily Phalangioidea

Phalangiidae (*Mitopus*, *Odiellus*, *Oligolophus*, *Opilio*, *Phalangium*, *Scotolemon*)
(some other genera put in Protolophidae & Sclerosomatidae)

Phalangodidae (*Banksula*, *Bishopella*, *Calicina*, *Phalangodes*, *Phalangomma*, *Sitalcina*, *Texella*, *Tolus*, *Wespus* (*Hoplobunus* put in Stygnopsidae), *Crosbyella* now uncertain as to family status))

Protolophidae (*Protolophus*)

Sclerosomatidae

(*Dalquestia*, *Eumesosoma*, *Eurybunus*, *Globipes*, *Hadrobunus*, *Leiobunum*, *Leuronychus*, *Mesosoma*, *Nelima*, *Trachyrhinus*)ncertain family (*Crosbyella*))

Superfamily Troguloidea

Nemastomatidae

Suborder Cyphophthalmi

(no representatives recorded from caves north of Mexico in North America)

Caddidae (*Caddo*)

Ceratolasmatidae (*Crosbycus* (misidentification), *Hesperonemastoma*)

Cladonychiidae (*Erebomaster* (once in Erebomastriidae), *Speleomaster* (once in Travuniidae), *Theromaster*)

Cosmetidae (*Vonones*)

Erebomastriidae = Cladonychiidae

Family Uncertain (*Phalangodoidea*) (*Crosbyella*)

Gagrellidae (species now in Sclerosomatidae)

Ischyropsalidae (*Sabacon*, *Taracus* (now in Sabaconidae))

Leiobunidae (species now in Sclerosomatidae)

Leptobunidae (*Leuronychus* (now in Sclerosomatidae), *Protolophus* (now in Protolophidae))

Nemastomatidae (*Ortholasma*, some other species now in Ceratolasmatidae)

Phalangiidae (*Mitopus*, *Odiellus*, *Oligolophus*, *Opilio*, *Phalangium*, *Scotolemon*) (some other genera moved to Protolophidae & Sclerosomatidae)

Phalangodidae (*Banksula*, *Bishopella*, *Calicina*, *Phalangodes*, *Phalangomma*, *Sitalcina*, *Texella*, *Tolus*, *Wespus* (*Hoplobunus* moved to Stygnopsidae, *Crosbyella* moved to Family Uncertain))

Protolophidae (*Protolophus*)

Sabaconidae (*Sabacon*, *Taracus*)

Sclerosomatidae (*Dalquestia*, *Eumesosoma*, *Eurybunus*, *Globipes*, *Hadrobunus*, *Leiobunum*, *Leuronychus*, *Mesosoma*, *Nelima*, *Trachyrhinus*)

Stygnopsidae (*Hoplobunus*)

Travuniidae (*Speleonychia* (now in Cladonychiidae))

Triaenonychidae (*Cryptobunus*, *Paranonychus*, *Sclerobunus*, *Zuma*)

Travuniidae (*Speleomaster* (now in Cladonychiidae))

Genera & species Incl.

Acanthocheir Lucas, 1861 (see *Phalangodes*)

Acanthocheir *armata* (= *Phalangodes armata*)

Acanthocheir *armatum* (= *Phalangodes armata*)

Banksula Roewer, 1949 (some species formerly in *Scotolemon* & *Phalangodes*) Phalangodidae
harvestmen

Banksula *californica* (*Scotolemon californica* Banks, 1900) (*Phalangodes californica*, Roewer 1912) Roewer, 1949; Goodnight & Goodnight, 1960, 1981; Briggs, 1974, 1987; Briggs & Ubick, 1981; Rambla & Juberthie, 1994 (Alabaster Cave (type locality) (cave was quarried) El Dorado Co., CA / Tb, Tm- eyes missing)

Banksula *elliotti* Briggs & Ubick, 1981 (type locality cave in Tuolumne Co. & 3 caves in Calaveras Co., CA / Tb, Tm- retinae missing or reduced)

Banksula *galilei* Briggs, 1974 (type locality & 1 other cave in Placer Co., CA / Tb) **Bibl.:** Briggs & Ubick, 1981; Goodnight & Goodnight, 1981; Arnett, 1983; Rambla & Juberthie, 1994

Banksula *grahami* Briggs, 1974 (Moaning Cave (type locality), & 2 other caves in Calaveras Co., + 6 caves & 3 mines, Tuolumne Co. CA / Tb, meiofauna- specimens moved in interstitial spaces to enter mines) **Bibl.:** Briggs, 1974, 1987; Briggs & Ubick, 1981; Goodnight & Goodnight, 1981; Elliott, 1985; Rambla & Juberthie, 1994

Banksula *grubbsi* Briggs & Ubick, 1981 (*type locality cave in Amador Co., CA / Tb, Tm- retinae missing/ G1G2)

Banksula *martinorum* Briggs & Ubick, 1981 (*type locality cave in Calaveras Co., CA / Tb, Tm- eyes missing/ G1G2) **Bibl.:** Rambla & Juberthie, 1994

Banksula *melones* Briggs, 1974 (type locality cave in Calaveras Co. + 10 caves, Tuolumne Co. + 11 caves + transplanted to mine, Calaveras Co., CA / Tb/ S2G2/ VUA2c) **Bibl.:** Arnett, 1983; Briggs, 1974, 1987; Goodnight & Goodnight, 1981; Elliott, 1978a; 1979a, b; 1981; 1985; Gray, 1975; Briggs & Ubick, 1981; Arnett, 1983

Banksula *rudolphi* Briggs & Ubick, 1981; Rambla & Juberthie, 1994 (*type locality cave in Amador Co., CA / Tb)

Banksula *tuolumne* Briggs, (type locality cave & one surface site in Tuolumne Co., CA / Tb, Tm- retinae usually reduced) **Bibl.:** Briggs & Ubick, 1981; Goodnight & Goodnight, 1981; Rambla & Juberthie, 1994

Bishopella Roewer, 1927 (one species formerly in *Phalangodes*) Phalangodidae harvestmen

Bishopella *jonesi* Goodnight & Goodnight, 1942; (*type locality cave in Jackson Co., AL / Tp or Tb – caves only) **Bibl.:** Peck, 1978, 1998

Bishopella *laciniosa* (*Phalangodes laciniosa* Crosby & Bishop, 1924a; *Phalangodes* (*Bishopella*) *laciniosa*: (AL, FL, GA, NC, SC, TN epigean/ Tp in nAL (Walker Co.), FL, nwGA (Bartow, Dade & Walker Cos.), cTN; Tb? - Tm long legs, lighter color, reduced eyes in cave in Mt. Eagle, TN) **Bibl.:** Peck 1970); Goodnight & Goodnight, 1942, 1960; Barr, 1961; Holsinger & Culver, 1988; Peck, 1989; Holsinger & Peck, 1971; Franz, Bauer & Morris, 1994; Rambla & Juberthie, 1994

Bishopella undet. sp. (cave in Newton Co., AR; >1 Tp species in Walker & Dade Cos., GA) **Bibl.:** Youngsteadt & Youngsteadt, 1985; Buhlmann, 1992

Bishopella undescr.? sp. (Tb in GA (Dade Co.))

Caddo Banks, 1892 - Caddidae harvestmen

Caddo *agilis* Banks, 1892 (CT, DC, MA, ME, NC, NJ, NY, OH, PA, TN, VI, VT, WI, WV, NB, ON, PQ / Tx in cave in Pickett Co., TN) **Bibl.:** Shear, 1975; Cokendolpher & Lee, 1993

Calicina Ubick & Briggs, 1989 (some species formerly in *Sitalcina*) Phalangodidae harvestmen

Calicina *cloughensis* (*Sitalcina cloughensis* Briggs & Hom, 1967) (*type locality cave in Sequoia National Park, Tulare Co., CA / Tb, Tm- pale coloration, complete loss of eyes, high tarsal count) **Bibl.:** Briggs, 1968; Goodnight & Goodnight, 1981; Ubick & Briggs, 1989; Rambla & Juberthie, 1994; Peck, 1998

Calicina *digita* (*Sitalcina digitus* Briggs & Hom, 1967) (Mariposa, Fresno, Tulare Cos., CA / Tp? in Fresno Co.) **Bibl.:** Briggs, 1968; Ubick & Briggs, 1989

Calicina *serpentinea* (*Sitalcina serpentinea* Briggs & Hom 1966) (southern Bay area from San Mateo and Contra Costa to San Benito counties, CA / Tp? in Santa Cruz Co.) **Bibl.:** Briggs,

1968; Ubick & Briggs, 1989

Calicina *sierra* (*Sitalcina sierra* Briggs & Hom, 1967; *Sitalcina sierra sierra* Briggs, 1968) (Amador, Calaveras, Tuolumne Cos., CA / Tp? & epigeal) **Bibl.:** Ubick & Briggs, 1989

Cladonychium Hadzi 1935 (see *Erebomaster*)

Cladonychium corii = *Erebomaster acanthina*

Crosbycus Roewer, 1914 (misidentification)

Crosbycus goodnighti Roewer, 1951; Shear, 1986; Holsinger & Culver, 1988; Cokendolpher & Lee, 1993 (species and genus of uncertain identification and locality; sp. et gen. inquirenda) (reported in error from Fountain Cave, Augusta Co., VA; possibly from Europe / Tx or Tp)

Crosbyella Rower, 1927 (= *Goodnightiella*, some species formerly in *Phalangodes*)
Phalangodoidea superfamily, uncertain family of harvestmen

Crosbyella *distincta* Goodnight & Goodnight 1942 (*Goodnightiella distincta*: Roewer, 1949); Goodnight & Goodnight, 1960; Rambla & Juberthie, 1994 (*cave type locality in Boone Co., AR / Tb, Tm- eyes lacking, longer appendages, greater number of tarsal segments)

Crosbyella *roeweri* Goodnight & Goodnight 1942 (*cave type locality in Benton Co., AR / Tp or Tb/ caves only) **Bibl.:** Soares & Avram 1981; Rambla & Juberthie, 1994

Crosbyella *spinturnix* (*Phalangodes spinturnix* Crosby & Bishop, 1924a; *Phalangodes* (*Crosbyella*) *spinturnix* Peck, 1970); (LA, AR, FL, AL, GA, MS / Endogean & Tp in AL, AR, FL, GA (Bartow Co.), LA, MS, OK, Tx in MO) **Bibl.:** Black, 1971; Holsinger & Peck, 1971; Goodnight & Goodnight 1942; Peck, 1970; Youngsteadt & Youngsteadt, 1978; McDaniel, et al., 1979; Peck & Peck, 1982; Gardner, 1986; Peck, 1989; Franz, Bauer & Morris, 1994

Crosbyella undescr.? sp. (AR / Tb)

Cryptobunus Banks, 1905 (one species formerly in *Sclerobunus*) Triaenonychidae harvestmen

Cryptobunus *cavicolens* Banks, 1905 (*Sclerobunus cavicolens*: Goodnight & Goodnight, 1943; *Sclerobunus robustus* (in part) Crosby & Bishop, 1924b); (Lewis & Clark (=Morrison's) Cave (type locality), Jefferson Co., MT / Tb) **Bibl.:** Goodnight & Goodnight 1960; Briggs 1971; Peck 1973

Cryptobunus undescr. sp. (*?Tongue River Cave, WY)

Cryptobunus undet. sp. Briggs, 1974 (cave in Clark Co., ID / Tb, Tm- lack of pigmentation)
Bibl.: Peck, 1973

Cryptobunus *ungulatus madhousensis* Briggs 1971 (*type locality cave in UT Co., UT / Tb, Tm- cornea small, retinae displaced medially) **Bibl.:** Rambla & Juberthie, 1994

Cryptobunus *ungulatus unguatus* Briggs, 1971 (*?type locality cave in White Pine Co., NV / Tb/ G1 or G3G4 T1T2 NV S1S2) **Bibl.:** Rambla & Juberthie, 1994

Dalquestia Cokendolpher, 1984 (some species formerly in *Eurybunus*) Sclerosomatidae harvestmen

Dalquestia *formosa* (*Eurybunus formosus* Banks, 1910) Cokendolpher, 1984; Cokendolpher pers, comm, 1999 (NL (Mexico), TX / Accidental Tx in Burnet, Kendall, Travis, Uvalde Cos., TX) **Bibl.:**

Erebomaster Cope, 1872 (= *Cladonychium* & some species formerly in *Phalangodes*, *Scotolemon*) Cladonychiidae harvestmen

Erebomaster (?) undet. species or sp. (caves in Alleghany, Bath, Bland Cos., VA / Tp?) Holsinger & Culver, 1988

Erebomaster *acanthina* (= *Phalangodes acanthina* Crosby & Bishop, 1924a; *Cladonychium corii* Hadzi, 1935) Goodnight & Goodnight, 1942, Holsinger, 1961; Briggs, 1969; Franz & Slifer, 1971; Cokendolpher, 1985; Murphree, 1987; Holsinger & Culver, 1988 (epigean NC, DC, MD / Endless Caverns (type locality of *Cladonychium corii*), Rockingham Co. + numerous caves in Augusta & Frederick cos., VA; MD / Tp? Augusta Co.; Tb, Tm- blind in Endless Caverns; reduced eyes and pigment in some other caves)

Erebomaster *flavescens coecum* (*Phalangodes flavescens coecum* Packard, 1888; *Scotolemon flavescens coecum*: Banks, 1893) (Bat Cave (type locality), Carter Caves, Carter Co., Kentucky / Tp or Tb/ S2 G1G2) **Bibl.:** Conn, 1981; Rambla & Juberthie, 1994

Erebomaster *flavescens flavescens* Cope, 1872 (= *Phalangodes flavescens*: Simon, 1879; *Scotolemon flavescens*: Packard, 1877); (Wyandotte Cave (type locality), Crawford Co., IN (S2) + VA, OH, NY?, WV, KY, MO, VA/ Tp? & epigean in IN; Accidental or Tx? in MO, VA/ Tm- light coloration, reduced eyes, longer legs in Wyandotte Cave/ G1G2?) **Bibl.:** Bishop, 1949; Goodnight & Goodnight, 1960, 1981; Holsinger, 1962, 1967; Briggs, 1969; Gardner, 1986; Rambla & Juberthie, 1994; Peck, 1998

Erebomaster *flavescens weyerensis* (*Phalangodes flavescens weyerensis* Packard, 1888; *Scotolemon flavescens weyerensis*: Banks, 1893) Holsinger, Baroody & Culver, 1976; Rambla & Juberthie, 1994 (type locality cave in Augusta Co., VA; & caves in Grant, Jefferson, Pendleton, Pocahontas & Tucker Cos., WV / Tp or Tb, Tm - reduced or missing eyes, reduced pigmentation)

Erebomaster undet. sp. (cave in Taney Co., MO / Tp?)

Eumesosoma Cokendolpher, 1980 (= *Mesosoma* Weed, 1892) Sclerosomatidae harvestmen

Eumesosoma *roeweri* (*Mesosoma roeweri* Goodnight & Goodnight, 1943 = *Mesosoma texanum* Goodnight & Goodnight, 1943 (AR, IA, KS, KY, LA, MN, NB, ND, OK, SD, TX / accidental

Tx in cTX) **Bibl.:** Elliott & Reddell, 1975; Elliott, 1979; Cokendolpher, 1980; Cokendolpher & Lee, 1993

Eurybunus Banks, 1893 (see also *Dalquestia*) Sclerosomatidae harvestmen
Eurybunus formosus (= *Dalquestia formosa*)

Eurybunus *n. sp.* (misidentified as *Eurybunus brunneus* Banks, 1893) (w TX, se NM / Tx in NM) **Bibl.:** Welbourn, 1978; Cokendolpher & Lee, 1993; Cokendolpher pers.comm., 1999

Globipes Banks, 1893 - Sclerosomatidae harvestmen

Globipes *spinulatus* Banks, 1893; Cokendolpher & Lee, 1993 (CA, NV / Tx in Calaveras & Tuolumne Co., CA)

Goodnightiella Roewer, 1949; not Soares & Soares, 1945 (see *Crosbyella*)
Goodnightiella distincta = *Crosbyella distincta*

Hadrobunus Banks, 1900 (some species formerly in *Phalangium* & *Liobunum*) Sclerosomatidae harvestmen

Hadrobunus *grandis* (*Phalangium grandis* Say, 1821; *Liobunum similis* Weed, 1890, nomen nudum; *Liobunum grande* var. *simile* Weed, 1892) (GA, OH, NC, OK, VA / Accidental or Tx in MO) **Bibl.:** Gardner, 1986; Cokendolpher & Lee, 1993

Hesperonemastoma Gruber, 1970 (some species formerly in *Nemastoma*) Ceratolasmatidae harvestmen

Hesperonemastoma *inops* (*Nemastoma inops* Packard, 1896) Gruber, 1970 (*?type locality cave in Carter Co., KY / Tb/ G1G2) **Bibl.:** Goodnight & Goodnight, 1960, 1981; Gruber, 1970; Conn, 1981; Cokendolpher & Lee, 1993; Rambla & Juberthie, 1994

Hesperonemastoma *modestum* (*Nemastoma modesta* Banks, 1894) Gruber, 1970 (epigean in BC, WA, OR, CA / Tx in BC & Calaveras & Tuolumne Cos., CA) **Bibl.:** Gruber, 1970; Cokendolpher & Lee, 1993

Hesperonemastoma *packardi* (*Nemastoma packardi* Roewer, 1914 (= *Nemastoma troglodytes* Packard, 1877, not Wankel, 1861) (type locality cave in Tooele Co., UT + surface in ID / Tp? in UT/ G1G2) **Bibl.:** Goodnight & Goodnight, 1960, 1981; Gruber, 1970; Cokendolpher & Lee, 1993

Hesperonemastoma *pallidimaculosum* (*Nemastoma pallidimaculosa* Goodnight & Goodnight, 1945) (**type locality & one other cave in Morgan Co., AL / Tb, Tm- eyes lacking, relatively weak sclerotization of the integument, elongation of the appendages) **Bibl.:** Goodnight & Goodnight, 1960; Gruber, 1970; Peck, 1989; Cokendolpher & Lee, 1993; Rambla & Juberthie, 1994

Hesperonemastoma troglodytes = *Hesperonemastoma packardi*

Hesperonemastoma undescr. sp. (ID, UT / Tb)

Hesperonemastoma undet. sp. Lee, 1985 (Kings Canyon Natl. Park, CA / Tp or Tx)

Hoplobunus Banks, 1900 - Stygnopsidae harvestmen

Hoplobunus *madlae* Goodnight & Goodnight, 1967 (type locality cave in Uvalde Co. + Bandera, Bexar, Comal, Edwards, Kendall, Kinney, Medina, Real, Uvalde, Val Verde Cos.), Balcones Fault Zone & Edwards Plateau, TX / Tb, Tm- elongate appendages, no eyes, reduced pigmentation/ G3) **Bibl.:** 1967, 1981; Reddell, 1981; Rambla & Juberthie, 1994

Hoplobunus *russelli* Goodnight & Goodnight 1967, 1981; Elliott, 1979a (type locality & 1 other cave in Val Verde Co., 1 cave each in Medina, Uvalde Cos., TX / Tb, Tm- large size, elongate appendages, reduced eyes, reduced pigmentation/ G3) **Bibl.:** Goodnight & Goodnight 1981; Elliott, 1979a

Hoplobunus undet. spp. (Tb in Bandera, Bexar, Comal, Kendall, Kinney, Terrell, Uvalde Cos., TX) **Bibl.:** Cokendolpher & Reddell 1998 pers. comm.

Leiobunum C.L. Koch, 1839 (= *Liobunum*) (see *Nelima*) Sclerosomatidae harvestmen

Leiobunum *aldrichi* (Weed, 1893) (*Liobunum longipes aldrichi* Weed, 1890; *Liobunum longipes* Weed, 1890, not of Menge in C.L. Koch & Berendt, 1854) (AL, AR, BC?, DC, GA, IL, IN, KY, LA, MA, MD, ME, MI, MO, NH, NY, NC, OH, ON, PA, SD, TN, VA, VT, WA?, WI, WV / TTx in Mammoth & Cathedral (Edmonson Co.) & Lone Star (Hart Co.), KY; Rockport Cave, MO; Salt Petre Cave, IN; sON; PQ) **Bibl.:** Davis, 1934; Conn, 1981; Cokendolpher, 1984; Gardner, 1986; Peck, 1988; Cokendolpher & Lee, 1993; Cokendolpher, pers. comm., 1999
Leiobunum bicolor = *Leiobunum elegans*

Leiobunum *calcar* (*Phalangium calcar* Wood, 1868; *L. brunnea* Walker, 1928; *L. serratipalpe* Roewer, 1910) (FL to NF, w.to AR, IL, MI, ND, OH / Ttx in MO) **Bibl.:** Davis, 1934; Gardner, 1986; Cokendolpher & Lee, 1993

Leiobunum cavernarum (= *Leiobunum politum*)

Leiobunum *elegans* Weed, 1889 (*Phalangium bicolor* Wood, 1868, not of Fabricius, 1793; *Liobunum annulatum* Walker, 1928) (FL to NF, w. to sON & SD, s. to LA / TTx in KY, MO, NS, sON, PA, TN, VA, WV; TTx in MD; Tx in IN (Crawford, Harrison, Orange Cos.), OH; Tx (overwinters) NS) **Bibl.:** Davis, 1934; ; Bishop, 1949; Cokendolpher, 1984; Gardner, 1986; Peck, 1988; Cokendolpher & Lee, 1993; M. Moseley, pers. commun. 1998

Leiobunum *exilipes* (*Phalangium exilipes* Wood, 1868; *Leuronychus gertschi* Schenkel, 1951, *Nelima goodnighti* Schenkel, 1951); Davis, 1934; Briggs & Ubick, 1988; Cokendolpher & Lee, 1993 (AK to CA, MT / Tx in CA) **Bibl.:**

Leiobunum *flavum* (*Liobunum flavum*, in part, Banks, 1894; *Leiobunum supracheliceralis* Roewer, 1957) (AL to MA, w. to LA, OH, OK, MI, WS, TN / TTx in OH, MO, TX) **Bibl.:** Davis, 1934; Gardner, 1986; Cokendolpher & Lee, 1993

Leiobunum longipes = *Leiobunum aldrichi*

Leiobunum *nigripes* Weed, 1887 (FL to ON, w. to AR, ND / Tx or Ac in sON; Tx in OH) **Bibl.:** Walker, 1928; Davis, 1934; Peck, 1988; Cokendolpher & Lee, 1993

Leiobunum oregonense = *Nelima paessleri*

Leiobunum paessleri = *Nelima paessleri*

Leiobunum *politum* (*Liobunum politus* Weed, 1889; *Liobunum politum magnum* Weed, 1893; *Leiobunum cavernarum* Roewer, 1952) (NC, FL to ON, w.to AR, ND, OK, TN, WI / Tx in AR, NC; Tx or Ac in ON) **Bibl.:** Davis, 1934; Peck, 1988; Cokendolpher & Lee, 1993

Leiobunum supracheliceralis = *Leiobunum flavum*

Leiobunum *townsendi* Weed, 1893; (AZ, CO, NM, NV, UT, Chihuahua & Durango (Mexico) / TTx in NM, TX, AZ, Mexico) **Bibl.:** Davis, 1934; McAlister, 1962; Mitchell & Reddell, 1971; Elliott & Reddell, 1975, 1985; Elliott, 1978b, 1979a; 1987; Peck, 1980; Cokendolpher, 1982; Ekpa et al., 1985; Cokendolpher & Lee, 1993; Rambla & Juberthie, 1994; Cokendolpher & Polyak, 1996; Cokendolpher, pers. comm, 1999

Leiobunum undet. sp(p). (Tx or Ac in OK, PA / Tx in MO, GA (Walker Co.) & AR; TTx or Ac in AZ)

Leiobunum *vittatum* (*Phalangium vittatum* Say, 1821 = *Phalangium dorsatum* Say, 1821; *Liobunum vittatum minor* Weed, 1893) (FL, DC, CT, to NB, ON, w. to TX, OK, SD, ND / Tx in AB, ON) **Bibl.:** Davis, 1934; Peck, 1988; Cokendolpher & Lee, 1993

Leuronychus Banks, 1900 (one species formerly in *Liobunum* & *Microgyas*) Sclerosomatidae harvestmen

Leuronychus gertschi = *Leiobunum exilipes*

Leuronychus *pacificus* (*Liobunum pacificum* Banks, 1894; *Microgyas banksi* Schenkel, 1951) (AK to CA, Baja California (Mexico) / Tx in Tuolumne Co., CA) **Bibl.:** Cokendolpher, 1980; Cokendolpher & Lee, 1993

Liobunum Agassiz, 1846 (see *Hadrobunus*, *Leiobunum*, *Leuronychus* & *Nelima*) Sclerosomatidae harvestmen

Liobunum annulatum = *Leiobunum elegans*; *Liobunum brunnea* = *Leiobunum calcar*
Liobunum grande var. *simile* = *Hadrobunus grandis*; *Liobunum longipes* = *Leiobunum aldrichi*

Liobunum longipes aldrichi = *Leiobunum aldrichi*; *Liobunum pacificum* = *Leuronychus pacificus*

Liobunum paessleri = *Nelima paessleri*; *Liobunum politum magnum* = *Leiobunum politum*
Liobunum politus = *Leiobunum politum*; *Liobunum serratipalpe* = *Leiobunum calcar*
Liobunum similis = *Hadrobunus grandis*; *Liobunum vittatum minor* = *Leiobunum vittatum*

Mesosoma Weed, 1892; not Otto, 1821 (see *Eumesosoma*, *Trachyrhinus*) Sclerosomatidae harvestmen

Mesosoma roeweri = *Eumesosoma roeweri*

Mesosoma texanum = *Eumesosoma roeweri* (see also *Trachyrhinus dicropalpus*)

Microgyas Schenkel, 1951 - See *Leuronychus*

Microgyas banksi = *Leuronychus pacificus*

Mitopus Thorell, 1876 (some species formerly in *Phalangium*, *Oligolophus* & *Opilio*)
Phalangidae harvestmen

Mitopus *morio* (*Phalangium morio* Fabricius, 1779; *Oligolophus montanus* Banks, 1893; *Opilio scabripes* Walker, 1860) (AK e.to Greenland, NS, NF, NH, NY, MT or WY/ Tx in MO - almost certainly misidentified (specimens from out of species range and based on juveniles) **Bibl.:** Gardner, 1986; Cokendolpher & Lee, 1993; Cokendolpher, pers. comm., 1999

Nelima Roewer, 1910 (some species formerly placed in *Liobunum* & *Leiobunum*)
Sclerosomatidae harvestmen

Nelima goodnighti = *Leiobunum exilipes*

Nelima *paessleri* (*Liobunum paessleri* Roewer, 1910; *Leiobunum oregonense* Goodnight & Goodnight, 1943) Crawford, 1977; Cokendolpher, 1982; Holmberg, Angerilli & LaCasse, 1984; Cokendolpher & Lee, 1993; Rambla & Juberthie, 1994 (AK to CA, e. to AB, MT, WY? / TTx in AB, BC, CA, OR, WA) **Bibl.:**

Nemastoma C. L. Koch, 1836 - See *Hesperonemastoma*;

Nemastoma inops = *Hesperonemastoma inops*)

Nemastoma modesta = *Hesperonemastoma modestum*

Nemastoma packardi = *Hesperonemastoma packardi*

Nemastoma pallidomaculosa = *Hesperonemastoma pallidomaculosum*;

Nemastoma troglodytes = *Hesperonemastoma packardi*

Odiellus Roewer, 1923 (some species formerly placed in *Phalangium* & *Oligolophus*)
Phalangidae harvestmen

Odiellus *pictus* (*Phalangium pictum* Wood, 1868; *Oligolophus ohioensis* Weed, 1889); Peck,

1988; Cokendolpher & Lee, 1993; Cokendolpher, pers. comm, 1999 (LB south to GA, west to MB, WI, IL, TN / Tx or Ac in sON) **Bibl.:**

Oligolophus C. Koch, 1871 (some species formerly placed in *Opilio*, see also *Mitopus*, *Odiellus*)
Phalangidae harvestmen

Oligolophus montanus = *Mitopus morio*
Oligolophus ohioensis = *Odiellus pictus*

Oligolophus *tridens* (*Opilio tridens* C. L. Koch, 1836) Cokendolpher & Lee, 1993; M. Moseley, pers. comm. 1998 (native to Europe, introduced to VT, NF, NS / Ac in 2 caves in NS) **Bibl.:**

Opilio Herbst, 1798 (some species formerly placed in *Phalangium*, see also *Mitopus*, *Oligolophus*) Phalangidae harvestmen

Opilio angulatichelis = *Phalangium opilio*

Opilio *parietinus* (*Phalangium parietinum* DeGeer, 1778; *Phalangium cinereum* Wood, 1868) (NA (except SE, Far West, AZ), Europe / Tx in MO - probably misidentification of *Phalangium opilio* females or juveniles) **Bibl.:** Gardner, 1986; Cokendolpher & Lee, 1993

Opilio scabripes = *Mitopus morio*
Opilio tridens = *Oligolophus tridens*

Ortholasma Banks, 1894 - Nemastomatidae harvestmen

Ortholasma *levipes* Shear & Gruber, 1983 (CA epigeal / Tx in Calaveras & Tuolumne Cos., CA) **Bibl.:** Cokendolpher & Lee, 1993

Ortholasma *pictipes* Banks, 1911 (s BC, w WA, w OR, nw CA / Tx? in BC, WA) **Bibl.:** Shear & Gruber, 1983; Cokendolpher & Lee, 1993

Paranonychus Briggs, 1971 (some species formerly placed in *Sclerobunus*) Triaenonychidae harvestmen

Paranonychus *brunneus* (*Sclerobunus brunneus* Banks, 1893) (AK, BC, WA, OR, CA / TTP in BC, WA) **Bibl.:** Briggs, 1971; Bragg & Leech, 1972

Phalangium Linnaeus, 1761 (some species formerly placed in *Opilio*; see also *Hadrobunus*, *Mitopus*, *Odiellus*) Phalangodidae harvestmen

Phalangium bicolor = *Leiobunum elegans*; *Phalangium calcar* = *Leiobunum calcar*
Phalangium cinereum = *Opilio parietinus*; *Phalangium dorsatum* = *Leiobunum vittatum*

Phalangium exilipes = *Leiobunum exilipes*; *Phalangium grandis* = *Hadrobunus grandis*
Phalangium longipalpis = *Phalangium opilio*; *Phalangium morio* = *Mitopus morio*

Phalangium *opilio* Linneaus, 1761 (*Phalangium longipalpis* Weed, 1890; *Opilio angulatichelis* Roewer, 1952) (Europe, NA (except SE, far SW, Great Basin) / brown daddy-long-legs / Tx in OK) **Bibl.:** Black, 1971; Edgar & Yuan, 1968; Cokendolpher & Lee, 1993

Phalangium parietinum = *Opilio parietinus*; *Phalangium pictum* = *Odiellus pictus*
Phalangium vittatum = *Leiobunum vittatum*

Phalangodes Tellkamp, 1844 (= *Acanthocheir*, *Phrixis*. See also *Banksula*, *Bishopella*, *Crosbyella*, *Erebomaster*, *Scotolemon*, *Theromaster*, *Tolus*) Phalangodidae harvestmen

Phalangodes appalachius = *Tolus appalachius*
Phalangodes acanthina = *Erebomaster acanthina*
Phalangodes archeri = *Theromaster archeri*

Phalangodes *armata* Tellkamp, 1844 (*Acanthocheir armata* Lucas 1861, *Phrixis longipes* Cope, 1872; *Acanthocheir armatum*: Kingsley, 1884) (Mammoth Cave (type locality), & caves in Edmonson & Warren Cos., KY / +nAL, cKY, wTN / Tb, Tm - long, slender appendages, reduced ocularium, no eyes; considered Tp by Sullivan 1962 as it leaves the dark zone in June & July/ G3G4) **Bibl.:** Goodnight & Goodnight, 1960, 1981; Briggs, 1974; Rambla & Juberthie, 1994

Phalangodes brunnea = *Theromaster brunnea*; *Phalangodes californica* = *Banksula californica*
Phalangodes flavescens = *Erebomaster flavescens*; *Phalangodes flavescens coecum* = *Erebomaster flavescens coecum*

Phalangodes flavescens weyerensis = *Erebomaster flavescens weyerensis*
Phalangodes laciniosa = *Bishopella laciniosa*

Phalangodes *spinifera* Packard, 1888 (Tx in Mammoth C., KY) (from FL?) (considered by most authors as no longer a valid species)

Phalangodes *spinturnix* = *Crosbyella spinturnix*
Phalangodes undet. sp. (Tx or Tp in AR)

Phalangomma Roewer, 1949 – Phalangodidae harvestmen

Phalangomma *virginicum* Roewer, 1949 (*type locality cave in Augusta Co., VA / Tp/ see comments under *Crosbycus goodnighti*, another species supposedly found in Foun.Cave. Neither species has been recollected and probably originated from another region) **Bibl.:** Peck, 1998; Rambla & Juberthie, 1994; Cokendolpher, pers. comm, 1999

Phlegmacera Packard, 1884 - See *Sabacon*
Phlegmacera cavicolens = *Sabacon cavicolens*
Phlegmacera occidentalis = *Sabacon occidentalis*

Phrixis Cope, 1872 (see *Phalangodes*)
Phrixis *longipes* = *Phalangodes armata*

Protolophus Banks, 1893 - Protolophidae harvestmen

Protolophus undet. sp. (Tx in Amador & Tuolumne Cos., CA)

Sabacon Simon, 1879 (= *Phlegmacera*) Ischyropsalidae harvestmen

Sabacon *cavicolens* (*Phlegmacera cavicolens* Packard, 1884; *Sabacon crassipalpe* (not of L. Koch, 1879) Roewer 1914; *Sabacon spinosus* Weed, 1893)(widespread in eastern North America, from NB, PQ, ON to SC & AK / Tx in Bat Cave (type locality), Carter Co., KY, TTx in KY (Mammoth Cave); Tp or Tx in Washington (prob.), Searcy & Stone Cos., AR + IL (prob.), IN (Harrison Co.), MO, sON, PQ, SC; Tp in GA (probably) (Walker Co.)) **Bibl.:** Shear, 1975; Peck & Lewis, 1977; Youngstedt & Youngstedt, 1978; McDaniel, et al., 1979; Conn, 1981; Peck & Peck, 1982; Gardner, 1986; Peck, 1988, 1989; Cokendolpher & Lee, 1993

Sabacon *jonesi* Goodnight & Goodnight, 1942; Shear, 1975; Peck, 1989; Cokendolpher & Lee, 1993 (*?type locality in cave in Madison Co., AL / Tp; (known only by single juvenile and species may not be valid, adults need to be collected and studied/ G1?) **Bibl.:**

Sabacon near *occidentalis* (Tx in Trinity Co., CA)

Sabacon *occidentalis* (*Phlegmacera occidentalis* Banks, 1894) Shear, 1975; Cokendolpher & Lee, 1993 (BC, WA, OR, CA / Tp or Tx in BC, OR Caves & WA) **Bibl.:**

Sabacon *siskiyou* Shear, 1975 (CA / Tp in OR Caves, OR)

Sabacon spinosus = *Sabacon cavicolens*

Sabacon undet. sp. (2 caves in Skamania Co., WA / Tx?) Peck, 1973

Sabacon undet. sp.#1 Crawford, 1974 (cave in Skagit County, WA / TTp?)

Sabacon undet. sp. or species (Tp or Tx in BC, IL)

Sclerobunus Banks, 1893 (see also *Cryptobunus*, *Paranonychus*) Triaenonychidae harvestmen

Sclerobunus brunneus = *Paranonychus brunneus*

Sclerobunus cavicolens = *Cryptobunus cavicolens*

Sclerobunus *nondimorphicus* Briggs, 1971 (BC, WA, OR / Tx in WA)

Sclerobunus *robustus* Crosby & Bishop, 1924 (epigean in SE, NM/ Tp in Baker Cr. System, White Pine Co., NV) Epka et al. 1984

Sclerobunus undescr. sp. (MT, NV, UT / Tb)

Sclerobunus undet. sp. (Tp in Whetstone, Huachuca, Santa Rita & Catalina Mts., sAZ)

Scotolemon Banks, 1901 (see *Banksula*, *Erebomaster*, *Phalangodes*, *Theromaster*)
Phalangodidae harvestmen

Scotolemon brunnea = *Theromaster brunnea*; *Scotolemon californica* = *Banksula californica*

Scotolemon flavescens = *Erebomaster flavescens*; *Scotolemon flavescens caecum* = *Erebomaster flavescens coecum*; *Scotolemon flavescens weyerensis* = *Erebomaster flavescens weyerensis*

Sitalcina Banks, 1911 (= *Sitalces*, see also; *Calicina*, *Texella*) Phalangodidae harvestmen
Sitalcina bifurcata = *Texella bifurcata*

Sitalcina *californica* (Banks, 1893) Briggs, 1967, 1968; Briggs & Hom 1968 (west central counties, CA / Tp or Tx in Santa Cruz Co., CA)

Sitalcina *cloughensis* = *Calicina cloughensis*

Sitalcina *cockerelli* Goodnight & Goodnight, 1942)(OR, CA / epigean & Tp in CA) **Bibl.:** Briggs & Hom 1966, Briggs, 1968; Briggs & Ubick, 1989

Sitalcina digitus = *Calicina digita*
Sitalcina serpentinea = *Calicina serpentinea*
Sitalcina sierra = *Calicina sierra*

Sitalcina *sura* Briggs, 1968 (Monterey Co., CA/epigean & Tx)

Speleomaster Briggs, 1974 - Cladonychiidae harvestmen

Speleomaster *lexi* Briggs, 1974 (*Cryptomaster* sp. Briggs, 1973); (type locality & one other lava tube cave in Lincoln Co., ID +Mt. Adams caves, WA / Tb, Tm - reduced ocularium, no eyes, elongate appendages, reduced pigmentation/ G1G2) **Bibl.:** Briggs, 1983, 1986; Peck, 1973; Benedict, 1974a; Goodnight & Goodnight, 1981; Briggs, 1986; Rambla & Juberthie, 1994

Speleomaster *pecki* Briggs, 1974 (*type locality cave in Craters of the Moon National Monument, Butte Co., ID/ G1G2 / Tb, Tm - reduced ocularium, no eyes, elongate appendages, reduced pigmentation) **Bibl.:** Briggs, 1974, 1983, 1986; Peck, 1973; Benedict, 1974; Goodnight & Goodnight, 1981; Briggs, 1986; Rambla & Juberthie, 1994

Speleomaster undescr. sp. (*cave in ID / Tb?/ G1)

Speleonychia Briggs, 1974 - Cladonychiidae harvestmen

Speleonychia *sengeri* Briggs, 1974(****? type locality & 3 other caves in Skamania & Klickitat Cos., WA/ G3G4 / Tb, Tm - reduced ocularium, no eyes, elongate appendages, reduced pigmentation; greater number of segments in tarsi) **Bibl.:** Briggs, 1974, 1983, 1986; Peck, 1973, 1998; Benedict, 1974a; Crawford, 1974a; Goodnight & Goodnight, 1981; Rambla & Juberthie, 1994

Taracus Simon, 1879 - Sabaconidae harvestmen (genus in Asia and NA)

Taracus *malkini* Goodnight & Goodnight, 1945; (Manzanita Lake & cave, both in Shasta Co. + caves in Lassen Co., CA / Tb or Tp?/ G1G2) **Bibl.:** Peck, 1973; Cokendolpher & Lee, 1993

Taracus *silvestrii* Roewer, 1930; Cokendolpher & Lee, 1993 (*Oregon Cave (type locality), Josephine Co., OR / Tb)

Taracus undescr. sp. #1 (*cave in White Pine Co., eNV / Tp or Tb, Tm- large size) **Bibl.:** Briggs 1969

Taracus undescr. sp. #2 (*?cave in Tulare Co., Sequoia-Kings Canyon Natl.Park, CA / Tp or Tb, Tm- large size) **Bibl.:** Briggs 1969; Lee 1985

Taracus undet. sp. or species Crawford, 1973; Crawford & Senger, 1985 (Tx or Tp in BC & Skamania & Skagit Cos., WA) **Bibl.:**

Taracus undet. (s)sp. (TTx or Tp in Siskiyou & Tulare Cos., CA)

Taracus undet. sp Benedict, 1982 (cave near Bend, OR/ Tx or Tp)

Texella Goodnight & Goodnight 1967 (one species formerly placed in *Sitalcina*) Phalangodidae harvestmen

Texella *bifurcata* (*Sitalcina bifurcata* Briggs, 1968) (nw CA, Jackson Co., OR / Tp or Tx in Shasta Lake Cave, Shasta Co., CA, Tm- depigmentation) **Bibl.:** Ubick & Briggs, 1992

Texella *brevidentata* Ubick & Briggs 1992 (Honey Creek Cave (type locality), Comal Co., TX / Tp, Tm- depigmentation/ caves only?/ G1G2)

Texella *brevistyla* Ubick & Briggs 1992 (type locality & 1 other cave in Uvalde Co., TX / Tp, Tm- depigmentation/ caves only?/ G1 or G1G2)

Texella *cokendolpheri* Ubick & Briggs 1992 (= *Texella watersi* nomen nuda Ubick & Briggs 1992) (type locality & 1 other cave? in Bexar Co., TX / Tb, Tm- elongation of legs and palps, increased tarsal count, eye and eyemound reduction, depigmentation/ Robber Baron cave harvestman/ Federal endangered T&E/ G1)

Texella *diplospina* Ubick & Briggs 1992 (*type locality cave in Hays Co., TX / Tp, Tm- depigmentation/ caves only/ G1G2)

Texella *fendi* Ubick & Briggs 1992 (KY (Fayette Co.) epigean / Tp in cave in Coryell Co., TX) **Bibl.:** Reddell & Ubick 1998 pers. comm.

Texella *grubbsi* Ubick & Briggs 1992 (*type locality cave in Hays Co., TX / Tp or Tb, Tm- depigmentation/ caves only?/ G1G2)

Texella *hardeni* Ubick & Briggs 1992 (type locality & 1 other cave in Bandera Co., cave? in Kerr Co., TX / Tb, Tm- elongation of legs and palps, increased tarsal count, eye and eyemound reduction, depigmentation/ G1 or G1G2)

Texella *kokoweef* Ubick & Briggs 1992 (*type locality cave in San Bernardino Co., CA / Tp or

Tb, Tm- depigmentation/ G1G2)

Texella *longistyla* Ubick & Briggs 1992 (epigean in Culberson Co., TX / type locality & 1 other cave in Eddy Co., NM / Tp, Tm- depigmentation/ G1G2)

Texella *mulaiki* Goodnight & Goodnight 1942 (Ezell's Cave (type locality) + possibly 6 other caves, Hays Co. and possibly 3 caves, Travis Co., TX / Tb, Tm- elongation of legs and palps, increased tarsal count, eye and eyemound reduction, depigmentation/ G3) **Bibl.:** Goodnight & Goodnight 1942, 1960, 1967, 1981; Elliotta, 1979; Ubick & Briggs 1992

Texella *reddelli* Goodnight & Goodnight 1967, 1981; Ubick & Briggs, 1992; Elliott, 1979a, 1982, 1985, 1989 (****type locality & 3 other caves in Travis Co., TX / Tp, Tm- depigmentation / Bee Creek Harvestman / Endangered- Federally Listed/ G1G2)

Texella *renkesae* Ubick & Briggs 1992 (*type locality cave in Hays Co.,TX / Tp, Tm- depigmentation/ G1G2)

Texella *reyesi* Ubick & Briggs 1992 (type locality + numerous other caves in Williamson Co., +numerous caves in Travis Co., both in TX / Tb, Tm- elongation of legs, increased tarsal count, eye reduction, depigmentation / B. Cave Harvestman (= Tooth Cave harvestman) / Endangered- Federally Listed/)

Texella *shoshone* Ubick & Briggs 1992 (*type locality cave in Inyo Co., CA / Tp, Tm- depigmentation/ caves only/ G1G2)

Texella *spinoperca* Ubick & Briggs 1992 (*type locality cave in Travis Co.,TX / Tp, Tm- depigmentation/ caves only)

Texella undescr. sp. #1 Ubick & Briggs 1992 (*?cave in Medina Co.,TX / Tb, Tm- elongation of legs and palps, increased tarsal count, eye and eyemound reduction, depigmentation)

Texella undescr. sp. #2 Reddell 1998 pers. comm. (*?cave in Bexar Co., TX / Tp?)

Texella undescr. sp. #3 Reddell 1998 pers. comm. (*?cave in Bexar Co., TX/ Tp?)

Texella undescr. sp. #4 Reddell 1998 pers. comm. (*?cave in Williamson Co., TX / Tp?)

Texella undescr. sp. #5 Reddell 1998 pers. comm. (Long Joint Sink, Bell Co., TX / Tp?)

Texella *watersi* nomen nudum Ubick & Briggs 1992 = *Texella cokendolpheri* Ubick & Briggs 1992)

Texella *welbourni* Ubick & Briggs 1992 (*type locality cave in Eddy Co., NM / Tb) Tm- elongation of legs, eye reduction, depigmentation/ G1G2)

Thermomaster = misspelling of *Theromaster*

Theromaster Briggs, 1969 (sometimes misspelled *Thermomaster*, some species formerly placed

in *Scotolemon*, *Phalangodes*) Cladonychiidae harvestmen

Theromaster *archeri* (*Phalangodes archeri* Goodnight & Goodnight, 1942 (type locality & 1 other cave in Jackson Co. & one cave in Madison Co., AL / Tp?/ G1) **Bibl.:** Briggs, 1969; Rambla & Juberthie, 1994

Theromaster *brunnea* (*Scotolemon brunnea* Banks, 1902; *Phalangodes brunnea*: Roewer, 1912); Goodnight & Goodnight, 1960; Briggs, 1969; Peck, 1989 (AL, GA, NC, TN / Tx? in 2 Jackson Co. caves + cave in Madison Co., AL)- *Theromaster archeri* is probably the female of this species. The above record from Mc. Cave is that of a male. This cave is also the type locality of *Bishopella jonesi*.

Tolus Goodnight & Goodnight 1942 (one species formerly placed in *Phalangodes*)
Phalangodidae harvestmen

Tolus *appalachius* Goodnight & Goodnight 1942 (*Phalangodes* (= *Tolus*) *appalachius*) (Wonder Cave (type locality), Grundy Co. + 11 caves (Marion, Overton, Putnam, Van Buren, White Cos.), TN; cave in Jackson Co., AL / Tb/ G3G4) **Bibl.:** Peck, 1989); Goodnight & Goodnight, 1960; Rambla & Juberthie, 1994

Trachyrhinus Weed, 1892 - Sclerosomatidae harvestmen

Trachyrhinus *dicropalpus* Cokendolpher, 1981 (misidentified as *Mesosoma texanum* by Rowland & Reddell, 1976) (Kerr Co., TX / Ac or Tx in cave in Medina Co., TX) **Bibl.:** Cokendolpher & Lee, 1993

Vonones Simon, 1879 - Cosmetidae harvestmen
Vonones ornata (Say, 1821) (*Gongyleptes* & *Libitiodes ornatus*) = often misidentification of *Vonones sayi*

Vonones *sayi* (*Cynorta Sayi* Simon, 1879; often misidentified as *Vonones ornata*) (AL, IL, IN, KN, KY, LA, MS, OK, TX, NC, NE Mexico/ Ac or Tx in MO, IL, TX, KY (Mammoth Cave) **Bibl.:** Gardner, 1986; Jones & Cokendolpher, 1985; Cokendolpher & Jones, 1991; Cokendolpher, pers. comm., 1999

Vonones sp. (= *Vonones sayi*) (Ac or Tx in cave in Johnson Co., IL) **Bibl.:** Peck & Lewis, 1978; Cokendolpher, pers. comm., 1999

Wespus Goodnight & Goodnight, 1942 - Phalangodidae harvestmen
Wespus undet. sp. (cave in Taney Co., MO)

Zuma Goodnight & Goodnight, 1942 - Triaenonychidae harvestmen

Zuma *acuta* Goodnight & Goodnight, 1942 (Monterey, San Mateo, Santa Cruz Cos., CA / Tp in 2 caves in Cruz Co., CA, Tm- reduction of pigmentation in Empire Cave population). **Bibl.:** Briggs, 1967, 1971; Rambla & Juberthie, 1994

hazard, caving - Incl. histoplasmosis, insect (spider, tick), microbe (coccidiomycosis, coccidiomycosis fungus (blastomycosis, cryptococcosis, dermatophytes, histoplasmosis, mycormycosis, & valley fever), gas (CO₂, ammonia), hantavirus, leptospirosis, lyme, plague, rabies, rat bite fever, tetanus, ticks, tularemia)

hellgrammites - Insect of Order Megaloptera. See Neuroptera

helminthology – The study of parasitic worms.

helminths – Inclusive term for various parasitic worms (trematodes, tapeworms, round worms, leeches, acanthocephalans)

helocrene - Area where a spring percolates into a marshy holding area.

hemiedaphon - Of upper soil layer. Cf. euedaphon

helminths - Various parasitic worms that incl. **trematodes**, tape **worms**, round **worms**, acanthocephalans (see **worms**) and leeches.(see **worm**, **Hirudinoidea**)

helocrene - Area of spring seepage through bryophytes, litter & detritus. Cf. rheocrene..

Hemiptera - See **bug**.

herbivore - An animal that eats plants.

herbivore & heterotroph - Bibl. - See feeding

heritability - The proportion of the variance among individuals for a trait that is attributable to differences in genotype.

herpobethos - Animals living on or in mud and moving through it.

heterochrony - Developmental dissociation in time of shape, size or maturity. Usually refers to changes in timing or rate of development relative to the same even in an ancestor, as in the appearance of neoteny.

Heteroptera - See bug.

heterothermy - The ability to regulate body temperature physiologically, but temperature is not regulated precisely or at the same level at all times.

heterotroph - A **type** of organism that uses organic material to synthesize its own living matter.
Syn: consumer.

heterozygosity - The presence of different **alleles** at a gene locus.

Hexapoda - Superclass Incl. **dipluran, insects, springtail, thysanuran.**

hibernation - Method of surviving periods of low food availability by prolonged inactivity. Various bats control their temperature by choosing areas of the cave with an appropriate microclimate.

Hirundinea - Syn. leech. See **worm, Hirudinoidea**

histoplasmosis – Ascomycote fungus (*Histoplasma capsulatum*) hazard usually contracted from airborne bat or poultry guano, rarely from ingestion. Types range from asymptomatic to fevers & breathing difficulty. Largely restricted to river valleys in warm temperate to tropics.
Bibl.: Al-Doory & Rhoades, 1969; Anon, 1968; Anon, 1963, 1973; Barton 1996; Baum 1960; Breisch & Foxman 1974; Elliott 1981; Emmons, 1958; E. et al. 1966; Gordon 1993; Halliday 1949; Huppert 1981; Kabli 1986; Kwon-chung & Bennett 1992; Locklear 1994; Lottenberg et al. 1979; McMurray & Russell 1982; Richards 1975; Sacks & Crockett 1986; Schacklette & Hasenclever 1968; Washburn et al. 1948 Grayston & Furcolow 1953, 1956; Halliday 1959; Riege 1965, 1974; Tesh & Schneidau 1966; Waldspurger 1964; Wisener 1976;

Areas: **AR** (Rocky Comfort C.); **AZ:** Disalvo et al. 1969; Negroni 1965; **FL** (7 caves), **GA** (1 cave); **MO** (Shannon Co.) & Pulaski Co., **OK** (c. near Reed). Bryles & Robinson 1969; Furcolow & Horr 1956; **NM** (Carlsbad, 2 others), **TN** (1 cave), **TX** (5 caves) Al-Doory & Rhoades, 1968; Anon. 1961a; W. Elliott 1978; **WV:** Emmons 1956; Gilleo 1960; Locklear 1994

history - Barr 1966, 1966a; Bocking, 1966; Dexter 1966, 1970, 1979, 1984; Grady 1986-7; Hobbs, III & Krantz 1976, 1978; Matthews 1986; Reddell 1976.

Holarctic – Biogeographic area that includes Europe, Asia and North America

Holarctic region or realm – Zoogeographic area of the Arctic, North America, Europe and a large part of Asia.

Holocene - The latest division of the Quaternary. It begins about 10,000 years ago, the end of the Ice Age in large parts of Europe and North America.

holophyly - When one taxon has completely evolved into a new taxon, leaving no individuals of the original taxon.

holotype - The one individual, etc. designated by the author as the type used in describing a new species. An existing holotype establishes the use of the name. Syn: type specimen.

homeomorph - Resemblance between taxon due to convergent evolution, as in attenuation of limbs in cave species.

homoeotic mutation – One in which a structure exists in a series of states, such as the evolution of gills into jaw bone and then into inner ear structures. Syn.: homeotic.

homeostasis - The tendency of a biosystem to resist change.

homeothermic - Referring to animals that maintain their own constant body temperature.

homing - Refers to the return of individuals to their place of birth or origin.

homosymbiosis - Symbiosis between individuals of the same species.

homolog(ue) - A species or one of its parts with homology.

homologous - Referring to traits evolved from a common ancestor.

homology - Similarity but not identity between parts or species with differences due to evolutionary divergence.

homonymy - Similarity of structures in the same individual.

homonym - One of two or more separately published names for the same taxon or identical names from different taxa. The first published name is known as the senior homonym and any later published name as a junior homonym.

homoplasy – Possession of >one species of a similar trait that has not been derived by both species from their common ancestor. Causes may be convergence, parallelism, or evolutionary reversal.

Homoptera

Order of insects of cicadas & allies (hoppers, whiteflies, aphids, scales). Of Subclass Pterygota, Division Neoptera, Subdivision Acercaria, Section Condylgnatha. Name from *homo*, “same” and *pteron*, “wing,” in reference to the more or less uniform thickness of the front wings, unlike the Hemiptera.. Wing venation. Long, coiled, sucking mouthparts for piercing plants and feeding on their juices. Bodies soft or thickened and leathery, sometimes with spines, seatae or with a waxy covering. Most species brown or green but some (esp. tropical) brightly colored. Head bent down (except scale insects). Antennae mostly 3-10 segments by some 11-13, bristlelike and mostly short, absent in some female scale insects. Wings folded when at rest. Hind pair of scale insects greatly reduced. Legs often spiny Tarsi with 1-3 tarsomeres only. No cerci although basal segment of cicadas modified for making sounds in mating. Cornicles or siphunculi on 5th or 6th abdominal segment are short, tube-like structures secrete a defensive liquid. They are paurometabolous, with eggs (some ovoviviparous), larvae and adults. Approx. 23,000 species with 6,359 species and 894 genera in US and Canada. **Bibl.:** Goulet & Huber 1993; Krombein et al. 1979. Incl.

Suborder Auchenorrhyncha (=Cicadinea)

Superfamily Cicadoidea

Cicadidae (cicadas) (*Magicicada*; undet. genus
(2,000 to 3,000 & 9,400 to 10,300 years BP
in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM)

Superfamily Fulgoroidea

Achilidae (achilid planthoppers) Undescribed species and/or genera (CA Tx, Tb or Tp
on roots) (*Synechdoche*)

Cixiidae (cixiid planthoppers) (family also put in Hemiptera)
(*Apache* (now in Derbidae), *Cixius*, *Oliarus*, *Stegocixius*)

Derbidae (derbid planthoppers) (*Apache* (once in Cixidae), *Cedusa*)

Fulgoridae (fulgorid planthopper; lanternflies, fulgorids, delphacids)
(new sp.? in 2 caves in Tuolumne Co., CA/ Tp, Tb)

Superfamily Cicadelloidea

Cicadellidae (=Jassidae) (leafhoppers; sharpshooters)
Subfamily Deltocephalinae (*Exitianus*)

Subfamily Typhlocybinae (*Typhlocyba*,
Subfamily Xestocephalinae (*Xestocephalus*)

Membracidae (treehoppers)

Subfamily Smiliinae

Tribe Micrutalini (*Micrutalis*)

Suborder Sternorrhyncha

Superfamily Aphidoidea

Aphididae (aphids and plantlice) (*Prociphilus*, *Rhopalosiphoninus*)

Superfamily Coccoidea

Ortheziidae (ensign scales; root scales) (*Arctorthezia*)

Pseudococcidae (mealy bugs) (*Geococcus*)

ACHILIDAE (achilid planthoppers) Undescribed species and/or genera (CA Tx, Tb or Tp on roots) (*Synechdoche*)

APHIDIDAE (aphids and plantlice) **Bibl.:** C. Smith & Parron 1978
(*Prociphilus*, *Rhopalosiphoninus*)

CICADELLIDAE (=Jassidae) (leafhoppers; sharpshooters) **Bibl.:** DeLong 1948; Oman 1949
Subfamily Deltocephalinae (*Exitianus*)
Subfamily Typhlocybinae (*Typhlocyba*,
Subfamily Xestocephalinae (*Xestocephalus*)

CICADIDAE (cicadas)

(*Magicicada*; undet. genus (2,000 to 3,000 & 9,400 to 10,300 years BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM)

CIXIDAE Spinola, 1839 (cixiid planthoppers) (family also put in Hemiptera) (*Apache* (now in Derbidae), *Cixius*, *Oliarus*, *Stegocixius*)

DERBIDAE (derbid planthoppers) (*Apache* (once in Cixidae), *Cedusa*)

FULGORIDAE (fulgorid planthopper; lanternflies, flugorids, delphacids)
(new sp.? in 2 caves & 1 mine in Tuolumne Co., CA/ Tp, Tb/ G1)

MEMBRACIDAE (treehoppers) **Bibl.:** Deitz 1975

Subfamily Smiliinae

Tribe Micrutalini (*Micrutalis*)

ORTHEZIIDAE Green, 1896 (ensign scales; root scales) **Bibl.:** H. Morrison 1952
(*Arctorthezia*)

PSEUDOCOCCIDAE (mealy bugs) (*Geococcus*)

Apache Kirkaldy, 1901 - Derbidae homoptera (once in Cixidae) (2 species in US or Canada)
Apache *degeeri* (*Otiocerus* g. Kirby, 1821) (widely distributed epigeal/ Tx or Ac in Conecuh Co., KY)

Arctorthezia Cockerell, 1902 - Ortheziidae homoptera (3 species in US or Canada)
Arctorthezia *occidentalis* (*Orthezia* o. Douglas, 1891; *O. californica* Erhorn, 1906) (Tp root

feeding in Mt.St. Helens caves (WA) & OR C.(OR)).

Cedusa - put in Derbidae,

Cedusa Fowler, 1904 (also put in Fulgoroidae) Derbidae homoptera (35 species in US or Canada)

Cedusa undet. sp. (Tx? in AR),

Cixius Latreille, 1804 (*Vincentia* Uhler, 1895; *Pseudocixius* Caldwell, 1950) - Cixidae homoptera (also put in Hemiptera) (25 species in US or Canada)

Cixius lochites = *Stegocixius l.*

Cixius undet. sp. (cave in Santa Cruz Co./Tp)

JASSIDAE = Cicadellidae

Exitianus Ball, 1929 (= *Mimodrylix* Zachvatkin, 1935) Cicadellidae homoptera, Subfamily Deltocephalinae (3 species in US or Canada)

Exitianus undet. sp. (Ac in cave in Irion Co., TX)

Geococcus Green, 1902 - Pseudococcidae homoptera (1 species in US or Canada)

Geococcus *coffeae* Green, 1933 (alien in Kauia,Oahu,Maui,HI/ Tx or Ac in Kazumura Lava Tube, HI)

Magiccicada – Cicadellidae bugs (four species in US & Canada)

Magiccicada undet. sp. (Edaphic &/or Ac in cave in Walker Co., GA)

Melanaethus Uhler, 1876 (= *Lobonotus* Uhler, 1877) - Cydnidae bugs, Subfamily Cydninae (11 species in US or Canada)

Melanaethus undet. sp. (9,100 year old fossil in *Neotoma* woodrat midden, Puerto Blanco Mts.,Pima Co., sAZ)

Microtalis Fowler, 1895 - Membracidae homoptera, Subfamily Smiliinae, Tribe Microtalini (5 species in US or Canada)

Microtalis undet. sp. (21,800 years old in *Neotoma* woodrat nest in Ajo Mt., Pima Co, AZ)

Oliarus Stal, 1862 (= *Pentastiridius* & *Pentastira* Kirschbau, 1868) - Cixidae homoptera (51 species in US or Canada, endemic to HI but with affinities to NA taxa). **Bibl.** Hoch 1997; Howarth, 1987b; F. Mead 1968

Oliarus *gagnei* Hoch & Howarth, 1999 (*Ulupalakua Cave #2, east Maui, HI/ Tb/ G1)

Oliarus *kalaupapae* Hoch & Howarth, 1999 (**type locality & 1 other cave (both part of same

lava tube system) in Molokai Island, HI/ Tb/ G1)

Oliarus *koanoa* Kirkaldy, 1902 (Tp in HI Island caves)

Oliarus *lorettae* Hoch & Howarth, 1999 (**type locality & one other cave in HI Island, HI/ Loretta Lynn's blind planthopper/ Tb?/G1 or G1G2? HA T&E)

Oliarus *makaiki* Hoch & Howarth, 1999 (*type locality cave on Hualalai Mt., HI Island, HI/ Tb/ HI Species of Concern, S1S2, global G1 or G1G3 rank) **Bibl.** Howarth, Hoch & Asche, 1987

Oliarus *polyphemus* Fennah, 1973 (type locality cave in HI Volcanoes Natl. Park/ priolan oliarus planthopper/ Tb/ G1G2) **Bibl.** Hoch 1993, 1996; Hoch & Howarth, 1993; Howarth, Hoch & Asche, 1987, 1988, 1990; Wessell & Hoch 1999

Oliarus *priola* Fennah, 1973 (*?type locality cave in Maui, HI/ Maui blind planthopper/ Tb/ G1 or G1G3 S1S3)

Oliarus *waikau* Hoch & Howarth, 1999 (*type locality cave in Waikamoli Nature Reserve, East Maui, HI/ Tb/ G1)

Otiocerus Kirby, 1821 = *Apache*

Prociphilus Koch, 1857 (= *Pulvius* Sanborn, 1904; *Paraprociophilus* Mordvilko, 1923; *Neoparacletus* Strom, 1942) Aphididae Homoptera (11 species in US or Canada)

Prociphilus undet. sp. (Ac in cave? in Travis Co., TX)

Rhopalosiphoninus Baker, 1920 - Aphididae Homoptera (5 species in US or Canada)

Rhopalosiphoninus *latysiphon* (*Amphorophora* l. Davidson, 1912) (TTx on roots in CA)

Stegocixius Kramer, 1983 - Cixidae homoptera (1 species in US or Canada)

Stegocixius *lochites* K.1983 (= *Cixius* l.) (root feeding Tx in WA)

Synecdoche O'Brien 1971 - Achilidae planthoppers (21 species in US or Canada)

Synecdoche *nemoralis* (*Catonia* n. Van Duzee 1916) (Tx? in WA)

Typhlocyba Germar, 1833 (= *Empoa* Fitch, 1851; *Anomia* Fleber, 1866; *Edwardsiana* Zachvatkin, 1929; *Eupterycyba* Diabola, 1858; *Ficocyba* Vidano, 1960; *Empoides* Vilbaste, 1968; *Eupterycyba* Kirejtschuk, 1977 (misspelling) Cicadellidae homoptera, Subfamily Typhlocybinae (69 species in US or Canada)

Typhlocyba undet. sp. (TTx or Ac on rotting log in cave in Rockcastle Co., KY)

Xestocephalus Van Duzee, 1892 (= *Myrmecophryne* Kirkaldy, 1906; *Nesotettix* Lindberg, 1936 (Homo.); *Lindbergana* Metcalf, 1952) Cicadellidae homoptera, Subfamily Xestocephalinae (5 species in US or Canada)

Xestocephalus undet. sp. (Ac in cave in Travis co., TX)

homozygosity - The same alleles at more or more locations in homologous chromosomal sections.

horse - See **mammal**, **ungulate**

Horseshoe Crabs

Phylum Chelicerata

Class Merostomata

Subclass or Order Xiphosura

Order Xiphosurida

Suborder Limulina

Superfamily Limuloidea

Limulidae (*Limulus*)

Limulus – Limulidae horseshoe crabs

Limulus polyphemus (Linnaeus, 1758) (horseshoe crabs/ MA, Virginian marine infauna)

human - See **mammal**, **human**

human impacts (see also endangered, pollution) - Brandon, 1971; Duchon & Lisowski, 1980; Gamble, 1981; Gardiner, 1971; Hobbs II United States, Army Engineer District, 1973 I, 1995b, 1996a; Simon 1991; Steever 1995

alien species introductions –

Dobat 1998; Elliott 1992b, 1993a; Howarth 1985; Reeves 1967, 1974; Veni 1991;

acidification - Allison, et al., 1992; Berrill, et al. 1985; Davies, I., 1984, 1989;

Distefano et al., 1991; France, 1984-5a, 1992; France & Graham. 1985; Keenan & Alikhan, 1991; J. Lewis 1995a; Tierney, & Atema, 1986; Uiska et al., 1994

ammonium nitrate - Bechler, 1983; Krukilton 1984; Crunkilton 1982;

chlorination - Mathews et al 1975, 1977

climate change - Poulson 1992

dam flooding/base level changes - Craig 1977; Elliott 1979a-b, 1981a; Eraso 1981;

McEachern & Grady 1978; Smyre 1977; W. Elliott 1981; Poulson & Smith 1964; Poulson 1981; United States, Army Engineer District 1973

entrance modifications - J. Fry 1996; Hellman 1989

fish kills - Streever 1992

exotics - Aley 1972b; Aley & Aley 1984a, 1985a; Elliot 1992a; Reeves 1999

food - Northup, Hardy & Ingham 1989; Viele 1989; Viele & Studier 1990 ; Trepasso & Kaletsky 1994

highway construction - Klawitter 1992;

lights - Aley 1972, 1976, 1984, 1985; Aley, Aley & Rhodes 1984; Claus 1963; Maguire 1960-a

logging - Hedstrom 1992

military operations - Tazik et al. 1992

overpumping and/or salinization –

Dudley & Larson, 1976; Longley 1991a, 1992; Dudley & Larson 1976

oxygen consumption - Hakenkamp 1997

restoration - J. Lewis 1991, 1993a

traffic - Carlson 1991, 1994; Crawford & Senger 1988; Northup, Hardy & Ingham 1989;

Carlson 1993; Quick 1972

urbanization - Reddell 1995; Reddell & Elliot 1995; Russell, K. 1983; Sheps 1971; Pride et al. 1991;

humate - organic acids that occur as brown-black coatings on cave ceilings and walls. May result from evaporation of thin films composed of solutions of humic acid in water. The humic acid is probably derived by seepage of an organic accumulation from a swamp or possibly a sinkhole pond. Mammoth and Salts C., KY. **Bibl.** Quinlan and Traverse 1967.

humidity (see habitat) - Bull & Mitchell 1970, 1972; Davis, R., & Harris. 1936.

humins - Polymeric, structurally varied, dark-colored organics

humus - The sum of dead organics in or on the soil. More broadly, the transformations of dead animals, plants and microbes in the soil. Cf. humate, humins, humic acids.

humification - All changes in dead organics in or on the soil., especially the formation of humins.

hybridization - See reproduction

hydra, hydroidea & hydrozoa - See Cnidaria

hydrobiology - The study of species who live in water and their ecologic and environmental relationships.

hydrophytes - Non-planktonic plants which live in water all their lives.

Hydrozoa - A class of **Cnidaria**.

hygrophilic - **Type** of terrestrial species adapted to moist conditions, are unable to tolerate dry conditions, & which therefore actively seek out a humid microclimate. Common in caves.

hygrophytes - Plants living in permanently damp soils and high humidity.

Hymenoptera

(wasps, ants and bees) Order of Class **Insecta**, Subclass Pterygota, Division Neoptera, Subdivision Endopterygota (=Holometabola), Section Panorpidia, Superorder Neoptera or Amphimesenoptera. Name from Greek hymen, “membrane” & pteron, “wing” in reference to the membranous wings of most species. Third largest insect order (after beetles and flies). Soft-bodied, leathery to very hard; shape usually elongate, sometimes compressed, color brown or dark, often with yellow markings. Antennae moderately long (long in some parasites), with 13 segments in the male and 12 in most females (as few as 3 in some parasites). Mandibulate mouthparts but modified tongue for lapping nectar in main pollinators. Two wing pairs with hind one smaller. Distinctive few cross wing veins angled to form closed cells. Many wingless in one or both sexes, especially in social castes. Tarsi with 5 tarsomeres. Legs may be modified for pollination. End of female abdomen modified into an ovipositor, especially in parasites or, in most bees, predatory wasps and some ants, modified into a stinger. Larvae may be caterpillar like but most lack legs. Pupae are in silken or parchmentlike cocoon or naked, either in an isolated cell or, among social species, in constructed cell complexes cared for by workers. Males produced from unfertilized eggs; likely the reason for complex social systems. Complete metamorphosis (holometabolism: egg, larvae, pupae, adults). Most larvae are parasitic, with the abdomen of most adults constricted. Most adults are predators but many are plant feeders or pollinators. About 105,000 species in the world, with 18,000 and 2040 genera in the US and Canada.

Bibl.: Goulet & Huber 1993; Krombaine et al. 1979; Poole & Lewis 1996a; Pease & Grzybowski 1991; W. Wilson 1971; **Areas:** **CT:** Viereck et al. 1916; **World:** Goulet & Huber 1993

Suborder Apocrita (members have a “wasp waist” (narrowly constricted))

Section Terebrantes

Series or Section Parasitica

Superfamily Chalcidoidea

Trichogrammatidae (*Oligosita*)

Superfamily Ichneumonoidea (put in Series Apiformes)

Braconidae - now in Aculeata

Superfamily Proctotrupoidea

Diapriidae - now in Aculeata

Superfamily Sphecoidea

Sphecidae (sphecid wasps; digger wasps; sand wasps; cicadakillers; mud

daubers

Undet. genus (740 yrs. old in woodrat nest in Butler Mts., Yuma Co,

AZ)

Subfamily Sphecinae

Tribe Sceliphronini (*Chalbion*, *Sceliphron*)

Series Aculeata (sting-bearing)

Superfamily Apoidea (put in Apiformes)

Series Apiformes

Superfamily Apoidea (also put in Series Aculeata)

Andrenidae (andrenid bees)

Subfamily Panurginae (*Perdita*)

Apidae (bumble bees and honey bees; bumble bees; euglossine(s); honeybees;
stingless bees) (*Apis*)

Superfamily Ichneumonoidea (sawflies) (once in Series Parasitica)

Braconidae (=Aphidiidae) (braconid sawflies; braconids) **Bibl.:** Wharton et al.

1997

Subfamily Alysiinae

Subfamily Alysiinae

Tribe Alysiini (*Aspilota*, *Phaenocarpa*)

Ichneumonidae (=Paxylommatidae) (Ichneumon wasps)

Subfamily Ichneumoninae

Tribe Alomyini (*Heterischnus*)

Tribe Ichneumonini

Subtribe Amblytelina (*Diphysus*)

Subtribe Gyrodontina (*Melanichneumon*)

Superfamily Proctotrupoidea (also put in Parasitica)

Diapriidae (undet. genus in Tulare Co.,CA)

Scelionidae

Subfamily Scelioninae (*Baeus*)

woodrat

Mutillidae (velvet ants) Undet. Genus (9.400-10.3 K years BP in *Neotoma*

Dorylinae))

Formicidae (once put in Formicoidea & Scolioidea) (ants)

Tribe Tapinomini (*Liometopium*, *Tapinoma*)

Tribe Ecitonini (also put in own subfamily) (*Labidus*, *Neivamyrmex*)

Tribe Camponotini (*Camponotos*)Tribe Lasiini (*Lasius*, *Prenolepis*),Tribe Attini (*Acromyrmex*, *Atta*, *Trachymyrmex*)Tribe Crematogastrini (*Crematogaster*)

Tribe Myrmecini (Myrmicina)

Tribe Myrmicini (*Myrmica*, *Pogonomyrmex*)

Tribe Solenopsidini (*Monomorium Oligomyrmex*, *Solenopsis*,)

Tribe Ectatommini (*Proceratium*)Tribe Odontomachinii (*Odontomachus*)

Tribe Ponerini (*Hypoponera*, *Leptogenys*)

Subfamily Pepsinae

Tribe Ageniellini (*Ageniella*)Tribe Pepsini (*Pepsis*)

Subfamily Pompilinae

Tribe Pompilini (*Agenioideus*, *Anoplius*)

ANDRENIDAE (andrenid bees) Hymenoptera of Superfamily Apoidea

Subfamily Panurginae (*Perdita*)

APIDAE

(bumble bees and honey bees; bumble bees; euglossine(s); honeybees; stingless bees) (*Apis*)

BRACONIDAE (=Aphidiidae) (braconid sawflies; braconids) **Bibl.:** Wharton et al. 1997

Subfamily Alysiinae: Subfamily Alysiinae

Tribe Alysiini (*Aspilota*, *Phaenocarpa*)

Subfamily Microgastrinae

Tribe Microgastrini (*Apanteles*)

DIAPRIIDAE (also put in Diaprioidea) (undet. genus in Tulare Co.,CA)

FORMICIDAE (ants)

Mostly Ac near entrances & aliens deep in show caves. **Bibl.:** Bolton, 1995; Holldobler & E.O.

Wilson 1990; Iwata 1976; Trager 1988; **Areas:** NA Creighton 1950; Krombein et al. 1979;

TX: Cockendolpher & Francke, 1990; US: M. Smith 1943, 1947

Dolichoderinae

Tribe Tapinomini (*Liometopium*, *Tapinoma*)

Dorylinae

Tribe Ecitonini (also put in own subfamily) (*Labidus*, *Neivamyrmex*)

Ecitoninae (*Labidus*, *Neivamyrmex*) (subsumed as tribe in Dorylinae))

Formicinae

Tribe Camponotini (*Camponotus*)

Tribe Formicini (*Formica*)

Tribe Lasiini (*Lasius*, *Prenolepis*),

Myrmicinae (*Novomessor*, *Pachycondyla*,)

Tribe Attini (*Acromyrmex*, *Atta*, *Trachymyrmex*)

Tribe Crematogastrini (*Crematogaster*)

Tribe Leptochoracini (*Leptothorax*)

Tribe Myrmecini (*Myrmicina*)

Tribe Myrmicini (*Myrmica*, *Pogonomyrmex*)

Tribe Pheidolini (*Aphaenogaster*, *Pheidole*)

Tribe Solenopsidini (*Monomorium* *Oligomyrmex*, *Solenopsis*,)

Ponerinae

Tribe Ectatommini (*Proceratium*)

Tribe Odontomachini (*Odontomachus*)

Tribe Ponerini (*Hypoponera*, *Leptogenys*)

ICHNEUMONIDAE (=Paxylommatidae) (Ichneumon wasps) of Superfamily Ichneumonoidea .

Bibl.: Gupta 1988; Spradbery 1973; Townes 1944-5.

Subfamily Ichneumoninae

Tribe Alomyini (*Heterischnus*)

Tribe Ichneumonini

Subtribe Amblytelina (*Diphysus*)

Subtribe Gyrodontina (*Melanichneumon*)

MUTILLIDAE (velvet ants) Undet. Genus (9,400 to 10,300 years BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM))

POMPILIDAE (spider wasps) hymenoptera wasps of Superfamily Vespoidea

Subfamily Pepsinae

Tribe Ateniellini (*Ateniella*)

Tribe Pepsini (*Pepsis*)

Subfamily Pompilinae

Tribe Pompilini (*Atenioides*, *Anoplius*)

SCELIONIDAE (scelionid wasps; scelionids)

Subfamily Scelioninae (*Baeus*)

SPHECIDAE (sphecids; digger wasps; sand wasps; cicadacillers; mud daubers)

Bibl.: Bohart & Menke 1976

Undet. genus (740 years old in *Neotoma* woodrat nest in Butler Mts., Yuma Co., AZ)

Subfamily Sphecinae

Tribe Sceliphronini (*Chalbion*, *Sceliphron*)

TRICHOGRAMMATIDAE (trichogrammatid wasps; trichogrammatids) hymenoptera wasps of superfamily Chalcidoidea (*Oligosita*)

Acromyrmex Mayr, 1865 - Formicidae hymenoptera, Subfamily Myrmicinae? , Tribe Attini (2 species in US or Canada)

Acromyrmex *versicolor* (*Atta* v. Pergande, 1893) (epigeal in AL, CA, Mex./ fossil in *Neotoma* woodrat midden, Puerto Blanco Mts., Pima Co., sAZ; 10,800 & 8,970 years old in *Neotoma* woodrat nest in Tinajas Mts., Yuma Co, AZ)

Ateniella Banks, 1917- Pompilidae hymenoptera wasps, Subfamily Pepsinae, Tribe Ateniellini

(38 species in US or Canada)

Ageniella (*Ageniella*) *evansi* Townes, 1957 (AZ, NM, Mex. epigeal/Tx in AZ)

Agenioideus Ashmead, 1902 (*Aaporoideus* Ashmead, 1902; *Ridestus* Banks, 1912; *Gymnochores* Banks, 1917) Pompilidae hymenoptera wasps, Subfamily Pompilinae, Tribe Pompilini (3 species in US or Canada)

Agenioideus *humilis* (*Pompilus h.* Cresson, 1867) (NB, BC to FL, CA s.to Panama/ Ac in cave in Travis Co., TX)

Anoplius Dufour, 1834 - Pompilidae hymenoptera wasps, Subfamily Pompilinae, Tribe Pompilini (36 species in US or Canada)

Anoplius (*Notiochores*) *amethystinus a.* (*Sphex a.* Fabricius, 1793) sFL, AZ, CA s. to Panama/Ac in Devil's Sinkhole, Edwards Co., TX)

Anoplius (*N.*) *lepidus atromentarius* (*Pompilus a.* Dahlbom, 1843)) (sNew England, OH, NB to FL, Mex./Ac in cave in Edwards Co., TX)

Anoplius undet. sp. (Ac in cave in Irion Co., TX)

Apanteles Forster, 1862 (= *Pseudapanteles*, *Urogaster* Ashmead, 1898; *Xestapanteles* Cameron, 1910; *Stenopelura* Viereck, 1911; *Allapantales* Brethes, 1915) Braconidae hymenoptera, Subfamily Alysiinae, Tribe Microgastrini (65 species in US or Canada)

Apanteles undet. sp. (TTx in nests of *Hirundo fulva* in Edwards Co.; Tx in Uvalde Co.; Ac? in CO)

Aphaenogaster Mayer, 1853 (*Deromyrma* Forel, 1913; *Planimyrmica* Viehmeyer, 1914; *Attomyrma*, *Novomessor* Emery, 1915; *Nystalomyrma* Wheeler, 1916) (spine-waisted ants) Formicidae hymenoptera, Subfamily Myrmicinae, Tribe Pheidolini (30 species in US or Canada)

Aphaenogaster *boulderensis* Smith, 1941 (epigeal NV, TX?, AZ/ 1,200 years old in *Neotoma* woodrat nest in Ajo Mt., Pima Co, AZ)

Aphaenogaster *texana t.* Wheeler, 1915 (*Stenamma t.* Emery, 1895 (Unav.); *A. furvescens*, *carolinensis* Wheeler, 1915; *A. nana* W., 1932; *A. silvestrii* Menozzi, 1919; *A. punctithorax* Cole, 1938) Emery (NC, TN, s.to FL, w. to KS, AZ/ TTx in cave in Brewster Co., TX)

Aphaenogaster undet. sp. (TTx in cave in Coryell Co., TX/ 2,000 to 3,000 & >26,000 years BP in *Neotoma* woodrat nest in scNM; 21,800 to 9,600 years old in *Neotoma* woodrat nest in Ajo Mt., Pima Co, AZ)

Apis Linnaeus, 1758 (*Apicula* R., 1814; *Apiarus* Rafinesque, 1815; *Mellifera* L., 1758) Apidae hymenoptera, Subfamily Apinae, Tribe Apini (1 species in US or Canada)

Apis *mellifera* L.1758 (honey bee) (worldwide, introduced into Western Hemisphere/TTx in Edwards, Kinney Cos., TX)

Apis undet. sp. (Tx or Ac in CA)

Aspilota Forster, 1862 (*Dipiesta*, *Panerema*, *Spanomeris* F.1862; *Scotioneurus* Provancher, 1886) Braconidae hymenoptera, Subfamily Alysiinae, Tribe Alysiini (53 species in US or Canada)

Aspilota undet. sp. or species (Tx in AL (parasite of *Megaselia cavernicola* fly) & sON; Tp or Tx in GA (parasite of *Megaselia spelunciphila* fly))

Atta Fabricius, 1804 (*Oecodoma* Latreille, 1818; *Archeata*, *Neoatta* Goncalves, 1942; *Palaeatta*, *Epiatta* Borgmeier, 1950) Formicidae hymenoptera, Subfamily Myrmicinae, Subfamily Attini (2 species in US or Canada)

Atta *texana* (*Myrmica t.* Buckley, 1860) (LA,e.Mex./Ac in Bandera, Bexar Cos., TX)

Baeus Haliday, 1833 (= *Hyperbaeus* Foerster, 1856; *Psilobaeus* Kieffer, 1926) Scelionidae hymenoptera wasps, Subfamily Scelioninae (7 species in US or Canada)

Baeus undet. sp. (Ac in Persimon Sink, Burnet Co., TX)

Belyta Jurine, 1807 (B. Haliday, 1857 (emend.); *Tetrapsilus*, Kieffer, 1908; *Paraclista* K.1909; *Neobelyta* Hellen, 1964; *Balyta* Ashmead, 1893 (missp.) Diapriidae hymenoptera of Subfamily Belytinae (31 species in US or Canada)

Belyta undet. sp. (sON/Tx or Ac)

Camponotus Mayr, 1861; (= *Colobopsis* Mayr, 1861; *Tanaemyrmex* Ashmead, 1905; *Myrmoturba*, *Myrmothrix*, *Myrmetoma*, *Myrmobrachys* Forel, 1912; *Myrmaphaenus*, *Paracolobopsis* Emery, 1920; *Neomyrmamblys* Wheeler, 1921) Formicidae hymenoptera ants, Subfamily Formicinae, Tribe Camponotini (48 species in US or Canada)

Camponotus (*Myrmentoma*) *decipiens* Emery, 1893 (= *C. Rasilis* Wheeler, 1910; *C. nearcticus* Emery; *C.marginatus* var. *d.* Emery, 1893) (Ac in cave in Burnet Co., TX)

Camponotus *festinatus* (*Formica f.* Buckley, 1866; *C. pubicornis* Emery, 1893; *C. fragilis* Pergande, 1893; *C. spurcus* Wheeler, 1910) (Ac in cave in Sutton Co., TX)

Camponotus (*Myrmentoma*) *nearcticus* Emery, 1893 (= *Formica americana* Buckley, 1866 (Homo.); *C. minutus* E., 1893; *C. pardus*, *tanquaryi* Wheeler, 1910) (ON s.to FL, w.to ND, CO, BC s.to ID, CA/Ac in cave in Bexar Co., TX)

Camponotus (*Tanaemyrmex*) *semitestaceus* Emery, 1893 (*F. americana* B., 1866 (homo.); *C.*

minutus E.1893; *C. pardus*, *tanquaryi* W.1910) (OK, TX w.to WA, OR, CA, Mex./ TTx in cave in Williamson Co., TX)

Camponotus (*Tanaemyrmex*) *sansabeanus* s. (F.s. Buckley, 1866; *C. bulimosus*, *torrefactus* W.1910) (AR, LA w.to CO, UT, AZ, sCA/ Ac in Hays, Williamson Cos., TX)

Camponotus undet. sp. or species (Ac in cave in Coryell Co., TX; (fossil in *Neotoma* woodrat midden, Puerto Blanco Mts., Pima Co., sAZ & 9,120+- 500 years old in scNM))

Camponotus (*C.*) *texanus* Wheeler, 1903 (TX/Ac in Bexar Co., TX)

Chalybion Dahlbom, 1843 Sphecidae hymenoptera wasps, Subfamily Sphecinae, Tribe Sceliphronini (2 species in US or Canada)

Chalybion undet. sp. (Tx mud dauber wasp in AZ)

Crematogaster Lund, 1831 - Formicidae hymenoptera ants, Subfamily Myrmicinae, Tribe Crematogastrini (31 species in US or Canada)

Crematogaster (*C.*) *laeviuscula* Mayr, 1870 (LA, OK, TX, Mex. epigeal/ Ttx in Bexar, Edwards, Travis Cos., TX)

Crematogaster (*Acrocoelia*) undet. sp. (Epigeal in West /Ac in cave in Hardeman Co., TX)

Crematogaster undet. sp. or species (TTx in Edwards, Sutton, Travis, Williamson Cos., TX; 9,700 year old fossil in *Neotoma* woodrat midden, Puerto Blanco Mts., Pima Co., sAZ; 32,000 to 8,100 years old in *Neotoma* woodrat nest in Ajo Mt., Pima Co, AZ))

Diphysus Kriechbaumer, 1890 (= *Diphyes* K., 1890 Missp.; *Pseudamblyteles* Ashmead, 1900; *Physocoteles* Berthoumieu, 1904; *Antelca* Morley, 1914; *Aethiopischnus* Heinrich; *Posocentrus* Provancher, 1875; *Rhexidermus* Forster, 1868) Ichneumonidae hymenoptera wasps of Subfamily Ichneumoninae, Tribe Ichneumonini, Subtribe Amblytelina (30 species in US or Canada)

Diphysus undet. sp. (TTx winter hibernation in KY)

Eciton = *Labidus*

Formica Linnaeus, 1758 (= *Serviformica*, *Raptiformica* Forel, 1913; *Neoformica* Wheeler, 1913; *Coptoformica* Mueller, 1923; *Adformica* Lomnicki, 1925) Formicidae hymenoptera ants, Subfamily Formicinae, Tribe Formicini (97 species in US or Canada)

Formica *fusca* L., 1758 (*F. alpicola* Gredler, 1858; *F. cinereoides* Forel, 1874 (Unav.); *F. cinereofuscoides* F, 1892 (Unav.); *F. marcida* Wheeler, 1913; *F. 3333tombeuri* Bondroit, 1917; *F. maura* Santschi, 1929; *F. fuscolemani* Samsinak, 1951; *F. hyrcana* Arnoldi, 1968) (nCanada to nMex., CA, IL, NC, W/ fuscous or silky ant/TTx or Ac in woodrat nest, NWT)

Formica lasioides Emery, 1893. (epigean NS, PQ, w. to BC,, s. to MA, MI, SD, CO, NM, AZ, CA/ Ac or Tx in Vancouver Island, BC)

Formica moki Wheeler, 1906 (*F. occidua* Wheeler, 1912 (Unav.), 1913 (Syn.)) (SW/Ac or Tx in CA)

Formica undet. sp. or species (Ac in cave in Hardeman Co., TX (*fusca* group); remains in *Neotoma* woodrat midden in Canyonlands, UT; 2,000 year old remains in entrance pit in Rat's Nest Cave, AB; 6,400 to 7,800 years BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM)

Heterischnus Wesmael, 1859 (ichneumons or ichneumon s) Ichneumonidae hymenoptera wasps of Subfamily Ichneumoninae, Tribe Alomyini (2 species in US or Canada)

Heterischnus *huardi* h. (*Posocentrus* h. Provancher, 1875) (PQ s. to NY, w.to AK, OR/ Tx or Ac in sON)

Hypoponera Santschi, 1938 Formicidae hymenoptera ants, subfamily Ponerinae, Tribe Ponerini (5 species in US or Canada)

Hypoponera *opacior* (*Ponera* o. Forel, 1893; *P. chilensis* F.1914) (West Indies, CO, VA s.to FL, CA to Chile/ Ttx in Bexar, Hays, Uvalde Cos., TX)

Hypoponera undet. sp. (TTx in Travis, Williamson Cos., TX)

Labidus Jurine, 1807 (*Nycteresia* Roger, 1861; *Pseudodictyadia* Andre, 1855) Formicidae hymenoptera ants, Subfamily Dorylinae, Tribe Ecitonini (once in Ecitoninae) (1 species in US or Canada)

Labidus *coecus* (= *Formica* c. Latreille, 1802) (AR to LA, w. to TX & Mex., n. to OK epigean/ Tx in TX)

Lasius Fabricius, 1805 (= *Chthonolasius* Ruzsky, 1913; *Donisthorpea* Morice & Durrant, 1914; *Cautolasius* Wilson, 1955) Formicidae hymenoptera ants, Subfamily Formicinae, Tribe Lasiini (17 species in US or Canada)

Lasius *pallitarsis* (*Formica* p. Provancher, 1881; *L. sitkaensis* Pergande, 1900) (Canada, n.US/ Tx or Ac in OR; TTx in WA)

Leptogenys Roger, 1861 (= *Lobopelta* Mayr, 1862; *Dorylozelus* Forel, 1915; *Microbolbos* Donisthorpe, 1948) Formicidae hymenoptera ants, Subfamily Poneriane, Tribe Ponerini (6 species in US or Canada)

Leptogenys (L.) *e. elongata* (*Ponera* e. & *texana* Buckley, 1866; *Lobopelta septentrionalis* Mayr, 1866) (LA/TTx in TX)

Leptothorax Mayr, 1855 (= *Dichothorax*, *Goniothorax* Emery, 1896; *Mychothorax* Ruzsky, 1904; *Nesomyrmex* Wheeler, 1910; *Caulomyrma* Forel, 1914; *Limnomyrmex* Arnold, 1948; *Myrafant* Smith, 1950; *Macromischa* Roger, 1863) Formicidae hymenoptera, Subfamily Myrmicinae, Tribe Leptochoracini 6 species in US or Canada)

Leptothorax *nevadensis* n. Wheeler, 1903 (*L. edoradensis* W., 1915; *L. uvicensis* Blacker, 1992) (OR, WA, CA epigeal /Tx or Ac in OR; Ac in WA)

Leptothorax undet. sp. (Ac in cave in Coryell Co., TX)

Liometopum Mayr, 1861 - Formicidae hymenoptera, Subfamily Dolichoderinae, Tribe Tapinomini (3 species in US or Canada)

Liometopum *apiculatum*, 1870 Mayr (SW,nMex./Ac in cave in Brewster Co., TX)

Liometopum undet. sp. or species (Ac or Tx in CA; 14,500 years old in *Neotoma* woodrat nest in Ajo Mt., Pima Co, AZ)),

Melanichneumon Thomson, 1893 - Ichneumonidae hymenoptera wasps of Subfamily Ichneumoninae, Tribe Ichneumonini, Subtribe Gyrodontina (20 species in US or Canada)

Melanichneumon undet. sp. (Ac in cave in Uvalde Co., TX)

Monomorium Mayr, 1855 - Formicidae hymenoptera, Subfamily Myrmicinae, Tribe Solenopsidini (7 species in US or Canada)

Monomorium *minimum* (*Myrmica m.* Buckley, 1867; *M. atra* B.1867; *Mono. emersoni* Gregg, 1945; *M. metoecus* Brown & Wilson, 1957)) (PQ, ON, s. to FL, w. to MT, CA, Mex./ Ttx in San Saba, Travis, Williamson Cos., TX/ little black ant)

Monomorium undet.sp. (Ttx in Pima Co.,AZ)

Myrmecina Curtis, 1829 - Formicidae hymenoptera, Subfamily Myrmicinae, Tribe Myrmecini (1 species in US & Canada)

Myrmecina *americana* (*M. latreillei* ssp. *a.* Emery, 1895) (PQ,ON w. to MT, CO, CA, Mex./ Ac in Travis Co., TX; Tx in GA (Dade Co.))

Myrmica Latreille, 1804 - Formicidae ants in Subfamily Myrmicinae, Tribe Myrmicini (22 species in US or Canada)

Myrmica undet. sp. (2,000 year old remains in entrance pit in AB cave)

Neivamyrmex Borgmeier, 1940 (*Acamatus* Emery, 1894 (homo.); *Woitkowskia* Enzmann, 1952) Formicidae hymenoptera ants, Subfamily Dorylinae, Tribe Ecitonini (once in Ecitoninae) (24 species in US or Canada)

Neivamyrmex fallax Borgmeier, 1953 (LA, KS, NM, nMex, AZ, Guatemala epigean /Ac in cave in Travis Co., TX)

Neivamyrmex nigrescens (*Labidus n.* Cresson, 1872) (epigean WV, KS, VA, TN, CA, AL, MS, IL, IA, MO, AR, NB, KS, OK, TX, CO, NM, AZ, CA, Mex./ fossil in *Neotoma* woodrat midden, Puerto Blanco Mts., Pima Co., sAZ)

Novomessor Emery, 1915 Formicidae hymenoptera, Subfamily Myrmicinae

Novomessor undet. sp. (fossil in *Neotoma* woodrat midden, Puerto Blanco Mts., Pima Co., sAZ)

Odontomachus Latreille, 1804 - Formicidae hymenoptera ants, Subfamily Ponerinae, Tribe Odontomachini (4 species in US or Canada)

Odontomachus clarus Roger, 1861 (= *O. texana* Buckley, 1867; *O. coninodis*, *desertorum* Wheeler, 1915; *O. clarionensis* W., 1934) (LA, Mex, West Indies/Ac in Platypus Pit, Bexar Co., TX)

Oligosita Walker, 1851 (*Westwoodella* Ashmead, 1904; *Paroligosita* Kurdjumov, 1911; *Pseudoligosita* Girault, 1913; *Zorontogramma* Silvestri, 1915) Trichogrammatidae hymenoptera wasps (7 species in US or Canada)

Oligosita undet. sp. (Ac in cave in Irion Co., TX)

Oligomyrmex Mayr, 1867 - Formicidae hymenoptera ants, Subfamily Myrmicinae, Tribe Solenopsidini (1 species in US or Canada)

Oligomyrmex longii (*Erebomyrma l.* Wheeler, 1903) (OK, TX/Ac in cave in Coryell Co., TX)

Pachycondyla Smith, 1858 (= *Neoponera*, *Brachyponera* Emery, 1901; *Trachymesopus* E. 1911) Formicidae hymenoptera ants, Subfamily Ponerinae (4 species in US or Canada)

Pachycondyla harpax (*Formica h.* Fabricius, 1804)

Pachycondyla harpax montezumia (*P.m.* F. Smith, 1858) (LA s. to Brazil, West Indies/ Ac in cave in Medina Co., TX)

Paratrechina Motschulsky, 1863 (*Nylanderia* Emery, 1906) (crazy ants) Formicidae Hymenoptera ants, Subfamily Formicinae (15 species in US or Canada)

Paratrechina terricola (*Formica t.* Buckley, 1866; *Prenolepis melanderi* Wheeler, 1903; *P. vividua* v.) (*Formica v.v.* Nylander, 1846) (FL, MS introduced in greenhouses n. to Canada/ TTx in cave in Bexar Co., TX)

Paratrechina undescr. sp. (TTx in Travis, Williamson Cos., TX)

Paratrechina undet. sp. (TTx in cave in Kinney Co., TX)

Pepsis Fabricius, 1804 (*Gigantopepsis* Lucas, 1919; *Stenopepsis*, *Dinopepsis* Banks, 1945)
Pompilidae hymenoptera wasps, Subfamily Pepsinae, Tribe Pepsini (18 species in US or Canada)

Pepsis undet. sp. (Ac in cave in Collingsworth Co., TX)

Perdita Smith, 1853 - Andrenidae hymenoptera, Subfamily Panurginae (607 species in US or Canada)

Perdita undet. sp. (Ac in mine in Presidio Co., TX)

Phaenocarpa Forster, 1862 - Braconidae hymenoptera, Subfamily Alysini, Tribe Alysini (76 species in US or Canada)

Phaenocarpa undescr. sp.? (Tx? in cave in KY)

Pheidole Westwood, 1841 - Formicidae hymenoptera ants, Subfamily Myrmicinae (68 species in US or Canada)

Pheidole *dentata* Mayr, 1886 (VA to FL, w.to IL, KS/ Ac in Bexar Co., TX)

Pheidole undet. sp. or species (Ac in TX; 9,700 year old fossil in *Neotoma* woodrat midden, Puerto Blanco Mts., Pima Co., sAZ; 11,250 to 9,900 years old in *Neotoma* woodrat nest in Tinajas & Butler Mts., Yuma Co, AZ; 8,600 to 1,200 years old in *Neotoma* woodrat nest in Ajo Mt., Pima Co, AZ; 2,000 to 3,000 & 18,000 to 19,700 years BP in *Neotoma* woodrat nest in scNM)

Pogonomyrmex Mayr, 1868 (harvester ants) Formicidae hymenoptera, Subfamily Myrmicinae, Tribe Myrmecini (22 species in US or Canada)

Pogonomyrmex (*P.*) *barbatus* (*Myrmica barbata* F. Smith, 1858; *M. molefaciens* Buckley, 1860; *P. nigrescens* Wheeler, 1902) (eAR, eLA, s., wKS, l OK, eCO, s., cNM, AZ, NV, Mex./Texan or red harvester ant; Texan agricultural ant/Ac in Edwards, Williamson Cos., TX)

Pogonomyrmex (*P.*) *comanche* Wheeler, 1902 (AR, wLA, sKS, OK, eTX, SW epigeal/ Ac in cave in Travis Co., TX)

Pogonomyrmex undet. sp. (fossil in *Neotoma* woodrat midden, Puerto Blanco Mts., Pima Co., sAZ)

Posocentrus huardi h. = *Heterischnus* h.

Prenolepis Mayr, 1861 - Formicidae hymenoptera ants, Subfamily Formicinae, Tribe Lasiini (3 species in US or Canada)

Prenolepis *imparisi* (Formica i. Say, 1836; *P. americana* Forel, 1891; *P. arizonica*, *Pumila californica*, *coloradensis*, *colimana veracruzensis* Wheeler, 1930; *F. wichita* Buckley, 1866; *T. polita* Smith, 1855) (epigean CT, ON, s. to FL, w. to WI, CA, MO, OK, TX, NM, AZ/ Ac or Tx in CA)

Proceratium Rogers, 1863 (= *Sysphingta* R.1863; *Sysphincta* Mayr, 1865) Formicidae hymenoptera ants, Subfamily Poneriane, Tribe Ectatommini (5 species in US or Canada)

Proceratium *compitale* Ward, 1988 (Tp? in Val Verde, Sutton, Terrell, Uvalde Cos., TX + Cueva de los Lagos, Coahuila, Mexico)

Proceratium *pergandei* (*Sysphincta p.* Emery, 1895) (MA to FL, w.to IA, AR, LA/ Tp? in cave/sinkhole in Val Verde Co., TX)

Pseudamblyteles = *Diphysis*

Sceliphron Klug, 1801 (= *Pelopoeus* Latreille, 1803) Sphecidae hymenoptera wasps, Subfamily Sphecinae, Tribe Sceliphronini (2 species in US or Canada)

Sceliphron undet. sp. (Tx mud dauber wasp in AZ)

Solenopsis Westwood, 1841 (*Diplorhoptrum* Mayr, 1855; *Synsolenopsis* Forel, 1918; *Diagyne*, *Lebauchena* Santschi, 1930; *Euophthalma*, *Oedaleocerus* Creighton, 1930; *Bisolenopsis* Kusnezov, 1953; *Lilidris*, *Granisolenopsis* Kusnezov, 1957) Formicidae hymenoptera, Subfamily Myrmicinae, Tribe Solenopsidini (18 species in US or Canada)

Solenopsis *aurea* Wheeler, 1906 (fossil in *Neotoma* woodrat midden, Puerto Blanco Mts., Pima Co., sAZ; 32,000, 13,500 & 1,200 years old in *Neotoma* woodrat nest in Ajo Mt., Pima Co, AZ)

Solenopsis (*S.*) *geminata* McCook (*Atta m.* Fabricius, 1804) (SC s. to FL, w.to TX, sCA, Mex, s. to Peru, West Indies/Tx(?extirpated) in Bexar, Williamson Cos., TX/ fire ant)

Solenopsis (*S.*) *wagneri* Santschi, 1916 (= *P. invicta* Buren, 1972; *P. invicta* Smith, 1979 (emend.) (red imported fire ant) (AL, FL, LA, MS ,TX epigean /Tx alien threat in FL, TX) Elliott, 1992c, 1993

Solenopsis (*S.*) *xyloni* McCook, 1879 (*Myrmica sabeana* Buckley, 1867; *S. maniosa* Wheeler, 1915) (NC s.to FL, w.to CO, CA, Mex./Ac or Tx in CA), (Tx(?extirpated) in Bexar, Val Verde, Williamson Cos., TX/ southern fire ant)

Solenopsis undet. sp. (Tx or Ac in nMS)

Tapinoma Forster, 1850 (= *Micromyrma* Dufour, 1857; *Tapinoptera* Santschi, 1925) Formicidae hymenoptera, Subfamily Dolichoderinae, Tribe Tapinomini (3 species in US or Canada)

Tapinoma *sessile* (Formica s. Say, 1836; *F. gracilis* & *parva* Buckley, 1866; *T. boreale* Roger,

1863; *Bothriomyrmex dimmocki* Wheeler, 1915) (NS,PQ,s. to FL, w. to WA,CA,Mex./ odorous house ant/ Tx or Ac in CA)

Trachymyrmex Forrel, 1893 - Formicidae hymenoptera ant, Subfamily Myrmicinae, Subfamily Attini (8 species in US or Canada)

Trachymyrmex arizonensis (*Atta a.* Wheeler, 1907) (AZ epigeal/ 29,100, 13,500-8,600 & 1,200 years old in *Neotoma* woodrat nest in Ajo Mt., Pima Co, AZ)

hyperparasitic - Parasitic on a parasite. Syn.: secondary parasites; 2nd degree parasites

hypocrenon - The short part of a stream flowing directly from the spring. Syn.: springbrook.

hypogean - Adj. for subsurface environments, including the soil, rocks & any air- or water-filled spaces within them. In the case of any body of water (salt, fresh, or frozen) open to the sky, the hypogean realm begins at the top of whatever medium lies underneath the water mass. Cf. epigeal. **Incl. endogena** (incl. eudaphophile), **upper** (Syn: interstitial), & **lower** (Syn: cavernicoles). **Bibl.** (used in title) - Bartkowiak et al. 1991; Bechler 1977, 1981a, 1981b, 1985; Bechler, David & Fernandez 1981; Bosnak 1984; Bousfield & Holsinger 1989; Caine 1978; Clamp 1990; Goodnight & G. 1981; Hobbs, Jr. & Franz 1986; H. & Hart 1966; Kuschel 1991; Owen 1995; Proudlove 1997.

hyponeuston - Refers to species who live just below the air/water interface of a water body.

hyporheic - Area inhabited by **phreatobia** under & alongside streams & rivers. Dominated by midges (see **Diptera**), elmids **beetles**, **mites**, **cladocerans**, **ostracodes**, **amphipods**, **rotifers**, **snails**, **tardigrades**, **bacteria**, **protists**, **stoneflies**, **mayflies**, **caddisflies**, and **worms**. Different chemically & fauna wise from groundwater in epigeal areas & areas below & bordering the hyporheic zone. May extend up to 2 km from rivers, as in the case of the Flathead River in MT. Fauna usually abundant in streams unless the substratum is bedrock or where pore size is less than 50 microns.. Syn.: hyporheon. **Bibl.**: J. Anderson & Meadows 1969; Ferrington & Goldammer 1992; ; **AL**: Hakenkamp 1997; **AZ**: Boulton et al. 1992; Boulton & Stanley 1996; D. Busch & Fisher 1981; S. Fisher et al. 1982; L. Gray 1980; L. Gray & Fisher 1981; Grimm 1987; Grimm & Fisher 1984, 1986, 1989; Grim, Fisher and Minckley 1981; Stanley & Fisher 1992; Stanley & Valett 1992; **CA**: Jackman wet al. 1984; Triska et al., 1989; **CO**: J. Ward & Voelz 1994; J. Ward, Voelz & Harvey 1989; **IL**: L. Robinson et al, 1967; **KS**: Ferrington 1987; Goldammer & Ferrington 1992; Rensner & Distler 1992; **MD**: Tarshish & Stuht 1970; **MI**: Hendricks 1992; Hendricks & White 1991; D. White 1990-1; D. White, Elzinga & Hendricks 1987; **MN**: Triska, Avanzino et al. 1994; Triska, Duff & Jackman 1996; Triska, Duff & Avanzino 1990, 1993, 1995; Triska, Jackman et al. 1994, 1997-8; **MT**: Ellis, Stanford & Ward 1998; Stanford & Gaufin 1974; Stanford & Ward 1993; Stanford, Ward & Ellis 1994; **NM**: D. Carr 1989; **NY**: Strayer & Bannon-O'Connell 1988, 1992; **NM?**: Morrice 1997; **OK**: D. Bass & Walker 1992; **ON**: B. Fraser et al. 1996; Giberson & Hall 1988; A. Hill 1982, 1991; Lush & Hynes 1978; M. Osgood & Boylen 1990; D. Williams 1972; **SC**: Stibbe 1995; **TX**: Poole & Stewart 1976; **VA**: Dahm, Carr and Coleman 1991; **General** - Chafic 1998; Dahm,

Grimm et al. 1998; Dahm, Carr & Coleman 1991; Dahm, Trotter and Sedell 1987; J. Duff & Triska 1990-1; D. Fiebig et al. 1990; S. Findlay et al. 1993; J. Ford 1962; T. Ford & Naiman 1989; Fortner & White 1988; Graf 1988; Kaplan & Bott 1983, 1985; G. Marshall, Cummins et al. 1985; J. Meyer 1988, 1990; J. Meyer, McDowell et al. 1988; Mickelburgh, Lock and Ford 1984; Mikell, Smith and Richardson 1996; E. Murphy, Davis et al. 1989; Naiman et al. 1987; J. Owen 1995; M. Palmer 1990, 1992; Palmer, Arensburger et al. 1996; Pennak & Ward, 1986; Pugsley & Hynes 1983; Rabeni & Minshall 1977; C. Richards & Bacon 1994; Sedell, Reeves et al. 1990; Statzner & Higler 1985; Strayer, 1989-a, 2000; S. & Bannon-O'Donnell, 1988; Strommer & Smock 1989; Thurman 1985; D.D. Williams 1984, 1989; Valett et al. 1993; J. Ward & Stanford 1983; D. White 1993; D. White, Hendricks & Fortner 1992; R. Whiteman & Clark 1982; D. Williams 1981, 1983-4

hyporheos - Hyporheic fauna especially **isopods**, **copepods**, **amphipods** and **worms**. Below a few cm. the abundance of hyporheos is generally inversely related to substratum depth and directly related to the amount of detritus input, with very few individuals much below 1 m

hypoxia - An environment with oxygen levels below that of the subsurface atmosphere but not necessarily anoxic.

Ichneumon flies - See **Homoptera**.

ICZN - International Commission of Zoological Nomenclature. The body who draws up the International Code of Zoological Nomenclature & supervises their application.

imago - The adult state of an insect.

immature - An animal which has attained adult dimensions but not sexual maturity.

indices of biologic integrity - Measures that determine the overall health of a community.

infauna - Species which live in sediment or which burrow and live inside another species.

inquiline - An arthropod living in the nest or burrow of another insect.

inquilism - See mutualism.

insect - Subclass Insecta (Class **Hexapoda**), having, as an adult, three pairs of legs, three-segmented & usually two pairs of wings. Incl. angel insects, barklice & booklice, **beetles**, **bugs**, **caddisflies**, **cockroaches**, **crickets**, **dragonflies & allies**, **earwigs**, **fishflies & allies**, **fleas**, **flies & keds**, **grylloblattids**, **Homoptera**, **Hymenoptera**, **lice**, **moths**, **Neuroptera**, **Orthoptera**, **scorpionflies & allies**, **silverfish**, **bristletails & allies**, **stylopids**, **termites**, **thrips**, **walkingsticks**

Bibl.: Arnett 2000; Arnett & Jackques 1981; Askew 1971; Borror & White 1970; Borror, Triplehorn & Johnson 1989; Brues, Melander & Carpenter 1964; de la Torre-Bueno 1957; Gillott 1995; Gullan & Cranston 1994; Powell & Hogue 1979; Henning 1981; Stehr 1987, 1991

instar - Any developmental stage between molts.

interstitial - Areas between sediment particles, usually at least partly filled with water, as within groundwater and hyporheos.

interstitial fauna - **Meiofauna** that lives between sediment pores. Aquatic interstitial fauna are hyporheic, psammon or phreatic.. Partial syns.: **meiofauna, mesofauna, microfauna**. Altherr & Deboutteville 1973; Bretschko & Klemens 1986; Hart 1973; Henning 1981; Kolasa et al. 1987; Kristensen 1981; Pennak 1950; P. & Ward 1985a 1986; Plenet 1995; Schminke 1981; Uhlig 1968.

invertebrates - Animals without backbones. Incl. **arthropods, echinoderms**

iron bacteria - Anaerobic bacteria that precipitate iron oxide from solution, either by oxidizing ferrous salts or by releasing oxidized metals from organic compounds.

irregular - **Population** common to abundant some years but absent in others.

irruption - A rapid but temporary increase in population usually as a result of increased food, reduced predation, favorable climate, etc.

Irvingtonian faunas - Early Pleist. (approx. 2 myrs to .6 myrs.) fauna in NA typified by the presence of mammoths & the absence of bison.

isolation - **Barriers**, ecology or behavior that prevent interbreeding.

Isopods

Isopoda is one of the largest crustacean orders of the class or subclass **Malacostraca**. Subclass Eumalacostraca: Superorder Peracarida (= Syncarida) (see also **syncarids**). Most 5-15mm. long. Most of the approx. 10,000 sp. dwell on the ocean floor or are parasitic. Generally elliptical, dorsoventrally flattened with a prominent pair of uniramous antennae, (usually) obvious uropods, seven pairs of legs & segments resembling plates of armor. No carapace. A pair of sessile, compound eyes present in non-troglomorphs. Female carries eggs on bottom side of body. Often scavengers (esp. Asellidae & Oniscoidea) on dead or dying animals in caves. Syn: woodlice, sow or pill bugs, slaters.

Bibl.: Banta 1910; Crawford 1976a, 1977f; Culver & Ehlinger 1980; Holsinger 1979; Lewis 1984; Lisowski 1978; Lohmander, 1927; Mackin 1959; Manicasteri & Argano 1989; Minckley 1961; Muchmore 1990a; H. Richardson 1900; Schaik 1949; Schultz 1964, 1970, 1981; Steeves 1963, 1966; Steeves & Holsinger 1968; Taiti & Howarth 1998; Wegele 1990; Chappuis 1950; Packard, 1886 ; Rafi 1985; K. Williams 1990

Behavioral adaptations: Suppl. Bibl: Warburg 1968; pollution: A. Bosnak 1979;

Areas: **AR:** Causey 1952-3, Schram 1980, 1982; **CA:** Holmes 1904; **Canada:** Rafi 1985; **FL:** Schultz & Johnson 1984; **HI:** Schultz 1973; **IL:** J. Lewis & Bowman 1981, J. Lewis 1981c; **IN:** Eberly 1954; J. Lewis 1981c; Lohmander 1927; H. Richardson 1900; **s.Appalachia:** Steeves 1969; **KS:** Gurtz et al. 1982; Leonard & Ponder 1949; **KY:** Cole 1959; J. Lewis 1981a; H. Richardson 1900; **MI:** Hatchett 1947; **MN:** Sargent 1973; **NA:** Jass & Klausmeir 2000; Vandel 19654a-b; Suppl. Bib.: W. Williams 1972; **NC:** G. Schultz 1982a; **OK:** Mackin 1940; **ON:** Huntsman 1915; **OR:** Vandel 1952; **SC:** Wagele, Voelz & McArthur 1995; **TN:** M. Hatch 1939; : H. Richardson 1900 **US:** Van Name 1936; **VA:** Holsinger & Estes 1978; Vandel 1953; **TX:** Elliott & Mitchell 1973; Schultz 1965; Steeves 1968; Lohmander 1927; Magniez 1983; H. Richardson 1900; Tabacaru 1993; Vandel 1952-3, 1960; **WA:** Hatch 1947; **World:** Argaro 1994; Coineau 1994. Orders or suborders incl. Undescr. sp. in *?cave in Kauai, HA

Phylum Arthropoda

Subphylum Crustacea

Class or Subclass **Malacostraca**.

Subclass Eumalacostraca

Superorder Peracarida (= Syncarida)

Order Isopoda

Suborder **Anthuridea**

Anthuridae

(*Amakusanthura*, *Apanthura*, *Apanthuretta*, *Cyathura*, *Horoloanthura*, *Mesanthura*, *Ptilanthura*)

Hyssuridae (*Kupellonura*, *Xenanthura*)

Suborder **Asellota** Latreille, 1803

(Dominates deep-sea crustaceans; arose in Mesozoic, early in radiation of order)

Santiidae (*Santia*)

Eurycopidae (*Acanthomunnopsis*)

Superfamily Janiroidea

Ilyarachnidae (*Ilyarachna*)

Janiridae – put in Suborder **Janiroidea**

Microparasellidae (*Microcharon*)

Munnopsidae (= Ilyarachninae) (*Eurycope*, *Munnopsurus*)

Pleurogoniidae (*Pleurogonium*)

Superfamily Aselloidea

Asellidae (*Asellus*, *Caecidotea*, *Lirceolus*, *Lirceus*, *Remasellus*, *Salmasellus*)

Microcerberidae (currently in Microcerberidae)

Stenasellidae (*Mexistenasellus*)

Suborder **Epicaridea**

Bopyridae (*Argeia*, *Bopyroides*)

Suborder Cymothoidea (= cirolanoidea) or Flabellifera (see below)

Limnoriidae (*Limnoria*)

Sphaeromatidae (now put in own suborder)

Tecticipitidae (also put in with syncarids) (*Tecticeps*)

Superfamily Flabellifera (or treated as suborder)

Cirolanidae (*Antrolana*, *Cirolana*, *Cirolanides*, *Eurydice*, *Speocirolana*)

Suborder **Gnathiidea**

Gnathiidae (*Araphura* (now put in Syncarida), *Gnathia*)

Paranthuridae (*Califanthura*, *Paranthura*)

Suborder **Janiroidea**

Jaeropsididae (*Jaeropsis*)

Janiridae (*Caecianiropsis*, *Ianiropsis*, *Jaera*)

Munnidae (*Hawaiioscia* (now in Philosciidae in Suborder Oniscoidea), *Uromunna*)

Santiidae (*Santia*)

Suborder **Microcerberidea**

Microcerberidae) (also placed in Asellota) (old group likely present before separation of Europe and America in Jurassic) (*Coxicerberus*, *Microcerberus*)

Suborder **Oniscidea** (pleopods adapted for breathing air, only terrestrial order)

Infraorder Ligiamorpha

Platyarthridae (*Trichorhina*)

Series Tylienne

Tylidae (*Tylos*)

Series Tylienne or Section Diplocheta

Ligiidae (*Ligia*, *Ligidium*)

Superfamily Trichoniscoidea

Trichoniscidae

(*Amerigoniscus*, *Brackenridgia*, *Causasonethes*, *Haplophthalmus*,
Miktoniscus,
Venezillo,
new genera & sp.? in TX/Pb; undet. genera in San Bernardino &
Tulare Cos.,

CA)

Section Crinochaeta:

Superfamily Atracheata

Oniscidae (wood lice/sow bugs)

(*Cylisticus*, *Metoponorthus*, *Oniscus*, *Philoscia*, *Trachelipus*)

Superfamily Oniscidea

Philosciidae (also put under Superfamily Atracheata)

(*Burmoniscus*, *Haplophiloscia*, *Hawaiioscia* (once put in Munnidae),
Littorophiloscia, *Papuaphiloscia*, *Philoscia*, *Tropicana*)

Scyphacidae (*Alloniscus*)

Scleropactidae (*Aulaconiscus*)

Superfamily Porcellionioidea

Porcellionidae (also put under Superfamily Atracheata & Pseudotracheata)

(*Cyclisticus* (also put in Cyclisticidae), *Metoponorthus*), *Porcellio*,
Porcellionides)

Superfamily Pseudotracheata

Armadiillidae (pill bugs) (*Armadiillidium*, *Reductoniscus*, *Venezillo*)

Cylisticidae ((*Cyclisticus* (now in Porcellionidae))

Porcellionidae (put in Superfamily Porcellionioidea)

Suborder Sphaeromatidea

Sphaeromatidae (also put in Suborder Flabellifera)

(*Ancinus*, *Cassidinidea*, *Cymodoce*, *Dynamenella*, *Exosphaeroma*,
Gnorimosphaeroma, *Harrieta*, *Paracerceis*, *Serolis* (or in Serolaoidea),]
Sphaeroma, *Thermosphaeroma*; undet. genus in LA brackish beach)

Suborder Valvifera

Arcturidae (*Arcturus*)

Idoteidae (*Edotia*, *Erichsonella*, *Eusymmerus*, *Idotea*, *Synidotea*)

Families incl.

Aegidae (*Aega*, *Rocinela*)

Anthuridae (*Apanthura*, *Apanthuretta*, *Haliophasma*, *Mesanthura*, *Horoloanthura*, *Ptilanthura*)

Arcturidae (*Arcturus*)

Armadiillidae Verhoeff, 1917 (pill bugs) (*Armadiillidium*, *Reductoniscus*, *Venezillo*) **Bibl.:**
Schultz, 1972

Asellidae Rafinesque-Schmaltz, 1815 (hog or water slater) (*Asellus*, *Caecidotea*, *Lirceolus*,

Lirceus, Remasellus, Salmasellus) **Bibl.:** Mackin 1940; Steeves 1963

Chaetiliidae (*Chiridotea, Saduria*)

Cirolanidae Dana, 1852 (*Antrolana, Cirolana, Cirolanides, Eurydice, Speocirolana*). **Bibl.:** Botosaneanu, Bruce, & Notemboom 1986

Chaetiliidae (*Sadura*) Adams, 1852

Cylisticidae (see Porcellionidae)

Idoteidae (*Edotia, Erichsonella, Eusymmerus, Idotea, Synidotea*)

Gnathiidae (*Araphura* (now put in Syncarida), *Gnathia*)

Ilyarachnidae (*Ilyarachna*)

Jaeropsididae (*Jaeropsis*)

Janiridae (*Caecianiropsis, Jaera*)

Ligiidae Brandt, 1883 (*Ligia, Ligidium*)

Limnoriidae (*Limnoria*)

Microcerberidae (*Coxicerberus, Microcerberus*)

Microparasellidae (*Microcharon*)

Munnidae G.O. Sars, 1899 (*Hawaiioscia* (now in Philoscidae), *Uromunna*)

Oniscidae Brandt, 1851 (wood lice/sow bugs) (*Cylisticus, Metoponorthus, Oniscus, Philoscia, Trachelipus*). **Bibl.:** Schultz 1981; Sket 1986; Vandel 1945, 1965a

Paranthuridae (*Califanthura, Paranthura*)

Platyarthridae Verhoeff, 1949 (*Trichorhina*)

Philoscidae (*Burmoniscus, Haplophiloscia, Hawaiioscia* (once put in Munnidae), *Littorophiloscia, Papuaphiloscia, Philoscia, Tropicana*)

Pleurogoniidae (*Pleurogonium*)

Porcellionidae Verhoeff, 1918 (*Cyclisticus* (also put in Cyclisticidae), *Metoponorthus*), *Porcellio Porcellionides*)

Santiidae (*Santia*)

Scleropactidae (*Aulaconiscus*)

Scyphacidae (*Alloniscus*)

Sphaeromatidae H. Milne Edwards, 1840 (*Cassidinidea, Cymodoce, Exosphaeroma, Gnorimosphaeroma, Harrieta, Paracerceis, Serolis* (or in Serolaoidea), *Sphaeroma, Thermosphaeroma*; undet. genus in LA brackish beach)

Stenasellidae Dudich, 1924 (*Mexistenasellus*) **Bibl.:** Cole & Minckley 1972; Magniez 1999

Trichoniscidae Sars, 1899 (*Amerigoniscus*, *Brackenridgia*, *Causasonethes*, *Haplophthalmus*, *Miktoniscus*, *Protrichoniscus*, *Styloniscus*, *Trichoniscus* (once in Oniscoidea), *Venezillo*, 2 new genera & sp.? in TX/Pb; undet. genera in San Bernardino & Tulare Cos., CA) **Bibl.:** Vandel 1965b

Tylidae (*Tylos*)

Acanthomunnopsis – Eurycopidae isopods

Acanthomunnopsis undet. sp. (WA marine infauna)

Aega Leach, 1815 – Aegidae isopods

Aega symmetrica Richardson, 1905 (WA marine infauna)

Alloniscus Dana, 1852 – Scyphacidae isopods

Alloniscus mirabilis (Stuxberg, 1875) (= *A. conutus* Budde-Lund, 1885) (CA marine sandy beach infauna burrower)

Alloniscus perconvexus Dana, 1865 (CA marine sandy beach infauna burrower)

Amakusanthura – Nunomura, 1977- Anthuridae isopods

Amakusanthura californiensis (*Apanthura c.* Schultz, 1964) (CA marine benthic)

Amakusanthura magnifica (Menzies & Frankenberg, 1966) (Carolinian, LA & FL Gulf of Mex. marine infauna)

Amerigoniscus Vandel, 1950 (see *Causasonethes*) Trichoniscidae isopods. **Bibl.:** Vandel 1977

Amerigoniscus *centralis* Vandel, 1977 (*type locality cave in Murray Co.,AR/Tb)

Amerigoniscus *curvatus* Vandel, 1977 (*type locality cave in Walker Co.,GA/Tb)

Amerigoniscus *georgiensis* Vandel, 1977 (*type locality cave in Walker Co.,GA/Tb),

Amerigoniscus *gipsicolus* (= *Causasonethes g.* Vandel, 1965) (*type locality cave in King Co.,TX/Tb)

Amerigoniscus henroti = *Caecidotea h.*

Amerigoniscus *malheurensis* Schultz, 1982 (*type locality cave in Harney Co.,OR/Tb/ critically imperiled in OR Natural Heritage list),

Amerigoniscus *nicholasi* (Vandel, 1965) (= *Caecidotea n.* & *Causasonethes n.*) (**?type locality cave in Dickson Co., + cave in Anderson Co.,TN/ Pb/ G3 or G1)

Amerigoniscus *paynei* (C. p. Muchmore, 1970b) (type locality & other cave in Anderson Co. & caves in Hancock Co.& Union Cos., TN +Roane Co.,TN/ Tb/ S2 G3G4)

Amerigoniscus *proximus* Vandel, 1977 (type locality cave in Chattooga Co. & cave in Dade Co., GA/ Tb)

Amerigoniscus unidentified sp.#1 (SE/Tb) Benedit & McEvoy 1995

Amerigoniscus unidentified sp.#2-3 (TX/ Tb)

Amerigoniscus poss. undescr. sp. (2 caves in Dade Co., GA/Tp) **Bibl.:** Buhlmann 1996, 2000

Ancinus H. Milne-Edwards, 1840 - Sphaeromatidae isopods

Ancinus depressus (Say, 1818) (rare Carolinian, Virginian marine infauna)

Antrolana (see also *Caecidotea*) Cirolanidae isopods. **Bibl.:** Bowman, 1964; Collins & Holsinger 1981

Antrolana *lira* Bowman, 1964 (type locality & one other cave in Augusta Co. + caves in Rockingham & Warren Cos., VA/ Tb T&E G3/Madison Cave isopod) **Bibl.:** Holsinger 1979; Holsinger, Hubbard & Bowman 1994; Collins & Holsinger 1981; USFWS 1982

Apanthura Stebbing, 1900 - Anthuridae isopods

Apanthura inornata Miller & Menzies, 1952 (HI anchialine caves)

Apanthura magnifica = *Apanthuretta m*

Apanthuretta Wagele, 1981 - Anthuridae isopods

Apanthuretta magnifica (*Apanthura m.* Menzies & Frankenberg, 1966) (FL marine benthic)

Arcturus Latreille, 1829 – Arcturidae

Arcturus beringanus Benedict, 1898 (AK marine infauna)

Argeia Dana, 1852 – Bopyridae isopods

Argeia pugettensis Dana, 1852 – (WA marine infauna)

Armadillidium Brandt in Brandt & Ratzeburg, 1831 - Armadillidae isopods

Armadillidium *nasatum* Budde-Lund, 1885 (E/Tp or Tx in MO; Tx in OH)

Bibl.: Adamkewicz 1968

Armadillidium *vulgare* (*Asellus* v. Latreille, 1804) (common pillbug/ alien TTx in GA (Walker Co.)/ alien epigeal & Tx in CA, IL, MO, NM, TX, VA, TX)

Asellus Geoffroy St.-Hilaire, 1762 (see *Caecidotea*, *Calasellus*, *Lirceus*, *Mancasellus*) Asellidae isopods (freshwater and brackish marine species) **Bibl.:** Chappuis 1953-5; Fleming 1972a; Henry & Magniez 1968; Needham & Burnet 1957; Packard, 1885a.

Asellus *aquaticus* (*Oniscus* a. Linnaeus, 1758) Geoffroy, 1762 (Hog slater; water slater/ Europe/ (alien Tx? in sON,PQ; alien Ttx (occasional Tx) in NS)

Asellus parvus = *Remasellus p.*

Asellus pilus = *Lirceolus p.*

Bopyroides Stimpson, 1864 – Bopyridae isopods

Bopyroides hippolytes (Kroyer, 1838) (WA marine infauna)

Aulaconiscus Taiti & Howarth, 1997 - Scleropactidae isopods

Aulaconiscus caecus Taiti & Howarth, 1997 (Tx in HI (Kauai,Oahu))

Brackenridgia Eigenmann & Ulrich, 1902 in Ulrich, 1902 (= *Protrichoniscus*) Trichoniscidae isopods

Brackenridgia heroldi (Arcangeli, 1932) (Tp in Calaveras & Tuolumne Cos.,CA)

Brackenridgia cavernarum Eigenmann & Ulrich, 1902 in Ulrich, 1902 (type locality & one other cave in Hays Co.,TX + caves on western edge of Edwards Plateau and along Balcones Fault Zone (Bexar, Comal, Hays, Kendall, Kinney, Terrell, Val Verde Cos.)/ Tb)

Brackenridgia reddelli (= *Protrichoniscus r.* Vandel, 1965) (Tb in Bandera, Medina, Real, Uvalde Cos., TX & Eddy Co.?, NM)

Brackenridgia undescr. sp.#1 (Carlsbad area (NM) & Culberson Co.,TX/Tb)

Brackenridgia undescr. sp.#2 (CA/epigean)

Brackenridgia undescr. sp.#3 (Tuolumne Co.,CA, quarried/mine transplant) Briggs 1987

Brackenridgia undescr. sp.#4? near *B. sphinxensis* Schultz G. A., 1984 (Kartchner C.,Cochise Co., AZ/)

Brackenridgia undet. (Edwards Plateau, Balcones Fault Zone, TX).

Burmoniscus Collinge, 1914 - Philoscidae isopods

Burmoniscus meeusei (Holthius, 1947) (panropical epigean/ Tp in Kauai, Molokai, Maui, Hawaii)

Caecianiropsis Menzies & Petit, 1956 - Janiridae isopods

Caecianiropsis psammophila Menzies & Petit, 1956 (CA, OR, WA marine interstitial & infauna)

Caecidotea Packard, 187 - Asellidae isopods. **Bibl.:** Collinge (see *Asellus*, *Lirceolus* Lewis, 1983, see *Remasellus*) Bosnak & Morgan 1981; Collinge 1944; J. Lewis 1980a, 1981c, 1982d, 1985; Lewis & Bowman 1981; Packard, 1885

Caecidotea acuticarpa Mackin & Hubricht, 1940 (= *A. acuticarpus*) (type locality cave in Pontotoc Co. + caves, springs & wells in Johnson, Murray & Seminole Cos.,OK/ Tp/ G2)

Caecidotea adenta Mackin & Hubricht, 1940 ** (type locality cave in Kiowa Co. (extirpated?) & small cave near Turner Falls (Murray Co.),OK/ Tb/ G1 or G1G2)

Caecidotea *alabamensis* (*Asellus* (*Prosellus*) *a.* Stafford, 1911; *A. bicrenatus* Steeves, 1963 & a. Maloney, 1939; *Conasellus a.* Henry & Magniez 1970) (*well near Auburn/ Pb/ G1G2)

Caecidotea *ancyla* (*A. ancylus* Fleming, 1972) (type locality cave in Boone Co. + caves in Madison, WA, Camden, DE, Adair Cos.,AR/ Tb/ G2G3)

Caecidotea *antricola* (*A. antricolus* Fleming, 1972; *C. a.* Creaser, 1931b; *C. meisterae* & *whitei* Lewis & Bowman, 1981) (see *C. bicrenata whitei*) (type locality cave in Camden Co., MO +MO(Camden, Carter, Christian, Crawford, Douglas, Franklin, Greene, Howell, Iron, LaClede, Oregon, Ozark, Perry, Phelps, Pulaski, Shannon, St. Francois, St. Louis, Ste. Genevieve, Taney,Texas, Wright & Washington Cos), nAR (Baxter, Benton, Carroll, Independence, Izad, Madison, Newton, Searcy,Stone, Washington Cos.) & Delaware Co.,OK/ Pb/ G3G4)

Caecidotea *barri* Steeves, 1965 (*type locality cave in Woodford Co.,KY/Tb/Cli. C. Isopod/ Federal Review Status T&E; KY T&E/ G1G3)

Caecidotea *beattyi* Lewis & Bowman, 1981 (runoff stream from wellouse, Dixon Spr. State Park, Pope Co.,sIL(5cos.)/ Pb/ G3G4)

Caecidotea *bicrenata b.* (*A. bicrenatus* Steeves, 1963; *A. alabamensis* Bresson, 1955; *Conasellus a.* Henry & Magniez, 1970) (type locality cave in Marshall Co.,AL/ caves and wells? And springs? in nAL (M.&Jackson Cos.) n Colbert, Limestone, Marshall, Lawrence, Morgan & Jackson Cos.(AL), 13Cos. in KY & 10 cos. in nc,ecTN (Clay, Davidson, Franklin, Maury, Putnam, Rutherford, White Cos./ Tb or Tp?, Pb/ TN SR, G3G4 T3T4) **Bibl.:** Bosnak 1979

Caecidotea *bicrenata whitei* (= *A. antricolus* Fleming, 1972; *C. a.* Creaser, 1931b; *C. meisterae* & *whitei* Lewis & Bowman, 1981) (type locality in Mammoth C.,KY/ Pb & caves in ncTN(Clay Co.) n.to Hart Co.(wKY: Barren, Caldwell, Christian, Crittenden, Edmonson, Hart, Lvingston, Logan, Metcalfe, Todd, Trigg Cos.), across Pennyroyal Plateau w. to sIL (Johnson & Union Cos.) & eTN(Clay Co.)/ TN SR, G3G4 T3T4)

Caecidotea *bilineata* J. Lewis & Bowman, 1996. (Tahuaya Springs, Bell Co., TX + springs & well in Dallas Co., TX/ Pb/ G3) **Bibl.:** J. Lewis 1985

Caecidotea biseta or *bisetus* = *Lirceolus bisetus*

Caecidotea *bowmani* (*A.b.* J. Lewis, 1980a) (*drain tile near Natural Bridge,Rockbridge Co.,VA/ Pb/ T&E VA S1, global G1 or G2)

Caecidotea *brevicauda b.* (*A. b.* Forbes, 1876) (E epigean,spr.(-fed stream)/Tp? in AR, IL, KY, MO) **Bibl.:** Lisowski 1979

Caecidotea *brevicauda bivittatus* (*A.b.b.* Walker, 1961) (*Doe Run, spr.fed cr., KY/ Pp?)

Caecidotea *californicus* (*A.c.* M. Miller, 1933 (Lake, Napa & Santa Clara Cos.,CA/ spr.,well, Pb?) **Bibl.:** M.iller 1939

Caecidotea *cannula* (A.c. Steeves, 1963a) (type locality & 1 other cave in Tucker Co. & 2 caves in Randolph Co., WV/ Tb/ S1 rank & global G2 or G3 rank) **Bibl.:** Culver & Ehlinger 1980, 1982; Culver 1981

Caecidotea *carolinensis* Lewis & Bowman, 1977 (type locality cave in McDowell Co.,NC & cave in Orangeburg Co.,SC/ Ben. M. Cave water slater/ Tb, St?/ G1) **Bibl.:** Holler 1991; Will Reeves 2000

Caecidotea *catachaetus* Fleming & Steeves, 1972 (seep, 1mi. ne of Adairsville (Baron Co.) & possibly cave in Walker Co, GA +AL, TN/ spr.,Pb, AL cave)

Caecidotea *circulus* (A.c. Steeves & Holsinger, 1968) *(type locality cave in Cumberland Co. Cave in Bledsoe Co.,TN/ Tb/ G1G2)

Caecidotea *communis* (A.m. Say, 1818; *A. militaris* Hay, 1878; *A. puebla* Coke & Minckley, 1968; *Consellus c.* Henry & Magniez, 1970) (epigean in NE to CO, AL/ Ac in NY, sON)

Caecidotea condei = *C. pricei*
Caecidotea conestogensis - see *C. pricei*

Caecidotea *cyrtorhynchus* Fleming & Steeves, 1972 (type locality & 2 other caves in Walker Co.,GA/Tb/ G1 or G1G2) **Bibl.:** C. Buhlmann 1996

Caecidotea *dauphina* Modlin, 1986 (*Audubon Sanctuary on Dauphin Island,Mobile Co.,AL/ Pb)

Caecidotea *dimorpha* Mackin & Hubricht, 1940 (*A. dimorphus*) (seep .5mi. s. of Greenville, MO (Barry & Wayne Cos.) +spr. 1.5mi.sw of Olyphant (Jackson Co.) & Searcy Co., AR/ Tp,Pb, seep, spr./MO T&E R/ G1G3)

Caecidotea *extensolinguala* Fleming, 1972 (seMO/ Pb)

Caecidotea *filicispelunca* Bowman & Hobbs III, 1983 (type locality cave in seAdams Co.,IL +OH/ Tb/ OH State Special Concern T&E/ G1 or G1G2)

Caecidotea *fonticulus* Lewis, 1983b (*Abernathy Spr.,8mi.w. of Polk-Montgomery Co. line by Hw 8,Ouachita Mts./ Pb, Tb)

Caecidotea *forbesi* (A. f. Williams, 1970) (temporary ponds, epigean in E,VA/ Ac in OH)

Caecidotea "forcipitus" Dearwolf, 1953 - See undescr. sp.

Caecidotea *foxi* (A.f. Fleming, 1972) (type locality cave in Camden Co.,MO/ Tp)

Caecidotea *franzi* (C. f. Holsinger & Steeves, 1971) (type locality cave in Center Co.,PA + cave

in Mineral Co., WV (S1) & caves in Garrett & Allegany Cos., MD/ Tb/ Franz's cave isopod/ WV & MD S1; WV G3G4 & MD G2G3 rank)

Caecidotea *fustis* J.Lewis, 1981 (type locality cave in Franklin Co. + Crawford, Iron & WA Cos. (MO)/ Tb/ G3) **Bibl.:** Lewis 1981

Caecidotea *henroti* (*Asellus* (*Baicalasellus*) *henroti* Bresson, 1955) (type locality cave in Lee Co. + Pulaski Co. & 2 caves in Giles Co., VA/ Tb/ Powell Valley Terrestrial Isopod)/ T&E VA S1S2, global G3 or G2G3/ Pb)

Caecidotea *hobbsi* (*A.h.* Maloney, 1939) Van Name, 1943 (type locality cave in Alachua Co. & groundwater & caves in Calhoun, Jackson & Marion Cos., Choctawhatchee-Yellow-Escambia, Aucilla-Suwanee & St. Johns hydrologic subregions + De Kalb Co., GA/ Hobb's Cave Isopod/ Pb, burrows/ T&E species of concern, G2G3) **Bibl.:** Steeves 1964a,

Caecidotea *holsingeri* (*A.h.* Steeves, 1963a) (type locality cave in Greenbrier Co. + caves in Monroe, Pocahontas, & Randolph Cos. (eWV), cave in Bath Co., VA & cave in Garrett Co., MD) /Tb/ Greenbrier Valley cave isopod/ T&E VA S1, global G3; WV T&E S3 rank & global G3 rank). **Bibl.:** Culver & Ehlinger 1980, 1982; Culver 1981; Melhem 1993

Caecidotea *incurva* (*A.i.* Steeves & Holsinger, 1968) (type locality cave in Cumberland Co., TN & cave each in Smyth & Wythe Cos., VA), cave in Blount Co. & single cave in Blount & Roane Cos., TN/ Tb/ VA Species of Concern/ Incurved Cave Isopod TN SR, G2G3)

Caecidotea *intermedius* (*A .i.* Forbes, 1876) (epigean in IL, MT/ Ac in VA) **Bibl.:** R. Ellis 1961

Caecidotea *jordani* (*A. j.* Eberly, 1966) (*spring at IN Univ/ Pb/ IN T&E, G1G2) **Bibl.:** Keith 1984b

Caecidotea *kendeighi* (*A. k.* Steeves & Seidenberg, 1971) (subsurface discharge 3mi. n. of Mayview, Champaign Co., IL + IL (Bureau, Carroll, Champaign, Christian, Coles, Cook, Dewitt, Edgar, Edgar, Fulton, Hancock, Henderson, Henry, Iroquois, Kane, Kabankakee, Knox, LaSalle, Macon, McClean, McDonough, Ogie, Peoria, Piatt, Putnam, Saline, Stark, Stephenson, Tazewell, Union, Vermillin, Warren, Will, Winnebago Cos.), IN (Henry, Lake & Porter Cos.), IA (Des Moines, Henry & WA Cos.) & MO (St. Louis Co.)/ Pb/ G4G5)

Caecidotea *kenki* (*A.k.* Bowman, 1967) (DC, MD, PA, VA/ stream, spr.-fed cr./epigean, Pp?; Tp in PA)

Caecidotea *laticaudatus* Williams, 1970 (warm water epigean in SE, KY, LA; Ac or Tx in IL/ intermediate with *C. foxi* in Camden Co., MO)

Caecidotea *lesliei* Lewis & Bowman, 1981 (outlet of drain tile, 3mi. s. of Colmar, McDonough Co., IL/ Pb, interstitial in glacial drift or alluvium/ State T&E, G4G5)

Caecidotea *macropropoda* (= *A. m.* Chase & Blair, 1937) (type locality 1-3 other cave in Adair

Co., OK & cave & spring in Carroll & WA Cos., AR/ Tp or Tb, Pb?/ G1 or G2 or G1G2)

Caecidotea meisterae - see *C. bicrenatra* w.

Caecidotea metcalfi Fleming, 1972 (*well, Cowley Co.,KS/ Pb/ G1G2)

Caecidotea nickajackensis (Packard, 1881) (Nickajack C. (type) +Marion, Hamilton & Thomas Cos., TN & Sanders Spr. & Hidden River C.?,KY/Tb/T&E TN, G3G4 or G2G3; TN rare)

Caecidotea nortoni (A.n. Steeves, 1966) (type locality cave in Greene Co. & cave in Carter Co. & seep off Tallapoosa Rd. in Johnson City (WA Co.),TN/ Pb/ SR G3)

Caecidotea oculata Mackin & Hubricht, 1940 (seep on or near Rich Mt, Polk Co.,AR +Latimer & Leflore Cos., OK/ spr.,stream, Tp?/ G2G3)

Caecidotea ozarkana Chase & Blair, 1937) (*spr. 5mi. s. of Kansas,Adair Co.,OK/Pb)

Caecidotea packardi Mackin & Hubricht, 1940 (type locality cave in Monroe Co. + caves in Adams, Lincoln, Pike, St. Clair Cos.,IL/ Tb/ G3G4)

Caecidotea paurotrigonus Fleming, 1972 (*ditch under river bridge, Adams Co.,MS/ Pb/ G1G2 S?)

Caecidotea phreatica Lewis & Holsinger, 1985 (drain pipe 5 km.n.of Cuckatuck, seVA (Chesapeake & Isle of Wight Cos.)/Pb/T&E VA S1, global G1 or G1G2)

Caecidotea pilus = *Lirceolus p.*

Caecidotea pricei (A. p. Levi, 1949) Chappuis, 1957; *A. conestogensis* Levi, 1949; *A. p.* Mackin, 1959; *Conasellus p. & condei* Henry & Magniez, 1970; *Caecidotea stygia* Richardson, 1905; *A. condei* Chappuis, 1957) (type locality cave in Lancaster Co.,sPA & wells, seeps, spr. & caves in wVA (Augusta, Fredeick, Page, Rockbidge, Rockingham, Shenandoah Cos.), cMD (Wa Co.), swPA (Berks, Cumberland, Dauphin, Lancaster, Lebanon, Mifflin, Montgomery, York, Westmorland), eWV (Berkeley & Jefferson Cos. – S1)/ Pb/ T&E VA S2; WV T&E S1, MD S3 & global G3G4 rank). **Bibl.:** Bechler 1986a

Caecidotea racovitzae r. (A. r. Williams, 1970) (epigean in NE, seCanada, MT, WA/ Tx or Ac in Tazwell Co.,VA; seVA hyporheic)

Caecidotea recurvata (*Asellus recurvatus* Steeves, 1963) (type locality cave in Lee Co. & caves in Russell, Scott, Smyth,Washington Wise Cos., VA +eTN (Campbell, Claiborne, Hancock, Knox, Union, Washington Cos.)/ Tb,hyporheic/ SW VA cave isopod/ Federal Special Concern T&E; VA Special Concern, TN SR G3) **Bibl.:** Culver 1976, 1981; Magniez 1981

Caecidotea reddelli (*Conasellus r.* Steeves, 1968) (type locality cave in Bell Co. + caves and groundwater in Coryell, Dallas, Hays, Henderson, Palo Pinto, Travis, Williamson Cos.,*Edwards Aquifer,TX/G3/ Pb) **Bibl.:** J. Lewis 1985; Lewis & Bowman 1996

Caecidotea richardsonae (*A. r.* Mackin, 1959) Hay, 1901 (Nickajack C., TN/sc + seTN (Bledsoe, Claiborne, Grainger, Hancock, Hawkins, Marion Cos.) + swVA (Marion, Lee & Scott Cos.), neAL (De Kalb, Jefferson, Lee, St. Clair, Talladega Cos.) & nwGA (Chattooga, Dade, Floyd, Walker Cos.)/Tb, Pb/ VA Species of Concern, T&E VA S2, global G3G5, TN SR/ TN Valley Isopod) **Bibl.:** Culver 1976

Caecidotea rotunda Bowman & Lewis, 1984 (***?type locality cave in swPike Co., OH + cave in Decatur Co., OH & cave or caves in Jennings Co., IN/ northeastern cave isopod/ OH State Special Concern T&E, IN T&E/ Tb/ G1?)

Caecidotea salemensis Lewis, 1981 (= *L. tridentatus* in part) (deep cistern, Lawrence CO.(nAR) +MO(Boone, Camden, Carter, Dallas, Douglas, Franklin, Hickory, Oregon, Pettis, Phelps, Pulaski, Shannon, Texas, Washington Cos.)/ Pb, caves/ G3G4)

Caecidotea scrupulosa (*A. s.* Williams, 1970) (GA to VA, epigean/ Tp in Greenbrier & Monroe Cos. (WV)) **Bibl.:** Culver 1976

Caecidotea scyphus (*A.s.* Steeves & Holsinger, 1968) (*type locality cave in Cumberland Co., TN/ Tb/ G1G2)

Caecidotea sequoiae Bowman, 1975 (*type locality cave in Sequoia Natl. Park, Tulare Co., CA/ Tb/ G1G2)

Caecidotea serrata (*A.s.* Fleming, 1972) (*type locality cave in Shannon Co, MO/ Tb/ G1G2)

Caecidotea simonini (*Asellus (Baicalasellus) s.* Bresson, 1955) (*type locality cave in Randolph Co., VA & cave? in Pendleton Co., WV/ S1G1; Federal Species of Concern/ Tb/ G1)

Caecidotea simulator Lewis, 1999 (Pb in Ozark Springfield Plain, neOK (Cherokee Co., Baxter Springs) & nwAR (WA Co. well)/ G3G4)

Caecidotea sinuncus Steeves, 1965 (type locality & 3 other caves in Pendleton Co., WV/ Tb/ S1 rank & global G1 rank; Federal Species of Concern)

Caecidotea smithii (*L.s.* Ulrich, 1902; *Conasellus s.* Bowman & Longley, 1976) (see *Lirceolus smithii*)

Caecidotea undescr. sp. #1 (*cave in Dubuque Co., IA/ Tb)

Caecidotea undescr. sp. #2 (*cave in Lee Co., VA/ Tb/ T&E VA S1, global G1)

Caecidotea undescr. sp. #3 (**cave each in Smith & Wayne Co., nMS/ Tb)

Caecidotea undescr. sp. #4 (*cave in Orange Co., in St. John's hydrologic subregion in neFL/ Rock Springs Cave Isopod/ Tb/ FL T&E S1, global G1 rank)

Caecidotea undescr. #5 (*cave in Harney Co., OR/ Tb?) Benedict & McEvoy 1995

Caecidotea undescr. sp.#6 (*cave in Skamania Co.,WA/Tb)

Caecidotea undescr. sp.#7 (Boone Co.,AR/ Tb)

Caecidotea undescr. sp.#8 (*2 caves in Alleghany Co.,MD/ Pb/ S1G1 (sp. #1 in MD T&E)

Caecidotea undescr.sp.#10 (cave in Pasco Co.,FL/ Pb)

Caecidotea undescr. sp. #11? (**?cave each in Walker & Dade Cos.,GA (&/or poss. *C. catachaetus*) **Bibl.:** Buhlmann 1996

Caecidotea undescr. #12 (*cave in Culberson Co., TX/ Tb)

Caecidotea undescr. #13 (Ec. Bl. Sprs. Cave Isopod/ type locality cave in cave in WA Co. & likely other caves in Choctawhatchee-Yellow-Escambia hydrologic subregion in wFL Panhandle/ Cave isopod/ Tb)

Caecidotea undescr. #14 (“*forcipitus*” Dearwolf, 1953) (*?cave in Claiborne Co.,TN)

Caecidotea undescr. #15? (sFL (Dade Co.) stygophile or stigobiotic)

Caecidotea undescr. #16-18 (caves &/or groundwater in MD/ S1G? (sp. #2, 4-5 in MD T&E)/ Pb?)

Caecidotea undescr. #19 (caves &/or groundwater in MD/ S1G3 (sp. #3 in MD T&E)/ Pb?)

Caecidotea undescr. #20 (caves &/or groundwater in MD/ S2G? (sp. #6 in MD T&E)/ Pb?)

Caecidotea undet. sp. or species (Tb in cave in Kendall Co. & cave in Williamson Co., TX/ Tb? in nFL; OK, seVA hyporheic) **Bibl.:** J. Lewis 1985

Caecidotea undet. sp(p). (near *C. brevicauda* & others in WA, Franklin & Crawford Cos.,MO/Tp; 9 cos. in KY/Pb; Blount Co.,TN/T b)

Caecidotea spatulata Mackin & Hubricht, 1940 (type locality & one other cave in Carroll Co. & caves in Williamson Co.,IL +St. Louis & Boone Cos. (MO)/ Pb,spr./IL State T&E, G3G4)

Caecidotea sphinxensis Schultz, 1984 (*type locality cave in Cochise Co.,AZ/ Tb/ G1)

Caecidotea steevesi (A.s. Fleming, 1972) (type locality cave in Dade Co.,MO +OK (Adair, Benton, Carroll, Madison, Newton, WA Cos.) & seeps in Baxter Spr.,Cherokee Co.,KS/ Pb/ G2G4)

Caecidotea stiladactyla Mackin & Hubricht, 1940 (spr. (3.5mi.s of Jasper,Newton Co.) + Benton, Carroll, Madison, Newton Cos, AR; cave in Crawford Co.(MO) & cave in Delaware Co.,OK / spr.,Pb/ G2G4)

Caecidotea stygia (*Asellus (Proasellus) stygius* Packard, 1871; *Asellus* s. Forbes, 1876; *C. microcephala* Cope, 1872; also incl. in *C. pricei*) (Mammoth C.,KY(type locality) +sIN (Brown,

Clark, Crawford, Greene, Harrison, Jefferson, Jennings, Lawrence, Martin, Monroe, Orange, Owen, Washington Cos), KY (many cos.), ecMO (Jefferson, Stone & St. Louis), swOH (Adams, Scioto & Hamilton Cos.) & neTN (Overton Co.)/ Pb/ G4G5) **Bibl.:** Bechler 1981, 1985-6; Bowman & Beckett 1978; Hobbs, III 1987; Racovitza 1950; Steeves 1963

Caecidotea *teresae* Lewis, 1982a ******(drain tiles at IN Univ. Southeast Campus, New Albany (Floyd Co.) & stream near base of escarpment (Clark Co.), IN/spring/Pb, extirpated in drain tiles?, refound in well near Univ./ G1G2)

Caecidotea *tridentata* Hungerford, 1922 (= *A. acuticarpa* Mackin & Hubricht, 1940; *Conasellus* t. Henry & Magniez, 1970) (cistern in Lawrence, Co., AR/ Pb/ G3G4) **Bibl.:** Dexter 1954; Birstem, 1951; C. Edler & Dodds 1996

Caecidotea *vandeli* (*Asellus* (*Baicalasellus* v. Bresson, 1955; *Pseudobaicalasellus* v. Bresson, 1970) (type locality cave in Montgomery Co. + Bath, Botetourt, Giles & Roanoke Cos., VA/ T&E VA S1S2, global G3 or G2G3/ Tb)

Caecidotea whitei = *C. bicrenata whitei*

Calasellus Bowman, 1981- Asellidae isopods

Calasellus *californicus* (*Asellus* c. Miller, 1933) (*well near Kelseyville, Lake Co. + spr. in Napa & Santa Clara Cos. & Marin Co. hyporheic, all in CA/ Pb/ G3) **Bibl.:** Rosario & Resh 2000

Calasellus *longus* Bowman, 1981 (*Shaver Lake, Fresno Co., CA/ Pb/ G1G2)

Calasellus undet. sp. (cave in Santa Cruz Co., CA/ Pb)

Califanthura Schultz, 1977 – Paranthuridae isopods

Califanthura squamosissima (*Colanthura* s. Menzies, 1951) (CA muddy or sandy marine infauna & kelp beds)

Cassidinidea Hansen, 1905 - Sphaeromatidae isopods

Cassidinidea lunifrons (Richardson, 1900) (Virginian (rare), TX estuary marine infauna)

Cassidinidea ovalis (Say, 1818) (Virginian (rare), TX marine infauna)

Caucasonethes Verhoeff, 1932 - Trichoniscidae isopods (genus may not be in NA)

Caucasonethes gipsocolus (see *Amerigoniscus* g.); *Caucasonethes henroti* = *Caecidotea* h.; *C. nicholasi* - see *Amerigoniscus*

Caucasonethes undescr. sp.#1 (*WV/Tb?)

Caucasonethes undescr. sp.#2 (OR/epigean)

Caucasonethes undescr. sp.#3 (2 caves in Taney Co., MO/ Tb/ G1) Gardner 1986

Caucasonethes undescr. sp.#4 (*cave in King Co., TX/Tb)

Chiridotea Harger, 1878 - Chaetiliidae isopods

Chiridotea almyra Bowman, 1955 (MD, NC, VA marine infauna)

Chiridotea arenicola Wigley (= *C. stenops* Menzies & Frankenburg) (Virginian (rare), Carolinian marine infauna)

Chiridotea caeca (Say, 1818) (GA, MD, NC, VA marine infauna)

Chiridotea sabini (Kroyer) (Baffin Island (neCanada) marine infauna)

Chiridotea tuftsi (rare Virginian, MA, NY marine infauna)

Chiridotea stenops Menzies & Frankenburg = *C. arenicola*

Cirolana Leach, 1818 - Cirolanidae isopods

Cirolana concharum (Stimpson, 1853) (VA, NC marine benthic)

Cirolana diminuta Menzies, 1962 (CA marine benthic)

Cirolanides Benedict, 1896 - Cirolanidae isopods

Cirolanides texensis B., 1896 (artesian wells at San Marcos & cave each in Kerr & Uvalde Co. + 12 other cos. in TX/ Pb) J. Baker, 1960; Bowman 1964, 1992 Elliott 1973

Conasellus (subsumed in *Caecidotea*; see also *Lirceolus*, *Brackenridgia*),
Conasellus smithii = *Caecidotea s.*

Coxicerberus Wagele, Voelz & MacArthur, 1995 - Microcerberidae isopods

Coxierberus abboti a. (*Microcerberus a.* Lang, 1960) (cCA marine beach interstitial, intertidal)

Coxierberus abboti juani Coineau & Delamare, 1968 (WA marine beach interstitial)

Cyathura Norman & Stebbing, 1886 - Anthuridae isopods

Cyathura (C.) burbancki Frankenberg, 1965 (GA, MA marine infauna)

Cyathura (C.) carinata (Kroyer, 1847) (NC marine infauna)

Cyathura munda Menzies, 1951 (CA marine infauna)

Cyathura polita (Stimpson, 1855) (w,eFL, LA, MD, VA, Carolinian marine sandy infauna)

Cylisticus Schnitzler, 1853 (= *Cyclisticus*) Porcellionidae isopods

Cylisticus convexus (DeGeer, 1778) (nNA, sCanada, AL, AZ, GA, IL, MO, VA epigeal/ Tp alien from Europe, now in GA (Bartow, Dade, Walker Cos.), IN, KY, MD, MO, OH, TN, TX, VA, WI caves)

Cymodoce Leach, 1814 – Sphaeromatidae isopods

Cymodoce faxoni (Richardson, 1905) (wFL marine infauna)

Dynamenella Hansen, 1905 – Sphaeromatidae isopods

Dynamenella undet. sp. (Carolinian marine infauna)

Edotia Guérin-Meneville, 1843 (= *Edotea*) - Idoteidae isopods

Edotia baltica = *Idotea b.*

Edotia montosa (*Edotea m.* Stimpson, 1853; *Edotea acuta*) (FL, MA, TX, Virginian marine infauna)

Edotia undet. sp. or species (sCA, NC marine infauna)

Edotia sublittoralis Menzies & J.L. Barnard, 1959 (CA, WA marine infauna)

Edotia triloba (*Edotea t.* Say, 1818) (FL, LA, MA, NC, NJ, VA common marine infauna; NB, PQ Gulf of St. Lawrence sandy marine interstitial)

Erichsonella Benedict in Richardson, 1901 - Idoteidae isopods

Erichsonella attenuata (Harger, 1873) (e,wFL, LA, MD, VA marine infauna)

Erichsonella filiformis (Say, 1818) (LA marine infauna)

Erichsonella undet. sp. (NC marine infauna)

Erichthonius Milne-Edwards – Ischyroceridae isopods

Erichthonius brasiliensis (Dana, 1853) (Carolinian, Virginian, e,w FL, LA marine infauna)

Erichthonius rubricornis (Carolinian marine infauna)

Eurycope Sars, 1864 – Munnopsidae isopods

Eurycope undet. sp. (WA marine infauna)

Eurydice Leach, 1815 - Cirolanidae isopods

Eurydice caudata Richardson, 1899 (sCA marine infauna)

Eurydice personata Kensley, 1987 (wFL Gulf of Mex .marine infauna)

Eusymmerus Richardson, 1899 – Idoteidae

Eusymmerus undet. sp. or species (sCA, NC marine infauna)

Exosphaeroma Stebbing, 1900 - Sphaeromatidae isopods

Exosphaeroma oregonensis (WA, OR marine sandy interstitial)

Exosphaeroma rhomburum (*Sphaeroma r.* Richardson, 1899)(CA marine infauna?)

Exosphaeroma undet. sp. (FL marine benthic)

Gnathia Leach, 1814 - Gnathiidae isopods

Gnathia coronadoensis Schultz, 1966 (CA hydrogen sulfide mud marine infauna)

Gnathia crenulatifrons Monad, 1926 (sCA marine infauna)

Gnathia productatridens Menzies & J.L. Barnard, 1959 (sCA marine benthic)

Gnathia sanctaecrucis Schultz, 1972 (sCA marine benthic)

Gnathia undet. sp. (WA marine infauna)

Gnathia tridens Menzies & Barnard, 1959 (AK marine infauna)

Gnathia trilobata Schultz, 1966 (sCA marine benthic)

Gnorimosphaeroma Menzies, 1954 - Sphaeromatidae isopods

Gnorimosphaeroma oregonensis (Dana, 1853) (AK, OR, WA marine infauna)

Gnorimosphaeroma rayi Hoestlandt, 1969 (neAsia, CA, Kauai streams/ hypogean, anchialine cave/ ponds in Cape Kinau (Maui) & Lua o Palahemo & Pakini Iki (both HI Island), HI)

Haliophasma Haswell, 1881 - Anthuridae isopods

Haliophasma geminatum Menzies & Barnard, 1959 (sCA marine infauna)

Haplophthalmus Sars, 1898 - Trichoniscidae isopods

Haplophthalmus danicus Budde-Lund, 1885 (cosmopolitan/alien Tp or Tx in HI (Maui), IN, KY (Mammoth C.), MD, NM, TN, VA, WV; Tx in OH)

Harrieta Kensley, 1987 - Sphaeromatidae isopods

Harrieta faxoni (Richardson, 1906) (e, wFL marine infauna)

Hawaiioscia Schultz, 1973 - Philosciidae isopods

Hawaiioscia microphthalma Taiti & Howarth, 1997 (*type locality cave in Oahu, HI/ Tb)

Hawaiioscia paeninsulae Taiti & Howarth, 1997 (**?type locality and one other cave and possibly at least two other caves in Kalaupapa Peninsula on north shore of Maloki Island, HI/ Tb/ G1)

Hawaiioscia parvituberculata Schultz, 1973 (*type locality cave in Maui, HI/ Pb/ G1)

Hawaiioscia rotundata Taiti & Howarth, 1997 (*type locality cave in Kauai, HI/ Tb/ G1)

Hawaiioscia undescr.? sp. (*cave in Oahu, HI)

Horoloanthura – Anthuridae isopods

Horoloanthura irpex (wFL Gulf of Mexico infauna)

Hyloniscus Verhoeff, 1908 - Trichoniscidae isopods

Hyloniscus riparius (C.L. Koch, 1838) (Great Lakes, NE/ Tx in OH)

Ianiropsis Sars, 1897 – Janiridae isopods

Ianiropsis minuta Menzies, 1952 Menzies & Petit, 1956 (CA marine sand infauna)

Idarcturus Barnard, 1914- Arcturidae isopods

Idarcturus allelomorphus Menzies & Barnard, 1959 (sCA marine infauna)

Idotea Fabricius, 1798 - Idoteidae isopods

Idotea baltica (*Edotea b*/ Pallas, 1772) (NB, PQ Gulf of St. Lawrence & MA, NJ, VA sandy marine interstitial)

Idotea fewkesi Richardson, 1905 (WA marine infauna)

Idotea montereyensis (*Pentidotea m.* Maloney, 1933) (CA marine benthic)

Idotea ochotensis Brandt, 1851 (WA marine infauna)

Idotea resecata stimpson, 1957 (*Pentidotea r.*) (CA marine benthic)

Ilyarachna Sars, 1870 - Ilyarachnidae isopods

Ilyarachna acarina Menzies & Barnard, 1959 (sCA marine infauna)

Jaera Leach, 1814 - Janiridae isopods

Jaera albifrons Leach, 1814 (NB, PQ Gulf of St. Lawrence sandy marine interstitial)

Jaera ischiosetosa Forsman, 1949 (NB, PQ Gulf of St. Lawrence sandy marine interstitial)

Jaera prae-hirsuta Forsman, 1949 (NB, PQ Gulf of St. Lawrence sandy marine interstitial)

Joeropsis Koehler, 1885 - Jaeropsididae isopods

Joeropsis asellotaj (sCA marine infauna)

Joeropsis concava Schultz, 1966 (sCA marine infauna)

Joeropsis dubia Menzies, 1951 (sCA marine infauna)

Joeropsis undet. sp. (WA marine infauna)

Kupellonura Barnard, 1925 – Hyssuridae isopods

Kupellonura undet. sp. (Carolinian marine infauna)

Ligia Fabricius, 1798 - Ligiidae isopods

Ligia *hawaiiensis* (Dana, 1853) (Nihoa, Kauai, Oahu, Maui, HI/Tx? In hypogean, anchialine cave)

Ligia *perkinsi* (Dollfus, 1900) (Kauai, Oahu, HI/Tx? in HI hypogean, anchialine cave)

Ligia undet. sp. (Cape Kinau, Maui, HI/hypogean, anchialine cave, Pb) **Bibl.:** Schultz, 1973

Ligidium Brandt, 1833 - Ligiidae isopods. **Bibl.:** Schultz 1970

Ligidium *elrodii chatoogaensis* Schultz, 1970 (*type locality cave in Chattooga Co., GA/Pb)

Ligidium *elrodii e.* (Packard, 1873) (= *L. longicaudatum* Stoller, 1902) (cave in Orleans, IN/Tp in AL, GA, MO, TN, VA, WV; Tx in AR, nMS) **Bibl.:** Schultz 1970

Ligidium *elrodii leensis* Schultz, 1970 (type locality cave in Lee Co. + Scott? & Craig? Cos., VA/ Pb/ G4G5T1T2)

Ligidium *elrodii hancockensis* Schultz, 1970 (type locality cave in Hancock Co.,TN & 2 caves in Walker Co.,GA/ Pb/ TN SR, G4G5T1T2)

Ligidium *elrodii scottensis* Schultz, 1970 (type locality cave in Scott Co.,VA/ G4G5, T1T2/ Pb)

Ligidium *gracile* (Dana, 1852)

Ligidium *gracile flavum* (BC/ Tp?)

Ligidium *kofoidi* (= *Japyx kofoidi* Silvestri, 1928; *Occasjapyx k.*) Maloney, 1930 (originally identified as a dipluran) (*type locality cave in Shasta Co.,CA/ Pb,Tb or Tp/ G1G2)

Ligidium longicaudatum = *L. elrodii* e.

Ligidium undet. sp. (Pb? in Subway Cave, Shasta Co.,CA; Tp in OH)

Limnoria Leach, 1814 - Limnoriidae isopods

Limnoria *algarum* Menzies, 1957 (WA marine infauna)

Limnoria *lignorum* (Rathke, 1799) (AK marine infauna)

Lirceolus Bowman & Longley, 1976. **Bibl.:** Lewis 1983

Lirceolus *bisetus* (*Caecidotea bisetus*; *A.b.* Steeves, 1968; *Conasellus b.* S.1968) Lewis & Bowman, 1996 (type locality cave in San Saba Co. + caves and groundwater in Travis & Blanco Cos.,TX/ Pb/ G3)

Lirceolus *hardeni* Lewis & Bowman, 1996 (caves and groundwater in Travis, Blanco & Comal Cos.,TX/ Pb)

Lirceolus *pilus* (= *Asellus paurotrigonus* Steeves, 1968) Lewis, 1983a (type locality cave in Medina Co. +Bandera Co.,*Edwards Aquifer,TX/ Pb)

Lirceolus *smithii*(*Caecidotea smithii* Ulrich, 1902; *Conasellus s.* Bowman & Longley, 1976) (*nearby subterranean stream & artesian well at San Marcos (Hays Co.) + cave? in Kendall Co.,TX/ Pb)

Lirceolus undescr. sp. (*?cave in Jeff Davis Co., TX/ Pb)

Lirceus Rafinesque-Schmaltz, 1820 (= *Asellus*) Asellidae isopods

Bibl.: Holsinger & Bowman, 1973; H. & Estes 1978; Findlay, Meyer & Smith 1984, 1986

Lirceus *alabamae* Hubricht & Mackin, 1949 (AL/spr,seep/ Pb?) Bosnak 1979

Lirceus *bidentatus* Hubricht & Mackin, 1949 (*seep, Boston Mts., 9mi.s sw of Harrison, Boone Co.,AR/ Pb)

Lirceus *bicuspidatus* Hubricht & Mackin, 1949 (AR spr.,cr./Tp or Tx in AR)

Lirceus *brachyurus* (*Mancasellus b.* Harger, 1876) (nePA to nVA/Tx? in PA/ watercress sowbug)

Lirceus *culveri* Estes & Holsinger, 1976 (*type locality cave in Scott Co., swVA/ Rye (Cove) Cave Isopod/VA T&E S1, Global G1/ Tb) Holsinger & Estes 1978

Lirceus *fontinalis* Rafinesque-Schmaltz, 1820 (E epigean/ Tx in IL, OH, KY(Mammoth C.), TN) Porter 1995; Styron 1969

Lirceus *garmani* Hubricht & Mackin, 1949 (neAR, sIL, eKS, wMO, eOK epigean/ spr., stream, pond, Tx in OK)

Lirceus *hargeri* Hubricht & Mackin, 1949 (Powell Valley (TN) & Holston Valley (VA)/ spr., Pb?)

Lirceus *hoppinae h.* (*A.h.* Faxon in Garman, 1889) (type locality cave in Jasper Co.(MO) & AR,*sw Ozarks/ spr., Tx)

Lirceus *hoppinae ozarkensis* Hubricht & Mackin, 1949 (type locality cave in Pulaski Co. & caves in Taney Co.,MO +nAR,*central Ozarks/ spr.,streams)

Lirceus *lineatus* (Say, 1818) (rare Virginian marine infauna)
Lirceus macrourus = *Mancasellus m.*

Lirceus *megapodus* Hubricht & Mackin, 1949 (MO/spr.,Pb?/ MO State T&E)

Lirceus *richardsonae* Hubricht & Mackin, 1949 (*drain 1.3mi.se of Perryville,Wood Co.,OH/Pb) **Bibl.:** Culver 1976

Lirceus undescr. sp. (**?cave each in Independence & Stone Co., AR/ Tb or Pb)

Lirceus undescr. sp. (**?2 caves in Tazewell Co., VA/ Tb or Pb)

Lirceus *usdagalun* Holsinger & Bowman, 1973 (Lee County cave isopod/ type locality & 2 other caves (all 3 part of same cave system, 2 springs near airport site & cave Lee Co.,swVA/ Tb/ federal T&E, VA Special Concern T&E & S1G1)

Bibl.: Culver 1976, 1981); Estes 1978); Estes & Holsinger 1981-2); Holsinger & Estes 1978); Springston 1997; USFWS 1992

Littorophiloscia Hatch, 1947 - Philoscidae isopods

Littorophiloscia *bifasciata* Taiti & Ferrara, 1986 (Tx in Oahu, HI/endemic?)

Littorophiloscia *culebrae* (Moore, 1901) (adventive alien in HI/ Tx in Oahu, HI)

Littorophiloscia *hawaiiensis* Taiti & Ferrara, 1986 (littoral under rocks of guano in Laysan Island, HI/ anchialine Tp in Oahu and Big Islands, HI)

Mancasellus Harger, 1876 - Asellidae isopods
Mancasellus brachyurus = *Lirceus b.*

Mancasellus *macrourus* (*Lirceus m.* Garman, 1890) (TN/St? in Mammoth C.,KY),

Mesanthura Barnard, 1914 Anthuridae isopods
Mesanthura undet. sp. or species (Carolinian, LA marine infauna)

Metoponorthus Budde-Lund, 1879 (= *Porcellionides* Miers) Porcellionidae isopods
Metoponorthus *pruniosus* (Brandt, 1833) (Tp in HI & c,wTX)

Mexistenasellus Cole & Minckley, 1972 - Stenasellidae isopods
Mexistenasellus *coahuila* C. & M., 1972 (Mexico, Bexar & Medina Cos.,TX/ spr.,hyporheic, Pb)

Microcerberus Karaman, 1933 - Microcerberidae isopods
Microcerberus abboti abboti Lang, 1961 = *Coxicerberus a. a.*
Microcerberus abboti juani Coineau & Delamare, 1968 = *Coxicerberus a. j.*

Microcerberus *carolinensis* Wagele, Voelz & McArthur 1995 (hyporheic of SC coastal blackwater (freshwater) stream)

Microcharon Karaman, 1934 - Microparasellidae isopods
Microcharon undet. sp. or species (nonkarst stygobite in MT; hyporheic & parafluvial in AZ),

Miktoniscus Kesselyak, 1930 - Trichoniscidae isopods
Miktoniscus *alabamensis* Muchmore, 1964 (E/Tp in nAL, nFL, nGA, wNC, cTN, seVA, WV) Cooper & Cooper, 1977) **Bibl.:** Buhlmann 1996

Miktoniscus *barri* Vandel, 1965 (type locality cave in Dickson Co.(TN) +3 counties in IN, incl. Marengo C./ Tp/ TN SR/ IN T& E S2 G3G4)

Miktoniscus *linearis* (Patience, 1908) (SE/Tp? in NC) Schultz 1964
Miktoniscus *mammothensis* Muchmore, 1964 (Mammoth C. (type locality) +cKY/ Tp, sinks)

Miktoniscus *medcofi* (*Trichoniscus m.* Van Name, 1940) (= *M. alabamensis* in part) (E, incl. AL, FL, VA/ Tp or Tx in GA (prob. in Walker Co.), KY (Clark Co.), MO, IL(probable), IN (Clark Co.), OH, TN (Dickson, Smith, Grundy Cos.),VA; Tp in FL, GA) **Bibl.:** Buhlmann 1996

Miktoniscus *morganesis* Schultz, 1976 (*type locality cave in Morgan Co.,AL/ Tp)

Miktoniscus *racovitzae* r. Vandel, 1965 (*M.r.r.* Vandel, 1964) (type locality in Luray C., Page Co. + caves in Alleghany, Botetourt, Page, Rockbridge & Shenandoah Cos., seVA/ Tb/ VA T&E S2, Global G3G4T3/ Racovitza's Terrestrial Cave Isopod)

Miktoniscus *racovitzae oklahomensis* Vandel, 1965 (*type locality cave in Murray Co.,OK/ Tb/ G1)

Miktoniscus undescr. sp.#1 (*cave in Marshall Co.,AL/Tb?)

Miktoniscus undescr. sp.#2 (Tb in GA (Bartow, Dade, Walker Cos.)

Miktoniscus undet. sps. (Tx in PQ; Tb in AR, TX)

Munna Kroeyer, 1839 – Munnidae isopods

Munna fernaldi George & Stromberg, 1968 (WA marine infauna)

Munna ubiquita Menzies, 1952 (WA marine infauna)

Munnogonium George & Stromberg, 1968 - Paramunnidae isopods

Munnogonium tillerae (*Austrosignum t.* Menzies & Barnard, 1959) (sCA, WA marine infauna)

Munnopsurus Richardson, 1912 – Munnopsidae isopods

Munnopsurus undet. sp. (WA marine infauna)

Neastacilla Tattersall, 1921 - Arcturidae isopods

Neastacilla californica (Boone, 1918) (sCA marine infauna)

Oniscus Linnaeus, 1758 - Oniscidae isopods

Oniscus asellus Linnaeus, 1758 = *Asellus aquaticus*

Papuaphiloscia Vandel, 1970 - Philoscidae isopods

Papuaphiloscia *laevis* (*Halophiloscia laevis* Schultz, 1973) (may be junior syn. of *P. insulana* Vandel, 1970) (type locality cave in Big Island & other caves in Kauai, HI/ epigean on Oahu & Tawiwan/ Tp)

Paracerceis Hansen, 1905 - Sphaeromatidae isopods

Paracerceis caudata (Say, 1818) (e,wFL, LA, MD, VA marine infauna)

Paracerceis cordata (*Cilicaea c.* Richradson, 1899) (CA marine benthic)

Paracerceis sculpta (*Cilicaea s.* Say, 1818) (CA marine benthic)

Paranthura Bate & Westwood, 1868 – Paranthuridae isopods

Paranthura elegans Menzies, 1951 (CA marine benthic)

Philoscia Latreille, 1817- - Philoscidae isopods

Philoscia *angusticauda* Budd-Lund, 1885 (Tx or Tp in Oahu)

Philoscia undescr. sp. #1 (caves in Maui, Oahu, & Kauia/ Tb)

Philoscia undescr. sp.#2 (caves in Kauai, Hawaii & Maui,HI/ Tb)

Pleurogonium G.O. Sars, 1864 - Pleurogoniidae isopods

Pleurogonium californiense Menzies, 1951 (sCA marine infauna)

Pleurogonium rubicundum (G.O. Sars, 1864) (AK, WA marine infauna)

Porcellio Latreille, 1804 - Porcellionidae isopods

Porcellio laevis Latreille, 1804 (NA & HI I(all islands) alien from Europe/dooryard sowbug/ Tp in HI (Kauai, Oahu, Hawaii) (alien), CA caves & Bell, Childress, Hays & Williamson Cos., TX)

Porcellio undet. sp. (Ttp or Tx in Kartchner C., Cochise Co., AZ)

Porcellio rathku = *Trachelipus rathkei*?

Porcellio scaber Latreille, 1804 (BC to sCA/common wood louse; scabby or dooryard sowbug/ Tx in BC; alien Tx in HI (Maui & Hawaii), IN, OH, TX)

Porcellio cf. *scaber* Latreille, 1804 (alien Tx in CA)

Porcellio spinicornis Say, 1818 (CA,N/ spiny sowbug/Tx? in sON, PQ)

Porcellionides Miers, 1877 - Porcellionidae isopods

Porcellionides pruinosus (Brandt, 1833) (SW, pantropical epigeic/Tx or Tp in HI (Maui, Hawaii, Kauai); Tx in Crawford Co., IN) **Bibl.:** R. Lane 1974; Garthwaite & Sassaman 1985

Protrichoniscus - see *Brackenridgia* c., *Conasellus* r.

Pseudobaicalasellus - see *Caecidotea* v.

Ptilanthura Harge, 1878 – Anthuridae isopods

Ptilanthura tenuis - rare/ Virginian marine infauna)

Remasellus Bowman & Sket, 1985 - Asellidae isopods

Remasellus parvus (= *Asellus parvus* Steeves, 1964) Bowman & Sket, 1985 (type locality cave in Alachua Co. +Wakulla, Madison & Suwannee Cos., Wakulla & upper Suwannee Rivers in Ochlockonee and Aucilla-Suwannee hydrologic subregions, ncFL/ Pb/ Swimming Florida Cave Isopod/ FL T&E, G3)

Reductoniscus Kesselyat, 1930 - Armadillidae isopods

Reductoniscus costulatus Kesselyak, 1930 (epigeic in Kauai,Oahu, HI/ Tx or Tp in HI)

Reductoniscus undet. sp?. (Tp or Tx in cave in Oahu, HI)

Rocinela Leach, 1818 (= Acherusia) - Egidae isopods

Rocinela cf *americana* Schioedte & Meinert, 1879 (WA marine infauna)

Rocinela angustata Richardson, 1904 (sCA marine infauna)

Rocinela belliceps (Stimpson, 1864) (WA marine infauna)

Rocinela cf *propodialis* Richardson, 1905 (WA marine infauna)

Saduria Mills, 1962 - Chaetiliidae isopods

Saduria entomon (Linnaeus, 1758) (OR, WA marine infauna)

Salmasellus Bowman, 1975 - Asellidae isopods

Salmasellus steganothrix Bowman, 1975 (cave spr. at Horseshoe Lake, Jasper National Park, Alberta +BC,MT,WA/ Pb glacial refugia in BC cave/ Pb?, hypogean) **Bibl.:** Clifford & Bergstrom 1976

Santia Sivertsen & Holthuis, 1980- Santiidae isopods

Santia hirsuta (Menzies, 1951) (= *Antias h.*) (CA marine infauna in rock and sand intertidal)

Serolis Leach, 1818 - Seroloidae or Sphaeromatidae isopods

Serolis carinata (sCA marine infauna)

Serolis m'garyi Menzies & Frankeberg (wFL Gulf of Mex. marine infauna)

Speocirolana Bolivar & Pieltain, 1959 - Cirolanidae isopods

Speocirolana hardeni Bowman, 1992 (type locality cave in Val Verde Co. & artesian wells & sprs. in Bexar Co., ,sprs.,TX/ Pb)

Sphaeroma Bosc, 1802 - Sphaeromatidae isopods

Sphaeroma quaridentata (FL, SC marine infauna)

Sphaeroma quoyanum H. Milne Edwards, 1840 (CA marine infauna mud borer)

Styloniscus Dana, 1853 - Trichoniscidae isopods

Styloniscus mauritiensis (Barnard, 1936) (Tp in Molakia, Kauai, Hawaii, HI)

Synidotea Harger, 1878 - Idoteidae isopods

Synidotea angulata Benedict, 1897 (WA marine infauna)

Synidotea bicuspidata (Owen, 1839) (AK, WA infauna & NB, PQ Gulf of St. Lawrence sandy marine interstitial)

Synidotea calcarea Schultz, 1966 (sCA marine infauna)

Synidotea magnifica Menzies & J. Barnard, 1959 (sCA marine infauna)

Synidotea media Iverson, 1972 (sCA marine infauna)

Synidotea nebulosa Benedict, 1897 (WA marine infauna)

Synidotea nodulosa (Kroyer, 1846) (WA marine infauna)

Tecticeps Richardson, 1897 – Tecticipitidae isopods

Tecticeps pugettensis Haatch, 1947 (WA marine infauna)

Thermosphaeroma Cole & Bane, 1978 – Sphaeromatidae isopods

Thermosphaeroma *thermophilum* (Richardson, 1897) (*Sedillo Spring, NM/Pb?/Socorro

Isopod/ NM & federal T&E) **Bibl.:** Schuster, 1981

Trachelipus Budde-Lund, 1908 - Oniscidae isopods

Trachelipus *rathkei* (Brandt, 1833) (*Tracheoniscus r.*) (E epigeal/ TTx or Ac in IN,PQ,WV; TTx in OH)

Trichoniscus Brandt, 1833 - Trichoniscidae isopods

Trichoniscus *nearcticus* Arcangeli, 1932 (cave in Harney Co.,OR/ extirpated? or misidentified)

Trichoniscus *pusillus* Brandt, 1833 (East US/ alien Tx in sON, TX, VA, WV)

Trichoniscus *pygmaeus* Scars, 1899 (Tx in OH)

Trichoniscus undet. sp. (cave in Marion Co.,TN)

Trichorhina Budde-Lund, 1908 - Platyarthridae isopods

Trichorhina *heterophthalma* Lemos de Castro, 1964 (Tp or Tx in cave in Kauai, HI)

Trichorhina *tomentosa* (Budd-Lund, 1893) (Tx in OH?)

Tropicana Manicasteri & Taiti, 1987 - Philoscidae isopods

Tropicana *minuta* Manicasteri & Taiti, 1987 (pantropical epigeal/ Ttx or Tp in Kauai, HI)

Tylos Audouin, 1826 – Tyliidae isopods

Tylos *punctatus* Holmes & Gay, 1909 (CA marine sandy beach infauna burrower)

Uromunna Menzies, 1962 – Munnidae

Uromunna *hayesi* Robertson, 1978 (wFL Gulf of Mexico infauna)

Venezillo Verhoeff, 1928 Trichoniscidae isopods

Venezillo *tanneri* (Mulaik & Mulaik, 1942) (Mex,TX/ Tp in 2 caves ni Val Verde Co.,TX)

Xenanthura Barnard, 1925 - Hyssuridae isopods (once in Anthuridae)

Xenanthura *brevitelson* Barnard, 1925 (e,wFL, LA, Virginian (rare)m, TX marine infauna)

Isoptera

(Termites & white ants) **Insecta** Order of Superorder (or Division) Neoptera, Subdivision Exopterygota (also put in Subdivision Dictyoptera). The name refers to the equal size of both pairs of wings, unlike those of ants. 3-10 mm. Soft bodies elongated, cylindrical, with only a slight constriction between abdomen and thorax (unlike ants). Mostly pale in NA with darker wings and brownish heads. Antennae short, usually not much longer than the head, with 9-30 or more segments. Large biting mandibles, especially in soldier caste. Very short terminal cerci. Usually wingless except during reproduction when wings have long, slightly curved veins with no or very few cross veins (unlike ants). Worker and soldier abdomens are simple, cylindrical and somewhat oval. A queen's abdomen is huge when filled with eggs. They are paurometabolous, with terrestrial eggs, larvae and adults. Social hormones secreted by the queen prevent nymphs from changing into reproductives. About 19000 species known with 44 in 18 genera in the U.S, mostly

in the south. **Bibl.** Arauja 1977; Helfer 1963; Krishna & Weesner 1969-70; Snyder 1949

Kalotermitidae (powder-post termites)

undet. genus (14,300 yrs. BP in *Neotoma* woodrat nest, El Paso Co., wTX or sNM)

Rhinotermitidae (subterranean termites)

Subfamily Heterotermitinae (*Heterotermes*, *Reticulitermes*)

Heterotermes Froggatt, 1897 - Rhinotermitidae termites, Subfamily Heterotermitinae (1 species in US or Canada)

Heterotermes *aureus* (*Reticulitermes a.* Snyder, 1920) (>43,300 years old in *Neotoma* woodrat nest in Tinajas Mts., Yuma Co, AZ)

Reticulitermes Holmgren, 1913 (*Frontotermes* & *Planifrontotermes* Tsai & Hwang, 1977)
(subterranean termites) Rhinotermitidae termites, Subfamily Heterotermitinae (6 species in US or Canada)

Reticulitermes undet. sp. (Tx or Ac in CA)

isotropic - Having the same shape or properties in all directions. Cf. anisotropic.

jaguar - see **mammal**, cat.

karyotype - A description of the size, number and shape of all chromosomes within a eukaryotic cell.

Kinorhyncha (spiny neck worms; mud dragons)

Marine animal Phylum of pseudocoelomates. About 150 species, all benthic & <1mm. long.

Clade Bilateria

Clade Protostomia

Clade Ecdysozoa

Phylum Kinorhyncha (also put as a class in Phylum Aschelminthes)

Class Homalorhagida (also put as an order under Class Kinorhyncha)

Family Pycnophyidae (*Pycnophyes*)

Pycnophyes Zelinka, 1907 -: Pycnophyidae Kinorhyncha

Pycnophyes *parasanjuanensis* Adrianov & Higgins 1996 (marine interstitial in San Juan Islands, WA)

klinotaxis - Movement (taxis) which compares stimulus intensity on each side of the body.

K-selected - Organisms in a relatively constant or predictable environment where populations reach densities at or near carrying capacities. Usually strong competitors with low reproduction rate and fairly stable populations. Common in caves. Cf. R-selected.

lampenflora - **Plants** growing around lights in showcaves.

larvae - An active immature stage in an animal's life history when its form usually differs from the adult form, such as the grub stage in the development of a beetle. **Fly** larvae has less than 14 segments (unlike earthworms) & often have a head or with dark mouth-hook at one end. Singular is larva.

larvites - Calcified mucus tubes formed by **fly** larvae.

lava tubes - Ahearn & Howarth 1982; Benedict 1977; Barnard 1977; Bellinger & Christiansen 1975; Benedict 1973-74a,d, 1976-7; Bousfield & Howarth 1976; Briggs 1973, 1982-3, 1986, 1992; Brindle 1980; Crawford 1975a,e, 1980, 1982, 1990, 1992; Fennah 1973; Ferguson 1982, 1992; Gagne & Howarth 1975-a; Gertsch 1974; Grady 1989c; Gurney & Rentz 1978; Howarth 1972-91; Iliffe et al 1984; Kashima & Ogawa 1995; Kensley & Williams 1986; Liebherr & Samuelson 1992; Muchmore 1979, 1983; Nelson & Smith 1976; Palmer, J. 1975; Peck 1973a-4, 1982; Popa 1997; Richard et al. 1993; Schultz 1973; Staley & Crawford 1975; Williams, D. 1992; Zacharda 1980.

lavicole – Biota that lives in lava tubes or other pores in lava rock.

leafhopper - See Homoptera.

leaf mold - A general term for an accumulation on the soil surface that is composed largely of partly decomposed plant matter. Cf. **duff**.

leech - See **worm**, **Hirudinoidea**

lemming - See **mammal**, **rodent**.

lentic- Habitats of standing water such as pools, lakes and ponds.

Lepidoptera - Insect Order (incl. butterfly, **moths**), Subclass Pterygota, Division Neoptera, Subdivision Endopterygota (=Holometabola), Section Panorpida, Subsection Amphiesmenoptera. A few cave-adapted species are tropical.

Leporidae - See **hare & rabbit**.

leptospirosis - **Microbe hazard** caused by *Leptospira interrogans*. Known from British cave (polluted by pig farm runoff) & possibly from West Indies & Sarawak (Mulu Fever). The most severe clinical form is Weil's disease.

Lice

Division Neoptera **insect**, Subdivision Acercaria, Section Psocodea. Some consider the two orders to be one order, the Phthiraptera (= Pseudorhynchota) (animal or ectoparasitic lice). For book- & bark-lice, see Psocoptera.

Hemimetabolous (simple metamorphosis, no pupa) or paurometabolous with eggs, larvae and adults. Larvae resemble adults. Wingless (apterous).

Mallophaga .5-.6 mm (rarely up to 10 mm. Body flattened, shape oval or elongate; pale tan, some with yellowish markings, or with dark brown or black banding. Head > thorax; antennae short, not > half of head length. Legs reduced, modified for attachment to host. Simple abdomen. Unlike psocids, antennae short with <6 segments and eyes greatly reduced.

Anoplura similar but with much smaller heads, piercing, sucking mouthparts and confined to mammal hosts. Brown, sometimes brown or gray

Ectoparasites of mammals & birds. Eggs attached by water insoluble glue. Probably evolved from psocid(-like) ancestor. Small, flat-bodied, biting, or sucking. Some are eyeless. Some feed only on blood, others feed also on feathers, hair, skin, sebaceous fluids or even other parasites.

Bibl.: Kim & Ludwig 1978. **Bibl.:** Durden & Musser 1994; Emerson 1972; Kim & Ludwig 1978; Kim, Pratt & Stojanovich 1986; Price & Graham 1997

Subdivision Pareneoptera

Order **Mallophaga** (biting lice) (name from Greek mallos, “wool” and phagus, “to eat”, referring to the belief that they ate wool, being found on mammals. 5,000 known species,

864 in 115 genera in US & Canada

Phloptoridae (feather chewing, bird sucking or bird lice))

Subdivision Siphunculata (sucking lice)

Order **Anoplura** (from *anoplos*, “unarmed” and *ura*, “tail” from the lack of tail structures.

500 known species, 56 in 17 genera in US & Canada

Linognathidae (=Solenopotes) (pale or body lice)

(*Linognathoides*) (once in Siphunculata, also put in Polyplacidae))

Haematopinidae (ungulate lice; mammal sucking or wrinkled sucking lice)

(*Hoplopleura*) (now in Hoplopleuridae)

Hoplopleuridae (armoured lice) ((*Hoplopleura*) (once in Haematopinidae)

Pediculidae (body lice) undet. genus (2,000 to 3,000 & 9,400 to 10,000 years BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM)

Polyplacidae (spiny rat lice)
(*Fahrenholzia*, *Linognathoides* (put in Linognathidae) *Neohaematopinus*,
Polyplax)

Fahrenholzia Kellogg & Ferris, 1915 - Polyplacidae lice (7 species in US or Canada)
Fahrenholzia *pinnata* Kellogg & Ferris, 1915 (Tx or Ac on *Myotis lucifugus* bat; on *Neotoma cinerea* & *lepida* woodrat)

Hoplopleura Enderlein, 1904 - Hoplopleuridae lice (once in Haematopinidae) (15 species in US or Canada)

Hoplopleura *acanthopus* (Burmeister, 1839) (ectoparasite on AB, BC, NWT, ON *Neotoma cinerea occidentalis* woodrats)

Hoplopleura *hirsuta* Ferris, 1916 (ectoparasite on FL *Neotoma floridana* woodrat)

Linognathoides Cummings, 1934 - Linognathidae lice (also put in Polyplacidae) (3 species in US or Canada)

Linognathoides *inornatus* (*Neohaematopius i.* Kellogg & Ferris, 1915) (ectoparasite on CO *Neotoma mexicana fallax* & OR *N. cinerea* woodrats)

Neohaematopinus Mjoberg, 1910 - Polyplacidae Anoplura (lice) (9 species in US or Canada)

Neohaematopinus *inornatus* Kellogg & Ferris, 1915 (ectoparasite on AZ, BC, CA, CO, ID, MT, OR, UT, WY *Neotoma cinerea*)

Neohaematopinus *neotomae* Ferris, 1942 (ectoparasite on *Neotoma fuscipes*; UT, WY *Neotoma lepida* & *N. cinerea*; CA *N. lepida*; AZ, NM, TX *N. albigula* & NM *N. mexicana* & *N. micropus* woodrats)

Neohaematopinus undet. sp. (ectoparasite on UT *Neotoma lepida* woodrats)

Polyplax Enderlein, 1904 (= *Eremophthirius* Glinkiewicz, 1907) - Polyplacidae lice (5 species in US or Canada)

Polyplax undet. sp(p). (ectoparasite on CO *Neotoma cinerea orolestes* woodrats; parasite in WA caves)

Solenopotes Enderlein, 1904 - Linognathidae lice (4 species in US or Canada)

Solenopotes undet. sp. (ectoparasite on CO *Neotoma mexicana fallax* & CO *Cinerea orolestes* woodrats)

LICHENS

Kingdom Fungi

Phylum Ascomycota (true yeasts, moulds, morels, truffles)

Order Lecanorales

Suborder Cladoniaceae

Acarosporaceae (*Acarospora*)

Acarospora .Massal., 1852 (cracked lichen) Acarosporaceae lichen

Acarospora *schleicheri* (*Urceolaria s.* Ach., 1810) Massal. (= *A. evoluta* H.Magn). (Schleicher's cracked lichen/ twilight zone in nNM caves)

Gasparrinia *elegans* (*Lichen e.* Fink, 1794; *Caloplaca e.* Fries, 1871)

Gasparrinia *elegans* var. *brachyloba* (Zahlbr., 1930) H.Magn. (twilight zone in nNM)

life - Incl. **current, fossil, & organic.** See also **human.**

life cycle/history - Bruce 1972; Peck 1975; VanLuik 1981

limnicoid – Adj. for biota that lives in lakes. Syn.: limnicole.

Limno – Prefix for things restricted to freshwater.

limnocene - A spring pool from which water tends to flow out more slowly into a channel.

limnostygobionts – Stygobionts restricted to freshwater.

limnoplankton - Freshwater plankton often composed of unicellular organisms, rotifers, & small crustaceans.

lint - **HUMAN sediment** of cloth, hair, & skin parts. Jeans are major source. Can be 1/100,000 of lb/hour/visitor & cause **paradox of enrichment** near trails. Concentrates on stairs, where air funnels into small passages & where these passages open up into larger rooms. Lint supports mites, ants, rhadine beetles & spiders. 1' high trail curbs can contain most lint.

lithotroph - Taxon that gets energy from oxidation of inorganics. Cf. organotroph & autotroph.

lion - See **mammal, carnivore.**

litter - 1. Syn: **trash.** 2. In forestry, a general term for the layer of loose organic debris, composed of freshly fallen or only slightly decayed material, that accumulates in wooded areas. Use **duff.**

Liverworts

Of the Class Hepaticae, generally flat lying **bryophytes**. Most species have either a flat, lobed thallus or a vegetative body with a dorsiventrally winged stalk. Oil bodies present in most thalli. Most species have long, colorless, unicellular rhizoids that anchor the thallus and absorb water and minerals. The sporangium (capsule), which represents the sporophyte, is usually hidden by the archegonial wall. Sporangium has elaters, unique to liverworts. About 10,000 species in 5 orders

Phylum Embryophyta

Division Hepatophyta (= Marchantiopsida)

Class Bryopsida (= Bryophyta) or Hepaticae (incl. Pleudolepicoleaceae)

Subclass Metzgeriidae

Order Metzgeriales

Suborder Metzgeriineae

Aneuraceae (*Riccardia*)

Metzgeriaceae (*Metzgeria*)

Suborder Pelliineae

Pelliaceae (*Pellia*)

Subclass Jungermanniae

Order Jungermanniales (=Hepaticopsida)

Suborder Cephaloziineae

Adelanthaceae

Subfamily Odontoschismatoideae (*Odontoschisma*)

Suborder Cephaloziineae

Cephaloziaceae

Subfamily Cephalozioideae (*Cephalozia*)

Cephaloziellaceae (*Cephaloziella*)

Suborder Geocalycineae

Geocalycaceae

Subfamily Geocalycoideae (*Geocalyx*, *Harpanthus*)

Subfamily Lophocoleoideae (*Chiloscyphus*, *Lophocolea*)

(both also put in Subfamily Takakiinae)

Plagiochilaceae (*Scapania* (also put in Scapaniaceae))

Subfamily Plagiochiloideae (*Plagiochila*)

Lophocoleaceae (subsumed in Geocalycaceae)

Suborder Gymnomitriaceae
Subfamily Gymnomitrioideae (*Marsupella*)

Suborder Jungermanniineae
Jungermanniaceae (*Anastrophyllum*, *Jamesoniella*, *Nardia*)
Subfamily Jungermannioidea (*Jungermannia*)

Suborder Lepidoziineae
Subfamily Bazzanioidea
Lepidoziaceae (*Bazzania*)

Suborder Porellineae
Jubulaceae
Subfamily Frullanioideae (*Frullania* (also put in Frullaniaceae))

Lejeuneaceae (= Bryopteridaceae)
Subfamily Cololejeuneoidea (*Cololejeunea* (also put in Codoniaceae))

Subfamily Lejeuneoideae
(*Leucolejeunea*, *Lejeunea*, *Rectolejeunea*, *Taxilejeunea*)

Porellaceae (*Porella*)

Superfamily Jubulacea
Jubulaceae (= Frullaniaceae)

Subfamily Jubuloideae (*Jubula*)
Subfamily Frullanioideae (*Frullania* (also put in

Conocephalaceae))

Suborder Ptilidiineae
Ptilidiaceae (*Ptilidium*)

Suborder Radulineae
Radulaceae (*Radula*)
Scapaniaceae (*Diplophyllum* *Scapania* (also put in Plagiochilaceae))

Suborder Leidoziineae
Calypogeiaceae (*Calypogeia*)

Subclass Marchantiae

Order Marchantiales

Suborder Marchantiineae
Aytoniaceae (=Grimaldiaceae, Rebouliaceae) (*Reboulia*)
Conocephalaceae (*Conocephalum*, *Dumortiera* (also put in M.),

Marchantiaceae (*Dumortiera* (also put in Conocephalaceae), *Marchantia*)

Anastrophyllum (Spruce) Stephani, 1893 - Jungermanniaceae liverworts

Anastrophyllum michauxii (*Jungermannia m.* F. Weber, 1753) H.Buch. ex A. Evans, 1932
(= *Sphenolobus m.*) (WV twilight zone)

Bazzania Gray, 1821 (= *Bazzanius*) Lepidoziaceae liverworts

Bazzania nudicaulis Evans, 1821 (= *B. tricenata* according to T. Fry & L. Clark, 1943) (WV twilight zone)

Bazzania tricenata (Wahlenb.) Trev., 1877 (*B. nudicaulis* A. Evans, 1821) (WV twilight zone)

Bazzania trilobata (*Jungermannia t.* Linnaeus) Gray, 1821 (WV twilight zone)

Blepharostoma (Dumort. emend. Lindb.) Dumort, 1835 - Pseudolepicoleaceae liverworts

Blepharostoma trichophyllum (*Jungermannia t.* Linnaeus) Dumort., 1835 (blepharostoma/ WV twilight zone)

Calypogeia Raddi, 1818 (= *Calipogeja*) Calypogeiaceae liverworts

Calypogeia neesiana (Massal. & Carest, 1880) K. Muller, 1905 (WV twilight zone)

Calypogeia sullivantii Austin, 1873 (WV twilight zone)

Calypogeia trichomanis (Mnium t. Linnaeus, 1753) Corda, 1818 (WV twilight zone)

Cephalozia (Dumortier emend. Schiffn.) Dumortier, 1835 - Cephaloziaceae liverworts

Cephalozia bicuspidata (*Jungermannia b.* Linnaeus, 1835) Dumortier, 1835 (WV twilight zone)

Cephalozia catenulata (*Jungermannia c.* Huebener, 1872) Dumortier, 1835 (WV twilight zone)

Cephalozia curvifolia = *Jungermannia c.*

Cephalozia media Lindb. = *C. lunulifolia*

Cephalozia lunifolia (Dumort) Dumort (= *C. media*) (WV twilight zone)

Cephaloziella (Spruce) Schiffner, 1893 - Cephaloziellaceae liverworts

Cephaloziella divaricata (*Jungermannia d. Sm., 1800*) Schiffner, 1893 (cephaloziella/ WV twilight zone)

Chiloscyphus Cordin, 1829 - Geocalycaceae liverwort, Subfamily Takakiinae

Chiloscyphus *pallens* (Ehrh. Ex Hoffm., 1795) Dum. (AL)

Cololejeunea (Spruce) Schiffn., 1893 - Lejeunaeaceae liverworts

Cololejeunea *biddlecomiae* (*Lejeunea b.* Austin ex Pearson, 1890) Evans, 1902 (epigeal in AR; Tp in AL; WV twilight zone)

Cololejeunea *minutissima* (*Jungermannia m.* Smith, 1806) Schiffner, 1895 (AL)

Cololejeunea *ornata* Evans, 1938 (AL)

Conocephalum J. Hill, 1773 - Conocephalaceae liverworts

Conocephalum *conicum* (*Marchantia c.* Linnaeus, 1780) Underwood, 1895 (Ozarks, AL, MO, WV twilight zone)

Diplophyllum (Dumortier) Dumortier, 1835 - Scapaniaceae liverworts in Jungermanniales

Diplophyllum *apiculatum* (*Diplophylleia a.* A. Evans, 1902) (WV twilight zone)

Dumortiera Nees in Reinwardt, Blume et Nees, 1824 - Marchantiaceae liverworts

Dumortiera *hirsuta* var. *h.* (Swartz) Nees, 1833 (Ozarks/ diplophyllum/ TTp in AL)

Frullania Raddi, 1818 - Frullaniaceae liverworts

Frullania *asagrayana* Mont., 1842 (WV twilight zone)

Frullania *eboracensis* Gottsche, 1818 ssp. *virginica* (G.) Schust. (Ozarks/TTp in AL)

Frullania *inflata* Gottsche, 1845 (MW/Tp in AL)

Geocalyx Nees, 1833 - Geocalycaceae liverworts in Jungermanniales

Geocalyx *graveolens* (*Jungermannia g.* Schrad., 1797) Nees, 1836 (geocalyx/ WV twilight zone)

Harpanthus Nees, 1836 - Geocalycaceae liverworts in Jungermanniales

Harpanthus *scutatus* (*Jungermanni scutata* F.Weber & D Mohr, 1807) Spruce, 1850 (WV twilight zone)

Jamesoniella (Spruce, 1876) Carrington, 1881- Jungermanniaceae liverworts

Jamesoniella *autumnalis* (*Jungermanni a* DC., 1815) Stephani, 1901 (WV twilight zone)

Jubula Dumort., 1822 - Jubulaceae liverworts in Jungermanniales

Jubula *pennsylvanica* (*Frullania p.* Stephani, 1883) Dumort, 1883 (WV twilight zone)

Jungermannia Linnaeus, 1753 emend. Dumort - Jungermanniaceae liverworts

Jungermannia *curvifolia* Dicks, 1790 (= *Cephalzia c.*) (WV twilight zone)

Jungermannia *exsecta* (Schmidel ex Schrad., 1797 (*Sphenolobus exsectus* (Schmidel ex Schrad., 1797). Steph.) (Jungermannia/ WV twilight zone)

Lejeunea Libert, 1820 - Lejeuneaceae liverworts

Lejeunea *cavifolia* (*Jungermanni c.* Ehrh., 1789) Lindb., 1871 (WV twilight zone)

Lejeunea *laetivirens* (Nees et Mont., 1820) (*Microlejeunea l.*) (Ozarks/TTp in AL)

Lejeunea sharpii = *Taxilejeunea sharpii*

Lepidozia (Dumort., 1831 as *Pleuroschisma* sect. *Lepidozia*) Dumort., 1835

Lepidozia *sylvatica* Evans., Dicks, 1904 (WV twilight zone)

Leucolejeunea A.W. Evans, 1907 - Lejeuneaceae liverworts

Leucolejeunea *unciloba* (*Lejeunea u.* Lindenberg in Gottsche, Lindenberg & Nees, 1845) Evans (Ozarks/TTp in AL),

Lophocolea (Dum.) Dumortier, 1835 - Geocalycaceae liverworts

Lophocolea *cuspidata* (Nees) Limpricht, "1877" 1876 (AL)

Lophocolea *heterophylla* (Schrader) Dumortier, 1835 (AL)

Marchantia Linnaeus, 1753 - Marchantiaceae liverworts

Marchantia *polymorpha* Linnaeus, 1753 (Europe,NA/ AL, KY, MN, NM, NY, WV twilight zone)

Marsupella Dumortier, 1822 - Gymnomitriaceae liverworts

Marsupella *emarginata* (*Jungermannia e.* Ehrhart, 1894) Dumortier, 1835 (WV twilight zone)

Metzgeria Raddi, 1818 - Metzgeriaceae liverworts

Metzgeria *conjugata* Lindb., 1818 (marsupella/ WV twilight zone)

Metzgeria *myriopoda* (Lindberg, 1818) (Ozarks/ marsupella/ TTp in AL),

Nardia S. Gray, 1821 - Jungermanniaceae liverworts

Nardia *crenulata* (Austin) Lindb., 1818 (nardia/ WV twilight zone)

Nardia *crenuliformis* (Austin) Lindb., 1818 (nardia/ WV twilight zone)

Odontoschisma (Dumortier) Dumortier, 1835 - Adelanthaceae liverworts

Odontoschisma *denudatum* (*Jungermannia denudata* Nees, 1817) Dumortier, 1835 (WV twilight zone)

Pellia Raddi, 1818 - Pelliaceae liverworts in Metzgeriales

Pellia *epiphylla* (*Jungermannia e.* Linnaeus, 1753) Corda, 1829 (WV twilight zone)

Plagiochila (Dumortier.) Dumortier, 1835 - Plagiochilaceae liverworts

Plagiochila *asplenioides* (Linnaeus) Dumortier, 1835 (*Plagiochila major* & *porelloides*) (WV twilight zone)

Plagiochila *asplenioides* ssp. *porelloides* (= *P. p* Torrey ex Nees) Lindenberg, 1840 (Ozarks/ AL twilight zone)

Plagiochila invisa = *Scapania i.*

Plagiochila *undata* Sullivant in Gray, 1846

Plagiochila *undata* ssp. *undata* Sullivant in Gray, 1846 (Ozarks/TTp in AL)

Plagiochila *virginica* A. Evans (AL)

Porella Linnaeus, 1753 - Porellaceae liverworts

Porella *pinnata* Linnaeus, 1753 (Ozarks/TTp in AL) &

Porella *platyphylloidea* (Schwein.) Lindberg. 1876 (Ozarks/TTp in AL)

Ptilidium Ness, 1833 - Ptilidiaceae liverworts

Ptilidium *pulcherrimum* (*Jungermannia pulcherrima* Weber, 1778) Hampe, 1836 (ptilidium/ WV twilight zone)

Radula Dumortier, 1822 - Radulaceae liverworts

Radula *australis* Austin, 1876 (TX/TTp in AL)

Radula *mollis* Lindenberg et. Gottsche, 1822 (AR/TTp in AL)

Radula *obconica* Sulliv. (epigeal in CT, MA, ME, VT/ WV twilight zone)

Reboulia Raddi, 1818 - Aytoniaceae liverworts

Reboulia *hemisphaerica* (Linnaeus) Raddi, 1818 (Ozarks/TTp in AL)

Rectolejeunea Evans, 1906 - Lejeuneaceae liverworts

Rectolejeunea *maxonii* A. Evans, 1906 (Ozarks/ TTp in AL)

Riccardia Gray, 1821 nom. cons - Aneuraceae liverworts in Metzgeriales

Riccardia *chamedryfolia* (Withering) Grolle, 1969 (Ozarks/TTp in AL)

Scapania (Dumortier) Dumortier, 1835 - Scapaniaceae liverworts in Jungermanniales

Scapania *dentata* Dumortier (WV twilight zone)

Scapania *nemorosa* (*Jungermannia n.* Linnaeus, 1763) Dumortier, 1835 (illegitimate name) (WV twilight zone)

Scapania (*Scapaniella*) *invisa* Schuster, 1974 (= *Plagiochila invis*a) (AL)

Scapania *undulata* (*Jungermannia u.* Linnaeus, 1753) Dumortier, 1835 (WV twilight zone)

Sphenolobus (S.O. Lindberg, 1898) Berggren, 1951

Sphenolobus exsectus = *Jungermannia e.*

Sphenolobus michauxii = *Anastrophyllum m.*

Taxilejeunea (R. Spruce, 1983) Schiffner in Engler & Prantl. - Lejeuneaceae liverworts

Taxilejeunea *sharpii* R.M. Shuster, 1893 (= *Lejeunea sharpii*) (AL)

Lizards

Reptile of Class Reptilia

Subclass Lepidosauria

Order Squamata (snakes, lizards, amphisbaenids)

Suborder Lacertilia (lizards & allies) (most primitive suborder)
(rejected as suborder because it is paraphyletic)

Infraorder Anguimorpha

(monitors, anguids, gila monsters, mososaurs, etc.) (Anguidae)

Infraorder Gekkota (geckos and allies) (Gekkonidae)

Infraorder Iguania (iguanas & allies) (Iguanidae)

Infraorder Scincomorpha (skinks, (lacertids) & allies)

(Teiidae, Scincidae (also put in Lacertilia)) **Bibl.:** Gilmore 1928

Anguidae (anguids, galliwasp, alligator & glass lizards) (*Gerrhonotus*, *Ophisaurus*)

Gekkonidae (geckos) (*Coleonyx*)

Iguanidae (iguanids) (*Anolis*, *Crotaphytus*, *Phrynosoma*, *Sceloporus*)

Scincidae (skinks) (*Eumeces*, *Scincella*) about 600 sp. in 50 genera

Teiidae (whiptails, racerunners & ground lizards) (*Cnemidophorus*)

Anolis Daudin, 1980 - Anguidae lizards (21 species in US or Canada)

Anolis *carolinensis* Voigt, 1832 (green anole/ sVA to sFL, w. to cTX/ TTx in TX)

Cnemidophorus Wagler, 1830 - Teiidae lizards (whiptails & racerunners) (16 species in US or Canada)

Cnemidophorus undet. sp. (Pleist. in Burnet and/or Dark Canyon C., NM)

Coleonyx Gray, 1845 - Gekkonidae lizards (4 species in US or Canada)

Coleonyx *brevis* (Stejneger, 1893) (Texas banded gecko/ seTX, scNM/ TTx in TX)

Coleonyx *variegatus* (Baird, 1859) (epigeal swAZ, neAZ, swCA/ banded gecko/ late Pleistocene to early to middle Holocene extralimital west in Tse'an Bida C., AZ)

Coleonyx variegatus brevis = *C. brevis*

Crotaphytus Holbrook, 1842 - Iguanidae lizards (3 species in US or Canada)

Crotaphytus *collaris* Holbrook, 1842 (eUT, CO to swIL, s. to Mex., w. to cAZ/collared lizard/ Pleist. in Burnet and/or Dark Canyon C., NM)

Crotaphytus cf. *collaris* Holbrook, 1842 (Irvingtonian extralimital sw. in Fyllan C., TX)

Eumeces Wiegmann, 1834 - Scincidae lizards (13 extant species in US or Canada)

Eumeces *curri* Meylan, 1982 (extinct Pleist. in Inglis sink, Citrus Co., FL)

Eumeces *fasciatus* (Linnaeus, 1758) (sNew England to nFL, w. to eTX, n.to KS, WI, sON/ five-lined Skink/ TTx or Ac in MD, NJ, PA/ cf. Rancholabrean extralimital in Reddick I Site, Marion Co., FL)

Eumeces *fasciatus* (se PA to cFL, along Gulf Coast to eTX, n. to KS, IL/ broad-headed skink/ Tx in FL)

Eumeces *obsoletus* (Baird & Girard, 1852) (seWY,sNB,swIA to cAZ,Mex.,wcTX/ Great Plains Skink/ Tx in TX)

Eumeces tetragrammus (Baird, 1859) (four-lined skink) (c,s TX to Mex., n. to scAZ, swNM/ north extralimital in C.Without A Name (13,000BP, TX) & cave in Kendall Co. (11,000yrs, cTX)

Gerrhonotus Wiegmann, 1828 - Anguidae lizards (5 species in US or Canada)

Gerrhonotus liocephalus (Wiegman, 1828) (Texas alligator lizard)

Gerrhonotus liocephalus infernalis (G.i. Baird, 1858) (Edwards Plateau to Big Bend, s. to Mex./TX alligator l./Ac or Tx in TX)

Gerrhonotus multicarinatus (Blainville, 1835) (swWA s.to nMex./southern alligator lizard/ TTx? or Ac in CA)

Ophisaurus Daudin, 1803 (glass lizards) Anguidae lizards (3 species in US or Canada)

Ophisaurus undescr.? sp. (late Irvingtonian extinct? in Fryllan C., TX)

Phrynosoma Wiegmann, 1828 (horned lizards)_Iguanidae lizards (7 species in US or Canada)

Phrynosoma cornutum (Harlan, 1825) (KS to TX, w.to seAZ, LA disjunct, alien in nFL/ Texas horned lizard/ extralimital in NM (Burnet &/or Dark Canyon C.,NM)

Phrynosoma douglassi (Bell, 1829) sBC to nCA, s.ID, UT, sSK, se to KS, s.to Mex., disjunct in wTX / short-horned lizard/ extralimital in late Wisconsinan NV (Smith Cr. C., NV, NM (Burnet &/or Dark Canyon C.,NM) & TX (Hall C.)

Phrynosoma undet. sp. (Pleist. fossil/w. extralimital in Conrad Fissure (AR))

Sceloporus Wiegmann, 1828 - Iguanidae lizards (16 species in US or Canada)

Sceloporus magister (Hallowell, 1854) (sNV s. to Baja, se to AZ,NM,w.TX/desert spiny lizards/ extralimital in late Wisconsinan Smith Cr. C., NV)

Sceloporus occidentalis Baird & Girard, 1852 (wWA, OR, seID, NV, eUT, n,cCA/ western fence lizard/ Ttx? in CA)

Sceloporus olivaceus Smith, 1934 (Texas spiny lizard/ scOK to Mex./Ac in cave inKinney Co., TX)

Sceloporus undulatus (Latreille, 1801)

Sceloporus undulatus hyacinthinus (Green, 1818) (eKS to NJ, s. to cSC, sw to eTX & n. to eOK/ northern fence lizard/ Ac in NJ?)

Sceloporus variabilis Wiegmann, 1834 (scTX to Costa Rica/rose-bellied lizard / 11,000BP north extralimital in Kendall Co., TX)

Scincella Mittleman, 1950 - Scincidae lizards (1 species in US or Canada)

Scincella *lateralis* (Say in James, 1823) (NJ s.to FL, w.to cTX, n.to NB,MO/ ground skink/ TTx in Travis Co., TX & Madison Co.,AL)

Limpets - Class Gastropoda

Subclass Patellogastropoda (once an order) (=Diotocardia?)

Order Archaeogastropoda

Superfamily Lottioidea (once put in Subclass Prosobranchia)

Acmaeidae (also put in superfamilies Patellacea & Patelloidea) (limpets)

Subfamily Acmaeinae (*Acmaea*)

Lottiidae (also put in superfamily Patelloidea) (*Tectura*)

Acmaea Rathke, 1833 - Acmaeidae limpets, Subfamily Acmaeinae

Acmaea testudinalis (Muller, 1776) = *Tectura t.*

Tectura – Gray, 1847 - Lottiidae limpets (7 species in US or Canada)

Tectura testudinalis (Muller, 1776) (= *Acmaea t.*) (tortoiseshell limpet/ Tx in ME sea c.)

Ilama - Extinct Camelidae. See **mammal**.

Lobster – Phylum Arthropoda, Subphylum Crustacea, Class Malacostraca, Subclass Eumalacostraca, Superorder Eucarida, Order Decapoda Suborder Pleocyemata, Infraorder Astacidea (lobsters) & Palinura (spiny or slipper lobsters)

Panulirus White in Gray, 1847 - Palinuridae lobster

Panulirus undet sp. (TTx in CA/ (spiny lobster)

local - Population not present throughout, but at least fairly common where present.

locality, type - Where a **type** species was collected.

longevity - Cooper & Cooper 1976, 1978, 1978a; Nicholas 1969; Nicholas 1974

Lophotrochozoa - Division of Protostomia Bilateria animals that does not undergo ecdysis. Includes various worms (chaetognathids, sipunculids, ascanthocephalids, gastrotrichs, platyhelminthes, ribbon worms, annelids), rotifers, cyclophorids, bryozoans, phoronids, brachiopods, and mollusks.

Lophophorates (= Lophophorata) – Lophotrochozoa that form a feeding structure (lophophore) that resembles a scope finged with cilia. Includes **phoronids**, **bryozoa** and **brachiopods**.

Loricifera - A phylum of microscopic marine animals with many Aschelminth characters. >100 species, mostly interstitial. In the US, found in marine sediments of TX, FL, NC and likely all other states)

Clade Bilateria

Clade Protostomia

Clade Ecdysozoa

Phylum Loricifera

Nanoloricidae (undetermined genus in FL/TX marine interstitial;

Nanoloricus)

Nanoloricus Kristensen, 1983 - Nanoloricidae loriciferans

Nanoloricus mysticus Kristensen, 1983 (interstitial marine off Greenland, Denmark, FL)

lotic - running water habitat (see **crayfish**).

lucifuge – Refers to a species intolerant of light.

luminescence - See bioluminescence

lyme disease - Microbe hazard caused by bacterium ***Borrelia burgdorferi*** that is transmitted by humans by infected insects, usually in the NE by the deer **tick**, a reddish-brown **mite** (*Ixodes*) about the size of a pinhead. The lone star tick (*Amblyomma americanum*) may also carry it. Initial symptoms are usually mild, flu-like (fever, headache, fatigue, malaise & joint aches). A bulls-eye type rash at the bite site may be present in 60% of cases. The acute phase occurs weeks or even years later, with progressive fatigue, migrating arthritis & malaise, sometimes leading to irregular heartbeats, facial paralysis, meningitis, & death. Not known from caves.

Ma - Millions of years before the present.

macro-evolution - Above the species level.

macrofauna - 1. Soils animals visible to the naked eye. 2. **Current** or **fossil** animals visible to the naked eye. Cf. microbe & mesofauna.

macrofossil - A fossil large enough to be studied without microscopes.

macroinvertebrate - Invertebrates larger than meiobenthos and which are retained on coarse sieves with a mesh size greater or equal to 2 mm. Usually visible to the naked eye from one foot away. Incl. most **arachnids**, **crustaceans**, **bivalves**, **hexapods**, & **worms**.

macromutation - One with large phenotypic effects.

macronutrient - Organics or inorganics needed in rather large amounts by a lifeform. Incl. amino acids, carbohydrates & fats.

macrophyte - Macroscopic species that eats sunlight and grows in water.

Malacostraca - Chace et al., 1959. Aquatic **crustacean** Class incl. orders **Amphipoda**, Decapoda (see **shrimp & crayfish**), **Isopoda** & (less common) Anaspidacea, Bathynellacea (**syncarids**), **Mysida**, Spelaeogriphocea, & **Thermosboenacea**. **Bibl.:** Chace et al. 1959; Ortmann 1918; R. Pennak 1968

mandible - Hardened mouthparts. Incl. most anterior gnathal appendages.

malacology - the study of mollusks.

Mammals

Of Kingdom Animalia, Phylum Chordata, Subphylum Vertebrata, Subclass Theria. All species listed here are in Infraclass Eutheria except opossum in Infraclass Metatheria, Superorder Marsupialia (or as order), Order Didelphimorphia). All young are fed by milk glands (mammary glands and all except Monotremata (incl. platypus) are viviparous (give birth to live, non-egg young). About 6,000 species.

Dasypodidae

Subfamily Pampatheriinae (*Holmesina*, *Dasypus*) (see armadillos)

Order Artiodactyla

Family Antilocapridae (*Antilocapra*, *Capromeryx*, *Stokocerus*, *Tetrameryx*)
(see pronghorns)

Family Bovidae

Subfamily Bovinae (*Bison*) (see bison)

Subfamily Caprinae

(*Euceratherium* (see shrub-ox), *Oreamnos* (see mountain goats),

Ovibos (see musk-ox), (*Ovis*) (see sheep),) *Symbos*) (see musk-ox))

Family Camelidae

(undet. fossil genus in Papago Spr. C., AZ; *Camelops*, *Hemiauchenia*, *Palaeolama*))
(see camels & llamas)

Family Cervidae

Subfamily Capreolinae (*Rangifer*) (see caribou)

Subfamily Cervinae (*Cervus*) (see elk)

Subfamily Odocoileinae

(*Blastocerus*, *Odocoileus*, *Navahoceros*, *Sangamon*) (see deer) (*Cervalces*)

(see moose)

Family Tayassuidae (*Mylohyus*, *Platogonus*, *Tayassu*) (see peccary)

Undet. Genus - Irvingtonian in limestone fissures in Ozark Mts. of Newton Co., AR

Order Carnivora

Suborder Caniformia

Family Mephitidae

Subfamily Mephitinae (*Brachyprotoma*, *Conepatus*, *Mephitis*, *Spilogale*) (see skunk)

Superfamily Arctoidea

Family Mustelidae

Subfamily Mustelinae

(*Gulo* (see wolverine), *Mustela* (see ermine, ferrets, fishers, weasels),
Martes (see martens), *Trigonictis* (see mink))

Subfamily Taxidiinae (*Taxidea*) (see badgers)

Family Otariidae (now in Order Pinnipedia)

Family Ursidae (see bears)

Subfamily Ursinae (*Arctodus*, *Tremarctos*, *Ursus*)

Infraorder Canoidea

Family Canidae

Subfamily Borophaginae (borophagines) (once in Simocyoninae)
(*Borophagus*, *Urocyon*, *Vulpes*) (see foxes)

Subfamily Caninae (3 extant species in US or Canada) (*Canis*)
(see dogs, coyotes, wolves)

Family Procyonidae (also put in Arctoidea) (*Bassariscus*) (see ringtails)

Subfamily Procyoninae (*Nasua*) (see coati) (*Procyon*) (see raccoons)

Suborder Fissipedia

Infraorder Feloidea

Suborder Feliformia

Superfamily Aeluroidea (= Feloidea)

Family Felidae

Subfamily Felinae (*Lynx*) (see bobcats) (*Felis*, *Homotherium*, *Smilodon*)
(see cats), *Lynx* (see lynx), (*Acinonyx*, *Miracinix*) (see cheetahs)

Subfamily Pantherinae (*Panthera*) (see panthers)

Family Hyaenidae (hyaenas) (*Chasmaporthetes*) (= *Euryboas*) (see hyaenas)

Order Chiroptera (see bats)

Suborder Yinochiroptera (= Suborder Megachiroptera in part)

Infraorder Megachiroptera

Superfamily Pteropodoidea

Pteropodidae (flying foxes) (*Pteropus*)

Suborder Yangochiroptera (= Microchiroptera)

Superfamily Emballonuroidea (= Rhinopomatoidea in part)

Emballonuridae (sac-winged or sheath-tailed bats) (*Emballonura*)

Infraorder Noctilionida

Superfamily Noctilionoidea

Desmodontidae - subsumed in Phyllostomidae

Mormoopidae (moustached, naked-backed & ghost-faced bats
(*Mormoops*, *Pteronopus*) **Bibl.:** J. Smith 1972;

Phyllostomidae (incl. Desmodontidae) (New World leaf-nosed bats)
(*Desmodus*, *Diphylla*, *Leptonycteris* (Glossophaginae), *Macrotus*)

Infraorder Vespertilionida

Superfamily Vespertilionoidea

Molossidae (free-tailed bats; free-tailed, bulldog & mastiff bats)
(also subsumed in Vespertilionidae)
(*Eumops*, *Molossus*, *Nyctinomops*, *Tadarida*)

Vespertilionidae Gray, 1821 (plain-nosed or vespertilionid bats)
(may include Molossidae)

Subfamily Vespertilioninae

(*Antrozous*, *Corynorhinus*, *Eptesicus*, *Euderma*, *Idionycteris*,

Lasionycteris,

Lasiurus, *Nycticeius*)

Order Edentata

Family Glyptodontidae (*Glyptotherium*) (see glyptodonts)

Family Megatheriidae (*Glossotherium*, *Nothrotheriops*, *Paramylodon*)

Family Megalonychidae (*Megalonyx*) (see ground sloths)

Order Insectivora (insectivores)

Family Talpidae (moles, desmans & shrew-moles)

Subfamily Talpinae

(*Neurotrichus* (see shrews), *Parascalops*, *Scalopus*, *Scapanus* (see moles))

Subfamily Soricinae (*Blarina*, *Cryptotis*, *Notiosorex*, *Sorex*) (see shrews)

Order Lagomorpha

Family Leporidae (see rabbits)

Subfamily Archaeolaginae (*Hypolagus*)

Subfamily Leporinae (*Aztlanolagus*, *Brachylagus*, *Lepus*, *Silvilagus*)

Family Ochotonidae

(pikas, pikas, whistling hares, calling hares, mouse hares, rock conies) (*Ochotona*)
(see pikas)

Order Perissodactyla

Suborder Mesaxonia

Infraorder Hippomorpha

Superfamily Equoidea

Family Equidae (horses & zebras) (*Equus*) (see horses)

Infraorder Moropomorpha

Parvorder Ceratomorpha

Magnafamily Tapiridea

Superfamily Tapiroidea

Family Tapiridae (tapirs) (*Tapirus*) (see tapirs)

Superfamily Rhinocerotidea

Family Rhinocerotidea (true rhinoceroses)

Subfamily Rhinocerotinae (*Coelodonta*) (see rhinos)

Order Pinnipeda

Suborder Pinnipedia (seals, sealions & walruses)

Family Odobenidae (*Odobenus*) (see walrus)

Family Otariidae (*Zalophus*) (see sea lions)

Order Primates

Family Hominidae (*Homo*)

Order Proboscidea (Elephants, mammoths, mastodons)

Elephantidae (*Cuvieronius*, *Mammut*, *Mammuthus*) (see elephants)

Order Rodentia

Hydrochaeridae (capybara rodent)

Subfamily Hydrochoerinae (*Neochorus*)

Suborder Hystricognathis

Family Erethizontida (*Coendu*) (see coendu)

Suborder Hystricognathis

Family Erethizontidae (*Erethizon*) (see porcupines)

Suborder Sciurognathi

Family Castoridae (*Castor*, *Castoroides*, *Paradipoides*) (see beavers)

Family Aplodontiidae (1 extant species in US & Canada)

(*Aplodontia*) (see mountain beavers)

Infraorder Myomorpha

Family Heteromyidae (heteromyid rodents) (*Proheteromys*)

Subfamily Perognathinae (*Perognathus*)

Family Dipodidae (brich & jumping mice & jeroboas)

Subfamily Zapodinae (*Napaeozapus*, *Zapus*)

Family Muridae (Old World **rats** & mice) (see also rats and woodrats)

(*Allophaiomys*, *Dicrostonyx*, *Lemmus*, *Mictomys*, *Synaptomys*)(see

lemmings, mice)

Subfamily Arvicolinae

(*Atopomys*, *Clethrionomys*, *Lagurus*, *Phenacomys* (see voles),

Microtus

(see mice), *Neofiber* (see rats), *Ondatra* (see rats))

Subfamily Murinae (*Mus* (see mice), *Rattus* (see rats)),

Subfamily Sigmodontinae (*Baiomys*, *Neotoma* (see rats), *Oryzomys* (see

rats)

Onychomys (see mice), *Peromyscus* (see mice), *Reithrodontomy* see

mice),

Sigmodon (see rats))

Infraorder Sciuromorpha

Family Geomyidae (pocket gophers)

(*Geomys*, *Pappogeomys*, *Thomomys*) (see gophers)

Family Sciuridae

Subfamily Sciurinae

(*Cynomys* (see prairie dogs), *Eutamias*, *Tamias* (see chipmunks),

Marmot

(see marmots), *Ammospermophilus*, *Glaucomys*, *Sciurus*, *Spermophilus*,

Tamiasciurus) (see squirrels)

antelope - See pronghorn

ARMADILLOS

Bibl.: Guilday & McCrady 1966.

Chlamytherium = *Holmesina*

Dasypus Linnaeus, 1758 - Dasypodidae mammal (one extant species in US) **Bibl.:** Klippel & P. 1984

Dasypus bellus (*Tatu b.* Simpson, 1930) (Extinct Pleist. beautiful armadillo/ Peccary C. & cave in Ozark National Scenic Riverways (both in AR), Anderson Pit (IN), A-maze-in & Mammoth (both in KY), Organ-Hedrick & Cricket Maze (both WV), Medford (FL) Auffenberg 1957, Cave Acb-3 Unit E (Unit E – Sangamonian, 11.5-4k, average 11.8k yrs., Unit D – 172k +/-10k, both in AL), Zoo, Crankshaft, Brynjulfson, Heinze, & Cherokee (40,000BP) & Little Beaver (11,000 +/-60 BP) (MO), Baker Bluff & Peck C. (TN), & TX (C. Without a Name, Baker's Bluff, Moore Pit, Kinkaid Shelter & Inner Space C.; in latest Irvingtonian sink near Coleman, Sumter Co., FL, Pleist. (latest Blancan or earliest Irvingtonian) Haile filled-in FL sinkhole or cave), late Rancholabrean Reddick I Site fissure, (Marion Co.), & early Irvingtonian in Inglis sinkhole, Citrus Co., FL) & in Sabertooth Cave (Sangamonian or possibly Wisconsinan, FL))

Dasypus novemcinctus Linnaeus, 1758 (nine-banded armadillo/ now in eTX, eOK, extreme se NB & sw MO, AR (except ne), sLA, sMS, sGA, & FL (except extreme s.)/ Tx in TX)

Holmesina Simpson, 1930 - Dasypodidae mammal, Subfamily Pampatheriinae

Holmesina floridanus (= *Kraglievichia f.* Robertson, 1976) (extinct in early Irvingtonian in Inglis sinkhole, Citrus Co., FL)

Holmesina septentrionalis (*Glyptodon s.* Leidy, 1889; *Chlamytherium s.* Sellards, 1915) (giant armadillo/ extinct in Sabertooth Cave (Sangamonian or possibly Wisconsinan, FL & Pleist. Coleman (latest Irvingtonian in Sumter Co.) & Haile (latest Blancan or earliest Irvingtonian) filled-in FL sinkhole or cave, late Rancholabrean Reddick I Site fissure, (Marion Co.), FL)

Dasypus novemcinctus Linnaeus, 1758 (c,eTX, adj.Mex., c,e,OK, AR, seNB, LA, wMS, seGA, wcAL, FL/ armadillo/ TTx in TX). See **glyptodont**.

Artiodactyla - Mammal order that incl. bighorn sheep, bison, camel, caribou, deer, elk, llama, mountain goat, musk-ox, peccary & pronghorn

BADGERS

Taxidea Waterhouse, 1839 - mammal Order Carnivora, Suborder Caniformia, Family Mustelidae, Subfamily Taxidiinae

Taxidea taxus (Schreber, 1778) (W(except wWA,OR), MW to wOH, n.to cSK/Irvingtonian extralimital in Cumberland (MD) & Welch (KY) C./ Fossil **Bibl.:** F. Grady 1998; Long 1964.

BATS - Mammal of Order Chiroptera (bats, flying foxes and fruit bats)

Elongated fingers of the forelimb act as supports for two thin, elastic membranes extending from the sides of the body and legs (incl. tail in some species). In most a cartilaginous spur (calcar or calcaneum) on the inner side of the ankle joint helps to spread the tail membrane. The third finger is very elongated (usually = body & leg length). Legs rotated to support wing membrane.

Order Chiroptera (see bats)

Suborder Yinochiroptera (= Suborder Megachiroptera in part)

Infraorder Megachiroptera

Superfamily Pteropodoidea

Pteropodidae (flying foxes) (*Pteropus*)

Suborder Yangochiroptera (= Microchiroptera)

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(may include Molossidae)

Subfamily Vespertilioninae

(*Antrozous*, *Corynorhinus*, *Eptesicus*, *Euderma*, *Idionycteris*,

Lasionycteris,

Lasiurus, *Nycticeius*)

General: W.F. Blair 1957, 1968; Pye 1966; Slaughter & Walton 1970

activity patterns (see emergence, seasonality) M. Adam, Lacki & Shoemaker 1994; R. Adams 1998; D. Audet 1987; L. Ball 1998; L. Beasley 1985-6; L. Beasley & Smith 1983-4; Beasley, Pelx & Zucker 1984; Brigham 1986, 1988; P. Brown 1982; Bruce & Wiebers 1969; Caceres 1998; Cockrum 1956; Cockrum & Cross 1964; Constantine 1967; P. Cryan 2000; De Coursey & de Coursey 1964; von Frneckell 1986; D. Griffin & Welsh 1937; Guthrie 1933; Hayes 1997; Hickey & Neilson 1995; Hickey, Palen et al. 1996; J. Horn 1999; J. Horn & Kunz 2000; Kirkwood & Cartwright 1994; Kunz 1969, 1973; Kunz & Anthony 1982; Kurta, Caryl & Lipps 1997; Kwiecinski 1982, 1984; McManus 1974; Menard 1997; P. Miller 1995; S. Murray 1997-8; Surprenant 1978; O'Farrel, Bradley 1970; O'Farrel, Bradley & Jones 1967; Rawson 1960; Reith 1980; S. Robertson, Britzke et al. 1998; Ruffner, Poche et al. 1979; Rupprecht 1980-1; Schmidt 1999; Suprenant 1978; Thibault & Adams 1996; 1996; Tipton 1983; von Frenckel 1986; T. Walker et al. 2000; D. Waters & Walsh 1994; T. Weller, Seidman & Zabel 1998; D. Young & Scudday 1975; Wunder 1987; Wunder & Nash 1980

adrenal gland - Krutzsch & Hess 1961; F. Miller et al. 1972; Rudd & Beck 1969

adrenal-cortical - Widmaier, Harmer & Sulak 1994

age & age determination - (see longevity, development) - T. Baptista, Richardson & Kunz 2000; R. Barclay 1994-5; E. Anthony 1988; Hoying & Kunz 1981-2; Kazial, Burnett & Mitchell 1998; C. Phillips, Steinberg & Kunz 1982; Rumage, Anthony & Kunz 1978; Sealander 1964

aging - S. Austad & Fischer 1991

albinism - Setzer 1950; H. Walley 1974

albumin - Honeycutt & Sarich 1987

allometry - T. Strickler 1978

altruism - Wilkionson 1988

ammonia tolerance - H. Mitchell 1963; Studier 1965, 1969; Studier & Fresquez 1969; Studier, Beck & Lindeborg 1967

antitragus - A small fleshy projection on the postero-ventral margin of the pinna of some bats.

aspect ratio - Forearm length (elbow to writst) + wing tip (wrist to tip of digit III)/ length of fifth finger.

arousal (see hibernation) - Brenner 1973; J. Pagels & Jones 1974; Studier 1974

ascourbic acid - Krutzsch & Hess 1961

asymmetry - Gummer & Brigham 1995

atrioventricula node - Spoonamore 1978

bachelor colony - A group of pre- and post-pubertal males that roosts seperately from females, usually during the reproductive period (includes non-harem males)

bacula - R. Brown 1967; W. Hamilton 1949; Krutzsch & Vaughan 1955; Rippy 1965

banding: (see surveying) L. Conrad 1962; E. Davis 1968; W. Davis 1960; Bonaccorso & Smythe 1972; H. Hitchcock 1978; Layne 1997; Paradiso 1968; E. Pierson 1993; E. Pierson & Fellers 1993

basisphenoid pits – Depressions in basisphenoid bones behind palates. May be involved in echolocation. DeBaeremaeker 2000.

barometric pressures - Paige et al. 1989; M. Scott & Vaughan 1997; M. Scott 1997

basal metabolic rate - Rate of energy expenditure while at rest, post-absorptive, and at thermoneutrality; express as $\text{kJ} \cdot \text{g}^{-1} \cdot \text{h}^{-1}$ Cf. roosting metabolic rate.

bat bombs - Moore 1948; Couffer 1992; Gilnes 1990; McCracken, 1989, 1993; Mohr 1955; Pidgeon 1982-3

bat detector - Electronic device sensitivity to ultrasonic and audible sounds produced by bats - See **collecting**.

bat houses (see roosts, bridges, mines, caves and trees) - B. Baker, McDaniel et al. 1997; B. Baker, Wilhide et al. 1998; Belwood 1990; H. Black 1983; A. Cartwright 1990; Clawson 1989; Clawson & Gardner 1993; Dourson & MacGregor 1998; Finn 2000; Glover & Properzio 1997; Greenhall 1981; Hickey & Neilson 1995; Hickey, Palen et al. 1996; W. Kern & Belwood 1996; Kiser 1998; Monday 1993; Moriety & Davis 1984; Murphy 1991; Neilson & Fenton 1994; Noteman 1998; Onan 1991; Pavwoski & Lewis 1998; Rathbone 1997; Siders, Garcia de la Cadena et al. 1997; Thorsby & Barnard 1996; M. Tuttle & Hensley 1993, 1997; Vavrick & Galli 1993; E. White 1982, 1997; L. Williams & Brittingham 1993

bat pass - One pass by one individual through air space as sample with a bat detector.

behavior - McNab 1974; Dooley 1974; C. Gaudet 1981; L. Hill 1966; D. Howell 1981; Lande 1977; Norberg 1993-4; O'Shea & Vaughn 1977; D. Thomas, Fenton & Barclay 1979

beneficial use - see use

bioamines - Bauman, Hashim & Sershen 1989

biochemistry - Manwell & Kerst 1966

biodiversity - Burt & Gannon 1998; Cochran, Hoffman, et al. 1998; Kurta, Caryl & Lipps 1997; R. Mills, Barrett & Cope 1976; D. Connor & McCoy 1979; Gannon & Sexton 1996; P. Miller 1995; K. Murray, Britzke et al. 1998; Perkins, Peterson and Anderson 1997; Ramsey 1997; Remington 2000; Schum 1975, 1978, 1984; Singer 1995; R. Spears & Hagan 1994; Stelfox 1995; T. Walker et al. 2000 Willig & Lyons 1991, 1994, 1998; Willig & Seker 1989; Willig & Selcer 1984; D. Wilson, Cole et al. 1996

biogeography - D. Armstrong 1994; Schum 1975; L. Ball 1995; R. Barclay & Brigham 1998; ; Barclay, Fullard & Jacobs 1999; Bowles 1975; Brack 1979; Brack & Mumford 1984; Bradshaw 1995-6; Bradshaw & Brigham 1998; J. Brown & Gibson 1983; C. Burnett 1982-3; Burt &

Gannon 1998; Burt, Gannon & Brown 2000; Choate 1996; B. Clark 1984; Cockrum 1960, 1981; C. & Ordway 1959; C. & Petrozyn 1986; C. & Musgrove 1964; L. Conrad 1963; De Jong 1994; Fenton, Tenannt & Wyszecski 1987, 1997; E. Cook, Gardner et al. 1988; P. Cryan, Bogan & Altenbach 2000; England 1999; Enright 1962; Fenton, Merriam & Holroyd 1983; Findley & Traut 1970; Gardner & McDaniel 1978; Geluso 2000; Glover 1933; Herrera Montalvo, Fleming & Findley 1991; LaVal, Clawson, et al. 1977; H. Jackson 1919; Legendre 1984; Long & Severson 1969; J. Jones & Carter 1979; Koopman 1981; S. Lyons 1995; Lyons & Willig 1997; McLaren & Kirkland 1979; R. Mills, Barrett & Cope 1977; Milstead & Tinkle 1959; R. Mumford 1958; G. Nelson & Platnick 1984; R. Owen 1989; I. Patterson 1961; J. Perkins & Peterson 1996; Ruffner et al. 1978; Tipton 1984; Tumblison 1990; Wethington et al. 1996-7; Whitaker & Mumford 1971-2; Fenton 1972; Knapp 1997; D. Owen et al. 1990, 1989; R. Owen 1989; J. Perkins 1995-6; Purdue 1980; Robbins 1983; Robbins, Engstrom et al. 1977; Sanchez-Brown et al. 1999; Schum 1978; Singer 1995; D. Thomas 1988; Tipton 1985; Tumblison 1990; T. Walker et al. 2000; Turmelle, Sorenson & Kunz 2000; Whitaker & Mumford 1972; B. Williams, Kunz et al. 1998

bioerosion - J. Hooper 1958

biology: Wimsatt 1977

biological clocks - Twente 1991; Twente & Twente 1989; Twente, Twente & Brack 1984;

biomedical research: W. Davis & Reite 1967

birds (see predation on bats) - Kurta & Foster 1995

birthing - Dixon, Foxworth et al. 1997; Kunz, Pierson & Kurta 1983; H. Lane 1946; Munyer 1967; Racey 1973; Sealy 1978;

blood and/or heart - see cardiovascular

Boettchger cells - Ramprashad, Money et al. 1983

bones - Bader & Hall 1960; Bruce & Wiebers 1969; D. Dawson 1975, 1980; Doty & Nunez 1985; ton & Crerar 1984; Krook, Wimsatt et al. 1977; W. Lancaster, Fenton & Eger 2000; Rumage, Anthony & Kunz 1978; K. Smith & Kier 1989; Swartz 1997; Swartz, Parker & Huo 1998; Tumblison 1995

brain (see echolocation, pituitary) - Barom & Jolicoeur 1980; Conover 1969; J. Cotter & Laemle 1987, 1990; Covey 1993; Covey & Casseday 1986; Covey, Lauer & Casseday 1996; Crowle 1974; Eisenberg & Wilson 1978; Esher, Wolfe & Koch 1980; Fenton 1989; B. Fowler & Zook 1982; Jen 1980, 1982; Kennedy & Fuzessery 1991; Jen & Chen 1988; Jen & Kamada et al. 1984; Jen, Sun & Kamada 1982; Jen, Sun & Lin 1989; Jen & Schlegel 1980, 1982, 1987; Jen, Vater et al. 1981; B. Jonson 1993; Jolicoeur, Pirlot et al. 1984; Kegeyama & Wong-Riley 1982; J. King, Anthony, Gustafson et al. 1984; J. King and Anthony 1983-4; J. King, Stenveld et al. 1994; Laemle, Coter & Feldman 1984; Legendre, Lapointe & Casgrain 1994; Mackawa, Wong & Paschal 1992; Oelschlaeger et al. 1998; Paschal 1994; Pirlot 1982; Pirlot & Jolicoeur 1982; Pirlot & Pottier 1977; H. Stephan, Frahm & Baron 1987; Stephan, Nelson & Frahm 1981; Studholme et al. 1987; Wenstrup & Suthers 1981; Winkelmann 1971; Zook & Dicaprio 1988

breathing - S. Thomas, Follete & Farabaugh 1991

bridges - Gore & Hovis 1997; Keeley & Keeley 1999; Keeley & Tuttle 1997; -Lance, Hardcastle & Tally 1998; McDonnell & Clark 1999; Perlmeter 1993, 1999; Perlmeter & Ormsby 1996

calcar - A cartilaginous process in the calcaneum bone that contributes to the support of the uropatagium. **Bibl.:** R. Adams & Briggs 1996; R. Adams & Thibault 1999, 2000; W. Schutt & Simmons 1997

call structure - Pattern of frequency change over time in vocalizations; sonograph or period meter display.

captivity - See collecting, captivity

cardiovascular: Bassett & Wiederhielm 1982-3; Bohlem & Hankins 1983; Kallen 1977; Chen 1983; Chen, Fleming & Prewitt 1984; Cukierski 1986; Cukierski 1982, 1985; Cukierski & Hogan 1986; M. Davis & Sikes 1989; P. Dunaway & Lewis 1965; B. Fleming 1983; B. Fleming, McKinney & Knight 1982; B. Fleming & McKinney 1985; Fonda, Herbener & Cuddhee 1983; P. Harris et al. 1976; Kallen & Wimsatt 1962; Kleinschmidt, Koop & Braunitzer 1986; Kleinschmidt, Ruchnagle et al. 1987; Longnecker, Harris & Hodoval 1971; Manwell & Kerst 1966; K. Martin & Stehn 1977; F. Miller & Harris 1975; G. Mitchell 1969; O'Shea 1987; O'Shea and Evans 1985; Pucinelli & D'Agrosa 1982; Rasweiler 1993; Rauch 1972; Rauch & Beatty 1975, 1977; Rauch & Hayward 1970; Riedesel 1977; Sealander 1964; Soskic et al. 1987; Spoonamore 1978; Studier & Weing 1971; Tiller 1977-8; Van Riper 1981; Wible 1987

carpal - B. Stafford & Thorington 1998

caves - Bagley 1981; Belwood 1995; Conrad 1963; D. Buecher, B. Buecher, et al. 1997; D. Buecher, Sidner & Buecher 1990; Campbell, Tyson & Hall 1991; Cliburn & Middleton 1983; Delfino 1982; J. Dunn & Hall 1989; W. Elliott & Clawson 1999; Ezzell 1992; Ganter 1989; Goodpaster & Hoffmeister 1950; Gore & Hovis 1995; Griffin 1940; Guthrie 1933; J. Hart et al. 1992, 1997; Haynie et al. 1998; R. Henshaw 1961; Herreid 1957; J. Kennedy 1999; Loomis & McDaniel 1971; M. Looney 1971; Mahan 1973; Marcot 1984; McCracken 1993; McDaniel, Harvey et al. 1982; McDaniel, Paige & Tumblison 1979; McDaniel, Rick & Gardner 1977; McDaniel, Paige & Tumblison 1979; McGimsey 1995; Mumford 1953, 1958; Mumford & Whitaker 1975; Munson & Keitch 1984; Palmer-Ball 1996; Richter, Ward & Cope; Richter, Humphrey et al. 1993; Rodrigues & Palmeirim 1993; Rodriguez-Duran 1991; N. Rogers 1952; Rysgaard 1942; Sacks, Ajello & Crockett 1986; Sasse & Perkins 1995; A. Schmidt, Romme & Tyrell 1997; Schmidt, Salyers et al. 1997; Sidner 1986; D. Silver 1993; J. Skeen, Grigsby et al. 1990; Stafford 1993; Stihler 1996-8; D. Stihler, Dalton et al. 1996; Stihler, Jones & Wallace 1998; Stokes 1996; G. Swanson & Evans 1936; Thies 1993; D. Thompson 1997; Tipton 1985; Twente 1955-6; A. Werner 1984; Wethington, Leslie et al. 1996-7; Whitaker & Mumford 1971; Whitaker & Rissler 1993; Whitaker & Winter 1977

cells - Kniazeff, Constantine et al. 1967

cerebellar vermis - Jen, Vater et al. 1981

cerebellum - Jen 1982

CF - Constant frequency (pure tone) component of ultrasonic pulses produced by some echolocating bats (used for ranging and judging velocity and direction of movement).

character displacement - Gannon 1995

cholesterol - Kunz, Widmaier et al. 1996

circumvallate papillae - R. Murray 1993

cochlear - Novacek 1991

colliculus, inferior and superior - B. Johnson 1993; D Marsh 1981; D. Marsh, Pollak & Bodenhamer 1980; Pouissin & Schlegel 1984; Wenstrup & Suthers 1981; K. White 1997

collecting, sampling, census, inventory - Ad hoc Committee 1987; Bagley & Jacobs 1985; Benedict 1973f; Bradbury, Morrison et al. 1979; Brigham & S. 1991; Elsea 19523; Lotz & Font 1990, 1991, 1994; O'Connor & Klompen 1988; Pistole 1983; Bonaccorso & Smythe 1972; Bonaccorso & Smythe & Humphrey 19726; Brahana & Walters 1994; Bretschko & Klemens 1986; Buchler 1976; Cooper & Poulson 1968; Crawford 1976b; Cross 1986; Danielopol 1979; Edwards & Fletcher 1971; Evans & Pagel 1986; French 1973; Furstenberg, Dye & de-Wet 1978; P. Garcia & Barclay 1996; Griffiths 1978; Hooker & Whiles 1988; Hunter & Thomas 1977; Kethley 1991; Kirchengast 1979; Kunz & Kurta 1988; Kuschel 1991; Maries 1994, 1986; McCann 1982; Owen 1995; Radice & Loftus 1995; Pace 1994; Thompson 1976; Valentine 1941; Cooper 1980; R. Crawford 1983; J. Fowler 1948; Woods 1955; Ivey 1953; Muma 1945; Peck 1967; Shepard & Lambert 1995; Tangl & Jones 1987; Stohlgren et al. 1995; F. Thompson 1976; Tidemann & Woodside 1978; Tuttle 1975, 1982; D. Wilson, Cole et al. 1996

Computers - P. Watts 1992

Curation - Bhatnagar 1988; Binindamonds & Russel 1993; L. Williams, Laubauch & Laubach 1979

Captivity (see netting) - Bear & Holguin 1971; Nave & James 1998; R. Orr 1958; D. Adams & Baer 1966; Adkins & Wasserman 1993; Barnard 1991, 1994; Bear & Holguin 1971; Coutts, Fenton & Glen 1973; Dickey 1922; Efird & Barnard 1991; Gates 1936, 1938; Gaudet 1982; Johnson 1932; Killpack & Goates 1963; Milam 1995; P. Morton 1998; Nellis 1969; Bear & Holguin 1971; Nave & James 1998; R. Orr 1958; Racey 1970; Rasweiler & Rasweiler 1979, S. Reynolds 1988; Ronsholt et al. 1998; R. Stones 1965; H. Taylor, Gould et al. 1974; S. Walker 1996; Waterstradt 1981

Acoustic Detectors (Anabat, etc.) - Blackburn & Gannon 2000; Bossi 1998; Britzke & Murray 2000; S. Burnett & Masters 2000; Corben, Gannon & O'Farrell 1998; Corben 1995-6; Corben, Gannon & O'Farrell 1998; J. Dawson & Fullard 1991; Delorme & Juras 2000; C. Downes 1982; Fenton 2000; Griffin 1973; Hadley, Britzke & Robbins 1998; J. Hooper 1969; Kuenzi & Morrison 1998; Kunz & Brock 1975; Lance, Bollich et al. 1995; Livengood & Drobney 1999; Livengood, Drobney & Corben 2000; McDonald 1997; B. Miller & M. O'Farrell 1998; K. Murray, Britzke et al. 1998-9; Neefus & Krusic 1995; M. Oliveira 1998; O'Farrell 1998-9; K. Paige, Mink & McDaniel 1985; Patriquin 2000; J. Pye 1979, 1983, 1985;

H. Rice et al. 200; J. Ross 1997; Schwenk 1997; Szewczak 2000; M. Shepard & Lanbert 1995; Tibbels 1999; Tibbels & Kurta 1999; A. Walker 1996; D. Waters & Walsh 1994; L. Watkins 1970; T. Weller, Seidman & Zabel 1998; J. Whiteman 1997

Electrical conductivity to assess fat content - D. Reynolds 1966

GIS - E. Cook, Gardner et al. 1988

Infrared - J. Frank 1997; J. Frank et al. 2000; Kunz & Frank 1997, 2000; W. Lancaster et al. 1997; Kirkwood & Cartwright 1994; Route 1998; Sabol & Hudson 1995; J. Simmons & O'Farrell 1999

Lasers and night vision - P. Farnsworth & Cox 1988

Marking - Griffin 1934, 1936; M. Gannon 1993

Netting & other traps- Blackburn & Gannon 2000; Cortelyou 1991; C. Francis 1987, 1989; J. Gardner, Hoffman, Garner & Cook 1987; Herder & Jackson 1998; Kuenzi & Morrison 1998; Kunz & Anthony 1977; Kunz & Brock 1975; Lacki & Bookhout 1982; K. Murray, Britzke et al. 1998; O'Farrell 1972; Tuttle 1974; G. White 1982

Radar - J. Horn et al. 2000; Westbrook, McCracken et al. 1998; S. Russ 1998; T. Williams, Ireland & Williams 1973

Radio transmitters - R. Barclay, Kalcounis et al. 1996; Berry 1999, 2000; P. Brown 1982; Constantine, Jensen & Tierkel 1959; E. Cook, Gardner et al. 1988; Dobkin, Kattel & Gettinger 1995; Hickey 1990, 1992; W. Lancaster, Keating & Henson 1992; Solberg et al. 1999; D. Stihler, Dalton et al. 1996

Statistics - Culver 1979; D. Connor & McCoy 1979; Elliott, J.M., 1977a; French 1977; Ghent 1971; Pimm 1979; G. White 1982

Survey/aging /banding techniques: Buecher 1993; Hassinger 1985; R. Clawson & Sheriff 1982; W. Davis 1961-3; Greenhall & Paradiso 1968; Humphrey 1971; Mohr 1979; Perry 1965; Perry & Beckett 1966; Perry & Herreid 1969; Trapido & Crowe 1946; Tuttle 1974; Warden 1981

Video - Dixon & Higginbotham 1998

color - See hair

communication (see echolocation) - Bloss & Kunz 1999; P. Brown; Balcombe 1988; Bradbury 1977; Kazial & Masters 1999; M. Leonard & Fenton 1984; Marsh 1981; C. Thompson, Fenton & Barclay 1985;

community - See social

communal roost - A roost used simultaneously by more than one individual.

chiropterophily - Mutualistic associations between flowers and flower-visiting bats. See pollination.

competition - S. Anderson & Koopman 1981; Freeman 1984; S. Humphrey 1978; Kurta & Foster 1995; J. Perkins 1995-6; Reith 1978; Shields & Bildstein 1979

conservation (see gating, endangered, mines, management, mortality, pollution, *Myotis sodalis* & *griseus*, *Leptonycteris*): Altenbach 1998; Belwood 1990; Christman 1984; Gore & Hovis 1998; F. Jonston 1981; Mohr 1976; Bowles, 1981; J. Brady, 1981-3; Brady, LaVal et al 1983; T. Brown 1997-8, 2000; W. Caire 1988; ; M.Clark 1995; W. Davis 1982; W. Davis 1965; Estes 1976; Ducummon 1997; Ducummon & Taylor 1996; Dusi 1976; Fenton 1997; M. Fletcher et al. 1979; Fletcher 1985; Ganter 1989; Genoways 1985; Glass 1976; Grigsby & Puckette 1982; J. Hart et al. 1992, 1997; Harvey 1976, 1989, 1991, 1993, 1998; Harvey, Cassidy & O'Hagen 1981; Henshaw 1970-2; Jordan 1986a; D. Howell 1997; C. Jones 1976; Keeley 2000; Lacki 1995; Ladd 1980; Laval 1978; Lera 2000; Luce & Priday 1996; Marquart 1997; McCracken 1986; Medellin 1994; Millsap et al. 1990; Mohr 1973, 1976; Myers 1975; Nold et al. 1997; Nold et al. 1997; Perkins 1980, 1985; Petit 1978; R. Martin; McCracken 1993; Moody 1989; P. Morton 1989; Noel, Snow & Castner 1995-6; E. Pierson & Brown 1992; Rissler; Sheffield et al. 1992; Saugey, England and Chandler-Mozisek 1993; Schmauch 1997; Schommer & Perkins 1993; Scott & Sims; Stebbings 1995; D. Taylor 1995-6; J. Taylor 1988; Tuttle 1984, 1986, 1990, 1992-3, 1996-5; Tuttle & Robertson 1988; Tuttle & Schmauch 1998; Twente 1960; Tyrell & Black 1993 United States Fish & Wildlife Service 1976, 1993, 1995; B. Webb 1987; D. Wilson 1985; Wackenhut & McGraw 1996; Wooder 1998

control: Baumgartner 1983; Brigham & Fenton 1987; R. Brown 1995; Constantine 1982; J. Cope 1959; R. Corrigan & Bennett 1982; DePaepe et al. 1996; Finn 1996; S. Frantz 1984, 1986; H. J. Jones 1993; R. Marsh & Howard 1977; L. Martin 1979; Neilson & Fenton 1994; R. Patterson 1985; Sarell & Luoma 1994; H. Scott 1961; Silver 1935; Sterner, Shumake & Gaddis 1978

cytochrome oxidase - Kegeyama & Wong-Riley 1982

dactylopatagium - The part of the **wing** membrane between the 2nd and 3rd digits.

day roost - A site or structure used by bats during the day.

delayed development - A condition where the blastocyst implants without delay after entering the uterus but subsequent embryonic development ceases temporarily or proceeds slowly.

delayed implantation - A condition where the blastocyst remains in the uterine lumen for a variable period before it implants.

delayed ovulation - A condition in which ovulation is postponed for a period of time following copulation and where spermatozoa are stored in the female reproductive tract. In temperate regions this period is prolonged by hibernation. Syn. delayed fertilization.

development (see also juveniles) - R. Adams 1992, R. Adams and Pederson 1997; Ahysen & Kunz 1993; T. Baptista & Kunz 1995; T. Baptista, Richardson & Kunz 2000; Boatright & Covery 1995; P. Brown & Grinnell 1980; P. Brown, Grinnell & Harrison 1978; Buchanan & Hagarfield 1990; J. Burns, Baker & Bleier 1972; J. Burns & Easley 1977; Case 1978; Hoying 1983; Drymond 1936; E. Evans & Miller 1968; Fujita 1982, 1986; Galli 1995; Greenhal & Frantz 1994; I. Hamilton 1995; Hoying 1983; Hoying & Kunz 1981-2; Koehler & Barclay 2000; Koopman 1974; Kunz & Allagier 1994; Kunz, Pierson & Kurta 1983; Kunz & Robson 1995; Kurta, Kunz & Nagy 1986; Kurta & Nagy 1986; A. Laird 1966; J. Pagels & Jones 1974; Short 1961; Sidner 1988, 1989; Stangl, Dalquest & Grimes 1996; Studier & Kunz 1995; Tiunov 1994; Tuttle & Stevenson 1982; Zullinger et al. 1984

digestion - R. Barclay et al. 1990; Buscholz 1958; Luckens, Van Eps & Davis 1971; Rouk 1968

digits (see limbs) - W. Schutt 1993; J. Simmons & Quinn 1994; Thewissen & Etnier 1995

diseases - see rabies, histoplasmosis, relapsing fever; J. Anderson 1975; Andreasen & Duimstra 1996; Eads 1952; Herbold 1981; Irons, Eads et al. 1957; LaMotte 1958; Lera 1980; McCracken 1994; Sulkin, Sims & Allen 1966; Tesh & Schneidau 1967;

carcinoma - Beck, Beck & Howard 1982

cryptosporidiosis - Dubey et al. 1998

distribution - see biogeography

disturbances: Humphrey 1969; LaVal & LaVal 1980; Psyllakis 1999;

doppler - Altes & Reese

ears - deCarvalho, Gannon & Ruedas 1998; Fenton 1972; O. Henson 1965, 1970; B. Lawrence & Simmons 1982; Obrist, Fenton et al. 1993

echolocation/communication - Echolocation is the use of echos of sounds produced by animals for orientation and prey capture. See doplar, vocalizations, collecting: Alderidge, Aldrige & Rautenbach 1987; Altenbach 1978; Altes 1981, 1989; Arita & Fenton 1997; Balcombe 1986; J. Balcombe & Fenton 1988; Ballantyne & Sherwin 1999; R. Barclay 1981, 1999; Barclay, Fullard & Jacobs 1999; Belwood 1982; Belwood & Fullard 1984; Berkowitz & Suga 1989; Betts & Haynes 1994; Boatright 1999; W. Bogdanowicz et al. 1997; Brigham et al. 1989; Brigham, Grindal et al. 1997; Britzke, Bossi & Robbins 1998; P. Brown & Grinnell 1980; P. Brown, Grinnell & Narims 1985; C. Burnett 1983; Busnell & Fish 1980; Casseday & Covey 1985, 1992; Casseday, Covey & Grothe 1997; Casseday, Ehrlich & Covey 1994; Casseday, Kobler et al. 1989; Chase 1985; Condon 1994; Condon, White & Feng 1994; Covey & Casseday 1986; Covey, Lauer & Casseday 1996; Dear, Simmons & Fritz 1993; Koemel 1996; Dear 1995, 1998; Dear & Suga 1998; deCarvalho, Gannon & Ruedas 1998; Denzinger et al. 1991; Dunning 1968; Dunning, Miller & Futtrup 1997; Dunning, Acharya et al. 1992; Durrant 1988; Ehrlich, Casseday & Covey 1997; Everett & MacRury 1996; Fattu 1975; Fattu & Suthers 1981; Feng, Condon & White 1994; Fenton 1974, 1980-2, 1984-5, 1987-8, 1994, 1999; Fenton, Audet, et al. 1995; Fenton & Bell 1981; Fenton, Merriam & Holroyd 1983; Fenton & Pullard 1981; Fenton & Rydell 1999; Ferragamo 1994; Frederickson & Jen 1984; Fubara et al. 1996; Fullard

1984, 1988, 1994, 1997; Fullard & Dawson 1997; Fuzessery & Hall 1996; Fuzessery, Zoltan & Pollack 1994-5; Galambos 1942; Gannon & Burt 1998; Gannon, Burt & O'Farrell 1998; Gannon 1997; Gannon, Burt & O'Farrell 1998; Gannon, Scott et al. 1996; - Gourdy & Freeman 1999; Gould 1977; Gould, Cooley & Barnick 1981; D Griffin et al. 1960, 1965; A. Grinnell 1963, 1967, 1969; A. Grinnell & Grinnell 1965; Grinnell & Griffin 1961; Grothe, Covey & Casseday 1996; Grothe, Schweizer et al. 1994; Haplea, Covey & Casseday 1994; Harrison 1962; Hartley 1985-6, 1992; Hayes 1997; Hobson 1998; Horner, Fleming & Sahley 1998; J. Hutcheon et al. 1999; Jen et al. 1987, 1989; B. Johnson 1993; Kamada, Wu & Jen 1992; Kazial, Burnett & Mitchell 1998; Kazial & Masters 1999, 2000; Kennedy & Fuzessery 1991; Kick 1980; Kindlmann et al. 1973; J. King, Anthony, Gustafson et al. 1984; J. King and Anthony 1983-4; J. King, Stenveld et al. 1994; Kirk, Simmons et al. 1980; Koemel 1996; Koay 1997; Koay, Heffner & Heffner 1997; Kobler et al. 1985; Krusic, Neefus et al. 1995; Kuc 1994; Lancaster & Speakman 1996; W. Lancaster, Keating & Henson 1992; W. Lancaster, Fenton & Eger 2000; B. Lawrence, & James A. Simmons 1981-2; P. Lea, Wallsgrove & Mifflin 1978; MacDonald, Matsui & Fenton 1994; Leonard 1982; M. Leonard & Fenton 1984; Mackawa, Wong & Paschal 1992; Mackey & Barclay 1988; Masters & Jacobs 1981, 1984, 1988; Marsh 1981; Marsh, Polack & Bodenhamer 1980; Masters 1989; Masters et al. 1985, 1989, 1990, 1991; Masters & Jacobs 1981, 1984, 1988; F. Mayer 1988; McCarty & Jen 1982-3; McCue 1961; McDonald, Matsui, Matsui & Fenton 1994; Mein & Tupinier 1986; Meschede et al. 1994; L. Miller 1994; L. Miller & Degn 1981; Mirowsky 1998; Miraile & Masters 1993; Mogdans & Schnitzler 1990; Mogus 1990; Mohl et al. 1989; C. Moss 1996; C. Moss & Simons 1993; C. Moss & Valentine 1995; Morgenson & Bretel 1979; M. Morris 1995; Moss & Schnitzler 1989; H. Mueller & Mueller 1979; Murray, Heywood et al. 1999; Nader & Hoffmeister 1983; Neefus & Krusic 1995; Neuweiler 1981, 1983; Nitsche 1994; Norberg & Rayner 1987; Novacek 1980, 1991, 1985; Obrist 1989, 1995, Obrist & Wenstrup 1998; O'Farrell 1997, 1999; O'Farrell, Miller & Gannon 1999; S. Parsons, Thorpe & Dawson 1997; Paschal 1994; Pavey & Burwell 1998; Pearl 1992, 1994; Pearl & Fenton 1996; Pederson 1990; 1991-2; 1995, 1998; Pinheiro, Wu & Jen 1991; G. Pollack 1993; Pollack et al. 1977; Poussin 1982; Pouissin, Drake & Simmons 1982; Pouissin & Schlegel 1984; J. Pye 1967, 1979, 1980, 1983, 1985; Raichel & Raichel 1996; Ramprashad et al. 1979; Rayner 1991; Roeder 1962; Roverud & Rabitos 1994; Saillant 1995; Schmidt & Joermann 1986; Schmidt & Thaller 1994; Shen, Chen & Jen 1997; Shannon-Hartman, Wong & Mackawa 1992; R. Shimozawa, Sun & Jen 1984; Simmons 1968, 1971, 1979, 1989, 1996, 1980, 1987, 1989, 1991, 1993; J. Simmons, Fenton, Ferguson et al. 1979; J. Simmons & Howell 1973; J. Simmons & Kalko 1998; J. Simmons & Kick 1982, 1984; J. Simmons, Kick et al. 1988; Simmons, Lavender et al. 1978; Simmons, Moss & Ferragamo 1990; Simmons & O'Farrell 1977; Simmons, Saillant et al. 1992, 1997; Simmons, Fenton & O'Farrell 1979; Simmons & Stein 1980; Spoonamore 1978; Suga 1965, 1970, 1990; Suga & Jen 1975; Suga, Olsen & Butman 1990; Suga & Schlegel 1973; W. Sullivan 1981-2, 1986; Sun & Jen 1987; Sun & Kamada 1983; Sun, Sun & Zhang 1987, 1989; Surlykke 1992; R. Suthers & Fattu; R. Suthers & Winstrup 1987; Tanaka & Wong 1993; H. Tanaka, Wong & Taniguchi 1992; J. Taylor 1989, 1990; Teng 1989, 1991; Teramino 1996; D. Thomas, G. Bell & Fenton 1987; Tougaard, Casseday & Covey 1998; A. Treat 1983; Tupinier, Biraud et al. 1980; D. Valentine 1995; D. Valentine & Moss 1998; Van Gelder 1956; Vater 1998; D. Waters 1994; D. Waters & Gareth Jones 1995-6; F. Webster & Brazier 1968; K. White 1997; D. Wong 1984; Winkelmann 1971; Wong & Shannon 1988; Woodsworth, Bell & Fenton 1981; Wotton, Haresign & Simmons 1995; Wotton 1994; Wotton & Simmons 1991; Wu 1993; Wu & Jen 1991, 1996; Wu, Jen & Kamada 1991; Zbiden 1985-6,

1994; Zhang & Jen 1982; Zhang, Sun & Jen 1987; Zook & Dicaprio 1988

ecology - Aldridge 1986; Jennings 1958; Kunz 1982; - R. Lance 1999; Bowles, 1981; LaVal & La Val 1980; C. Martin 1974; Neuweiler 1983; Norberg & Rayner 1987; D. Parker 1996; R. Spears & Hagan 1994; Twente 1956;(see individual species)

ecomorphology - Saunders & Barclay 1992; R. Warner 1982

education: Belwood 1995; Brown-Buescher & Brown 1995; A.Brown 1997; K. Campbell 1998; A. Cartwright 1990; Crowe 1996; Eidson, Keegan et al. 1997; L. Fawcett 1991; Glover & Properzio 1997; Kellner & Harestad 1998; Kunz 1982; Perlmeier, Hart et al. 1992; Rathbone 1997; Sakolsky 1991; J. Taylor 1998-9; K. Williams & Mies 1996

elevation (see biogeography): P. Cryan 1997; P. Cryan, Bogan & Altenbach 2000; Grindal et al. 1999;

embryology - Bleier 1975; J. Brown 1980; F. Carter 1987 ;F. Carter & Bleier 1988

emergence - Buecher 1996; J. Frank et al. 2000; Gould 1961; Kunz & Anthony 1996; Laborda et al. 1993; Lister 2000; T. Tanner & Baccus 1998

encephalitis virus: Allen, Stanley & Sulkin 1971; Corristan, Motte & Smith 1958; J. Daniels 1960

endangered & threatened (see conservation, *Myotis sodalis*, *griseus*; *Plecotus*, *Leptonycteris*). Bibl.: G. Allen 1942; Bergstrom 1979; H. Bryan & MacGregor 1987; Harvey 1975, 1993, 1997; J. Jones 1993; Layne 1978; LeGrand 1993; Lera 1981; McCracken 1988-9, 1993; McReynolds 1976; McReynolds, Whitaker & Gammon 1979; Mount 1986; Morgan; C. Rice 1997;Roosa 1977; H. Smith et al. 1973; D. Stevenson, Oakleaf et al. 1996; R Stones 1980; R. Wilson 1980-1

energetics (see flying, metabolism, thermoregulation) - L. Ball 1998; Dodgen & Blood 1956; Horner, Fleming & Sahley 1998; Kunz & Norberg 1991; Kurta, Bell, Nagy & Kunz 1989; Kurta, Kunz & Nagy 1986; Kurta & Nagy 1986; Limz 1090; Neunauser & Brisbin 1969; Norberg 1993-4; Pagels & Blem 1973; Salcedo, Fenton et al. 1995; Speakman & Racey 1991; S. Thomas 1980; Stack & Kunz 1981; D. Thomas, Dorais & Bergeron 1990; Voight & Helversen 1994; Voight & Winter 1999; Winter & von Helversen 1998;

enzymes - Moon & Borgmann 1976;

epiphysal closure - Ramage, Anthony & Kunz 1978;

escape response - J. Chase 1981

estrus - A period when females allow males to mate with them (specifically near the time of ovulation, except in temperate zone hibernators- but excluding *Miniopterus* bats)

evolution: Adkins & Honeycutt 1991; Ando, Tagawa & Uichida 1977; Arita 1999;Arita &

Fenton 1997; M. Arnold et al. 1982; R. Baker & Bickham 1980; B. Baker et al. 1989; R. Baker, Porter et al. 2000; R. Baker, Qumsiyeh & Hood 1987; Balch 1999; Bhatnagar 1980; R. Baker, Maltbie et al. 1991; R. Baker, Novacek & Simmons 1991; Bickham 1976, 1979a; Birch 1995; W. Bogdanowicz et al. 1995, 1997; Bravo, Dragoo & Yates 1998; Byrnes 1998; T. Case 1978; L. Conrad 1963; Dolan & Honeycutt 1978; E. Dumont 1997; Dunlop 1995-6; Fenton 1984; Freeman 2000; Garland 1999; Giesel 1972; Honeycutt 1981; Horavsek 1994; Honeycutt & Adkins 1993; Honeycutt & Sarich 1987; J. Hutcheon et al. 1999; Jepson 1970; Kirsch 1995; LaPointe 1992; LaPointe et al. 1999; Legendre, Lapointe & Casgrain 1994; C. Long, Zhang et al. 2000; Manning 1993; Mein & Tupinier 1986; Maltbie 1997; Mendel, Hicks et al. 1985; Novacek 1991; Nunez & Kilpatrick 1993; K. Padian 1982; Pettigrew 1991; Pettigrew, Jamieson et al. 1989; C. Phillips & Tandler 1987; C. Phillips, Tandler & Nagato 1984; Pine 1968; Reduker et al. 1983; Robbins 1983; Robbins & Sarich 1988; L. Ruedas 1991; Rydell & Speakman 1995; W. Schutt 1999; W. Schutt & Simmons 1997; Simmons 1979-80, 1993, 1994-5, 1998; N. Simmons & Geisler 1996; Simmons, Novacek & Simmons 1991; Simmons, Novacek & Baker 1991; J. Simmons & Quinn 1994; J. Smith 1976-7; J. Smith & Madkour 1980; Stephan, Nelson & Frahm 1981; A. Stock 1983; Suthers & Braford 1980; J. Thewissen & Babcock 1991-2; Van Den Bussche et al. 1999; Voleth & Heller 1994; R. Warner 1983; Wible 1987; D. Williams, Druecker & Black 1970; Willig & Hollander 1995;

eyes - Baron 1978; G. Bell & Fenton 1986; E. Buchler & Childs 1982; J. Chase 1981-2, 1985; Cotter 1985; Crowle 1974; Ellins et al. 1970; G. Hope & Bhatnager 1979; Kunz & Chase 1983; Layne, 1967; Masterson & Ellins 1974; Mistry & McCracken 1982; Mueller 1968; J. Pettigrew, Dreher et al. 1988; J. Simmons 1969, 1991; Suthers 1970; Suthers & Braford 1980; R. Suthers & Wallis 1970; D. Walton 1967

face - Gourdy & Freeman 1999; Peffley & Simmons 1993

facial glands - H. Werner n.d.; H. Werner & Dalquest 1952

false nipples - Supernumerary (pubic) nipples that function as “holdfasts” for suckling young, and which are present in several species of some Old World bat families.

fat (see hibernation) - W. Baker, S. Marshall & V. Baker 1968; D. Clark & Krynsky 1983; N. Weber & Findley 1970; Rauch and Hayward 1969; Remillard 1954; D. Reynolds 1966; C. Richardson 1996; Teramino 1992, 1996

fat index - The ratio of grams of fat/grams of lean dry mass.

fatty acids - Schalk & Brigham 1995

feces – Ormsbee & Zinck 1999

feeding - See **food & predation**.

feeding buzz - A rapid series of pulses made by an **echolocating** bat in its final approach to a prey.

feeding roost - A site used by bats to consume prey too large to consume during flight and as a night refuge from predators. See night roost.

femora - D. Dawson 1975, 1980

fire - T. Carter, Menzel & Ford 2000' Mika, Sherwin & Stricklan 1999; Patriquin-Meldrum 1999

fledging period - Time when young bats begin to make foraging flights.

flying (see emergence, wings): M. Adam, Lacki & Shoemaker 1994; Aldridge 1986; Aldridge, Aldridge 1987; Aldridge, Aldridge & Brigham 1988; Altenbach & Hermanson 1985, 1989; Arganbright 1984; Arita 1999; Arita & Fenton 1997; R. Armstrong, Ianuzzo & Ku8nz 1977; Birch 1992, 1995; Brandon 1980; Brigham 1988; Craft, Edmonson & Agee 1958; Cueva, Fenton et al. 1994; R. Davis & Cockrum 1963-4; R. Davis 1969; W. Davis & Barbour 1965; Foehring & Hermanson 1984; Hermanson & Altenbach 1979; D. Dawson 1975, 1980; B. Forbes 1988; Gutierrez, De Burgos et al. 1974; Hassanloo, Fenton et al. 1995; Hermanson 1977, 1997; Herreid & Davis 1966; Kalcounis & Brigham; Kennedy & Best 1972; Kennedy & Engbretson 1974; Kunz & Norberg 1991; Kurta 1982; C. Long & Kamensyk 1967; C. Long, Zhang et al. 2000; Mohr 1948; Norberg 1985, 1988, 1998; Norberg & Rayner 1987; O'Farrell & Bradley 1977; K. Padian 1982; A. Patterson & Hardin 1969; Pettigrew & Robson 1986; Powers 1989; Powers 1989 et al. 1991; Rayner 1985; Reith 1982; S. Robertson, Britzke et al. 1998; J. Ryan, Baier et al. 1992; Sahley, Moirner & Fleming 1993; Salcedo, Fenton et al. 1995; Shutt et al. 1994; D. Stewart 1996-7; Stockwell 1998-9; Strickler 1980; Stuhsaker 1961; Swartz 1997; Swartz, Watts & Thomas 1999; J. Thewissen & Babcock 1992; T. Williams & J. Williams 1967, 1969; T. Williams, Ireland & Williams 1973; Winter & von Helversen 1998; S. Thomas 1980; M. Swartz & Watts 1996; Van Riper 1981; Vaughan & Bateman 1980; Vaughan 1966, 1970; P. Watts 1992; Y. Winter 1998; Zook & Fowler 1985-6

FM - Frequency modulated pulses produced by some **echolocating** bats and mostly used for the discrimination of size and shape).

folklore - Kunz 1984; Strohm 1982; Mahan 1982; B. Webster 1984;

food, feeding & foraging (see also location & predation by bats) - Achrya 1989, 1990, 1995; Balcombe & Fenton 1988; R. Barclay 1986, 1988; Barclay & Brigham 1991; G. Bell 1982; Best et al. 1997; H. Black 1972; Griffith & Gates 1985; Bonnell, 1967; Booth 1945; Borell 1942; Brack & LaVal 1985; Bradbury & Vehrencamp 1977; Brigham 1988; P. Brown, Berry & Hall 2000; W. Caire, J. Smith et al. 1984; B. Clark et al. 1993; Coutts, Fenton & Glen 1973; Dalton, Brack & McTeer 1986; Dalton, Brack & Williams 1989; Diehl 1993; Fascione et al. 1991; Faure & Barclay 1994; Fenton 1974, 1995; Fenton & Van Zyll de Jong et al. 1980; Fenton & Griffin 1997; Fenton, Cumming & Oxley 1977; Freeman 1979; Fullard 1982; Fullard & Barclay 1980; Fullard & Morrill 1989; Gannon, Burt & O'Farrell 1998; Geggie & Fenton 1985; Griffin & Thompson 1981; Griffin, McCue & Grinnell 1963; Grinevith et al. 1995; I. Hamilton & Barclay 1998; T. Harrison 1978; J. Hayes & Honihan 1993; Hickey 1988, 1989, 1992; Hobson & Holland 1995; Ingles 1949; D. Johnson 1997; Koehler, 1989; Lacki, Burford & Whitaker 1995; Leonard 1982; Masters, Raver et al. 1997; McCracken 1996; Mendonca et al. 1993; Murray & Kurta 1999; R. Myers & Hermanson 1994; Rabe, Siders et al. 1998; Nicolay, Dumont & Winter 2000; Rabinowitz & Tuttle 1982; Reith 1978; Robson & Kunz 1987; A. Ross 1961, 1964, 1967; Rouk

& Glass 1970; Shields & Bildstein 1979; Solberg et al. 1999; R. Stones & Wiebers 1965; Teramino 1996; Tipton 1984; Tougaard, Casseday & Covey 1998; Vege 1999, 2000; S. Walker 1996; R. Warner 1985; D. Waters 1994; D. Waters & Gareth Jones 1995-6; Wethington 1994; Whitaker 2000; Whitaker, Maser & Keller 1977; Whitaker, Maser & Cross 1980-1; Whitaker & Rissler 1992-3; Whitaker, Rose & Poadgett 1997; J. White 1998; N. Wilson 1965; Wu 1993; Zinn & Humphrey 1981; Zinn & Humphrey 1981

forests - see trees

forest succession/seral stages (see also logging) - ; Burford, Lacki & Covell 1999; Erickson 1993; Erickson & West 1996; T. Jung et al. 1999; Hecker & Brigham 1999; Mazurek & Zabel 2000; Menze, Maness et al. 1999; Patriquin 2000; Tibbels 2000; Yamasaki 2000

forelimb - R. Adams 1987, 1991-2, 1994; Altenbach & Hermanson 1985; Sevick & Studier 1990, 1992;

fossils - G. Allen 1932; Balch 1999; K. Beard, Sige' & Krishtalka 1992; Choate & Hall 1967; Czaplewski 1990-1; ; Czaplewski et al. 1999; Dalquest 1981; S. Dorsey 1977; S. Emslie 1988; Handley 1955-6; ; C. Hibbard; 1963; C. Hibbard & Taylor 1960; Krishtalka & Stucky 1984; B. Lawrence 1960; Legendre 1983; Lydekker 1891; Guthrie 1980 ; R. Martin 1972, 1974, 1977; Menard 1997 G. Morgan 1991; G. Morgan, Linares & Ray 1988; Munson & Keitch 1984; Novacek 1985; C. Ray, Olsen & Gut 1963; N. Simmons 1991; N. Simmons & Geisler 1996; J. Thewissen & Smith 1987; Toomey 1995; S. Webb & Wilkins 1984; Weigel 1962

gates & gating - Anon. 1985, 1989, 1996; Elliott 1993; J. Hathorn 1993; S. Henry et al. 1997; Hunt & Stitt 1981; MacGregor 1991, 1993; Navo et al. 1996; R. Powers 1993; R. Powers 1993; Senulis 2000; Sherwin, Haymond et al. 1996; Sherwin & Rogers 1996; J. Skeen, Grigsby et al. 1990; J. Taylor, Grandison et al. 1999; B. Thompson 1997; Tuttle 1978; D. White & Seginak 1987

genetics (see evolution): Ando, Tagawa & Uichida 1977; Anthony & Kitchin 1976; R. Baker 1965, 1967; R. Baker & Bickham 1980; R. Baker & Hsu 1970; R. Baker & Mascarello 1969; R. Baker, Matbie et al. 1992; R. Baker & Jordan 1970; R. Baker & Patton 1967; R. Baker, Patton, Genoways & Bickham 1988; R. Baker, Qumsiyeh & Hood 1987; R. Baker, Maltbie et al. 1991; R. Baker et al. 1988; Bickham et al. 1986; Bickham 1987; Cadle 1992; T. Dewey 2000; Findley 1972; Gassel & McCracken 1988; R. Herd & Fenton 1983; Honeycutt & Adkins 1993; C. Hood & Baker 1986; Hooper & Van den Busche 1998-9; Horton, Anthony & Kitchin 1974; Hsu & Benirschke 1968; Hsu, Baker & Utakoji 1968; R. Lance 1999; R. Lance & Leberg 1999; McCracken 1988; McCracken et al 1994, 2000; J. Findley 1972; McCracken, McCracken & Vawter 1994; McCracken, Gustin & Vawter 1986; McCracken & Johansen 1982; M. Morrell, Shoults & Vann 1996; Nelson-Rees, Kniazeff et al. 1968; J. Morales 1992; Novacek & Norell 1989; Nunez & Kilpatrick 1993; Osborne 1965; T. Painter 1925; Pettigrew 1994; Pham 1997; E. Pierson 1986; Pizzimenti 1971; J. Pride 1996; Qumsiyeh & Bickham 1993; L. Ruedas 1991; A. Russell 2000; R. Russell, Suzanne et al. 1998; Saidak, McCracken & Currie 1998, 2000; Schum 1975, 1984; Shoshani & Mckenna 1998; N. Simmons 1994; Simmons, Novacek & Simmons 1991; P. Tucker & Bickham 1986; Turmelle, Sorenson & Kunz 2000; Vadonbossche et al; A.

Stock 1983; Van Den Bussche 1992; Voleth & Heller 1994; J. Warner, Patton et al. 1974; R. Warner 1983; J. Warner, Patton et al. 1974; Watt 1990, 1995; Wilkinson & Chapman 1991; Wilkinson, Mayer et al. 1996; D. Williams, Druecker & Black 1970; Zima 1982; Zima & Horacek 1985

Molecular - Bravo, Dragoo & Yates 1998; R. Lance & Leberg 1999; D. Williams, Druecker & Black 1970;

gestation - Length of time from fertilization until birth.

gland secretions - Dapson et al. 1977

gleaning - A foraging tactic used by some bats whereby **food** items are taken from a surface (e.g. ground, leaves, tree trunk, etc.).

glucose - Widmaier & Kunz 1993

grooming - King 1990

group stability - S. Lewis 1996;

growth - See development

guanophiles - Bernath & Kunz 1981; D. Conn & Marshall 1991; Franklin 1978; B. Martin 1980-1, 1984; Whitaker, Clem & Munsee 1992

guano:- Fecal and urinary waste that accumulates within or below a roost. Rollin Baker 1993; Bernath & Kunz 1981; D. Clark, LaVal & Tuttle 1981; Hatnie et al. 1998; Kunz & Whitaker 1983; Lavoie 1981, 1981a; M'Murtrie 1874; Richards 1991. **Areas:** **AZ:** Cole & Mead 1981; Mead 1980; . Jackson 1920; J. Mitchell 1972; Petit & Altenbach 1973; Strinati 1982; Studier & Seveck et al.1994; Studier & Viele et al. 1991; **AZ:** Huntoon 1989; **CA:** Mead, Van Devender, et al. 1985; Kartman 1962; **Central US:** Birney 1973; **CO:** Findley 1958; Fischbach 1994; Fletcher 1984; J. Harris 1970; Holman 1958; McAney, Shiel et al. 1991; F. Miller 1931; J. Pride 1996; **IN:** R.L. Richards 1973; Hahn 1909; **KS:** Hall 1955; **KY:** Barr 1955b; Goldman 1910; **MO:** Goldman 1910; **NA:** Kelson 1952; **NM:** Elias 1987; Petit & Altenbach 1973; Wellbourn 1977; **TX:** : Elias 1987; Elias & Devender

habitat selection & use (see thermoregulation, resource partitioning, roosts) Amelon et al. 2000; Barclay, Fullard & Jacobs 1999; G. Bell 1980; P. Brown 1991; Byrnes, Rowe et al. 1997; S. Carroll et al. 2000; B. Coleman, Sherwin & Rogers 1999; E. Cook, Gardner et al. 1988; Crampton 1993; Crampton & Barclay 1996; P. Cryan 1996; Decher & Choate 1995, 1988; Duchamp 2000; Erickson 1993; Erickson & West 1996; J. Gardner, Hoffman, Garner & Cook 1987; Kalcounis, Hobson et al. 1999; Klaas 1986; Leonard 1982; Obrist, 1995; Patriquin 2000; Perkins & Levesque 1987; Poole 1938; Rabinowitz 1982; Romme, Tyrell & Brack 1995; Solberg et al. 1999; Simons, et al. 2000; Stelfox 1995; Wethington 1994; Wethington, Leslie et al. 1996-7; Vaughan, Jones & Harris 1997; Wethington, Leslie et al. 1996-7; Woodsworth, Bell & Fenton 1981; Zimmerman 1997; Zimmerman & Glanz 1998, 2000

habitat heterogeneity – Bradshaw 1997; Giesel 1972; Hecker & Brigham 1999; Leonard 1982

hair - Amman 1998, 2000; F. Benedict 1957; Caire & Thies 1988; Constantine 1958; Trapido &

Crowe 1942; W.F. Blair 1948; Constantine 1958; R. Graham 1959; Hickey & Fenton 1987; Ling 1970; McCoy 1960; Nason 1948; Quammen 1989; Hassanloo, Fenton et al. 1995; Shump & McIntyre 1980; D. Thomas, Crawford et al. 1984; Timm 1989; Trapido & Crowe 1942, 1946; H. Walley 1974

head size - Fenton 1989; P. Freeman 1981; Pederson 1990; 1991-2; 1995, 1998

hearing (see also echolocation) - P. Brown, Grinnell & Harrison 1978; P. Brown, Grinnell & Narims 1985; E. Buchler & Childs 1981; Dalland 1965; Grinnell 1963, 1969; Koay, 1997; Koay, Heffner & Heffner 1997; Obrist, Fenton et al. 1993; D. Richards & Wiley 1980; Stones & Branick 1969; Tepaske 1965

heart (see cardiovascular): B. Harris 1976; Hilton et al. 1990

heterothermy - The ability to regulate body temperature physiologically, but temperature is not regulated precisely or at the same level at all times.

hibernaculum - See roosting

hibernation - The assumption of a state of greatly reduced core temperature for prolonged periods of time during cold seasons by an animal which has an active body temperature near 37 degrees centigrade, yet it retains the ability to spontaneously arouse without absorbing heat from the environment. See also **energetics, thermoregulation**. Bibl.: Borgman & Moon 1976; Brack 1985; : Brack & Twente 1985; D. Bruce & Wiebers 1966; Bruce, Tuggy & Pearson 1984; Burbank & Young 1934; W. Caire & Stevens 1990; Caire, Haines & McKenna 1982; Caire & Stevens 1990; G. Carmody, Fenton & Lee 1971; E. Christensen 1947; R. Clawson, LaVal et al. 1980; Cloutier 1987-8; Conover 1969; Cuddihee & Fonda 1981-2; Cukierski 1982, 1985; Cukierski & Hogan 1986; W. Davis 1970; W. Davis 1964-5; W. Davis, Cawein et al. 1967; Doty & Nunez 1985; R. Dryer & Palsrud 1966; Dryer et al. 1969; C. Evans 1934; Folk 1940; G. Folk et al. 1970; French 1988; Ginsburg 1969; Goehring 1954; J. Hall 1963-4; J. Harding 1967; Harding & Hassell 1970; Hardin & Hassell 1970; B. Harris 1976; B. Harris & Holting 1977; Hassell 1967; Hayward 1968; Hayward & Lyman 1967; Hayward & Ball 1966; Henshaw 1970, 1972; Henshaw & Folk 1963, 1966; Herman 1969; Horowitz & Nelson 1968; Jen 1980, 1982; Jen & Chen 1988; Jen & Kamada et al. 1984; Jen, Sun & Kamada 1982; Jen, Sun & Lin 1989; Jen & Schlegel 1980, 1982, 1987; Jen, Vater et al. 1981; Kallen & Kanthor 1967; Kirwan 1968, 1974; Koski 1970; Krook, Wimsatt et al. 1977; Krulin 1969; Lidicker & Davis 1955; R. Martin, Pawluk & Thomas B. Clancy 1966; Menaker 1960-2, 1964; Mendonca & Hopkins 1997; P. Meyers 1976; Moon & Borgmann 1976; Napolitano, Kruttsch et al. 1963; E. Pearson 1962; Ploskey & Sealander 1979; Pucinelli & D'Agrosa 1982; Rabinowitz 1981; Rauch & Hayward 1970; Redmond 1939; Reeder 1949; K. Reynolds 1941; C. Richardson 1996; Rupprecht 1980-1; Schmidt, Salyers et al. 1997; Schowalter 1980; G. Swanson & Evans 1936; Sutter 1993; Szewczak 1992; D. Thomas, Dorais & Bergeron 1990; D. Thomas 1990, 1993, 1995; D. Thomas & Cloutier 1988; D. Thompson 1997; Tinkle & Patterson 1965; Trevor-Deutsch 1973; Veal Troyer 1959, 1965, 1968; Tuttle 2000; Twente 1954, 1960, 1991; Twente & Twente 1964, 1978, 1989; Twente, Twente & Brack 1985; Vincent, Whitaker & Koemer 1998; P. Webb, Speakman & Racey 1996; H. Wells et al. 1965; Yacoe 1982; T. Warner & Zar 1982;

Wetmore 1936; Wimsatt 1960, 1969; Yacoe 1981-3

hindlimb - W. Schutt 1998;

hippocampus - Kegeyama & Wong-Riley 1982;

histiochemistry, histology & histiomorphology: Dalquest & Werner 1954; Foehring & Hermanson 1984; C. Hood & Smith 1983; Pinkstaff, Tandler & Cohan 1982; Strickler 1980;

histoplasmosis (see histoplasmosis) - Ajello 1960, 1965; August, Ajello & Week 1986; Bain 2000; W. Brown 1965; Bryles, Cozad & Robinson 1969; Burgess 1999; Choquette 1986; Christensen 2000; Furcolow & Horr 1956; Harrick, Lichtwardt & Lan 1986; Hasenclever et al. 1969; Histoplasmosis 1995; J. Johnson et al. 1970; McMurray, Stroud et al. 1982; Sacks, Ajello & Crockett 1986

home range - Krishon, Carter et al. 1996

homeostasis - Kwiecinski 1982

homing - Refers to the return of individuals to their place of birth or origin. - V. August 1984; M. Avery, Racey & Fenton 1984; J. Cope, Koontz & Churchwell 1960; Cockrum 1956; R. Davis 1963, 1966; R. Davis & Cockrum 1963; Mueller 1963; W. Davis & Barbour 1965; W. Davis & Hardin 1967; Gunier & Elder 1971; Hassell 1963; Hassell & Harvey 1964-5; Hitchcock & Reynolds 1942; H. Mueller 1963, 1957, 1966; K. Reynolds 1941; T. Williams & J. Williams 1967, 1969; D. Wilson & Findley 1972

hormones - E. Anthony 1982; E. Anthony & King 1984; E. Anthony, King, Gustafson & Damassa 1981; J. E. Anthony, King & Stopa 1984; Burns, Baker & Bleier 1972; J. Burns & Easley 1977; J. King et al. 1984; B. Richardson 1980

Identification (see sampling) - Corben, Gannon & O'Farrell 1998; Herreid 1957; Tipton 1985

human impacts (see also pollution)

logging – Bohn & Keller 1999; Busch 1994; Grindal 1995; Grindal & Adam 1995; Grindal & Brigham 2000; Hayes & Adam 1995; Hayes & Gruver 2000; Humes & Collopy 1996; Humes, Hayes & Collopy 1999; Kalcounis, Hobson et al. 1999; Mazurek & Zabel 2000; Menzel, Carter et al. 1998; D. Parker; Perkins & Anderson 1996; Patriquin-Meldrum 1999; Patriquin 2000; Racey & Swift 1986; Stokes 1996; Tibbels 2000; Vonhof 1993; H. Walker, Stelfox et al. 1995; Wethington, Leslie et al. 1996-7

artificial lights - Hickey, Acharya & Pennington 1996; Rydell & Baagoe 1996; Svensson & Rydell 1998

carbon monoxide: Hexter & Goldsmith 1971

arousal/disturbance - M. Bailey, Baccus & Welch 1995; Grindal & Brigham 1998; Lauziere & Thomas 1993; MacKay 1997; S. Johnson et al. 1998;

S. Johnson, Brack & Rolley 1993; Mann, Steidl & Dalton 1998; Moody 1989; D. Thomas, Dorais & Bergeron 1990; Twente 1960

cave entrance modifications - Bradley 1996; Richter, Ward & Cope; Richter, Humphrey et al. 1993

dams - Lipps, Caryl & Kurta 1996

eutrophication - S. Murray 1996

global warming - Scheel, Vincent & Cameron 1996

grazing - Hovorka 1996

habitat use – Grindal & Brigham 2000; Tuttle 1995; Wonder & Carey 1994

habitat fragmentation (see also logging) B. Coleman, Sherwin & Rogers 1999;

heavy metals - D. Clark, Wenner & Moore 1986; D. Clark 1979; Massa & Grippo 1999; M. Petit 1977; Thies & Gregory 1994

Land use - Grindal & Brigham 2000; Wethington, Leslie et al. 1996-7

Lights - Svensson & Rydell 1998

mining - P. Brown & Berry 1996; D. Clark 1991; D. Clark, Hill & Henry 1991

pesticides & herbicides (see pollution) – Ahlstrand 1974; D. Clark & Krynitsky 1983; D. Clark & Stafford 1981; Constantine 1978; W. Fleming, Clark & Henny 1983; S. Frantz 1987; Henny et al. 1982; G. Kirkland 1978; Kunz, Anthony & Ramage 1977; O'Shea, Fleming & Chromartie 1980; A. Schmidt, Romme & Tyrell 1997; Streit, Winter & Nagel 1995; Thies 1993; Thies & McBee 1994; D. White & Krynitsky 1986

sewage - N. Vaughan, Jones & Harris 1996

timber treatment chemicals - Mitchell-Jones, Cooke et al. 1989

traps, stick - D. Constantine 1982

urbanization - Geggie 1983; J. Hubbell & Miller 1995

visitation - see arousal

wind turbines - R. Osborn, Higgins et al. 1996

hydration - R. Webster 1970

hypoglycemia - Bohlem & Hankins 1983

hypothalamic lesions - Koski 1970

identification - McDonald 1997; Schmidly 1977, 1983; Tipton 1985;

immature - An animal which has attained adult dimensions but not sexual maturity - See juvenile

immune system and immunoglobulin - J. Cotter & Laemle 1987, 1990; Laemle, Cotter & Feldman 1984; McMurray, Stroud et al. 1982; Mennone, Phillips and Pumo 1985; D. Murphy & Kwiecinski 1993; Studholme et al. 1987

infanticide: Kunz & Ebensperger 1999;

insectivory - The habit of eating insects. - See predation and food.
intestines - Payette, Gershon et al. 1987; Studier, Studier et al. 1977
integument - Quay 1970

interactions with other bats - Gannon 1997
jaw - Mendel, Hicks et al. 1985
joints - Schlosserstorm & Schliemann 1995

juveniles - An animal which has not reached adult physical dimensions; characterized by unfused epiphyses (see immature, development): D. Adams & Baer 1966; R. Adams 1996; R. Adams & Pedersen 1995; Bassett & Wiederhielm 1982; Beckett 1963; Brigham & Brigham 1989; P. Brown & Grinnell 1980; Dalton, Brack 1986; D. Gould 1971, 1975; Gustin & McCracken 1987; Orr 1970; R. Davis 1970; Easterla & Easterla 1974, 1976; G. Foster, Humphrey & H. 1978; Gustin 1985; Kunz & Ebensperger 1999; M. Lyon 1903; McCracken & Bradbury 1977; R. Hamilton & Stalling 1972; Kunz & Stern 1995; Herreid 1967; McCracken 1984-5; McCracken & Gustin 1987, 1991; B. Milligan 1993; Mohr 1933; R. Packard 1956; Rolseth, Koehler & Barclay 1994; Stains 1965; C. Thomson, Fenton & Barclay 1985; D. Turner, Shaughnessy & Gould 1972

k-selection - G. Kirkland & Kirkland 1979
karyotypes - See genetics

kidneys (see also water) R. Carpenter 1969; Lu & Blier 1981; Geluso 1978, 1980; Kusewitt, Wagner & Harris 1977

kilohertz - kHz (1,000 cycles per second)
kilojoule - kJ (4.10 x kcal)
lactate dehydrogenase - Cuddihee & Fonda 1981-2; Fonda & Cuddihee 1982;

lactation - Wilde, Kerr et al 1995
laryngus - Durrant 1988; Griffiths 1983
learning - R. Adams & Pedersen 1995; Gaudet & Fenton 1984; D. Johnston & Fenton 1997

leptin - Kronfeld, Noga et al. 1998;; Silvia, Kronfeld et al. 1998
life history - C. Martin 1974
ligaments - O'Connor, Cain & Zarrow 1966

light-sampling - Behavior associated with the onset of nightly emergence where one or more individuals fly in the vicinity of the exit before emergence.

liver - Fonda, Herbener & Cuddhee 1983; Leonard & Wimsatt 1959; Wimsatt 1983; Yacoe 1981-3

longevity: Cockrum 1949, 1952, 1956; David & Hitchcock 1995; W. Davis 1986; Duke, Bateman & Bateman 1979; E. Evans & Miller 1968; Griffin & Hitchcock 1965; J. Hall, Cloutier & Griffin 1957; Herreid 1966; Paradiso & Greenhall 1967; J. Perkins 1994; Schowalter, Harder

& Treichel 1978; L. Summers et al. 1993; H. Walley 1971; H. Walley & Jarvis 1972

lunar phobia - Avoidance response to bright moonlight, where flight activity either becomes reduced or ceases.

lek - An assembly area used by adult males for courtship display and copulation with females.

lung - Maina & King 1985;

lymph glands - G. Forman 1974

lysosomes - Cukierski 1984

magnetic orientation - E. Buchler & Wasilewski

management: Altenbach 1998; M.Bailey, Baccus & Welch 1995; Brady 1985; LaVal & LaVal 1980; Cherry & Eichelberger 1996; Gilbert 1995; Greenhall 1981; Harding 1978; E.Hill 1970; Lera 1978-9; Lera & Fortune 1978-9, 1982; Marcot 1995; Noel 1995; Noel, Castner & Snow 1994; Nyberg 1995; Pritchard 1987; Racey, Hutson and Micklburgh 1995; Rabinowitz 1982; Stafford 1993; Tuttle & Smith 1992; R.Wilson 1984a; United States Fish & Wildlife Service 1995

mastigation - Kellen & Gans 1972; D. Reduker 1983;

maternity – Bloss & Kunz 1999; G. Buchanan & YoungLai 1988; T. Carter, S. Carroll & Feldhamer 2000; Dalton, Brack 1986; R. Garfield & Buchanan 1985; Kung 1989; Kunz & Allagier 1994; Kurta, Bell, Nagy & Kunz 1989; Kurta, Kunz & Nagy 1986; Kurta & Nagy 1986; Kurta, Nagy et al. 1987; Kurta & Stewart 1990; S Lewis 1991; McCracken 1987; McCracken & Gustin 1991; P. Miller 1995; B. Milligan 1993; Robson, Kunz & Offedal 1988; J. Rydell 1990; A. Schmidt, Romme & Tyrell 1997; Schmidt, Salyers et al. 1997; Sidner 1982; Silvia, Kronfeld et al. 1998; E. Smith 1956; C. Thompson, Fenton & Barclay 1985; 1996; Tipton 1983; D. Turner, Shaughnessy & Gould 1972; Tuttle & Heaney 1974; Watt 1995; L. Williams & Brittingham 1997; L. Williams & Brittingham 1993; Wunder 1987; Wunder & Nash 1980; Zeveloff & Boyce 1980

maternity colony - An aggregation of female bats during pregnancy and lactation.

maternity roost - A site used by females during pregnancy and lactation

mating (see reproduction) - The pairing of a male and female during courtship and copulation.

melanism - G. Buchanan 1985; F. Osgood 1936

melatonin - L. Beasley 1985-6; L. Beasley & Smith 1983-4

memory - H. Mueller & Mueller 1979

metabolism (see hibernation, flying): Bassett & Wiederhielm 1982; Buchler 1975; Menaker 1960; McNab 1974, 1982; Studier & Howell 1969; Thomas & Cloutier 1992; Thomas, Cloutier & Gagne 1990; Geluso 1975; Geluso & Studier 1979; Herreid 1959; Herreid & Schmidr-Nielson 1966; H., Bretz & S. 1968; Dodgen & Blood 1956; Herreid 1966; Hock 1950, 1951; Kallen 1961; Kurta 1986; Leitner 1966; C. Lyman 1970; McNab 1988; O. Pearson 1947-8 Stack 1985; Trune & Slobodchikoff 1976; Wakeham et al. 1988; Waterman & Maxwell

1963; H. Wells et al. 1965; T. Warner & Zar 1982; Winsatt 1983; Yacoe 1981-3

migration (regular seasonal movements): Barclay 1984; T. Carter 1950; McCracken et al 1994; Villa & Cockrum 1962; E. Christensen 1947; Cockrum 1969; D. Griffin 1939-40, 1945, 1970; Gunier 1971; J. Hall & Wilson 1966; Gassel & McCracken 1988; G. Miller 1897; J. Perkins & Cross 1988, 1991; O'Shea 1976; Rojas-Martinez et al. 1999; Rysgaard 1942; O. Thomas 1921; Timm 1989; Tuttle & Stevenson 1977; Van Gelder 1956; Zinn & Baser 1979

milk - W. Hood, Bloss et al. 1996; Hulbregtse 1966; R. Jenness & Studier 1976; Kurta, Bell, Nagy & Kunz 1989; Kunz, Stack & Jenness 1983; S Lewis 1991; S. Steele 1989

mines - Altenbach & Milford 1991; Barnwell 2000; Betts 1997; C. Brown & Brown 1993; C. Brown, P. Brown & Berry 1995; P. Brown & Berry 1996; Altenbach & Milford 1995; Belwood & Waigh 1991; P. Brown, Berry & Brown 1996; P. Brown et al. 1993; H. Bryan & MacGregor 1987; Burghardt 1997; Byrnes, Rowe et al. 1997; Ducummon 1997; Ducummon & Taylor 1996; Fegley, Brown et al. 1997; Griffin 1945, 1946, 1970; Heath et al. 1986; S. Henry et al. 1997; Hoffmeister; Lengas & MacMahon 1996; Luce & Priday 1996; Menzel, Monroe et al. 1997; Lengas & MacMahon 1996; Milford & Pierson 1995; Navo 1993; Navo et al. 1991, 1993, 1995-6; E. Pearson 1962; E. Pierson & Brown 1992; E. Pierson 1986; E. Pierson & Rainey 1991; M. Rhodes 1997; Rissler & Whitaker 1990; Senulis 2000; Senulis & Reinartz 1998; C. Snow, Castner & Noel 1996; Tuttle & Taylor 1994; Whitaker & Rissler 1992; Stihler & Hall 1993; Stolzenburg 1996; D. Taylor 1995-6; D. Taylor & Row 1999; Vincent, Whitaker & Koemer 1998; Whitaker & Winter 1977

moon – Hecker & Brigham 1999; Negraeff 1992

morphology (see ecomorphology) - Alderidge, Aldrige & Rautenbach 1987; Fenton & Wilson 1982; P. Freeman 1981; Palmeirim 1998; Stuhsaker 1961; Vaughan & Bateman 1980; Vaughan 1966; R. Warner 1982

mortality: G. Bell 1981; DeBlase et al. 1965; Denys 1972; Dunaway 1960; Gore & Hovis 1995; Gosnell; Grady 1991; Gunier 1970-1; Herreid 1963, 1967; Hexter & Goldsmith 1971; Hitchcock 1963; Hitchcock, Keen & Kurta 1984; Hodgkins 1985; Iwen 1958; Koopman 1974; Kurta 1980; Laduc 1993; Manville 1963; Mohr 1953-4; Pybus, Hobson & Onderka; Raun 1960; Rysgaard 1941; Saugey, Baber & McDaniel 1978; Sherwin & Gannon 1999; Turnblom 1992; Wahl 1984, 1986, 1993; Walley, Southern & Zar 1969; B. Webb 1987; T. Williams & J. Williams 1967, 1969; A. Wisely 1978;

moths and other insects (see predation by bats) - Acharya 1995; D. Bates 1987; D. Bates & Fenton 1990; Burford, Lacki & Covell 1999; Dunning 1968, 1992; Dunning & Acharya 1991-2; Fenton & Pullard 1981; Fenton & Roeder 1974; J. Fullard & Cardone 1986; Hamr 1978; Roeder 1962, 1965, 1967; Roeder & Treat 1957, 1961; J. Simmons 1996; Svensson & Rydell 1998; A. Treat 1983; Whitaker & Long 1989

muscles (see flying): Arganbright 1984; R. Armstrong, Ianuzzo & Kunz 1977; Cho, Sidie & Debruyne 1972; Cukierski 1982, 1984-5; Cukierski & Hogan 1986; Foehring & Hermanson

1984; Fonda & Herbener 1983; Fonda, Herbener & Cuddhee 1983; Gutierrez, De Burgos et al. 1974; Hermanson 1995, 1997-8; Leonard & Wimsatt 1959; R. Myers & Hermanson 1994; Z. Nelson 1977; J. Ryan, Baier et al. 1992; W. Schutt 1991; K. Smith & Kier 1989; Strickler 1980; T. Strickler 1978; Studier 1974; Winsatt 1983; Yacoe 1981-3;

mutation: Herreid 1958

myosin isoforms - W. Schutt 1991

natural selection - Lande 1977

nectarivory - The habit of feeding on nectar. See **pollination**.

nerves - J. Brown 1980; Henson 1970; J. Ryan, Cushman and Baier 1997

net nights - The product of the number of mist nets and the number of nights that nets are employed for the purpose of capturing bats (the size of the nets should be designated)

niche partitioning - See resource partitioning

night roost - Roost site used at night for resting, consuming and digesting prey, and predator avoidance. See **roost**.

noses: Arita 1990; W. Bogdanowicz et al. 1997; Leach 1821; Suthers 1970

nutrition - E. Evans & Miller 1968

odors: Bhatnagar & Herreid 1960; Bloss, Acree & Kunz 1996; Bloss & Kunz 1999; Crosby & Humphrey 1939; Scully, Fenton & Saleuddin 2000; Studier & Lavoie 1984; Studier, Lavoie & Drake 1982; Tuttle & Stevenson 1977

ontogeny - Goebbel 1997

orientation – Sparks & Laborda 1999

oxygen consumption - Herreid & Schmidt-Neilson 1966; Riedesel & Williams 1976; Szewczak & Jackson 1992

pancreatic insulin and glucagon - Bauman 1990

parasites and commensals (see diseases, rabies): G. Adams & Morris 1971; P. Allan 1947; D. Allred & Beck 1966; Allred & Goates 1964; Anciaux de Faveaux 1971, 1976; J. Anderson 1975; Ando 1983; Audy, Radovsky & Vercammen-Granjean 1972; G. Augustson 1941; E. Baker & Strandtmann 1959; E. Baker 1949; N. Banks 1904, 1909-10; Beck 1966; A. Beck 1969; Brennan 1965; Brennan & Beck 1956; Pistole 1983; Radovsky 1964; J. White 1960; Bhatnagar & Lichtenfels et al. 1981; Blankespoor & Ulmer 1971; Blankespoor & Szymusiak 1974; Borland, 1956; Bower 1980; Bower & Woo 1981; Bradshaw & Ross, 1961; Burns & Farinacci 1955; B., F. & Shelton 1957; Cadena 1967; G. Cain 1966; G. Cain & Studier 1974; W. Caire, L. Hornuff & Ports 1981; Cockerell 1910; Cockrum 1970, 1997; Coggins et al. 1981-2; C. Curran 1930; R. Davis & Loomis 1971; Dood 1987; Dooley 1974; Dooley, Bristol & Canaris 1976; Dubbs 1968; Durden, Best et al. 1992; Dusabek 1973; Duszynski, Scott 1999; Duszynski, Reduker & Parker 1988; Eads 1950; Eads, Campos & Barnes 1979; Eads & Menzies 1948; E.

Easton 1974-5; E. Easton & Wrenn 1988; Elsea 1953; Ewing 1920, 1933; Ewing & Stover 1915; Fain & Whitaker 1976, 1982, 1987; G. Ferris & Usinger 1939; W. Font & Lotz 1989; G. Foster 1979; G. Foster & Mertins 1996; I. Fox 1940; R. Fox & Stabler 1953; Furman 1950, 1955; Furman & Tipton 1950; George & Strandtman 1960; Gittleson & Hoover 1969; Goater et al. 1987; Greenbaum & Phillips 1974; D. Gould 1956; Hansen 1964; Hassanloo, Fenton et al. 1995; Ho 1962; Hocking 1971; Holdenried, Evans & Longanecker 1951; Kunz 1976; Hedeon 1953; J. Herborld et al. 1983; D. Jameson 1959; E. Jameson & Chow 1952; Jobling 1929; J. Jones 1957; Judd 1953; Keeley 1995; Kusewitt, Wagner & Harris 1977; E. Jameson 1950; Jellison & Senger 1976; Keegan 1951; W. Kern 1991; La Motte 1958; R. Lewis 1978; Leadabrand 1992; R. Lewis & Wilson 1982; S. Lewis 1996; Lichtenfels & Bhatnagar 1981; Little, Patrick & Gannon 1998; Loomis 1956; Loomis & Bunnell 1962; Loomis & Wrenn; Lotz & Font 1985; Macy 1940, 1957; J. Jones 1998; Lotz & Font 1985, 1990, 1991, 1994; Mahunka 1982; Main et al. 1982; A. Marshall 1981; W. Marshall 1956; B. Martin 1980; D. Martin 1976; McDaniel & Tenorio 1979; Medvedev 1990; Meurer 1980; Miller, Jones & Kin 1973; C. Mitchell & Hitchcock 1965; O. Mitchell 1956; Mollagen 1991; O'Connor & Klompen 1988; O'Connor & Reisen 1978; O'Connor, Whitaker & Easterla 1977; Oldroyd 1964; W. Overall 1974; W. Patterson & Wood 1983-4; B. Wheat 1975; Pistole 1983, 1988; Pitts & Galloway 1993; B. Paterson, Ballard & Wenzel 1000; Poche & Keirans 1975; A. Price, McDaniel & Tumilson 1982; Prins & Loewen 1988; Radovsky 1964, 1969, 1979; Radovsky' & Poche 1975; Radovsky 1966-7, 1969, 1979, 1994; Radovsky & Beck 1971; Radovsky & Krantz 1998; Radovsky, Krantz & Whitaker 1997; Radovsky & Furman 1963; N. Randolph & Eads 1946; Rausch 1975; Rausch & Rausch 1983; Reisen et al. 1976; Ritzi, Dixon & Richerson 2000; Ritzi & Richerson 1998; A. Ross 1960-1; D. Scott & Duszynski 1997; H. Smith 1934, 1981; S. Smith 1981; Spears et al. 1995; Specian & Ubelaker 1976; Stiles 1931; Strandtmann 1949; Strandtmann & Allred 1956; Strandtmann & Hunt 1951; Studier & Lavoie 1984; Studier, Lavoie & Drake 1982; Theodor & Peterson 1964; Thies 1967; Tibbets 1957; Till & Evans 1964; Tipton & Boese, 1958; Tromba 1954; Sulkin 1974; C. Townsend 1893; Ubelaker 1971; Ubelaker & Dailey 1971; Uchikawa 1979; Uchikawa, Zhang, Oconnor and Klompen 1994; Usinger 1966; Veal 1983; Vercammen-Grandjean & Langston 1976; Vercammen-Grandjean, Watkins & Beck 1965; J. Webb & Loomis 1977; Wendell 1995; Wenzel, Patterson et al. 1998; Whitaker 1973, 1982, 1991; Whitaker, Deunff & Belwood 2000; Whitaker & Easterla 1974-5; Whitaker, Easterla & Fain 1987; Whitaker & Lukoschus 1982; Whitaker, Miller & Boyko 1968; Whitaker, Yunker & Maser 1983; Wilkinson, et al. 1980; N. Wilson 1961; R. Williams 1960, 1962; P. Wood, Baker & Selden 1984; Yunker 1958; Zanolwiak et al. 1993; Zanolwiak 1987; Zanolwiak, Harison & Caire 1993; Zeve 1958; Zeve & Howell 1962

parotid gland - Pinkstaff, Tandler & Cohan 1982; Tandler & Cohan 1984

pars distalis - B. Richardson 1980

parturition - The act or process of giving birth to offspring - See maternity.

parturition period - The time of year when females give birth to young.

patagium - Membrane which forms the wings and uropatagium.

patella - B. Smith et al. 1995

pelage - Collective term pertaining to body hair. See **hair**.

pelvis: Crelin & Newton 1969; D. Walton & Walton 1968

peruvate - Cuddihee & Fonda 1981-2

penis - J. Smith & Madkour 1980; Wimsatt & Kallen 1952

phenology - see genetics

philopatry - The seasonal return of a bat to its place of birth or to the same hibernaculum. Kurta & Murray 2000;

phototaxis - Berra & Policello 1979

phylogeny - See evolution

physiology (see also hibernation, metabolism, thermoregulation): Herreid 1961; E. Anthony 1982; W. Caire, B. Cox & Levescy 1981; Cukierski 1985; R. Dryer & Palsrud 1966; Dryer et al. 1969; Dubbs 1968; J. Fitch 1966; J. Harrioson 1965; Hermanson et al. 1989; D. Howell 1974; Krutsch & Hughes 1959; Leitner & Ray 1964; Melman & Rosenbaum 1963; Mitchell 1963; O'Connor, Cain & Zarrow 1966; Quay 1969; Rouk & Glass 1970; Schackleford & Caire 1993; Suprenant 1978; Tewari & Thakar 1968; Troyer 1959, 1965, 1968; Walton 1967; H. Werner 1967; Wimsatt & Parks 1966

pineal gland, pinealocyte nuclear and nucleolar - Quay 1976, 1970

pituitary - E. Anthony 1982, 1985; E. Anthony & Gustafson 1995; E. Anthony & King 1984; E. Anthony & Gustafson 1984; E. Anthony, King, Gustafson & Damassa 1981; J. E. Anthony, King & Stopa 1984; E. Anthony, Neel & Cicione 1992; B. Richardson 1981; Widmaier, Harmer & Sulak 1994.

plagiopatagium - Membrane which forms the part of the wing that extends laterally from the fifth digit of the wing to the ankle.

pollination (see *Choeronycteris*, *Leptonycteris*) Alcorn, McGregor & Olin 1961; H Baker 1977; Baron 1986; E. Dumont 1997; Eguiarte et al. 1994; Erickson 1989; T. Fleming 1985, 1993, 1995, 1997; Fleming et al. 1989, 1998; T. Fleming & Tuttle 1990; P. Freeman 1995; Griffin 1940; Helversen 1993; Herrera Montalvo 1997; Herrera Montalvo & Martinez del Rio 1998; Heyneman 1983; Hinman 1999, 2000; D. Howell 1979, 1980; D. Howell & Roth 1981; Koopman 1981; McGregor, Alcorn & Olin 1962; Sahley 1990; R. Sidner & Houser 1990; J. Smith 1983; J. Smith & Hood 1984; Stroo 1998; D. Thomas, Crawford et al. 1984; Tuttle 1991; R. Warner 1983; T. Wilson, Stanton & Rigney 1994; Winkelmann 1971

pollution (see human impacts): D. Clark 1978, 1981, 1988; D. Clark & Lamont 1975; D. Clark et al. 1983; D. Clark & Prouty 1976; D. Clark, LaVal & Tuttle 1981; D. Clark, Kunz & Kaiser 1978; D. Clark & Krol 1977; D. Clark & Krynitsky 1978; D. Clark, LaVal & Tuttle 1981; D. Clark & Prouty 1976-7, 1984; D. Clark & Ratner 1987; D. Clark & Stafford 1981; Cockrum 1969; Elliott 1993; Faegri & Van der Pijl 1966; Fulton 1985; Thies 1993; Thies & Thies 1997; Thies, Thies & McBee 1993; D. Thomas, Crawford n.d.; Braaksma & J. van der Drift, 1972; D. Clark 1981, 1982; D. Clark et al. 1981; D. Clark & Prouty 1976; D. Clark LaVal & Krynitsky 1980; D. Clark, LaVal & Swineford 1978; D. Clark, LaVal & Tuttle 1982; D. Clark & Lamont 1976; D. Clark, Martin & Swineford 1975; Eisler 1989; Esher, Wolfe & Koch 1980; Geluso,

Altenbach & Wilson 1981; Luckens & Davis 1954-5; Reidinger 1972, 1976

polydactyly - Koford & Kruttsch 1948

pontine nuclei - Teng 1989, 1991

population (structure) (see sex ratios): R. Barclay 1991; Bowers & Matter 1997; Dunlap 1995; Ellison, Everette et al. 1996; Everett, Ellison et al. 1997; Mumford 1958a; Reidinger 1972; W. Davis 1966; Fenton 1970; Goehring 1957; Humphrey & Bonaccorso 1979; Krohne 1997; McCavit 1975; Nielson 1989, 1991; O'Shea & Vaughn 1997; Perry 1965; Ramsey 1998; Route 1998; D. Snyder 1976; Stevens & Willig 2000; Storz & Williams 1996; Whitaker & Gummer 1999;

precipitation - Brigham, Grindal et al. 1991; Syme 1991-2, 1994

predation by bats (see also feeding): Acharya 1990; R. Adams 1996, 1993; G.M. Anderson 1978; Anon. 1998; J. Baker 1962b; Barclay 1985-6; D. Bates 1987; D. Bates & Fenton 1990; Bauman, Hashim & Sershen 1989; G. Bell 1980-4; Belwood 1982; Belwood & Fullard 1984; Belwood & Fenton 1976; H. Black, 1974; W. Bogdanowicz et al. 1997; P. Brown 1982; P. Brown, R. Berry et al. 1999; E. Buchler, 1976; Burford & Lacki 1995; W. Caire & M. Ports 1981; S. Carroll et al. 2000; T. Carter, M. Menzel et al. 1998-9; R. Clawson, Gray & Gray 1981; Constantine 1948; DeCarvalho, Gannon et al. 1997-8; DeCarvalho, Gannon et al. 1997; Dunkle & Belwood; Dunning 1968, 1992; Dunning & Acharya 1991; Dunning, Miller & Futtrup 1997; Dunning, Acharya et al. 1992; Easterla & Whitaker 1972; Eisenberg & Wilson 1978; S. Ellis 1988; Engler 1943; P. Faure 1988, 1990; P. Faure, Fullard & Dawson 1991, 1993; Fenton 1972, 1974, 1982, 1985, 1995-6; Fenton & Morris 1976; Fenton & Pullard 1981; Folk 1940; ; P. Freeman 1981-2; J. Freeman 1946; J. Fries 1981; Fuzessery 1991; Gannon & Burt 1998; Gannon, Burt & O'Farrell 1998; J. Gardner, Hoffman, Garner & Cook 1987; Gould 1955; Griffin 1995; Griffin, Webster et al. 1960; J. Hall & Blewett 1964; W. Hamilton 1933; I. Hamilton 1995-6; Hamr & Bailey 1985; B. Harris & Holting 1977; Hassell M. Harvey & McDaniel 1986; Hatt 1923; Herrera Montalvo, Fleming & Findley 1991; Hickey 1986, 1990-3; Hough 1957; D. Howell 1974; D. Howell & Hart 1980; T. Hurst 1997; T. Hurst & Lacki 1997; J. Hutchinson & Lacki 1999; Kurta 1985; Kirwan 1968, 1974; Kiser & Elliott 1996; Kiser, Elliott & Whitaker 1998; Kunz 1973; Kunz & Whitaker 1983; Lesser et al. 1957; Y. Lee 1998; J. Lloyd 1989; McCracken, Lee et al. 1997; C. Merriman 1989; P. Miller 1995; K. Muller 1998; L. Miller & Treat 1993; S. Murray 1996; Oaten 1977; Obrist & Wenstrup 1998; S. Parsons, Thorpe & Dawson 1997; Pavey & Burwell 1998; Racey & Speakman 1990; Reidinger 1972; K. Roberts, Yancey & Jones 1997; Roeder & Fenton 1973; Roeder 1962; Rydell & Speakman 1995; Rydell & Waters 1995; Schalk & Brigham 1995; Schuler 1982; M. Scott 1994; Sih 1980; Simmons, Fenton & O'Farrell 1979; H. Smith 1981; K. Strong 1978; Studier, Sevicke et al. 1991; Syme 1991-2, 1994; Svensson & Rydell 1998; Tejedor, Holland et al. 1998; Trevor-Deutsch 1973; Tuttle 1968, 1976; Van de Water & Peachey 1997; Vaughan 1980; L. Ward 1997; R. Warner 1982; F. Webster & Griffin 1962; Westbrook, McCracken et al. 1998; Wethington, Leslie et al. 1996-7; Whitaker 1992-3; Whitaker & Lawhead 1992; Whitaker & Quentin 1983; Whitaker, Neefus & Kunz 1996; Whitaker & Rissler 1992-3; Whitaker & Tomich 1983; Wilkinson 1993-4; Wilkinson & Barclay 1997; J. Williams 1983; N. Wilson 1958; Woodsworth, Bell & Fenton 1981;

predation on bats: P. Allan 1947; J. Baker 1962; H. Black 1976; D. Cary, Clawson & Grimes 1981; Church 1967; D. Clark & Bunck 1991; Clay 1959; Drake 1957; Duguay, Ritchison & Duguay 1997; Duncan & Sidner 1990; Elwell 1962; Fenton 1994; Fenton, Rautenbach et al. 1994; Fenton, Cumming & Oxley 1977; Goodpaster & Hoffmeister 1950; Hoffmeister & Goodpaster 1964; R. Macy & R. Macy 1939; R. Martin 1961; K. Martin & Fenton 1978; McCracken, Gustin & McKame 1986; Meritt 1989; Mueller 1990; H. Mueller 1969; Rydell & Speakman 1995; Stagger 1941, 1948; J. Taylor 1964; Herreid 1960-2; R. Jones & Hettler 1959; Hickey, Acharya et al. 1996; C. Long 1971; R. Martin 1916; McIntosh & Gregory 1976; R. Mumford 1969; Munson & Keitch 1984; Nugent, Escobar et al. 1989; Perry & Rogers 1964; Simms 1977; Stager 1941-2; J. Taylor 1964; Vaughn 1982; Twente 1954; Wilks & Laughlin 1961; J. Wiseman 1963; Wroe & Wroe 1982; Yancey, Roberts & Jones 1996

pressure changes - Anon. 1996

prolactin - B. Richardson 1980

progesterone - G. Buchanan & Young 1988; W. Currie, Blake & Wimsatt 1988

propatagium - The membrane between the wrist and the body that forms the leading edge of the wing.

proteins - D. Moore & Yates 1983; Wakeham, Bogenschutz & Caire 1988

public health - Tuttle & Kern 1981

rainfall - K. Howell 1990; Syne 1994

rabies - G. Rupprecht, 1990; Alder 1996; Anon. 1973a, 1977, 1980, 1883-4, 1986, 1996; G. Baer, 1975; G. Baer & Adams 1970; A. Harrison et al. 1980; Beauregard & Stewart 1964; A. Beck 1981; Becker 1983; J. Bell 1975; J. Bell, Moore & Raymond 1969; J. Bell & Moore 1960, 1971; J. Bell & Thomas 1964; Bigler, Hoff & Buff 1975; Bigony 1985; Birch 1997; Brass 1988, 1993; Burnett 1989; Burns & Farinacci 1955; Carey 1985; Casey et al. 1994; J. Childs, Krebs & Rupprecht 1997; Constantine 1962-3, 1966-7, 1978, 1982, 1986; Constantine, Humphrey & Herbenick 1979; Constantine & Woodall 1964; Constantine, Tierkel et al. 1968; Constantine, Emmons & Woodies 1968; J. Daniels 1960; W. Dean, Maddy et al. 1960; Delpietro et al. 1997; Dempster, Godrums et al. 1972; diSalvo, Parker & Doda 1978; Dorward, Showalter et al. 1977; Elmgren et al. 1997; Enrith 1956, 1962; Fischman & Young 1976; Brass, 1991, 1994; Constantine 1962, 1963, 1966-a, 1967, 1979; D. et al. 1969; Eads et al. 1955; H. Feder, Nelson & Reilher 1997; Fenton 1997; Fishbein et al. 1988; Fischman 1984, Fischman & Young 1976; Frantz 1997; Fredrickson & Thomas 1965; French 1997; Gibbons 2000; Girard 1955; Gordon 1965; Greenhall 1968; Heidt 1982; Held et al. 1967; G. Humphrey et al. 1960; Hunt & Bhatnagar 1997-8; Irons et al. 1954; Kaplan 1985; Kaplan & Koprowski 1981; Kough 1954; Kreindel 1997; Kurta 1979; Lemson 1998; Lera 1980; Lewis, W. 1990; MacInnes 1996-8; Maddy, Cockrum & Crecelius 1958; Mahan 1973; Malaga-alba 1966; R. Martin 1961-2; Marr & Beck 1976; Medeiros & Heckmann 1971; Messenger, Smith et al. 1997; G. Moore & Raymond 1970; Morimoto et al. 1996; D. Murphy & Kwiecinski 1993; B. Perry 1987; Pool & Schlegel 1984; M. Pybus 1983; J. Richardson, Ramsey & Starr; Rosatte 1987; Rotz 1997; Rotz, Hensley et al. 1998; Rupprecht 1986, 2000; Rupprecht, Yager et al. 1993; Schaftenaar 1998; Sullivan et al. 1954; Ritter & Follmann 1997; Ronsholt et al. 1998; Rupprecht 1986; Rupprecht, Yager et al.

1993; Sahley 1990; Saugey 1996; Schaftenaar 1998; N. Schneider, Scatterday et al. 1994; Schurrenberger, Beck & Burson 1964; J. Smith 1981, 1989, 1996; J. Smith & Orciari 1997; Steece & Calisher 1989; Steece, Erickson et al. 1982; Sulkin 1959, 1962, 1974-5; Sulkin & Greve 1954; Sutton 1984; Syme 1991, 1994; Tierkel 1954, 1966; Tierkel et al. 1960; Tinline, Ball et al. 1997; Trimarchi 1978, 1981-2, 1986-7, 1993, 1996-8; Trimarchi & Debbie 1977; Trimarchi & Rupprecht 2000; Trimarchi, Rudd & Abelseth 1986; Tuttle 1980, 1996, 1999; Tuttle & Kern 1981; Venters et al. 1954; Verts & Barr 1961; Wandeler 1993; R. Warner 1983; R. Warner & Czaplewski 1981; J. Warner, Davis & Grimes 1962; Whitaker & Douglas 1979; Whitaker & Miller 1974; Witte 1954; Yancey, Raj et al. 1997

refuging species - Pertains to species in which members form roosting aggregations.

relapsing fever: Eads 1952;

reproduction (see maternity) R. Adams 1988; R. Allen, Sims & Sulkin 1964; Amir 1978; E. Anthony et al. 1984, 1987, 1989, 1995; Appley 1971; R. Barclay 1995-6; J. Belcher 1940; Berry & Brown 1995; Bleier 1975; Bradbury 1978; Brimley 1923; P. Brown 1985; P. Brown & Berry 1991; P. Brown, Grinnell & Narims 1985; G. Buchanan 1985, 1987; G. Buchanan, Garfield & YoungLai 1988; G. Buchanan & YoungLai 1987-8; G. Buchanan & Ryan 1983; Canney 1988; D. Carter 1970; F. Carter 1987; Cockrum 1955; Crichton, Hoyer & Krutzsch 1990; Crichton, Krutzsch et al. 1982, 1993; Cukierski 1982, 1987; W. Currie, Blake & Wimsatt 1988; A. Enders & Wimsatt 1968; French & Amanda 1998; Gustafson 1975; Gustafson & Shemesh 1976; Gustafson, Damassa & Kwiecinski 1995; Dixon, Foxworth et al. 1997; J. Findley 1954; Geluso 2000; Guthrie 1933; Hamlett 1935; Harman 1944; M. Henry 2000; Hirth 1960; L. Hoffman, Wimsatt & Olson 1987; Holroyd 1993; C. Hood & Smith 1983; Houghton; Koeler et al. 1990; Koehler & Barclay 2000; Koopman 1974; Kronfeld, Noga et al. 1998; Krutzsch 1979; Krutzsch & Crichton 1986, 1991; Krutzsch, Crichton, Lennon et al. 1984; Krutzsch, Crichton & Nagle 1981; Kurta, Kunz et al. 1987; Kwiecinski 1984; Lollar 1995; R. Miller 1938-9; Napolitano, Krutzsch et al. 1963; Nester 1993; Nicklaus & Keeley 1998; Oxberry 1979; Racey 1988; Racey & Speakman 1990; Racey, Uchida et al. 1986; Rasweiler & Rasweiler 1979, 1993, 1999; Rasweiler 1981; Rasweiler & Rasweiler & Badwaik 1979, E. Reeder 1938; D. Reynolds & Kunz 2000; K. Reynolds & Parker 1983; Saugey 1989; Schowalter 1980; Sidner 1988; E. Smith 1946; Ryan 1991, 1992; D. Sparks & Krochmal 2000; Stack 1985-6; Stack & Kunz 1981; Stuewer 1948; Syme 1991-2, 1994; Wai-Ping 1984, 1986; Wai-Ping & Fenton 1988; L. Ward 1997; Whitaker & Mumford 1972; Wilkinson 1993-4; Wilkinson & Barclay 1997; Wimsatt 1942, 1944-5, 1948-9, 1960, 1969, 1979, 1984; Wimsatt & Kallen 1952; Wimsatt & Parks 1966; Zveloff & Boyce 1980

resource partitioning: R. Adams 1990, 1996; Aldridge 1986; Aldridge, Aldridge & Rautenbach 1987; Brach, Taylor & Holmes 1984; Freeman 1985; R. Green 1974; Kunz & Fenton 1973; Hickey, Acharya & Pennington 1996; M. Saunders 1987; Wong & Fenton 1982; G. Woodsworth 1981

resource patchiness - Kunz, McCoy & Kosciuszko 1978; Oaten 1977

resource utilization (see predation by bats, feeding)- Kunz 1973; Y. Lee 1998; Miner, Brown et al. 1996;

riparian: Brinson, Swift et al. 1981; Grindal et al. 1999; Holloway 1998; Holloway & Barclay 2000; Lacki & Bookhout 1982; A. Miller & Kessler 1980;

roost - Site used by bats when not in flight. (See **bat houses, caves, hibernation, mines, trees**): Altenbach 1998; Amelon et al. 2000; E. Arnett & Hayes 2000; M. Avery, Racey & Fenton 1984; L. Ball 1998; B. Baker, McDaniel et al. 1997; A. Barclay et al. 1988; R. Barclay 1982, 1984; R. Barclay & Brigham 2000; S. Barnard 1991; G. Bell 1981; Brack, Wilkinson & Mumford 1984; Bradshaw 1997; Brigham 1984-5; Broders 2000; P. Brown & Berry 1996; P. Brown, Berry et al. 1997; P. Brown, Berry & Hall 2000; T. Carter, S. Carroll & Feldhamer 2000; Chung-MacCoubrey 1996; M. Clark 1990; Herreid 1961; J. Miller 1955; Twente 1954; Dalquest & Walton 1970; W. Davis, Barbour & Hassell 1968; K. Campbell 1990; Carampton & Barclay 2000; Faure 1987; P. Cryan 1996; R. Foster 1997; R. Foster & Kurta 1999; R. Graham 1966; Gummer & Whitaker 1993; I. Hamilton & Barclay 1994; M. Harvey & McDaniel 1988; Hoffman, Cochran et al. 1998; Hutchinson & Lacki 1997-8; H. Johnson & Trapp 2000; Kurta & Foster 1998; Lacki, Adam & Shoemaker 1994; S. Lewis 1990; Mattson, Buskirk & Stanton 1996; ; Mika, Sherwin & Stricklan 1999; Mirowsky 1998; A. Parkinson 1981; Kunz 1982a; N. Miller 1996; Racey 1974; Crampton 1993; Crampton & Barclay 1996; Dalquest 1946; Dalquest & Walton 1970; W. Davis, Hassell & Harvey 1965; Downes 1964; Fassler 1975; Fenton & Crerar 1984; Findley 1954; Goad 1983; R. Foster 1996; J. Gardner, Gardner & Hoffman 1991; Hickey & Neilson 1995; Hickey, Palen et al. 1996; Hicks 1987; Higginbotham et al. 2000; Hirshfeld, Nelson & Bradley 1976-7; J. Hutchinson & Lacki 2000; Kurta 1994; Kurta & Foster 1998; Kurta & King 1991; Kurta & Murray 2000; Lausen 2000; S. Lewis 1997; S. Leis & Pavwoski 1999; Lengas & MacMahon 1996; Limpert & Bounds 1999; Lister 2000; Luce & Priday 1996; Luckens, Van Eps & Davis 1971; Lutch & Miller 1996; Menzel, Carter et al. 1998; Menzel, Chapman & Miller 1998; Menzel, Krishon et al. 1996; Moon & Borgmann 1976; Moorman, et al. 1999; Morrell, Green et al. 1994; Morrell, Rabe et al. 1996; Navo, Gore & Skiba 1990; Ormsbee 1995-7; Ormsbee & McComb 1997; J. Perkins & Lacki 2000; J. Perkins, Peterson & Anderson 1997; Perlmeier 1999; Perry & Bogan 1996; E. Pierson & Rainey 1991; Pitts & Scharninghausen 1986; Pruszek & Bowles 1986; Psyllakis 1999; Rabe, Siders et al. 1998; Raesly & Gates 1987; Raesly 1982; Ritzi, Walker & Honeycutt 1998; Rodriguez-Duran 1991; Roemer 2000; Romme, Tyrell & Brack 1995; Sandle et al. 1999; Sasse & Perkins 1995; Sheffield et al. 1992; Speakman & Racey 1989; Stihler, Jones & Wallace 1998; Stager 1943; J. Taylor & Wai-Ping 1987; Thibault 2000; Thibault & Adams 1998; D. Thompson 1997; ; Trombulak et al. 2000; Trune & Slobodchikoff 1976; Tuttle 2000; Vaughan & Oshea 1976; Veilleux 1999, 2000; Vonhof 1993, 1996; Vonhof & Barclay 1996; P. Webb & Jones 1952; Menzel, Johnson et al. 2000; Wenzel, Patterson et al. 1998; Whitaker 1998; Whitaker & Gummer 1999; Wilhide, Harvey et al. 1999; L. Williams & Brittingham 1997; K. Williams, Mies & Kurta 1996; L. Williams & Brittingham 1993; Wunder & Nash 1980

roost fidelity - The tendency of a bat to return repeatedly to a certain roost (e.g. cave, tree hollow, barn) or general area (foliage).

roosting metabolic rate - Rate of energy expended under natural or semi-natural conditions (incl. Costs associated with specific dynamic action, movements, clustering, grooming, social interactions, etc.)

salivary glands - C. Phillips, Tandle & Nagato 1984; Tandler & Phillips 1987, 1989
sanguivory - The habit of feeding on blood.

seasonal: - see behavior: Beasley 1986; L. Beasley 1982, 1985-6; L. Beasley & Smith 1983-4; Golden 1970, 1972; Menard 1997; Sealander 1964; Zinn & Humphrey 1981; Whitaker & Rissler 1993;

sensory orientation (see echolocation) E. Buchler & Childs 1982; E. Buchler & Wasilewski

sex ratios: R. Adams 1996; J. Bain & Humphrey 1986; W. Davis & Hitchcock 1964; Goad 1983; Hitchcock 1950; E. Hooper 1939; Kurta & Matson 1980; B. Milligan 1991; B. Milligan & Brigham 1993; Mohr 1945; Semanie 1996; Sherwin & Gannon 1999; Sidner 1982; E. Smith 1957

sexual dimorphism: Achary 1993, 1995; R. Adams 1996; C. Burnett 1983; Crelin & Newton 1969; Fujita 1984, 1986; J. Fullard & Cardone 1986; Giesel 1972; Herreid 1959; Kazial, Burnett & Mitchell 1998; D. Williams & Findley 1979; Grinevith et al. 1995; P. Myers 1978; Sealander 1964; P. Tucker 1985-6; P. Tucker & Bickham 1986; Wilkinson & Barclay 1997; D. Williams 1968; Willig & Hollander 1995; T. Wilson, Stanton & Rigney 1994

sex steroids - Crichton, Hoyer & Kruttsch 1990; Damassa, Gustafson & Chari 1983; Kusewitt, Wagner & Harris 1977

shoulder - Hermanson & Altenbach 1981; T. Strickler 1978

sinoastrial & sinu-atrial node - D'Agrosa & Laskowski 1982; Lakowski & D'agrosa

silent heat - The occurrence of ovulation without fertilization, prior to behavioral estrus and insemination.

size differences: Arita 1999; Barclay & Brigham 1991; ; Barclay, Fullard & Jacobs 1999; Fujita 1986; McLaren & Kirkland 1979; P. Patterson & Davis 1968; O. Pearson 1947-8; D. Reynolds & Kunz 2000; Sealander 1964; R. Stevens 2000;

skeleton - See bones

skull - see head

social organization - Baine & Humphrey 1986; Blackburn, Gannon & Little 1998; Bradbury 1977; Findley 1976; H. Black 1974; Brigham 1984; Krishon, Carter et al. 1996; Kurta & Teramino 1992; Lengas & MacMahon 1996; B. Miller & M. O'Farrel 1998; Pearl & Fenton 1996; Ramsey 1997; ; R. Russell, Suzanne et al. 1998; Tejedor, Holland et al. 1998; D. Thomas, Fenton & Barclay 1979; Trune & Slobodchikoff 1976

social signals/communication - Mirowsky 1998; D. Turner, Shaughnessy & Gould 1972;

spatial memory - Loughry et al. 1988

species composition - see biodiversity

sperm - Crichton, Kruttsch et al. 1981-2, 1993; G. Forman 1968; ; Napolitano, Kruttsch et al.

1963; M. Scott 2000

spleen - K. Martin & Fenton 1978; Lidicker & Davis 1955;

steroids - G. Buchanan & Ryan 1983;

stress - Widmaier, Harmer & Sulak 1994; Widmaier & Kunz 1993

sudoriparous glands - M. Sisk 1957.

stomach - G. Forman 1972, 1974; Mennone, Phillips and Pumo 1985; H. Park & Hall 1951; C. Phillips 1984; C. Phillips & Studholme 1982; C. Phillips, Mennone et al. 1985

submandibular gland - Pinkstaff, Tandler & Cohan 1982

swarming (The activity of bats (males and females) from mid-summer through early autumn at sites that ultimately are used as hibernacula (the latter part of this interval is coincident with mating in temperate regions) Campbell, Tyson & Hall 1991; Cassidy et al. 1979; W. Davis 1965; Schowalter 1980; Tyson et al. 1990

synanthropy - The association of bats with man.

tails - Peffley & Simmons 1993

swarming - Sparks et al. 2000;

taste - See tongue

taxonomy - R. Baker, Porter et al. 2000; W. Bogdanowicz et al. 1995, 1997; Byrnes 1998; W. Davis 1959; De Jong & Van Zyll 1984; Dolan & Honeycutt 1978; Genoway & Jones 1969; Griffin 1940; Honeycutt & Adkins 1993; Hoofer & Van den Busche 1998; J. Jones & Carter 1979; Koopman 1983-4, 1988, 1994; Manning 1993; Manwell & Kerst 1966; C. Martin 1974; Menu 1984, 1988; J. Morales 1992; R. Owen 1989; E. Pierson 1986; Peffley & Simmons 1998; Skilbins 1991; J. Smith 1972; Tumlison 1990; Van Den Bussche 1992; Van Zyll de Jong 1984; Van Zull de Jong & Nagorsen 1994; Walton 1967

teaching - see education

teeth - D. Clark 1980; Fenton 1970; P. Freeman 1981, 1995, 1998; C. Phillips 1971; C. Phillips, Steinberg & Kunz 1982; Schowalter, Harder & Treichel 1978; Slaughter 1970; H. Smith 1977; Strait 1993

temperature (see thermoregulation) R. Barclay, Kalcounis et al. 1996; Burbank & Young 1934; Cuddihee 1980; Cuddihee & Fonda 1981; W. Davis 1967; Doctor 1967; E. Dumont 2000; W. Elliott & Clawson 1999; Fonda & Cuddihee 1982; P. Freeman 1992; R. Henshaw 1961; Herreid & Schmidt-Neilson 1966; Hickey 1991; Hirshfeld & O'Farrel 1976; Hock 1950; Holt 1969; W. Lancaster et al. 1997; Milam & Best 1994; Z. Nelson et al. 1977; Pagels 1972, 1975; Senlius & Reinartz 1998; Suprenant 1978; Syme 1994; S. Thomas, Follete & Farabaugh 1991; Vincent, Whitaker & Koemer 1998; P. Webb & Jones 1952; P. Webb, Speakman & Racey 1996;

tendons - Quinn & Baumel 1992; N. Simmons & Quinn 1994; B. Smith et al. 1995;

terminology - Kunz & Gustafson 1983;

testosterone - L. Beasley 1985-6; L. Beasley & Smith 1983-4;

thermoregulation: D. Audet 1987; Brenner 1974; Carpenter & Graham 1968; McManus 1976; Pagels 1975; .: J. Harrison, Brown & Huang 1978; Heinrich 1977; Henshaw & Folk 1966; Herreid 1961, 1963; Hickey 1988, 1991, 1993; Hickey & Fenton 1996; Kurta 1986, 1991; Hock 1951; Holyoak & Stones 1971; Jujita & Kunz 1981; Kluger 1970; Kurta, Kunz & Williams 1994; Licht & Leitner 1967; Kurta 1982, 1984-6; Licht & Leitner 1967; Menaker 1960, 1962, 1969; McManus 1974; O'Farrell & Bradley 1977; Hitchcock & Keen 1989; Kunz & Frank 1997; Kurta & King 1991; Kurta & Williams 1994; Lausen 2000; C. Lyman 1970; K. Martin & Stehn 1977; McNab 1970; Menaker 1961-2; Moss, Redish et al. 1997; O'Farrell & Bradley 1977; Perkins 1976-7; Pistole 1989; Rabinowitz 1981; Racey & Speakman 1990; Reeder 1949; W. Reeder & Cowles 1951; Reite & Davis 1966; Remillard 1958; Rodriguez-Duran 1991; Shump & McIntyre 1980; R. Stones 1964; R. Stones & Wiebers 1965, 1967, Studier 1981; Studier, Studier et al. 1977; Studier 1974; S. Thomas, Follete & Farabaugh 1991; Twente & Twente 1964, 1978

thyroid - Novacek 1991; Nunez & Gershon 1982-3; Nunez, Payette et al. 1988

tongue - H. Park & Hall 1951; Rockman et al. 1996; K. Smith & Kier 1989; Suthers 1970

torpor (see hibernation) - R. Barclay, Kalcounis et al. 1996; Hollis 2000; Kurta 1989; K. Martin & Fenton 1978; Rauch & Beatty 1975, 1977; Szewczak & Jackson 1992

training - Gaudet 1982.

transient roost - Temporary roost used by bats enroute during migration.

tragus - The fleshy projection from the lower medial margin of the pinna in the most microchiropteran bats.

trap-lining - A foraging behavior characteristic of some nectarivorous bats wherein regular and repeated visits are made to flowers along a fixed route.

Trees (see forrest and logging in human impacts) Bowles, Howell et al. 1996; T. Brown 1998, 2000; Crampton 1994; Findley 1954; Gehrt & Chelsvig 1998; Gellman & Zielinski 1996; J. Hart 1992; Heady & Persion 1995; Hecker & Brigham 1999; Herder & Jackson 1999; Kalcounis 1996; Kalcounis & Brigham 1998; Kellner & Harestad 1998; Kiser & Elliott 1996; Kurta & King 1991; Kurta & Williams 1994; Lacki 1995; R. Lance 1999; Lance, Bollich et al. 1995; Luckens, Van Eps & Davis 1971; Mazurek & Zabel 2000; Morrell, Green et al. 1994; Morrell, Rabe et al. 1996; Nyberg 1995; Ormsbee 1996-7; Patriquin 2000; J. Perkins & Cross 1988; J. Perkins & Lacki 2000; J. Perkins, Peterson & Anderson 1997; J. Taylor 1998; D. Thomas 1991; Tibbels 2000; Van den Driessche & Chatwin 1997; Vonhof 1999; Wunder & Carey 1996; Zielinski & Gellman 1993

tropic structure – Tejedor et al. 1999

trunk - K. Smith & Kier 1989;

urban - Gehrt & Chelsvig 1998; J. Hubbell & Miller 1995; Kurta & Teramino 1992

ultrasonic - Pertains to sound frequencies above the audible range (usually frequencies greater than 20 kHz). See **echolocation**.

urine & urinary system - Kallen & Kanthor 1967; Rosenbaum 1970; Studier & Rimle 1980; Wakecham, Bogenschutz & Caire 1988.

uroptagium - Membrane extending between the tail and hind legs. Syn.: interfemoral membrane.

use - Osborne 1939; S. Pedersen 1996; S. Pedersen & Siegfried 1996; S. Pedersen & Siegfried 1996; Poncavage 1996; R. Reynolds 1994

value of bats - R. Corrigan & Bennett 1982; Cutler et al. 2000; Long 1996; S. Lewis 1991; Whitaker 1993; T. Williams.

vestibular end organ - Ramprasad, Landolt et al. 1980

videos - P. Morton 1998;

vision - See eyes

vocalization - P. Brown 1976; P. Brown, Grinnell & Baker 1978; Erickson & West 1994; Fenton 1977, 1988; Fenton & Bell 1981; Fenton et al. 1976; Fenton, Belwood, Fullard & Kunz 1976; J. Fullard 1988; D. Gould 1971, 1975; Gould & Turner 1973; Koehler 1992; K. Martin & Fenton 1978; Rasmuson & Barclay 1992; Schereer & Wilkinson 1991; Stains 1965; C. Thomson 1982; C. Thomson, Fenton & Barclay 1985

walking - Dietz 1973

water balance/loss/use (see kidneys) R. Adams 1999, 2000; Bassett 1979; G. Bell 1981; R. Carpenter 1969; Chew & White 1960; Cloutier 1987-8; Herreid & Schmidt-Neilson 1966; Horst 1969; Kunz 1984; Kurta, Bell et al. 1989; D. Thomas 1990, 1992; von Frenckel 1986; P. Webb 1995; Wilhide, Harvey et al. 1996;

water index - The ratio of grams of water/grams of lean dry mass.

weather - R. Barclay 1994;

weight - P. Dunaway & Lewis 1965; G. Carmody, Fenton & Lee 1971; Drumm 1999; S. Johnson, Brack & Rolley 1993; Studier & Weing 1971; Studier, Proctor & Howell 1970; Sutter & Bakken 1992;

whispering bat - One who emits low intensity echolocation pulses, as in *Nycteris*.

wing membranes - Studier 1972;

wings - Bininda-Emonds & Russell 1993; Brich 1992; Blood & McFarlane 1988; M. Davis & Sikes 1989, 1972; J. Findley, Studier & Wilson 1972; B. Fleming 1983; B. Fleming, McKinney & Knight 1982; B. Fleming & McKinney 1985; E. Harley & Miller-Butterworth 2000; Goslin 1942;

C. Jones & Suttikus 1971; W. Lancaster et al. 1997; Poole 1936; S. Swartz 1998; Zook 1985

Areas:

AB: Alder 1996; Barclay 1986; Chruszcz 1998; Collister & Hunt 1990; Crampton 1994-5; Fujita 1986; Hollis 2000; Holloway 1998; Holloway & Barclay 2000; Holroyd 1991; Lausen 2000; Lister 2000; M. Saunders 1987; Schowalter 1979, 1980; Schowalter & Allen 1981; Schowalter, Dorward & Gunson 1978; Schowalter & Gunson 1979; Schowalter, Gunson & Harder 1979; H. Smith 1979, 1981, 1993; H. Smith & Schwalter 1979

AK: R. Baker 1951; Manville & Young 1965; K. Nolan & Pierce 1996; D. Parker 1996; D. Parker & Cook 1996; Patriquin 2000; W. Reeder 1965; Ritter & Follmann 1997; E. West 1991, 1993; E. West & Swain 1993; Whitaker & Lawhead 1992;

AL: Best et al 1991-2; Dorward, Showalter et al. 1977; Durden, Best et al. 1992; Dusi 1976; A. Howell 1920-1; Mohr 1932; J. White 1960; Chermock & White 1953; Kilburn, Best et al. 1990; LaVal. 1967; Linzey 1970; Mohr 1932; Mount 1986; B. Wheat 1975

AR: B. Baker, McDaniel et al. 1997; B. Baker, Wilhide et al. 1998; R. Baker & Ward 1967; J. Black 1934; D. Buecher, Sidner & Buecher 1990; R. Buecher & Sidner 1999; Hensley & Scott 1995; Czaplewski et al. 1979; W. Davis, Lidicker & Sealander 1955; Dellinger & Black 1938; Disalvo et al. 1969; M. Fletcher 1985; Gardner 1978; Gardner & McDaniel 1978; M. Harvey 1987, 1996; M. Harvey & Barkley 1990; M. Harvey, Cassidy & O'Hagen 1979; Harvey 1976, 1989, 1991, 1993, 1998 M. Harvey & McDaniel 1986; M. Harvey, Cassidy & O'Hagen 1981; Heath et al. 1986; McDaniel, Paige & Tumilson 1979; Paige 1989; J. Palmer 1992; Saugey 1989; Saugey et al. 1989, 1990; Saugey, McDaniel et al. 1993; Paige & Steward et al. 1986; R. Pitts 1988; A. Price, McDaniel & Tumilson 1982; Saugey, Vaughn et al. 1998; Sealander 1951, 1960; Van Zyll de Jong et al. 1980; Wilhide, Harvey et al. 1996;

AZ: Reidinger 1972; McFarlane & Keeler 19?; J. Bain 1986; Baird 1859; Berry 1999, 2000; Bradshaw, & Ross 1961; P. Brown, R. Berry et al. 1999; P. Brown, Berry & Hall 2000; Buecher 1996; Cahalane 1939; B. Campbell 1934; Carothers & Ruffner 1971; Castner, Snow, Noel et al. 1996; D. Clark, Martin & Swineford 1975; D. Clark et al. 1981; Cockrum 1960-1, 1969, 1981; R. Baker 1956; Cockrum & Gardner 1960 C. & Ordway 1959; C. & Petrozyn 1986; Constantine 1961, 1966; Cross 1965; W. Dean, Maddy et al. 1960; Czaplewski et al. 1999; Erickson 1989; Fleming, Newton & Usieh 1999; Halfield 1942; B. Hayward & Johnson 1961; Hinman 1999, 2000; Hoffmesiter 1959. 1970-1, 1986; Hoffmeister & Krutsch 1955; Hoffmeister & Goodpaster 1954; D. Irwin & Baker 1967; R. Johnson & Johnson 1964; C. Jones 1965; J. Jorgensen 1994; Koopman 1963; Leitner & Ray 1964; C. Lowe 1974; Maddy, cockrum & Crecelius 1958; McKee 1932; Merriam 1889; Mohr 1932; Monday 1993; Morierity 1988; Morrell, Green et al. 1994; Morrell, Rabe et al. 1996; R. Mumford 1963; Noel 1995; Noel, Snow & Castner 1994-6; O'Shea 1976; O'Shea & Vaughn 1977, 1997; O'Shea, Fleming & Chromartie 1980; Osborne 1965; Peachey 1997; Peachey & Bethard 1997; Quinn & Petterson 1997; Rabe, Morrell et al. 1998; C. Ray & Wilson 1979; Reidinger 1972, 1976; E. Roth & Cockrum 1976; Ruffner et al. 1978; Schmidt 1999; Siders, Garcia de la Cadena et al. 1997; Siders, Rabe et al. 1997; Siders, Miller et al. 1996; Sidner 1986, 1988; C. Snow, Castner & Noel 1996; Stager 1956-7; Studier 1965, 1969; Tejedor et al. 1999; Tejedor, Holland et al. 1998; Van de Water & Peachey 1997; T.

Vaughan 1954; Vorhies 1935; R. Warner 1982-3, 1985; R. Werner & Czaplewski 1981;

BC: R. Barclay & Brigham 2000; Brigham, Grindal et al. 1991; Caceres 1998; Chatwin et al. 1997; K. Chapman, McGuinness & Brigham 1994; I. Cowan 1942, 1945; Cowan & Guiguet 1956; Fenton, Merriam & Holroyd 1983; P. Garcia & Barclay 1996; Getty & Barclay 1993; Grindal 1993; Grindal, Collard & Brigham 1991; Holroyd 1993; Kellner & Harestad 1998; Luckens, Van Eps & Davis 1971; Merriam 1895; B. Milligan 1993; Nyberg 1995; Prins & Loewen 1988; Psyllakis 1999; Racey 1933; Rand 1942; Schowalter 1980; Schowalter, Dorward & Gunson 1978; Schowalter 1980; Sheldon 1932, 1936; Shepard & Lambert 1995; Speakman & Fenton 1996; Stokes 1996; Thacker 1944; Van den Driessche & Chatwin 1997; Van Zull de Jong & Nagorsen 1994; Vonhof 1993, 1996; Vonhof and Barclay 1996;

CA: G. Allen 1919; L. Arnold 1953; Ashcraft 1932; P. August & R. Digman 1973; G. Augustson 1941; Baird 1859; A. Beck 1969; Berry & Brown 1995; Benson 1954; Bolster 1997; Bond 1970; P. Brown & Berry 1996; P. Brown, Berry et al. 1997; P. Brown, Berry & Brown 1996; P. Brown 1979, 1991; W. Bryant 1891; J. Burns, Baker & Bleier 1972; J. Burns & Easley 1977; Cockrum & Petrozyn 1994; Constantine 1959; Constantine, Humphrey & Herbenick 1979; Dalquest 1946-7; B. Davis & Baker 1974; Gellman & Zielinski 1996; D. Gould 1956; R. Graham 1966; H. Grinnell 1914, 1918, 1933; Grinnell, Dixon & Linsdale 1930; Hatfield 1937; Holdenried, Evans & Longanecker 1951; Kunz A. Howell 1920; E. Jameson & Whitaker 1975; D. Johnson, Bryant & Miller 1948; D. Johnson 1997; H. Johnson & Trapp 2000; Keeley 1995; Koford & Koford 1948; Krutsch 1946, 1955; Leitner & Ray 1964; S Lewis 1991; R. Loomis 1964; Marcot 1984; W. Marshall 1956; Medeiros & Heckmann 1971; Merriam 1890, 1897; Miner, Brown et al. 1996; R. Orr 1950, 1958, 1956; H. Parker 1952; Perkins 1991; Pierson 1986, 1988; E. Pierson & Rainey 1991, 1996-7; Remington 2000; S. Rhoads 1895, 1902; Szewczak 2000; Silva 1988; Sillman & Bloeker 1938; Simons, et al. 2000; Stager 1942-3, 1957; F. Stephens 1906; Surprenant 1978; Szewczak & Szewczak 1998; J. Taylor & Wai-Ping 1987; W. Taylor 1919; Tenaza 1966; T. Vaughan 1954; Vaughn & Krutzsch 1954; von Blocker, Jr. 1932; D. Williams 1986;

Canada: G. Casey et al. 1994; Elmgren et al. 1997; M. Pybus 1983; Rosatte 1987; Van Zyll de Jong 1978-9

CO: R. Adams 1996-2000;; R. Adams & Thibault 1999; R. Adams, Thibault & Petru 1999; Amman 2000; S. Anderson 1959; D. Armstrong 1975; August, Ajello & Week 1986; Cary 1911; Colorado Division of Wildlife 1982; Constantine 1966; Ellinwood 1987; R. Finley & Creasy 1982; J. Fitzgerald & Taylor 1989; J. Fitzgerald, Meaney & Armstrong 1989; Goad, 1983; Graul 1979; Navo et al. 1992; J. Hubbell & Miller 1995; Ingersoll & Navo 1996; Svoboda & Choate 1987; R. Findley et al. 1983; Goad 1983; Hove et al. 1990, 1993; Meacham 1974; Navo 1993; Navo et al. 1991; Navo et al. 1995-6; Navo, Gore & Skiba 1990; Storz & Williams 1996; Svoboda 1983; Thibault & Adams 1996, 1998; Turnblom 1992; E. Warren 1906; E. White 1997; Wunder 1987; Wunder & Nash 1980; Zeveloff 1988

CT: Main et al. 1982

DC: H. Jackson 1922; D. Wilson 1998;

DE: Mohr 1976

Eastern US: Hamilton & Whitaker 1979

FL: Balir 1935; Balier 1935; Belwood 1990; Bigler, Hoff & Buff 1975; L. Brown 1985; Jennings 1958; D. Lee & Tuttle 1970; Rice 1955a, 1957; Tuttle 1976a; T. Carter, M. Menzel et al. 1998; W. Davis 1957; Finn 1995-7; G. Foster & Mertins 1996; Glover & Properzio 1997; Ivey 1959; W. Jennings 1958; Jennings & Layne 1957; W. Kern 1991; W. Kern & Belwood 1996; D. Koopman 1974; J. Layne 1974, 1978, 1992; P. Lazell & Koopman 1985; Lee 1976; R. Martin 1974, 1977; Means 1977; Millsap et al. 1990; J. Moore 1949; Morgan 1991; Neill 1953; P. Pearson 1960; ; C. Ray, Olsen & Gut 1963; S. Rhoads 1895, 1902; D. Rice 1955, 1957; Robson, Mazzotti & Parrott 1989; N. Schneider, Scatterday et al. 1994; A. Schwartz 1951; Sherman 1929, 1935-6, 1939, 1956; Venters et al. 1954; O. Webb & Wilkins 1984; Weigel 1962; A. Werner 1984; Zinn 1977; Zinn & Humphrey 1981

GA: W. Baker 1965; Constantine 1958; W. Davis 1963; F. Harper 1927; Krishon, Carter et al. 1996; Laerm 1996; Laerm, et al. 1980, 1982; R. Martin & Bearden 1990; R. Martin & Sneed 1990; Menzel, Krishon et al. 1996; Padgett 1988, 1990; J. Richardson, Ramsey & Starr; R. Spears & Hagan 1994

Great Lakes Region - Kurta 1994

HA: Belwood 1982; Belwood & Fullard 1984; Cabrera 1996; Fullard 1984, 1988, 1990-1; D. Jacobs 1991-3, 1999; C. Kepler & Scott 1990; McDaniel & Tenorio 1979; M. Reynolds, Cooper & Day 1997; M. Reynolds, Nielsen & Jacobi 1997; Menard 1997; Q. Tomich 1986, 1974; Whitaker & Quentin 1983; Whitaker & Tomich 1983; D. Worthington 1997; D. Worthington & Dwyer 1998

IA: Blakespoor & Ulmer 1971; J. Bowles 1981; Bowles, Howell et al. 1996; Kunz 1969; B. Clark 1984; B. Clark et al. 1993; B. Clark, Bowles & Clark 1987; Constantine 1996; Easterla & Watkins 1967, 1970; Klaas 1986; Kunz 1969, 1971, 1973; Kunz & Anthony 1996; Kunz & Schlitter 1968; Laubach et al. 1989; McClure 1942; Muir & Polder 1960; R. Patterson 1985; S. Peck 1958; Polder 1954; Pruszko & Bowles 1986; Roosa 1977; Ubelaker 1971; L. Watkins 1970

ID: Betts 1997; W. Davis 1939; Genter 1986; G. Jones 1948; Knapp 1997; J. Perkins & Peterson 1996; J. Perkins, Peterson & Anderson 1997; Singer 1995; Stager 1957; H. Tucker 1957; C. Vullo, Lewis et al. 1997; Wackenhut & Keller 1989; Wackenhut & McGraw 1996; Whitlow & Hall 1933

IL: Krejca 1993; E. Anderson 1951; Brack, 1979, 1983; Brack & Dunlap 1997; Brack & Twente 1985; Burnett & August 1981; S. Carroll et al. 2000; C. Cory 1912; Easterla & Watkins 1970; Fairman 198-1; J. Gardner et al. 1996; J. Gardner, Hoffman & Garner 1991; J. Gardner and Taft 1982-4; J. Gardner and Saugey 1989; J. Gardner & Gardner 1980; J. Gardner, Gardner & Hoffman 1991; Grady 1989; J. Hall & Davis 1958; J. Hoffman & Ducummon 1997; Hoffman & Gardner 1996; Hoffmeister & Mohr 1957; Kurta & Foster 1994; J. Layne 1958; Lera 1976;

Marquart 1997; D. Miller 1990; R. Mumford 1967; Necker & Hatfield 1941; E. Pearson 1962; Provost & Kirkpatrick 1952; D. Rice 1955; Rissler & Whitaker 1990; Tuttle 2000; Verts & Barr 1961; Walley 1970-1, 1974; H. Walley & Jarvis 1972; D. Walton & Kimbrough 1970; Whitaker & Winter 1977

IN: A. Black 1996; Cope & Mumford 1955; LaVal 1966; Lindsay 1956; Mumford & Cope 1960; Mumford 1958a, 1953; Brack, Dunlap & Tyrell 1995; Brack, Wilkinson & Mumford 1984; A. Butler 1895; Commissaris 1961; Cagle & Cockrum 1943; T. Carter, S. Carroll & Feldhamer 2000; Collett 1890; Hahn 1909; J. Cope, Koontz & Churchwell 1960; Cope 1964; Cope & Humphrey 1972; Cope & Mills 1970; Gates 1983; S. Johnson et al. 1998; Kirkpatrick & Conaway 1948; J. Cope et al. 1991; Duchamp 2000; Dunlap 1995, 2000; J. Dunn & Hall 1989; C. Kirkpatrick & Conaway 1948; Laval 1966, 1969; Linsay 1956, 1992; Loomis & McDaniel 1971; M. Lyon 1936; R. Martin 1971; McReynolds, Whitaker & Gammon 1979; R. Mills, Barrett & Cope 1977; R. Mills, Barrett & Cope 1976; R. Mumford 1953, 1957-8, 1966, 1973; Mumford & Cope 1964; Mumford & Handley 1956; Mumford & Whitaker 1975; Mumford & Calvert 1960; Mumford & Whitaker 1982; Munson & Keitch 1984; Nold et al. 1997; Pistole 1983, 1988; Quick & Langdon 1882; D. Rice 1955; Richter et al. 1976, 1978, 1993; Rippey & Harvey 1965; Sparks et al. 2000; D. Sparks & Krochmal 2000; Whitaker & Gummer 1999; J. Whitaker & Mumford 1971-2; Whitaker & Rissler 1992-3; Pistole 1983; Provost & Kirkpatrick 1952; Rissler & Whitaker 1967, 1973, 1982, 1990-1; Tyrell, Black & Romme 1994; Veilleux 2000; Vincent, Whitaker & Koemer 1998; Whitaker 1972, 1992, 1998, 2000; Whitaker & Clem 1992; Whitaker, Clem & Munsee 1991; Whitaker & Douglas 1979; Whitaker & Gummer 1993, 2000; Whitaker & Miller 1974; Whitaker, Miller & Boyko 1968; Whitaker & Mumford 1971-2; Whitaker & Rissler 1992-3;

KS: Choate & Fleharty 1975; Choate & Decher 1996; R. Clawson 1987; R. Clawson 1987; Cockrum 1952; Crowle 1980; Choate, Dragoo et al. 1986; Choate & Fleharty 1975; Decher & Choate 1995, 1988; Dunnigan & Fitch 1967; Goslin 1964; E. Hall 1955; C. Hibbard; 1936, 1963; C. Hibbard & Taylor 1960; Hibbard, 1933, 1936, 1944; J. Jones, Fleharty & Dunigan 1967; J. rJones, Hoffmann & Kortlucke 1984; J. Jones, Loomis et al. 1952; Kellogg 1915; Knox 1875; Koopman 1974; Kunz 1971; Kunz, Choate & George 1980; Lantz 1918; C. Long 1961, 1976; Morse & Glass 1960; R. Myers 1965; W. Overall 1974; G. Phillips 1966; Robbins, Engstrom et al. 1977; D. Sparks & Choate 1995, 1998; Tinkle & Patterson 1965; Tinkle & Milstead 1965; Twente 1955; L. Watkins 1970

KY: R. Barbour 1957; MacGregor 1985; R. Wilson 1981b, 1984; Barbour 1963; Bee, Glass et al. 1981; H. Burke 1998; D. Conn & Marshall 1991; W. Davis, Hassell, Rippey 1965; W. Davis, Barbour & Hassell 1968; W. Davis 1965, 1969; W. Davis & Barbour 1970, 1979; R. Ewers & Vaughan 1965; Fessler 1971; Goodpaster & Hoffmeister 1950; J. Hall 1961, 1963-4; J. Hall & Wilson 1966; M. Harvey, Macgregor & Curre 1991; Hassell 1967; T. Hurst & Lacki 1997; T. Hurst 1997; J. Hutchinson & Lacki 1999; Kessler et al. 1981; Kirwan 1968, 1974; Kiser & Elliott 1996; Kiser, Elliott & Whitaker 1998; Lacki, Adam & Shoemaker 1994; Lacki, Burford & Whitaker 1995; Lacki & Huttenhinson 1999; MacGregor 1987, 1993; MacGregor & Evans 1994; MacGregor & Westerman 1982; A. Miller & Kessler 1980; Palmer-Ball 1996; G. Phillips & Mumford 1957; Rabe, Robertson & Robbins 1999; Rabinowitz & Tuttle 1980; Tuttle 1997; Wethington 1996; N. Wilson 1997; R. Wilson 1980-1, 1984a

LA: Hardy 1982; C. Jones & Suttikus 1973; R. Lance 1999; Lance & Garrett 1997; R. Lance & Rogowski 1999; LaVal 1973; Lowery 1936

MA: Cardoza 1986; J. Daniels 1960; Harding 1978; Horwitz 1986; Kreindel 1997; G. Miller 1897

MB: Barclay 1984; Collister 1995; Sealy 1978;

MD: D. Clark & Prouty 1976; H. Hughes 1992; Limpert & Bounds 1999; Paradiso 1965; W. Webster, Parnell and Biggs 1985

ME: G. Zimmerman 1997; Zimmerman & Glanz 1998, 2000

MI: Bowers, Heidt & Baker 1968; Brach, Taylor & Holmes 1984; Cahalane 1932; Constantine 1961a; Kurta 1980; Kurta & Murray 2000; Tibbels 2000;

MIDWEST: D. Carter, Pine and Davis 1966

MN: Cahn 1921; W. Davis 1968; C. Evans 1934; Goehring 1954, 1957, 1972; Nordquist 1987; Norquist, 1988-90, 1998; R. Osborn, Higgins et al. 1996; Paradiso 1969; Rysgaard 1941-2; Steece, Erickson et al. 1982; G. Swanson & Evans 1936; Vavrick & Galli 1993;

MO: Amelon et al. 2000; R. Baker 1983; Barros 1981; Britzke, Bossi & Robbins 1998; Casseday; W. Caire, LaVal et al. 1979; D. Clark 1982; R. Clawson 1987; R. Clawson & Sheriff 1982; Dodd & Kurta 1988; Kurta 1979, 1980-82; Kurta, Hubbard et al. 1992; Lemson 1998; C. Mitchell & Hitchcock 1965; S. Murray 1998; O'Connor & Klomse; Scharf & Jorae 1980; Stones 1980; R. Stones & Holyoak 1970; Wood & Dice 1924; G. Adams & Morris 1971; J. Belcher 1940; Brack & LaVal 1985; Callahan, Drobney & Clawson 1997; D. Clark et al. 1983; R. Clawson 1988-9; R. Clawson, Gray & Gray 1981; Harvey 1975; Hensley & Scott 1995; Easterla 1965; Easterla & Watkins 1970; W. Elliott & Clawson 1999; J. Gardner 1985; Gilkey 1965, 1969; Gunier & Elder 1973; J. Hall & Blewett 1964; Lantz 1918; Laval 1978; Laval, Clawson et al. 1977; LaVal & Laval nd; LaVal & LaVal 1980; Laval, Clawson, et al. 1977; LaVal, Clawson, et al. 1977; B. Martin 1980; N. Miller 1996; N. Miller, Drobney & Clawson 1996; Missouri Dept. 1980; K. Murray, Britzke et al. 1998; R. Myers 1960; R. Myers & Lewis 1955; Neller 1963; Pitts, Schimmelpfenig & Choate 1996; Purdue 1980; Rabinowitz 1982; T. Tucker 1969; L. Watkins 1970; L. Watkins & Shump 1981

MS: C. Carter, Rummel & Guy 1987; Cliburn & Middleton 1983; Kennedy, Randolph & Best 1974; LaVal 1967; Wolters & Martin 2000;

MT: T. Clark et al. 1989; Fegley, Brown et al. 1997; Hendricks, Genter & Martinez 2000; Hoffmann & Pattie 1968; Hoffmann, Pattie & Bell 1969; Hoffmeister 1955, 1959, 1986; Lampe, Jones et al. 1974; LeGrand 1993; W. Matthews & Swenson 1982; J. Swenson & Shanks 1979; Worthington 1991; Zeveloff 1988;

NB: Suppl. Bibil.: Czaplewski 1990-1; ; Czaplewski et al. 1999; P. Freeman, Geluso &

Altenbach 1997; J. Jones 1964; Kunz 1965; Quay 1948; O. Webb, & Jones 1952;

NC: F. Barkalow & Fundeburg 1960; Barnwell 2000; Britzke, Harvey et al. 1999; M. Clark 1990; M. Clark & Lee 1987; P. Horner, Mirowsky & McDonnell 1998; D. Lee & Marsh 1978; Linzey & Linzey 1968; Nelson-Rees, Kniazeff et al. 1968; Padgett & Rose 1991; Rabinowitz 1982; Shryer & Flath 1980; W. Webster 1970; Whitaker, Rose & Poadgett 1997; W. Webster, Parnell and Biggs 1985;

ND: Bailey 1926; J. Jones & Genoways 1966; Genoways 1967; Genoways & Jones 1972

NF - Maunder 1988

NH: Fujita 1986; Sasse & Perkins 1996

New England: Griffin 1940; W.Davis & Hitchcock 1965; Girard et al. 1965; Godin 1997; D. Griffin 1940; J. Hall, Cloutier & Griffin 1957; W. Hood, Bloss et al. 1996; Ladd 1980; Schloyer & Griffiths 1981;

NH: E. Anthony & Kunz 1977; J. Horn & Kunz 2000; Kronfeld, Noga et al. 1998; Krusic, Neefus et al. 1995; Krusic, Yamasaki et al. 1995; Sasse 1993; Sasse & Perkins 1994-5; Yamasaki 2000

NJ: J. Hall 1961; R. Henry 1979; Leffler et al. 1979; D. Morris 1981; Rhoads 1903; Trapido & Kezer 1941; Trapido & Crowe 1946;

NM: Ahlstrand 1974; Allison 1926; J. Baker 1962a; Bogan & O'Shea 1997; Jablonsky 1992b; Koemel 1996; Reeve 1925; Thies, Thies & McBee 1993; Bradley & O'Farrell 1967; F. Brady 1905; D. Buecher, B. Buecher, et al. 1997; Burt & Gannon 1998; G. Cain 1966; Chung 1998; Chung-MacCoubrey 1996; D. Clark 1982; D. Clark et al. 1981; Constantine, 1948-1967, Constantine et al. 1968; Dalquest, Stangl, Jones 1990; DeCarvalho, Gannon et al. 1997; Eads 1956; Eads & Menzies 1948; Gannon 1998; Gannon, Burt & O'Farrell 1998; Gannon, Scott et al. 1996; Gannon & Sexton 1996; Eads, Menzies & Hightower 1956; Eads, Menzies & Wiseman 1956; Egbert 1979; J. Findley 1987; Geluso, Altenbach & Kerbo 1987; Geluso, Altenbach, Wislon 1981; Gosnell 19?; Hummel 1981; Jagnow 1998; C. Jones 1961, 1964, 1965; C. Jones & Findley 1963; Mahunka 1982; R. Mumford, Oakley & Zimmerman 1964; Pape 1999; H. Parker 1932; Perry & Bogan 1996; Perry, Cryan et al. 1997; Ramsey 1998; Roemer 2000; Route 1998; Rowlett 1972; Exton & Gannon 1996; Sexton, Davenport et al 1996; Sexton, Kendall and Gannon 1998; Studier 1968; Thies & McBee 1994; G. Wright et al. 1933

NS: Bleakney 1965; Bleakney 1965; Gould 1936

NY: Bergstrom 1979; D. Clark 1986; S. Franz 1983; Hicks, 1981, 1983, 1989; Horst 1994; Neilsojn 1991; Fenton 1966; Horst 1998; Marr & Beck 1976; R. Murphy 1913; Schwager & Benton 1956; Syme 1991-2, 1994; C. Thomson 1982; Trapido 1942; Trimarchi & Debbie 1977; Trimarchi & Rupprecht 2000;

NV: Allred & Goates 1964; Anon. 1967; Ramsey 1995; L. Ball 1995, 1998; L. Ball 1998; Bradley 1996; Bridgemon 1965; Byrnes, Rowe et al. 1997; Cockrum & Musgrove 1964;1977; Cockrum & Petrozyn 1994; Deacon & Bradley 1962; Geluso 2000; E. Hall 1935, 1946; O'Farrell & Bradley 1969; O'Farrell, Bradley & Jones 1967; Perkins 1928; Ports & Bradley 1996; Ramsey 1995, 1997; Straney, O'Farrell & Smith 1976; Szewczak & Szewczak 1998; Zeveloff 1988

North America: Allen 1894; E. Hall & Kelson 1959; J. Jones et al. 1978, 1982; Schober & Grimberger 1997; Schum 1975;

NW: Humes & Collopy 1996

NWT: Hitchcock 1943

OH: Belwood 1996; Bole & Moulthrop 1942; Brack & Finna 1987; Dood 1987; Keenan 1988; Gottschang 1966; Long & Severson 1969; J. Hine 1929; R. Mills 1971; R. Mills, Barrett & Farrell 1975; P. Osborn, Schultes & Belwood 1996; Rausch 1946; Reardon 1969, 1976; E. Smith 1954; H. Smith et al. 1973

OK: Cadena 1967; Caire 1988; Caire et al 1984; Glass 1955; Glass & Ward 1959; Hensley & Scott 1995; G. Rogers 1972; Saugey et al. 1990; W.F. Blair 1939, 1954; Black 1975b; Bryles et al. 1969; W. Caire 1986, 1988; W. Caire et al. 1989; W. Caire 1985; W. Caire & M. Ports 1981; W. Caire, B. Cox & Levescy 1981; Hardisty & Lacy 1986; W. Caire, Smith et al. 1984; W. Caire, Hornuff & Ports 1981; Choate & Fleharty 1975; Constatine 1958, 1967; Dalquest, Stangl, Jones 1990; Glass 1951, 1958, 1961, 1964, 1975, 1982; Glass & Morse 1959; Glass & Ward 1959; Glass & Halloran 1961; Glass & Humphrey 1970; Hardisty, Caire & Lacy 1987; Hatnie et al. 1998; M. Haynie et al. 1998; S. Humphrey 1969; H. Jackson & Warfel 1933; J. Jones et al. 1990; M. Looney 1971; Macy 1957; Maly 1962; R. Martin & Preston 1970; McDaniel 1982; McDaniel, Harvey et al. 1982; McDaniel, Rick & Gardner 1977; McDaniel, Paige & Tumilson 1979; Morse & Glass 1960; Pritchard 1987; Schackelford & Caire 1990; J. Taylor 1964; Thies & McBee 1994; Thies, Thies & McBee 1993; Tinkle & Patterson 1965; Tinkle & Milstead 1965; Tumilson 1995; 1976; Twente 1955-6; J. Tyler & Scott 1982; Wethington 1994; Wethington et al. 1996-7

ON: G. Buchanan 1985, 1987; G. Buchanan & YoungLai 1987-8; G. Buchanan & Ryan 1983; G. Carmody, Fenton & Lee 1971; Fenton 1966, 1969-70, 1972; T. Harrison 1978; Hickey & Neilson 1995; Hickey, Palen et al. 1996; Hitchcock 1941, 1965; J. Jones 1998; Judd 1953; T. Jung et al. 1999; H., Keen & Kurta 1984; Kenn & Hitchcock 1980; Long & Severson 1969; MacDonald, Matsui & Fenton 1994; Nnagorsen & Nash 1984; Parsons, Smith & Whittam 1986; R. Peterson 1957, 1966; Soper 1923; K. Strong 1978; Toner 1938; Trevor-Deutsch 1973; Wai-Ping & Fenton 1988; P. Wood, Baker & Selden 1984

OR: M. Adam 1998; M. Adam & Hayes 2000; Allbright 1959; E. Arnett & Hayes 2000; Booth 1945; Cressman & Reed 1938; Cross 1976-83, 1989, 1992, 1997; E. Easton 1974-5; Erickson 1994; Hansen 1964; J. Hayes & Adams 1995; Hendricks 1997; Henny et al. 1982; Humes, Hayes & Callopy 1999; S. Lewis 1993; McMahon, Oakley & Cross 1981; Maser, Mate & Dryness 1981; Ormsbee 1995-7; Ormsbee & McComb 1997; Perkins 1987; Perkins et al. 1990;

J. Perkins & Cross 1988, 1991; Perkins & Levesque 1987; Perlmeter 1993, 1997, 1999; Perlmeter & Ormsby 1996; Roest 1948, 1951; D. Thomas 1991; Verts & Carraway 1998; Whitaker, Maser & Keller 1977; Whitaker, Maser & Cross 1980-1; Whitaker, Yunker & Maser 1983; J. Whiteman 1997

OZARKS: Bagley 1981; Cassidy, O'Hagan et al. 1979; McDaniel, Paige & Tumblison 1979; R. Myers 1964; R. Myers et al. 1969; Saugey, Baber & McDaniel 1978; Wethington, Leslie et al. 1996-7

PA: Blackburn & Gannon 2000; Blackburn, Gannon & Little 1998; E. Brown & Ropski 1995; K. Campbell 1997-8; K. Campbell, Schwenk et al. 1998; K. Campbell, Tyson & Hall 1991; Doult, Heppenstall & Guilday 1966; Dunn & Hall 1989; Genoways 1985; J. Hall & Brenner 1968; Mohr 1932-3 1932b, 1939a; Butchkoski, 1986, 1990; J. Hall 1985; J. Hall & Brenner 1968; J. Hart et al. 1992, 1997; J. Hill & Brenner 1965; Mohr 1931-45, 1950-2; Kennedy 1989; Kirkland & Krim 1990; Little, Patrick & Gannon 1998; J. Merritt 1987; Nicholas Sullivan 1976; Petterson 1958; Pham 1997; E. Poole 1932, 1938, 1949; Rambaldini 2000; Rhoads 1903; Sakolsky 1992; Schwenk 1997; Todd 1903; Whitaker & Lukoschus 1982; Whitaker & Long 1998; L. Williams & Brittingham 1993; Witt 1954

PLAINS: D. Armstrong, Choate & Jones 1986

PQ: Beaupre, Caron & Dubuc 1976; Delorme & Juras 2000; Fenton 1969; M. Henry 2000; Hitchcock 1941, 1945, 1949

RI: Cronan & Brooks 1968; J. Simmons 1998

SC: Chastain; 2000; M. Clark 1997; T. Carter, M. Menzel et al. 1998-9; M. Clark, Black & Kiser 1998 ; DiSalvo, Hans & Mancke 1992; Golley 1966; Menzel, Carter et al. 1998; Menzel, Chapman & Miller 1998; P. Horner, Mirowsky & McDonnell 1998; Neuhauser & diSalvo 1972; Nichols 1920; diSalvo, Parker & Doda 1978; K. Reynolds & Parker 1983; W. Webster, Parnell and Biggs 1985

SK: Bouman et al. 1996; Dempster, Godrums et al. 1972; ; Nero 1957; Novakowski 1956; Parsons, Smith & Whittam 1986 Schowalter 1979

SD: K. Andersen & Jones 1971; J. Choate & Jones 1981; P. Cryan 1996-7; P. Cryan, Bogan & Altenbach 2000; J. Jones & Packard 1958; R. Martin & Hawks 1972; Mattson, Buskirk & Stanton 1996; Tigner 1992; R. Turner 1974; R. Turner & Davis 1969; R. Turner & Jones 1968; Tuttle & Heaney 1974; Wilhelm, Choate & Jones 1981; J. Jones & Genoways 1967; M. Kennedy, Kennedy & Baumgardner 1984; R. Martin & Hawks 1972; Mohr 1932; S. Peck 1960, 1964; Rabinowitz 1982; D. Snyder 1993; Spencer et al. 1995; J. Thompson 1965; R. Turner & Jones 1968; Visher 1914;

SW: Cockrum & Petrozyn 1992;

TN: Bole, 1943; Mohr 1932; Rabinowitz 1979; Tuttle 1964, 1974, 1976; Cadle 1992; F. Graves

1969; Graves & Harvey 1974; Gunier 1970; Handley & Patton 1947; M. Harvey 1989; M. Harvey, Macgregor & Curre 1991; Kellogg 1939, 1963; Tuttle 1964 1

SE: LaVal 1967; Bogan 1975; Bole 1935

SW: Bogan 1973; Burns et al. 1956; Kruttsch 1975; Cockrum & Petrozyn 1992; J. Findley 1972-3; Genoway & Jones 1969; Zeveloff 1988

TX: Blair 1952; Booth, 1985; Eads 1956; D. Jameson 1956; McCracken 1984; McMurray & Russell 1982; Milstead & Tinkle 1959; Mollhagen 1970; R. Packard & Mollhagen 1971; Raun & Baker 1959; G. Rogers 1972; Toomey 1989a, 1992a, 1993a; W.F. Blair 1952, 1954; Borell & Bryant, 1942; K. Burns & C. Farinacci 1995; K. Burns, Farinacci & Murnane 1956; B. Byers 1960; Cagle 1950; Cameron et al. 1997; S. Chapman & Chapman 1990; Choate 1996; D. Clark & Lamont 1976; Clauser m1989, 1990; Constatine 1948, 1958, 1962, 1966, 1967; Constatine, Tierkel 1968; Cutler et al. 2000; Dalquest 1981; Dalquest & Roth 1971; R. Davis, Herreid & Short 1962; W. Davis 1940, 1971, 1974; W. Davis & Robertson 1944; Dixon, Foxworth et al. 1997; Dooley 1974; Dooley, Bristol & Canaris 1976; S. Dorsey 1977; Dowler et al. 1992; Eads, Wiseman & Menzies 1957; Easterla 1970, 1973, 1976; Easterla & Whitaker 1972; Fenton 1969; Foxworth & Dixon 1998; J. Frank et al. 2000; Genoways, Baker & Cornely 1979; George & Strandtman 1960; Goetze & Yancey 1995; Goetze, Manning et al. 1996; A. Harris 1971, 1976; J. Hermann 1950; Herreid 1957, 1960, etc.; Hight 1990; Higginbotham 1999-2000; Higginbotham, Ammerman & Dixon 1997-9; Hollander et al. 1987; J. Horn et al. 2000; Horner, Fleming & Tuttle 1990; Horner & Mirowsky 1996; Horner 1995; Horner & Maxey 1998; P. Horner, Mirowsky & McDonnell 1998; M. Hovorka 1996; J. Jacobs & Bagley 1989; J. Jones 1993; J. Jones & C. Jones 1992; J. Jones, Manning et al. 1987, 1993; J. Jones 1993; J. Jones, Young & Schmidly 1985; Jordan 1986a; Judd 1967; Keeley & Tuttle 1997; Kennedy & Vreeland 1997; Kiser 1995; Kruttsch & Hughes 1959; LaVal 1973; Y. Lee 1996, 1998; Leo 1993; Lollar 2000; Manning et al. 1987; Manning, C Jones et al. 1988; McCarley 1959 1986; Medellin 1994; Michael et al. 1970; Mirowsky 1998; Milstead & Tinkle 1959; Mohr 1948; P. Morton 1994; P. Morton & Schmidly 1993; O'Farrell & Bradley 1977; R. Packard 1966; R. Packard & Judd 1968; R. Packard & Mollhagen 1971; W. Phillips 1901; Pool & Schlegel 1984; G. Raun 1961; Raun 1960; Raun & Baker 1958; M. Rhodes 1997; Ridlehuber & Silvy 1981; Ritzi & Richerson 1998; Ritzi, Dixon & Richerson 2000; Ritzi, Walker & Honeycutt 1998; Sandle et al. 1999; D. Scarbrough 1989; Scheel, Vincent & Cameron 1996; Schmidly 1977, 1983; Schmidly & Jones 1984; Schmidly, Wilkins et al. 1977; N. Scott 1981; Short, Davis & Herreid 1960; Specia and Ubelaker 1976; Stihler & Hall 1993; Stager 1942; Stangl, Dalquest & Grimes 1996; Tangl & Jones 1987; Tamsitt, 1953-4; W. Taylor & Davis 1947; Thies 1994; Tinkle & Patterson 1965; Tinkle & Milstead 1965; Wahl 1993; Wahl 1986, 1993; J. Warner, Davis & Grimes 1962; Whitaker, Easterla & Fain 1987; K. Wilkins, Boer et al. 1979; Yancey, Goetze et al. 1995; Yancey & Jones 1996-7; Rancey, Raj et al. 1997; Yancey, Roberts & Jones 1994, 1996; Yancey, Raj et al. 1997

US: Barbour & Davis 1969; J. Cooper 1970-1; W. Hamilton 1943; LeConte 1856; Honacki, Kinman & Koeppl 1982

UT: D. Allred & Beck 1966; D. Armstrong 1982; Benson 1954; Brennan & Beck 1956; B.

Coleman, Sherwin & Rogers 1999; Durrant 1952, 1988; Durrant, Lee & Hansen 1955; Easterla 1965-6; Hansenyager 1980; Hardy 1941, 1949; Kirkland 1981 Krishtalka & Stucky 1984; Mollhagen & Bogan 1996; Musser & Durrant 1960; Padgett & Rose 1991; Poche 1975, 1979; Poche & Bailie 1974; Poche & Ruffner 1975; Ruffner, Poche et al. 1979; Sherwin, Haymond et al. 1996; Sherwin & Rogers 1996; Twente 1960; Pruszek & Bowles 1986; Twente 1960; Zeveloff 1988

VA: H. Bryan & MacGregor 1987; Conrad 1962, 1964; Rogers 1952; Conrad 1961-2; Dalton, Brack & Williams 1989; Handley & Patton 1947; Hobson & Holland 1995; Holsinger 1964, 1982; E. Hooper & Cady 1941; D. Johnson 1950; Kirwan 1968, 1974; Leffler et al. 1979; J. Lewis 1940; P. Miller 1993; Padgett 1987; N. Rogers 1952; Tifton 1986; Tipton & Coggin 1977; Tipton, Tipton & Coggin 1979; T. Walker et al. 2000; R. Warner & Czaplewski 1981; W. Webster, Parnell and Biggs 1985; Whitaker, Rose & Padgett 1997

VT: Barr 1951a; Fichteel 1993; D. Griffin & Hitchcock 1965; Hitchcock 1967; Kirk 1922; Sasse & Perkins 1996; R. Stevens et al. 1993; D. Thomas 1995; Menaker 1962; Trombulak et al. 2000;

WA: D. Brown 1935; T. Brown 2000; Flahaut 1933; Senger 1969, 1970, 1975; Dicks 1935; Elliot 1899; King 1998; Krishtalka & Stucky 1984; R. Lunder & Herstad 1986; McCorquodale et al. 1997; Perkins 1980, 1985; Senger 1969, 1973, 1986; Svihla 1938; W. Taylor & Shaw 1929; D. Thomas 1991; Whitfield 1980; D. Williams 1968

WI: R. Adams 1988; W. Davis & Lidicker 1955; Coggins et al. 1981-2; C. Cory 1912; Dice 1919; Greeley & Beer 1949; J. Hedges 1959; H. Jackson 1919, 1961; Knoche & Stumpf 1990; ; S. Lewis 1997; S. Leis & Pavwoski 1999; C. Long 1976; Long & Severson 1969; Pavwoski & Lewis 1998; Rupprecht 1980-1; Senlius 1994, 1998, 2000; Senlius & Reinartz 1998; Stumpf 2000; Tallman 1983, 1991; D. Taylor & Row 1999; H. Walley 1974

WV: R. Anderson 1991; R. Barbour 1951a; Conrad 1962, 1964; Bradshaw, 1990; D. Clark & Prouty 1976; Conrad 1961-2; Dalton 1986; Delfino 1982-3; J. Findley 1954; J. Fowler 1943; Frum 1944, 1946; Garton 1987; Grady, 1984, 1990; 1991, 1994; Handley 1956; Hight 1990; J. Jacobs & Bagley 1987; Kaye & Grady 1993; Kellogg 1937; Krutsch 1961; Lipske 1984; McKeever 1952; Menzel, Johnson et al. 2000; Stihler 1996-7; D. Stihler, Dalton et al. 1996; Stihler 1996-8; Stihler & Hall 1993; Stihler, Jones & Wallace 1997-8; Tinkle & Milstead 1965; Tipton 1984; R. Turner 1974; L. Wilson 1946; W. Wilson 1946

WY: Boyce 1980; T. Clark & Stromberg 1987; Horton, Anthony & Kitchin 1974; Luce & Priday 1996; Mickey 1961; Quay 1948; S. Skinner 1990; D. Stevenson, Oakleaf et al. 1996; Stromberg 1981-2; R. Travis 1979; Worthington 1991; Zeveloff 1988

Yukon - P. Youngman 1975

Suborders incl.

Megachiroptera (incl. Pteropodidae)

Microchiroptera (incl. Emballonuridae, Molossidae)

Superfamily Noctilionoidea (incl. Phyllostomidae)

Bat families incl.

Desmodontidae - subsumed in Phyllostomidae

Emballonuridae Gervais, 1856 (sac-winged or sheath-tailed bats) (*Emballonura*). **Bibl.:** Dunlop 1995-6; Robbins 1983; Robbins & Sarich 1988;

Molossidae Gervais, 1856 (free-tailed bats; free-tailed, bulldog & mastiff bats)

(*Eumops*, *Molossus*, *Nyctinomops*, *Tadarida*) (80 sp. in 12 genera)

Bibl.: R. Baker 1976; Freeman 1981; Vaughan & Bateman 1980; V. 1966; D. Walton 1967

Mormoopidae (moustached, naked-backed & ghost-faced bats (incl. *Mormoops*, *Pteronopus*)

Bibl.: J. Smith 1972;

Phyllostomidae Gray, 1825 (incl. Desmodontidae) (New World leaf-nosed bats) (incl. *Desmodus*, *Diphylla*, *Leptonycteris* (Glossophaginae), *Macrotus*) **Bibl.:** Baker 1977; R. Baker & Carter 1979; R. Baker, Jones & Carter 1979; Honeycutt 1981; Honeycutt & Sarich 1987; Koopman 1981; P. Tucker 1985-6; P. Tucker & Bickham 1986; Van Den Bussche 1992;

Pteropodidae Gray, 1821 (flying foxes) (*Pteropus*)

Vespertilionidae Gray, 1821 (plain-nosed or vespertilionid bats)

Subfamily Vespertilioninae (incl. *Antrozous*, *Corynorhinus*, *Eptesicus*, *Euderma*, *Idionycteris*, *Lasionycteris*, *Lasiurus*, *Nycticeius*)

Antrozous H. Allen, 1862 - Vespertilionidae bats, Vespertilioninae subfamily (1 extant species in US & Canada)

Antrozous (*Antrozous*) *pallidus* (Le Conte, 1856) (= *A. bunkeri*, *koopmani*, *minor*, *pacificus*, *packardi*) (pallid bat/ Queretaro & Baja CA (Mex.) to AZ, extreme scBC, CA, s,nwCO, swCO, swKS, NM, s,nwNV, wOK, OR, s,seUT, eWA, wTX/ federal T&E species of concern in AZ/ TTx in CA, NV, TX)

Antrozous pallidus **Bibl.:** Arganbright 1984; L. Ball 1998; Bassett & Wiederhielm 1982; Bassett & Wiederhielm 1982; L. Beasley 1985-6; Beasley, Pelx & Zucker 1984; L. Beasley & Smith 1983-4; G. Bell 1980, 1982; Beck & Rudd 1960; Beck, Beck & Howard 1982; G. Bell 1982; Borell 1942; P. Brown 1982; P. Brown, Berry et al. 1997; P. Brown, Grinnell & Harrison 1978; P. Brown, Grinnell & Narims 1985; S. Lewis 1993; Sidner, 1997, . K. Chapman, McGuinness & Brigham 1994; Cressman & Reed 1938, Dalquest & Roth 1971; R. Davis 1969; Dickey 1922; Dobkin, Kattel & Gettinger 1995; Engler 1943; B. Fowler & Zook 1982; Fuzessery 1991, 1994, 1997; Fuzessery, Battenhoff et al. 1993; Fuzessery & Hall 1996; Fuzessery, Zoltan & Pollack 1994-5; C. Gaudet 1981; Grindal, Collard & Brigham 1991; Gaudet 1983; J. Harrison, Brown & Huang 1978; hatt 1923; Herreid 1961; Hermanson 1977; R. Herd 1987; Hermanson & Altenbach 1981; Hermanson & O'Shea 1983; Herrera Montalvo et al 1993; Herrera Montalvo, Fleming & Findley 1991; Huey 1936; D. Johnston 1993, 1997; D. Johnston & Fenton 1997;

Kennedy & Fuzessery 1991; Krull 1989; S.Lewis 1990-1, 1993, 1994, 1996-7; Licht & Leitner 1967; Lutch & Miller 1996; Manning, C Jones et al. 1988; C. Martin 1974; C. Martin & Schmidly 1982; Monday 1993; Morse & Glass 1960; K. Muller 1998; O'Shea & Vaugh 1977; Orr 1954; Oxberry 1979; Racey 1933; Shryer & Flath 1980; Sidner 1982, 1988, 1997; Sidner & Davis 1988; H. Taylor, Gould et al. 1974; Trune & Slobodchikoff 1976; Vaughan & O'Shea 1976; T. Williams 1984

Antrozous pallidus bunker (Hibbard, 1934)(now in wOK, nTX)

Antrozous pallidus pallidus ((*Vespertilio p.* LeConte, 1856) H. Allen, 1864) Cockrum, 1960 (now in AZ, NM, OK, w,sTX, UT/ Tx in AZ, NM, OK, TX, UT)

Antrozous undescr. sp. (large extinct sp. in FL cave)

Artibeus Leach, 1821 - Phyllostomidae bats, Subfamily Stenodermatinae

Artibeus (*Artibeus*) *jamaicensis* Leach, 1821 (epigeal in Ecuador, Venezuela, Amazonian Brazil (if *A. obscurus* or *A. planirostris* is included) n. to Mex., Caribbean, FL Keys (sFL)/ Jamaican fruit-eating bats) **Bibl.:** Cotter 1985; Farney 1976; Marques 1993; D. Morrison 1975; Tuttle 1968

Choeronycteris Tschudi, 1844 - Phyllostomidae bats, Subfamily Glossophaginae (one species in US)

Choeronycteris mexicana Tschudi, 1844 (long-tongued bat; Mexican long-tongued bat/ now in extreme sCA (probable), sAZ, extreme swNM, swTX (rare) to South America/ **Bibl.:** Cryan & Bogan 1999; Monday 1993; R. Mumford & Zimmerman 1962; Nicolay, Dumont & Winter 2000; Peachey 1997; R. Sidner & Houser 1990; Van de Water & Peachey 1997

Corynorhinus H. Allen, 1865 (originally as valid genus, then changed to subgenus of *Plecotus* E. Geoffroy, 1818, then reinstated as valid genus) Vespertilionidae bats, Vespertilioninae subfamily subfamily (3 extant species in US or Canada) **Bibl.:** A. Stock 1983

Corynorhinus alleganiensis (*Plecotus a.* Gidley & Gazin 1933) (extinct/ Pleist. in Cumberland C.,MD),

Corynorhinus rafinesquii Lesson, 1827 (= *Plecotus r.*, *P. lecontei*, *P. macrotis*) (Rafinesque's big-eared Bat/ now in sw,seVA, s. to FL, w. to sIN, sWV, sOH, seIL, seMO, & extreme eOK & TX/ Tx in AL, AR, IL, IN, KY, MO, NC, OH (accidental), TN, WV, VA/ AL & NC T&E; IL T&E, KY & GA T&E S3?, global G3G4 rank)

Corynorhinus rafinesquii **Bibl.:** Bagley & Jacobs 1985; M.Clark 1995; M. Clark 1991, 1995, 1997; M. Clark, Black & Kiser 1998; S. Ellis 1988; Fessler 1971; Finn 1995-7; Finn et al. 1999; D. Heath et al. 1983; Hoffman, Cochran et al. 1998; T. Hurst 1997; T. Hurst & Lacki 1997; J. Hutchinson & Lacki 1999; J. C. Jones 1971, 1977; R. Lance 1999; Lance, Hardcastle & Tally 1998; R. Lance & Leberg 1999; McDonnell & Clark 1999; Mirowsky 1998; O. Pearson, Koford & Pearson 1952; Mirowsky 1998; R. Pitts 1988; Qumsiyeh & Bickham 1993; Saugey, McDaniel et al. 1993; Wolters & Martin 2000; Thies 1994; Yancey & Jones 1996

Corynorhinus rafinesquii humeralis (Le Conte, 1831) (Rafinesque=s big-eared bat/ Tx in seOK)

Corynorhinus townsendii (= *Plecotus t.* Cooper, 1837) Cooper (Wisconsinan Townsends' Big-Eared Bat in Dry C., TN & Clark's C., VA/ now in West, n. to sBC, e. to sMT, eSD, CO (except ne), swOK, wOK, wTX & extreme wNB, s. to Oaxaca (Mex.); *C.t. ingens*: in Ozarks (swMO, nwAR, extreme neOK, seNB) & *C.t. pallescens* in eKY, WV (except extreme n,ne), swOH, wVA & extreme nwNC & neTN/ Tx in AR, CA, CO, IN, KS, KY, MO, MT, NV, OH, OR, TN, TX, WV, VA, WA)

Corynorhinus townsendii **Bibl.:** M. Adam, Lacki & Shoemaker 1994; Anthony & Kitchin 1976; Bagley 1981; M.Barclay & Barclay 1990; Barr 1963c; Booth 1945; Burford & Lacki 1995; Cabeza de Baca 1986; B. Clark 1991-2; B. Clark, Clark & Leslie 1996-7, 1990; Clark M. Clark & Lee 1987; M. Clark 1990; M. Clark & Lee 1987; Conrad 1961; Cross 1992; Dobkin et al. 1995; England et al. 1989; Gentner 1989; Goslin 1954; Graham 1966; Grigsby & Puckette 1982; Guilday 1961a; Guilday & Irving 1969 (paleo); Harvey et al. 1978; Harvey & Barkley 1990; M. Harvey, Cassidy & O'Hagen 1979; Hensley & Scott 1995; Hughes 1968; Tipton 1986; B. Clark 1991; Conrad, 1961, 1963; Dalquest 1947; Dalton, Brack 1986; Dalton, Brack & McTeer 1986; Dobkin, Kattel & Gettinger 1995; Dyas 1977; R. Graham 1966; J. Hall 1963; Handley 1955, 1959; Hoffmeister & Goodpaster 1964; Horacek 1975; J. Horn 1988; J. Jacobs & Baghley 1987; Kunz & Martin 1982; Lacki, Adam & Shoemaker 1994; Lengas & MacMahon 1996; Maly 1962; Marcot 1984; McKee 1932; Mika, Sherwin & Strickland 1999; Monday 1993; Nowak 1980; Perkins & Levesque 1987; E. Pierson 1988; E. Pierson & Fellers 1993; E. Pierson & Rainey 1991, 1996; Pupek; Rippey & Harvey 1965; Qumsiyeh & Bickham 1993; Schommer & Perkins 1993; Scheffer 1930; Senger 1969, 1970, 1973, 1975, 1986; D. Stihler, Dalton et al. 1996; Stihler 1996-8; Stihler, Jones & Wallace 1997-8; 1996; Tipton 1983; Tumblison 1990; United States Fish & Wildlife Service 1995; Wethington 1994; Wethington et al. 1997; Wethington et al. 1996-7

Corynorhinus townsendii australis (Handley, 1955) (now in nMex., wTX/ federal T&E)

Corynorhinus townsendii ingens (Handley, 1955) (type locality - Hewlitt Cave, WA Co., AR/ now in AR, MO, OK, nTX/ Ozark big-eared bat/ federal T&E/ Tx in AR, MO, OK, VA, WV)

Corynorhinus townsendii pallescens (*C. macrotis p.* G.S. Miller, 1897) Handley, 1959 (Western Big-eared or Townsend=s big eared bat/ now in sAZ, CA, BC, CO, NM, wOK, UT/ Tx in sAZ, CO, NM, wOK, UT/ OK state special concern species; US candidate species)

Corynorhinus townsendii t. (Western Big-eared or Townsend=s big eared bat/ now in BC, CA, ID, NV, OR, nwUT (possible), WA)

Corynorhinus townsendii virginianus Conrad 1963 (now in KY, VA, WV, NC/ Tx in KY, VA, WV, NC federal T&E in NC, TN; MO T&E; KS S2 Species of concern, global G4 rank) **Bibl.:** Dalton, Brack & Williams 1989;

Desmodus Wied, 1824 (vampire bats) Phyllostomidae bats, Subfamily Desmodontinae
Bibl.: Altenbach 1988; Bhatnagar 1988; R.Baker et al. 1988; Machado-Allison 1968; C. Ray et

al. 1989; U. Schmidt et al. 1990aa

Desmodus archaeodaptes G.S. Morgan, O. Linares & C.E. Ray, 1988 (type locality in Irvingtonian Haile, Alachua/ extinct, in FL Pleist. sinkholes/ status unclear, may = *D. stocki*)

Desmodus stocki Jones, 1958 (*D. magnus* Gut, 1959) (extinct Stock's vampire bat in Big Bend Natl. Park (TX); Potter Cr. C. (CA), Mammoth C. (KY or undescr. extinct species) & Haile IIB & Reddick (Marion Co.), FL (Illinoan)

Desmodus undet. sp. or species (Pleist. extralimital in Friesenhahn C., TX & (near *D. draculae* G.S. Morgan, O., Linares & C.E. Ray, 1988), New Trout C.(30-17,000BP),WV & Rancholabrean Arredondo fissure fillings, Alachua Co.,FL) **Bibl.:** Grady 1991

Diphylla Spix, 1823 (hairy-legged vampire bats) Phyllostomidae bats, Subfamily Desmodontinae

Diphylla ecaudata Spix, 1823 (hairy-legged vampire bat/ now in TX to ePeru & Brazil/ one in tunnel, Val Verde Co., TX)

Emballonura Temminck, 1838 (sheath-tailed bats) Emballonuridae bats (one species in US)
Emballonura semicaudata (Peale, 1848) (= *E. sulcata*) (Mariana sheath-tailed bat/ American Samoa/ Species of Concern T&E) **Bibl.:** Freeman 1989; T. Griffiths 1990; Hilton et al. 1990

Eptesicus Rafinesque, 1820 - Vespertilionidae bats, Vespertilioninae subfamily. **Bibl.:** Heller & Volleth 1984 (1 extant species in US & Canada)

Eptesicus (*Eptesicus*) *fuscus* (*Vespertilio* f. Palisot de Beauvois, 1796; *V.f. grandis* Brown, 1908; *Adelonycteris* f.) (= *E. arquatus*, *bahamensis*, *bernardinus*, *carolinensis*, *cubensis*, *dutertreus*, *hispaniolae*, *lynni*, *melanops*, *melanopterus*, *miradorensis*, *osceola*, *pallidus*, *peninsular*, *pelliceus*, *petersoni*, *phaiops*, *ursinus*, *wetmorei*) (big brown bat/ Pleist. Trout C.,WV; New Paris #4(11,300BP),PA & Cumberland C.(MD)/n. Brazil n. to parts of Caribbean & most of NA except AK (perhaps), nCanada (except ncSK), neME/ Tx in AL,AR (or Ac), CA, CO, FL, IA, IN, KY, MD, MO, NC, NJ, NS, NV, OH, OK, PA, TN, TX, WV, VA, WA/ (sub)fossil in sNM; LA state T&E)

Eptesicus fuscus **Bibl:** R. Adams 1988; R. Adams, Thibault & Petru 1999; Adkins & Wasserman 1993; Altes 1981, 1989; Audet 1987; V. August 1984; Banfield 1948, 1950; R. Baker 1990; R. Barclay 1994-5; S. Barnard 1991; Beer 1953; Betts 1998; Betts & Haynes 1994; Bhatnagar & Audet 1987; Bingham 1986; H. Black 1972; Boatright 1999; Boatright & Covey 1995; Brenner 1968; Brigham 1984-6, 1988; J. Christian 1956; C. Burnett 1982; C. Burnett 1982-3; C. Burnett & Kunz 1982; C. Burnett et al. 1998; Cadle 1992; Cahalane 1932; Casseday & Covey 1985, 1992; Casseday, Covey & Grothe 1997; Casseday, Ehrlich & Covey 1994; Casseday, Kobler et al. 1989; J. Christian 1953; Cuddihee & Fonda 1981; Duchamp 2000; Durden, Best et al. 1992; Durrant 1988; D. Gould 1956; Guilday 1967; Hamilton 1996; Kalcounis 1996; Phillips 1966; Poussin 1982; Sidner, 1997; Twente 1954; Cartwright & Kirkwood 1990; Casseday, Covey & Grothe 1997; J. Christian 1956; D. Clark 1976, 1978; D. Clark & Lamont 1976; Cotter 1985; Cope, Hendricks & Telfair 1970; J. Cope, Koontz & Churchwell 1960; Cope & Mills 1970;

Coutts, Fenton & Glen 1973; Covey & Casseday 1986; Covey & Casseday 1996; Cross & Huibregtse 1964; Cuddihee 1980; Cuddihee & Fonda 1981-2; W. Davis, Barbour & Hassell 1968; W. Davis 1986; W. Davis & Luckens 1966; W. Davis & Mumford 1962; Dear 1995, 1998; Dear, Simmons & Fritz 1993; Dear & Suga 1995; deCarvalho, Gannon & Ruedas 1998 Denzinger & Schnitzler 1998; Dood 1987; Dicks 1935; Drumm 1993; Dubey et al. 1998; Durrant 1988; Ehrlich, Casseday & Covey 1997; Ellins 1972; Engler 1943; Fattu & Suthers 1981; Feng, Simmons & Kick 1978; Ferragamo 1994; Ferragamo, Haresign & Simmons 1998; Fonda & Cuddihee 1982; Fonda & Herbener 1983; Fonda, Herbener & Cuddihee 1983; B. Forbes 1989; Frederickson & Jen 1984; Gates 1937; C. Gaudet 1981; Geggie 1983; Goehring 1954; Haplea, Covey & Casseday 1994; B. Harris & Holting 1977; Hartley 1992; W. Hood, Bloss et al. 1996; Hovorka 1996; Gaudet 1983; Geggie 1983; Geggie & Fenton 1985; Glover 1933; Goehring 1957; Griffiths 1983; Gummer & Whitaker 1993; J. Hall & Davis 1958; I. Hamilton & Barclay 1994, 1998; I. Hamilton 1995-6; Hamr 1978; Hamr & Bailey 1985; B. Harris 1976; Hermanson 1995, 1997; Hitchcock, Keen & Kurta 1984; Hilton et al. 1990; Hollis 2000; Holloway 1998; Holroyd 1991, 1993; Holt 1969; Howell 1990; Hoying & Kunz 1981; Jen et al. 1987, 1989; Jen 1980, 1982, ; Jen & Chen 1988; Jen & Kamada et al. 1984; Jen, Sun & Kamada 1982; Jen, Sun & Lin 1989; Jen & Schlegel 1980, 1982, 1987; Jen, Vater et al. 1981; J. Jones et al. 1990; Kalcounis & Brigham 1998; Kamada, Wu & Jen 1992; Kazial, Burnett & Mitchell 1998; Kazial & Masters 2000; Keeler et al. 1990; Kick 1980, 1982; Kilburn, Best et al. 1990; Kirkwood & Cartwright 1994; Kluger 1970; Koay 1997; Koay, Heffner & Heffner 1997; Koontz & Davis 1991; Koay 1997; Koopman 1974; Krulin 1969; Krutsch 1946; Kunz & Chase 1983; Kunz & Fenton 1973; Kurta & Baker 1990; Kurta, Bell, Nagy & Kunz 1989; Kunz, Stack & Jenness 1983; Kurta 1984; Kurta & Foster 1994, 1998; Kurta, Nagy et al. 1987; Kurts, Kung et al. 1987; Lausen 2000; B. Lawrence, & James A. Simmons 1981; Layne 1992; Lemson 1998; C. Long 1971; Long & Severson 1969; D. Lowe et al. 1990; Luckens, Van Eps & Davis 1971; Lutch & Miller 1996; Manning et al. 1989; Masters et al. 1985, 1989, 1990, 1991; Masters and Raver 1993; Masters, Raver et al. 1997; F. Mayer 1988; McCarty & Jen 1982-3; Mendonca et al. 1993, 1997, Merriam 1989; Milam & Best 1994; J. Miller, Jones & Kin 1973; P. Miller 1995; C. Mitchell & Hitchcock 1965; Mogdans & Schnitzler 1990; Monday 1993; G. Moore & Raymond 1970;; Moss & Schnitzler 1989; Nader & Hoffmeister 1983; Neuweiler 1981; Morrell, Shoults & Vann 1996; M. Morris 1995; R. Mumford 1969; Nester 1993; Obrist 1989; Oelschlaeger et al. 1998; Pagels & Blem 1973; D. Parker 1996; P. Patterson & Davis 1968; Pederson 1989; G. Phillips 1966; Pinheiro, Wu & Jen 1991; Pistole 1989; Pouissin 1982 ; Pouissin, Drake And Simmons 1982; Pouissin & Schlegel 1984; A. Price, McDaniel & Tumilson 1982; Rasmuson & Barclay 1992; Rauch & Beatty 1975, 1977; Reagan & Brueckner 1951; W. Reeder 1965; Reith 1978; K. Reynolds 1941; S. Rhoads 1902; Rysgaard 1941-2; ; R. Russell, Suzanne et al. 1998; Rydell 1990; Rysgaard 1942; Saillant 1995; Schowalter & Allen 1981; Schowalter & Gunson 1979; Sevic & Studier 1990, 1992; Shimozawa, Sun & Jen 1984; Sidner & Davis 1988; Silvia, Kronfeld et al. 1998; J. Simmons 1971, 1979, 1993; J. Simmons & Kick 1984; J. Simmons, Kick et al. 1988; Simmons, Moss & Ferragamo 1990; Solberg et al. 1999; Spoonamore 1978; Stack 1985-6; Stack & Kunz 1981; Studier, Beck & Lindeborg 1967; Studier, Sevic et al. 1994; Surlykke 1992; Szewezak & Jackson 1991-2; H. Taylor, Gould et al. 1974; Teng 1989, 1991; Teramino 1996; Tiller 1978; Toner 1938; Teramino 1996; Tiller 1977; Turmelle, Sorenson & Kunz 2000; D. Valentine 1995; S. Walker 1996; H. Walley, Southern & Zar 1969; N. Weber & Findley 1970; Wetmore 1936; Wilkinson 1993-4; Whitaker & Gummer 1999; Wilkinson & Barclay 1997; L. Williams & Brittingham 1997; R. Williams 1960;

Winsatt 1983; Wotton 1994; Wotton & Simmons 1991; Wotton, Haresign & Simmons 1995; Wu 1993; Wu & Jen 1991, 1996; Wu, Jen & Kamada 1991; Yacoe 1981-3; Zhang & Jen 1982; Zhang, Sun & Jen 1987; Zook & Dicaprio 1988

Eptesicus fuscus (*Vespertilio* f. Palisot de Beauvois, 1796) (big brown bat in Pleist. Trout C., WV; New Paris #4(11,300BP), PA & Cumberland C.(MD)/extant in NA except AK, nCanada, neME/ Tx in AL, AR (or Ac), CA, CO, FL, IA, IN, KY, MD, MO, MT, NC, NJ, NS, NV, OH, OK, PA, TN, TX, WV, VA, WA, WI, WV/ (sub)fossil in sNM; LA state T&E)

Eptesicus fuscus f. (*Vespertilio* f. Palisot de Beauvois, 1796) (most of East & sCanada except FL)

Eptesicus fuscus bernardinus Rhoads, 1902 (= *E.f. melanopterus* Stone) (sBC s. to cCA)

Eptesicus fuscus miradorensis (*Scotophilus* m. H. Allen, 1866) (Panama n. to swTX)

Eptesicus fuscus osceola Rhoads, 1902 (in FL, seGA)

Eptesicus fuscus pallidus Young, 1908 (now in West from s,cSK, eWA, eOR, sCA east to wSD, wND, wKS, OK, UT, wTX)

Eptesicus grandis Brown, 1908 = *E. fuscus*

Euderma H. Allen, 1892 - Vespertilionidae bats, Vespertilioninae subfamily (1 extant species in US & Canada)

Euderma maculatum (J.A. Allen, 1891) (spotted bat; death=s head bat/T&E species of concern in AZ, NM/ Queretaro (Mex.) n. to wMT, AZ, extreme seBC, seCA, NV, ID, NM (except nw), UT (except extreme nw), wNM, eOR, swCO, swTX/ mostly cliffs, Tx in CO, WY)

Euderma maculatum **Bibl:** Ashcraft 1932; P. August & R. Digman 1973; Benson 1954; T. Best & Hudson 1996; H. Black 1976; Bleich & Pauli 1988; Constantine 1961a; Constantine, Humphrey & Herbenick 1979; Durrant 1988; Durrant, Lee & Hansen 1955; Easterla 1971, 1976; Fenton, Tennant & Wyszecski 1987; R. Finley & Creasy 1982; Findley & Jones 1965; Fullard & Dawson 1997; Gentner 1989; Navo et al. 1992; Deacon & Bradley 1962; Easterla 1965; Geluso 2000; Grinnell 1910; E. Hall 1934-5; Handley 1955, 1959; Leonard 1982; M. Leonard & Fenton 1984; S. Lewis 1996; McMahon, Oakley & Cross 1981; Medeiros & Heckmann 1971; Mickey 1961; G. Miller 1903; Monday 1993; Navo, Gore & Skiba 1990; H. Parker 1952; Perry, Cryan et al. 1997; Poche 1975, 1979; Poche & Bailie 1974; Poche & Ruffner 1975; Poche & Keirans 1975; J. Priday & Luce 1999; Pride & Luce 1999; Rabe, Siders et al. 1998; R. Reynolds 1981; Shen, Chen & Jen 1997; Siders, Garcia de la Cadena et al. 1997; Siders, Rabe et al. 1997; Siders, Miller et al. 1996; Stager 1957; ; A. Stock 1983; J. Taylor & Wai-Ping 1987; H. Tucker 1957; Vonhof 1993, 1996; Vorhies 1935; Wakins 1977; D. Williams, Druecker & Black 1970; Wong & Fenton 1982; Woodsworth, Bell & Fenton 1981;

Eumops Miller, 1906 (mastiff-bats) Molossidae bats (3 extant species in US) **Bibl.:** R. Martin 1977; Pirlot 1965

Eumops glaucinus glaucinus (*Dysopes* g. Wagner, 1843; *Molossides floridanus* Allen, 1932; *E.*

floridanus) (now in sFL, s. to nSouth America/ Florida or Eastern mastiff-bat/ federal listed endangered/Tx? in FL; Pleist. FL; FL Holocene in Monkey Jungle sinkhole)

Eumops glaucinus **Bibl.:** Belwood 1981; D Koopman 1974; R. Martin 1977; Robson, Mazzotti & Parrott 1989; J. Warner, Patton et al. 1974; J. Warner, Patton et al. 1974

Eumops glaucinus floridanus (*Molossides floridanus* G.M.Allen, 1932)

Eumops perotis (*Molossus p.* Schinz, 1821) (western mastiff bat/ Pleist. of Centipede C., TX/ now in swTX, swNM, AZ (except ne), s,wcCA, & extreme sNV/ Tx in AZ)

Eumops perotis **Bibl.:** T. Best, Kiser & Freeman 1996; Bradley & O'Farrell 1967; Castner, Snow, Noel et al. 1996; Cockrum 1960; Constantine, Humphrey & Herbenick 1979; T. Cox 1965; Dolan & Honeycutt 1978; Eger 1977; A. Howell 1920; H. Johnson & Trapp 2000; Krutsch 1955; Leitner 1962, 1966; Little 1920; Monday 1993; O'Farrell & Bradley 1977; Pirlot 1965; Rowlett 1972; Ryan 1991, 1992; Siders, Miller et al. 1996; D. Walton & Kimbrough 1970; J. Warner, Patton et al. 1974

Eumops perotis californicus (*Molossus c.* Merriam, 1890) Sanborn, 1932 (Western mastiff bat; greater Western mastiff bat (now in AZ, CA(extirpated), NM (very rare), TX(extirpated?)/ Tx in AZ/ AZ state species of special concern) **Bibl.:** Kruttsch 1944; von Blocker, Jr. 1932

Eumops underwoodi Goodwin, 1940 (Underwood's mastiff-b.; Honduras & Nicaragua n. to scAZ/ very rare in caves/ east extralimital in FL Pleist. caves) **Bibl.:** R. Baker 1956; Cockrum & Gardner 1960; Kiser 1995; Monday 1993; J. Warner, Patton et al. 1974

Eumops underwoodi sonoriensis Benson, 1947 (Sonora (Mex.) n. to sAZ)

Idionycteris Anthony, 1923 (Allen's big-eared or Allen=s lappet-browed bats) (1 extant species in US) **Bibl.:** A. Stock 1983

Idionycteris phyllotis G. M. Allen, 1916 (= *Plecotus p.*) (Distrito Federal (Mex.), n. to AZ (except extreme sw), extreme eCA, swNM, extreme swMT, extreme seNV, s,seUT, extreme wTX/ Allen's big-eared or Allen=s lappet-browed bat/ rare in caves) **Bibl.:** Berry 2000; P. Brown, Berry & Hall 2000; Cockrum & Musgrove 1964; B. Hayward & Johnson 1961; Monday 1993; O'Farrell & Bradley 1969; Simmons & O'Farrell 1977; Tumlison 1993

Lasionycteris Peters, 1866 (silver-haired bats) Vespertilionidae bat, Vespertilioninae subfamily (1 extant species in US & Canada)

Lasionycteris noctivagans (Le Conte, 1831) (silver-haired bat/ Wisconsinan fossil in Little Box Elder & Bell C., WY/ now in neMex., n. to sCanada & most of US (incl. seAK & except s,cCA, swAZ, FL, sAL, sCA, sGA, sMS, seTX)/ infrequent in caves/ Tx in CO, KY, MN, NV, VA, WV/ LA & NY State T&E, listed as rare in PA)

Lasionycteris noctivagans **Bibl.:** R. Adams, Thibault & Petru 1999; R. Barclay 1984-6; R.

Barclay et al. 1988; Beer 1954; B. Betts 1998; Betts & Haynes 1994; Bohn & Keller 1999; L. Campbell et al. 1996; Carlstead 1998; C. Carter, Rummel & Guy 1987; M. Clark 1993; Krutzsch 1966; Rogers 1952; B. Clark et al. 1993; Collister 1995; I. Cowan 1933; W. Davis 1952; Druecker 1972; Easterla & Watkins 1967; Faure 1987; Gosling 1977; D. Heath et al. 1983; Hunt & Bhatnagar 1997-8; Kunz 1982; Krutsch 1966; R. Lance 1999; R. Lance & Rogowski 1999; Limerick & Wiebe 1997; C. Martin 1970; Mattson, Buskirk & Stanton 1996; Menzel et al. 2000; Neunauser & Brisbin 1969; Messenger, Smith et al. 1997; Monday 1993; Nero 1957; D. Parker 1996; Parsons, Smith & Whittam 1986; J. Perkins & Cross 1988, 1991; Reith 1978, 1980; N. Rogers 1952; Saugey, McDaniel et al. 1993; Schowalter, Dorward & Gunson 1978; R. Stones & Holyoak 1970; Twente 1960; Vonhof 1993, 1996, 1999; Whitaker, Maser & Cross 1980; Whitaker & Lawhead 1992

Lasiurus Gray, 1831 (hairy tailed bats) Vespertilionidae bat, Vespertilioninae subfamily (6 extant species in US & Canada)

Bibl.: E. Hall & Jones 1961; J. Hart et al. 1992, 1997; M. Lyon 1903; McClure 1942; J. Morales 1992; R. Tomes 1857; H. Werner & Dalquest 1952

Lasiurus blossevillii Lesson & Garnot, 1826 (= *L. borealis* according to some authors) (desert red or western red bats) (now in AZ, CA (except extreme ne), wOR, seUT, wWA, & extreme s,w NV, swBC & swNM) **Bibl.:** Corben, Pierson & Raioney 1999; Pierson, Rainey and Corben 1999

Lasiurus (*Lasiurus*) *borealis* (*Nycteris b.* Muller, 1776) (incl. *L. minor* & *L. blossevillii* according to some authors, = *L. bonariensis*, *brachyotis*, *degelidus*, *enslenii*, *frantzii*, *funebis*, *lasiurus*, *monachus*, *noveboracensis*, *ornatus*, *pfeifferi*, *quebecensis*, *rubellus*, *rubra*, *rufus*) (red, northern red or New York bat/ state T&E species in AZ/) (Pleist. Red Bat in Organ-Hedricks C., WV/sCanada w. to extreme wManitoba, all US East to cFL, neNM, neMT, NB, wCO, ND, SD; Tx in AR, IA, IN, KY, MO, NM, NJ, TN (occasional), TX, WV (sometimes accidental), VA)

Lasiurus (*Lasiurus*) *borealis* **Bibl.:** Acharya 1990, 1995; P. Allan 1947; R. Baker, Patton, Genoways & Bickham 1988; S. Barnard 1991; T. Carter, M. Menzel et al. 1998-9; Downes 1964; Drake 1957; Gates 1938; Glass 1966; Clay 1956; R. Coleman 1950; Constantine 1958; Cueva, Fenton et al. 1994; Fassler 1975; R. Hamilton & Stalling 1972; Hagner 1921; Hickey 1986; Hickey, Acharya et al. 1996; Hutchinson & Lacki 1998-2000; C. Johnson 1932; C. Jones & Bradley 1999; G. Jones & Klimkiewicz; Menzel et al. 1998; Menzel, Carter et al. 1998; Menzel, Chapman & Miller 1998; C. Merriman 1989; Meritt 1989; H. Mueller 1969; R. Mumford 1963, 1973; R. Myers 1960; Nichols 1920; Norton 1930; Obrist & Wenstrup 1998; R. Orr 1950; Quay 1970; R. Packard 1956; R. Peterson 1970; Quay 195; Quimby 1942; Salcedo, Fenton et al. 1995; Saugey, Vaughn et al. 1998; Scharf & Jorae 1980; Shump & Shump 1982; Stallup 1954; Stangl, Dalquest & Grimes 1996; Stuewer 1948; D. Thomas 1988; Timm 1989; R. Warner & Czaplewski 1981; Waterstradt 1981; J. Warner, Davis & Grimes 1962; Whitaker, Rose & Poadgett 1997; N. Wilson 1965; J. Wiseman, Davis & Grimes 1962

Lasiurus (*Lasiurus*) *borealis teliotis* (H. Allen, 1891)

Lasiurus (*Lasiurus*) *borealis*

Lasiurus* (*Lasiurus*) *cinereus (Palisot de Beauvois, 1796) (= *L. brasiliensis*, *grayi*, *mexicana*, *pallidus*, *pruinatus*, *semotus*, *villosissimus*) (cCHile to sBC, seMAckenzie, Hudson Bay & sPQ, Galapagos, Bermuda, HI, accidental on Cuba, Hispaniola, Iceland and Scotland/ Tx in AR, IN, IA, KY, MO, NJ, NV, TN, TX, WV, VA/ NY state T&E; (sub)fossil in sNM)

Lasiurus (*Lasiurus*) *cinereus* **Bibl.:** Acharya 1990, 1995; R. Adams, Thibault & Petru 1999; A. Bailey 1937; R. Baker 1954; Barclay 1984-6; ; Barclay, Fullard & Jacobs 1999; Barclay & Koehler 1988; A. Benton & Stanley 1965; S. Bishop 1947; H. Black 1972; Bowers, Heidt & Baker 1968; Brisbin 1966; D. Brown 1935; Constantine 1959, 1996; Couch 1934; P. Cryan 2000; Cueva, Fenton et al. 1994; Denys 1972; Findley & Jones 1964; Fullard 1989; Gottschang 1966; J. Hart et al. 1992, 1993; Hickey 1988, 1990-1, 1993; Hickey, Acharya et al. 1996; Hickey & Fenton 1996; Hickey, Acharya & Pennington 1996; Hitchcock 1943; Koehler 1992; Hoffmeister & Downs 1964; Koehler & Barclay 1988; D. Heath et al. 1983; Iwen 1958; S. Kirk 1922; Merriman 1990; Mumford 1953; Obrist 1989; Caire, Hardisty & Lacy 1986; Church 1967; Mohr 1952; Druecker 1972; Easterla 1967, 1975; Koehler & Barclay 2000; Kunz & Fenton 1973; Maunder 1988; C. Merriman 1989; R. Mumford 1967; Munyer 1967; R. Myers 1960; Mohr 1952; R. Myers & Lewis 1955; Nero 1958; R. Orr 1950; J. Perkins & Cross 1988; Provost & Kirkpatrick 1952; Quay & Miller 1955; Rolseth, Koehler & Barclay 1994; Salcedo, Fenton et al. 1995; Saugey, McDaniel et al. 1993; Shump & Shump 1982; Stains 1965; Tenaza 1966; J. Tyler & Scott 1982; T. Vaughan 1953; Whitaker 1967; Zinn & Baser 1979

Lasiurus cinereus cinereus (de Beauvois, 1796) (hoary bat/ all NA except AK, sFL, neCanada/ Tx in AR, IN, IA, KY, MO, NJ, NV, TN, TX, WV, VA/ NY state T&E; (sub)fossil in sNM))

Lasiurus cinereus semotus H. Allen, 1890 (Hawaiian hoary bat; ope=ape=a/ T&E/ Tx (rare) in HI; fossils in HI caves)

Lasiurus cinereus semotus **Bibl.:** J. Belwood 1982; Cabrera 1996; Fujorka & Gon 1988; Fullard 1984, 1988-91; D. Jacobs 1991-3, 1999; Koopman 1965; W. Maher 1972; McDaniel & Tenorio 1979; Menard 1997; G. Miller 1939; Monday 1993; P. Morton & Schmidly 1993; M. Reynolds, Cooper & Day 1997; M. Reynolds, Nielsen & Jacobi 1997; Sealy 1978; Tomich 1974, 1986; Whitaker & Quentin 1983; Whitaker & Tomich 1983; D. Worthington 1997; D. Worthington & Dwyer 1998

***Lasiurus* (*Dasypterus*) *ega* (*Sasypterus e.* Gervais, 1856)** (Argentina, Uruguay & Brazil n. to sCA (rare, accidental?), swAZ (rare, accidental?), seTX/ southern yellow bat/ rare in c./state T&E species in AZ)

Lasiurus ega **Bibl.:** R. Baker, Mollhagen & Lopez 1971; Bond 1970; Cockrum 1961; Constantine 1946; Constantine, Humphrey & Herbenick 1979; Kurta & Lehr 1995; R. Loomis 1964; Monday 1993; R. Mumford & Zimmerman 1963; Spencer et al. 1988; G. Stewart 1969

Lasiurus ega xanthinus (Thomas, 1897) = *Lasiurus xanthinus*

Lasiurus* (*Dasypterus*) *intermedius H. Allen, 1862 (= *L. floridanus*, *L. insularis*) (northern yellow

bat/ Sangamonian fossil in Devil's Den., FL/ Honduras, n. to coastal plain in sePA, eMD, FL, s,cGA, sAL, sMS, LA (except extreme n.), sMS, eNC, NJ, PA, eSC, seTX, eVA) **Bibl.:** Webster, Jones & Baker 1980

Lasiurus intermedius i. (H. Allen, 1862) (now in TX)

Lasiurus intermedius floridanus (G.S. Miller, 1902) (now in LA, FL, MS, eTX)

Lasiurus (Lasiurus) seminolus (Rhoads, 1895) (may only be a subspecies of *L. borealis*) (Seminole bat/ Bermuda, FL (except sw) n. to GA (except extreme ne), SC (except extreme w.0, cMD, scNY, w. to seOK, extreme sTN & wTX & eVA; rare in caves). **Bibl.:** F. Barkalow & Fundeburg 1960; T. Carter, M. Menzel et al. 1998-9; Coleman 1950; Dunaway 1960; D. Heath et al. 1983; M. Kennedy, Kennedy & Baumgardner 1984; R. Lance 1999; T. Lee 1987; Menzel, Carter et al. 1998; Menzel, Chapman & Miller 1998; Padgett 1987; E. Poole 1932, 1938, 1949; H. Sherman 1935; K. Wilkins 1987;

Lasiurus undescr.. sp. (prehistoric fossils in HI caves)

Lasiurus xanthinus (Lasiurus ega xanthinus Thomas, 1897) Findley et al. 1975 ((southern yellow bat/ now rare in s,cAZ, nMex., sCA, extreme swNM/ AZ S2 Species of Special Concern; TX state Threatened Species; Critically Imperiled in NM (S1) **Bibl.:** Constantine 1946; Higginbotham 1999; Higginbotham et al. 1999-2000;

Leptonycteris Lydekker, 1891 (Mexican long-nosed bats) Phyllostomidae bats, Glossophaginae subfamily (2 extant species in US & Canada). **Bibl.:** R. Baker & Cockrum 1966; Cockrum & Petrozyn 1991; W. Davis & Carter 1962; Griffin 1940; Pirlot 1965

Leptonycteris curasoae Miller, 1900 (southern long-nosed bat/ now in c,seAZ & extreme swNM/ Federal & NM T&E)

Leptonycteris curasoae **Bibl.:** Cockrum & Petryszyn 1991; Alcorn, McGregor & Olin 1961; Carpenter & Graham 1968; W. Davis 1968; Fleming 1995, 1997, 2000; Fleming et al. 1989, 1994, 1998; Fleming, Newton & Usieh 1999; Fleming & Tuttle 1990; Fleming & Wolff 1998; Greenbaum & Phillips 1974; B. Hayward & Cockrum 1971; Herrera Montalvo 1997; Herrera Montalvo & Martinez del Rio 1998; Horner, Fleming & Sahley 1998; Horner, Fleming & Tuttle 1990; C. Jones & Findley 1963; J. Jorgensen 1994; Monday 1993; Nicolay, Dumont & Winter 2000; Peachey & Bethard 1997; Petryszyn 1992; Pirlot 1965; Rojas-Martinez et al. 1999; Sahley 1990; Sahley, Moirner & Fleming 1993; Voight & Helversen 1994

Leptonycteris curasoae yerbabuenae (Martinez and Villa-R.) = *L. nivalis* (lesser (=Sanborn's) long-nosed bat; long-nosed bat; Sanborn=s southern long-nosed bat/ now in NM & AZ/ Federal & NM T&E)

Leptonycteris nivalis (Saussure, 1860) (incl. *L. yerbabuenae* (Saussure, 1860); *L. nivalis y.* (Saussure, 1880)) (Mexican Long-nosed Bat as Wisconsinan fossil in San Josecito/ now in extreme swTX & seNM (rare), sAZ (rare)/ Tx in TX, Federal & NM T&E)

Leptonycteris nivalis **Bibl.:** Medellin 1994; Easterla 1972; Greenbaum & Phillips 1974; Hensley et al. 1988, 1989, 1992; Hevly 1979; D. Howell 1981; D.Lowe et al. 1990; O'Connor et al. 1977; D. Wilson 1985; Voight & Helversen 1994; D.Wilson 1985

Leptonycteris sanborni Hoffmeister, 1957 = *L. yerbabuenae*
Leptonycteris yerbabuenae Martinez and Villa-R., 1940 = *L. nivalis*

Macrotus Gray, 1843 - Phyllostomidae bats, subfamily Phyllostominae (1 extant species in US)
Bibl.: S. Anderson & Nelson 1965; Rehn 1904

Macrotus californicus Baird, 1858 (= *M. waterhousii* Gray, 1843; *M. waterhousii californicus*, treated as a subspecies of *M. waterhousii* by Anderson 1969) (California or Waterhouse=s leaf-nosed bat/ federal T&E species of concern/ nSinaloa & sw Chihuahua (Mex.) to sNV, wAZ/sCA, extreme sUT,/ winter roost in Agua Caliente C., AZ; TTX in AZ, CA)

Macrotus californicus **Bibl.:** Arnold 1943; R. Baker & hsu 1970; P. Brown & Berry 1991; G. Bell 1980, 1982; G. Bell et al. 1985; G. Bell & Fenton 1986; Berry & Brown 1995; Blair 1975; Bleier 1975; Bradshaw, 1961-2; C. Brown et al. 1993; P. Brown 1991; P. Brown & Berry 1996; P. Brown, R. Berry et al. 1999; J. Burns & Easley 1977; F. Carter 1987; F. Carter & Bleier 1988; Crichton, Hoyer & Krutzsch 1990; B. Davis & Baker 1974; B. Forbes 1989; Hatfield 1937; Huey 1925; Leitner & Ray 1964; Lu & Bleier 1981; H. Mitchell 1963; Pearl 1992; C. Ray & Wilson 1979; Rehn 1904; B. Richardson 1980-1; Schmidt 1999; Soskic et al. 1987; D. Wilson 1971; J. Burns, Baker & Bleier 1972; Nelson-Rees, Kniazeff et al. 1968; D. Wilson 1971

Macrotus waterhousii Gray, 1843 = *M. californicus*. **Bibl.:** S. Anderson 1969

Molossus E. Geoffroy, 1805 - Molossidae bats (1 extant species in US)
Molossus molossus (*Tadarida m.* Pallas, 1766) (Sinaloa and Coahuila (Mex.) To Peru, nArgentina, Uruguay, Brazil & Guianas, to sCaribbean, rare (accidental?) in TX & three colonies in FL Keys/ Pallas' free-tailed b., rare in caves/ TTx in TX) **Bibl.:** Constantine 1958; Eger 1987; Frank 1997; Stager 1942, 1956

Mormoops Leach, 1821 (ghost-faced bats) Mormoopidae bats (1 extant species in US) **Bibl.:** Morrison-Scott 195

Mormoops megalophylla (*Mormops m.* Peters, 1864) (= *M. carteri*, *intermedia*, *rufescens*, *senicula*, *tumidiceps*) (now in seAZ, extreme swNM, swTX/ ghost-faced bat north extralimital in Pleist. cave near Rock Springs, FL) **Bibl.:** Constantine 1958a; Monday 1993; Rezsutek & Cameron

Mormoops megalophylla m. (Peters, 1864) (Leafchin bat/ swTX, seAZ/ Tx in TX)
Bibl.: Rehn 1902

Myotis Kaup, 1829 (= *Vespertilio* in part) (little brown or mouse-eared bats) Vespertilionidae bats, Vespertilioninae subfamily (18 extant species in US or Canada)

Myotis **Bibl.:** J. Baker 1962; Bickham et al. 1986; Bohn & Keller 1999; Findley 1972; Goldman 1914; G. Miller & Allen 1928; Mohr 1933a; Munson & Keitch 1984; Murray, Heywood et al. 1999; Tinkle & Milstead 1965; Vaughan 1980

Myotis (*Myotis*) *auriculus* (*M. a.* Baker & Stains, 1955) (listed as a subgenus of *M. evotis* by Hall & Kelson, 1959 but see Genoways & Jones 1969 & Hall 1981) (now in sw,cNM through seAZ, s. to cMexico/ southwestern myotis/ rare in caves) **Bibl.:** Gannon 1997-8; Gannon 1995; Monday 1993; R. Warner 1982; R. Werner & Czaplewski 1981;

Myotis (*Myotis*) *auriculus auriculus* (*M. a.* Baker & Stains, 1955)

Myotis *auriculus apache* (Hoffmeister & Krutzsch, 1955) (now in seAZ, neMex./ Mexican long-eared myotis; long-eared Mexican myotis; southwestern myotis)

Myotis (*Leuconoe*) *austroriparius* (Rhoads, 1897) (= *M. gatesi*, *mumfordi*) (southeastern or Mississippi myotis. as fossil' in FL sinks/ now in SE from nFL n. to sNC, SC (except extreme nw), c,sGA, sAL, MS, n. to wTN, WKY, seIL, sIN, csAR, LA (except extreme s.), extreme eTX & seOK /AL,NC & TN state listed T&E; KY T& E/ Tx in AL, AR, FL, sIL, IN, KY, MO, TN, TX, WV, VA)

Myotis (*Leuconoe*) *austroriparius* **Bibl.:** Bole, 1943; Humphrey 1992, C. Jones & Manning 1989; E. Michael et al. 1970; Mirowsky 1998; Rice 1957; S. Barnard 1991; M. Clark 1997; M. Clark, Black & Kiser 1998; W. Davis & Rippey 1968; W. Davis, Lidicker & Sealander 1955; G. Foster et al. 1978-9; G. Foster & Mertins 1996; J. Gardner, Hoffman & Garner 1991; J. Hall 1961; Hoffman, Cochran et al. 1998; P. Horner, Mirowsky & McDonnell 1998; W. Kern 1991; LaVal 1973; Layne 1967; Michael et al. 1970; Mirowsky 1998; R. Packard 1966; R. Phillips & Mumford 1957; D. Rice 1955, 1957; Rippey 1965; Saugey, McDaniel et al. 1993; Sealander 1951; Sherman 1930; W. Webster 1970; Zinn 1977; Zinn & Humphrey 1981

Myotis *austroriparius a.* (Rhoads, 1897) (now in TX)

Myotis (*Selysius*) *californicus* (*Vespertilio c.* Audubon & Bachman, 1842) (= *M. agilis*, *caurinus*, *exilis*, *mexicanus*, *nitidus*, *oregonensis*, *quercinus*, *stephensi*, *tenuidorsalis*) (now in sAK to Guatemala, w. to TX, not in MT,WY/ California myotis/ extralimital in Klein C. (>8,000BP, Kerr Co.,TX/ Tx in CA, CO, NV, OR, TX, WA)

Myotis (*Selysius*) *californicus* **Bibl.:** R. Barclay & Brigham 2000; Bogan 1973-5; Brogja, Vpmjpf et al 1997; deCarvalho, Gannon & Ruedas 1998; Dalquest 1946; Duke, Bateman & Bateman 1979; Genter 1989; Krutzsch 1954; Monday 1993; D. Parker 1996; Reeder 1949; Szewczak 2000; Straney, O'Farrell & Smith 1976; Van Zyll de Jong et al. 1980; G. Woodsworth 1981; D. Young & Scudday 1975; D. Young & Scudday 1975

Myotis *californicus californicus* (*Vespertilio c.* Audubon & Bachman, 1842) (seBC s. to nUT, Baja, disjunct in seAZ, wNM, wTX, nMex.)

Myotis *californicus caurinus* Miller, 1897 (wcBC s. to wcCA)

Myotis californicus stephensi Dalquest, 1946 (= *Myotis findleyi*) (now in w,nAZ, seCA, wCO, wNV, s,eUT, nMex.)

Myotis ciliolabrum (*Vespertilio c.* Merriam, 1886) (formerly incl. in *M. leibii*) (now in West (except coastal), e. to wOK, wNB, wKS, w,sSD, swSD, MT (except extreme ne,nw), swSK, sAB, extreme scBC/ western small-footed bat/ rare Tx in CA, CO, MT, OR, seON, PQ, WA; (sub)fossil in sNM/ KS T&E S1S3B,SZN, Federal Species of Concern G5 global rank)

Myotis ciliolabrum **Bibl.:** Collister & Hunt 1990 deCarvalho, Gannon & Ruedas 1998; R. Herd 1987; Holloway 1998; Lopez-Wilchis, Lopez-Ortega & Owen 1994; Monday 1993; Schowalter & Allen 1981; Szewczak 2000;

Myotis ciliolabrum c. (*Vespertilio c.* Merriam, 1886) (now in AB, SK)

Myotis ciliolabrum melanorhinus (Merriam, 1890) (now in sBC, CO, NM, sAZ./small-footed myotis/ Tx in CO, NM, AZ)

Myotis (*Myotis*) *evotis* (*V.e.* H. Allen, 1864) (= *M. chrysonotus*, *micronyx*, *pacificus*) (long-eared myotis / federal T&E species of concern in AZ extralimital in Klein C. (>8,000BP, Kerr Co.,TX/ Tx in CA, CO, MT, NV, OR, WA/ now in West from sBC, sAB, swSK to neAZ, CA (except extreme e., NV (except extreme s.), nw,cNM, w,cCO, WY, Baja CA & extreme wSD, wNB & wND)

Myotis evotis **Bibl.:** R. Adams 1988; R. Barclay 1986, 1991, 1993; R. Barclay et al. 1990; Caceres 1998; Chruszcz 1998; Chung-MacCoubrey 1996; De Jong & Van Zyll 1978; Faure 1988-9, 1990; Faure & Barclay 1989, 1994; Faure, Hoy et al. 1992; Findley 1972; Gannon 1997-8; Genoway & Jones 1969; P. Hayes 1998; Hetherington 1971; Hoffmeister & Krutsch 1955; Holloway 1998; Ingles 1949; Kiser, Elliott & Whitaker 1998; Manning 1989, 1991, 1993; Marcot 1984; Miner, Brown et al. 1996; Monday 1993; Morrell, Rabe et al. 1996; E. Pierson & Rainey 1997; Reduker et al. 1983; Schowalter & Allen 1981; Simms 1977; Van Zyll de Jong 1979; Van Zull de Jong & Nagorsen 1994; Walden et al. 2000

Myotis evotis evotis (*Vespertilio e.* H. Allen, 1864) (in eBC, NM, AZ, UT)

Myotis evotis pacificus Dalquest, 1943 (now in wBC, wWA)

Myotis (*Leuconoe*) *fortidens* Miller & G.M. Allen, 1928 (cinnamon myotis/ now in Sonora & Veracruz (Mex.), s. to Guatemala, accidental in sAZ) rare or absent in caves) **Bibl.:** Findley 1967

Myotis (*Leuconoe*) *grisescens* A.H. Howell, 1909 (type locality in Nickajack C., Mario Co., TN/ gray bat or myotis; gray, cave, large-winged or Howell=s bat/ Pleist. in WV & MD caves & extralimital in Devil's Den, FL & Hamilton C., WV/ now in extreme nwFL, e,nAL, neGA, nAR, KY (except extreme n.), sIN, sIL, KS, MO (except extreme nw.), neOK, TN, & extreme sIN, sIA, wVA, wNC, wWV/ federal T&E in GA, KS, MS, NC, MO, OK; KS S1B,SZN, G2G3 global rank /Tx in AL, AR, FL, GA, IA ,IL, KS, MO, MS, NC, OK, TN, WV, VA)

Myotis grisescens **Bibl.:** Anon. 1985; Appley 1971; J. Belcher 1940; Best et al 1991, 1997; T. Best & Hudson 1996; Brady 1983, 1985; Brady, Kunz et al. 1982; D. Clark et al. 1983; D. Clark & Prouty 1976; R. Clawson 1988-9; Gore 1992; Grigsby 1980; Holsinger 1964a; Humphrey 1978a; D. Lee 1976; Mohr 1932; Rice 1955a; Theis 1967; Tuttle 1976 1979, 1982; J. Black 1934; Brack 1979; Brady, 1981, 1983; Choate & Decher 1996; R. D. Clark, :LaVal & Wineford 1978; Clawson 1986; W. Davis 1962; Decher & Choate 1995, 1988; Easterla 1967; Elder & Gunier 1981; J. Gardner & Gardner 1980; Goslin 1964; Grigsby & Puckette 1982; Gunier 1970-1, 1977; Gunier & Elder 1971; Guthrie, Jeffers & Sawyer 1940; Guthrie, Jeffers & Smith 1951; J. Hall & Wilson 1966; M. Harvey, Cassidy & O'Hagen 1979; Hatcher 1985; Holsinger 1964; Humphrey & Tuttle 1978; J. Jones & Downhower 1963; Kennedy & Best 1972; Kurta 1999; Lacki, Burford & Whitaker 1995; Laval 1978; LaVal, Clawson, et al. 1977; D. Lee 1976; C. Long 1961; R. Martin & Sneed 1990; MacGregor 1993; McGimsey 1995; McReynolds, Whitaker & Gammon 1979; R. Miller 1938-9; Mohr 1932; R. Myers 1965; Rabe, Robertson & Robbins 1999; Rabinowitz 1982; Rabinowitz 1982; Rabinowitz & Tuttle 1982; D. Rice 1955; Sabol & Hudson 1995; Saugey 1989; A. Schmidt, Romme & Tyrell 1997; Schmidt, Salyers et al. 1997; J. Skeen, Grigsby et al. 1990; Teel 1976; Thies 1967; Tuttle 1975-9, 1980; Tuttle & Stevenson 1977; Ubelaker & Dailey 1971; A. Werner 1984

Myotis (*Myotis*) *keenii* (*Vespertilio subulatus keenii* Merriam, 1895) (Keen's myotis as extralimital Wisconsinan fossil in New Paris #4, Robinson C. (TN), Natural Chimneys, Clark's, Organ-Hedricks, & Bootlegger Sink, VA/ wBC (except extreme nw.), nwWA & extreme sAK / Tx in BC, MO?, OH (accidental?), TN(1cave, accidental?), WI (accidental?))

Myotis (*Myotis*) *keenii* **Bibl.:** Blankespoor & Szymusiak 1974; Brandon 1961; Coggins et al. 1981; R. Milles 1971; Rice 1955; Scudder & Humphrey 1978; W.Caire, LaVal et al. 1979; B. Clark et al. 1993; Cohen 1942; Cope & Humphrey 1972; Fleharty & Farney 1965; Getty & Barclay 1993; Glass & Baker 1965; Glass & Baker 1965; Goehring 1954; Hitchcock 1949; R. Mills 1971; D. Parker 1996; D. Parker & Cook 1996; D. Rice 1955; Schloyer & Griffiths 1981; Van Zull de Jong & Nagorsen 1994; E. West 1991, 1993; E. West & Swain 1993

Myotis (*Selysius*) *leibii* (*Vespertilio gryphys* Audubon & Bachman, 1842) (= *M. subulatus*, *ciliolabrum*, *melanorhinus*) (extralimital Irvingtonian in Little Box Elder & Clark's C., MT/ (Eastern) small-footed myotis/ now in sON, sePQ, sNS, s. to New England (except nME), PA, MD, NJ, wMD, NY, wVA, WV, wSC, nwSC, TN, nAR, seMO, sIN, sIL, OH (except nw.) & extreme nAL, nGA, nLA & eOK/ Tx in AR, CO, IA, IN, KY, MD, MO, OH (accidental), TN, WV, VA, VT, WV/ State Special Concern T&E in MA, NC, NH, NY, OH & SC; T&E in TN; federal Species of Concern)

Myotis leibii **Bibl.:** D. Adams 1950, 1988, W. Baker 1965, 1967; Best & Jennings 1997; D. Johnson 1950; Krutzsch 1966; Mohr 1932; Schwartz 1954; D. Thomas 1995; Tuttle 1964, 1975; Bogan 1974, 1997; W. Davis 1955; W. Davis & Lidicker 1955; W. Davis, Hassell & Rippey 1965; De Jong & Van Zyll 1984; Erd;e 2000; Fenton 1972; Gunier & Elder 1973; J. Hall 1985; R. Herd 1987; Hitchcock 1945, 1955; Hitchcock, Keen & Kurta 1984; D. Johnson 1950; Koford & Koford 1948;; Krutsch 1966; McDaniel 1982; McDaniel, Harvey et al. 1982; R. Martin, Pawluck & Claney 1966; Mohr 1932, 1936 Nelson-Rees, Kniazeff et al. 1968; Robbins,

Engstrom et al. 1977; Saugey, McDaniel et al. 1993; Schloyer & Griffiths 1981; Schwager & Benton 1956; Sealander 1951; Trapido 1942; Tuttle & Heaney 1974; Van Zyll de Jong 1984; G. Woodsworth 1981

Myotis (Leuconoe) lucifugus (Vespertilio l. Le Conte in McMurtrie, 1831) (= M. occultus, affinis, alascensis, albicinctus, altipetens, baileyi, brevirostris, carissima, carolii, crassus, domesticus, gryphus, lanceolatus, pernox, relictus, salarii, virginianus) (Little Brown Myotis or bat/ fossil in Natural Chimneys, extralimital in Klein C. (>8,000BP, Kerr Co.,TX/now in most of NA s. to Distrito Federal (Mex.) except nAK, nCanada, swCA, sFL, wAR, NB, TX & extreme eNC, neGA, sSD, swAZ & eCO/ hybridizes with *M. yumanensis* in some areas/ federal T&E species of concern in AZ, NM; OK T&E/ Tx in AL, AR, CA, Canada, CO, FL, GA, IN, IA, KY, MO, MT, MD, NJ, NS, NWT, OH, ON, OR, PA, TN, VA, WA, WI, WV)

Myotis lucifugus **Bibl.:** R. Adams 1990-2, 1993-4, 1996-8; R. Adams & Briggs 1996; R. Adams & Thibault 1999; Aldridge, 1986, 1988; E. Anthony 1982; E. Anthony & Kunz 1977; E. Anthony et al. 1984, 1987, 1989, 1995; E. Anthony 1982. 1985; E. Anthony & Gustafson 1995; E. Anthony & King 1984; E. Anthony & Gustafson 1984; E. Anthony, King, Gustafson & Damassa 1981; J E. Anthony, King & Stopa 1984; E. Anthony, Neel & Cicione 1992; R. Armstrong, Ianuzzo & Kunz 1977; V. August 1984; M. Avery, Racey & Fenton 1984; R Barclay 1981-2, 1986, 1991; Bassett & Wiebers 1980; Bauman 1990; Bauman, Hashim & Sershen 1989; K. Beard, Sige' & Krishtalka 1992; J. Bell & Moore 1960, 1971; J. Bell & Thomas 1964; Belwood & Fenton 1976; Borgman & Moon 1976; Brenner 1974; Brigham & James 1993; Brown 1989; L. Brown 1985; G. Buchanan 1985, 1987; G. Buchanan, Garfield & YoungLai 1988; G. Buchanan & YoungLai 1987-8; G. Buchanan & Ryan 1983; Buchler 1975; Buchler 1980a; Burnett & August 1981; C. Burnett & Kunz 1982; G. Carmody, Fenton & Lee 1971; D. Clark 1980; D. Clark, Kunz & Kaiser 1978; ; D. Clark & Krynsky 1978; D. Clark & Prouty 1977, 1984; D. Clark & Stafford 1981; Condon, White & Feng 1994; Cope et al. 1958; J. Cope, Koontz & Churchwell 1960; J. Cotter & Laemle 1987, 1990; Coutts, Fenton & Glen 1973; Cukierski 1982, 1984-5; Cukierski & Hogan 1986; W. Currie, Blake & Wimsatt 1988; Damassa, Gustafson & Chari 1983; W. Davis 1967; W. Davis & H. 1965; Doctor 1967; Doty & Nunez 1985; Drymond 1936; Dubois 1998;Ellins et al. 1970; A. Enders & Wimsatt 1968; Fenton et al. 1976; Findley & Jones 1968; R. Garfield & Buchanan 1985; Geluso & Studier 1979; Griffin & Hitchcock 1965; Guilday 1950;A. Harris 1974; H.Hitchcock 1949; L. Hoffman, Wimsatt & Olson 1987; J. Horn 1999; J. Horn & Kunz 2000; Hoying & Kunz 1981; Humphrey & Cope 1976; Hurst 1966; Neilson 1991; O'Farrell & Studier 1973; Whitaker & Lawhead 1992; D. Bruce & Wiebers 1966; Cagle & Cockrum 1943; K. Campbell 1990; Canney 1988; D. Clark & Ratner 1987; Cockrum 1949; Coggins et al. 1982; Condon,1994; Condon et al. 1994; Cukierski 1985-7; W. Davis 1965, 1982; W. Davis & Hitchcock 1964; W. Davis & Rippey 1968; D. Dawson 1975, 1980; Dubb 1968; Fain & Whitaker 1976, 1982; Fascione et al. 1991; Fenton 1970, 1966, 1969, 1970, 1972; Fenton, Belwood, Fullard & Kunz 1976; Frum 1946; Fujita 1986; Galazyuk & Feng 1997; R. Garfield & Buchanan 1985; C. Gaudet 1981; Gilkey 1965, 1969; Ginsburg 1969; D. Griffin & Hitchcock 1965; Grothe, Covey & Casseday 1996; M. Henry 2000; Hitchcock & Keen 1980; Guilday 1948, 1950; Gummer & Brigham 1995; Gustafson & Shemesh 1976; Gustafson, Damassa & Kwiecinski 1995; Guthrie & Jeffers 1933, 1935, 1938; Guthrie Jeffers & Sawyer 1935; W. Hamilton 1933; J. Harrison 1965; T. Harrison 1965, 1983; J. Hayward 1968; J. Hayward & Lyman 1967; Henshaw 1965; Henshaw & Folk 1963, 1966; R.

Herd & Fenton 1983; Herman 1969; Hitchcock, Reynolds 1942; Hobson 1998; Holyoak & Stones 1971; Humphrey 1971; Humphrey & Cope 1964; Jen, Vater et al. 1981; Jujita & Kunz 1981; Kalcounis & Brigham 1975; Kalcounis & Hocker 1996; Kallen 1961; Kallen & Gans 1972; Kallen & Wimsatt 1962; Kazial & Masters 1999; King 1984, 1990; Koopman 1981; Kronfeld, Noga et al. 1998; Kruttsch 1961; Kruttsch, Crichton & Nagle 1981; Krook, Wimsatt et al. 1977; Kruttsch & Hess 1961; Kunz 1982; Kunz & Anthony 1982; Kunz, Anthony & Rumage 1977; Kunz, Stack & Jenness 1983; Kunz, Wrazen et al 1998; Kurta 1982, 1985; Kurta & Bell et al. 1990; Kurta & Kunz 1988; Kwiecinski 1982, 1984; Kuiecinski et al. 1987; Kunz & Anthony 1996; Kurta 1986; Laemle, Coter & Feldman 1984; Lauziere & Thomas 1993; Leffler et al. 1979; Lipske 1984; J. Lister 2000; R. Lunder & Herestad 1986; Mackawa, Wong & Paschal 1992; K. Martin 1973; K. Martin & Fenton 1978; R. Martin, Pawluk & Thomas B. Clancy 1966; Masterson & Ellins 1974; McDaniel 1988; Melman & Rosenbaum 1963; Menaker 1962; J. Miller 1955; R. Miller 1938-9; Monday 1993; Moon & Borgmann 1976; Moss, Redish et al. 1997; R. Mumford 1967; R. Myers & Hermanson 1994; Negraeff 1992; Neilson & Fenton 1994; O'Connor, Cain & Zarrow 1966; O'Farrell 1999; A. Parkinson 1979; Paschal 1994; Patten & Patten 1956; R. Patterson 1935; Payette, Gershon et al. 1987; Pearl 1994; Pearl & Fenton 1996; Powers 1989; Powers et al. 1991; Quay 1976; Racey et al. 1987; Rambaldini 2000; Ramprashad, Landolt et al. 1980; Ramprashad, Money et al. 1983; Rauch & Hayward 1969, 1970; Reagan & Brueckner 1951; Redmond 1939; Reeder 1938-9; Remillard 1954, 1958; D. Reynolds 1993, 1999; D. Reynolds & Kunz 2000; S. Rhoads 1897; C. Richardson 1980; C. Roth 1957; Rumage, Anthony & Kunz 1978; J. Ryan, Baier et al. 1992; Saunders 1987-8; Scharf & Jorae 1980; Scheffer 1930; Schloyer & Griffiths 1981; Schowalter 1980; Schowalter, Gunson & Harder 1979; Shannon-Hartman, Wong & Mackawa 1992; Sisk 1957; E. Smith 1956-7; H. Smith 1977, 1981; H. Smith & Schowalter 1979; Sparks et al. 2000; D. Sparks & Krochmal 2000; Stager 1943; L. Summers et al. 1993; R. Stones & Branick 1969; R. Stones & Wiebers 1965, 1967; Studier 1978, 1981; Studier, Lavoie & Drake 1982; Studier, Beck & Lindeborg 1967; Studier & Weing 1971; W. Sullivan 1981-2, 1986; Syme 1992, 1994, 1995; H. Tanaka, Wong & Taniguchi 1992; Tanaka & Wong 1993; Tandler & Cohan 1984; J. Taylor 1988; D. Thomas 1993; D. Thomas, Fenton & Barclay 1979; D. Thomas 1992; D. Thomas, Dorais & Bergeron 1990; C. Thompson, Fenton & Barclay 1985; C. Thomson, Fenton & Barclay; C. Thomson 1982; Tougaard, Casseday & Covey 1998; Troyer 1955, 1959, 1965, 1968; D. Turner, Shaughnessy & Gould 1972; Wai-Ping 1986; Wai-Ping & Fenton 1988; Wai-Ping 1984, 1986; H. Walley 1970, 1974; Waterman & Maxwell 1963; Watt 1995; R. Webster 1970; H. Wells et al. 1965; Whitaker & Lawhead 1992; K. White 1997; Wimsatt 1942, 1944-5, 1948-9, 1960, 1979, 1984; Wimsatt & Kallen 1952; Wimsatt & Parks 1966; Wimsatt, Kruttsch & Napolitano 1966; Wonget al. 1992; Wottton 1994; T. Warner & Zar 1982; Wong & Shannon 1988; Wunder 1987; Wunder & Nash 1980; Yunker 1958

Myotis lucifugus alascensis Miller, 1897 (nw,sBC, wSK, nID, nwMT, eWA, nwOR, seAK s. along coast to cCA/ Ac or Tx in CA, ID, OR)

Myotis lucifugus carissima Thomas, 1904 (most of West (AZ, CO, NM, OK, TX, UT) except range of *M.l. alascensis* & *occultus*, sCA, most of AZ, TX & NM)

Myotis (Leuconoe) lucifugus l. (Vespertilio l.. Le Conte in McMurtrie 1831) (most of East & seCanada (except coastal SC & NC, FL, LA), w. to eOK, eKS, seNB, eSD, eND)

Myotis lucifugus occultus Hollister, 1909 (occult little brown bat/ now in seCA, AZ, NM, Mex./ occasional mines in AZ/ historically in AZ, CA, NM (except nw), extreme wTX, ncMex.)

Bibl.: Piaggio et al. 1999

Myotis (Leuconoe) lucifugus pernox Hollister, 1911 (nwBC, SK, Manitoba)

Myotis (Leuconoe) lucifugus relictus Harris, 1974 (Sierra Mts., CA)

Myotis "magnumularis" Choate & Hall, 1967 = *Myotis velifer m.*

Myotis melanorhinus = *M. ciliolabrum m.*

Myotis rectidentis Choate & Hall, 1967 (likely = junior syn. of *M. lucifugus*) (Wisconsinan extinct/ straight-toothed myotis/ Laubach C. (type locality), TX & Dry Cave?, NM/ AZ
Myotis/now in most of AZ, wNM)

Myotis septentrionalis (Vespertilio s. Troussart, 1897; M. keeni s.) (NE, sNWT, sCanada, s. to nwFL, wNC, nwSC, wGA, AL (except sw.), nMS, s AR, w. to c,eOK, eKS, NB (except sw.), eBC & extreme wMT & neCO/ northern long-eared or northern bat/ uncommon Tx in AB(rare), AR, BC, FL, GA, IN, KY, MD, MO, NS, OH, ON, PA, TN, WV, VA/ NC State T&E/OK T&E)

Myotis septentrionalis **Bibl.:** Broders 2000; S. Carroll et al. 2000; T. Carter et al. 2000; Chermock & White 1953; P. Faure, Fullard & Dawson 1993; Foster 1997; R. Foster & Kurta 1999; J. Jones & Packard 1958; Kurta & Foster 1998; L. Miller 1994; L. Miller & Treat 1993; Sasse & Perkins 1996, 2000; Sparks & Laborda 1999; Sparks et al. 2000; Van Zyll de Jong et al. 1980;

Myotis (Selysius) sodalis (Miller & G.M. Allen, 1928) (Indiana or pink bat/ type locality in Wyandotte C., Crawford Co., IN/ extreme nwFL n. to c,nwGA, wSC, w NC, wWV, MD (except se), nNJ, sNH, sVT & w. to sWI, sMI, c,se IA, wOK, AR (except se.) & extreme eKA & seNB/ Federal & State T&E in AL, FL, IA, KY, MA, NC, NH, MD, NY, MA, MO, MS, OH, OK; OK T&E; WV hibernaculum/ Tx in AR, FL, IN, IL, KY, MD, MO, OH, TN, WV, VA)

Myotis sodalis **Bibl.:** Ahle'n 1980-1; Ainslie & Long 1980; Anon. 1996; Barbour & Hassell 1966; Belwood 1979, 1996; Bergstrom 1978-9; Bergstrom & Lawson 1978; P. Bishop 1980; J. Bowles 1981; Brack 1983; Brack & Dunlap 1997 ;Brack, Dunlap & Tyrell 1995; Brack & Johnson 1990; Brack & LaVal 1985; Brack & Tyrell 1990; Brady 1983, 1985; Brack 1983; Brack et al.; Brady & LaVal; 1985; Brady, Laval et al. 1983; Britzke, Harvey et al. 1999; Callahan, Drobney & Clawson 1997; Brack, Wilkinson & Mumford 1984; Cardoza 1986; T. Carter, S. Carroll & Feldhamer 2000; Clawson 1986, 1988-9, 1993, 1996; R. Clawson, Gray & Gray 1981; Conn & Demoss 1984; E. Cook, Gardner et al. 1988; Daton 1986; Dunlap 2000; Engel 1976; Fenton 1966; Fichteel 1993; R. Foster & Kurta 1999; J. Gardner et al. 1996; J. Gardner, Gardner & Hoffman 1991; J. Gardner, Hoffman, Garner & Cook 1987; J. Gardner and Taft 1982-4; Grady 1984; J. Hall 1960-2; J. Harding 1967; Harding & Hassell 1970; M. Harvey, Cassidy & O'Hagen 1979; Harvey & McDaniel 1986; Hobson & Holland 1995; Humphrey & Cope 1977, 1992a; Humphrey & Scudder 1978; H. Jackson 1922; S. Johnson et al. 1998;

MacGregor 1991; Mohr 1932; Myers 1975; Saugey et al. 1990; R. Williams 1962; Humphrey 1971; Humphrey & Cope 1964; Indiana bat 1980; S. Johnson, Brack & Rolley 1993; Kessler et al. 1981; Kiser & Elliott 1996; Kiser, Elliott & Whitaker 1998; Klaas 1986; Kurta 1980, 1995, 1999; Kurta & Foster 1998; Kurta & King 1991; Kurta & Murray 2000; Kurta & Williams 1994; Kurta, Williams & Mies 1996; Kurta, Kath et al. 1993; Kusewitt, Wagner & Harris 1977; Laval 1978; LaVal & Laval nd; LaVal, Clawson, et al. 1977; MacGregor 1993; MacGregor & Westerman 1982; MacKay 1997; Maryland 1979; McCracken, Saidak & Currie 2000; McReynolds, Whitaker & Gammon 1979; Metzger 1956; N. Miller, Drobney & Clawson 1996; R. Miller 1939; N. Miller 1996; Mohr 1932; R. Mumford & Calvert 1960; R. Mumford & Cope 1958; S. Murray 1997-8; ; Murray & Kurta 1999; Nold et al. 1997; O'Farrell 1999; Palmer-Ball 1996; Quay 1976; Rabinowitz 1982; Richter et al. 1978; Rippey 1965; Romme, Tyrell & Brack 1995; Saidak, McCracken & Currie 1998, 2000; Schloyer & Griffiths 1981; A. Schmidt & Tyrell 1997; Schmidt, Salyers et al. 1997; W. Schutt 1991; J. Skeen, Grigsby et al. 1990; Skibins 1991, 1993; R. Stones 1980; C. Thomson 1982; Tipton & Coggin 1977; Tipton, Tipton & Coggin 1979; Tuttle 2000; USFWS 1983; Tyrell, Black & Romme 1994; Whitaker, Deunff & Belwood 2000; Wilhide, Harvey et al. 1999; K. Williams, Mies & Kurta 1996

Myotis (Myotis) thysanodes Miller, 1897 (fringed myotis; fringed-tailed bat/ federal T&E species of concern in AZ,NM/ nMex. (Chiapas) n. to sBC, neAZ, NV (except extreme se.), seSK swSD, e. to w,cCO, WY, MT & extreme wSD, wND & wNB/ Tx in AZ, CA, CO, OR, TX, WA)

Myotis thysanodes **Bibl.:** Bole, 1935; Boyce 1980; Chung-MacCoubrey 1996; Easterla 1966; J. Jones & Genoways 1967; Maslin 1938; B. Milligan 1993; Miner, Brown et al. 1996; Monday 1993; Musser & Durrant 1960; R. Orr 1956; Pape 1999; Studier 1968; D. Williams 1968

Myotis thysanodes pahasapensis Jones & Genoways, 1967 (Fringe-tailed myotis/ now primarily in caves in Black Hills of swSD, eWY and wNB)

Myotis thysanodes thysanodes (*M.t.* Miller, 1897) (fringed myotis/federal T&E species of concern in AZ,NM/ now in W to sBC, swMT,seWY(rare)/ Tx in AZ, CA, CO, NM, OR, TX, WA)

Myotis velifer (Vespertilio velifer J.A. Allen, 1890; *M.v. brevis* (southwestern cave bats)) (cave m.; Wisconsin in Cave Without a Name & Inner Space C.(14,000BP) (TX)/ now in SW to s,cAZ, nUT (accidental?), se, extreme wNM sw,cKS, w,swTX, w,cOK, s.to Honduras; accidental in WA/ Tx in CA, KS, NM, OR, TX, WA; nMex., NM T&E; KS T&E S2S3, G5 global rank; s. to Hondruas/ Federal Species of Concern)

Myotis velifer **Bibl.:** D. Buecher 1996; D. Buecher, Sidner & Buecher 1990; Caire & Stevens 1990; Cockrum & Musgrove 1964; Cadena 1967; Constantine 1957; Earl 1971; Fitch et al. 1981; Hayward 1961; Reeve 1943; Raun 1960; Tinkle & Milestead; Tinkle & Patterson 1965; Cockrum & Musgrove 1964; Constantine 1957; Dunnigan & Fitch 1967; Gannon 1995; J. Harrison, Brown & Huang 1978; B. Hayward 1970; Kennedy & Engbretson 1974; Kleinschmidt, Koop & Braunitzer 1986; Kleinschmidt, Ruchnagle et al. 1987; Krutzsch, Crichton & Nagle 1981; Kunz 1971, 1973; Kunz & Robson 1990; Mann, Steidl & Dalton 1998;

Monday 1993; I. Patterson 1961; Pitts & Scharninghausen 1986; Raun 1960; Reisen et al. 1976; Riedesel & Williams 1976; Schackelford & Caire 1993; Studier & Kunz 1995; Tinkle & Patterson 1965; Samanie 1996; Tinkle & Patterson 1965; T. Vaughan 1954; Veal 1983; Zanolowiak et al. 1993; Zanolowiak 1987

Myotis velifer incautus (J.A. Allen, 1896) (cave myotis; Mexican brown bat/Tx in sTX. seNM, nMex./federal species of concern)

Myotis velifer magnamolaris (Choate & Hall, 1967) (large myotis/ Inner Space C. (type locality - 14,000 BP),TX/ Tx in wOK, nwTX)

Myotis velifer velifer (*Vespertilio* v. J. Allen, 1890; M. v. Brevis Vaughan, 1954) Miller & Allen, 1928 (now in nMex., sAZ/ Tx in sAZ)

Myotis volans (*Vespertilio volans* H. Allen, 1864) (long-legged myotis; Hairy winged Myotis/ fossil in Little Box Elder C., eastern extralimital in Klein C. (>8,000BP, Kerr Co.,TX/ now in W n. to extreme sNWT & sAK, e. to wND and extreme wSD & wNB/federal T&E; species of concern in AZ,NM/ Tx in CA, CO, OR, MT, TX, WA; (sub)fossil in sNM).

Myotis volans **Bibl.:** R. Adams 1988; R. Barclay et al. 1994; Bogan 1978; Druecker 1972; Genoways 1967; Herder & Jackson 1999; Monday 1993; Ormsbee 1996-7; Ormsbee & McComb 1997; D. Parker 1996; Schowalter 1980; H. Smith 1979; Saunders 1987-8; J. Taylor 1998; E. West 1993

Myotis volans interior (G.S. Miller, 1914) (now in seWA, ID (except extreme n.) NM, AZ, wTX, UT, CO, WY, wSD, wND, NV, wNB, eOR)

Myotis volans longicrus (True, 1886) (now in Pacific NW from sAK, w,seBC s. to sSK, neMT,nID, WA (except seWA), along coast to cCA)

Myotis yumanensis (*Vespertilio* y. H. Allen, 1866) (Yuma m./federal T&E; species of concern in AZ,NM/ sBC, WA, n.cID, eWY, wNV, OR (except extreme se.), CA, c,s,neUT, seCO, AZ, NM, wTX & extreme wMT & wOK/ Tx in AZ, CA, CO, OR, TX, WA)

Myotis yumanensis **Bibl.:**R. Adams 1988; Easterla 1966; Betts 1997; Brigham et al. 1989; A. Harris 1974; R. Herd 1983; Licht & Leitner 1967; B. Milligan 1991; B. Milligan & Brigham 1993; R. Mumford 1957; A. Parkinson 1979; E. Pierson & Rainey 1997; Speakman & Fenton 1996

Myotis yumanensis saturatus Miller, 1897 (now in coastal areas west of Cascad Range in WA, swBC)

Myotis yumanensis sociabilis H.W. Grinnell, 1914 (now in sCA n. to e. of Cascades (eWA, scBC/ TTX in AB)

Myotis yumanensis yumanensis (H. Allen, 1864) (now in NM, AZ/ Tx in AZ, NM)

Nycteris = *Lasiuris*

Nycticeius Rafinesque, 1819 - Vespertilionidae bat, Vespertilioninae subfamily (1 extant species in US or Canada)

Nycticeius humeralis Rafinesque, 1818 (evening bat/ now in SE, MW,se, e, cTX, n.. to PA (except ne.), sMI, sWI, IA (except extreme n.) & eMD, w.to seNB, eKS, eOK/ rare in caves; Tx in IA?, TX/ TX State T&E Candidate, KY T & E; rare in PA)

***Nycticeius humeralis* Bibl.:** W. Baker, S. Marshall & V. Baker 1968; J. Bain & Humphrey 1986; Berra & Policello 1979; Bowles, Howell et al. 1996; T. Carter, M. Menzel et al. 1998-9; B. Clark et al. 1993; Clem 1991, 1992; Duchamp 2000; Easterla 1965; Easterla & Watkins 1968, 1970; Gates 1941; D. Heath et al. 1983; E. Hooper 1939; Humphrey & Cope 1970; Kapone 1994; R. Lance 1999; R. Mumford 1953; Scherrer 1989; Schereer & Wilkinson 1991; A. Schwartz 1951; Spears et al. 1995; S. Steele 1989; L. Taylor & Lehman 1997; Ubelaker 1971; Veilleux 2000; Watkins 1972; Whitaker 1992; Whitaker & Clem 1992; Whitaker, Clem & Munsee 1992; Whitaker & Gummer 1993; Wilkinson 1988, 1989; Wilkinson & Chapman 1990; L. Watkins 1970; L. Watkins & Shump 1981

Nyctinomops Miller, 1902 (formerly incl. in *Tadarida*) Molossidae bats (1 extant species in US or Canada)

Nyctinomops femorosaccus (*Tadarida femorosacca* Merriam, 1889) Constantine 1958 (pocketed freetail bat/ now in swTX (except extreme sw) s,cAZ, extreme sNV, southern quarter of CA & extreme sw,seNM) **Bibl.:** Monday 1993

Nyctinomops macrotis (*Nyctinomus macratis* Gray, 1839; *N. macrotis* Miller, 1902) Hoffmeister & Durham, 1971 (big free-tailed bat/ now in BC (rare, accidental?), s,cCO (rare), NM, AZ, sUT, seCA, w,sTX & extreme neNV, neNB, wOK/ Tx in OH? but rare in caves).

***Nyctinomops macrotis* Bibl.:** P. August & R. Digman 1973; Carothers & Ruffner 1971; Constantine 1961; I. Cowan 1945; DiSalvo, Hans & Mancke 1992; Dixon & Higginbotham 1998; Easterla 1968, 1970, 1973; Geoffroy 1824; Milner, Jones & Jones 1990; Monday 1993; Pitts, Schimmelpfenig & Choate 1996; Poche 1979; Pyle & Caire 1979; G. Raun 1961; D. Scarbrough 1989; J. Warner, Patton et al. 1974

Pipistrellus Kaup, 1829 (= *Arielulus*, *Falsistrellus*, *Hypsugo*, *Perimyotis*, *Scotozous*, *Vansonia*) Vespertilionidae bats, Vespertilioninae subfamily (2 extant species in US or Canada) **Bibl.** Anon. 1996; Hall & Dalquest 1950; Racey 1974

Pipistrellus hesperus (*Scotophilus h.* H. Allen, 1864) (= *P. apus*, *australis*, *maximus*, *merriami*, *oklahomae*, *potosinus*, *santarosae*) (Western pipistrelle; canyon bat/ extralimital in Klein C. (>8,000BP, Kerr Co., TX/ epigeal in extreme sw,wOK w. & sw to wTX, NM (except ne), AZ, swCO, CA (except ne. & extreme nw), eOR, m,scWA, seID, s,cUT, s,wNV, seMT, swWA, nMex. (Baja, Hidalgo & Guerrero)/ TTx in CA, CO, NV, TX)

Pipistrellus hesperus **Bibl.:** Anon. 1996; Bradley & O'Farrell 1967; T.Cox 1965; Cross 1965; Findley 1954; Findley & Traut 1970; J. Fries 1981; Hayword & Cross 1979; Cross 1965; W. Davis 1959; Hovorka 1996; Hoying & Kunz 1981-2; Koford & Koford 1948; Krutzsch 1975; Krutzsch & Crichton 1986; MacDonald, Matsui & Fenton 1994; McDonald, Matsui, Matsui & Fenton 1994; Monday 1993; F. Osgood 1936; Poole 1938; Rabinowitz 1981; Rabinowitz & Tuttle 1982; Stager 1943; Straney, O'Farrell & Smith 1976; Surprenant 1978; Speakman & Racey 1989; Whitaker 1998

Pipistrellus hesperus hesperus (*Scotophilus h.* H. Allen, 1864) (now in wCO, NM, nMex.)

Pipistrellus hesperus maximus (Hatfield, 1936) (now in CA, seCO, swOK, TX/ Tx in CA, TX (rare))

Pipistrellus hesperus merriami (Dobson) (Western Pipistrelle) (Tx in CA)

Pipistrellus hesperus santarosae (Hatfield, 1936) (now in sCA, swOK, TX/ Tx in CA, TX)

Pipistrellus subflavus (*Vespertilio s.* F. Cuvier, 1832; *P. clarus*, *erythrodactylus*, *floridanus*, *monticola*, *obscurus*, *veraecrucis*) (Eastern Pipistrelle/ NS, sME, sPQ, MN, s. to FL & Honduras, w. to sWI, IA, seNB, e,cKS, OK (except extreme w.), e,cTX; in late Irvingtonian in Trout C., WV/ Tx in AL, AR, FL, GA, IA, IN, KS, KY, MD, MO, New Brunswick, NC, NJ, NS, OH, OK, ON, PA, PQ, TN, TX, WI, WV, VA)

Pipistrellus subflavus **Bibl:** Ashley & Rabalais 1980; Jennings 1958a; D. Lee 1976; Barros 1981; W.F. Blair 1948; Menzel et al. 1996; Bleakney 1965; Brack & Mumford 1984; Cockrum 1952; Cope & Humphrey 1972; W. Davis 1959, 1965-6; D. Dawson 1975, 1980; Frum 1944; Goehring 1954; Greeley & Beer 1949; Guilday 1956; Hoying 1983; Hoying & Kunz 1998; H. Jackson 1919; C. Jones & Suttikus 1973; Jujita & Kunz 1984; Kurta & Teramino 1994; Laduc 1993; H. Lane 1946; Layne 1992; Lechner 1985; D. Lee & Marsh 1978; Menu 1984; Menzel, Monroe et al. 1997; Morales et al. 1991; Pitts & Galloway 1993; Ploskey & Sealander 1979; Pucinelli & D'Agrosa 1982; Sandle et al. 1999; Sparks et al. 2000; Todd 1903; Traut 1968; Veilleux 1999, 200; Vincent, Whitaker & Koemer 1998; H. Walley 1971; H. Walley & Jarvis 1972; B. Wheat 1975; Winchell 1988; Winchell & Kunz 1993; Yancey & Jones 1997; Zbiden 1985-6, 1994

Pipistrellus subflavus clarus Baker, 1954 (extreme swTX & a small portion of adjacent Mexico)

Pipistrellus subflavus floridanus Davis, 1957 (sGA & FL (except nwFL))

Pipistrellus subflavus s. (*Vespertilio s.* F. Cuvier, 1832) (range of species except for range s. of US and range of *P.s. floridanus*/ Tx in OK)

Plecotus = *Corynorhinus*

Plecotus phyllotis = *Idionycteris p.*

Pteropus Erxleben, 1777 (flying foxes) Pteropodidae bats, Subfamily Pteropodinae (1 extant species in US)

Pteropus mariannus m. (Desmarest, 1822) (Mariana fruit bat, rare in caves/T&E)

Pteropus tokudae (Tate, 1934) (little Mariana fruit b., rare in caves/T&E)

Tadarida Rafinesque, 1814 (free-tailed bats) Molossidae bats (2 extant species in US or Canada)

Bibl.: Legendre 1984

Tadarida constantinei Lawrence, 1960 (extinct Constantine's free-tailed b. in *New C.,NM)

Tadarida brasiliensis (*Nyctinomus b. I.* Geoffroy St. Hilaire, 1824) (placed in distinct genus (*Rhizomops*) by Legendre (1984) but see Freeman 1981 and Owen et al. 1990) (= *T.*

antillularum, *bahamensis*, *californicus*, *constanzae*, *cynocephala*, *fuliginosus*, *intermedia*, *mexicana*, *mohavensis*, *multispinosus*, *murinus*, *muscula*, *naso*, *nasutus*, *peruanus*, *rugosus*, *texana*) (now in nSouth America, n. to SC (except extreme ne.), sTN, n,cAR, KS (except extreme ne.), sNB, n,cCO, scUT, scNV, CA, extreme swOR & swVA/ Brazilian free-tailed or guano bat/ state T&E species in AZ, FL, NC, NM/ extralimital in Hamilton C.(800,000BP),WV; Tx in AZ, CA, CO, NM, OR, TX)

Tadarida brasiliensis **Bibl.:** R. Adams & Thibault 1999; Ahlstrand 1974; Altenbach 1998; Altenbach et al. 1979; Altenbach & Hermanson 1985, 1989; A. Harrison et al. 1980; Balcombe 1988-90; Balcombe & Fenton 1988; Balcombe & McCracken 1992; Beckett 1963; Benson 1947; H. Black 1976; Booth, 1985; Borell, 1939; Cadena 1967; Cagle 1950; D. Clark & Kroll 1977; Cockrum 1969; Constantine 1957; Cutler et al. 2000; Davis & Short 1962; Des Marais 1980; Durden, Best et al. 1992; Eads, Wiseman & Menzies 1957; Feldhammer 1985; J. Frank et al. 2000; French & Amanda 1998; Gelfand & McCracken 1986; Glass 1954-5; Gould 1961; Grady (1991; Henshaw 1959-60; Herreid 1963; H. & Davis 1960; J. Horn et al. 2000; Humphrey 1971; B. Lawrence 19609; D. Lawrence 1968; Marsh 1981; McCracken 1984; M. et al 1994; McCracken, Gustin & McKame 1986; D. Martin 1970; McFarlane & Keeler 19?; McMurray & Russell 1982; O'Shea 1976; J. Pagels & Jones 1974; Ridlehuber & Silvy 1981; G. Rogers 1972; Studier 1965; Svoboda & Choate 1987; J. Taylor 1964; Thies 1993; Thies, Thies & McBee 1993; Thies & Thies 1997; Twente 1956; Villa & Cockrum 1962; Wahl 1986 & E. Christensen 1947; Cockrum 1969; Commissaris 1961; Constantine 1957, 1961, 1967; Crelin & Newton 1969; C., Tierkel et al. 1968; R. Davis et al. 1962; R. Davis & Loomis 1971 Freeman & Wunder 1988; Edgerton, Spangle & Baker 1966; Foehring & Hermanson 1984; Frazee & Wilkins 1990; Gassel & McCracken 1988; Glass 1955, 1958, 1982; Grothe, Schweizer et al. 1994; Gustin 1985; Gustin & McCracken 1987; Hardisty, Caire & Lacy 1987; Henshaw 1960-1; Herreid 1957-9, 1961, 1963, 1967; Herreid & Davis 1960; Higginbotham, Ammerman & Dixon 1997-8; Humphrey 1971, 1975; Humphrey & Cope 1964; Keeley & Keeley 1999; Kilburn, Best et al. 1990; Kiser 1996; Koford & Krutzsch 1948; Krutsch & Sulkin 1958; Kunz 1989; Kunz & Robson 1990; Kunz, Widmaier et al. 1996; LaVal 1973; Lesser et al. 1957; Y. Lee 1996, 1998; D. Lee & Marsh 1978; Legendre 1994; Licht & Leitner 1967; Lollar 1995, 2000; C. Long 1961, 1976; C. Long & Kamensyk 1967; C. Long & Long 1965; D Marsh 1981; McCoy 1960;; McCracken 1984, 1988-7, 1993; McCracken & Gustin 1991; McCracken, Gustin & Vawter 1986; McCracken & Johansen 1982; McCracken, Lee et al. 1997; McCracken, McCracken & Vawter 1994; Meacham 1974; Milam & Best 1994; Mistry 1988; Mistry & McCracken 1982; Nicklaus & Keeley 1998; Nitsche 1994; R. Owen 1989; R. Owen et al.1990, 1989; Pagels 1975; A. Parkinson 1981; Perry 19675; Perry & Rogers 1964; Pitts & Scharninghausen 1986; K.

Roberts, Yancey & Jones 1997; Robson, Kunz & Offedal 1988; Roemer 2000; A. Russell 1998, 2000; Sanchez-Brown et al. 1999; Schmidt & Thaller 1994; Sherwin & Gannon 1999; Short 1961; Short, Davis & Herreid 1960; Simmons, Lavender et al. 1978; D. Snyder 1993; Steece & Calisher 1989; Stihler Spears et al. 1995; Studier 1965, 1969; Studier & Kunz 1995; Studier, Beck & Lindeborg 1967; Svoboda 1983; T. Tanner & Baccus 1998; J. Taylor 1964; Tesh & Schneidau 1966-7; Thies & Gregory 1994; Thies & McBee 1994; Tifton 1986; Twente 1955-6; Vege 1999, 2000; Villa R. 1956; Wahl 1993; Walley 1971; H. Werner 1967; H. Werner n.d.; J. Warner, Patton et al. 1974; H. Werner; Westbrook, McCracken et al. 1998; Whitaker, Neefus & Kunz 1996; T. Williams, Ireland & Williams 1973

Tadarida brasiliensis cynocephala (Le Conte, 1831) (now in AL, FL, GA?, eTX)

Tadarida brasiliensis mexicana (*Molossus mexicanus* Saussure, 1860) Schwartz, 1955 (Mexican freetail bat; guano bat/ now in AZ, CO/ Tx in AZ)

Tadarida femorosacca = *Nyctinomus femorosaccus*

Tadarida macrotis = *Nyctinomops macrotis*

Tadarida molossa = *Molossus molossus*

BEARS

Mammal of Order Carnivora, Suborder Caniformia, Family Ursidae, Subfamily Ursinae (*Arctodus*, *Tremarctos*, *Ursus*)

Arctodus Puckette, 1976 - mammal Order Carnivora, Suborder Caniformia, Family Ursidae, Subfamily Ursinae. **Bibl.:** Hawksley 1965

Arctodus pristinus Leidy, 1854 (= *A. haplodon* Cope, 1895) (extinct Pleist. Lesser or Eastern Short-faced Bear in Cumberland (MD, Irvingtonian) & Hamilton & Grapevine (WV) Grady 1985; Port Kennedy C. (PA) & Glass & Proctor C. (KY); / in latest Irvingtonian sink near Coleman, Sumter Co., FL & early Irvingtonian in Inglis sinkhole, Citrus Co., FL)

Arctodus simus (*Arcotherium simum* Cope, 1879; *A. californicum* Merriam, 1911; *A. yukonense* Lambe, 1911; *Dinarctotherium merriami* Barbour, 1916)) (extinct Giant Short-faced Bear in Round Spr. Cavern and Powder Mill Cr. C. (AR), U-Bar C. (NM), Labor-of-Love C. (NV), McKittrick C. (wTX); Natural Trap & Little Box Elder C. & Prospects Shelter (WY), Mammoth C. (KY, Wilson 1981) & Unthanks C. (VA)

Bibl.: Grady 1997; Larson 1996; Matheus 1997; R. Richards 1996

Arctodus undet. sp. (extinct in Pleist. Isleta Caves #1 & #2 & Burnet C. (seNM))

Thalarctos maritimus = *Ursus m.*

Tremarctos Gervais, 1855 - mammal Order Carnivora, Suborder Caniformia, Family Ursidae, Subfamily Ursinae. **Bibl.:** Kurten 1966.

Tremarctos floridanus (*Arctodus* f. Gidley, 1928) (extinct Florida cave or spectacled bear from

FL caves & sinkholes (Devil's Den, Reddick), Grassy Cove Saltpeter C.(TN), & Inner Space C.(23,000BP),TX)

Tremarctotherium = *Arctodus*

Ursus Linnaeus, 1758 - Mammal of Order Carnivora, Suborder Caniformia, Family Ursidae, Subfamily Ursinae (3 extant species in US or Canada)
. **Fossil Bibl.:** K. Gordon 1986; C. Stock 1936; Wolverton & Lyman 1998

Ursus americanus Pallas, 1780 (*Euarctos vitabilis* Gidley, 1913) (NA/ TTx in AR, FL, CA, OH, OR)

Ursus americanus amplidens (*U. amplidens* Leidy, 1853) (MO/extinct) **Fossil Bibl.:** Tucker 1984

Ursus arctos Linnaeus, 1758 (AK,wCanada to nNM/Brown & Grizzly Bears as extralimital fossil in Moonshiner, Welsh (13,000BP,KY), cave near Craters of the Moon Natl. Monument, ID, & Jaguar C. (TN)), also in Prince of Wales (10-12,000 BP, 35,000 BP) **Fossil Bibl.:** Grady 1993; Heaton 1995; Heaton & Grady 1994, WV Grady 1985a

Ursus maritimus Phipps, 1774 (= *Thalarctos m.*) (extant in coastal nAK & nCanada/bones in lava cave in Pribilof Island, AK) **Fossil Bibl.:** Grady 1989c

Ursus optimus Schultz, 1938 (*U. amplidens* Leidy, 1853) (extant in most of NA/Black Bear /widespread in late Pleist./Tx or Ac in WV; Tx in PA, TN; past Tx in MO, OR)

BEAVERS

(see also mountain beaver) Order Rodentia, Suborder Sciurognathi, Family Castoridae (incl. *Castor*, *Castoroides*, *Paradipoides*). **Bibl.:** McAlpine 1977; Richards 1985.

Castor Linnaeus, 1758 - mammal Order Rodentia, Suborder Sciurognathi, Family Castoridae (1 extant species in US or Canada)

Castor canadensis Kuhl, 1820 (NA except sAZ, sNV, wUT, most of sCA,FL/ beaver/ Tx or Ac in WV; TTx in AK, AL(1 cave), NB, MO, TX)

Castoroides Foster, 1838 - mammal Order Rodentia, Suborder Sciurognathi, Family Castoridae
Castoroides ohioensis Foster, 1838 (extinct giant beaver as fossil in many Eastern caves, as in Baker Bluff (TN), Cutoff (KY) & Dutchess Quarry (NY) C.)

Paradipoides Rinker & Hibbard, 1952 - mammal Order Rodentia, Suborder Sciurognathi, Family Castoridae

Paradipoides stovalli Rinker & Hibbard, 1952 (Extinct Stovall's Beaver as fossil in Cumberland C.)

bighorn sheep - See Sheep

BISON

Artiodactyl mammal, Family Bovidae, Subfamily Bovinae

Bison Hamilton-Smith, 1827 - Artiodactyl mammal, Family Bovidae, Subfamily Bovinae (1 extant species in US or Canada)

Bison bison (*Bos b.* Linnaeus, 1758; *B. californicus* Rhoads, 1897; *B. occidentalis* Lucas, 1898; *B. kansasensis* McClung, 1905; *B. pacificus* Hay, 1927; *B. figginsi, texanus & taylori* Hay & Cook, 1928; *B. oliverhayi* Figgins, 1933)) (extralimital in Smith Cr. Canon C., NV & Bison Alcove, a rockshelter in Arches Natl. Park, UT; dung in Shrubbox Alcove (Glen Canyon NRA), sUT / historically in most of NA, now in W pockets)

Bison bison antiquus Leidy, 1852 (= *B.a.* Hay & Cook) (extinct/ Burnet & Dark Canyon (NM); Owl Cave Two (NV); Cutler Hammock sinkhole (FL) & Halls & McKittrick C. (TX) & late Rancholabrean Reddick I Site fissure, (Marion Co.), FL) **Bibl.:** Butler, B. 1971; J. McDonald 1976, 1981; Toomey, Huebner & Boutton 1992

Bison undet. sp. (Howel's Ridge C. (NM); 8,000 BP Devils Den sink, Levy Co., FL; Sandblast C., Grand Canyon, nAZ)

BOBCATS

Lynx Kerr, 1792 Mammal of Order Carnivora, Suborder Fissipedia, Infraorder Feloidea, Suborder Feliformia, Family Felidae, Subfamily Felinae

Lynx rufus (*Felis r.* Schreber, 1776; *F. calcaratus* Cope, 1899; *F. wiedii oaxacensis*) (NA except mEast, parts of MW/ bobcat/ TTx in AR, MO, OH, TX; Ttx in NV (preys on bats)),

CAMEL

Mammal of Order Artiodactyla, family Camelidae (incl. llamas) (undet. fossil genus in Papago Spr. C., AZ)

Camelops Leidy, 1854 - mammal of Order Artiodactyla, family Camelidae. **Bibl.:** Dompierre 1995; O. Hay 1913; D. Webb 1961, 1963, 1965.

Camelops near *kansanus* Leidy 1854 (extinct/Burnet C., NM)

Camelops huerfanensis dallasi (*Auchenia h.* Cragin, 1892) (Moore Pit (Rancholabrean), TX)

Camelops undet. sp. or species (Stanton (AZ); Burnet, Conkling, Muscox, Shelter, Dry & Isleta C.(NM) Gypsum & Smith (12,600 yrs.) C. (NV); Laubacvh C.(TX); Wolf River C. (TN); Horned Owl C.(WY); Vulture and Sandblast C., Grand Canyon, nAZ))

Camelops hesternus (*Auchenia h.* Leidy, 1873) (Yesterdays camel/ Ventana C. (11,300 yrs., AZ); Vulture C.(13,600-17,200BP),Grand Canyon, AZ; Schuiling & Kokoweef (cf) (CA); Jaguar & Wilson Butte (14,500-15,00) C. (ID); Dry C.? & Isleta C. No.1 (NM); McKittrick (wTX); Crystal Ball (>23,000BP) & Tabernacle C. (UT); Fishbone, Gypsum, Smith & Hidden C. & Owl Cave Two (NV); Horned Owl, Natural Trap & Little Box Elder (cf) C. & Prospects Shelter (cf) (WY) **Bibl.:** Dompierre 1992.

canid - See coyote, dog, fox, wolf

CAPYBARA

Nechoerus Hay, 1926 – Hydrochaeridae capybara rodent, Subfamily Hydrochoerinae

Nechoerus aesopi Mones, 1991? (*Hydrochoerus holmesi* Simpson, 1928) (in Sabertooth Cave (*H.h.* type) (Sangomonian or possibly Wisconsinan, Coleman IIA & Inglis IA sinks (FL) & late Rancholabrean Reddick I Site fissure, (Marion Co.), FL/ Aesop's capybara) Mones 1991; Morgan & White 1995

Nechoerus undet. sp. (Pleist. (latest Blancan or earliest Irvingtonian) Haile filled-in FL sinkhole or cave)

CARIBOU

Artiodactyla Cervidae, Subfamily Capreolinae - similar to deer but tundra-adapted & with antlers on both sexes.

Rangifer Hamilton-Smith, 1827 (caribou, reindeer) Mammal of Order Artiodactyla, Family Cervidae, Subfamily Capreolinae (1 extant species in US or Canada)

Rangifer fricki = *Navajoceros f.*

Rangifer tarandus (Linnaeus, 1758) (extralimital in AL, NM?, NY, TN, PA, VA caves) **Bibl.:** Churcher, et al. 1989; Funk et al 1970 & Guilday, Hamilton & Parmalee 1975

CATS

(see also cheetah, lynx, mountain lion, ocelot, panther)

Order Carnivora, Suborder Fissipedia, Infraorder Feloidea, Suborder Feliformia, Family Felidae, Subfamily Felinae (*Felis*, *Homotherium*, *Smilodon*)

Bibl.: Simpson 1941a; Werdelin 1985

Felis Linnaeus, 1758 - Family Felidae, Subfamily Felinae

Felis domesticus Linnaeus, 1758 (= *F. silvestris* Schreber, 1777; *F. catus*) (feral in most of NA/ domestic cat/ Ac in TX, WA)

Homotherium Fabrini, 1890 - Family Felidae, Subfamily Felinae

Homotherium serum Cope, 1893 (Pleist. scimitar cat in Shela George farm limestone crevice (TN) & at Friesenhahn C.(17-19,000 yrs), TX & late Rancholabrean Reddick I Site fissure, (Marion Co.), FL /) **Bibl.:** Clemmer 1989; Rawn-Schztzinger 1987

Smilodon Lund, 1842 (sabertooth cat or tiger) Family Felidae, Subfamiiy Machairodontinae, Tribe Smilodontini. **Bibl.:** Akersten 1985; Berta 1985, 1987; Kurten 1990.

Smilodon cf. *fatalis* (Leidy, 1869) (Crystal Ball C.(>25,000BP,UT)

Smilodon fatalis (*Felis (Trucifelis) f.* Leidy, 1869; *Machaerodous floridanus* Leidy, 1889; *S. californicus* Bvovard, 1907; *Smilodontopsis troglodytes* Brown,l 1908; *S. conardi* Brown, 1908; *S. nebraskensis* Matthew, 1918; *S. trinitiensis* Slaughter, 1960) (extinct Sabertooth tiger or cat in 8,000 BP Devils Den (FL); Hurricane River (Searcy Co, AR), Irvingtonian in Conrad Fissure (limestone fissures in AR Ozarks); Crystal Ball (NV), Hamilton (WV, Pendleton Co. - 800K) & Harrodsburg Crevice (IN) C./ state fossil of CA) **Bibl.:** Duckler 1997; Janczewski 1993

Smilodon gracilis Cope, 1880 (Irvingtonian gracile sabertooth cat in Port Kennedy (PA) & Hamilton & Organ (WV. - 800K, 21.04K) C., Haile (sink in Alachua Co.), & Inglis (sink or fissure in Citrus Co.), FL)

Smilodon undet. sp. (Pleistocene in Hamilton C.(WV), Port Kennedy (PA), Berome Moore (MO/ prob. tracks) & sink in Cannon Co.(TN)). **Bibl.:** Grady; 1981b

carnivore - Refers to species who eat live animal prey and/or to the mammal Order Carnivora (incl. bear, cheetah, coyote, dog, fishers, lions, martens, sabertooth tiger, weasels, wolf

CHEETAHS

Order Carnivora, Suborder Fissipedia, Infraorder Feloidea, Suborder Feliformia, Family Felidae, Subfamily Felinae (*Acinonyx*, *Miracinox*)

Bibl.: D. Adam 1979

Acinonyx Brookes, 1828 (= *Cynaelurus*, *Schaubia*) (transferred to *Miracinonyx* by Van Valkenburgh et al. 1990) Family Felidae, Subfamily Acinonychinae

Miracinonyx inexpectatus (*Crocota i.* Cope,1895; *Uncia i.* Cope,1899; *Felis longircus*; *F. cougar* Brown, 1908; *Smilodontopsis mooreheadi* Hay, 1922; *Felis studei* Savage, 1960; *Acinonyx studei* Adams, 1979) (Irvingtonian Type in Port Kennedy C., Montgomery Co.,PA + Hamilton C. (V) & Conrad Fissure (limestone fissures in AR Ozarks); *M. cf. inexpectatus* early Irvingtonian in Inglis sinkhole, Citrus Co., FL)

Miracinonyx studei (*Felis s.* Savage, 1960; *Uncia i.* Cope, 1899; *Acinonyx (M.) studei*) (may = *A. (M.) inexpectatus*) (Pleistocene extinct Studer=s cheetah in Crypt C. (NV); Natural Trap (WY Sangamonian), Conrad Fissure (limestone fissures in AR Ozarks); cf. in Cumberland

C.(MD,Irvingtonian) tracks in flowstone in AR. sabertooth & (Hamilton (10- 100,000BP)
C.,WV) Van Valkenburgh et al. 1990

Miracinonyx trumani (Felis t. Orr, 1969; *F. longicurus* Brown, 1908; *Smilodontopsis mooreheadi* Hay, 1920?; *Acinonyx (M.) t.*) (extinct American Cheetah/Crypt (NV,type), Muskox (Eddy Co.,NM), Haystack (Gunnison Co.,CO); Little Canyon Cr. C. (WY)
Bibl.: Adams 1979; Martin, Gilbert & Adams 1977

Felis inexpectata = *Miracinonyx i.*

CHIPMUNKS

Order Rodentia, Suborder Sciuerognathi, Infraorder Sciuromorpha, Family Sciuridae, Subfamily Sciurinae (*Eutamias*, *Tamias*). Small, active, diurnal, ground-dwelling squirrels, of Order Rodentia, with face stripes & erect tail when running.

Eutamias Trouessart, 1880 (= *Tamias* in part by some authors) (chipmunks) Family Sciuridae, Subfamily Sciurinae

Eutamias cinericollis (*Tamias c.* J.A. Allen, 1890) (grayneck or gray-collared chipmunk/ Pleist. extralimital in Fowlkes C.,TX)

Eutamias minimus Bachman, 1839 (least chipmunk/ Pleist. extralimital in Clark's, Baker Bluff, & Back Creek C. (VA)/ now in extreme swTX nw.to cAZ)

Eutamias townsendi = *Spermophilus t.*

Tamias Illiger, 1811 (chipmunks) Sciuridae rodent, subfamily Sciurinae
Tamias cinericollis = *Eutamias c.*

Tamias dorsalis Baird, 1855 (*Eutamias d.*) (extreme scID, swWY to eNV, wUT, AZ, eNM to nMex./ Cliff chipmunk/ Ttx in Lehman C.,NV)

Tamias striatus (*Sciurus striatus* Linnaeus, 1758) (Irvingtonian eastern chipmunk in Cumberland C.; extralimital in Rancholabrean Klein, Friesenhahn C., Schultze (TX), & C. Without A Name (cTX) & Wisconsinian Bat C.,MO/Ac in IN; TTx in PA)

Tamias striatus rufescens Bole & Moulthrop, 1942 (Tx? in OH rock crevices)

COENDU

Extinct rodent genus

Coendu Lesson, 1937 - mammal Order Rodentia, Suborder Hystricognathis, Family Erethizontidae

Coendu cumberlandicus White, 1968 (extinct, from Irvingtonian Appalachian C.(MD))

COATI

carnivore, coati(mundi)

Nasua Storr, 1780 - Mammal of Order Carnivora, Suborder Caniformia, Infraorder Canoidea, Family Procyonidae, Subfamily Procyoninae

Nasua nasua (Linnaeus, 1766). (now in AZ/ Ac or TTx).

COYOTES

Canis Linnaeus, 1758 - mammal of Order Carnivora, Suborder Caniformia, Infraorder Canoidea, Family Canidae, Subfamily Caninae (3 extant species in US or Canada) (*Canis*)

Canis latrans Say, 1823 (coyote/ Ttx in PA, TX, WV; Ac in MO; Tx or Ac in CA)

Canis lepophagus Johnston, 1938 (*C. arnensis* Del Campana, 1913?) (extinct Johnston's Coyote of Blancan age)

DEER

Cervidae artiodactyl mammal, Subfamily Odocoileinae (*Blastocerus*, *Odocoileus*, *Navahoceros*, *Sangamona*)

deer scat - Between spherical & bullet shaped & about 3/4 of an inch long.

Blastocerus Gray, 1850 (marsh deer) Cervidae artiodactyl, Subfamily Odocoileinae

Blastocerus extraneus Simpson, 1928 (Rancholabrean Florida Marsh Deer in late Sangamonian times in Sabertooth C., FL)

Odocoileus Rafinesque, 1832 (mule, white-tailed and black-tailed deer) Mammal of Order Artiodactyla, Family Cervidae, Subfamily Capreolinae (2 extant species in US or Canada)

Odocoileus virginianus (*Dama* v. Zimmermann, 1780; *O. cooki* & *sheridanus* Frick, 1937) (most of NA except Great Basin, CA/ white-tailed deer/ Ttx in nFL, wTx)

Odocoileus cf. *hemionus* (Rafinesque, 1817) (extinct (if new species, subspecies or variety) in Pleist. Dry C.(NM/ mule deer)

Navahoceros Kurten, 1975 - Cervidae artiodactyl, Subfamily Odocoileinae

Navahoceros fricki (*Rangifer* f. Schultz & Howard, 1935; *Cervus lasiocrus* Frick, 1937; *Odocoileus halli* Alvarez, 1969) (extinct Rancholabrean Mountain Deer in Little Box Elder, Burnet (type locality), New (=Slaughter) & Hermit's Cave (NM)), Cueva Quebrada (cf. *E.s.* at 12,280, 13,920 & 14,300 B.P. at Amistad NRA, TX))

Sangamona Hay, 1920 - Cervidae artiodactyl, Subfamily Odocoileinae

Sangamona fugitiva Hay, 1920 (*Cervus whitneyi* Allen, 1876) (extinct fugitive or stilt-legged deer in Baker Bluff & Brynjulfson (MO), Little Blue C. (or *Odocoileus* in AR), Peck & Baker Bluff (cf.) (TN), Frankstown (PA), Peccary (AR), Robinson (KY), Patton (WV) & Burnet? C.(NM),) **Bibl.:** Churcher 1984; Durten 1979

DOG

Canis Linnaeus, 1758 - mammal Order Carnivora, Subfamily Caninae (3 extant species in US or Canada)

Canis familiaris Linnaeus, 1758. One of NA's oldest (10,370 BP) dogs in Jaguar C., ID; Tx in TX)

ELEPHANTS

mammal Order Proboscidea

Elephantidae (*Cuvieronius*, *Mammut*, *Mammuthus*)

Cuvieronius Osborn, 1923- Elephantidae elephants

Cuvieronius tropicus (Cope, 1884) (Pleist. (latest Blancan or earliest Irvingtonian) Haile filled-in FL sinkhole or cave/ gomphothere/ elephant-like species)

Elephas Linnaeus, 1758 - Elephantidae elephants

Elephas undet. sp. extinct in Pleist. Isleta C.(seNM)

Mammut Blumenbach, 1799 (transferred back to *Elephas* by some authors) (mammoth and mastodons) Mammutidae mammoth. **Bibl.:** Grady 1987; W. Johnson & Kost 1988; Lucas & Morgan 1997; Shoshani 1991;.

Mammut americanum (*Elaphas a.* Kerr, 1792; *Mastodon giganteus* Cuvier, 1817; *Mammut progenium* Hay, 1914) (American mastodon) (Irvingtonian in Cumberland C., >200,000BP in Heinze C.,MO; Port Kennedy C. (PA), widespread in later times, as at Potter Cr. (CA); 8,000 BP Devils Den, Levy Co., FL; in Sabertooth Cave (Sangomonian or possibly Wisconsinan, FL) ; in Scott Hollow C. (WV), Fossil C. in Lava Beds Natl. Monument (neCA), early Irvingtonian in Inglis sinkhole, Citrus Co., FL), dung in GRCA caves; IL Bagg,1909; sink in TN (Cannon Co.), UT (Sanpete Co., 7,090 +/- 200 yrs BP) & McKittrick C. (TX)

Bibl.: Daeschler 1996; R.Laub 1996; Laub & Sues 1992; Laub & Fisher 1996; W. Miller 1987; B. Muller & Camp 1987; Sher & Fisher 1995; K. Stewart & Seymour 1996; S. Webb & Newsom 1991.

Mammuthus Brooks, 1828 (mammoth) - Genus of Elephantidae, state fossil of NB.

Bibl.: Dudley 1988; W. Johnson & Kost 1988; Saunders 1970; Shoshani 1991

Mammuthus columbi (*Elaphas c.* Falconer, 1857; *E. imperator* Leidy, 1858; *E. maibeni*

Barbour, 1925; *Archidiskodon sonoriensis* Osborn, 1929) (Schulze C.(12,500BP), TX & McKittrick C. (wTX) & Hermit's C.(NM)/ state fossil of WA) **Bibl.:** Mead & Agenbroad 1992; M.&A.et al. 1986

Mammuthus jeffersonii (*Elephas j.* Osborn, 1822; *E. roosevelti* Osborn, 1922; *E. washingtonii* O., 1923; *E. eellsii* Hay, 1926; *E. exilis* Stock & Furlong, 1928; *E. floridanus* Osborn, 1929; *Paralephas progressus* Osborn, 1924; *M. columbi j.*) (Pleist. in Friesenhahn C. (TX), Huntington Reservoir Sinkhole (W.E. Miller 1987; Gillette & Madsen 1993) & Natural Trap C. (WY) **Bibl.:** Haynes 1970; Mead, Agenbroad et al.1986

Mammuthus primigenius (*Elaphus p.* Blumenbach, 1799) (probably junior syn. of *M. columbi*)(Pleistocene extinct wholly mammoth in Endless (VA) & Potter Cr. C. (CA)) **Bibl.:** Barsi 1985; Grady et al. 1997; Kahlke et al. 1999

Mammuthus undet. sp. or species (Extinct Pleistocene in Papago Springs (AZ); Howell's Ridge (NM) & Natural Trap (WY) C., Welsh C. (13,000BP,Woodford Co.,KY)), Bison Alcove, a rockshelter in Arches Natl. Park, UT, Grobot Grotto (28,290, 26,140 BP), Glen Canyon, NRA, sUT & in latest Irvingtonian sink near Coleman, Sumter Co., FL.; Pleist. dung at Bechan (11,670 & 12,900 years old), Shrubox Alcove in Glen Canyon NRA, & Cowboy C., UT; scapula in cave in Bering Land Bridge National Preserve, nAK)

ELK

Cervus Linnaeus, 1758 (deer, wapiti) Artiodactyl ungulate mammal, family Cervidae, subfamily Cervinae (1 extant species in US or Canada)

Cervus canadensis (Erxleben, 1777). C. cf. *c. canadensis* Pleist.? fossil in Dyer Co.,TN (Marcher 1959; elevation extralimital in Crystal Ball C., NV/ elk or wapiti now in sSK,sMB, coastal PNW, se along Rockies to ncNM, also AR,swSD, swTX)

ERMINE

Mammal Order Carnivora, Suborder Caniformia, Family Mustelidae, Subfamily Mustelinae (5 extant *Mustela* species in US or Canada)

Mustela Linnaeus 1758 (ermine, ferrets, minks, weasels) Mustelidae, Subfamily Mustelinae

Mustela erminea Linnaeus, 1758 (ermine/ approx 13,000 BP, extralimital in Cave-Without-A-Name, cTX)

FERRETS

Mammal Order Carnivora, Suborder Caniformia, Family Mustelidae, Subfamily Mustelinae (5 extant *Mustela* species in US or Canada)

Mustela Linnaeus, 1758 (ermine, ferrets, minks, weasels) Mustelidae, Subfamily Mustelinae

(5 extant *Mustela* species in US or Canada)

Mustela nigripes Audubon & Bachman, 1851 (Pleist. in January C.(AB), Snake Cr. Burial (White Pine Co., NV (15.1k -+700-9,460 -+160 yrs.), Moore Pit (Dallas & Denton Cos., TX (>37,000 yrs.) & Wisconsin in January (all outside present range), Orr (Beaverhead Co. (late Pleist), Jaguar (Lemhi Co. (10.37k -+ 350 yrs.), Little Box Elder (all MT) & Isleta (NM) C.; Irvingtonian in Cathedral C., NV(750-850 k) & early Holocene in Moonshiner C. (ID) / black-footed ferret/ Historically now in Great Plains & central Rocky Mountains, now restricted (all reintroduced except near Meetetse, WY) as a federally endangered species to a few sites in SD, WY)

FISHERS

Martes Pinel, 1792 (fishers, martens) mammal Order Carnivora, Suborder Caniformia, Family Mustelidae, Subfamily Mustelinae (2 extant *Martes* species in US or Canada)

Martes diluviana (= *Mustela d.* Cope (1889); *M. parapennanti* Gidley & Gazin, 1933) extinct Irvingtonian Diluvial F. in Port Kennedy (PA), Cumberland C.(MD) & Conard Fissure (AR)

FOXES - Subfamily Borophaginae (borophagines) (once in Simocyoninae) (*Borophagus*, *Urocyon*, *Vulpes*)

Borophagus Cope, 1893 (= *Hyaenognathus* in part) Canidae mammal, Subfamily Borophaginae (borophagines) (once in Simocyoninae) (*Borophagus*, *Urocyon*, *Vulpes*)

Borophagus diversidens Cope, 1893 (*Felis hillianus* Cope, 1893; *Hyaenognathus pachyodon* Merriam, 1903; *H. (Porthocyon?) dubius* Merriam, 1903; *Porthocyon matthewi* Freudenberg, 1910) (early Irvingtonian extinct in Inglis sinkhole, Citrus Co.,FL/ bone eating dog)

Urocyon Baird, 1857 - mammal Order Carnivora, Suborder Caniformia, family Canidae Mustelinae (1 extant species in US or Canada)

Urocyon cinereoargenteus (Schreber, 1775) (extant in US except WA, eOR, neOK, NB, nRockies, wSD, ND/ gray fox/ TTx in OH, PA)

Vulpes Frisch, 1775 (kit and red foxes) - mammal Order Carnivora, Suborder Caniformia, family Canidae (2 extant species in US or Canada)

Vulpes fulva (Linnaeus, 1758) (may = Old World *Vulpes v.*) (NA except mAB to swTX, coastal CA, most of AZ/red fox/ extralimital in Isleta C.(NM) & Crystal Ball C.(>25,000BP,UT) & /Tx or Ac in IN; TTx in OK, PA)

Vulpes macrotis Merriam, 1888 (kit fox/ now in nMex, n. to wTx,NM, swWY, AZ, wUT, NV, wCA, seOR and swID/ north extralimital in Jaguar Cave, Lemhi Co., ID)

Vulpes velox (Say, 1823) (sSK, AB s. to nTX/swift fox/extralimital se to Schulze C.(TX), n. to

Mid-WI January C., AB & Isleta C.(NM)

Vulpes velox velox (Say, 1823) (kit fox/ TTx in OK)

Vulpes vulpes (*Canis* v. Linnaeus, 1758; *V. palmaria* Hay, 1917) (may incl. *Vulpes fulva*)

GLYPTODONS - A turtle-like mammal fossils

Glyptotherium Osborn, 1904 -Mammal of Order Edentata, Family Glyptodontidae

Glyptotherium arizonae Gidley, 1926 (*Xenoglyptodon fredericensis* Meade, 1953) (Pleist. Girdley's glyptodont/ early Irvingtonian in Inglis sinkhole, Citrus Co.,FL & Pleist. (latest Blancan or earliest Irvingtonian) Haile filled-in FL sinkhole or cave)

Glyptotherium floridanus (*Boreostracon* f. Simpson, 1929; *Glyptodon petaliferus* Cope, 1888 (nomen nudum)) (both in Inner Space C. (23,000BP), TX)

Goat - See Mountain Goat

GOPHERS

In mammal Order Rodentia, Suborder Sciuerognathi, Infraorder Sciuromorpha,

Family Geomyidae (pocket gophers) (*Geomys*, *Pappogeomys*, *Thomomys*)

Fossil Bibl.: Fling 1994 .

Cratogeomys castanops = *Pappogeomys c.*

Geomys Rafinesque, 1817 (eastern pocket gophers) - Order Rodentia, Suborder Sciuerognathi, Infraorder Myomorpha, Family Geomyidae (8 extant species in US or Canada)

Geomys bursarius (Shaw, 1800) (Plains pocket gopher Irvingtonian extralimital in Welsch (KY), Cheek Bend (TN) & Autolite (40,000BP/MO) C. & cf. Harrodsburg Crevice (Monroe Co.,IN/now in MW from nSD s. to sTX, e. to nIL). **Bibl.:** L. Brown 1995

Geomys propinetus K.T. Wilkins, 1984 (type locality in early Irvingtonian in Inglis sinkhole, Citrus Co.,FL/ extinct pocket gopher)

Pappogeomys Merriam, 1895 - Order Rodentia, Suborder Sciuerognathi, Infraorder Myomorpha, Family Geomyidae (1 extant species in US or Canada)

Pappogeomys castanops (= *Cratogeomys c.* Baird, 1852) (Yellow Faced or Mexican pocket gopher as Wisconsinan fossil in Williams (TX) & Burnet C. (NM)/ now in nMex. N. to wTX, eNM, seCO, swKansas)

Plesiothomomys – See *Thomomys bottae potomacensis*

Thomomys Wied-Neuweid, 1839 - Order Rodentia, Suborder Sciuerognathi, Infraorder

Myomorpha, Family Geomyidae (9 extant species in US or Canada). **Bibl.:** Fling 1997

Thomomys (*Megascapheus*) *bottae* (*Oryctomys* (*Saccophorus*) *b.* Eydoux & Gervais, 1836) (Rancholabrean Valley P. in Burnet, Dry & Isleta C. (NM) & Klein C. (TX); extralimital in late Sangamonian times in Sabertooth C., FL/ Valley or Botta's pocket gopher/ now in SW n. to swOR, e. to CO, s. to Sinaloa & Nuevo Leon Mex./ endogean in CA) **Bibl.:** Nelson 1951

Thomomys bottae bursarius = *Geomys b.*

Thomomys bottae castanops = *Pappogeomys c.*

Thomomys bottae microdon Sinclair, 1905 (extinct Sinclair's Mazama G./Wisconsinan fossil in Potter Cr. & Samwel C., CA)

Thomomys bottae orientalis (*T. o.* Simpson, 1928) (Eastern P. as fossil in late Sangamonian & in Sabertooth C. (Sangomonian or possibly Wisconsinan,L))

Thomomys bottae potomacensis (*Plesiothomomys p.* Gidley & Gazin, 1933) (extinct Potomac P. in Irvingtonian in Cumberland (MD) & Wisconsinan in Hamilton (WV: also listed as *T.p.*) & Trout C. (WV: also listed as *T. (Plesiothomomys)* undet. sp.) in Appalachians)

Thomomys bottae talpoides = *T. talpoides*

Thomomys bottae umbrinus = *T. u.*

Thomomys microdon Sinclair, 1905 (extinct Sinclair's Mazama gopher in Samwell Cave, CA)

Bibl.: Sinclair 1904

Thomomys talpoides (*Cricetus t.* Richardson, 1828) (Pleist. northern pocket gopher extralimital in Dry C. (NM) & Pintwater C. (32-9k BP in NV); Holocene in Lamar C., WY/ now in swCanada s. to nNV, nNM, nAZ, SD, ND). **Bibl.:** Hadly 1995; Hadly et al. 1998

Thomomys umbrinus (*Geomys u.* Richardson, 1829) (extralimital pygmy pocket gopher in Schulze C.(12,500BP) (TX)/ now in nMex. n. to extreme sAZ, sNM)

Fossil Bibl.: Hadly 1990, 1997; Hadly et al. 1998

GROUND SLOTHS

Fossil mammal in Class Edentata

Family Megatheriidae (*Glossotherium*, *Nothrotheriops*, *Paramylodon*)

Familiy Megalonychidae (*Megalonyx*)

Glossotherium Owen, 1840 (= *Myiodon*) - Megatheriidae edentate mammal. **Bibl.:** Naples 1989

Glossotherium harlani = *Paramylodon harlani* McDonald, 1995

Megalonyx Jefferson, 1799 - Megatheriidae ground sloths. **Bibl.:** Claypole 1897; W. Cooper 1836

Megalonyx jeffersonii (*Megatherium j.* Desmarest, 1822; *Megalonyx laqueatus* Harlan, 1843; *M. dissimilis* Leidy, 1855; *M. leidy* Lindahl, 1893; *M. sierrensis* Sinclair, 1905; *M. californicus* Stock, 1913; *M. milleri* Lyon, 1938; *M. hogani* Stovball, 1940; *M. brachycephalus* Stovall & McAnulty, 1950) (Wisconsinan Jefferson's ground sloth in Haynes C. (WV – may be type locality), Potter Cr. C. (CA) Devil's Den (FL), Glass, White=s (Mammoth C., National Park) & Gillenwater (KY), Cave Acb-3 Unit E (Unit E – Sangamonian, 11.5-4k, average 11.8k yrs., Unit D – 172k +/-10k, both in AL), Sangamonian in AL), Big Bone & Peck (TN), & Haynes C. (WV) **Bibl.:** Grady 1993a, 1995; Harlan 1831; Leidy 1857; Mercer, 1897a

Megalonyx leptostomus Cope, 1893 (early Irvingtonian in Inglis sinkhole, Citrus Co., FL & Pleist. (latest Blancan or earliest Irvingtonian) Haile filled-in FL sinkhole or cave/ narrow-mouthed ground sloth)

Megalonyx undet. sp. (Hawver, Potter Cr. & Samwel C., CA) & late Rancholabrean Reddick I Site fissure, (Marion Co.), FL)

Megalonyx wheatleyi Cope, 1871 (= *M. loxodon*, *M. sphenodon*, *M. tortulus* Cope, 1871; *M. scalper* Cope, 1899) (extinct Middle Pleistocene fossil/ type in Port Kennedy C. (PA) +Haile XVI filled-in FL sinkhole or cave & Scott Hollow C. (WV))

Eremotherium Lund, 1842 – Megatheriidae ground sloth

Eremotherium undet. sp. (Pleist. (latest Blancan or earliest Irvingtonian) Haile filled-in FL sinkhole or cave)

Eremotherium mirabile (Leidy, 1855) (early Irvingtonian in Inglis sinkhole, Citrus Co., FL/ status unclear, may not be valid species)

Megalonyx wheatleyi Cope, 1871 (*M. loxodon*, *sphenodon* & *tortulus* Cope, 1871; *M. scalper* Cope, 1899) (Irvingtonian Wheatley's ground sloth in Port Kennedy C., PA; cf *M.w.* in 8,000 BP Devils Den sink, Levy Co., FL & in Sabertooth Cave (Sangamonian or possibly Wisconsinan, FL))

Nothrotheriops Hoffstetter, 1952 – Megatheriidae ground sloths

Nothrotheriops shastensis (*Nothrotherium s.* Sinclair, 1905; *N. graciliceps* Stock, 1913; *N. texanum* Hay, 1916) (Shasta G. as fossil in Rampart (Akersten & McDonald 1991) & Coconino Cave (both Grand Canyon, AZ); Ventana C. (11,300 yrs. - AZ); Long, Hansen & M. 1974; Phillips & Van Devender 1974, 3 c. (TX, incl. Dust & McKitttrick Cave), Cowboy & Gypsum Cave (NV: coprolites: 11,000, 20,000, 28,500 BP) Hofreiter et al. 2000 Poinar et al. 1998; Bechan (UT), Carlsbad C. (111,900 yrs.) NM; Lower Sloth (10,750-11,060 B.P.), Upper Sloth (11,760), Dust and Williams (all in Guadalupe Mts, wTX), & in Hawver, Potter Cr., Newberry (11,600 B.P.), Mitchell & Samwel C., (all 5 in CA); U-Bar C. (NM). **Bibl.:** Hofreiter et al. 2000; Naples 1987; Stock 1917

Nothrotheriops undet sp. (extinct in Pleist. Wilson Butte (14,500-15,00) C. (ID); Shelter C., NM & Williams C. (11,140-12,100 yrs.), wTX)

Paramylodon – Mylodontidae giant sloth – treated as a subgenus of *Glossotherium* by Hoffstetter 1952

Paramylodon harlani (*Mylodon h.* Owen, 1840; *Paramylodon nebrascensis* Brown, 1903; *M. garmani* Allen, 1913; *Glossotherium chapadmalensis* Kraglievich, 1925 (also treated as separate species) McDonald, 1995 (Pleist. In Hawver C. (sCA) & Lange (in Sierras, cCA) C.; McKittrick C. (wTX) early Irvingtonian in Inglis sinkhole, Citrus Co., FL & late Rancholabrean Reddick I Site fissure, (Marion Co.), FL) / Harlan's ground sloth)

HORSES

Equus Linnaeus, 1758 - mammal Order Perissodactyla, Family Equidae (1 extant species in US or Canada) **Bibl.:** Czaplewski 1991; Davenport & Ruddell 1995; Gibbes 1850; Gidley 1901; Skinner et al. 1992; Stirton 1942; Stock & Howard 1944; Winans 1985, 1989

Equus alaskae Winans, 1989 (*E. conversidens* Owen, 1869; *E. semiplicatus* Cope, 1893; *E.c.* retained by most authors) (extinct Mexican Horse or Mexican ass in Jaguar (ID), Dry, Burnet, Dark Canyon & Isleta Cave #1 (NM); Gypsum C. (NV); Williams (nw Culberson Co.,TX), Haystack? (Gunnison Co.,CO) & Crystal Ball? (UT) C.) **Bibl.:** Dalquist & Hughes 1965

Equus (*Amerhippus*) undet. sp. (Pleist. extinct in Natural Trap C., WY)

Equus complicatus Leidy, 1858 (extinct Complex-tooth Horse) (Pleist. in fissure at Mundy's Landing (KY)), cf. Harrodsburg Crevice (Monroe Co.,IN) & sink above Cove Hollow C. (now dam flooded) (TN) & Pleist. in Craig Quarry & Vess C.,TN)

Equus conversidens Owen, 1869 (junior syn. of *E. alaskae* according to some authors) (extinct Mexican Horse or Mexican ass in Papago Springs (AZ); Jaguar (ID), Dry, Burnet, Dark Canyon, Howell's Ridge (cf) & Isleta Cave #1 & #2 (NM); Gypsum C. (NV); Williams (nw Culberson Co.,TX), Haystack? (Gunnison Co.,CO); Crystal Ball? (UT); Natural Trap & Little Box Elder (cf) (WY) C.) **Bibl.:** Dalquist & Hughes 1965

Equus excelsus Leidy, 1858 (= *Onager hibbardi* Mooser, 1959; *O. arellanoi* M.1959; *Asinus aguascalentensis* M., 1959) (extinct/Burnet C., NM) **Bibl.:** E. Cope 1892

Equus francisci (Pleist. extinct at Cueva Quebrada (cf. *E.s.* at 12,280, 13,920 & 14,300 B.P. at Amistad NRA, TX))

Equus lambei Hay, 1917 (extinct, maybe be subspecies of *E. niobrarensis*/ Moore Pit (Rancholabrean),TX & Bluefish C., Yukon Territory, Canada) **Bibl.:** A. Burke & Cinq-Mars 1998;

Equus leidy (Sabertooth Cave (Sangomonian or possibly Wisconsinan, FL) &), in latest Irvingtonian sink near Coleman, Sumter Co., FL, in early Irvingtonian in Inglis sinkhole, Citrus

Co., FL)

Equus laurentius Hay, 1913 (= *E. niobrarensis* Hay, 1913; *E. hatcheri* Hay, 1915) (extinct/ Pleist. in Dry, Burnet, Dark Canyon & Isleta Cave #1 & #2 (NM); Haystack (Gunnison Co., CO) C.) **Bibl.:** O. Hay 1927

Equus midlandensis = *E. scotti*

Equus occidentalis Leidy, 1865 (*E. bautistensis* Frick, 1921?) (Pleistocene extinct fossil in Ventana C. (11,300 yrs. - AZ); Hawver?, Samwel & Potter Cr. (CA); Dry (NM); Gypsum (NV) & McKittrick (TX)) C.)

Equus pacificus Leidy, 1869 nomen dubium (Savage, 1951 not nomen dubium; Lundelius, 1972) (extinct Pleistocene in Potter Cr. C. (CA))

Equus quinni Slaughter, 1962 (Moore Pit (Rancholabrean), TX)

Equus cf. *scotti* Gidley, 1900 (= *E. midlandensis* Quinn, 1957) (Crystal Ball C. (cf. *E. scotti*, 23,000BP, UT), Cueva Quebrada (cf. *E.s.* at 12,280, 13,920 & 14,300 B.P. at Amistad NRA, TX) & Moore Pit (Rancholabrean, TX)) **Bibl.:** C. Johnston 1937

Equus undescr. sp. 1-4 (extinct Pleist. fossil in Natural Trap C. (WY))

Equus undet. or undescr. sp. (extinct Pleist. fossil in Dry C. (NM)) **Bibl.:** Harris & Porter 1980

Equus (Hemionus) undet. sp. (Pleist. extinct in Natural Trap C., WY)

Equus large extinct Pleist. undet. sp. or species (Crystal Ball (UT); Crypt, Fishbone, Gypsum, Schuiling C. & Owl C. Two (NV); Smith Cr. C. (CA) & dung from Oakleaf Alcove, Glen Canyon NRA, sUT)

Equus small extinct Pleist. undet. sp. or species (Crystal Ball C. (UT); Kokoweef, Schuiling & Smith Cr. C. (CA); Owl Cave Two (NV))

Equus undet. sp. or species (Papago Spr., Sandblast & Rampart C. (all nAZ); Schuiling (2sp., CA); Wilson Butte (14,500-15,000) C. (ID); Mineral Hill C. (NV); Isleta, Hermit, Shelter, Muskox, U-Bar & Conkling C. (NM); Smith C. (2 species, 12,600 yrs., NV) Snake Cr. Burial (15.1-17.7ka BP); Jaguar C. (ID); Schulze C. (12,500BP) & Hall C. (TX); Earlys or Earlys Pit (VA - Late Pleist.); Horned Owl C. & Prospects Shelter (WY); Rampart C. (nUT), 8,000 BP Devils Den sink, Levy Co., FL / in latest Irvingtonian sink near Coleman, Sumter Co., FL & early Wisconsinan in Haile XIVA sink near Haile, Alachua Co., FL)

Equus tau Owen, 1869 (*E. littoalis* Hay, 1913; *E. francisci* Hay, 1915; *E. achates* Hay & Cook, 1930; *E. quinni* Slaughter et al., 1962) (extinct/Burnet C., NM)

Parahippus Leidy, 1858 - mammal Order Perissodactyla, Family Equidae

Parahippus leonensis Leidy, 1858 (early Miocene extinct fossil in Thomas farm sinkhole/cave,

Gilchrist Co., FL)

jackrabbit - See Rabbit

HUMANS

Mammal of Order Primates, Family Hominidae

bones - (Schuiling C. (CA); Anderson Pit (IN) (R. Richards 1987), Carrol C. (MO); Mammoth (KY), Lehman (UT), Jerry Long (Ralls Co.,MO), Warm Mineral Spring, FL (Grey 1985); Hourglass C. (8,000BP) (CO) Rhinehart 1993; Pinnacle Point & Ripply Ridge (C.(CA); Conkling & Howell's Ridge (NM); Spirit C. (9,400 BP) (NV) (Anon. 1996, 1997); Taylor's C. (TN). CA: W. Wallace 1951; Wendell 1990; TX: Setzler 1932-5; Shafer 1970-1
TN Footprints - Centerville C.,TN - G. Wright et al. 1982
paleo fecal - Mammoth C. (KY) (2700 to 2300 BP) Sobolik et al. 1996, Oakleaf Alcove, Glen Canyon NRA, sUT - see coprolites

HYENAS

Chasmaporthetes Hay, 1921 (= *Euryboas*) - Hyaenidae mammals (hyenas) **Bibl.:** Kurten & Werdelin 1988.

Chasmaporthetes leptostomus Hay, 1921 (extinct in early Irvingtonian in Inglis sinkhole, Citrus Co., FL)

Chasmaporthetes ossifragus Berta, 1981 (extinct in early Irvingtonian in Inglis sinkhole, Citrus Co., FL)

LEMMINGS

Suborder Sciurognathis

Infraorder Myomorpha

Muridae (*Dicrostonyx*, *Lemmus*, *Mictomys*, *Synaptomys*) (see lemmings)

Dicrostonyx Gloger, 1841 - mammal Order Rodentia, Suborder Sciurognathi, Infraorder Myomorpha, Family Muridae, Subfamily Arvicolinae (7 extant species in US or Canada) **Bibl.:** Koenigswald & Martin 1984; Guilday 1963; G. & Doult 1961; Martin, Gilbert & Chomko 1979

Dicrostonyx hudsonius (*Mus h.* Pallas, 1778) (Hudson Bay collard lemming Pleist. extralimital south in New Paris (WV), Jaguar (ID) & Little Box Elder (WY) (11,000BP) C./ now in ne Canada e. of Hudson Bay). **Bibl.:** Gurbault 1981b; Grady & Garton 1981

Dicrostonyx torquatus (*Mus t.* Pallas, 1778) (collard lemming/ extralimital south in Jaguar (ID), Charlie Lake (BC: Driver 1996), New Trout C. (WV) & Bell & Little Box Elder Caves (WY: Zeimens & Walker 1974), all extralimital south)

Lemmus Link, 1795 (brown lemmings) - mammal Order Rodentia, Suborder Sciurognathi, Infraorder Myomorpha, Family Muridae, Subfamily Arvicolinae (1 extant species in US or

Canada)

Lemmus sibiricus (Mus l.s. Kerr, 1792) (22-23,000 yrs. old extralimital in January C., Alberta)

Bibl.: Foley & Raue 1987

Mictomys True, 1894 (also treated as subgenus of *Synaptomys*)

Mictomys meltoni Paulson, 1961 (= *Synaptomys m.*) (or *M. kansasensis* Hibbard, 1952)

(Irvingtonian extinct fossil in Cathedral C., NV/ Melton's bog lemming) Heaton 1999, 2000

Synaptomys Baird, 1858 - mammal Order Rodentia, Suborder Sciurognathi, Infraorder Myomorpha, Family Muridae, Subfamily Arvicolinae (2 extant species in US or Canada) **Bibl.:** Repenning & Grady 1988

Synaptomys australis Simpson, 1928 (extinct / Florida or southern bog lemming in Crankshaft Cave, Rancholabrean Arredondo fissure fillings, Alachua Co., FL & Devil's Den, FL & in Sabertooth Cave (Sangomonian or possibly Wisconsinan, FL)

Synaptomys (*Myctomys*) *borealis* (*Arvicola b.* Richardson, 1828) (northern bog lemming Pleist. extralimital in Bat & Crankshaft C., (MO), Bootlegger Sink & New Paris (PA), Cheek Bend, Guy Wilson, Baker Bluff & Peck (TN), Natural Chimneys, Earlys or Early=s Pit (VA - Late Pleist.) & Patton (WV) C./ now in AK, most of Canada)

Synaptomys cooperi Baird, 1858 (southern bog lemming south extralimital in Cumberland (MD) & Cheek Bend, Baker Bluff & Peck (TN) C. & TX (Friesenhahn & Klein C. (8- 9,000BP), Bluff (7,200BP), Hall, & Schulze (12,500BP) & C.-Without-A-Name (13,000BP)) & Trout (WV) C.)/ now in seCanada s. to NE,NB, nAR, along Appalachians)

Synaptomys undet. sp. (Late Pleist. extralimital in Fyllan Cave, TX) **Bibl.:** Repenning 1992

LLAMAS

Order Artiodactyla mammal

Camelidae (*Hemiauchenia*, *Palaeolama*)

Hemiauchenia Hibbard & Dalquest, 1962? - Camelidae llamas. **Bibl.:** Dompierre 1995

Hemiauchenia macrocephala (*Holmeniscus m.* Cope, 1893; *Camelus americanus* Wortman, 1898; *Tanupolama stevensi* Merriam & Stock, 1928; *T. hollomani* Hay & Cook, 1930) (extinct Large-headed Llama / Pleist. Smith; Cr.? & Schuiling? C. (CA); Isleta & Dry C.(NM), Lecanto 2A cave or fissure, Coleman IIA, Inglis & Haile XVA sinks (FL) & late Rancholabrean Reddick I Site fissure, (FL); McKittrick C. (TX); (Little Box Elder C.(WY))

Hemiauchenia cf. *macrocephala* (Cope, 1893) (Crystal Ball C.(.25,000BP), UT/ shortlimbed llama) **Bibl.:** Dompierre 1992.

Hemiauchenia undet. sp. (Schuiling C. (CA); Wilson Butte (14,500-15,00) C. (ID); Gypsum,

Smith (12,600 yrs.) & Mineral Spring C.(NV); Conkling (NM); Little Box Elder? (WY) C.)

Palaeolama Hoffstetter, 1952 - Camelidae llamas. **Bibl.:** Dompierre 1995

Palaeolama mirifica (*Tanuplama m.* Simpson, 1929) (shortlimbed or wonderful llama, extinct/
Rancholabrean fossil in Moore Pit (TX), in latest Irvingtonian sink near Coleman, FL, &
Lecanto 2A cave or fissure (FL)) late Rancholabrean Reddick I Site fissure, (FL)

Palaeolama undet. sp. (FL C. State Park, FL)

Tanuplama mirifica = *Palaeolama m.*

LYNX - See CAT

Lynx rufus = *Felis r.*

Mammoth - See Elephant

MARMOTS

Mammal Order Rodentia, Suborder Sciurognathi, Infraorder Sciuromorpha, Family Sciuridae,
Subfamily Sciurinae (*Marmota*) (6 extant species in US or Canada)

Marmota Blumenbach, 1779 (marmots) Family Sciuridae, Subfamily Sciurinae. **Fossil Bibl.:**
Goodwin & Reynolds 1989; Lange 1956; Nagorsen, Keddle & Luszcz 1996; Nagorsen 1989.

Marmota flaviventris (*Arctomys flaviventer* Audubon & Behman, 1841) (rockchuck; yellow-
bellied marmot extralimital in Rampart & Papago Sprs. (246 -+19ka to 26.7 -+7ka) (AZ),
Kokoweef (CA), Isleta, Dark, Shelter & Dry (NM) & Fowlkes & Lower Sloth (TX) C.;
Elevation extralimital in Haystack (CO), Devils Peak (sNV) & Mormon Mt. & Crystal Ball
C.(NV) C./ now in interior W (esp. mts.) e. to wSD) **Fossil Bibl.:** Goodwin 1989a; Goodwin &
Reynolds 1989; Karnes 1995; Nagorsen et al. 1996; Saysette & Walker 1992.

Marmota monax Linnaeus, 1758 (woodchuck or groundhog) (Pleist. extralimital in Trout (WV),
Cumberland (MD) C. & Mohave Desert caves; Tx or Ac in nMS, PA, VA; Tx in IN, OH/
sCanada s. to E to n.AL)

MARTENS

Mammal Order Carnivora, Suborder Caniformia

Martes Pinel, 1792 (fishers, martens) Family Mustelidae, Subfamily Mustelinae (2 extant *Martes*
species in US or Canada)

Martes americana(*Mustela a.* Turton, 1806) (= *M.a.a.*) (Pleist. Pine Marten extralimital in
eastern caves, Snake Cr. Burial C.(NV), Crystal Ball C.(>25,000BP,UT), Baker Bluff (TN) &
Bluff & Clark's C. in the West)/ presently in Canada, s.to nCA, nNM, nNE)

Martes pennanti (*Mustela p.* Erxleben, 1777) (Fisher, extralimital in Appalachians, Crankshaft & Peccary (AR), Bat (MO), Baker Bluff (TN), Bobcat (VA, footprints) Gourdault 1981b; Grady 1991d), in Ladds (GA) C. & FL (Barkalow, 1961)/ presently in Canada, s.to nCA, nID,wMT, nNE). **Bibl.:** Reynolds 1987a

Martes nobilis Hall, 1926 (= *M. americana* Turton, 1806 according to some authors) Youngman & Schueler, 1991 (extinct Noble Marten from late Pleist. in Potter Cr. & Samwel C. (CA), Jaguar & Wilson Butte (15,000-14,500) C. (ID); Smith Creek, Snake Cr. (9460-15,000 BP), Burial & Bronco Charlie (NV), Crystal Ball (UT); Old Crow River; Moonshiner (MT); Hidden (NM) Bell, Little Canyon Cr., Chimney Rock, Natural Trap & Little Box Elder C. (WY))

MICE (grasshopper, harvest, jumping, pocket, & pygmy)

Mammal Order Rodentia

Suborder Sciurognathi

Infraorder Myomorpha

Family Muridae (Old World **rats** & mice) (see also rats and woodrats)

(*Allophaiomys*)

Subfamily Arvicolinae (*Microtus*)

Subfamily Murinae (*Mus*)

Subfamily Sigmodontinae (*Baiomys*, *Onychomys*, *Peromyscus*,

Reithrodontomys)

Family Heteromyidae (heteromyid rodents)

Subfamily Perognathinae (*Perognathus*)

Family Dipodidae (brich & jumping mice & jeroboas)

Subfamily Zapodinae (*Napaeozapus*, *Zapus*)

Allophaiomys Kormos, 1933 – Muridae rodents

Allophaiomys pliocaenicus = *Microtus p.*

Allophaiomys undet. sp. (extinct? In Irvingtonian in Cathedral C., NV)

Baiomys True, 1894 (pygmy mice) Family Muridae, Subfamily Sigmodontinae (1 extant species in US or Canada)

Baiomys taylori (*Hesperomys t.* Thomas, 1887) ((Northern) Pygmy Mouse as fossil in Schulze C. (12,500BP) & Cueva Quebrada/ now in nMex. n. to eTX, seAZ)

Microtus Schrank, 1798 - Family Muridae voles, Subfamily Arvicolinae (16 extant species in US or Canada) **Bibl.:** R. Martin 1987, 1995; Meulen 1978; Zakrzewski 1985

Microtus aratai (*Pitymys a.* R.A. Martin, 1974) (extinct Llano vole/ in latest Irvingtonian sink near Coleman, Sumter Co., FL/ considered by some authors as *P. cf. mcknowni*)

Microtus cumberlandensis Van der Meullen, 1978 (Extinct Cumberland Pine V., Irvingtonian in Cumberland C. (type))

Microtus chrotorrhinus (*Arvicola c.* Miller, 1894) (Pleist. Red, Yellownose or Rock V. in Clark's & Eagle C. & Irvingtonian in Trout C. (WV))/ now in neCanada s. along mts. To nwSC)
Bibl.: Guilday 1982

Microtus guildayi Van der Meullen, 1978 (*Arvicola didelta, involuta, sigmodus, speothen & tetradelta* Cope, 1871; *M. involutus* Cope, 1871) (Extinct, Irvingtonian type locality in Cumberland C.; Port Kennedy C.)

Microtus hibbardi (*Pitymys h.* Holman, 1959) (extinct early Rancholabrean Hibbard's pine vole in Hamilton C. (WV))

Microtus llanensis Hibbard, 1944 (extinct Llano vole/ in Coleman Fissure (AR) & latest Irvingtonian sink near Coleman, Sumter Co., FL)

Microtus longicaudus (*Arvicola l.* Merriam, 1888; *M. mordax*) (Long-tailed V. Pleist. extralimital in Chimney Rock, Little Box Elder (WY) & Moonshiner C. (ID); Dry & Burnet? C., NM; elevation extralimital in Crystal Ball C., NV/ now in AK s. to cNM, cCA/ Irregular Tx in NWT; Ttx in WV))

Microtus mexicanus (*Arvicola m.* Saussure, 1861) (Pleist. north extralimital in Dry, Howells Ridge, Shelter, Conkling & Anthony (seNM) & Papago Springs (AZ) C./ now in nMex. n. to e,nAZ, eNM, seUT, swCO)

Microtus mordax = *M. longicaudus*

Microtus montanus (*Arvicola m.* Peale, 1848) (Pleist. extralimital in Dry, Howells Ridge, Shelter, Conkling & Anthony C., seNM)

Microtus ochrogaster (*Hypudaeus o.* Wagner, 1842) (Pleist. extralimital in Dry, Howells Ridge, Dark Canyon, Shelter, Conkling & Anthony C., seNM c./now in nMex. n. to swCO, seUT, MW n. to cAB, e. to OH, s. to OK/ Tx in IN; preys on bats))

Microtus paroperarius Hibbard, 1944 (*Neodon paroperarius*) (extinct Hibbard's Tundra Vole in Cumberland C. (MD), Trout & Hamilton C. (both WV), latest Irvingtonian sink near Coleman, Sumter Co., FL, Irvingtonian in Cathedral Cave (NV) & 750,000 BP in Porcupine C., CO)

Microtus pennsylvanicus (*Mus p.* Ord, 1815; *Neotoma p.*) (meadow vole/ widespread Irvingtonian & Wisconsinan in Devil's Den, FL; extralimital in Beartown (TN), C. Without a Name, Hall & Klein C. (TX), Peccary C. (4,300BP, AR), & Bat C. (MO (10-16,000BP), Dry C. (seNM), & Crystal Ball C. (>25,000BP, UT) & filled sinkholes in Alachua Co., FL/ now in N s. to GA, NM/ Ac in OH) **Fossil Bibl.:** Arata 1961; Barnosky 1988, 1993; Bolt & Grande 1997; C. Gordon 1997; Guilday 1982; Hibbard 1956; Martin & Prince 1990; Holman, Bell, & Lamb 1990

Microtus pinetorum (*Pitymys p.* Le Conte, 1830) (Pine V. widespread fossil in East; sw extralimital in Rattlesnake C., TX/ now in E. s. to nFL, w. to WI,eTX/ TTx? in AR, OH, TX).

Bibl.: Meulen 1978; Jans 1993

Microtus*(*Allophaiomys*) *pliocaenicus or *M. p.* (= *Allophaiomys p.* Kormos 1933) (Extinct Kormo's Steppe Vole in Fyllan C. (TX) & Irvingtonian in Porcupine C. (750,000 BP in CO)) & Hamilton C. (WV). **Fossil Bibl.:** Keesing 1992; Zakrzewski 1975

Microtus speothen = *M. guildayi*

Microtus xanthognathus (*Arvicola .x.* Leach, 1815) (Pleist. Yellow-cheeked Vole widespread, extralimital in East, as in Cheek Bend & Baker Bluff C.(TN) & Lloyds Rock Hole, PA/ now in cAK to cAB) **Bibl.:** Guilday 1982

Mimomys Forsyth Major, 1902 (voles) (also treated as subgenus of *Ophiomys* Repenning, 1987?)

Mimomys (*Cromeromys*) *virginianus* C. A. Repenning & F. Grady, 1988 (possibly *Cromeromys*) (Irvingtonian extinct fossil in Cathedral C., NV) Owen et al. 2000

Mimomys (*Cromeromys*) cf. *virginianus* Repenning and Grady, 1988 (extinct fossil in WV & CO (cf. *M. cf. v.*))

Mus Linnaeus, 1766 (house mice) Family Muridae, Subfamily Murinae (1 extant species in US & Canada)

Mus musculus Linnaeus, 1758 (House Mouse/ now in NA/ Ttx or Ac in AL, PA)

Napaeozapus Preble, 1899 (woodland jumping mice) Family Dipodidae (=Zapodidae) Subfamily Zapodinae (jumping mice) (1 extant species in US or Canada)

Napaeozapus insignis (*Zapus i.* Miller, 1891) (Woodland jumping mouse as fossil in Robinson & Clark's C./ now in seCanada, NE, s. along Appalachians/ TTx or Ac in PA; Ac in OH)

Perognathus Wied-Neuweid, 1839 (pocket & silky pocket mice) Family Heteromyidae, Subfamily Perognathinae (10 extant species in US or Canada) **Bibl.:** Osgood 1900

Perognathus flavescens Merriam, 1889 (= *P. apache* & *melanotus*) (Apache or plains pocket mouse as fossil in Papago Springs C. in AZ/ now in MW, swWI to nTX),

Perognathus flavus Baird, 1855 (= *P. merriani* J.A. Allen, 1892) (Silky pocket mouse/ Pleist. in Isleta C./ Tx in TX)

Perognathus inornatus Merriam, 1889 (San Joaquin pocket mouse/ Pleist. extralimital in McKittrick C. (NM)/ now in cCA)

Perognathus intermedius Merriam, 1889 (rock pocket mouse in Isleta C./now in swTX n. to nAZ, cNM/ TTx in TX)

Perognathus gilvus Osgood = *P. flavus*

Perognathus parvus (*Cricetodipus p.* Peale, 1848) (Pleist. Great Basin pocket mouse in Moonshiner C. (ID) / now in Great Basin n. to seBC)

Perognathus undecr. sp. (Pleist. in Dry C., seNM)

Peromyscus Gloger, 1841 (deer & white-footed mice) Family Muridae, Subfamily Sigmodontinae (17 extant species in US or Canada)

Peromyscus attwateri J.A. Allen, 1895 (Texas mouse/ Ttx in AR)

Peromyscus boylei (*Hesperomys b.* Baird, 1855) (fossil brush mouse in Klein & Schulze C.(12,500BP) & Friesenhahn C.,all TX/ now in SW to nwAR, nCA, UT / Tx in CA (Tulare Co.), NM, TX)

Peromyscus crinitus (*H.c.* Merriam, 1891) (canyon mouse/ Pleist. in Dry C. (NM, extralimital/ now in Great Basin n.to cOR/ TTx in CA)

Peromyscus cumberlandensis Guilday & Handley, 1967 (extinct Pleist. Cumberland mouse in Cumberland C.(MD) & Trout & Hamilton C. (both WV))

Peromyscus difficilis (*Vesperimus d.* J.A. Allen, 1891) (Wisconsinan Rock Mouse extralimital in Dry C.(eNM) & Fowlkes C., TX)/ now in nMex., n.through NM to eAZ, ncCO)

Peromyscus eremicus (*Hesperomys e.* Baird, 1858) (cactus mouse/ TX/TTx?/fossil in Friesenhahn C.,TX/ Tx in TX/now in nMex.,swTX nw.to nNV)

Peromyscus gossypinus (*H. g.* LeConte, 1853) (cotton mouse extralimital in Friesenhahn C.,TX/ now in SE except sAppalachians)

Peromyscus leucopus (*Musculus l.* Rafinesque, 1818) (white-footed mouse/ TTx in IN, KY, MO, MS, OH, PA; Tp in NM/ fossil in Moonshiner C. in ID, extralimital) Viele 1989/ now in E to seAZ, eMT) **Bibl.:** Viele & Studier 1990

Peromyscus maniculatus (*Hesperomys m.* Wagner, 1845) (deer mouse /US, Canada except SE/ Tx in CA (Tulare Co.), MO, NV, OR, PA, TX, WA) **Bibl.:** Senger & Crawford 1984

Peromyscus pectoralis Osgood, 1904 (white-ankled or encinal mouse /TX/TTx?/fossil in Klei & Schulze (12,500BP) (TX) & Dry C. (NM)/ TTx in KY, OR, TX). **Bibl.:** Cordes 1981,

Peromyscus undet. sp. (Tx in BC, KY, & ON (feeds on bats) **Bibl.:** Martin 1968; Tarnsitt 1957; R. Martin 1967

Proheteromys A.E. Wood, 1932 – Heteromyidae pocket mice

Proheteromys floridanus A.E. Wood, 1932 (early Miocene extinct fossil in Thomas farm sinkhole/cave, Gilchrist Co., FL)

Proheteromys magnus A.E. Wood, 1932 (early Miocene extinct fossil in Thomas farm sinkhole/cave, Gilchrist Co., FL)

Onychomys Baird, 1858 - mammal Order Rodentia, Suborder Sciurognathi, Infraorder Myomorpha, Family Muridae, Subfamily Sigmodontinae (3 extant species in US or Canada)

Onychomys leucogaster (*Hypudaeus l.* Wied-Neuwied, 1841) (Northern M. as fossil in Crankshaft C. (extralimital east)/ now in interior W., from cSK to sTX) **Bibl.:** Riddle & Choate 1986

Onychomys torridus (Coues, 1874) (upper elevation extralimital in Pleistocene Lower Sloth (wTX) & Muskox (sNM) C. / southern grasshopper mouse/ now in sCA, cNV, swUT s. to AZ (except ne), c,swNM, wTX to Mex.))

Pitymys pinetorum = *Microtus p.*

Perodipus montanus richardsoni = *Microtus r.*

Reithrodontomys Giglioli, 1874 (harvest mice) Family Muridae, Subfamily Sigmodontinae (5 extant species in US or Canada)

Reithrodontomys montanus (*Reithrodon m.* Baird, 1855) (plains harvest mouse / Pleist. in Klein & Schulze C.(12,500BP) & Longhorn C. in TX/ now in nMex. n. to eWY,swSD)

Reithrodontomys fulvescens J.A. Allen, 1894 (fulvous harvest mouse/ Holocene extralimital in Fowlkes C.,wTX/ now in nMex. nw.to sAZ, se.to swMO)

Reithrodontomys humulis (*Mus h.* Audubon & Bachman, 1841) (Eastern harvest mouse/ Illinoian fossil in Costeau Pit/now in nMex. n.to AR, seAZ)

Zapus Coues, 1876 (jumping mice) Dipodidae, Subfamily Zapodinae (3 extant species in US or Canada)

Zapus hudsonius (*Dipus h.* Zimmermann, 1780; *Z. adamsi* Hibbard, 1955) (meadow jumping mouse as fossil in Cumberland C.,MD/ now in AK s. to sBC, MW, NE)

Zapus princeps J.A. Allen, 1893 (western jumping mouse as fossil only from Schulze C.(12,500BP/ now seAK s. to cCA, cNM, neSD)

Zapus sandersi Hibbard, 1956 (extinct Sander's jumping mouse in Pleist. Port Kennedy C., PA) (13,000BP), cTX).

MINK

Mammal Order Carnivora, Suborder Caniformia, Family Mustelidae, Subfamily Mustelinae (*Mustela*, *Trigonictis*)

Mustela Linnaeus, 1758 (ermine, ferrets, minks, weasels) Family Mustelidae, Subfamily Mustelinae (5 extant *Mustela* species in US or Canada)

Mustela vison Schreber, 1777 (Irvingtonian in Cudahy & Cumberland C. & Conrad Fissure (AR)); extralimital in Snake Cr. Burial, Crystal Ball, & Bronco Charlie (GB)/mink/ [presently in NA except SW)

Trigonictis Hibbard, 1941- Mustelidae mammal, Subfamily Grisoninae

Trigonictis macrodon Hibbard, 1941 (early Irvingtonian extinct in Inglis sinkhole, Citrus Co., FL)

MOLES (see also shrews)

Insectivore mammal of Family Talpidae (moles, desmans & shrew-moles)

Subfamily Talpinae (*Parascalops*, *Scalopus*, *Scapanus*)

Parascalops True, 1894 (hairy-tailed moles) Talidae, Subfamily Talpinae (1 extant species in US and Canada)

Parascalops breweri (Bachman, 1842) (hairy-tailed mole/ extralimital in MO (Crankshaft C., Irvingtonian), IN caves & TN (cf. *breweri*, Pleist. in Craig Quarry/ now in sME, sON, s. to MD & coastal plain in NC, VA, along Appalachians s. to wTN, wNC, w. to eOH, eKY)

Scalopus E. Geoffroy St.-Hilaire, 1803 - Talidae, Subfamily Talpinae (1 extant species in US and Canada)

Scalopus aquaticus (Linnaeus, 1758) (sastern or common mole/ w. extralimital in latest Pleist. in Hall C., TX/ now in most of US from sMN, extreme seWY, KS an and cTX east to Atlantic & Gulf coast (except most of New England, Appalachians & sFL) **Bibl.:** R. Baker 1951

Scapanus Pomel, 1848 - Talpidae, Subfamily Talpinae (3 extant species in US or Canada)

. **Bibl.:** J. Hutchison 1966

Scapanus latimanus (Bachman, 1842) (extinct broad-footed mole as Pleist. fossil in Potter Cr. & Hawver Caves, CA. Blacan/ TTx in CA) **Bibl.:** J. Hutchison 1987

MOOSE

Cervidae artiodactyl mammal, Subfamily Odocoileinae (*Cervalces*)

Cervalces Scott, 1885 (moose) Cervidae ungulate mammal (1 extant species in US & Canada)

Cervalces scotti (Lydekker, 1898) (extinct stag-moose/ NE,MW/Frankstown C.(PA).

MOUNTAIN BEAVER

Aplodontia Richardson, 1829 mammal Order Rodentia, Suborder Sciurognathi, Family Aplodontiidae (1 extant species in US & Canada) (*Aplodontia*)

Aplodontia rufa (*Anisonyx r.* Rafinesque, 1817) (Wisconsinan in Samwel, Potter Cr., & Hawver C. (nCA), Holocene &/or Pleist. in Oregon Caves (OR) & south extralimital in Hawver C. (CA))

MOUNTAIN GOATS

Mammal Order Artiodactyla, Bovidae, Subfamily Caprinae (*Oreamnos*)

Oreamnos Rafinesque, 1817 (mountain goat) Bovidae, Subfamily Caprinae (1 extant species in US & Canada)

Oreamnos americanus (Blainville, 1816) (mountain goat/ Wisconsinan extralimital in Bell (WY), Horned Owl (WY), Rampart (nAZ), Little Box Elder, Samwel (CA), & Potter Cr. C. (CA)/ now in se AK to nWA, nID)

Oreamnos harringtoni Stock, 1936 (extinct Harrington's mountain goat in Smith Cr. (NV, 12,600 yrs, type locality), Muskox (NM), Bare Ladder Shelter (dung 39,800 B.P.) & Bechan (UT) & Rampart (dung - 10,140 B.P., 28,700 B.P. & bones – 12,930 B.P.), Skull, Stanton, Tse'an Kaetan (dung 30,600 B.P. to 14,220 B.P.), Crescendo (prob. dung at 16,640 B.P.), Left Eye (or dung of *Ovis canadensis*), Right Eye, Five Windows (or dung of *O.c.*), Chuar (29,380 B.P.), Disappearing (dung at 27,360 B.P.) & Tse'an Bida (24,190 to 11,850 B.P.) Caves (all 9 in Grand Canyon) P Caves. **Bibl.:** Cragin 1900; Jass, Mead & Logan 2000; J. Mead 1983; J. Mead & Lawler 1995

Oreamnos undet. sp. (fossil dung in Shrubbox Alcove (Glen Canyon NRA), sUT)

Oreamnos-like species (extinct Pleist. fossil in Muskox C., NM)

MOUNTAIN LION

Felis atrox = *Panthera a.*

Puma Jardine, 1834 - Order Carnivora, Suborder Feliformia, Family Felidae, Subfamily Felinae (1 extant species in US & Canada)

Puma concolor (*Felis c.* Linnaeus., 1771) (= *F. Californica*, *cougar*, *hippolestes*, *improcera*) (W, sFL, TX, LAT/ mountain lion/ Tx in NM, TX/ common as Pleist. fossil, extralimital in Kitty City C., TN) **Bibl.:** Handley et al 1961

murid - A species of rodent family Muridae (Old World rats and mice). See **mouse, lemming, rat & vole**

MUSKOXEN (see also shrub-ox)

Of mammal Order Artiodactyla Family Bovidae, Subfamily Caprinae (*Ovibos*, *Symbos*)

Bootherium Harlan, 1825 - muskoxen) Family Bovidae, Subfamily Caprinae Mammal of Order Artiodactyla, Family Bovidae, Subfamily Caprinae. **Bibl.:** J. Allen 1913; Hesse 1942

Bootherium bomifrons (*Bos b.* Harlan, 1825) (extinct/Natural Trap (WY) Nease 1986, IN (Richards, L. & McDonald 1991), Trout C. (WV) & Frankstown C.(PA). **Bibl.:** J. McDonald, Freeman et al. 1989

Ovibos Blainville, 1816 (musk ox) Family Bovidae, Subfamily Caprinae (1 extant species in US & Canada)

Symbos Leidy, 1852 (muskoxen) Family Bovidae, Subfamily Caprinae, Tribe Ovibovini. **Bibl.:** J. Allen 1913.

Symbos cavifrons. (Leidy, 1852) (*Scaphoceros tyrelli* Osgood, 1905; *Bison appalachicolus* Rhoads, 1895; *Liops zuniensis* Gidley, 1906; *Bootherium sargenti* Gidley, 1908; *Symbos australis* Brown, 1908; *B. nivicolens* Hay, 1915; *Symbos n.* Hay, 1920; *S. convexifrons* Barbour, 1934; *Ovibos giganteus* Frick, 1937; *B. brazosis* Hesse, 1942)) (Pleist. musk-ox in Frankstown (PA), Musk-Ox (NM) Ahlstrand & Crisman 1978 & Natural Trap (WY) & Crystal Ball C.(.25,000BP),UT) **Bibl.:** M. Nelson & Madson 1987

Symbos undet. sp. (Deer Cr. C.(NV); Prospects Shelter, Little Box Elder & Little Canyon Cr. C. and Prospects Shelter (WY)).

Muskrat - See rat

mustelid - mammal of Order Carnivora, family Mustelidae. Mead & M., 1989. Incl. badger, ferret, fisher, marten, mink, otter, skunk, weasel & wolverine.

NUTRIA

Order Rodentia, Suborder Hystricognathi

Myocaster Kerr, 1792 - Family Myocastoridae (1 extant species in US & Canada)

Myocaster coypus (Molina, 1782) (nutria) (TTx in TX/ now in scattered areas in US)

OCEOLOT

mammal Order Carnivora, Suborder Feliformi

Leopardus Gray, 1842 (American spotted cats) Family Felidae, Subfamily Felinae (1 extant species in US & Canada)

Leopardus pardalis (*Felis pardalis* Linnaeus, 1758) (= *Felis albescens*, *canescens*, *griffithii*, *limitis*, *mearnsi*, *mexicana*, *ocelot*, & *pseudopardalis*, *Leopardus griseus*) (sTX, seAZ/ ocelot/ Ttx? In TX/ FL & late Rancholabrean Reddick I Site fissure, (Marion Co.), FL)

OPOSSUM

Mammal of Subclass Theria, Infraclass Metatheria, Superorder Marsupialia (or as order), Order Didelphimorphia

Didelphis Linnaeus, 1758 (large American opossums Family Didelphidae, Subfamily Didelphinae. Syn: possum (1 extant species in US & Canada)

Didelphis virginiana Kerr, 1792 (now in E to sNH, sWI, w. to eCO, along Pacific coast/ Virginia opossum/ Ttx in FL(eats Myotis),PA,TX; TTx or Ac in AL, nMS)

OTTER

In mammal Order Carnivora, Suborder Caniformia, Family Mustelidae, Subfamily Lutrinae

Lutra Brunnich, 1771 (river otters) Family Mustelidae, Subfamily Lutrinae (1 extant species in US & Canada)

Lutra canadensis (*Mustela lutra* c. Schreber, 1776; *L. parviuspis* Gidley & Gazin, 1933; *L. iowa* Goldman, 1941) (Ttx in MO/ Pleist. fossil in Cumberland C./presently in NA except parts of Great Basin, swTX, sCA, sAZ,sNM)

Satherium - Family Mustelidae, Subfamily Lutrinae

Satherium piscinarium (*Lutra piscinaria* Leidy, 1873) (*Lutra piscinaria* Leidy; *Satherium ingens* Gazin, 1934) (fossil in Blancan cave or fissure filling in Haile XVA, Alachua Co., FL)- otter

PANTHER (see also mountain lion)

In mammal Order Carnivora, Suborder Feliformia, Family Felidae, Subfamily Pantherinae (*Panthera*)

Panthera Oken, 1816 (roaring cats) Family Felidae, Subfamily Pantherinae (1 extant species in US) **Bibl.:** Kurten 1973.

Panthera leo ((*Felis l.* Linnaeus, 1758)

Panthera leo atrox (*Felis a.* Leidy, 1853) (American lion in Ventana C. (11,300 yrs. - AZ); Potter Cr. C. (CA); Smith Cr. C.? (NV); Muskox C. & Isleta Cave #1 (NM), Cutler Hammock sinkhole (FL); tracks in MO) Graham, Farlow et al. 1996; Martin & Gilbert 1978 & Jaguar & Natural Trap C. (WY)

Panthera onca augusta (*Felis a.* Leidy, 1872) (jaguar/ extralimital north in Ruby Falls, Johnson, Lost Sea & Post Office (prob.) C., TN & FL (Coleman) filled sinkholes),

Panthera onca (Linnaeus, 1758) (= *Felis onca*; *F. augustus* Leidy, 1872; *F. veronis* Hay, 1919) (Pleist. jaguar extralimital in Bat C. (Ozark National Scenic Riverways, AR), OR C. (OR), A-maze-in (KY), Harrodsburg Crevice (IN); Hamilton C. (WV), Little Box Elder & Hamilton C. (WY) Grady 1981; Inner Space (23,000BP & Laubach C. (TX), Cumberland (MD), Port Kennedy (PA), Ladds Quarry (GA), Finger Quarry & Big Bone (TN) & footprints & scratch marks in Craighead Caverns (TN); / in latest Irvingtonian sink near Coleman, Sumter Co., FL FL & late Rancholabrean Reddick I Site fissure, (Marion Co.), FL & 8,000 BP Devils Den, FL / presently in seAZ, swNM/TTx? In swTX?) **Bibl.:** Matthews 1971a

PECCARY

In mammal Order Artiodactyla, Family Tayassuidae (*Mylohyus*, *Platogonus*, *Tayassu*)
Undet. Genus - Irvingtonian in limestone fissures in Ozark Mts. of Newton Co., AR.

Mylohyus Cope, 1889 - Family Tayassuidae

Mylohyus fossilis Westgate & Messick, 1985 (extinct in late Rancholabrean Reddick I Site fissure, (Marion Co.), FL/ forrest peccary)

Mylohyus nasutus (*Dicotyles n. & fossilis* Leidy, 1860; *D. pennsylvanicus* Leidy, 1889; *M. tetragonus* Cope, 1899; *M. browni & exortivus* Gidley, 1920; *M. gidleyi* Simpson, 1920) (extinct long-nosed peccary. in Russel C. (AL); Irvingtonian in Conrad Fissure (limestone fissures in AR Ozarks); Friesenhahn, C.(TX), Ice Box & Savage C.(KY), Jaguar, & Vess C.(TN), Town C.#2 (sp. footprints), Cumberland C.(MD), Sabertooth Cave (Sangamonian or possibly Wisconsinan, FL), Knob Rock C. & Harrodsburg Crevice (IN) Richards 1988, Plummer (MO) & Hartman's C. & New Paris #4 (11,300BP), PA; in latest Irvingtonian sink near Coleman, Sumter Co., FL) **Bib.:** Gourdault 1992; Lundelius 1960

Mylohyus undet. sp. (Cave Acb-3 Unit E (Unit E – Sangamonian, 11.5-4k, average 11.8k yrs., Unit D – 172k +-10k, both in AL)), in latest Irvingtonian sink near Coleman, Sumter Co., FL,

Platygonus Le Conte, 1848 - Family Tayassuidae. **Bibl.:** Guilday, Hamilton and McCrady 1971; Leidy 1889; Williston 1894.

Platygonus alemanii (extinct Pleistocene fossil in Papago Springs Cave, AZ)

Platygonus bicalcaratus Cope, 1892 (*P. texanus* Gidley, 1903) (extinct fossil in early Irvingtonian in Inglis sinkhole, fissure or cave, Citrus Co., FL)

Platygonus compressus Le Conte, 1848 (*P. leptorhinus* Williston, 1894) (extinct flat-headed peccary, 10 c. in KY (Mammoth C. , Wilson 1981, Welch Cave, Guilday, Hamilton & McCrady 1971; Wilson, Branstetter & Guilday 1975), MO (Zoo & Bat Caves), Indun Rockshelter (IN), & Appalachian caves (Laubach, Cherokee & Peccary C.), TN (Baker Bluff C.), Laubach (Slaughter 1966a); & Friesenhahn C., TX, 8,000 BP Devils Den sink, FL & late Rancholabrean Reddick I

Site fissure, (Marion Co.), FL, ncOH sinkhole (Gobertz 1998) & Castle Rock C.(WI) Palmer, H. 1974

Platygonus undet. sp. or species (Potter Cr. (CA) & Mammoth (KY) C.)

Platygonus *vetus* Leidy, 1882 (= *P. cumberlandensis* Gidley, 1920; *P. intermedius* Gidley, 1920) (may be large *P. compressus*) (extinct Leidy's peccary, middle Pleist. in Cumberland C.(MD), cf. Harrodsburg Crevice (IN), Hamilton & Poorfarm C. (both WV), Bishop C. (Bedford Co.,TN) & Lisanby C. (>250,000 BP, Caldwell Co.,KY); in latest Irvingtonian sink near Coleman, Sumter Co., FL, in early Irvingtonian in Inglis sinkhole, Citrus Co., FL)

Tayassu Fischer, 1814 (peccaries) Tayassuidae (1 extant species in US & Canada)

Tayassu *tajacu* (*Picari angulatus* Linnaeus, 1758; *Dictyles t.*) (javelina or collared peccary) (TTx in TX)

PIKAS

In mammal of Order Lagomorpha, Family Ochotonidae (picas, pikas, whistling hares, calling hares, mouse hares, rock conies) (*Ochotona*) **Bibl.:** Crawford 1975c; Grady 1991.

pika scat - Spherical & about 1/8" diameter. Larson 1972

Ochotona Link, 1785 (pikas) Family Ochotonidae (1 extant species in US & Canada)

Ochotona *princeps* (*Lepus p.* Richardson, 1828) (elevation extralimital in Mormon Mt. (NV), Haystack (CO), Crystal Ball C.(>25,000BP,UT) , Kelso C. (ON), Pintwater C. (32-9k BP in sNV) & Horned Owl C.(WY); eastern extralimital in Elba C.,ON/ now in sBC s. in W mts./ American pika/ TTx or Ac in CA; Ttx in WA)

Ochotona undescr. sp. (Pleist. extinct, Kelso C., ON) Churcher & Dods 1979; Mead & Grady 1996

PORCUPINES (see also coendu)

In mammal Order Rodentia, Suborder Hystricognathis, Family Erethizontidae (*Erethizon*)

Erethizon F. Cuvier, 1822 - Family Erethizontidae (1 extant species in US & Canada)

Erethizon *dorsatum* (*Hystrix d.* Linnaeus, 1758) (NA epigeal/ TTx in AZ, CA, NM, NS, OK, TX, IL, AR, PA, (Recent extralimital),WA/ now AK se to. NE, s. in W to nMex.)

Bibl.: Barkalow 1961; Betancourt, Van Devender & Rose 1986; Crawford 1975c; Graham 1962a; Bridgemon 1967, 1974. See Coendou.

Erethizon *kleini* Frazier, 1981 (extinct type in early Irvingtonian in Inglis sinkhole, Citrus Co., FL)

Erethizon poyeri R. C. Hurlbert, Jr. 1997 (extinct, type locality in Pleist. (latest Blancan or earliest Irvingtonian) Haile filled-in FL sinkhole or cave)

PRAIRIE DOGS

Order Rodentia

Family Sciuridae

Subfamily Sciurinae (*Cynomys*)

Cynomys Rafinesque, 1817 (Prairie dogs) Family Sciuridae, Subfamily Sciurinae (4 extant species in US & Canada). **Bibl.:** Rouse 1997

Cynomys (*Leucocrossuromys*) *churcherii* Burns & McGillivray, 1989 (= *C.(L.) niobrarius c.* Burns & McGillivray, 1989) (mid-Wisconsinan extralimital fossil in January C., Alberta)

Cynomys gunnisoni (*Spermophilus g.* Baird, 1855) (Gunnison's pocket gopher as fossil in Isleta C., NM)

Cynomys leucurus Merriam, 1890 (White-tailed p. as fossil in Horned Owl C./ now in cWY s. to nNM, eAZ).

PRONGHORNS

In mammal Order Artiodactyla

Family Antilocapridae (*Antilocapra*, *Capromeryx*, *Stokocerus*, *Tetrameryx*). Has horn cores & deciduous sheaths.

Antilocapra Ord, 1818 (pronghorn) Family Antilocapridae (1 extant species in US & Canada)

Antilocapra americana (Ord, 1815) (Pronghorn/ Pleist.. extralimital in Brynjulfson C.,MO/ now in Great Basin, interior W) **Bibl.:** Chorn, Frase & Frailey 1988

Capromeryx Matthew, 1902 (= *Breameryx* in part) (pronghorn) Family Antilocapridae.

Capromeryx arizonensis Skinner, 1942 (extinct in early Irvingtonian in Inglis sinkhole, Citrus Co.,FL/ Skinner's pronghorn)

Capromeryx* cf. *furcifer Matthew, 1902 (= *C. minimus* Meade, 1942) (extinct Pleist. in Fowlkes C., TX)

Capromeryx minor Taylor, 1911 (*Breameryx m.* Furlong, 1946) (extinct/ Diminutive Pronghorn/ Schuiling & Smith Cr.? C. (CA); McKittrick C. (TX); possible in Smith Cr Canyon C.,NV but unlikely)

Capromeryx undet. sp. or species (Rancholabrean fossil in Dry, Dark Canyon, Shelter & Conkling C.(NM); Smith C. (12,600 yrs., NV) ; Moore Pit & Fowlkes C., TX)

Stockoceros Frick, 1937 (described as subgenus of *Tetrameryx*) (pronghorn) Family

Antilocapridae

Stockoceros conklingi (*Tetrameryx c.* Stock, 1930) (Pleistocene extinct in Shelter (type locality) (Dona Ana Co.) & Muskox C., NM; Ventana C. (11,300 yrs. - AZ);)

Stockoceros onusrosagris (*Tetrameryx o.* Rossevelt & Burden, 1934) (Extinct Pleist. Quentin's pronghorn in Papago Springs (AZ) & Burnet (NM) & Muskox (NM) C.

Tetrameryx Lull, 1931 (pronghorn) Family Antilocapridae

Tetrameryx shuleri Lull, 1921 (Shuler's pronghorn/ extinct Rancholabrean in Moore Pit, TX)

Tetrameryx undescr. sp. (extinct/ Burnet C. in Bighorn Canyon ,MT)

RACCOONS

In Mammal Order Carnivora, Suborder Caniformia, Family Procyonidae, Subfamily Procyoninae (*Procyon*)

Procyon Storr, 1780 (raccoons) mammal Order Carnivora, Suborder Caniformia, Family Procyonidae, Subfamily Procyoninae (1 extant species in US & Canada)

Procyon lotor (Linnaeus, 1758) (NA/ Tx in AR, CA, IN, MS, OK, TN, WV; TTx in AL, KS, KY, MD, MO, OH, PA; Tx in NC, TX). Feeds on cave crickets & roosting bats (KS). Coprolites in Mammoth C., Wyandotte C., IN (Munson & Keith, 1984. / presently sCanada s.except most of CO, WY, Great Basin) **Fossil Bibl.:** Arata & Hutchinson 1964; P. Munson & Keitch 1984; Guilday & Parmalee 1966

RABBITS

In mammal Order Lagomorpha, Family Leporidae

Subfamily Archaeolaginae (*Hypolagus*)

Subfamily Leporinae (*Aztlanolagus*, *Brachylagus*, *Lepus*, *Sylvilagus*)

Leporidae lagomorph. **Bibl.:** Grayson 1977; Hockett 1994; Pettus 1956; J. White 1984. rabbit scat - Spherical & about 1/4 inch in diameter.

Aztlanolagus Russell & Harris, 1986 - mammal Order Lagomorpha, Family Leporidae, Subfamily Leporinae

Aztlanolagus agilis Russell & Harris, 1986 (extinct Rancholabrean fossil/ in Anthony Cave (type locality), U-Bar & Dry Caves, NM & Chihuahua, Mex.

Brachylagus Miller 1900 (as subgenus of *Sylvilagus*) (generally now considered a valid genera) (pygmy rabbits) Family Leporidae, Subfamily Archaeolaginae (1 extant species in US & Canada)

Brachylagus idahoensis (*Sylvilagus i.* Merriam, 1891.) (pygmy rabbit/ Rancholabrean

extralimital northwest in Jaguar & Moonshiner C., ID & southeast extralimital in Bechan C., UT/ now in Great Basin n. to seWA & sID)

Brachylagus coloradoensis Ramos, 1999 (extinct pygmy rabbit in early to middle Irvingtonian in *Porcupine C. (Type locality), CO)

Hypolagus Dice, 1917 - Leporidae mammal, subfamily Archaeolaginae, Subfamily Leporinae
Hypolagus undet. sp (2 undescr.? fossil species in Irvingtonian in Porcupine C., CO)

Lepus Linnaeus, 1758 (hares, jack rabbits) Family Leporidae, Subfamily Leporinae (8 extant species in US & Canada)

Lepus americanus Erzleben, 1777 (snowshoe or varying hare, jackrabbit, snowshoe rabbit/ extralimital Irvingtonian in Cumberland C.(MD) & Wisconsinan in Jaguar & Welsh C.(KY), Bat C.(MO), & Crystal Ball C.(>25,000BP,UT)/ now in AK s. to nCA, NE, s. along Appalachians & Rockies to nNM)

Lepus californicus Gray, 1837 (black-tailed jackrabbit) (now in SW to seWA, eAR, nSD/Ac in wTX)

Lepus townsendii Bachman, 1839 (white-tailed jackrabbit/ south extralimital. in Dry, Jaguar & Little Box Elder C.; elevation extralimital in Crystal Ball C., NV/ now in interior nW to swCanada & e. to MN)

Sylvilagus Gray, 1867 (cottontails) (hares, jack rabbits) Family Leporidae, Subfamily Leporinae (8 extant species in US & Canada)

Sylvilagus floridanus (Allen, 1877) (eastern cottontail Late Pleist. extralimital in Isleta C.,NM/ now in E to eCO, sNH, eMT)

Sylvilagus cf. *hibbardi* J. White, 1984 (cottontail Late Pleist. extinct in Fyllan Cave, TX)

Sylvilagus idahoensis = *Brachylagus i.* Merriam, 1891

Sylvilagus transitionalis (Bangs, 1895) (New England cottontail Pleist. extralimital in Clark's C./ now in sON s. along Appalachians.)

RATS

In mammal Infraorder Myomorpha, Order Rodentia, Suborder Sciurognathi, Family Muridae

Subfamily Arvicolinae (*Neofiber*, *Ondatra*)

Subfamily Murinae (*Rattus*)

Subfamily Sigmodontinae (New World rats & mice) (*Neotoma*, *Oryzomys*, *Sigmodon*)

Incl. black, cotton, kangaroo, musk, pack, Norway, water & wood rats (all Muridae rodents)
rat amber - Syn: amberat, ratite, rat guano deposit.

Neofiber True, 1884 (round-tailed muskrats) mammal Order Rodentia, Suborder Sciurognathi, Family Muridae, Subfamily Arvicolinae (1 extant species in US)

Neofiber alleni True, 1884 (round-tailed muskrat or Florida water rat/ widespread in FL Pleist.; extralimital in Mammoth C., KY /now in FL to sGA/ TX in nFL)

Neofiber diluvianus (*Microtus d.* Cope, 1896; *Schistodelta sulcatus* Cope, 1899; *Proneofiber d.*) (*Port Kennedy C./extinct/ diluvial water rat)

Neofiber leonardi Hibbard, 1943 (*Schistodelta l.*) (Extinct Leonard's W. Rat in Wisconsinan Trout C., WV & Irvingtonian (possibly late Kansan or early Yarmouthian) FL (Levy Co.) sinkhole) Bibl.: M.Frazier 1977.

Neotoma Say & Ord, 1825 (wood, cave or pack rat) Family Muridae, Subfamily Sigmodontinae (New World rats & mice) (1 extant species in US) (10 extant species in US or Canada) Syns: Plants in nests document climate change up to 40,000 BP) See darapskite & amberat.

Bibl.: Anon. 1951a; Betancourt, Van Devender & Rose 1986 Crawford 1975a; Crim 1961; J. Davis 1956; O. Davis and Anderson 1987; Dunning & Payne 1979; Elias 1987, 1990, 1997; Elias, Mead and Agenbroad 1992; Force 1989-90; J. Goertz 1970; Guilday 1958; W. Hall, Van Devender & Olson 1988, 1990; Holler 1991; Mohr 1964; Nieland 1977; Phillips & Van Devender 1974; Sharpe 1990; Spilman 1976; R. Thompson 1985; Thompson 1979; Van Devender 1986; Van Devender, Owen & Anderson 1988; P. Wells 1976, 1987.

woodrat scat - Spherical & 1/4 inch in diameter. It and associated fungi may sustain fly larva, collembolans, beetles, fungus gnat larvae, & mites.

Neotoma albigula Hartley, 1894 (nMex., AZ, NM, sCO, seUT/ whitethroat woodrat/ Tx in TX)

Neotoma cinerea (*Mus c.* Ord, 1815; *Neotoma spelaea* Sinclair, 1905) (bushytailed woodrat widespread Rancholabrean in West; end Pleist. extralimital in Lower Sloth (TX) & Isleta & Dark Canyon (seNM) C.; elevation extralimital in Crystal Ball C., NV/ now in seAK s. to nCA, se. to nwNM/ TTx in CA, OR, WA) **Bibl.:** F. Smith & Betancourt 1998.

Neotoma findleyi Harris, 1984 (extinct/ Pleist. from Dry C., NM)

Neotoma (*N.*) *floridana* (Ord, 1918, incl. *N. magister*) (Eastern woodrat as Irvingtonian in Cumberland C., Recent extralimital in nIN, IA, IL, IN, OH & MO c./now in cFL n. to seNY, nw to nwSD, w.to cTX/ Tx in AR, FL, GA, KY, IN, MO, OH, OK, WV/ MO Status undet.; IL State T&E)

Neotoma (*N.*) *floridana* **Bibl.** B. Clark et al. 1994; Fitch & Rainey, 1956; Lavoie, King & Simonovic 1988; Cudmore 1983; Lavoie, King & Simonovic 1985; Lavoie, Helf & Poulson 1996; P. Pearson 1952; Rainey 1956; Rose 1982

Neotoma floridana illinoensis A.H. Howell, 1910 (Tx in IL/ state tracked in TN/ now in IL, IN, KY, TN)

Neotoma fuscipes Baird, 1858 (Dusky-footed woodrat as fossil in Hawver C., CA/ now in wOR s. to wCA, along coast to Baja/ TTx in neCA/ *N. f. riparia* Federal T&E Candidate)

Neotoma (N.) goldmani Merriam, 1903 (Now in se.Chichuahua to wc.San Luis Petosi, Mex./ Pleist. n. extralimital in Dry & Burnet C., seNM)

Neotoma lepida Thomas, 1893 (TTx or Ac in CA/ desert woodrat/ now in Baja n.to sCA, NV, eAZ, eUT, seOR, swID)

Neotoma magister Baird, 1857 (= *N.floridana m.*) (Allegheny woodrat/ Tx in AL, KY, MD, PA, TN, WV, VA/ NY T&E) **Bibl.:** Heisler 1941; Lefton 1973; Rhoads, 1894, 1897; Poole 1940; Rhoads 1894

Neotoma mexicana (N. m. m. Baird, 1855) (Mexican woodrat/ fossil in Burnet, Papago Springs (AZ) & Centipede C. (TX)/ now in nMex. n. to ncCO,seUT) **Bibl.** Finley 1953

Neotoma micropus Baird, 1855 (plains packrat/seTX nw to seCO,wNM/ Tx in TX) **Bibl.:** Braun & Mares 1989

Neotoma pennsylvanica = *Microtus longicaudus*

Neotoma pygmaea Harris, 1984 (extinct/ Pleist. from Dry C., NM)

Neotoma undescr. sp. (2 species in Dry C., NM)

Neotoma (Parahodomys) spelaea (Parahodomys s. Gidley & Gazin, 1933) (extinct cave woodrat in Cumberland C. (type) locality; Hamilton (WV: Irvingtonian) & Trout (WV: or as *N. (P.)* undet. sp.)

Neotoma stephensi Goldman, 1905 (nAZ,eNM/ Stephen's woodrat/ TTx in AZ). **Bibl.:** D. Hanson 1971; Hoffmeister & Torre 1960

Ondatra Link, 1795 (muskrats) Family Muridae, Subfamily Arvicolinae (1 extant species in US or Canada)

Ondatra annectens (Fiber a. Brown, 1908; *O. kansasensis* Hibbard, 1944) (extinct/ Brown's muskrat/ Conrad Fissure (limestone fissures in Ozarks, Newton Co (AR)), Cumberland (MD: Irvingtonian), Hamilton & Trout C.(both WV: >600,000: also listed as *O. annectens-hiatidens*) **Bibl.:** Grady & Gardon 2000; Grady 1985

Ondatra annectens-hiatidens (Pleist. extinct in Trout C.(>600,000) (WV: also listed as *O. annectens*) **Bibl.:** Grady & Gardon 2000

Ondatra hiatidens (Cope's muskrat/ extinct Irvingtonian Pleist. in Port Kennedy C., PA)

Ondatra* cf. *idahoensis Wilson, 1933 (= *O. hiatidens* Hibbard, 1947) (Browns muskrat/ extinct Pleist. in Fyllan C., TX)

Ondatra zibethicus (*Castor* z. Linnaeus, 1776; *Fiber oregonus* Hollister, 1911) (m.; extralimital in Miller's .(>11,000BP), TX) & Crystal (>25,000BP,UT) C.; early Wisconsinan in Haile XIVA sink near Haile, Alachua Co., FL) / now in Canada, US except most of TX, CA, nAK, nCanada, UT, AZ/ TTx in AZ) **Bibl.** Nelson & Semken 1969

Oryzomys Baird, 1858 (rice rats) Family Muridae, Subfamily Sigmodontinae

Oryzomys palustris (Harlan, 1837) (Pleist. extralimital in Brynjulfson (MO), Anderson Pit & Passenger Pigeon C. (IN) & Schulze C.(12,500BP),TX/ marsh rice rat/ now in SE n. to sNJ, w.to eTX).

Parahodomys - An extinct subgenus of *Neotoma*.
Proneofiber diluvianus = *Neofiber* d.

Rattus Fischer, 1803 (Old World rats) Family Muridae, Subfamily Murinae (2 extant species in US or Canada)

Rattus norvegicus (Berkenhous, 1769) (Norway or brown rat) (now in most of NA/Tx in OH),

Rattus rattus (Linnaeus, 1758) (black or house rat) (now where humans concentrate in NA/ alien Tx or Ac in HI; Tx in Longhorn Cavern, TX)

Schistodelta = *Neofiber*

Sigmodon Say & Ord, 1825 (cotton rats) Family Muridae, Subfamily Sigmodontinae (4 extant species in US or Canada)

Sigmodon arizonae Mearns, 1890 (*S.* cf. *a.* extralimital? in Middle Wisconsinian (246 -+19ka to 26.7 -+7ka) in Papago Sprs. C., AZ/ Arizona cotton rat now in seCA, cAZ, extreme sNV, s. to Mex.)

Sigmodon curtisi Gidley, 1922 (extinct fossil from early Irvingtonian in Inglis sinkhole, Citrus Co.,FL/ Curtis cotton rat/ *S.* cf. *curtisi* as Pleist. fossil in Fyllan C., TX) Winkler & Grady 1990

Sigmodon hispidus Say & Ord, 1825 (hispid cotton rat/ now in Mex., n to seVA, nMO,cAZ/ Ttx? in TX)

Sigmodon ochrognathus V.Bailey, 1902 (yellow-nosed cotton rat/ Holocene fossil in Centipede Cave, slightly east extralimital/ now in nMex. n. to extreme seAZ, swNM)

RHINOS

Mammal Order Perissodactyla, Rhinocerotidae

Coelodonta – Rhinocerotidae mammal, Subfamily Rhinocerotinae

Coelodonta antiquitatis (Blumenbach) (woolly rhinoceros/ extinct, fossil cast form in Blue Lake Rhino (lava cave created by cast) **Bibl.** C. Holler, 1995; Prothero 1987; Slettebak 1981

RINGTAILS

In mammal Order Carnivora, Family Procyonidae (*Bassariscus*)

Bassariscus Coues, 1887 (ringtails; ring-tailed cats) Family Procyonidae (1 extant species in US or Canada)

Bassariscus astutus (*Bassaris a.* Lichtenstein, 1830) (TTx in AZ, NM, TX (preys on bats); ringtail/ TTx in CA (Tulare Co.) & OR (Josephine Co.)) **Bibl.:** Cunningham 1989; Mead 1981b

Bassariscus sonoiensis Skinner, 1942 (extinct Rancholabrean Sonoita ringtail in Papago Springs C. (Type locality, AZ) & Late Pleist. or Early Holocene in Hanging Gardens (CA) C.) R. Graham 1969/ now in SW n. to sOR, nCO, nUT, seTX.)

Rodents - Of Order Rodentia (See **beaver, chipmunk, coendu, marmot, mice, muskrat, nutria, mountain beaver, porcupine, prairie dog, rat, squirrel, woodrat**). Order has nearly half of all mammal species. Unique two upper & two lower incisors.

sabertooth cat - See CAT

sciurid - See chipmunk, gopher, squirrel

SEA LIONS

In mammal Order Carnivora, Suborder Caniformia, Family Otariidae (*Zalophus*)

Zalophus Gill, 1866 (California sea lions) Family Otariidae (1 extant species in US & Canada)

Zalophus californianus (*Otaria c.* Lesson, 1828) (Pacific coast/ California sea lion/ Tx marine in CA). **Bibl.:** Rowley 1929

SHEEP, bighorn

In mammal Order Artiodactyl, Family Bovidae, Subfamily Caprinae (*Ovis*) **Bibl.:** Stokes & Condie, 1961)

Ovis Linnaeus, 1758 (sheep) - Artiodactyl, Family Bovidae, Subfamily Caprinae (1 extant species in US & Canada)

Ovis canadensis Shaw, 1804 (W except OR, WA, wCA/ Wisconsinan in Little Box Elder, Jaguar, Rampart, Natural Trap, Dry & Gypsum C; end Pleist. extralimital in Lower Sloth C., TX; Pleist. or Holocene extralimital in Timpanogos C., UT/ bighorn sheep)

Ovis canadensis* ssp. *catclawensis (= *O. c.* Hibbard & White, 1956) Harris & Mundel 1974
(temporal subspecies in Wisconsin in Catclaw C. (AZ/type), Little Box Elder? (15,000 BP in WY); Little Canyon Cr. C. & Prospects Shelter (WY); Haystack C. (CO) & Natural Trap (WY)
Bibl.: Geist 1971; Wang 1984, 1988, 1989.

SHREW (see also mole)

In mammal Order Insectivora

Family Talpidae **Bibl.:** Findley 1956; C. Jones 1961

Subfamily Talpinae (*Neurotrichus*)

Subfamily Soricinae (*Blarina*, *Cryptotis*, *Notiosorex*, *Sorex*)

Blarina Gray, 1838 (American short-tailed shrews) mammal Order Insectivora, Family Soricidae, Subfamily Soricinae (3 extant species in US or Canada) **Bibl.:** Jones, C., Choate, & Genoways 1984

Blarina brevicauda (*Sorex b.* Say, 1823; *B. simplicidens* Cope, 1899; *B. fossilis* Hibbard, 1943)) (short-tailed shrew extralimital in C. Without a Name (cTX), Klein C. (>8,000BP), & Williams C. , TX/ now in E to seCanada) **Bibl.:** Guilday 1957

Blarina brevicauda kirtlandi Bole & Moulthrop, 1942 (Tx in OH)

Blarina carolinensis (Bachman, 1837) (southern short-tailed shrew; extralimital in Schulze C. (12,500BP), TX))

Blarina ozarkensis (= *B. brevicauda o.* Brown, 1908) Graham & Semken, 1976 (extinct/ Pleist. shrew in Conrad Fissure (AR)) **Bibl.:** Graham 1976

Cryptotis Pomel, 1848 (small-eared shrews) Family Soricidae, Subfamily Soricinae (1 extant species in US)

Cryptotis parva (*Sorex p.* Say, 1823) (least shrew / end Pleist. extralimital in Lower Sloth C., (TX) & Dry C., seNM/ now in E to sNY, neCO, sWI) **Bibl.:** A. Harris et al 1973

Microsorex = *Sorex*

Neurotrichus Guenther, 1880 (American shrew-moles) Family Talpidae, Subfamily Talpinae (1 extant species in US & Canada)

Neurotrichus gibbsii (Baird, 1858)(now in sw BC to nwCA/Tx in OR C.)

Notiosorex Coues, 1877 (desert shrews) Family, Soricidae, Subfamily Soricinae (1 extant species in US & Canada)

***Notiosorex crawfordi* (c.)** (*Sorex* (*N.*) *c.* Coues, 1877) (*N.c.* now in SW, sNV, scCA, n. to extreme sUT, sCO, sOK, w. to extreme wAR/ extinct ssp.?, latest Pleist. in Hall's C.(TX) &

NM; Middle Wisconsinian (246 -+19ka to 26.7 -+7ka) in Papago Sprs. C., AZ)

Sorex Linnaeus, 1758 (red-toothed shrews) mammal Order Insectivora, Family, Soricidae, Subfamily Soricinae (29 extant species in US or Canada)

Sorex arcticus Kerr, 1792 (arctic shrew / extralimital in Bootlegger Sink & New Paris (PA), Cheek Bend & Peck (TN), Trout (WV) C. & Natural Chimneys (VA)/ now in AK to nMN, wME) Holman & Gray 1987; Kurten & Anderson 1980

Sorex arizonae Diersing & Hoffmeister, 1977 (extralimital in Middle Wisconsinian (246 -+19ka to 26.7 -+7ka) in Papago Sprs. C., AZ/ Arizona shrew now in seAZ & swNM)

Sorex cinereus Kerr, 1792 (masked shrew/ extralimital in TX (Hall's, Lower Sloth & Schulze (12,500BP) C., TX & AR (Peccary C.(4,300BP)/ now in AK s. to WA, nNM, nIA, NE s. along Appalachians)

Sorex fumeus Miller, 1895 (smokey shrew/ west extralimital in Ladds & Clark's C. & in limestone fissures in AR Ozarks/ now in NE s. along Appalachians/ TTx in KY), (var. f. Ac in OH)

Sorex hoyi Baird, 1858 (= *Microsorex h.*) (pygmy shrew/ extralimital in Myer C.(IL), Freemans Pit (IN), Peck (TN) & Little Box Elder C.(WY); *M. h. thompsoni* extralimital in New Paris #4 & Bootlegger Sink (PA), Clark's (VA), Robbins (TN) & Welsh (KY) C.)/ now in cAK s. to WI,MN, NE s. along Appalachians)

Sorex monticulus Merriam, 1890 (montane shrew/TTx in CA)

Sorex palustris Richardson, 1828 (water shrew/ Pleist. extralimital in Fowlkes C.,(TX) & Peccary C.(4,300BP),AR/ now in Canada s. to cCA, Great Basin, wCO, nNM, NE s. along Appalachians)

Sorex pratensis (= *Microsorex p.*) (extinct Irvingtonian fossil in Conrad Fissure (limestone fissures in AR Ozarks)

Sorex preblei Jackson, 1922 (Malheur area of eOR/ Malheur shrew/ Pleist.extralimital in Dry Cave., NM)

Sorex vagrans Baird, 1858 (= *S. trigonirostris*) (vagrant s.; Pleist. extralimital in Fowlkes & Lower Sloth C., TX & Schulze C.(12,500BP), TX) C./now in sBC s. to nCA,nNV. Great Basin to sAZ,wNM)

SHRUB- or BUSH OX

Artiodactyla mammal, Family Bovidae, Subfamily Caprinae (*Euceratherium*)

Euceratherium Furling & Sinclair, 1904 - Bovidae mammal fossil

Euceratherium collinum Furling & Sinclair, 1904 (*Peptoceras sinclairi* Furlong, 1905; *Taurotragus americanus*; *Aftonius calvini* Hay 1014; *E. bizzelli* Stovall, 1937) (extinct shrub-ox in Cumberland (MD), Bechan bones & dung? in Shrubbox Alcove (Glen Canyon NRA), sUT; Hawver & Potter Cr. (CA), Mineral Spring Hill (NV); Muskox (NM) & Burnet (NM) & McKittrick (wTX) C.)

Euceratherium undet. sp. (extinct / Pleistocene Kokoweef (CA) , Mineral Hill (NV) & U-Bar (NM) C.)

SKUNK

In mammal Order Carnivora, Suborder Caniformia, Family Mephitidae, Subfamily Mephitinae (*Brachyprotoma*, *Conepatus*, *Mephitis*, *Spilogale*)

Brachyprotoma Cope, 1899 - Order Carnivora, Suborder Caniformia, Family Mephitidae, Subfamily Mephitinae.

Brachyprotoma brevimala Heaton, 1985 (extinct/ Crystal Ball C.(>25,000BP,UT) &

Brachyprotoma obtusata (*Mephitis o.* Cope, 1899; *B. pristina* & *spelaea* Brown, 1908 (Pleist. Extinct Western Short-faced Skunk in Crystal Ball C. (NV); Cumberland (MD), Hamilton & Trout C. (both WV) Grady 1988, 1989) & Conard Fissure, Frankstown, Crankshaft Pit, & Brynjulfson C. (MO))

Conepatus Gray, 1837 (hog-nosed skunks) mammal Order Carnivora, Suborder Caniformia, Family Mephitidae, Subfamily Mephitinae (2 extant species in US or Canada)

Conepatus leuconotus (*Mephitis l.* Lichtenstein, 1832) (Hog-nosed skunk/ Irvingtonian in Inglis 1A & Pleist. in FL, Ladds C. (GA), & TX (Schulze(12,500BP), Centipede, Kyle C.)/now in Mex., n.to AZ, sCO, sTX/ Tx? In TX (preys on bats)

Conepatus mesoleucus (Lichtenstein, 1832) (= *C. leuconotus mearnsii*; may be conspecific with *C. leuconotus*) (AZ, CO, TX,s. To Nicaragua/ Common Hognosed or Western rooter skunk/ Tx in TX)

Mephitis E. Geoffroy Saint-Hilaire & G. Cuvier, 1795 (hooded and striped skunks) Family Mephitidae, Subfamily Mephitinae (2 extant species in US & Canada)

Mephitis mephitis (Schreber, 1776) (Striped Skunk/ TTx in AR, MO, MS, NJ, OH, OK, PA, TX (prey on bats); widespread in Pleist. caves/ now in most of NA except AK, nCanada),

Osmotherium Cope, 1896 (may be junior syn. of *Mephitis*) Family Mephitidae. Subfamily Mephitinae.

Osmotherium spelaeum Cope, 1896 (*Mephitis fossidens* & *orthostichus* Cope, 1896; *M. leptops*

Cope, 1899; *Pelycictis lobulatus* Cope, 1896) (may not be valid species) (extinct Port Kennedy skunk (PA) in Port Kennedy C.)

Spilogale Gray, 1865 (spotted skunks) Family Mephitidae, Subfamily Mephitinae (2 extant species in US & Canada)

Spilogale gracilis (g.) Merriam, 1890 (western spotted skunk) (= *S. putorius* by some authors) (Ttx or Ac in CA, OR)

Spilogale putorius (*Viverra p.* Linnaeus, 1758; *S. marylandensis* Gidley & Gazin, 1933; *S. pedroensis* Gidley, 1942)) (eastern spotted skunk /extralimital in Haystack C. (CO), sIN c. & Irvingtonian in Cumberland C., MD/ now most of NA except NE, E coastal plain, nWY north/ prob. Tx in OK, MS) **Bibl.:** R. Richards 1985a

Spilogale undet. sp. (extralimital fossil in IL, IN) Richards, R.L. 1985

SQUIRRELS

In mammal Order Rodentia, Suborder Sciuerognathi, Infraorder Sciuromorpha

Family Sciuridae, Subfamily Sciurinae (*Ammospermophilus*, *Glaucomys*, *Sciurus*, *Spermophilus*, *Tamiasciurus*)

Bibl.: Goodwin & Reynolds 1989.

Ammospermophilus Merriam, 1892 (antelope squirrels) mammal Order Rodentia, Suborder Sciuerognathi, Infraorder Sciuromorpha, Family Sciuridae, Subfamily Sciurinae (4 extant species in US & Canada)

Ammospermophilus leucurus (Merriam, 1889) (white-tailed antelope squirrel in Centipede C., TX/ now in Great Basin se to swTX, sw to Baja),

Citellus Oken, 1816 = *Spermophilus*

Cryptopterus (Old World flying squirrels)

Cryptopterus webbi Robertson, 1976 (Old World flying squirrel) (fossil in Blancan cave or fissure filling in Haile XVA, Alachua Co., FL)

Glaucomys Thomas, 1908 (New World flying squirrels) Family Sciuridae, Subfamily Sciurinae (2 extant species in US & Canada)

“*Glaucomys volans*” Morgan & White 1995 early Irvingtonian in Inglis sinkhole, Citrus Co., FL/ status unclear, may not be new species)

Glaucomys sabrinus (*Sciurus s.* Shaw, 1801) (northern Flying squirrel/ Wisconsin fossils from Samwel Cave, CA),

Glaucomys volans (*Mus v.* Linnaeus, 1758) (Southern Flying Squirrels as extralimital

Wisconsinan fossil from Samwel Cave, CA/now in E to sON, nFL/ Ac in OH)

Sciurus Linnaeus, 1758 (tree squirrels) mammal Order Rodentia, Suborder Sciuerognathi, Infraorder Sciuromorpha, Family Sciuridae, Subfamily Sciurinae (7 extant species in US & Canada)

Sciurus aberti Woodhouse, 1853 (extralimital in Middle Wisconsinian (246 -+19ka to 26.7 -+0.7ka) in Papago Sprs. C., AZ/ now in isolated mtns in AZ, NM, seUT, CO)

Sciurus carolinensis Gmelin, 1788 (Gray Squirrel) (E to sCanada/ Tx in OH)

Sciurus carolinensis (Irvingtonian extralimital fossil in Conrad Fissure (limestone fissures in AR Ozarks)

Sciurus niger Linnaeus, 1758 (DE,MD,adjacent VA,WV,PA/ Pleist. Fox S. in many caves, extralimital in much of east),

Sciurus tenuidens = *Tamiasciurus hudsonicus*

Spermophilus F. Cuvier, 1825 (= *Citellus* by some authors) (ground squirrels) mammal Order Rodentia, Suborder Sciuerognathi, Infraorder Sciuromorpha, Family Sciuridae, Subfamily Sciurinae (19 extant species in US & Canada)

Spermophilus beecheyi (Richardson, 1829) (eOR, CA except se, scNV/ California ground squirrel/ TTx in CA),

Spermophilus elegans Kennicott, 1863 (= *S. aureus* & *S. nevadensis*) (NE NV, seOR, sID,swMT to cCO, wNB/Wyoming ground squirrel/extralimital s. in Pleist. Dry C, seNM)

Spermophilus franklini. (Sabine, 1822) (Franklin's ground squirrel/ extralimital in Brynjulfson Cave, MO/ now in MW to eAB),

Spermophilus lateralis (Say, 1822) (golden-mantled ground squirrel extralimital in Ventana C.(Rancholabrean,AZ), Kokoweef C.,CA) & Mormon Mt. c.(NV)/ now in W n. to cBC, s. to cCA, cAZ/ Ttx in CA),

Spermophilus richardsoni (Sabine, 1822) (elevation extralimital in Haystack C., CO/ Richardson ground squirrel/ now in eMN sw to cCO, nNV,. nw to cAB),

Spermophilus townsendii Bachman, 1839 (= *Eutamias t.*) (Townsend's ground squirrel in Jaguar & Moonshiner (ID) C., extralimital in Kokoweef C.,San Bernadino,CA/now in West Coast from sBC to cCA/ TTx or Ac in CA),

Spermophilus tridecemlineatus (Mitchill, 1821) (thirteen-lined ground squirrel/ extralimital in Trout (Wisconsinan/WV) & Peck, Guy Wilson & Baker Bluff (TN) C., Harrodsburg Crevice (IN), & Cumberland C. (Irvingtonian/MD), Dry C. (seNM) & Anderson Pit (IN)/ MW,eW from

cAB to sTX)

Spermophilus variegatus (Erxleben, 1777) rock squirrel as fossil in McKittrick (TX) & Little Box Elder (WY), extralimital/now in Great Basin s. to nMex./ TTx in TX) **Bibl.:** Keitrans & Clifford 1974

Tamiasciurus Trouessart, 1880 (red squirrels) mammal Order Rodentia, Suborder Sciurognathi, Infraorder Sciuromorpha, Family Sciuridae, Subfamily Sciurinae (2 extant species in US & Canada)

Tamiasciurus douglasii (Bachman, 1839) (Rancholabrean fossil in Potter Cr. & Samwel C., CA/ Douglas' squirrel/ West Coast from sBC to cCA)

Tamiasciurus hudsonicus (*Sciurus vulgaris* h. Erxleben, 1777; *S. tenuidens* Hay, 1920) (extralimital in Cumberland (MD - Irvingtonian) & Trout (WV – Wisconsinan) nw Culberson Co.(TX)(11- 13,000 BP), Anderson Pit (IN) & Bat C.(MO; 10-16,000BP), & New Paris #4(11,300BP), PA/ now in AK se to NE, s. to extreme swTX/ red squirrel/ Tx in WA)

TAPIRS

In mammal of Order Perissodactyla, Family Tapiridae (*Tapirus*)

Tapirus Brisson, 1762 (tapirs) Family Tapiridae. **Bibl.:** C. Ray & Sanders 1984

Tapirus californus Merriam, 1912 (= *T. haysii* c.) (extinct California Tapir possibly as fossil in Dry Cave (NM))

Tapirus copei Simpson, 1945 (= *T. haysii* Leidy, 1859 (Rancholabrean, extinct/Cope's Tapir in late Sangamonian times in Sabertooth C. (FL) & early Irvingtonian Haile sinkhole (Alachua Co., FL), Moore Pit (Rancholabrean, TX), sinkhole (Scott Co., KY), Hamilton C. (WV) & Vess & Lookout C. & Craig Quarry (TN)/ now in nMex. n. to cAZ, sNM, cTX)

Tapirus undet. sp. or species (extinct in Pleistocene Ventana C. (11,300 yrs. - AZ), (Cave Acb-3 Unit E (Unit E – Sangamonian, 11.5-4k, average 11.8k yrs., Unit D – 172k +-10k, both in AL) early Irvingtonian in Inglis sinkhole, Citrus Co., FL) & Bradford C., Bartow Co., GA)

Tapirus cf. *veroensis* Sellards, 1918 (Vero tapir/ Finger Quarry, TN)

Tapirus veroensis Sellards, 1918 (= *T. tennesseae* Hay, 1920; *T. excelsus* Simpson, 1945) (Vero tapir extinct Pleist. in Bowman Saltpeter (VA), Reddick (Marion Co., FL), Anderson Spr. (Walker Co., GA), Sabertooth Cave (Sangamonian or possibly Wisconsinan, FL), in latest Irvingtonian sink near Coleman, Sumter Co., FL & late Rancholabrean Reddick I Site fissure, (Marion Co.), FL & Proctor C. (KY) & Claiborne Co, TN)

VOLES

In mammal Order Rodentia, Suborder Sciurognathi, Family Muridae, Subfamily Arvicolinae.

(*Atopomys*, *Clethrionomys*, *Lagurus*, *Phenacomys*) **Paleo Bibl.:** C. Bell 1997; Morlan 1984, 1990; Van der Meullen 1978.

Atopomys Patton, 1965 - Family Muridae, Subfamily Arvicolinae. **Fossil Bibl.:** Winkler & Grady 1990

Atopomys salvelinus Zakrzewski, 1975 (Extinct Trout Cave vole in Trout (type) & Hamilton C. (both WV) & Cumberland (MD) C.)

Atopomys texensis Patton, 1965 (extinct vole in *Fyllan C., nw Austin, TX) Bibl.: Winkler & Grady 1990

Clethrionomys Tilesius, 1850 (red-backed voles) - Family Muridae, Subfamily Arvicolinae (3 extant species in US & Canada)

Clethrionomys gapperi (*Arvicola* g. Vigors, 1830) (boreal redback vole, extralimital in IN, WV, WY, ID, TN & VA (Late Pleist.) caves & Cumberland (MD) C. (late Irvingtonian), Eastman Bluff C.#2 (TN), Peccary C.(4,300BP), AR), & Bat C., MO(10-16,000BP/ now in Canada to NE s. along Appalachians, s. to cOR, along Rockies to cNM) **Fossil Bibl.:** Cockrum & Fitch 1952; R.L. Richards 1985

Lagurus Gloger, 1841 (sagebrush voles) (= *Eremiomys*) Family Muridae, Subfamily Arvicolinae (1 extant species in US & Canada)

Lagurus curtatus (*Arvicola* c. Cope, 1868; *Lemmiscus* c.) (Sagebrush or prairie vole in Pleist. Dry, Atlatl & Isleta C. (NM) east extralimital, Bechan C. (seUT, 11,670 to 12,900 yrs. BP) southeast extralimital & Haystack & Porcupine C. (CO) north extralimital/ now in Great Basin n. to seAB, wSD & s.to cUT)

Lagurus undescr. sp. (Irvingtonian extinct fossil in Cathedral C., NV) Owen et al. 2000

Lemmiscus Thomas, 1912 is included in *Lagurus*

Pedomys Baird, 1858 – Muridae rodents

Pedomys llanensis Hibbard, 1994 (Llano vole/ extinct Late Pleist. in Fyllan (TX) & Trout (WV) caves) Bibl.: Grady & Gardon 2000; Winkler & Grady 1990

Phenacomys Merriam, 1889 (heather voles) Family Muridae, Subfamily Arvicolinae (3 extant species in US & Canada)

Phenacomys gryci Repenning, 1987 (extinct fossil 750,000 BP in Porcupine C., CO & Irvingtonian Cathedral C., NV)

Terricola Fatio, 1867 – Muridae rodents

Terricola meadensis (= *Pitymys* m. Hibbard, 1944) (Irvingtonian extinct fossil in Cathedral (NV) & Porcupine (CO) C.)

Phenacomys intermedius Merriam, 1889 (heather vole or mountain phenacomys / extralimital in Peccary (AR/Wisconsinian), Bootlegger Sink & New Paris #4 (PA), Graham (MO), IN caves R.L. Richards 1985; Baker Bluff, Cheek Bend, Carrier Quarry & Guy Wilson C. (TN) Parmalee & Klippel 1981 & in Patton, many WV, VA caves, Horned Owl, Little Canyon Cr. & Little Box Elder (WY), Wasden, Moonshiner & Wilson Butte (ID) & Cumberland C. (Pre- Wisconsinian) (MD), Parmalee & Klippel 1981a (elevation extralimital in Haystack C., CO/ now in Canada s. along mts. To cCA, nNM)

Phenacomys (extralimital in Wisconsinian Trout C. (WV)

WALRUSES

Order Pinnipeda

Family Odobenidae (*Odobenus*)

Odobenus Brisson, 1762 - Odobenidae mammals (walruses) (1 extant species in US & Canada)

Odobenus rosmarus (*Phoca r.* Linnaeus, 1758) (TtX in AK sea caves)

WEASEL - See also ermine & marten

In mammal Order Carnivora, Suborder Caniformia, Family Mustelidae, Subfamily Mustelinae (*Mustela*)

Mustela Linnaeus, 1758 (ermine, ferrets, minks, weasels) Family Mustelidae, Subfamily Mustelinae (3 extant *Mustela* species in US or Canada)

Mustela frenata Lichenstein, 1831 (long-tailed weasel as fossil from Moonshiner C., SE ID/ presently sCanada to Mex., except parts of SW/Tx in OH).

Mustela erminea Linnaeus, 1758 (short-tailed weasel or ermine; Wisconsinian in Schulze (12,500BP), Crankshaft, Chimney Rock, Silver Creek, Wasden, Moonshiner, & Fairbanks II C.; extralimital in Cave Without a Name & Klein C. (>8k BP), TX & Pintwater C. (32-9k BP in sNV)/ shorttail weasel/ presently N, s.to nNM, nCA, MD)

Mustela nivalis Linnaeus, 1766 (s. extralimital in Irvingtonian Cathedral C., NV/ least weasel/ now in most of Canada, s. in MW to ne MT, NE, IA, nIL, nN, OH, PA, WV and through sAppalachians)

Mustela rixosa Bangs, 1896 (=M.n.r.; may be same as Old World *M. nivalis* Linnaeus, 1766) (least weasel/ extralimital Pleist. fossil in Crankshaft, Peccary (4,300BP,AR), & Moonshiner C (ID), Snake Cr. Burial C.(NV)/ presently in Canada, nMW to PA, s. in Appalachians),

WOLVES

In mammal Order Carnivora, Suborder Caniformia, Family Canidae, Subfamily Caninae

(*Canis*)

Canis Linnaeus, 1758 (dogs, foxes, jackals, wolves) Family Canidae, Subfamily Caninae (3 extant species in US & Canada)

Canis armbrusteri Gidley, 1913 (extinct Armbrusters Wolf in Cumberland & New Trout (WV, >600,000BP) C. & (early Irvingtonian Haile sinkhole (Alachua Co., FL) &), in latest Irvingtonian sink near Coleman, Sumter Co., FL, **Bibl.:** B. Patterson 1932

Canis dirus Leidy, 1858 (*C. indianensis* Leidy, 1869; *C. mississippiensis* Allen, 1876; *C. ayersi* Sellards, 1916) (dire wolf in Pleist. in Ventana C. (11,300 yrs. - AZ); Potter Cr., Kokoweef & Samwell (CA); Devil's Den, Reddick (Marion Co.) & Cutler Hammock sinks (FL); Jaguar C. (ID); Harrodsburg Crevice (IN), Muskox, Hermit & Conkling (NM)), Welsh (13,000BP, KY); Gypsum C. (NV); Williams (11,140-12,100 yrs.), McKittrick? & Lower Sloth? C. (TX); Little Canyon Cr. C. (WY); 7 c. in MO (13,170+-600 BP) FL & late Rancholabrean Reddick I Site fissure, (Marion Co.), FL) **Bibl.:** Hawksley et al. 1963

Canis latrans Say, 1823 (*C. orcutti*, *C. andersoni* Merriam, 1910; *C. riviveronis* Hay, 1917; *C. caneloensis* Skinner, 1942; *C. irvingtonensis* Savage, 1951) (coyote / widespread in NA/ TTx in TX) widespread in Pleist., as in Cumberland C.)

Canis lupus Linnaeus, 1758 (grey wolf/ widespread Pleist. fossil; extralimital in Pintwater C. (32-9k BP in sNV); /historically most of NA, now largely AK, Canada & patches in swCO, nMI, nWA, NM, seAZ, nWI, WY, swTX)

Canis priscolatrans Cope, 1899 (*C. edwardii* Gazin, 1942) (extinct wolf coyote in Irvingtonian in Cumberland C. & early Irvingtonian Haile sinkhole (Alachua Co., FL)

WOLVERINES

Gulo Pallas, 1780 - mammal Carnivora of Mustelidae, subfamily Mustelinae (1 extant species in US & Canada)

Gulo gulo (*Ursus g.* Linnaeus, 1758; *G. gidleyi* Hall, 1936) in Irvingtonian Port Kennedy (PA) & Cumberland C., both extralimital, & in Wisconsinian across NA; in Nielson=s Well, UT (extirpated) & Natural Trap (WY, extirpated)/ presently in AK, nCanada, s. to sBC, patches in cCO, PNW),

ungulate - Mammal that includes Orders Artiodactyla (even toed ungulate) (**antelope, bison, deer, elk, deer, musk-ox, goat, peccary & sheep**) & Perrissodactyla (odd-toed ungulate) (**horse, tapir, rhino**).

mammoth - See mammal, elephant.

man-caused - See human impacts.

management see also conservation) - Baichtal, Swanson & Archie 1996; Helf, Poulson & Lavoie 1996; Grady & McEachern 1977; J. Lewis 1982a, 1996a; Noble 1991; Squire 1979; Tercafs 1988a; Toomey et al 1996; Walsh 1991.

Mandibulata – Arthropods in Subphyla Branchiata (= Diantennata) and Tracheata. Now thought to be an artificial grouping.

manganese - See bacteria

marine relict - Animal whose evolutionary ancestors lived in salt water, but became adapted to life in fresh water when its habitat was gradually raised above sea level, or was recharged by fresh water in some other way.

marine (see biogeography & anchialine) - Iliffe 1990; Iliffe et al 1984

marmot - see mammal, groundhog.

marten - See mammal, marten

MAST – Abbrev. For mean annual surface temperature. The deep zone of caves usually have the same temperature unless there is heat production from the geothermal gradient, biota (such as large bat colonies) or from certain chemical reactions such as concentrated sulfuric acid solution or if the climate is rapidly changing. Lag times in caves in response to MAST changes generally are in the order of thousands of years. Syn.: M.A.S.T.

mastodon(t) - See mammal, elephant.

maternal-offspring - See behavior

Maxillopoda - Crustacean class incl. Subclasses Branchiura, Copepoda (**copepods**), Cirripedia (**barnacles**), Tantulocarida, Mystacacarida (**mystacocarids**) & Ostracoda (**ostracods**).

Molecular studies indicate this group is not monophyletic and is artificial.

Mayflies & Shadflies

Orders Ephemeroptera (=Ephemerida) & Palaeodictyoptera of Class Insecta, Subclass Pterygota, Division Palaeoptera (also put in Division Ephemeroptera, Infraclass Pterygota). Of the winged insect orders that have not become extinct, they are the oldest and the only ones that molt after reaching the first winged stage. The few minutes to several day lives of most adults gives them their name (*ephemeroptera*, from *ephemero*- “lasting a day”, and *pteron*, “winged”). Adults don’t feed; their mouthparts are vestigial. 1-30 mm., soft-bodied with a cylindrical elongate shape.

Antennae are short and setalike. Two pairs of delicate, triangularly shaped wings with the front pair largers, with many cross veins, and the hind pair smaller, sometimes reduced, or, in a few species, absent. Legs are long, slender, and unmodified except that the front pair is longer than the others. The abdomen is usually as long as or longer than the body.

They are hemimetabolous, with egg, larva, subimago and adult stages. Larvae generally are broad with gills along the sides of the abdomen. Their mouthparts chew aquatic plants, detritus and animal carcasses (sometimes); some are carnivores. They live a few weeks to a year (rarely to \$0 in freshwater streams, ponds and lakes. Molting may occur 20-60 times before the subimago

stage. Unlike stoneflies, adults fold their wings vertically when not in use and have thin caudal filaments. Males typically perform a mating dance in clusters, rising up a few feet and then falling downwards before rising again

Of the 2,000 or so described species, 611 in 59 genera occur in the U.S. and Canada. Most species are pollution intolerant.

Bibl.: Alba-Tercedor & Sanchez-Ortega 1991; Berner 1950; Edmunds 1972; Edmunds & Allen 1957; Edmunds, Allen & Peters 1963; Edmunds, Jensen & Berner 1976; Hubbard 1990; McCafferty 1991. **Areas:** FL L. Berner 1950; IL: Burks 1953; MI: J. Leonard & F. Leonard 1962; NA: G. Edmunds et al. 1990; Klots 1966; McCafferty 1981; Merritt & Cummins 1978; World M. Hubbard 1990

Suborder Pannota (subsumed in Rectracheata)

Suborder Pisciforma (= Schistonota in part) (splitback mayflies)

Superfamily Siphonuroidea

Ameletidae

Baetidae

Siphonuridae (once in Baetoidea)) (primitive minnow mayflies)

Subfamily Isonychiinae (*Isonychia*)

(also put Isonychiidae, Oligoneuriidae & Ameletidae))

Subfamily Siphonurinae (*Ameletus* (also put in Ameletidae), *Siphonurus*)

Superfamily Heptagenioidea (= Baetoidea in part)

Ameletidae (*Ameletus*) (also put in Siphonuridae)

Baetidae (small minnow mayflies; small mayflies)

(*Baetis*, *Baetodes*, *Callibaetis*; undet. genus (Tx? in MN; Ac in OH)

Heptageniidae

Isonychiidae

Oligoneuriidae

Suborder Rectracheata (=Pannota in part) (fusedback mayflies)

Superfamily Caenoidea

Caenidae

Subfamily Caeninae (*Caenis*)

Superfamily Ephemerelloidea

Ephemerellidae (now in Ephemeroidea)

Tricorythidae (now in Leptohyphidae)

Superfamily Leptophlebioidea

Ephemerellidae (now in own superfamily)

Leptophlebiidae (pronggills; pronggill mayflies) (*Leptohypes*, *Tricorythodes*)

Undet. Tx genus in Vancouver Island, BC

Subfamily Atalophlebiinae (*Choroterpes*, *Neochoroterpes*)

Subfamily Leptophlebiinae (*Habrophleboides*, *Leptophlebia*, *Paraleptophlebia*)

Superfamily Ephemeroidea (burrowing & tusked mayflies)

Ephemeridae (burrowing mayflies)

(*Callibaetis*, *Ephemerella*, *Hexagenia*, *Leptobranchea*)

Ephemerellidae (spiny crawlers or midboreal mayflies)

Subfamily Ephemerellinae

Tribe Ephemerellini

Subtribe Ephemerellae

(*Caudatella*, *Drunella*, *Ephemerella*, *Eurylophella*, *Sarratella*)

Behningiidae (*Dolania*)

Palingeniidae (spinyheaded burrower mayflies)

Subfamily Pentageniinae (*Pentagenia*)

Polymitarcyidae (pale burrower mayflies)

Subfamily Polymitarcyinae (*Ephoron*)

Potamanthidae (hacklegill mayflies) (*Anthopotamus*)

Ameletidae (*Ameletus*) (also put in Siphonuridae)

Baetidae (small minnow mayflies; small mayflies)

(*Baetis*, *Baetodes*, *Callibaetis*; undet. genus (Tx? in MN; Ac in OH))

Behningiidae (*Dolania*)

Caenidae

Subfamily Caeninae (*Caenis*)

Ephemeridae (burrowing mayflies)

Callibaetis, *Ephemerella*, *Hexagenia*, *Leptobranchea*)

Ephemerellidae (spiny crawlers or midboreal mayflies)

Subfamily Ephemerellinae

Tribe Ephemerellini

Subtribe Ephemerellae

(*Caudatella*, *Drunella*, *Ephemerella*, *Eurylophella*, *Sarratella*)

Heptageniidae (flatheaded mayflies; stream mayflies)

Subfamily Heptageniinae

(*Cinygma*, *Cinygmula*, *Epeorus*, *Heptagenia*, *Pentagenia* (also put in Leptogeniidae),
Rhithrogena, *Stenacron*, *Stenonema*; Ac or Tx undet. genus in AR))

Isonychiidae (*Isonychia*) - Now put in Siphonuridae (also put in Oligoneuriidae)

Leptophlebiidae (pronggills; pronggill mayflies) *Leptohypes*, *Tricorythodes*)

Undet. Tx genus in Vancouver Island, BC

Subfamily Atalophlebiinae *Choroterpes*, *Neochoroterpes*,

Subfamily Leptophlebiinae *Habrophleboides*, *Leptophlebia*, *Paraleptophlebia*)

Oligoneuriidae (brush-legged or brushlegged mayflies)

Subfamily Isonychiinae ((*Isonychia* (now in Siphonuridae
(also in Isonychiidae & Amelitidae))

Palingeniidae (spinyheaded burrower mayflies)

Subfamily Pentageniinae (*Pentagenia*)

Polymitarciidae (pale burrower mayflies)

Subfamily Polymitarciinae (*Ephoron*)

Potamanthidae (hacklegill mayflies) (*Anthopotamus*)

Siphonuridae (primitive minnow mayflies)

Subfamily Isonychiinae ((*Isonychia*) (also put Isonychiidae, Oligoneuriidae & Amelitidae))

Subfamily Siphonurinae (*Ameletus* (also put in Ameletidae), *Siphonurus*)

Tricorythidae (little stout crawlers; little stout crawler mayflies)

(*Leptohypes*, *Tricorythodes*) (both now subsumed in Leptohyphidae)

MAYFLY species incl.

Ameletus Eaton, 1885 (= *Chimura* Navas, 1915; *Paleoameletus* Lestage, 1940; *Metreletus* Demoulin, 1951) Siphonuridae Ephemeroptera (mayflies), Subfamily Siphonurinae (also put in Ameletidae) (31 species in US or Canada)

Ameletus undet. sp. or species (BC, CO, NC?, WV hyporheic; Tx or Ac in BC & 7 seAK c.;
NC hyporheic?, meiofauna & benthic streams)

Anthopotamus McCafferty & Bae, 1990 (= *Potamanthus*) - Potamanthidae mayflies (4 species
in US or Canada)

Anthopotamus undet. sp. (hyporheic burrower in OH; VA, MD brackish infauna)

Baetis Leach, 1815 (= *Brachyphlebia* Westwood, 1840; *Montobaetis*, *Rhodobaetis*, *Vernobaetis*, 1972 (Unav.); *Tatubaetis* Kang & Yang, 1994; *Acentrella*, *Neobatis*) (small mayflies) Baetidae Ephemoptera (mayflies) (59 species in US or Canada) **Bibl.:** Bergman 1977; Morihara 1978

Baetis intercalaris McDunnough, 1921 (IL, ON hyporheic)

Baetis undet. sp. or species (CA (seasonal resident), CO, ON, TX, WI hyporheic; Tx in BC & 29 c. in seAK)

Baetis tricaudatus Dodds, 1923 (= *B. intermedius* Dodds, 1923; *B. incertans*, *vagans* McDunnough, 1925; *B. jesmondensis* McDunnough, 1938; *B. sp. No. 1* Traver, 1932; *Neobatis t.*) (NA, Central Amer./ BC hyporheic, PA spr.)

Baetodes Needham & Murphy, 1924 - Baetidae Ephemoptera (mayflies) (2 species in US or Canada)

Baetodes alleni (McCafferty & Provonsha, 1993) (Edwards Plateau, TX/Pb?)

Baetodes bibranchius (McCafferty & Provonsha, 1993) (sUS to n.Mex./Pb? In Edwards Plateau, TX)

Caenis Stephens, 1835 (*Oxycypha* Burmeister, 1839; *Ordella* Campion, 1923; *Austrocaenis* Barnard, 1932) Caenidae Ephemeroptera (mayflies) (13 species in US or Canada)

Caenis anceps Traver, 1935 (PA hyporheic)

Caenis undet. sp. or species (IL?, OK, ON, PA, PQ, TX hyporheic larvae/Tx? in MN; MI lake benthic; VA, MD brackish infauna)

Callibaetis Eaton, 1881 (= *Neobaetis* Navas, 1924) (flecked mayflies) Ephemeridae Ephemoptera (mayflies) (23 species in US or Canada)

Callibaetis undet. sp. (sON/Tx or Ac)

Caudatella Edmunds, 1959 - Ephemerellidae Ephemeroptera (mayflies), Subfamily Ephemerellinae, Tribe Ephemerellini, Subtribe Ephemerellae (5 species in US or Canada)

Caudatella undet. sp. (Tx or Ac in 1 seAK c.)

Centroptilum Eaton, 1869 - Baetidae Ephemoptera (mayflies) (6 species in US or Canada)

Centroptilum album McDunnough, 1926 (PA hyporheic)

Choroterpes Eaton, 1881 - Leptophlebiidae Ephemoptera (mayflies), Subfamily Atalophlebiinae (12 species in US or Canada)

Choroterpes undet. sp. (CO hyporheic)

Cinygma Eaton, 1885 - Heptageniidae Ephemeroptera (mayflies), Subfamily Heptageniinae (3 species in US or Canada)

Cinygma undet. sp. or species (Tx in BC & 13 seAK c; CA hyporheic)

Cinygmula McDunnough, 1933 - Heptageniidae Ephemeroptera (mayflies), Subfamily Heptageniinae (11 species in US or Canada)

Cinygmula ramaleyi Doods, 1923 (detritus hyporheic in BC)

Cinygmula undet. sp. (CO hyporheic; Tx in 30 seAK c.)

Dolania Edmunds & Traver, 1959 - Behningiidae Ephemeroptera (mayflies)(1 species in US or Canada)

Dolania americana Edmunds & Traver, 1959 (sand burrows in streams in seUS; hyporheic burrower in OH; unlike most species, the females perform a level, slightly undulating mating dance over water)

Drunella Needham, 1905 - Ephemerellidae Ephemeroptera (mayflies), Subfamily Ephemerellinae, Tribe Ephemerellini, Subtribe Ephemerellae (15 species in US or Canada)

Drunella doddsi (*Ephemerella d.* Needham, 1927) (wNA/CO hyporheic)

Drunella undet. sp. (Tx or Ac in 6 seAK c.)

Epeorus Eaton, 1881 (= *Iron*, *Ironopsis*) Heptageniidae Ephemeroptera (mayflies), Subfamily Heptageniinae (19 species in US or Canada)

Epeorus undet. sp. or species (Tx in BC, WV & 13 seAK c.; PA spr.)

Ephemera Linnaeus, 1758 (= *Nirvius Navas*, 1922) Ephemeridae Ephemeroptera (mayflies)(7 species in US or Canada)

Ephemera danica Muller, 1764 (burrows in NA river gravel; hyporheic burrower in OH)

Ephemera simulans Walker, 1853 (= *E. decora* Walker, 1853; *Palingenia natata* W.1853; *E.n.* (Walker), 1853) (brown drake; chocolate dun/NA/Tx or Ac in sON; burrows in gravel in Manitoba)

Ephemerella Walsh, 1862 (= *Chitonophora* Bengtsson, 1908) Ephemerellidae Ephemeroptera (mayflies), Subfamily Ephemerellinae, Tribe Ephemerellini, Subtribe Ephemerellae.(28 species in US or Canada) **Bibl.:** R. Allen 1960; Steger 1931

Ephemerella deficiens Morgan,1911 (ON, PQ hyporheic larvae)

Ephemerella dorothea Needham, 1908 (WV nonkarst hyporheic)

Ephemerella excrucians Morgan,1911 (ON, PQ hyporheic larvae)

Ephemerella infrequens McDunnough, 1924 (wNA/CO hyporheic)

Ephemerella inermis Eaton, 1884 (wNA/ BC, CO hyporheic)

Ephemerella needhami MCDunnough, 1925 (NE,SE,nMex./Tx? in MN?)

Ephemerella undet. sp. or species (NC?, PQ hyporheic; NC stream benthic & meiofauna)

Ephoron Williamson, 1802 - Polymitarcyidae mayflies, Subfamily Polymitarcyinae (2 species in US or Canada)

Ephoron undet. sp. or species (hyporheic burrower in OH; NC marine infauna; VA, MD brackish infauna)

Eurylophella Tiensuu, 1935 - Ephemerellidae Ephemeroptera (mayflies), Subfamily Ephemerellinae, Tribe Ephemerellini, Subtribe Ephemerellae. (12 species in US or Canada)

Eurylophella funeralis (*Ephemerella* t. McDunnough, 1925) (WV hyporheic)

Eurylophella undet. sp. (Tx or Ac in 1 seAK c.; MI lake benthic; VA, MD brackish infauna)

Eurylophella temporalis (*Ephemerella* t. McDunnough, 1924) (seVA hyporheic)

Habrophleboides Ulmer, 1920 - Leptophlebiidae, Subfamily Leptophlebiinae (4 species in US or Canada)

Habrophleboides undet. sp. (PA? hyporheic)

Isonychia Eaton, 1871 (= *Jolia*, *Chirotonetes* (emend.) Eaton, 1881; *Eatonia* Ali, 1971 (Unav.) (white legged mayflies) Siphonuridae Ephemeroptera (mayflies), Subfamily Isonychiinae (also put in Ameletidae, Oligoneuriidae, Isonychiidae) (25 species in US or Canada)

Isonychia sicca (*Baetis* s. Walsh, 1862; *I. edmundsi* Kondratieff & Voshell, 1984; *I. sieca*)

Isonychia sicca manca (*I.m.* Eaton, 1871) (TX hyporheic) **Bibl.:** P. Grant 1978; Kondratieff 1982

Isonychia undet. sp. or species (Tx or Ac in sON; IL river benthic)

Heptagenia Walker, 1863 (stream mayfly) Heptogeniidae Ephemeroptera (mayflies), Subfamily Heptageniinae (36 species in US or Canada)

Heptagenia undet. sp. or species (CO, IL?, TX hyporheic)

Hexagenia Walsh, 1863 (golden mayfly) Heptogeniidae Ephemeroptera (mayflies)(5 species in US or Canada)

Hexagenia bilineata (*Ephemerella* b. Say, 1824) (hyporheic burrower in OH; Virginian (rare), Carolinian freshwater infauna)

Hexagenia limbata (*Ephemerella* l. Serville, 1829; *Palingenia occulta*, *viridescens* Walker, 1853;

H. munda, *variabilis*, *venusta* Eaton, 1883; *H. affiliata* McDunnough, 1927; *H. carolina*, *elegans*, *marilandica*, *mingo*, *rosacea*, *weewa*, *pallens* Traver, 1935; *H. californica* Upholt, 1937; *H. kanuga* Traver, 1937)) (NA except AK, NWT/ sandfly, burrowing mayfly, fishfly, giant Michigan mayfly, spinner or caddis, great olivewing drake/ Tx? in MN; sandy hyporheic in Great Lakes, Manitoba, TX; rare Virginian marine infauna)

Hexagenia undet. sp. (VA, MD brackish infauna)

Litobrancha McCafferty, 1971 – Ephemeridae Ephemeroptera (mayflies), Subfamily ***Litobrancha recurvata*** (Morgan, 1913) (NC marine infauna)

Leptophlebia Westwood, 1940 (= *Blasturus* Eaton, 1881; *Euphyurus* Bengtsson, 1909) Leptophlebiidae Ephemeroptera (mayflies), Subfamily Leptophlebiinae (10 species in US or Canada)

Leptophlebia undet. sp. or species (Tx? in MN; seVA hyporheic)

Neochoroterpes Allen, 1974 - Leptophlebiidae Ephemeroptera (mayflies), Subfamily Atalophlebiinae (3 species in US or Canada) **Bibl.:** B. Henry 1989

Neochoroterpes oklahoma (*Choroterpes o.* Traver, 1934; *C. mexicana* & *mexicanus* Allen, 1974; *C. sp. 2* Lugo-Ortiz & McCafferty, 1995) (NW, SW, Central Amer./ TX hyporheic)

Paraleptophlebia Lestage, 1916 (= *Oligophlebia* Demoulin, 1965) Leptophlebiidae Ephemeroptera (mayflies), Subfamily Leptophlebiinae (33 species in US or Canada) **Bibl.** Lehmkuhl & Anderson 1971; Mattingly 1986

Paraleptophlebia undet. sp. or species (MI lake benthic; BC, n,sCA, CO, PQ, seVA, WV hyporheic; Tx in BC & 28 seAK c.; VA, MD brackish infauna)

Paraleptophlebia temporalis McDunnough, 1926 (Ttx in Vancouver Island, BC)

Pentagenia - Palingeniidae Ephemeroptera (mayflies), Subfamily Pentageniinae (also put in Heptogeniidae) (2 species in US or Canada)

Pentagenia undet. sp. (hyporheic burrower in OH)

Potamanthus = *Anthopotamus*

Rhithrogena Eaton, 1881 (brown stream m.) Heptogeniidae Ephemeroptera (mayflies), Subfamily Heptageniinae (21 species in US or Canada)

Rhithrogena hageni Eaton, 1885 (*H. brunnea* Hagen, 1875 (Homo.: *H.b* (Rambur), 1842; in part renamed); *R. doddsi* McDunnough, 1926) (wCanada & wUS/western red gill/ BC (detrital), CO hyporheic)

Rhithrogena undet. sp. (Tx or Ac in 4 seAK c)

Sarratella Edmunds, 1959 - Ephemerellidae mayflies , Subfamily Ephemerellinae, Tribe Ephemerellini, Subtribe Ephemerellae. (14 species in US or Canada)

Sarratella undet. sp. (MI lake benthic)

Siphonurus Eaton, 1868 - Siphonuridae Ephemeroptera (mayflies), Subfamily Siphonurinae (17 species in US or Canada)

Siphonurus undet. sp. (Ac in 1 seAK c.)

Stenacron Jenson, 1974 – Heptogeniidae mayflies, Subfamily Heptageniinae (7 species in US or Canada)

Stenacron undet. sp. (VA, MD brackish benthic)

Stenonema Traver, 1933 - Heptogeniidae mayflies, Subfamily Heptageniinae (24 species in US or Canada). **Bibl.:** Bednarik 1978

Stenonema (*S.*) *femoratum* (Baetis f. Say, 1823; *Ecydonurus* & *Siphylurus* f. (Say), 1823 (comb.) *Heptagenia tripunctata* (Banks, 1910); *S. birdi*, *scitulum* Traver, 1935) (US, Canada, n.Mex./Ac or Tx in AR)

Stenonema modestum (*Epeorus modestus* Banks, 1910) (seVA hyporheic)

Stenonema undet. sp. or species (MI lake & IL, NC stream benthic & meiofauna; NC?, TX (sandy) hyporheic?; Tx or Ac in sON, WV)

Tricorythodes Ulmer, 1920 - Tricorythidae Ephemeroptera (mayflies)(8 species in US or Canada)

Tricorythodes minutus Traver, 1935 (= *T. fallax* Traver, 1935; *T. fallacina* McDunnough, 1939) (NE, W, nMex./ CO hyporheic)

Tricorythodes undet. sp. or species (IL?, TX hyporheic; VA, MD brackish infauna)

Mecoptera (scorpionflies & allies) – Insect Order of Subclass Pterygota, Division Neoptera, Subdivision Endopterygota (=Holometabola), Section Panorpidia, Subsection Anthophora. Not known from US or Canadian caves or aquatic interstitial habitats

Mecopterida - Section of Subdivision Endopterygota of Class Insecta. Includes Superorder Antliophora (Orders Mecoptera, Siphonaptera (fleas) & Diptera (flies) & Superorder Amphiesmenoptera (Orders Trichoptera (stoneflies), Lepidoptera (moths and butterflies) and Hymenoptera (wasps, bees and kin)

megafauna - Animals large enough to be seen with our unaided eyes. Cf. macrofauna

Megaloptera (=Sialoidea) Small insect order of about 100 species. Included with Neuroptera.

meiobenthos - Benthic interstitial fauna. Syn.: Mesopsammon

meiobenthos - Benthic species that pass through a 2 mm mesh are retained on a 40-200 micron mesh.

meiobenthic – 1. Benthic species that pass through a 500 micron sieve but are retained on a 40 micron sieve. 2. Adj. for meiobenthos.

meiofauna - Benthic or subsurface microfauna which do not pass through a 500 micron sieve but are retained on a 40 micron sieve or which do not pass through a 1mm sieve. Area type of species mostly inhabiting microcavernous spaces in-between particles of (usually unconsolidated) sediments, such as sand & fine gravels, or in porous rocks. Incl. hyporheic, phreatobia, & upper hypogean (edaphophile). **Bibl.:** Furstenberg, et al., 1978; Heip, 1984; Higgins & Thiel, 1988; Husmann 1971; Palmer, M.A. 1990a; Uhlig et al., 1973; Ward & Palmer 1994

mesobiota - Soil species of intermediate size. Incl. mesofauna & mesoflora.

mesophilic - Species which thrive best in intermediate temperatures and habitats neither very dry nor very wet.

mesopsammon - Benthic interstitial fauna. Syn.: meiobenthos.

mesovoid shallow stratum – See superficial underground compartment.

Mesotrophic – Referring to an intermediate amount of available organic matter or medium energy density. Cf. oligotrophic & eutrophic.

Mesozoic - Geologic period which lasted for about 100 million years and ended about 75 million years ago. Some cavefish species appeared to have arisen after marine regression at the end of the Mesozoic isolated populations in eastern NA.

metabolic rate - The rate at which a specie transforms food into energy & body tissue. The higher its metabolic rate, the more food it must consume to continue living. Many cavernicoles live at a reduced metabolic rate but often live longer compared to surface counterparts & therefore are susceptible to bioaccumulation of pollutants.

metabolism - The sum of the chemical activities taking place in living cells; the sum of the processes by which a species transforms food into energy & living tissue. Bibl - See energy). Hueppop 1985; Jegla 1964

cellulose - Chamier, Anne-Carole. 1991

cellular - Dickson & Giesey 1981; Dickson & Franz 1980; Dickson, Gary & Giesey 1982

crayfish - McWhinnie & Connor, 1967

digestion (see feeding) –

Lavoie et al 1988; Lavoie, Phillpotts, et al. 1991; White 1989; Wildfang 1989

energetics - Weingartner 1979

microbial - Hicks, R.J. & J.K. Fredrickson, 1988.

neurology - Takahata, Masakazu & Hisada 1981

osmoregulation - Dobkin & Manning 1964; Parry 1957

oxygen usage - see oxygen

primitiveness - Popa 1997

rates - Hadley, Ahearn & Howarth 1981; Studier & Lavoie 1990

size, effects of - Poulson & Lavoie 1990

starvation resistance/effects - Northup, Lavoie, & Studier 1991; Steeves, 1964

temperature –

Poulson & Lavoie 1990; Studier & Lavoie 1991; Studier, Lavoie, Wares & Linn 1987

water loss - Hadley, et al.1981; Poulson & Lavoie 1990; Studier & Lavoie 1990;

Studier & Lavoie 1991; Studier, Lavoie, Wares & Linn 1987a; Thibaud 1981

Metazoa – A clade that includes all animals except the protists Chaonoflagellata (sometimes excluded from Animalia). Divided into Eumatozoa (most animals) and the Porifera and Placozoa

microarthropods - Small arthropods that live between soil particles, especially certain mites, springtails, other apterygote insects, spiders and myriapods.

microbe - Microscopic current or fossil species. Often filamentous in U-loops, moonmilk. *Leptothrix*, *Crenothrix*, & *Thiobacillus* like filaments in cave & paleokarst sediments in SD & NM Palmer & Palmer, 1990. Incl. algae, bacteria, mold, moonmilk, rotifer, & water bears (tardigrades).

Microbe **Bibl.**: Balkwill & Ghiorse 1985; Beloin & Ghiorse 1988; Boyd 1965; Bone & Balkwill 1988; Brock, Passman & Voder 1974; Coumartin 1963; Cunningham 1991; Davis, Palmer & P. 1990; Dickson 1975; Eichen et al. 1993; Feldhake & Vestal 1985; Fliermans, Bohlool, & Schmidt 1974; Fliermans & Dupont 1975; Ghiorse 1984; Ghiorse & Wilson 1988; Greer 1985; Hendry, et al 1993; Hicks & Fredrickson 1988; Jimenez 1990; Jones, Beeman & Suflita 1989; Lavoie 1981a; Lavoie et al 1988; Lavoie, Studier, Edwards & Apgar 1985; Lavoie, Studier & Kennedy 1988; Madsen & Ghiorse 1993; Ohde & Takii 1978; Olson & Thompson 1991; Phelps, Raione & White 1989; Phillpotts 1989; Rusterholtz 1989; Sinclair & Ghiorse 1987, 1989; Thompson & Olson 1988; Wood, Keller & Johnstone 1993; Northup, Lavoie & Mallory 1997; Rusterholtz 1989;

microbe hazard - Incl. coccidiomycosis, fungus, hantavirus, leptospirosis, plague, rabies, rat bite fever, tetanus, ticks, tularemia. Hazard transmitted by ticks incl. Colorado Tick Fever (west),

Lyme Disease, Rocky Mountain Spotted Fever (west), ehrlichiosis (south, south-central, southeast), Tick-bite Paralysis, & Tick-borne Relapsing Fever (TX).

microbial biomass - Measured as total lipid phosphate content.

microbial activity - The overall respiration of a microbial community. Measured as DO loss for anaerobics) & as the amount of carbon14-acetate incorporation into lipids.

microbiota - The smallest soil species such as bacteria, fungi, algae, & protists.

microclimate - See climate, habitat, temperature, humidity. Poulson, 1984a

microfauna - The smallest soil or benthic animals, those invisible to our unaided eye and which pass through a 40 micron mesh, smaller than meiobenthos

microhabitat - A restricted, defineable space where environmental conditions differ from those in surrounding area. See habitat. Poulson, 1984a

microvloid – See mesocaverns.

midges - See Diptera: Caratopogonidae

migration - See dispersal

milieu souterrain superficial – Syn: Superficial underground compartment.

Millipedes

A primarily phytosaprophagous myriapodous arthropod of the class Diplopoda. Each segment is really a diplosegment formed by fusion of adjacent somites in the embryo, and most therefore have two pairs or four legs. Autapomorphies include the diplosegment condition, aflagellate spermatozoa, and at least four sensory cones on the apices of the distal antennal articles. The sides of the head are covered by the bases of the large mandibles, the ends of which have a movable gnathal lobe with teeth and a rasping surface. Near the rear top of the head is a plate (gnathochilarium) ;formed by fusion of the first maxillae and vestiges of head appendages and the second maxillae) About 7,800 known species. First appear in Silurian.

Millipedes are often called “1000-legged” or “rain” worms. They are wormlike with rounded body segments that bear two pairs of legs on each segment (centipedes have only one leg per segment). The head is rounded with short antennae. Species can vary in length from less than one to two or more inches. They are light brown to black in color.

Millipedes are not poisonous, but many species have glands capable of producing irritating fluids (usually containing benzoquinones) which can create superficial “burns” on human skin, cause damage to the eyes or may produce allergic reactions. Most of these species are found in the tropics.

Most millipedes are scavengers and feed primarily on decaying vegetation and leaf litter, although some species attack roots of living plants and a few cave species (not in US or Canada)

are carnivores. Millipedes spend most of their life in the soil where they also overwinter. In the spring, millipedes lay from 20-300 eggs in the soil. The eggs hatch in several weeks, and the young millipedes have only the first three pair of legs and not more than seven segments. With each molt they add additional segments and legs until they reach maturity. Sexual maturity is reached in 2-5 years depending on the species.

Bibl.: Anon., 1947a; Bashor, 1974; Bollman, 1893; Carmoody, 1974; Causey, 1960a, 1971, 1973, 1975; Elliott, 1998; Enghoff, 1991; Hoffman, 1980; Hopkin & Read, 1992; Loomis, 1939, 1943; Chamberlin & Hoffman, 1958; Mauriès, 1994; Shear, 1972a, 1969; Bohlman, 1887-8; Packard, 1883

Areas: **AZ:** Chamberlin, 1930a; **CA:** Causey, 1963a; Causey, 1973; Graham, 1968; Grinnell, 1908; **IN:** McNeill, 1888; **FL:** Causey, 1960; **IN:** Packard, 1886; **KY:** Kingsley, 1888; **LA:** Causey, 1963; **MO:** Causey, 1960d; **NA:** Causey, 1960a, 1961, C. Hoff, 1958a; Shear, 1969a; **NM:** C. Hoff, 1956d; **OR:** Causey 1973; **PA:** Dearolf 1938; **TX:** Causey 1959; **UT:** Chamberlin 1930a; **VA:** R. Hoffman 1949; **WA:** Causey 1973; **WV:** R. Hoffman 1949.

Subclass Penicillata

Superorder Pselaphognatha

Order Polyxenida

Suborder Polyxenidea

Family Polyxenidae

Subclass Chilognatha

Infraclass Pentazonia

Superorder Chilognatha

Order Glomeridesmida - absent from North America.

Order Sphaerotheriida - absent from North America.

Order Glomerida (= Oniscomorpha) (pill millipedes)

Family Glomeridae - no cave representatives.

Subclass or Infraclass Helminthomorpha

Subterclass Colobognatha

Superorder Typhlogena

Order Platydesmida (= Proterospermophora, Polydesmidea)

Suborder Platydesmidea

Superfamily Platydesmoidea

Family Andrognathidae

Subfamily Andrognathinae – *Andrognathus*

Subfamily Bazillozoniinae – *Brachycybe*

Superorder Ommatophora

Order Polyzoniida

Suborder Polyzoniidea

Superfamily Polyzonioidea

Family Hirudisomatidae.

Subfamily Kusionzoniinae – *Octoglena*

Family Polyzoniidae (also put in Order Colobognatha)

(*Petaserpes*, *Polyzonium*)

Family Siphonotidae - introduced, no cave representatives.

Order Siphonophorida

Family Siphonophoridae - *Siphonophora*

Family Siphonorhinidae - no cave representatives.

Subterclass Eugnatha

Superorder or Order Nematophora (= Chordeumida)

Order Stemmiulida - absent from North America.

Order Callipodida (also put in Superorder Coelocheta)

Suborder Schizopetalidea

Superfamily Schizopetaloidea

Family Caspiopetalidae

Subfamily Abacioninae - *Abacion*, *Tetracion*

Family Schizopetalidae

Subfamily Acanthopetalinae

Tribe Colactidini - *Colactis*

Order Chordeumatida (also put in Superorder Coelocheta)

Suborder Striariidea

Superfamily Striarioidea

Apterouridae - no cave representatives

Urochordeumatidae - no cave representatives.

Superfamily Brannerioidea

Branneriidae - no cave representatives

Tingupidae – *Tingupa*

Superfamily Chordeumatidea

Caseyidae (or uncertain superfamily placement)

- *Caseya*, *Opiona*, *Speoseya*, *Underwoodia*, *Vasingtona*

Superfamily Chordematoidea

Order Chordeumidia **Bibl.:** Shear, William A. 1972.

Idagona (also in Conotylidae, Subfamily Idagoninae or Idagonidae)

Rhiscosomididae - no cave representatives.

Striariidae - *Striaria*, *Speostriaria*

Superfamily Cleidogonoidea

Cleidogonidae **Bibl.:** Shear 1971 - *Pseudotremia*

Trichopetalidae (see below)

Superfamily Heterochordeumatoidea

Adritylidae - *Adrityla*

Trichopetalidae (also put in Superfamily Cleidogonoidea)

- *Scoterpes*, *Trichopetalum*

Conotylidae (two new sp. in Vancouver Island caves) - *Lophomus*, *Plumatyla*

Subfamily Austrotylinae – *Achemenides*, *Austrotyla*

Subfamily Conotylineae - *Conotyla*, *Taiyutyla*

Subfamily Conotylineae – *Macromastus*

Superorder or Order Juliformia (= Opisthopermorphora)

Order Julida (also put under superorder Diplocheta)

Aprosphylosomatidae (also subsumed in Julidae)

Subfamily Aprosphylosomatinae - *Aprosphylosoma*

Chelوجلidae - no cave representatives.

Telsonemasomatidae - no cave representatives.

Zosteractinidae

Ameractis, *Zosteractis* (both also put in Nemasomatidae)

Suborder Parajulidea

Blaniulidae

Subfamily Blaniulinae

Tribe Blaniulini – *Blaniulus*

Tribe Boreoiulini – *Proteroiulus*

Nemasomatidae (also subsumed in Julidae)

Subfamily Nemasomatinae

Tribe Ameractini – *Ameractis* (put in Zosteractinidae)

Tribe Nemasomatini – *Nemasoma*

Tribe Zosteractininae – *Zosteractis* (put in Zosteractinidae)

Okeanobatidae - no cave representatives.

Peromopodidae

Californiulus, *Paeromopus*, *Tylobolus* (also put in Spirobolidae)

Parajulidae

Aniulus, *Oriulus*, *Parajulus*, *Ptyoiulus*, *Spathiulus*, *Uroblaniulus*, Undet. genera

in BC

Suborder Julidea

Julidae - introduced

Subfamily Julinae

Tribe Cylandroiulini - *Cylindroiulus*

Tribe Leptoiulini - *Ophiulus*

Superorder Anocheta

Order Spirobolida

Suborder Spirobolidea

Superfamily Spirobolidea

Allopocockiidae - no cave representatives.

Atopetholidae

Subfamily Eurelinae – *Eurelus*

Floridobolidae - no cave representatives

Pachybolidae - introduced to Hawaii, no cave representatives.

Spirobolellidae - introduced to Hawaii, no cave representatives.

Spirobolidae. Bibl.: Keeton 1960

Subfamily Spirobolinae – *Narceus*

Subfamily Tylobolinae - *Tylobolus* (put in Paeromopodidae)

Superorder Diplocheta

Order Spirostreptida

Suborder Cambalidea

Superfamily Cambaloidea

Cambalidae - *Cambala*, *Dimerogonus*, *Nannolene*

Cambalopsidae - introduced to Hawaii, no cave representatives
Choctellidae – *Choctella*

Suborder Spirostreptidea
Superfamily Spirostreptoidea
Spirostreptidae – *Orthoporus*

Superorder Merocheta
Order Polydesmida

Suborder Paradoxosomatidea
Superfamily Paradoxosomatidea

Paradoxosomatidae – introduced
Subfamily Paradoxosomatinae
Tribe Sulciferini – *Oxidus*

Superfamily Sphaeriodesmoidea
Sphaeriodesmidae
Subfamily Desmoninae
Tribe Desmonini - *Desmonus*

Superfamily Stygodemoidea
Pyrgodesmidae - *Myrmecodesmus* (alien)

Superfamily Trichopolydesloidea
Phreatodesmus (uncertain family)

Suborder Chelodesmidea
Superfamily Platyrhacoidea
Platyrhacidae (= Euryuridae) - *Auturus*, *Euryurus*

Superfamily Xystodesmoidea
Eurymerodesmidae. **Bibl.:** Shelley 1994b; (*Eurymerodesmus*)

Xystodesmidae. **Bibl.:** Shelley 1994b; Undet. genera & sp. in scAK

Subfamily Xystodesminae
Tribe Aphelorini (*Apheloria*, *Brachoria*, *Sigmoria*)
Tribe Chonaphini - *Chonaphe*, *Semionellus*

Tribe Harpaphini – *Harpaphe*, *Tubaphe*
Tribe Pachydesmini - *Pachydesmus*

Tribe Rhysodesmini - *Cherokia*, *Rhysodesmus*
Tribe Sigmocheirini - *Sigmocheir*

Tribe Xystodesmini – *Motyxia*, *Xystocheir*

Suborder Polydesmidea

Superfamily Polydesmoidea

Haplodesmidae - introduced, no cave representatives.

Macrosternodesmidae - *Chaetaspis* (or put in Superfamily

Trichopolydesmoidea)

Nearctodesmidae (or put in Superfamily Trichopolydesmoidea) **Bibl.:** Shelley

1994c

Ergodesmus, *Kepolydesmus*, *Nearctodesmus*

Polydesmidae

Brachydesmus, *Polydesmus*, *Pseudopolydesmus*, *Scytonotus*, *Speodesmus*,

Tidesmus

Superfamily Trichopolydesmoidea

Macrosternodesmidae (see above)

Nearctodesmidae (see above)

Abacion Rafinesque, 1820 (= *Spirostrephon*, *Reasia*, *Platops*) Caspiopetalidae millipedes,
Subfamily Abacioninae (4 species in eUS, nMex.)

Abacion *lactarium* (*Pseudotremia* l. Say, 1821; *Lysiopetalum* l., 1883; *Spirotrephon* l. Wood,
1865) (Tx or Ac in cave each in Hamilton & Grundy Cos., TN) Loomis 1939

Abacion *tesselatum* Rafinesque, 1820 (*Julus lactarius* Say, 1821) (Ac in Pulaski Co., MO; Ttx in
TN (Davidson, Lawrence, Grundy Cos.) **Bibl.:** Loomis, 1939

Abacion *texense* (Loomis, 1943) (Tp or Tx in AR (Searcy Co.), OK; Ac in cTX (San Saba Co.))

Abacion *magnum* m. (S.m. Loomis, 1943) (Tp or Tx in nAL, VA)

Abacion undet. sp. (Ac in TX)

Acanthoiulus Verhoeff, 1894 = *Pachyiulus*

Acentronus Chamberlin, 1938 = *Rhysodesmus*

Achemenides Shear, 1971 - Conotylidae millipedes, Subfamily Austrotylinae (1 species in IL, IA,
WI)

Achemenides *pectinatus* (= *Conotyla* & *Sonoratyla* p. Causey, 1952) Shelley, 1971 (type locality
cave in Carroll Co., + caves in Jo Daviess Co., IL/Upper MS Valley, IA (Des Moines, Jackson &
Winneshiek Cos.), WI (Grant & Richland Cos.) & MN (Fillmore Co.)/ mines; glacial relict? /Tb/
G4G5/ **Bibl.:** Peck & Christiansen 1990; Shear 1971

Ackandra Loomis, 1964 = *Cleidogona*

Adrityla Chamberlin, 1910 - Adritylidae millipedes (3 species in UT, MT)

Adrityla deseretae Chamberlin, 1910 UT, Salt Lake Co., Ac or Tx. **Bibl.:** Causey 1972.

Allajulus Koch, 1847 (= *Ypsiloniulus* Verhoeff, 1899 *Diploiulus*?) Julidae millipedes

Allajulus latistriatus = *Cylindroiulus* l.

Ameractis Causey, 1959 - Order Julida, Zosteractinidae millipedes (also put in Nemasomatidae, Subfamily Nemasomatinae, Tribe Ameractini) (1 species in TN)

Ameractis satis Causey, 1959 (type locality cave in White Co., TN & caves in Cumberland, Decatur, Hamilton, Monroe, Overton, Putnam & Roane cos.; AL, Marshall Co.; NC, Madison, McDowell cos. & GA (Dade Co.), Tb/ G3G4) **Bibl.:** Causey, 1959, Hoffman 1964, Shear 1969, Enghoff 1982

Amplaria Chamberlin, 1941 = *Striaria*

Andineptus Chamberlin, 1941 = *Orthoporus*

Andrognathus Cope, 1869 - Andrognathidae millipedes, Subfamily Andrognathinae (one species in US)

Andrognathus corticarius Cope, 1869 (E/Tx in SE)

Aneuloboilus Verhoeff, 1899 = *Neottiulus*

Aneuloboilus arborum Verhoeff, 1899 = *Neottiulus* a.

Aniulus Chamberlain, 1940 - Order Julida, Parajulidae millipedes (14 species in US, SE, w. to AZ, n. to ND, CO)

Aniulus adelphus Chamberlin, 1940 (Ac or Tx in Comal, Travis Cos., TX)

Aniulus austinensis Chamberlin, 1940 (Ac or Tx in Bell, Bexar, Travis, Williamson Cos., TX)

Aniulus nigrans Chamberlin, 1918. (Ac, Tx or Tp in Smith Co., TN) **Bibl.:** Causey 1959

Antriadesmus Loomis, 1941 = *Chaetaspis*

Apacheiulus Loomis, 1968? - Parajulidae millipedes (2 species in AZ, NM)

Apacheiulus guadalupensis Loomis, 1968 (Ac in nNM)

Apheloria Chamberlin, 1921 (= *Leptocircus*, *Rudiloria*) Order Polydesmida, Xystodesmidae millipedes, Subfamily Xystodesminae, Tribe Aphelorini (6 species in eUS)

Apheloria coriacea (Koch) = *A. corrugata butleriana*
Apheloria trimaculata (Wood) = *Sigmoria t.*

Apheloria corrugata butleriana (Bollman, 1889). IN, Harrison Co., Ac; Tx or Ac? in MO & cave in KY) **Bibl.:** Hoffman & Lewis 1997

Aporiaria Verhoeff, 1932 = *Rhysodesmus*

Aprosphylosoma Hoffman, 1961 - Order Julida, Aprosphylosomatidae millipedes, Subfamily Aprosphylosomatinae (once subsumed in Julidae) (one species in OR)

Aprosphylosoma darcenae Hoffman, 1961. (OR Caves?, Josephine Co., OR/ Tb) **Bibl** Hoffman 1961, Shelley 1994a

Arctobolus Cook, 1904 = *Narceus*

Austrotyla Causey, 1961 (= *Sonoratyla* Hoffman, 1961)) Order Chordeumatida, Conotylidae millipedes, Subfamily Austrotylinae (6 species, Rockies from AB to nMex., also upper MS River Valley)

Austrotyla humerosa = *Taiyutyla h.*

***Austrotyla specus* s. (*A.s.* Loomis, 1939; *Conotyla* s., *A.s.s.* & *montivaga*; *S.s.*)** Causey, 1961 (type locality cave in Jefferson Co. +Franklin & St.Louis Cos., MO & IA, Jackson; IL, Jackson, Joe Daviess, Monroe, Henderson, Saline, St. Clair, & Union cos. +MW, WI, MN?/ Tp in nIL, IA, eMo/ rare epigeal, Ac or Tx in NM) **Bibl.:** Loomis 1943, Causey 1961, Shear 1971

***Austrotyla* undescr.? sp. (nNM/Tb)**
***Austrotyla* undet. sp. (Shasta Co.,CA)**

Auturus Chamberlin, 1942 (= *Illiniurus*) Order Polydesmida, Platyrhacidae millipedes

Auturus evides Bollman, 1887 (Tx or Ac in AR (Benton, Fulton & Independence Cos.); MO (Barry, Camden, Carter, Christian, Crawford, Dent, Howell, LaClede, McDonald, Miller, Oregon, Ozark, Pulaski, Shannon, St. Louis, & Washington Cos.) & OK (Cherokee Co.) **Bibl.:** Duniva, Tumilson & McDaniel 1982 Shelley 1982

***Auturus* undet. sp. (or Euryurus) (MO/Tx)**

Bazillozonium Verhoeff, 1935 = *Brachycybe*

Blaniulus Gervais, 1836 (= *Typhloblaniulus*; *Plusioiulus*) Order Julida, Blaniulidae millipedes, Subfamily Blaniulinae, Tribe Blaniulini (2 alien species in US)

Blaniulus guttulatus (Bosc, 1792) (Europe, Eb/ alien edaphic Tx or Ac in GA (Dade Co.))

Blaniulus* *venustus Meinert, 1868 (*Nopoiulus* v. Schubart, 1934) (Europe, Eb/ alien Tx in cave in Fayette Co.; Pleistocene in MD cave)

Bollmaniulus Verhoeff, 1926 - Parajulidae millipedes (12 species in wUS)

Bollmaniulus undet. sp. (Amador & Mariposa Cos., CA)

Brachoria Chamberlin, 1939 (= *Tucoria*) Xystodesmidae millipedes, Subfamily Xystodesminae, Tribe Aphelorini (28 species in eUS)

Brachoria undet. sp. (nMS/Tx)

Brachycybe Wood, 1864 (= *Bazillozonium* Verhoeff, 1935) Order Polydesmida, Andrognathidae millipedes, Subfamily Bazillozoniinae (6 species in Japan, eUS, or CA)

Brachycybe* *petasata Loomis, 1936 (*?type locality cave in Great Smokies Natl. Park, Blount Co., TN/ Tp, Tx or Ac) **Bibl.:** Causey 1959.

Brachycybe lecontei = *B. superus*

Brachycybe* *producta Loomis (= *B. tuolumna* or *B. tuolumne* Chamberlin, 1953) Gardner, 1975 (type locality cave in Tuolumne Co./ TX, CA epigeal)

Brachycybe tuolumna Chamberlin, 1953 = *B. producta*

Brachydesmus Heller, 1858 - Order Polydesmida, Polydesmidae millipedes (also treated as subgenus or jr. syn. of *Polydesmus*)

Brachydesmus cavicola - see *Tidesmus*

Brachydesmus* *superus Latzel, 1884 (= *B. pallidus* Loomis, 1939; *Tidesmus* & *Cambala* s.) (Europe epigeal/alien in US/ Ac or Tx in PA (Blair, Mifflin cos) VA (Shenandoah Co.) WV (Kanawha Co. & near Charlestown); AR (Sharp Co.), KY (Fayette Co.) & sON, Europe) **Bibl.:** Loomis 1939, 1943; Chamberlin & Hoffman 1958

Brachydesmus yosemitensis = *Californiulus* undet. sp.

Californiulus Verhoeff, 1938 - Order Julida, Paeromopodidae millipedes

Californiulus* *chamberlini (Brolemann, 1922) (Ac in cave in Shasta Co., CA)

Bibl.: Shelley 1994a

Californiulus* *dorsovittatus Verhoeff, 1938. (Ac in cave in Shasta Co., CA)

Bibl.: Shelley 1994a

Californiulus undet. sp. (Tx in Calaveras, Mariposa, & Tuolumne Cos., CA)

Californiulus* *vicinus (Chamberlin, 1941) (Lassen Natl. Park/Tx in Shasta Co.)

Cambala Gray, 1832 (= *Troglocambala*, *Eclytus*, *Eclomus*) Order Spirostreptida, Cambalidae millipedes (8 species in South, WA, ID)

Cambala annulata (*Julus a.* Say, 1821) (= *C. cristula* Loomis; *Spirobolus a.*; *C. lactaria* Newport) AL, Talladega Co.; FL, Jackson Co.; TN, Perry & Wayne cos.; IN, Crawford Co.; KY, Robertson Co., Ac (Loomis 1939, 1943; Causey 1959; Shelley 1979; Hoffman & Lewis 1981). (FL to IN, OH, PA/ Tp in AL, FL, GA, KY, TN (Marion?, Wayne, Perry Cos.), VA, WV; Tx? in IN; TTx or Ac in GA (Bartow, Dade Cos.))

Cambala captiosa = *C. speobia*,
Cambala cristula = *C. annulata*

Cambala hubrichti Hoffman, 1858 (epigeal in nGA, swVA, eTN, wNC/ Tx in TN (Blount Co.); Tx in NC (McDowell, Polk, Rutherford, & Transylvania cos.) & wSC; bat guanobitic in GA (Walker Co.)) **Bibl.:** Chamberlin & Hgoffman, 1958; b Shelley 1979

Cambala minor Bollman, 1888. (*C. annulata minor* Bollman, 1888; *C. arkansana* Chamberlin, 1942) AL, Madison Co.; AR, Washington Co.; IL, Monroe & Union cos.; IN, Clark, Crawford, Harrison, Jefferson, Jennings, & Washington cos.; KY, Hart Co.; MO, Genevieve, Perry, & Taney cos.; OK, Adair & Sequoyah cos.; TN, Bedford, Davidson, DeKalb, Hickman, Humphreys, Jefferson, Perry, Wayne, Smith & Roane cos.; VA, Alleghany, Augusta, Bath, & Washington cos.; and WV, Greenbriar Co./ Tp in AL, AR, FL, GA, IL, IN, KY, MO, OH, OK, TN, VA, WV; ecUS epigeal/ IN S2G3) **Bibl.:** Loomis 1943; Causey, 1959; Shelley 1979; Hoffman & Lewis 1981

Cambala ochra Chamberlin, 1942 (*C. & Troglocambala loomisi* Hoffman, 1956) (type locality cave in Conecuh Co., nAL/Ep in LA, MS/ Tx in nAL (Conecuh Co.), sIN, cKY, eTX, TN?; Tp in GA (Bartow Co.)) **Bibl.:** Hoffman 1956; Shelley 1979

Cambala speobia (= *Eclytus & Eclomus s.* Chamberlain, 1952; *S. caeca* Loomis, 1953; *C. captiosa & inornatus* Causey, 1959; *C. reddellii i., r* Causey, 1964) Causey, 1964 (type locality cave in Edwards Co. + Bell, Childress, Comal, Coryell, Culberson, Edwards, Kimble, Travis, Wheeler & 18 other cos. in c, sc, swTX/ Tp) **Bibl.:** Bull & Mitchell 1970; Causey 1964, Elliott & Mitchell 1972; Shelley 1979; Bull 1969

Cambala superus = *Brachydesmus s.*
Cambala reddelli inornatus = *C. speobia* (synonymized by Shelley, not by Shear)
Cambala reddelli r. (= *C. speobia*) (synonymized by Shelley, not by Shear)

Caseya Cook & Colins, 1895 - Order Chordeumatida, Caseyidae millipedes
Caseya undet. sp. (Tx? in Mariposa & Tuolumne Cos., CA)

Cavota Chamberlin, 1942 = *Cleidogona*
Campodes sensu Bollman, 1893 = *Cleidogona*,

Chaetaspis Bollman, 1887 - Order Polydesmida, Macrosternodesmidae millipedes (4 species in eUS)

Chaetaspis albus Bollman, 1887 (Tx in cave in Edmonson Co.,KY) **Bibl.:** Loomis 1939

Chaetaspis debilis (*Antriadesmus d.* Causey, 1959) (type locality cave in Wayne Co., +White & Overton Cos.,TN/ Tb)

Chaetaspis fragilis (*Antriadesmus f.* Loomis, 1953) (*White's C. (Part of Mammoth Cave System) & under stones outside cave, near Mammoth C. PO,Edmonson Co.,TN/ Tp)

Bibl.: Loomis 1943, 1960; Chamberlin & Hoffman 1958

Chaetaspis mollis (Causey, 1959) (*Cumberland (=Henshaw, Higgenbotham) C.,Warren Co., TN/ Tp)

Chaetaspis (= *Antriademus*) undet. sp(p). (IL,OK/Tb or Tp in IL, MO, OK; Tb in AR; Tp? in Russel C.?.; Tb or Tp in 2 caves in Wayne Co.,KY) **Bibl.:** Ward 1983

Chamberlineptus Causey, 1953 = *Orthoporus*

Cherokia Chamberlin, 1949 - Xystodesmidae millipedes, Subfamily Xystodesminae, Tribe Rhysodesmini (1 species in seUS)

Cherokia georgiana (Bollman, 1889) (Ac or TTx in cave in Walker Co., GA)

Choctella Chamberlin, 1918 - Order Spirostreptida, Choctellidae millipedes (2 species in US (SE))

Choctella cumminsi Chamberlin, 1918. Ac or Tx in TN, Grundy & Warren Cos.) **Bibl.:** Causey 1959

Chonaphe Cook, 1904 - Order Polydesmida, Xystodesmidae millipedes, Subfamily Xystodesminae, Tribe Chonaphini (4 species in OR, WA, ID) **Bibl.:** Shelley 1994

Chonaphe remissa Chamberlin, 1949 (= *C. armata* Attems, 1931) (Ac or Tx in Skamania Co., WA)

Cleidogona Cooke, 1895 (= *Ackandra*, *Campodes*, *Cavota*, *Cryptotrichus*, *Hirsutogona*, *Mecistopus*, *Mexiceuma*, *Rhabdorona*) Order Chordeumatida, Cleidogonidae millipedes (71 species in Us, s. to Panama)

Cleidogona bacillipus (Chamberlin & Mulaik, 1941) (Tx or Ac in Bexar, Comal, and Kendall cos., TX)

Cleidogona undescr.? sp.#1, (*Onondaga C.,Crawford Co.,MO/ Tp)

Cleidogona undescr.? sp. #2 (*cave in Llano Co., TX/ Tp)

Cleidogona undet. sp. or species (Tx or Ac in 2 caves in Greenbrier Co., WV; Tx in nMS)

Cleidogona unita Causey, 1951 (epigean & Tp in IL, KY)

Colactis Loomis, 1937 - Order Callipodida, Schizopetalidae millipedes, Subfamily Acanthopetalinae, Tribe Colactidini (4 species in CA)

Colactis briggsi = *C. utorum*

Colactis tiburona (Chamberlin, 1923). (Tx or Tp in Yuma Co., AZ) **Bibl.:** Shelley 1996

Colactis utorum (Chamberlin, 1925) (= *C. briggsi* Shear, 1974) (Tx or Tp in CA, Inyo Co.; AZ (Gila & Pima cos.) **Bibl.:** Shear, 1974, Shelley 1996a

Conotyla Cook & Collins, 1895 (= *Proconotyla*) Order Chordeumatida, Conotylidae millipedes, Subfamily Conotylineae (13 species in eUS)

Conotyla blakei (*Proconotyla b.* Verhoeff, 1932) (*C. vaga* Loomis, 1939) (type locality cave in Berks Co.(PA)/ E, New England/ glacial relict/ Tp in IL,MD,MO,NY (Orange, Schoharie, & Sullivan cos), PA (Berks, Blair, & Mifflin cos.); Tx or Ac in WV (Jefferson Co./ **Bibl.:** Loomis 1939, 1943; Shear 1971

Conotyla bollmani (*Trichopetalum b.* McNeil, 1887; *Craspedosoma b.* Bollman, 1887; *Scoterpes b.* Bollman, 1888; *C.w.*) Cook & Collins, 1896 (type locality cave in Monroe Co. + caves in Jennings, Lawrence, Orange, Owen, Monroe & WA Cos., IN/ Tp or Tb/ caves only) G3 **Bibl.:** Shear 1971; Hoffman & Lewis 1997

Conotyla humerosa Loomis, 1943 = *Taiyutyla h.* Loomis, 1953
Conotyla pectinata = *Achemenides* p.

Conotyla undet. sp. (Tx or Ac in NY (1 cave)

Conotyla venetia v. (Hoffman, 1961) (Tx? in cave in Alleghany Co., VA/T&E VA S1, G2/S2 / Venetia Millipede)

Conotyla villosus = *C. blakei*

Conotyla vista Shear, 1971 (*type locality cave in Raleigh Co., WV/Tb/ SU G1G2)

Costaricia Loomis, 1966 & *Cryptotrichus* Packard, 1883 = *Cleidogona*

Cylindroiulus Verhoeff, 1894 (= *Allajulus* Curtis, 1945) Order Julida, Julidae millipedes, Subfamily Julinae, Tribe Cylindroiulini (3 species in Europe)

Cylindroiulus arborum Verhoeff, 1894 (Europe/ alien Tx in Marengo C., Crawford Co., IN)

Cylindroiulus latistriatus Curtis, 1945 (*Allajulus l.* (Crabtree); *Julus hesperus* Chamberlin) (HA, BC to CA/ Tx or Ac in CA,PQ; Tp? In NS)

Dampfaria Verhoeff, 1932 = *Rhysodesmus*
Dearolifa Loomis, 1939 = *Pseudotremia*

Desmonus Cook, 1898 (= *Ethocyclus* Chamberlin & Mulaik, 1941; *Stilbopagus* Loomis 1966) Sphaeriodesmidae millipede, Subfamily Desmoninae, Tribe Desmonini (7 species in sUS or Mex.)

Desmonus conjunctus = *D. pudicus*,

Desmonus pudicus (Bollman, 1888) (Tx in Bexar, Burnet, Comal, Travis, & Williamson cos., TX) **Bibl.:** Shelley 1998a

Diaporus Silvestri, 1897 = *Orthoporus*

Diploiulus Berlese, 1883 (= *Allajulus*?) Order Julida, Julidae millipedes
Diploiulus (= *Allajulus*?) undet. sp. (Tx or Ac in sON)

Dixidesmus Chamberlin, 1943 = *Pseudopolydesmus*

Dimerogonus Attems, 1903 - Cambalidae millipedes (1 species in HA)
Dimerogonus undet. sp. (Australia/alien? Tp or Tx in montane wet cave (Maui) & Kazumura Lava Tube, HI Island, HI)

Eclomus Chamberlin, 1952 = *Cambala*
Eclycytes Chamberlin., 1952 = *Cambala*
Ectopodesmus Hoffman, 1942 = *Ergodesmus*
Endere dusora = *Plumatyla humerosa*

Ergodesmus Chamberlin, 1949 (= *Ectopodesmus* Hoffman, 1962) Order Polydesmida, Nearctodesmidae millipedes (3 species in YWA, MT, IL)

Ergodesmus remingtoni Hoffman, 1962 (type locality cave in Jersey Co., IL + Adams, Hardin Monroe, & Pike Cos., IL/ Tp but see remarks by Shelley 1994c:491)

Ethmoiulus Verhoeff, 1894 = *Ophiulus*

Eurelus Cook, 1911 - Eurelidae millipedes, Subfamily Eurelinae (1 species in TX)
Eurelus kerrensis Chamberlin & Mulaik, 1941 (Ac in 2 caves in Uvalde Co., TX)

Eurymerodesmus Brolemann, 1900 (= *Kewanius*) Order Polydesmida, Eurymerodesmidae, millipedes (22 species in seUS) **Bibl.:** Shelley 1989

Eurymerodesmus birdi b. (Chamberlin 1931) (Ac or Tx in cave ni Seminole Co., OK)

Eurymerodesmus dactylocyphus Shelley, 1990. (Ac, Tp, or Tx in TX, Williamson Co.) (Shelley 1990).

Eurymerodesmus undet. sp. (Eastern epigean / Tx in MS, MO, TX; TTx in OK)

Eurymerodesmus digitatus Loomis, 1976. (Tx or Tp in Travis Co.,TX) **Bibl.:** Shelley 1990

Eurymerodesmus melacis Chamberlin & Mulaik, 1941. (Tp or Tx in Bexar, Comal, Hays, Kerr, Medina, Terrell, and Uvalde cos., TX) **Bibl.:** Shelley 1990

Euryurus Koch, 1847 (= *Eutheatus*, *Singulius*) Order Polydesmida, Platyrrhacidae millipedes. **Bibl.:** Hoffman 1978

Euryurus erythropygus = *E. maculatus*

Euryurus maculatus Koch, 1847 (*Polydesmus e.* Brandt, 1834; *E. erythropygus*) (unknown type locality/ Ac or Tx in cave in Madison Co., cAL) TX, Williamson Co. Loomis 1943

Euryurus l. leachii Gray, 1832. (Tx in IN (Harrison, Jennings, Monroe, & Orange Cos.) & OH (Hocking, Highland & Gallia Cos.) **Bibl.:** Hoffman 1978; Hoffman & Lewis 1997

Euryurus undet. sp. (near *E. leachii* (Gray) (MO/Tx)

Eutheatus Attems, 1938 = *Euryurus*

Flagellopetalum Causey, 1951 = *Zygonopus*

Gosiulus Chamberlin, 1940 (*Ziniulus* Chamberlin, 1940) - Parajulidae millipedes (5 species in TX or NM)

Gosiulus aethes (Chamberlin, 1940) (Ac or Tx in Bexar, Williamson Cos., TX)

Gosiulus conformatus Chamberlin, 1940 (Ac in cave in Medina Co., TX)

Gosiulus undet. sp. (Ac in Devil's Sinkhole, Edwards Co., TX)

Harpaphe Cook, 1904 - Xystodesmidae millipedes, Subfamily Xystodesminae, Tribe Harpaphini (3 species, CA to BC)

Harpaphe haydeniana (Wood, 1864) (yellow-spotted millipede/ Ac or Ttx in 1 WA cave)

Hawaiicambala Verhoeff, 1944 = *Nannolene*

Hexaglena McNeill, 1887 = *Polyzonium*

Hirsutogona Kraus, 1954 = *Cleidogona*

Hypozoneum Cook, 1904 = *Octoglena*

Idagona Buckett & Gardner, 1967 - Chordeumidae millipedes (also put in Conotylidae, Subfamily Idagoninae or in Idagonidae) (1 species in ID)

Idagona westcotti B.&G.1967 (type locality cave in Clark Co. & caves in Craters of the Moon Natl. Monument, Lincoln Co., ID + cave in Butte Co., ID)

Illiniurus Shear, 1968 = *Auturus*

Ilyma Chamberlin, 1941 = *Myrmecodesmus*

Kalorthomorpha Attems, 1914 = *Oxidus*

Kaloiulus = *Pachyiulus*

Kepolydesmus Chamberlin, 1910 - Nearctodesmidae millipedes (4 species or subspecies in ID, WA, OR)

Kepolydesmus anderisus Chamberlin, 1910 (TTx in OR?)

Kepolydesmus mimus Chamberlin, 1947 (Tp? in WA)

Kepolydesmus pungo Chamberlin, 1949 (Tp or Tx in OR, WA)

Kewanius Chamberlin, 1938 = *Eurymerodesmus*

Lasiolathus Loomis, 1943 = *Scytonotus*; *Leptocircus* Attens, 1931 = *Apheloria*

Leucoiulus Verhoeff, 1894 = *Cylindroiulus*; *Listrostreptus* Verhoeff, 1941 = *Orthoporus*

Lophomus Loomis & Schmitt, 1971 - Order Chordeumatida, Conotylidae millipedes (1 species in WA)

Lophomus skamania (*Troglotyla* s. Causey, 1972) Shear, 1976 (type locality? & 2 other caves in Skamania Co., *Mt. Adams area (incl. Klickitat Co.), WA/Tb) **Bibl.:** Shear 1976

Macromastus Loomis & Schmitt, 1971 - Order Chordeumatida, Conotylidae millipedes, Subfamily Macromastinae (1 or 2 species in caves in MT, ID or eOR)

Macromastus undescr. sp(p). or *Macromastus marginandus* Loomis & Schmitt, 1971 (/Tb or Tp in ID, eOR (less likely))

Macromastus umpqua Shear, 1984 (*type locality cave in Douglas Co., OR/ Tb/ G1G2)

Mecistopus Loomis, 1959 = *Cleidogona*

Megaiulus Verhoeff, 1894 = *Pachyiulus*

Mexiceuma Verhoeff, 1926 = *Cleidogona*

Mexicoiulus Verhoeff, 1926 = *Parajulus*

Minasgonus Verhoeff, 1938 = *Orthoporus*

Motyxia Chamberlin, 1941 - Order Polydesmida, Xystodesmidae millipedes, Subfamily Xystodesminae, Tribe Xystodesmini (6 species in CA)

Motyxia pior Chamberlin, 1941. (Ac in Tulare Co., CA) **Bibl.:** Shelley 1998b

Myrmecodesmus Silvestri, 1910 (= *Ilyma* Chamberlin, 1941) Pyrgodesmidae millipedes

Myrmecodesmus formicarius Silvestri, 1910 (Mexico, TX/ alien Tp in TX) (associate of *Solenopsis* fire ants)

Nannolene Bollman, 1887 (= *Hawaiicambala*) Cambalidae millipedes (8 species in CA, 14 in HA)

Nannolene undet. sp. (HI Volcanoes Natl Park)

Narceus Rafinesque, 1820 (= *Arctobolus*, *Rhexenor*, *Spirobolus*) Order Spiribolida, Spirobolidae millipedes, Subfamily Spirobolinae

Narceus americanus (Palisot de Beauvois) ssp? (E/ Tx in AR,IL,IN (Harrison & Crawford Cos./S4/G4), nMS, sON,TX; Tx(prob.) in MO; Tx or Ac in 1 cave in Marion Co. & 1 cave in Warren Co, TN)

Narceus marginatus = *N. americanus*

Narceus undet. sp. (Tx in OH)

Narceus tinctorius Rafinesque = *N. americanus*

Narceus annularis (= *N. americanus annularis* Rafinesque, 1820) R., 1820 (East epigean/ Tx or Ac in KY, MD) **Bibl.:** Keeton 1960

Nearctodesmus Silvestri, 1910 - Order Polydesmida, Nearctodesmidae millipedes

Nearctodesmus cochlearius Causey, 1954 (Tp or Tx in OR C.,NM)

Nearctodesmus cerasinus (Wood, 1864). (Tx in OR (Josephine Co.) & BC) **Bibl.:** Shelley 1994c

Nearctodesmus insulanus (Chamberlin, 1941). (Ac in Vancouver Is., BC) **Bibl.:** Shelley 1994c

Nearctodesmus salix Chamberlin, 1949. (Ac in Mendocino Co., CA) **Bibl.:** Shelley 1994c

Nemasoma Koch, 1847 - Nemasomatidae millipedes, Subfamily Nemasomatinae, Tribe Nemasomatini (1 alien species in US; 3 species in Europe)

Nemasoma undet. sp. (Tp, Ac or Tx alien in MD)

Neottiulus Loomis, 1973 = *Aneuloboiulus*

Octoglena auct. nec Wood, 1864 (= *Polyzonium*) Hirudisomatidae millipedes, Subfamily Kiusionzoniinae (4 species in US or Canada)

Octoglena anurum (*Hypozoneum a.* Cook, 1904) (HTx in WA?)

Octoglena bivirgata Wood, 1864 (Tp in CA (Napa Co.)) Bibl.: Shelley 1995a
Octoglena undet. sp. (HTx in WA)

Ophthalmoblaniulus Verhoeff, 1897 = *Nopoiulus*

Ophiulus Berlese, 1884 (= *Ethmoiulus*) Julidae millipedes, Subfamily Julinae, Tribe Leptoiulini

Ophiulus* (*O.*) *pilosus (Newport, 1843) (E/alien or Tx in seVA, WV; Tp? in nAL, NV; Tx in IN (Harrison Co./S4/G5), MD, OH; Ac or Tx in IN (Clark, Harrison, & Jennings cos.)

Bibl.: Hoffman & Lewis 1997; Causey 1963

Opiona Chamberlin, 1951 - Caseyidae millipedes (4 species in US)

Opiona siliquae Causey, 1963 (*type locality cave in Mendocino Co., CA/ Tp or Tb) **Bibl.:** Gardner & Shelley 1989

Oriulus Chamberlin, 1940 - Parajulidae millipedes (10 “species” (most likely jr. synonyms) in c,eUS, Rockies)

Oriulus delus Chamberlin, 1940 (Tx or Ac in MD)

Orocylindricus Verhoeff, 1930 = *Cylindroiulus*

Orthoporus Silvestri, 1897 (= *Andineptus*, *Chamberlineptus*, *Diaporus*, *Listrostreptus*, *Minasgonus*, *Minigonus*, *Phallorthus*, *Scaphiostreptus*, *Torynopus*, *Trinidadius*) Spirostreptidae millipedes (40 species, SW US to Brazil)

Orthoporus flavior = *O. ornatus*

Orthoporus undet. sp. (Ac or Tx in Medina, Terrell, Val Verde Cos., TX)

Orthoporus ornatus (Causey, 1954) (Ep in Randall Co., TX/ Ac or Tx in Randall, Uvalde Cos., TX/ sp. cf. *O. ornatus* - 2,000 to 10,800 years BP in Neotoma woodrat nest in wTX (El Paso Co.) or sNM))

Orthoporus sp. cf. *texicolens* (Chamberlin, 1938) (Ac in cave in Bexar Co., TX)

Oxidus Cook, 1911 (= *Kalorthomorpha* Attems, 1914) Paradoxosomatidae millipedes, Subfamily Paradoxosomatinae, Tribe Sulciferini (1 species in Japan, alien cosmopolitan)

Oxidus gracilis (C. L. Koch, 1847) (HI, S, W/Asian alien Tp in nAL, GA (Bartow, Dade, Dcatur, Grady & WA Cos.), PA, TX, CA, MO, OH (Harding Co.); Tx or Tp in IN, Clark, Crawford, Orange, & Jennings cos.; Tp or Tx in MD?, SC; alien? Tp in Kazumura C., HI Island, HI) **Bibl.:** Hamazaki 1995; Hoffman & Lewis 1997

Oxyiulus Verhoeff, Silvestri, 1896 = *Pachyiulus*

Pachydesmus Cook, 1895 - Xystodemidae millipedes, Subfamily Xystodesminae, Tribe Pachydesmini (2 species in se US)

Pachydesmus undet. sp. (nMS/Tx?) **Bibl.:** R. Hoffman 1958a

Pachyiulus = *Acanthoiulus*, *Kaloiulus*, *Megaiulus*, *Oxyiulus*

Paeromopus Karsch, 1881 (= *Paromopellus*) Order Julida, Paeromopodidae millipedes. **Bibl.:** Shelley 1994a

Paeromopus angusticeps buttensis Chamberlin, 1954. (Ac or Tx in Calaveras & Tuolumne Cos., CA) **Bibl.:** Shelley 1994a

Paeromopus eldoradus = *P. cavicolens*

Paeromopus cavicolens Chamberlin, 1949 (type locality cave in Calaveras Co. + caves in Tuolumne Co., CA/ Tx or Tp) **Bibl.:** Shelley 1994a

Paeromopus angusticeps a. (Wood, 1864) (Ac in Santa Cruz Co., CA) **Bibl.:** Shelley 1994a; Shelley & Bauer 1997

Paraiulus = *Parajulus*

Parajulus Humbert & de Saussure, 1869 (= *Mexicoiulus*) - Order Julida, Parajulidae millipedes (15 species in Mexico)

Parajulus undet. sp. (Tx? in cave in St. Clair Co., IL/alien? from Mexico)

Parajulus impressus = *Ptyoiulus i.*

Paranopoiulus Lothmander, 1939 = *Nopoiulus*

Paromopellus Verhoeff, 1938 = *Paeromopus*

Petaserpes Cope, 1970 (= *Polyzonium*) - Order Polyzoniida, Polyzonidae millipede

Petaserpes bikermani Causey, 1954. (Tx or Tp in IN (Mitchell Co) & MO (Barry Co.)) **Bibl.:** Shelley 1998c

Phallorthis Chamberlin, 1952 = *Orthoporus*

Phractodesmus - see *Tidesmus*

Platops Newport, 1844 = *Abacion*

Platyulus Gervais, 1836 = *Polyzonium*

Phreatodesmus Loomis, 1960 – Trichopolydesloidea millipedes, uncertain family (4 species in CA, phreatic habitats?)

Plumatyla Loomis, 1943 - Order Chordeumatida, Conotylidae millipedes (1 species in OR, CA)

Plumatyla humerosa (*Austrotyla* & *Conotyla h.* Loomis, 1943). (type locality in mine in Plumas

Co., +Siskiyou Co., & Lava Beds Natl. Monument, CA & unidentified sites in adjacent OR, Tb/G3) **Bibl.:** Causey 1961, Shear 1971) (glacial refugia?)

Plusioiulus Silvestri, 1903 = *Blaniulus*

Polydesmus Latreille, 1802 (see *Pseudopolydesmus*, *Brachydesmus* c., *Euryurus* e.) Order Polydesmida, Polydesmidae millipedes (numerous species in Palearctic) **Bibl.:** Anon. 1883

Polydesmus inconstans Latzel, 1884 (Tp? in NV; Ac in PQ; Tx in IN (Harrison Co.))
Bibl.: Hoffman & Lewis 1997

Polydesmus sastianus Chamberlin (Tx? in Tuolumne Co., CA)

Polydesmus undet. sp. or species (Tx or Ac in GA(1cave) & sON; TTX in NJ)

Polyxenus Linnaeus, 1758 - Order Polyxenida, Polyxenidae millipedes

Polyxenus lagurus Linnaeus, 1758 (duff millipede) (Tp or Tx? in CO?) **Bibl.:** M. Kane 1981

Polyzonium Brandt, 1837 (= *Hexaglena* McNeill, 1887; *Octoglena* auct. nec Wood, 1864, *Petaserpes* Cope, 1870; *Platyulus* Gerstaecker, 1836) Order Polyzoniida, Polyzoniidae millipedes (3 species in Europe, 11 species in eUS or eCanada)

Polyzonium undet. sp. (Tx or Ac in sON)

Proconotyla Verhoeff, 1932 = *Conotyla*

Proteroiulus Silvestri, 1897 - Blaniulidae millipedes, Tribe Boreoiulini (1 alien species in US)

Proteroiulus fuscus Silvestri, 1897 (alien from Europe; Tx in NV)

Pseudopolydesmus Attems, 1898 (= *Dixidesmus*) (incl. *Polydesmus*) Order Polydesmida, Polydesmidae millipedes (13 species in eUS) **Bibl.:** B. Valentine 1988; Withrow 1988

Pseudopolydesmus branneri (*Dixidesmus* b.) = *P. serratus*

Pseudopolydesmus collinus Hoffman, 1974 (epigean in KY/Ac in Jennings Co., Inc) **Bibl.:** Hoffman & Lewis 1997

Pseudopolydesmus hortus (*Polydesmus* m. Wms. & Hef.) = *P. serratus*

Pseudopolydesmus inconstans (*Polydesmus* i. Toutes en Marmites) = *P. serratus*

Pseudopolydesmus moniliaris = *P. serratus*

Pseudopolydesmus pinetorum (Bollman, 1887) (= *Polydesmus* & *Pseudotremia* p.) (Tx or Tp in AR (Fulton & Searcy Cos.), GA(prob.), IL, MO(Taney Co.), OK (Murray Co.))

Pseudopolydesmus serratus (*Polydesmus* s. Say, 1821). Tx in IN (Harrison, Jennings, Monroe & Washington cos.), PA (Berks Co.), nAL, MD, sON, OH, PQ)

Pseudopolydesmus undet. sp(p). (AL/Tx or Tp in IL, MD (WA Co.), MO (Crawford, Pulaski Cos.); Tx in sON, sOH, nMS, WV (or *Dixidesmus* sp.).

Pseudotremia Cope, 1869 (= *Dearolfia*, incl. *Spirostrephon*) Order Chordeumatida, Cleidogonidae millipedes

Pseudotremia aeacus Shear, 1972 (*type locality cave in Dade Co. & cave (or new ssp.) in Walker Co.,GA /Tb/ G1)

Pseudotremia acheron Shear, 1972 (type locality cave in Warren Co. & cave in Van Buren Co.,TN/ Tb/G3 or G1) **Bibl.:** Shear 1972

Pseudotremia amphiorax Shear, 1972 (*type locality cave in Meade Co.,KY/ Tb/ G1G2)

Pseudotremia armesi (s. lat.) Shear, 1972 (type locality & 1 other cave in Mercer Co.,WV & cave in Tazewell Co.,VA/Tp,epigean/T&E VA S2, global G2)

Pseudotremia carterensis (*P. cavernarum* var. *carterensis* Packard, 1888) Bollman, 1888 (type locality + 2 other caves in Carter Co.+ cave in Elliott Co., KY./Tb/ Car. C. millipede/ G1G2) **Bibl.:** C. Hoff 1958; Loomis 1939, Shear 1972

Pseudotremia cavernarum Cope, 1869 (*Spirostrephon* c. Cope, 1872) (Erhart's (destroyed by quarry) Cave type locality & 4 caves in Montgomery Co. + caves in Giles Co.,VA, Nickajack C.?(TN) & cave? in Carter Co.,KY/ Tb/ T&E VA S1, global G4G5 or G2G4) **Bibl.:** Hoff 1958a-b; R. Hoffman 1950, 1958a; K. Simon 1997; Shear 1972,

Pseudotremia cercops Shear, 1972 (type locality & at least one other cave in *De Kalb Co.,TN/ Tb/ G1G2)

Pseudotremia cocytus Shear, 1972 (Tp in 3 caves in Campbell & Cos., TN/ Tp,epigean type locality)

Pseudotremia conservata Hoffman & Lewis, 1997 (type locality & 8 other caves in *s.Harrison Co. Tb/ G1)

Pseudotremia cottus Shear, 1972 (type locality cave in The Sinks, Cades Cove,Blount Co. + Anderson, Knox, & Roane cos.,TN/ Tp)

Pseudotremia deprehendor Shear, 1972 (**?type locality cave in Anderson Co. & cave in Grainger Co., TN/ Tb/ G1 or G3) **Bibl.:** Shear 1972

Pseudotremia eburnea Loomis, 1939 (type locality + 4 other caves in Walker Co.; 3 caves (Dade Co.) & 2 caves (Marion Co.) & cave each in Jackson & Marshall Cos., all in AL / Tb G3G4) **Bibl.:** Buhlamann 2000; Reeves et al. 2000; Shear 1972

Pseudotremia fracta nantahala Hoffman, 1981 (type locality cave in NC, Swain Co./ Tp)

Pseudotremia fracta (s.lat.) *fracta* Chamberlin, 1951 (Tp in Claiborne & Union Cos.(TN)?)

Pseudotremia fracta ingens Hoffman, 1981. (type locality cave in Campbell Co., TN/ Tp)

Pseudotremia fracta paynei Hoffman, 1981. (type locality cave in TN, Anderson Co. & caves in Knox, & Roane Cos., TN/ Tp)

Pseudotremia fulgida Loomis, 1943 (type locality & >9 other caves (Greenbrier Co.) & 3 caves in Pocahontas Co., WV/Tb/WV T&E S2 rank & global G2G3 rank/Greenbrier Valley Cave Millipede) **Bibl.:** R. Hoffman 1981; Loomis 1943; Shear 1972

Pseudotremia hobbsi Hoffman, 1950 (type locality cave in Alleghany Co. +Bath, Botetourt & Montgomery Cos., VA; 3 caves in Greenbrier Co. & cave in Monroe Co.), WV/ Tp) **Bibl.:** Shear 1972

Pseudotremia indianae Chamberlin & Hoffman, 1958 (*P. cavernarum* Cook & Collins 1893, not Cope) (type locality cave in Wyandotte C.(Crawford CO.) +WA, Orange, Harrison Cos.,IN/ Blue River cave milliped/ Tb/ G3) **Bibl.:** Shear 1972, Hoffman and Lewis 1997

Pseudotremia lactarium = *Abacion l.*

Pseudotremia lethe Shear, 1972 (*type locality cave in Jackson Co.,TN/ Tb/ G1G2)

Pseudotremia lictor Shear, 1972 (*type locality cave in De Kalb Co.,TN/ Tb/ G1G2)

Pseudotremia lusciosa (*Dearolfia l.* Loomis, 1939) (Seneca & 3 other caves in Pendleton Co. + cave or caves in Pocahontas Co., WV/Tb/WV T&E S1 rank & global G1 rank/ Germany Valley Cave Millipede) **Bibl.:** Loomis 1943; Shear 1972

Pseudotremia merops Shear, 1972 (*type locality cave in Adair Co.,KY/Tb/ G1G2)

Pseudotremia minos Shear, 1972 (*type locality cave in Jackson Co.,AL/Tb/ G1G2)

Pseudotremia momus Shear, 1972 (type locality cave in Smyth Co. & cave near Wythe-Bland Co. line,VA/ Tp, epigean/T&E VA S2, global G2)

Pseudotremia nefanda Shear, 1972 (type locality cave in & at least 3 other caves in *Pleasant Run & Bull Cr.drainages,Clark Co.,IN/ Tb/ G1G2) Hoffman & Lewis 1997

Pseudotremia nodosa Loomis, 1939 (sensu latu) (type locality cave in Claiborne Co +Anderson & Union Cos., all TN & Lee Co.,VA/ Tb/ G3G5) **Bibl.:** Shear 1972

Pseudotremia nyx Shear, 1972 (*type locality cave in Marshall Co., AL/ Tb/ G1G2)

Pseudotremia pinotorium = *Pseudopolydesmus p.*

Pseudotremia princeps Loomis, 1939 (type locality in cave in Grant Co. & 4 caves in Pendleton Co.,WV & cave in Highland Co.,VA/Tp/T&E VA S1, global G1; WV T&E S1 rank & global G1 rank/ South Branch Valley cave millipede) **Bibl.:** Loomis 1939, 1943; Shear 1972

Pseudotremia rhadamanthus Shear, 1972 (type locality cave in Marshall Co.,AL + cave in Marion Co., TN/ Tb/ G3G4)

Pseudotremia scrutorum Shear, 1972 (Tp or Tx in TN?)

Pseudotremia simulans Loomis, 1939 (type locality & at least 2 other caves in Pendleton Co.) & at least one cave in Randolph Co,WV/Tp/ G3G4T3T4) **Bibl.:** Shear 1972

Pseudotremia sodalis Loomis, 1939 (*type locality cave in Carter Co.,KY/ G1)

Pseudotremia possibly undescr. sp. (cave in Dade Co.,GA/Tb or Tp)

Pseudotremia undescr. sp.#1 (*? cave in Greenbrier Co., WV/Tb)

Pseudotremia undescr. sp.#2 (Adams Co.,OH)

Pseudotremia undescr. sp.#3 (cave in Hardin Co.,IL/Tb)

Pseudotremia undescr. sp.#4 (part of *P. nodosa* complex) (Scott & Wise Cos.,VA/Tb)

Pseudotremia undescr. sp.#5 (*?cave in Blue River area, Crawford Co.,IN/Tb) Lewis 1997

Pseudotremia undescr. sp. #6 (three caves in Hoosier National Forest, Crawford Co., IN/ G1?)

Pseudotremia undescr. sp.#7 (*?cave in Monroe Co.,WV/Tb)

Pseudotremia undescr. sp.#8 (*?Organ C.,WV/Tb)

Pseudotremia undescr. sp. 9-? (caves in Giles, Russell, Bath, Smyth, Lee, Wythe, Craig Alleghany Cos.,all VA; WA Co.,MD/ Tb)

Pseudotremia undet. sp. or species (caves in Madison & Jackson Cos.,AL/Tb; 12 cos. in KY (incl. Mammoth Cave); Tx in OH; Tp in Great Smoky Mts., NC)

Pseudotremia spira Shear, 1972 (type locality cave in Pulaski Co. & cave or caves in Rockcastle,Co., KY/ Tb/ / G1G2 or G1 or G3)

Pseudotremia stupefactor Shear, 1972 (Jessamine, Powell & Anderson Cos.,KY/ Tp/ G1G2)

Pseudotremia sublevis Loomis, 1944 (type locality & one other cave in Giles Co. & cave or caves in Montgomery Cos.,VA/Tp,epigean/T&E VA S1, global G1) Shear 1972)

Pseudotremia tuberculata Loomis, 1939 (*type locality cave in Tazewell Co.,VA/Tb/T&E VA S1, global G1 or G2) **Bibl.:** Shear 1972

Pseudotremia unca Shear, 1972 (type locality cave in *Rockcastle Co.,KY/ Tb/ G1G2)

Pseudotremia valga Loomis, 1943 (****?type locality & at least 1 cave in, Lee Co.,VA & at least 2 caves in Claiborne Co., TN Tb?/ G1 or G3) **Bibl.:** Shear 1972

Ptyoiulus Cook, 1895 - Order Julida, Parajulidae millipedes (3 species in eUS)

Ptyoiulus impressus (Say, 1821). (Ac in WV (Kanawha Co.); Ttx in KY) **Bibl.:** Loomis 1939; Sullivan 1962

Ptyoiulus undet. sp. (Tx or Ac in cave in Tazewell Co.,VA)

Reasia Sager, 1853 = *Abacion*

Rhabdrona Chamberlin & Mulaik, 1941 = *Cleidogona*

Rhexenor Rafinesque, 1820 = *Narceus*

Rhysodesmus Cook, 1895 (= *Dampfaria*, *Aporiaria*, *Acentronus*) Xystodemidae millipedes, Tribe Rysodesmini (70 species in Central America)

Rhysodesmus undet. sp. or *Rhysodesmus* tribe (c.TX/ Tp? alien?)

Rudiloria Causey, 1955 = *Apheloria*

Scaphiostreptus Brolemann, 1902 = *Orthoporus*

Scoterpes Cope, 1872 (= *Scotherpes* Latzel, 1884) Order Chordeumatida, Trichopetalidae millipedes (4 species in ceUS) **Bibl.:** Causey 1959

Scoterpes austrinus a. Loomis, 1943 (type locality cave in De Kalb Co. +Floyd, Walker, Bartow & Dade Cos.,nGA/ Tb/ G3G4T3T4) **Bibl.:**Chamberlin & Hoffman 1958; Cain 1966

Scoterpes austrinus nudus Chamberlain, 1946 (*type locality cave in Bartow Co., GA/ Tb) **Bibl.:** Chamberlin & Hoffman 1958

Scoterpes copei Packard, 1871 (*Spirostrephon*, *Pseudotremia c.* Packard, 1871)

(type locality cave & Mammoth Cave in Edmonson Co.+Hart, Adair & Barren

Cos.(KY), Dade Co.(GA) + Blount, Grundy & Hamilton cos.,TN/ Tb/ G3) **Bibl.:** Loomis 1939; Chamberlin & Hoffman 1958

Scoterpes dendropus Loomis, 1939 (type locality & one other cave in Stone Co. +Barry, Franklin, Jefferson & OR(prob.) Cos.,swMO (Taney Co.) & AR (Carroll & Newton Cos.)/ Tb/ State T&E Status Undet.) **Bibl.:** Loomis 1943; Chamberlin & Hoffman 1958

Scoterpes poss. undescr. sp.#1 (3 caves in Walker Co., GA)

Scoterpes poss. undescr. sp.#2 (cave in Blount Co., TN./Tb?/ G1?)

Scoterpes undescr. sp.#1 (*?cave in Chatooga Co.,GA/Tb)

Scoterpes undescr. sp.#2 (neAL (Jackson Co.) & Franklin Co.,TN)

Scoterpes undescr. sp. #3 (2 caves in Harrison Co., IN/ S1/G1)

Scoterpes undescr. sp. #4 (*?cave in Coffee Co.,TN)

Scoterpes undescr. sp.#5-20? (undescr. ssp.? KY (Christian, Simpson Cos.) & TN (Stewart Co.),

TN (Dickson, Lewis, Davidson, Rutherford, Maury, Warren, Van Buren, Grundy, Franklin Cos.); Appalachia,E/Tb?) **Bibl.:** Causey 1906

Scoterpes undet. sp. or species (Tb in 4 caves in Jackson & Madison Co.,AL + GA, IL, Pulaski & Wayne Cos.(KY) & AR (Marion, Newton, Stone & Searcy Cos.); Tx in Blanchard Spr.(AR) & NJ)

Scoterpes ventus Shear, 1972 (*type locality cave in Marion Co.,TN/ Tb/ G1G2)

Scytonotus Koch, 1847 (= *Lasiolathus*) Order Polydesmida, Polydesmidae millipedes (4 species in eUS, 7 in Rockies & West Coast) **Bibl.:** Shelley 1993; Cook & Cook, 1895

Scytonotus granulatus (Say, 1921) (= *S. cavernarum* Bollman, 1887; *Polydesmus* g. Say, 1821; *P. setiger* Wood, 1865; *Stenonia hispida* Sager, 1856) (type locality cave in Monroe Co.,IN/NE from NY & sON w. to eMN, cIA, s. to MO, TN, eNC/ Ac or TTx in KY (Mammoth Cave), MD, MO, OH, sON, PA, VA) **Bibl.:** Loomis 1939, Hoffman & Lewis 1997

Semionellus Chamberlin, 1920 Xystodemidae millipedes, Subfamily Xystodesminae, Tribe Chonaphini (1 species in eUS)

Semionellus placidus (Wood, 1864) (IL/Ac or Tx in IL (probably))

Sigmocheir Chamberlin, 1951 (= *Tuolumnia*) Order Polydesmida, Xystodesmidae millipedes, Subfamily Xystodesminae, Tribe Sigmocheirini (3-? Species in CA)

Sigmocheir calaveras Chamberlin, 1951. (Tx or Tp in CA (Calaveras & Tuolumne cos.) **Bibl.:** Shelley 1995b

Sigmocheir dahehyi (*S. dohenyi* (missp.) Chamberlin, 1953a) ****(type locality & one other cave in Tuolumne Co. & 2 caves in Calaveras Co.),CA/ Tp or Tb/ G1)

Sigmocheir possibly one or more undescr. sp. (Tp? In Amador, Calaveras, Siskiyou & Tuolumne Cos.,CA)

Sigmocheir furcata Shelley, 1995 (Tx or Tp in CA (Calaveras Co.) **Bibl.:** Shelley 1995b

Sigmoria Chamberlin, 1939 - Order Polydesmida, Xystodesmidae millipedes, Subfamily Xystodesminae, Tribe Apheloriini (6 species in eUS)

Sigmoria (*Rudiloria*) *trimaculata* t. (Wood, 1864) (*Apheloria* t.) (Tx or Ac in VA)

Singuliurus Causey, 1955 = *Euryurus*

Sirobolus auct. nec. Brandt = *Narceus*

Sonoratyla Hoffman, 1961 = *Austrotyla*

Spathiulus Chamberlin, 1940 - Parajulidae millipedes (4 species in CA)

Spathiulus tribolus Chamberlin, 1940 (Tx or Ac in CA)

Speodesmus Loomis, 1939 (= *Speorthus*) Order Polydesmida, Polydesmidae millipedes (5 species in TX, NM or nMex.) **Bibl.:** Elliott, 1976, 1985

Speodesmus aquiliensis Shear, 1984 (*type locality cave in Fulford Co., CO/ Tb/ G1G2)

Speodesmus bicornourus Causey, 1959a (type locality cave in Williamson Co.+ cave in Lampasas Co. + many caves in Travis, Williamson Cos.,TX/ Tb) **Bibl.:** Bull & Mitchell 1970; Elliott & Mitchell 1972

Speodesmus echinourus Loomis, 1939 (type locality cave in Kendall Co.+Bandera, Bexar, Comal, Edwards, Hays, Kerr, Mason, Medina, Menard, Real, Sutton, Uvalde, Val Verde Cos.,TX/ Tb/ G3) **Bibl.:** Chamberlin & Hoffman 1958; Bull 1969.

Speodesmus tugaribus (*Speorthus t.* Chamberlin, 1952) (type locality in Carlsbad Cave & 1 other cave in Eddy Co. & 3 caves in Lincoln Co., NM+ Culberson Co.,wTX/Tb) **Bibl.:** Loomis 1960; Shear 1974

Speodesmus undescr. sps.#1-3 (*bicornourus* group/older caves of Balcones Escarpment, TX/ Tb)

Speodesmus undescr sps.#4 (s. Balcones Escarpment,TX/ Tb)

Speodesmus undescr sp.#5-7 (Tx/Tb)

Speorthus Chamberlin, 1952 = *Speodesmus*

Speoseya Causey, 1963 - Order Chordeumatida, Caseyidae millipedes

Speoseya grahami Causey, 1963. (****type locality & one other cave in Calaveras Co. + cave each in Tuolumne & Tulare Cos., CA/ Tp or Tb/ caves only/ G3)

Speoseya undescr. sp. (*?OR C.,OR/Tb)

Speoseya undet. sp. (near *S. grahami*/ cave in Calaveras Co.,CA/ Tb?)

Speostriaria Causey, 1960 - Order Chordeumatida, Caseyidae millipedes (1 species in CA)

Speostriaria eldora = *Striaria e.*,

Speostriaria shastae (*Striaria s.* Causey, 1958). (*type locality cave in Shasta Co.,CA/ Tb/ G1G2) **Bibl.:** Causey 1958, 1960

Spirostrephon Brandt, 1841 (see *Pseudotremia*, = *Abacion*)

Striaria Bollman, 1888 (= *Amplaria* Chamberlin, 1941) Order Chordeumatida, Caseyidae millipedes (7 species in eUS, OR)

Striaria columbiana Cook, 1899 (Ac or Tx in Warren Co., VA) **Bibl.:** Loomis 1939; Shear 1969

Striaria eldora Chamberlin, 1953a (= *Speostriaria e.*) ** (type locality cave in El Dorado & cave

in Calaveras Co., CA/ Tp or Tb/ caves only/ G1) **Bibl.:** Causey 1960

Striaria granulosa Bollman, 1888 (Ac in Henderson Co., NC) **Bibl.:** Causey 1960

Striaria shastae = *Speostriaria s.*

Striaria undet. sp. or species (Tx in Chatooga Co.,nGA & Simpson Co.,KY)

Striaria undescr. (s)sp. (cave in Simpson Co.,KY/Tb; Amador, Santa Cruz, Tulare & Tuolumne Cos., CA (may be one or more undescr. sp.)

Siphonophora Brandt, 1837 Order Siphonophorida, Family Siphonophoridae millipedes

Siphonophora undet. (?undescr.) spp. (Tp in Bell, Bexar, Coryell, Llano, Travis, Williamson Cos., TX) **Bibl.:** Shelley 1996b

Taiyutyla Chamberlin, 1952 - Order Chordeumatida, Conotylidae millipedes, Subfamily Conotylinae (14 species in WA,OR, CA, MT) **Bibl.:** Shear 1976

Taiyutyla humerosa = *Plumatyla h.*

Taiyutyla undescr. sp. or species (OR C./Tb; cave in Harney Co.,OR/Tb?; 11 caves in Mt.St. Helens basalt, WA/ Tp; cave in Trinity Co.,CA)

Tetracion Hoffman, 1956 - Caspiopetalidae millipedes, Subfamily Abacioninae (3 species in AL or TN)

Tetracion antraeum Hoffman, 1956. (type locality cave in Madison Co., AL (type locality)/ Tb in caves in Madison & Marshall Cos.) (= *T. jonesi a.*) **Bibl.:** Hoffman 1956

Tetracion jonesi (*T.j. j.* Hoffman, 1956; *T.j .atraeum* Hoffman, 1956) (type locality cave in Marshall Co. + DeKalb?, Jackson, Madison, & Morgan Cos.,AL & Franklin Co.?, TN/ Tb)

Tetracion jonesi atraeum Hoffman, 1956 = *T. j.*

Tetracion tennesseensis Causey, 1959 (Cumberland C.(Grundy Co.) +Warren, Van Buren & White Cos., TN/ Tb/ S1S2? G3 or (less likely) G1G2)

Tidesmus Chamberlin, 1943 - Order Polydesmida, Polydesmidae millipedes

Tidesmus hubbsi Chamberlin, 1943 (*cave in Cave Valley, n.Lincoln Co.,NV/ gonopods of type sp. of genera similar to *Phreatodesmus*)

Tidesmus undescr. sp. #1 (keys to *Tidesmus*) (= *Brachydesmus cavicola* Chamberlin & Hoffman, 1958; *Polydesmus c.* Packard, 1877) (*cave in Tooele Co.,UT/ Tb)

Tidesmus superus = *Brachydesmus* s.
Tiganogona Chamberlin, 1928 (See *Cleidogona*)

Tingupa Chamberlin, 1910 - Order Chordeumatida, Tingupidae millipedes

Tingupa pallida Loomis, 1939 (type locality cave in Camden Co.(MO)+ e,s,swMO (Carter, Crawford, Dent?, Franklin?, Maries, Miller, Ozark?, Phelps?, Pulaski, Ripley?, Shannon?, St. Louis?, Texas, Washington?, & Wayne Cos.), swIL (Jackson, Johnson & Pike Cos.), AR(Randolph & Sharpe Cos.)/ Tb, rare epigean/ polytypic or multiple species may be present with different sp. in eMO & swMO) **Bibl.:** Loomis 1939, 1943; Shear 1969, 1972, 1981

Tingupa possibly different new sps. in Benton, Boone, Camden, Crawford, Franklin, Maries, Marion, Miller, Jefferson, Phelps, Pulaski, Ripley, Texas & Wayne Cos.,MO) **Bibl.:** Loomis 1943, 1966

Torynopus Verhoeff, 1941 = *Orthoporus*

Trichopetalum Harger, 1972 (= *Flagellopetalum*, *Tynopus*, *Zygonpus*) Order Chordeumatida, Trichopetalidae millipedes. **Bibl.:** Causey 1960c

Trichopetalum appropinquo (Causey, 1969) (type locality cave in Washington Co., MD/ Tp or Tx) **Bibl.:** Causey 1969

Trichopetalum cornutum Cook & Collins, 1895 (epigean in IN, KY, TN/ Tp in cave near Bloomington, Monroe Co., IN)

Trichopetalum krekeri (Causey, 1960) (****?type locality & one other cave in Randolph Co. & cave each in Hardy & Tucker Cos.,WV/ Tb/ WV T&E S1 rank & global G3 rank/ West Virginia blind cave millipede)

Trichopetalum packardi (= *Zygonpus* p. Causey, 1959) Shear, 1972 (type locality cave in Randolph Co. & caves in Monroe, Greenbrier, Monroe & Mercer Cos.,WV +seVA (Botetourt, Craig, Giles, Montgomery, Page, Pulaski, Roanoke, Wythe Cos.) & Estill Co., KY/ Tb/ T&E WV & VA S1, global G3Q/ Packard's blind cave millipede)

Trichopetalum unidentified sp(p) (Estill & Pulaski Cos.,cKY/Tb or Tp)

Trichopetalum subterraneum Causey, 1967 (*type locality cave in Scott Co.,ncKY/ Tb/ G1G2)

Trichopetalum syntheticum Shear, 1972 *(type locality cave in Jackson Co.& cave in Marshall Co.,AL/ Tb/ G3)

Trichopetalum unicum Cook & Collins, 1895 (Tp in AR, IL, IN, KY, MO, OK, IN, Jennings & Monroe cos.; MO, Dade Co.) **Bibl.:** Causey 1967, Hoffman & Lewis 1997

Trichopetalum weyeri (Causey, 1960) (type locality cave in Augusta Co. & Bath & Rockbridge Cos.,VA & >4 caves in Greenbrier, Pendleton & Pocahontas Cos.),WV/ Tb/ T&E

WV & VA S1, global G3G4)

Trichopetalum whitei (*Zygonopus w.* Ryder, 1881) (type locality in Luray Caverns (Page Co.), 2 caves in ,Shenandoah,Augusta, Page & Rockingham Cos.,VA & Grant & Pendleton Cos.,WV/ Tb/ T&E VA & WV S1, global G2G3Q) **Bibl.:** Loomis 1939, 1943; Causey 1960; Shear 1972

Trigenotyla Causey, 1951 - Trichopetalidae millipedes

Trigenotyla parca Causey, 1951 (*nwAR/ type locality & 1 othe cave in WA Co.,AR/ G1G2/ Tp or Tb)

Trigenotyla undescr. sp.1-2 (caves in DE, Johnstone, Murray & Seminole Cos.,OK/ Tb?)

Trinidadius V., 1941 = *Orthoporus*

Troglocambala Hoffman, 1956 = *Cambala*

Troglotyla (see *Lophomus*)

Tubaphe Causey, 1955 - Xystodesmidae millipedes, Subfamily Xystodesminae, Tribe Harpaphini (1 species in CA)

Tubaphe levii Causey, 1955 (Tx in BC)

Tucoria Chamberlin, 1943 = *Brachoria*

Tuolumnia Chamberlin, 1955 = *Sigmocheir*

Tylobolus Cook, 1924 (= *Californibolus* Verhoeff, 1944; *Auxobolus* Chamberlin, 1949)- Order Julida, Paeromopodidae millipedes (also placed in Spirobolidae, Subfamily Tylobolinae) (7 species in US)

Tylobolus undet. sp. (Ac in cave? in Uvalde Co., TX),

Tynopus Chamberlin, 1940 = *Zygonopus*

Underwoodia Cook & Collins, 1895 - Caseyidae millipedes

Underwoodia undet. sp, (NE/Tx or Ac in sON)

Uroblaniulus Attems, 1909 - Parajulidae millipedes (12 species in eUS, eCanada, ID?)

Uroblaniulus canadensis (Newport) (Tx or Ac in sON?)

Vasingtona Chamberlin, 1941 - Order Chordeumatida, Caseyidae millipedes

Vasingtona irritans (Chamberlin, 1910). (Ac in OR, Harney Co.) **Bibl.:** Gardner & Shelley 1989

Xystocheir Cook, 1904 - Xystodesmidae millipedes, Subfamily Xystodesminae, Tribe Xystodesmini (6 species in CA)

Xystocheir undet. sp. (Tx or Tp in Calaveras & Tuolumne Cos., CA)

Zosteractis Loomis, 1943 - Order Julida, Zosteractinidae millipedes (also put in Nemasomatidae, Subfamily Nemasomatinae, Tribe Zosteractininae) (one species in US)

Zosteractis interminata Loomis, 1943 (type locality cave in St. Louis Co. +St. Genevieve, Shannon? & Madison Cos., MO & Pike Co., IL/ Tb/ MO State T&E Status Undet./ G3G4) **Bibl.:** Causey 1960; Shear 1969; Enghoff 1982

Zygonopus Ryder, 1881 = *Trichoptetalum*

minimal area - The smallest space in which a particular biotic community can develop fully with its full complement of species. The minimal area of a species is that space needed for the species to become stabilized.

mink - See mammal, mink

MITES

Order Acari (=Acarina) (or in three orders, Acariformes, Parasitiformes & Opilioacarida (=Opilioacariformes) in Subphylum or Class Arachnida. Body with much reduced, unsegmented (very rarely segmented), sack-like rear end (hysterosoma). The proterosoma has the two anterior pairs of legs but, unlike other arachnids, is divided into the anterior gnathosoma (base of the chelicera and pedipalps), and the central propodosoma (carries first and second pairs of legs). Pedipalps are large in predators and chelicera usually have pincers but are often modified to needle-like piercers. Post-embryo forms include larvae (3 pairs of legs), protonymphs, deutonymphs and tritonymphs. About 32,000 described species, perhaps half a million exist.

The three major divisions, sometimes treated as orders, include Parasitiformes, Acariformes and Opilioacariformes. Ticks are Metastigmata mites, part of the Parasitiformes. Water mites are five unrelated groups that may have independently invaded freshwaters and incl. Hydrachnida (Hydrachnella(e), Hydracarina or Hydrachnidia of some authors) and some Halacaridae, Oribatida, Acaridida & Mesostigmata. In interstitial habitats, soft-bodied forms became worm-shaped and sclerotized mites became compressed laterally or dorsoventrally, sometimes with flattened legs.

Bibl.: Elliott 1998; Cooley & Kohls 1945; George & Strandtmann 1960; Radovsky 1969; R. Schuster & Murphy 1991; Stock 1961; Thies 1967; Tromba 1954; Ubelaker 1971; Yunker 1958. Areas AL: Durden, Best et al. 1992; CA: Krutzsch 1955; East: Holt 1965a; CO: Stock 1961; GA: Spears et al. 1995; NA: Welbourn 1980; Webb & Loomis 1977; IN: Hughes 1959; Whitaker 1982; Whitaker & Loomis= MN: S. Dood 1981; NB: Wendell 1995; NM: Stock 1961; OR: Whitaker, Yunkler & Maser 1983; TX: Ritzi & Richerson 1998; Whitaker & Easterla 1975; WI: Thomas 1976; Turner & Jones 1968

Kingdom Animalia
 Clade Metazoa
 Clade Eumetazoa
 Clade Bilateria
 Clade Protostomia
 Clade Ecdysozoa
 Phylum Arthropoda
 Subphylum Chelicerata
 Class Archnida
 Subclass Micrura
 Order Acari

Division Notostigmata (now assigned to Division Opilioacariformes)

Division Parasitiformes

 Infraorder Mesostigmata (last 3 forms Parasitiformes))

 Cohort Dermanyssina

 Cohort Parasitina

 Cohort Sejina

 Cohort Uropodina

 Suborder Metastigmata (ticks)

 Suborder or Infraorder Ixodides.

Bibl.: Hoogstraal; Kohls et al. 1962; Northup & Welbourn 1991

 Argasidae (argasine or soft ticks) (*Antricola*, *Argas*, *Carios*, *Ornithodoros*)

 Ixodidae (hardback or hard ticks)

 (*Amblyomma*, *Aponomma*, *Dermacentor*, *Ixodes*, *Teinocoptes*)

Division or Order Acariformes (Amite-like@ mites) (see Prostigmata),

 Superorder Anactinotrichida

 Superorder Actinotrichida

 Infraorder Prostigmata (now assigned to Suborder Trombidiformes),

 Infraorder Oribatida (last two comprise Sacroptiformes))

 Suborder Cryptostigmata (=Oribatida)

 Superfamily Gymnodamaeioidea

 Gymnodamaeidae (*Plesiodamaeus*)

 Suborder Endeostigmata

 Nanorchestidae (*Nanorchestes*, *Speleorchestes*)

 Superfamily Cosmochthonoidea

 Cosmochthonidae (*Cosmochthonius*)

Superfamily Erythraeoidea

Erythracidae (running mites)

(*Abrolophus*, *Erythraeus*, *Leptus*; undet. Ac or Tx genera & sp. in seA)

Smarididae (*Fessonina*)

Superfamily Eylaoidea (water mites)

Limnocharidae

Subfamily Rhyncholimnocharinae (interstitial water mites)

(*Rhyncholimnochares*) (also put in Rhynchohydracaridae)

Limnohalacaridae (also put in Halacaridae, Subfamily Limnohalacarinae)

Piersigiidae

Subfamily Piersigiinae (water mites in springs, temporary pools,
interstitial)
(beetle hosts) (*Piersigia*)

Order or Suborder Actinedida (also suborder under Acariformes or Trombidiformes))

Suborder or Infraorder Prostigmata (= Suborder Trombidiformes, = Suborder Actinedida)

Cohort Parasitengona (also as Family Group)

Subcohort Hydrachnidia (= Hydrachnida, = Hydracarina) (true water mites)

Superfamily Hydrachnoidea (water mites)

Hydrachnidae (water mites in mostly lakes and temporary pools)

(*Hydrachna*; undet. genus in LA brackish sediment)

Superfamily Hydryphantoidea (water mites)

Hydryphantidae (water mites) (*Lundbladia*)

Subfamily Cyclothyadinae (interstitial in NA) (*Cyclothyas*)

Subfamily Thyadinae (mostly in springs, ripples & temporary pools)
(bug, Odonata & fly hosts) (*Thyas*)

Protziidae (water mites in springs & interstitial) (also put in Hydryphantidae)

Subfamily Wandesiinae (also put in own family) (stonefly hosts) (*Wandesia*)
(also put in own family)

Rhynchohydracaridae (also subsumed in Limnocharidae, Subfamily

Rhyncholimnocharinae) (*Rhyncholimnochares* (now in Limnocharidae))

Subfamily Clathrosperchoninae (water mites) (*Clathrosperchon*)

Wandesiidae (water mites) (also subsumed in Protziidae, Subfamily

Wandesiinae)

Subfamily Cowichaninae

(*Wandesia*) (once in Protziidae, Subfamily Wandesiinae)

Superfamily Hydrovolzioidea (water mites)

Acherontacaridae (*Acherontacarus*) (once in Hydrovolziidae)

Hydrovolziidae

Subfamily Hydrovoltziinae (water mites in springs, riffles, interstitial)

(*Hydrovolzia*, *Acherontacarus*) (also in Limnohalacaridae, now in own

family)

Superfamily Hygrobatoidea (or Hydrachnellae) (water mites)

Aturidae (water mites)

Subfamily Albiinae (*Albaxona* (now in Axonopsinae), *Albia*)

Subfamily Aturinae (fly & stonefly hosts)

(*Aturus*, *Kongsbergia*, *Phreatobrachypoda*, *Stygalbiella*, *Woolastookia*)

Subfamily Axonopsinae (*Axonopsis*) (now in Axonopsidae)

(*Albaxona*, *Axonopsalbia*, *Axonopsella*, *Bharatalbia*, *Brachypoda*,
Erebaxonopsis, *Estellacarus*, *Lethaxona* (now Lethaxonidae), *Ljania*
(now in Frontidopsinae), *Neobrachypoda*, *Vicinaxonopsis*)

Subfamily Cowichaninae (*Cowichania*)

Subfamily Frontipodopsinae - now in own family

Axonopsidae (*Axonopsis*) (also put in Aturidae, subfamily Axonopsinae)

Feltriidae (water mites) (parasites of fly larvae) (*Feltria*)

Frontipodopsidae (once a subfamily of Aturidae)

(*Frontipodopsis*, *Lethaxonella*, *Ljania* (put in Axonopsinae),

Phreatobrachypoda

(in Aturidae)

Hygrobatidae (water mites in sprgs, riffles, interstitial, lentic) (fly, stonefly hosts)

(*Diamphidaxona*) (once in Aturidae, Subfamily Axonopsinae)

Subfamily Hygrobatinae (*Atractides*, *Hygrobates*)

Lethaxonidae (*Lethaxona*) (once in Aturidae, Subfamily Axonopsinae)

Limnesiidae (water mites) (*Arizonacarus*, *Dorycranosus*)

Subfamily Kawamuracarinae

(*Kawamuracarus*; undet. genus in brackish LA beach)

Meramecia Subfamily Neomamersinae (interstitial) (*Arizonacarus*, *Neomamersa*,
 Subfamily Limesiinae (riffles, interstitial, pools & lakes) (*Limnesia*)
 Subfamily Protolimnesinae (interstitial) (*Protolimnesia*)
 Subfamily Tyrrelliinae (interstitial) (*Tyrrellia*)
 Omartacaridae
 Subfamily Omartacarinae (water mites in interstitial) (*Omartacarus*)
 Pionidae (water mites) (fly hosts)
 Subfamily Tiphyinae (=Hydrochoreutinae) (springs, interstitial, pools & lakes)
 Tribe Foreliini (*Forelia*, *Pionacercus*)
 Tribe Tiphyini (*Tiphys*)
 Unionicolidae (water mites)
 Subfamily Unionicolinae (mostly in pools & lakes) (*Unionicola*)
 Subfamily Pionatacinae (fly and stonefly hosts) (*Koenikea*)
 Superfamily Lebertioidea
 Anisitiellidae (water mites in springs, riffles, interstitial & pools) (fly hosts)
 Anisitsiellinae (*Bandakia*, *Bandakiopsis*, *Cookacarus*, *Oregonacarus*,
Utaxatax)
 Lebertiidae (water mites mostly in springs, riffles, pools & lakes) (fly hosts)
 (*Estelloxus*, *Lebertia*, *Scutolebertia*)
 Oxidae (*Frontipoda*, *Oxus*)
 Rutripalpidae (*Rutripalpus*)
 Sperchontidae
 Subfamily Sperchontinae (water mites in sprs., riffles, pools & lakes)
 (fly, stonefly host (*Spercon*)
 Teutoniidae (water mites mostly in pools) (fly hosts) (*Teutonia*)
 Torrenticolidae (water mites in interstitial & riffles)
 Subfamily Torrenticolinae (fly hosts)
 (*Monatractides*, *Neoatractides*, *Pseudotorrenticola*, *Torrenticola*)
 Subfamily Testudacarinae (*Testudacarus*)
 Superfamily Nematalycoidea
 Nematalycidae - Phreatic in Canadian Rocky Mountains area

Superfamily Stygothrombidoidea
 Stygothrombiidae (interstitial water mites)
 Subfamily Stygothrombiinae
 (*Cerberothrombium*, *Hydrothrombium*, *Stygothrombium*,
Victathrombium)

Superfamily Trombidoidea (velvet mites, chiggers & water mites)
 Johnstonianidae (*Johnstoniana*, *Polidiscia*)

Trombiculidae))
 Leeuwenhoekidae (*Leeuwenhoekia*, *Whartonia* (both also put in
 Microtrombiidae (velvet mites)
 (undesc. sp. & genus, Ac in El Malpais Natl.Monument, nNM)

Neotrombidiidae (*Ceuthothrombium* (also put in Trombidiidae),
Neotrombidium)

Trombidiidae (harvest mites or chiggers; trombidiid mites) (*Ceuthothrombium*
 (now in Neothrombiidae), *Leptotrombidium*, *Microtrombidium*,
Monunguis,
 undescr
 Monument,
Trombidium; undet. genus & sp. in OR C.,OR & Mariposa Co.,CA;
 parasitic Tb genus in WA & undescr. Ac genus in El Malpais Natl.
 NM)

Trombiculidae (chigger mites) (mostly parasitic as larvae, predators as adults)
 (*Acomatacarus*, *Albeckia*, *Beamerella*, *Cheladonta*, *Chatia*,
Comatacarus,
Hannemania,
Parasecia,
Eltonella, *Euschoengastia*, *Euschoengastoides*, *Eutrombicula*,
Hexidionis, *Loomisia*, *Microtrombicula*, *Monunguis*, *Otorhinoiphila*,
Perissopalla, *Pseudoschoengastia*, *Radfordia*, *Sasacarus*, *Speleocola*,
Tecomatlana, *Trombicula*, *Whartonia* (also put in Leeuwenhoekidae))

Subfamily Leeuwenhoekinae (*Leeuwenhoekia*) (also put in Leeuwenhoekidae)

Cohort Eleutherengona or Infraorder Tarsonemini
 Subcohort Raphignathae
 Superfamily Cheyletoidea

 Cheyletidae (*Cheletonella*, *Cheyletus*, *Eucheyletia*)
 Demodicidae (*Demodex*)

 Myobiidae
 (*Acanthophthirius*, *Eudusbabekia*, *Ewingana*, *Myobia*, *Neomyobia*, *Pteracarus*)

Superfamily Raphignathoidea
Caligonellidae (*Caligonella*)
Raphignathidae (*Raphignathus*)
Stigmaeidae (*Eustigmaeus*; undet. genus & sp. in MO)

Tetranychoidae
Tetranychidae (also put in Infraorder Prostigmata, family Group Eleutherengona)
(spider mites or red spiders) (*Bryobia*)

Subcohort Heterostigmata
Tarsonemidae (*Neotarsonemoides*)
Superfamily Pyemotoidea
Pyemotidae (soft-bodied mites) (*Pyemotes*; undet. genus & sp. in MO)

Superfamily Pygmephoroidae
Pygmephoridae
(*Bakerdania*; *Neopygmephorus*, *Pygmephorus*, undet. Tp genera in OR C., OR;
undet. Tp? genus in prob. fungivores in Kartchner C., Cochise Co., AZ; undet. Tp? genus
in Flea C., AR)
Scutacaridae (*Scutacarus*; undet. genus & sp. in MO)

Infraorder Astigmata,
Order Astigmata (=Acarodae; Acaridida) (feather, mange & itch mites)
(undet. genus in Kazumura Lava Tube, HI)

Superfamily Acaroidea (also put in Suborder Sarcoptiformes)
Acaridae (acarid, cereal or root mites) (*Acarus*, *Acotyledon*, *Caloglyphus*, *Calvolia*
(also put in Laelaptidae), *Rhyzoglyphus*, *Sancassania*, *Schwiebea*, *Stereoglyphus*,
Troglocoptes, *Tyroglyphus*, *Tyrophagus*) undet. genus in Siskiyou Co., phoretic on
Neotoma cinerea woodrats)

Histiostomatidae (=Anoetidae) (mostly feed on microbes)
(undet. genus in OR C., OR & Kartchner C., Cochise Co., AZ); *Histiostoma*
(also in Anoetidae), *Myianoetus*)

Superfamily Hemisarcoptoidea
Hemisarcoptidae (insect mites) (prob. new phoretic genus in WA caves)

Superfamily Glycyphagoidea
Chortoglyphidae (*Aplodontopus*, *Chortoglyphus*)
Glycyphagidae (glycyphagids) (*Ctenoglyphus*, *Dermacarus*, *Glycyphagus*,

Xenoryctes)

Rosensteiniidae

Subfamily Chiroptoglyphinae (*Chiroptoglyphus*, *Mydopholeus*)

Subfamily Nycteriglyphinae (*Nycteriglyphus*)

Superfamily Listrophoroidea

Chirodiscidae (*Alabidocarpus* (once put in Listrophoridae), *Olabidocarpus*)

Labidocarpidae (*Dentocarpus*) (also put in Chirodiscidae)

Listrophoridae (hair-clasping mites)

(*Alabidocarpus* (now in Chirodiscidae), *Listrophorus*, *Olabidocarpus* (once put in Chirodiscidae))

Order Oribatida (=Oribatei: Cryptostigmata) (moss or beetle mites)

(Tp in Kazumura C., HI Island, HI)

Suborder Euptyctyma

Superfamily Euphthiracaroidae

Oribotritiidae (*Oribotritia*)

Suborder Enarthronota

Superfamily Prothoplophoridae

Prothoplophoridae (*Prothoplophora*)

Suborder Desmonomata (or Cohort) (= Cohort Nothronata in part)

Superfamily Crotonioidea

Nothridae (also put in Desmonomata) (*Nothrus*)

Camisiidae (*Camisia* (also put in Liodidae), *Heminothrus*)

Malaconothridae (*Malaconothrus*, *Trimalaconothrus*)

Trhypochthoniidae (*Trhypochthoniellus*)

Suborder Brachypilina Hyll, 1918 (=Cohort)

Infraorder Gymnonota Balogh, 1972

Superfamily Cymbaeremaeidea

Scheloribatidae (*Scheloribates* (also put in Oribatulidae)

Oribatulidae – Put in Oribatelloidea

Superfamily Damaeoidea

Belbidae (also put in Belboidea) (*Belba* (now in Damaeidae))

Damaeidae (*Belba*)

Superfamily Gustavioidea

Liacaridae (*Dorycranopsus*, *Liacarus*, *Opsioristes*)

Superfamily Liodoidea (Liodidae)
Superfamily Oppioidea
Oppiidae (*Multioppia*, *Oppiella*)
Thyrisomidae (*Banksinoma*, *Gemmazetes*, *Oribella*)

Superfamily Tectocepheoidea
Tectocepheidae (also put in Carabodoidea)
(*Tectocephus*)

Infraorder Poronota in part)
(undet. CA genus in Siskiyou Co. in *Neotoma cinereus* nests) Balogh 1963.

Superfamily Ceratozetoidea
Ceratozetidae (*Ceratozetes*, *Sphaerozetes*)

Superfamily Galumnoidea Jacot, 1925
Galumnidae (beetle mites) (*Galumna*, *Oribata*, *Pilogalumna*)
Niphocepheidae (*Niphocephus*)

Superfamily Oribatelloidea
Oribatellidae (*Oribatella*)
Oribatulidae (*Oribatula*, *Scheloribates* (also in own family), *Zygoribatula*)

Suborder Mesostigmata (peritreme mites)
(undet. Tp family in Kazumura C., HI)

Anoetidae (now in Prostigmata)
Gamasiidae (*Gamasellodes* (now in Ascidae), *Macrocheles* (now in own family))

Subcohort Hydrachnidia ((fresh)water mites)
Order Hydrachnidia (= Hydrachnellae, Hydracarina, Hydrachnidia
or Monogynaspida-Gamasina in part of some authors)

Superfamily Arrenuroidea
Arenohydracaridae (interstitial water mites) (*Arenohydracarus*)

Arrenuridae (water mites in interstitial, springs, riffles, pools, lakes, temporary
ponds)
Subfamily Arrenurinae (*Arrenurus*)

Athienemanniidae (*Chelohydracarus*)
Subfamily Stygameracarinae (water mites in interstitial) (incl. *Stygameracarus*)
Subfamily Athienemanniinae (*Chelomideopsis*, *Platyhydracarus*)

Bogatiidae
Subfamily Horreolaninae (water mites in interstitial) (*Horreolanus*)

Chappuisididae

Subfamily Chappuisidinae (water mites in interstitial) (incl. *Chappuisides*)

Subfamily Morimotacarinae

(*Morimotacarus*, *Yachatsia* (both once in Uchidastygacaridae))

Mideidae (water mites mostly in pools & lakes) (fly hosts) (*Midea*)

Mideopsidae (also put in Prostigmata & Mesostigmata)

(water mites in springs, riffles, interstitial, pools & lakes) (fly hosts)

(*Mideopsis*, *Nudomideopsis* (now in own family))

Momoniidae (water mites in interstitial)

Subfamily Cyclomomoniinae (*Cyclomomonina*)

Subfamily Stygomomoniinae (stonefly hosts) (*Stygomomonina*)

Neoacaridae (*Neoacarus*, *Volsellacarus*)

Nudomideopsidae

(also subsumed in Mideopsidae) (water mites in springs & interstitial) (fly hosts)

(*Neomideopsis* (once in Mideopsidae) *Neomideopsis*, *Nudomideopsis*,

Paramideopsis)

Uchidastygacaridae (now subsumed in Chappuisididae))

Superfamily Epicrioidea

Arctacaridae (*Arctoseius* (once put in Ascidae))

Cohort Sejina

Superfamily Sejoidea

Urodinychidae (now in Cohort Uropodina)

Veigaiidae (now in Veigaiioidea)

Zerconidae (*Paleozercon*, *Zercon*, *Zerconopsis*; new genera in WA)

Superfamily Uropodoidea (now in Cohort Uropodina)

Cohort Dermanyssina.

Superfamily Ascoidea

Ameroseiidae (*Apicriopsis*)

Ascidae (*Asca*, *Arctoseius* (now in Arctacaridae), *Cheiroseius*, *Gamasellodes*,

Iphidozercon, *Melichares*, *Proctolaelaps*, *Zerconopsis*; undet. genus & sp. (Tx detritivore? in Calaveras Co.,CA)

Phytoseiidae (phytoseiid mites) (*Typhlodromus* (once put in Dermanyssidae)

Podocinidae (*Podocinum*)

Superfamily Dermanyssoidea **Bibl.:** Radovsky 1994

Dermanyssidae

Subfamily Nycteriglyphinae

(*Chiroptoglyphus* (now in Rosensteiniidae), *Chiroptonyssus*, *Dermanyssus*,
Ichoronyssus, *Liponyssoides*)

Haemogamasidae (also subsumed in Laelaptidae)

Subfamily Laelaptinae (*Brevisterna*; undet. genus on TX *Neotoma fuscipes*
woodrats)

Laelaptidae (also put in Notostigmata & in Superfamily Gamasida) (=Laelaptidae)

(*Androlaelaps*, *Atricholaelaps*, *Echinonyssus*, *Eubrachylaelaps*, *Calvolia* (also put
in Acaridae), *Eulaelaps*, *Geolaelaps*, *Gymnolaelaps*, *Hologamasus*, *Haemolaelaps*,
Laelaspis, *Loelaps*, *Neoichoronyssus*, *Pseudoparasitus*, *Stratiolaelaps*)

Undet. Tp genera (Marion Co., AR)

Undet. Tp genera in Possum Trot Hollow, Shannon Co., MO) **Bibl.:** Radovsky 1967

Subfamily Haemogamasinae, (*Haemogamasus* also put in own family)

Subfamily Myonyssinae (*Hirstionyssus*)

Subfamily Hypoaspidinae (*Hypoaspis Iphis*)

Macronyssidae (macronyssid mites) *Coprolactistus*, *Cytonyssus*)

Subfamily Macronyssinae (*Macronyssus*, *Radfordiella*)

Subfamily Ornithonyssinae

(*Cryptonyssus*, *Ornithonyssus*, *Steatonyssus* (once in Dermanyssidae)).

Bibl.: Radovsky 1967

Spinturnicidae

(*Paraspinturnix*, *Periglischrus*, *Paraspinturnix*, *Spinturnix*; undet. genus & sp. in
MO)

Superfamily Eviphidoidea

Eviphididae (*Alliphis*, *Eviphis*)

Macrochelidae (*Geholaspis*, *Macrocheles* (once put in Dermanyssidae))

Superfamily Laelaptonyssoidae

Digamasellidae (also placed in Rhodacaroidae) (*Dendrolaelaps*)

Superfamily Parasitoidea (also put in Cohort Parasitina) **Bibl.:** H. Ewing 1940

Parasitidae

(*Eugamasus*, *Gamasodes*, *Paracarpais*, *Parasitus*, *Pergamasus*, *Poecilophysis*;
undet. Tp genus in AR & undet. Tp or Tx genera in Shannon & OR Cos., MO)

Superfamily Rhodacaroidae (=Rhodacaridae Oudemans sensu lato)

Eurypasitidae (*Euryparasitus* (put by Antony 1986 in own family))
Digamasellidae (put in Laelaptonyssoidea)

Ologamasidae (*Cyrtolaelaps*, *Gamasellus*, *Gamasellodes* (put in Ascidae),
Rhodacaroides (now in own family), *Euryparasitus* (now in own family))

Rodacaridae (*Rhodacaroides*)

Subfamily Ologamasinae (also put in own family), *Cyrtolaelaps*, *Periseius*,
Rhodacarus (all in Ologamasidae), *Psammonsella*, *Rhodacaropsis*,
Saprolaelaps)

Superfamily Veigaioidea

Veigaiidae (undet. Tp genus in IL; *Trigynaspida*, *Uropoda* (now in Uropodidae),
Veigaia)

Cohort or Supercohort Endeostigmata

Superfamily Bimichaeloidea

Lordalychidae (*Lordalychus*)

Bimichaelidae (*Bimichaelia*)

Cohort Eupodina (also under Endeostigmata)

Superfamily Bdelloidea

Alicorhagiidae (also put in Cohort or Supercohort Endeostigmata) (*Alicorhagia*)

Bdellidae (snout mites) (*Bdella*, *Bdellozonium*?, *Cyta*). Tx? undet. genera in MN,MO;
undet. Ac or Tx genera & sp. in seAK)

Cunaxidae (*Cunaxa*, *Pulaeus*)

Superfamily Eupodoidea

Actinodidae (*Linopodes* (now in Eupodidae), *Spinibdella*)

Eupodidae (eupodid mites) (*Eupodes*, *Linopodes* (once in Actinodidae))

Penthalodidae (*Penthalodes*)

Rhagidiidae

(mostly predators) (*Elliotta*, *Foveacheles*, *Poecilophysis* (now in Parasitidae),
Rhagidia, *Robustocheles*; *Shibaia*, undet. genus & sp. Tp? predator in Mariposa
& Tuolumne Cos.,CA)

Superfamily Halacaroidae (subsumed in Hydrachnellae?)

Halacaridae

(*Actacarus*, *Anomalohalacarus*, *Halacarus*, *Scaptognathides*, undet.

genus in

LA brackish beach)

Subfamily Acarocheilopodinae (*Acarocheilopodia*)

Subfamily Copidognathinae (*Copidognathus*)

Subfamily Halacarinae

(*Nalacarellus*, *Hamohalacarus*, *Lobohalacarus* (both in Limnohalacaridae),
Porohalacarus)

Subfamily Limnohalacarinae (also in own family)

(*Soldanellonyx* (put in Limnohalacaridae))

Subfamily Lohmannellinae (*Porolohamannella*)

Subfamily Rhombognathinae (*Isobactrus*, *Rhombognathides*)

Subfamily Ropohalacarinae (*Ropohalacarus*)

Subfamily Simognathinae (*Acaromatis*)

Superfamily Tydeoidea

Ereynetidae

(*Ereynetes*, *Neospeleognathopsis*; undet. genus in cave in Eddy CO., NM)

Tydeidae (tydeid mites) (*Tydeus*)

Cohort Uropodina

Superfamily Polyaspidioidea

Polyaspididae (also subsumed in Uropodidae)

(*Dithinozercon* (now in Dithinozerconidae), *Calotrachytes*, *Polyaspis*)

Superfamily Uropodoidea

Dithinozerconidae

(*Dithinozercon* (once in Polyaspididae & Uropodidae);

undet. Tp genera in cave in OR Co., MO)

Leiodinychidae (*Leiodinychus*)

Polyaspididae (now in Polyaspidioidea)

Uropodidae

(*Cilliba*, *Discourella*, *Dithinozercon* (now in Dithinozerconidae) *Polyaspis*

(now

in Polyaspididae), *Trichouropoda*, *Uropoda* (once in Veigaiidae), undet. genus
in cave in Eddy Co., NM/ on bat gauno)

Cohort Anystina,

Superfamily Anystoidea

Anystidae (anystid or whirligig mites) (*Anystis*, *Chausseria*)

Superfamily Caeculoidea
Caeculidae (*Caeculus*)

Superfamily Hydrachnoidea (now in Hydrachnida)

Superfamily Pterygosomatoidea
Pterygosomidae (*Pimeliaphilus*)

Cohort (or Suborder) Palaeosomata
Superfamily Palaeacaroidae
Palaeacaridae (*Palaeacarus*)

Cohort Circumdehiscenciae = Brachypylina

Cohort Euptyctima
Superfamily Euphthiracaroidae

Euphthiracaridae (once in Cohort Mixonomata) (*Euphthiracarus*)
Phthiracaridae (also put in Cohort Mixonomata)
(*Steganacarus*; undet. Ac or Tx genera in seAK)

Cohort (or Suborder) Mixonomata
Superfamily Euphthiracaroidae (Euphthiracaroidae) (now in Cohort Euptyctima)
Superfamily Phthiracaroidae (put in Cohort Euptyctima)

Cohort Psoroptidia
Superfamily Psoroptoidea
Listrophoridae (put in Listrophoroidea)

Myocoptidae (*Myocoptes*, *Trichoecius*)
Sarcoptidae (itch, sarcoptic, mange or scab mites)
(*Histiostoma* (now in own family), *Microtrombicula*?, *Notoedres*, *Sarcoptes*,
Teionocoptes)

Bibl.: Bergstrom 1953; Conroy 1968; Conroy & Scudder 1975; Cook 1974; Crowell 1960-1;
Habeeb 1962, 1974; Marshall 1933, 1943; Quaglia & Conroy 1984; Quaglia, Conroy & Burton
1988

Acaridae (acarid, cereal or root mites) (*Acarus*, *Acotylenon*, *Caloglyphus*, *Calvolia* (also put in
Laelaptidae), *Rhyzoglyphus*, *Sancassania*, *Schwiebea*, *Troglocoptes*, *Tyroglyphus*,
Tyrophagus)
undet. genus & sp. in Siskiyou Co., phoretic on *Neotoma cinerea* woodrats)

Acherontacaridae (*Acherontacarus*) (once in Hydrovolziidae)
Actinedidae (*Linopodes* (now in Eupodidae), *Spinibdella*)

Alichorhigidiidae (*Alicorhagia*)

Ameroseiidae (*Apicriopsis*)

Anisitiellidae Koenike 1910 (water mites in springs, riffles, interstitial & pools) (fly hosts)

Subfamily Anisitiellinae (*Bandakia*, *Bandakiopsis*, *Cookacarus*, *Oregonacarus*, *Utaxatax*)

Anoetidae = Histiotomatidae

Anystidae (anystid or whirligig mites) (*Anystis*, *Chausseria*)

Arctacariidae (*Arctoseius* (once put in Ascidae))

Arenohydracaridae (interstitial water mites) (*Arenohydracarus*)

Argasidae (argasine or soft ticks) (*Antricola*, *Argas*, *Carios*, *Ornithodoros*)

Bibl.: Cooley & Kohls 1944; Kohls, Sonenshine & Clifford. 1968

Arrenuridae (water mites in interstitial, springs, riffles, pools, lakes, temporary ponds)

Subfamily Arrenurinae (*Arrenurus*)

Ascidae (*Asca*, *Arctoseius* (now in Arctacariidae), *Cheiroseius*, *Gamasellodes*, *Iphidozercon*, *Melichares*, *Proctolaelaps*, *Zerconopsis*; undet. genus & sp. (Tx detritivore? in Calaveras Co.,CA)

Athienemanniidae (*Chelohydracarus*)

Subfamily Stygameracarinae (water mites in interstitial) (incl. *Stygameracarus*))

Subfamily Athienemanniinae (*Chelomideopsis*, *Platyhydracarus*)

Aturidae (water mites) *Woolastookia*)

Subfamily Albiinae (*Albaxona* (now in Axonopsinae), *Albia*)

Subfamily Aturinae (fly & stonefly hosts (incl. *Aturus*)

Subfamily Axonopsinae (incl. *Axonopsis*) (now in Axonopsidae), *Albaxona*, *Axonopsalbia*, *Axonopsella*, *Bharatalbia*, *Brachypoda*, *Erebaxonopsis*, *Estellacarus*, *Ljanja*, *Neobrachypoda*, *Vicinaxonopsis*)

Subfamily Frontipodopsinae - now in own family

Axonopsidae (*Axonopsis*) (also put in Aturidae, subfamily Axonopsinae)

Bdellidae (snout mites) (*Bdella*, *Bdellozonium?*, *Cyta*). Tx? undet. genera in MN,MO; undet. Ac or Tx genera & sp. in seAK) **Bibl.:** Atyeo 1959-60

Belbidae (*Belba* (now in Damaeidae))

Bimichaelidae (*Bimichaelia*)

Bogatiidae

Subfamily Horreolaninae (water mites in interstitial) (*Horreolanus*)

Caeculidae (*Caeculus*)

Caligonellidae (*Caligonella*)

Camisiidae (*Camisia* (also put in Liodidae), *Heminothrus*)

Ceratozetidae (*Ceratozetes*, *Sphaerozetes*)

Chappuisididae

Subfamily Chappuisidinae (water mites in interstitial) (*Chappuisides*)

Subfamily Morimotacarinae (*Morimotacarus*, *Yachatsia* (both once in Uchidastygacaridae))

Cheyletidae (*Cheletonella*, *Cheyletus*, *Eucheyletia*)

Chirodiscidae (*Alabidocarpus* (once put in Listrophoridae), *Olabidocarpus*)

Chortoglyphidae (*Aplodontopus*, *Chortoglyphus*)

Cosmochthonidae (*Cosmochthonius*)

Cunaxidae (*Cunaxa*, *Pulaeus*)

Damaeidae (*Belba* (once in Belbidae), *Caenobelba*, *Epidamaeus*, *Paradamaeus*)

Demodicidae (*Demodex*)

Dermanyssidae (parasitic mites)

Subfamily Nycteriglyphinae

(*Chiroptoglyphus* (now in Rosensteiniidae), *Chiroptonyssus*, *Dermanyssus*, *Ichoronyssus*, *Liponyssoides*)

Digamasellidae Evans, 1957 (*Dendrolaelaps*)

Dithinozerconidae (*Dithinozercon* (once in Polyaspididae & Uropodidae) undet. Tp genera in cave in OR Co., MO)

Ereynetidae (*Ereynetes*, *Neospeleognathopsis*; undet. Genera in cave in Eddy Co., NM)

Erythraeidae (running mites)

(*Abrolophus*, *Erythraeus*, *Leptus*; undet. Ac or Tx genera & sp. in seA)

Euphthiracaridae (*Euphthiracarus*)

Euryparasitidae (*Euryparasitus* (put by Antony 1986 in own family) **Bibl.:** Antony 1986; Goff et al 1979; Krantz & Ainscough 1990,

Eupodidae (eupodid mites) (*Eupodes*, *Linopodes* (once in Actindidae))

Bibl.: Baker 1990; Thor 1941, Zacharda & Elliott 1985

Eviphididae Berlese, 1913 (*Alliphis*, *Eviphis*)

Feltriidae Koenike, 1892 (water mites) (parasites of fly larvae) (*Feltria*)

Frontipodopsidae (once a subfamily of Aturidae) (*Javalbia*, *Kongsbergia*, *Lethaxona*, *Lethaxonella*, *Phreatobrachypoda* (left in Aturidae))

Subfamily Axonopsiane (*Woolastookia*, *Ljanina*)

Subfamily Frontipodopsinae (*Frontipodopsis*)

Galumnidae (beetle mites) (*Galumna*, *Oribata*, *Pilogalumna*)

Gamasidae (*Gamasellodes* (now in Ascidae), *Macrocheles* (now in own family))

Glycyphagidae (glycyphagid mites) (*Ctenoglyphus*, *Dermacarus*, *Glycyphagus*, *Xenoryctes*)

Gymnodamaeidae (*Plesiodamaeus*)

Haemogamasidae (also subsumed in Laelaptidae)

Subfamily Laelaptinae (*Brevisterna*; undet. genus on TX *Neotoma fuscipes* woodrats)

Halacaridae (*Actacarus*, *Anomalohalacar*, *Halacar*, *Scaptognathides*, undet. genus in LA brackish beach. **Bibl.:** C. Walter 1931

Subfamily Acarocheilopodinae (*Acarocheilopodia*)

Subfamily Copidognathinae (*Copidognathus*)

Subfamily Halacarinae

(*Nalacarellus*, *Hamohalacar*, *Lobohalacar* (both in Limnohalacaridae),
Porohalacar)

Subfamily Limnohalacarinae (also in own family) (*Soldanellonyx* (put in Limnohalacaridae)

Subfamily Lohmannellinae (*Porolohamannella*)

Subfamily Rhombognathinae (*Isobactrus*, *Rhombognathides*)

Subfamily Ropohalacarinae (*Ropohalacar*)

Subfamily Simognathinae (*Acaromatus*)

Hemisarcoptidae (insect mites) (prob. new phoretic genus in WA caves)

Histiostomatidae (=Anoetidae) (mostly feed on microbes) (undet. genus in OR C., OR & Kartchner C., Cochise Co., AZ); *Histiostoma* (also put in Anoetidae), *Myianoetus*)

Hydrachnidae (water mites in mostly lakes and temporary pools) (*Hydrachna*; undet. genus in LA brackish sediment)

Hydrovolziidae

Subfamily Hydrovoltziinae

(water mites in springs, riffles, interstitial) (*Hydrovolzia*, *Acherontacarus*) (also put in Limnohalacaridae, now in own family)

Hydryphantidae (water mites) (*Lundbladina*)

Subfamily Cyclothyadinae (interstitial in NA) (*Cyclothyas*)

Subfamily Thyadinae

(mostly in springs, riffles & temporary pools) (bug, Odonata & fly hosts) (*Thyas*)

Hygrobatidae Koch, 1837 (water mites in sprgs, riffles, interstitial, lentic) (fly, stonefly hosts) (*Diamphidaxona*) (once in Aturidae, Subfamily Axonopsinae)

Subfamily Cowichaninae (*Cowichania*)

Subfamily Hygrobatinae (*Atractides*, *Hygrobates*)

Subfamily Kawamuracarinae

(*Kawamuracarus*; undet. genus in brackish beach sediment at Lake Pontchartrain, LA)

Ixodidae (hardback or hard ticks) (*Amblyomma*, *Aponomma*, *Dermacentor*, *Ixodes*, *Teinocoptes*)

Bibl.: Banks 1908

Johnstonianidae (*Johnstoniana*, *Polidiscia*)

Labidocarpidae (*Dentocarpus*) (also put in Chrodiscidae) **Bibl.:** McDaniel & Coffman 1970

Laelapidae Berlese, 1892 (=Laelaptidae) (*Androlaelaps*, *Atricholaelaps*, *Echinonyssus*, *Eubrachylaelaps*, *Calvolia* (also put in Acaridae), *Eulaelaps*, *Geolaelaps*, *Gymnolaelaps*, *Hologamasus*, *Haemolaelaps*, *Laelaspis*, *Loelaps*, *Neoichoronyssus*, *Pseudoparasitus*, *Stratiolaelaps*)

Undet. Tp genera (Marion Co., AR)

Undet. Tp genera in Possum Trot Hollow, Shannon Co., MO) **Bibl.:** Radovsky 1967

Subfamily Haemogamasinae, (*Haemogamasus* also put in own family)

Subfamily Myonyssinae (*Hirstionyssus*)

Subfamily Hypoaspidinae (*HypoaspisIphis*)

Lebertiidae Meiam, 1880 (water mites mostly in springs, riffles, pools & lakes) (fly hosts)
(*Estelloxus*, *Lebertia*, *Scutolebertia*)

Leeuwenhoeekiidae Womersley, 1945 (*Leeuwenhoekia*, *Whartonia* (both also put in Trombiculidae))

Leiodinychidae (*Leiodinychus*)

Liacaridae (*Dorycranopsus*, *Liacarus*, *Opsioristes*)

Limnesiidae Koch, 1835 (water mites) (*Arizonacarus*, *Dorycranosu*)

Subfamily Neomamersinae (interstitial) (*Arizonacarus*, *Neomamersa*, *Meramecia*)

Subfamily Limesiinae (riffles, interstitial, pools & lakes) (*Limnesia*)

Subfamily Protolimnesinae (interstitial) (*Protolimnesia*)

Subfamily Tyrrelliinae (interstitial) (*Tyrrellia*)

Limnocharidae

Subfamily Rhyncholimnocharinae (interstitial water mites)

(*Rhyncholimnochares*) (also put in Rhynchohydracaridae)

Limnohalacaridae (also put in Halacaridae, Subfamily Limnohalacarinae)

Subfamily Acherontacarinae

(*Acherontacarus*) (also put in Limnohalacaridae, but now in own family)

Subfamily Porohalacarinae (also in own family) (*Lobohalacarus*) (put in Halacaridae)

Subfamily Limnohalacarinae (*Hamohalacarus*, *Parasoldanellonyx* (both once in Halacaridae. **Bibl.:**Schwoerbel 1986a

Subfamily Lohmannellinae (*Soldanellonyx*) (once in Halacaridae & Limnohalacarinae)

Listrophoroidae (hair-clasping mites) (*Alabidocarpus* (now put in Chirodiscidae), *Listrophorus*, *Olabidocarpus* (once put in Chirodiscidae))

Lordalychidae (*Lordalychus*)

Macrochelidae Vitzthum, 1930 (*Geholaspis*, *Macrocheles* (once put in Dermanyssidae))

Macronyssidae (macronyssid mites) *Coprolactistus*, *Cytonyssus*)

Subfamily Macronysinae (*Macronyssus*, *Radfordiella*)

Subfamily Ornithonyssinae

(*Cryptonyssus*, *Ornithonyssus*, *Steatonyssus* (once in Dermanyssidae)).

Bibl.: Radovsky 1967

Malaconothridae (*Malaconothrus*, *Trimalaconothrus*)

Microtrombiidae (velvet mites) - undesc. sp. & genus, Ac in El Malpais Natl.Monument, nNM)

Mideidae (water mites mostly in pools & lakes) (fly hosts) (*Midea*)

Mideopsidae (water mites in springs, riffles, interstitial, pools & lakes) (fly hosts) (*Mideopsis*, *Nudomideopsis* (now in own family))

Momoniidae (water mites in interstitial)

Subfamily Cyclomomoniinae (*Cyclomomonina*)

Subfamily Stygomomoniinae (stonefly hosts) (*Stygomomonina*)

Myocoptidae (*Myocoptes*, *Trichoecius*)

Myobiidae (*Acanthophthirius*, *Eudusbabekia*, *Ewingana*, *Myobia*, *Neomyobia*, *Pteracarus*)

Nanorchestidae (*Nanorchestes*, *Speleorchestes*)

Naticidae (*Cryptonatica*)

Nematalycidae - Phreatic in Canadian Rocky Mountains area

Neoacaridae (*Neoacarus*, *Volsellacarus*)

Neotrombiidae (*Ceuthothrombium* (also put in Trombidiidae), *Neotrombidium*)

Niphocephidae (*Niphocephus*)

Nothridae (*Nothrus*)

Nudomideopsidae (also subsumed in Mideopsidae) (water mites in springs & interstitial) (fly

hosts) (*Neomideopsis*, *Neomideopsis*, *Nudomideopsis*, *Paramideopsis*)

Ologamasidae Ryke, 1962 (*Cyrtolaelaps*, *Gamasellus*, *Gamasellodes* (put in Ascidae), *Rhodacaroides* (now in own family), *Euryparasitus* (now in own family))

Omartacaridae

Subfamily Omartacarinae (water mites in interstitial) (*Omartacarus*)

Oppiidae (*Multioppia*, *Oppiella*)

Oribatellidae (*Oribatella*)

Oribatidae (*Galumna* & *Nothrus* both now in own family) **Bibl.:** Balogh 1982

Oribatulidae (*Oribatula*, *Scheloribates* (also in own family), *Zygoribatula*)

Oribotritiidae (*Oribotritia*)

Oxidae (*Frontipoda*, *Oxus*)

Palaeacaridae (*Palaeacarus*)

Parasitidae Oudemans, 1901 (*Eugamasus*, *Gamasodes*, *Paracarpais*, *Parasitus*, *Pergamasus*, *Poecilophysys*; undet. Tp genus in AR & undet. Tp or Tx genera in Shannon & OR Cos., MO)

Penthalodidae (*Penthalodes*)

Phthiracaridae (*Steganacarus*; undet. Ac or Tx genera in seAK)

Phytoseiidae Berlese, 1916 (phytoseiid mites) (*Typhlodromus* (once put in Dermanyssidae))

Pionidae (water mites) (fly hosts)

Subfamily Tiphyinae (=Hydrochoreutinae) (springs, interstitial, pools & lakes)

Tribe Foreliini (*Forelia*, *Pionacercus*)

Tribe Tiphyini (*Tiphys*)

Subfamily Pioninae (mostly in springs, riffles, pools, lakes & temporary ponds)

Tribe Pionini (*Piona*)

Piersigiidae

Subfamily Piersigiinae (water mites in springs, temporary pools, interstitial)
(beetle hosts) (*Piersigia*)

Podocinidae (*Podocinum*)

Polyaspididae (also subsumed in Uropodidae) (*Dithinozercon* (now in Dithinozerconidae), *Calotrachytes*, *Polyaspis*)

Porohalacaridae Viets, 1927 (*Porohalacarus*) (put in Halacaridae)

Prothoplophoridae (*Prothoplophora*)

Protziidae Piersig, 1896 (water mites in springs & interstitial) (also put in Hydryphantidae)

Subfamily Wandesiinae (stonefly hosts) (*Wandesia*)

Pterygosomidae (*Pimeliaphilus*)

Pyemotidae (soft-bodied mites) (*Pyemotes*; undet. genus & sp. in MO)

Pygmephoridae (*Bakerdania*; *Neopygmephorus*, *Pygmephorus*, undet. Tp genera in OR C., OR; undet. Tp? genus in prob. fungivores in Kartchner C., Cochise Co., AZ; undet. Tp? genus in Flea C., AR)

Raphignathidae (*Raphignathus*)

Rhagidiidae (mostly predators) (*Elliotta*, *Foveacheles*, *Poecilophysis* (now in Parasitidae), *Rhagidia*, *Robustocheles*; *Shibaia*, undet. genus & sp. Tp? predator in Mariposa & Tuolumne Cos., CA) **Bibl.:** Elliott & Strandtmann 1971; Thor 1941; Zacharda 1979, 1980, 1985; Zacharda. & Elliott 1981

Rhodacaridae (*Rhodacaroides*)

Subfamily Ologamasinae (also put in own family)

Cyrtolaelaps, *Periseius*, *Rhodacarus* (all in Ologamasidae), *Psammonsella*, *Rhodacaropsis*,

Saprolaelaps) **Bibl.:** Oudemans, 1892; Lee 1970, Krantz 1986

Rhynchohydracaridae (also subsumed in Limnocharidae, Subfamily Rhyncholimnocharinae)

Subfamily Clathrosperchoninae (water mites) (*Clathrosperchon*)

Rosensteiniidae

Subfamily Chiroptoglyphinae (*Chiroptoglyphus*, *Mydopholeus*)

Subfamily Nycteriglyphinae (*Nycteriglyphus*)

Rutripalpidae (*Rutripalpus*)

Sarcoptidae (itch, sarcoptic, mange or scab mites) (*Histiostoma* (now in own family), *Microtrombicula*?, *Notoedres*, *Sarcoptes*, *Teionocoptes*)

Scheloribatidae (*Scheloribates* (also put in Oribatulidae)

Scutacaridae (*Scutacarus*; undet. genus & sp. in MO)

Seuratoidae (*Seuratum*)

Smarididae (*Fessonia*)

Sperchontidae

Subfamily Sperchontinae

(water mites in sprs., riffles, pools & lakes) (fly, stonefly host (*Spercon*))

Spinturnicidae

(*Paraspinturnix*, *Periglischrus*, *Paraspinturnix*, *Spinturnix*; undet. genus & sp. in MO)

Stigmaeidae (*Eustigmaeus*; undet. genus & sp. in MO)

Stygothrombiidae (interstitial water mites)

Subfamily Stygothrombiinae

(*Cerberothrombium*, *Hydrothrombium*, *Stygothrombium*, *Victathrombium*)

Bibl.: Schwoerbel 1986b

Tarsonemidae (*Neotarsonemoides*)

Tectocepheidae (*Tectocepheus*)

Tetranychidae (spider mites or red spiders) (*Bryobia*) **Bibl.:** E. Baker 1994,

Teutoniidae (water mites mostly in pools) (fly hosts) (*Teutonia*)

Thyrisomidae (*Banksinoma*, *Gemmazetes*, *Oribella*)

Torrenticolidae Thor, 1902 (water mites in interstitial & riffles)

Subfamily Torrenticolinae (fly hosts)

(*Monatractides*, *Neotractides*, *Pseudotorrenticola*, *Torrenticola*)

Subfamily Testudacarinae (*Testudacarus*)

Trombiculidae (chigger mites) (mostly parasitic as larvae, predators as adults) (*Acomatacarus*, *Albeckia*, *Beamerella*, *Cheladonta*, *Chatia*, *Comatacarus*, *Eltonella*, *Euschoengastia*, *Euschoengastoides*, *Eutrombicula*, *Hannemania*, *Hexidionis*, *Loomisia*, *Microtrombicula*, *Monunguis*, *Otorhinoiphila*, *Parasecia*, *Perissopalla*, *Pseudoschoengastia*, *Radfordia*, *Sasacarus*, *Speleocola*, *Tecomatlana*, *Trombicula*, *Whartonia* (also put in *Leeuwenhoekidae*)).

Bibl.: Ewing 1932

Subfamily *Leeuwenhoekinae* (*Leeuwenhoekia*) (also put in *Leeuwenhoekidae*)

Trombidiidae (harvest mites or chiggers; trombidiid mites) (*Ceuthothrombium* (now in *Neothrombiidae*), *Leptotrombidium*, *Microtrombidium*, *Monunguis*, *Trombidium*; undet. genus & sp. in OR C., OR & Mariposa Co., CA; undescr. parasitic Tb genus in WA & undescr. Ac genus in El Malpais Natl. Monument, NM) **Bibl.:** Schwoerbel 1986b

Trhypochthoniidae (*Trhypochthoniellus*)

Tydeidae (tydeid mites) (*Tydeus*)

Tyroglyphidae = Acaridae

Uchidastygacaridae (*Morimotacarus*)

Subfamily *Uchidastygacarinae* (water mites in interstitial) (*Uchidastygacarus*, *Yachatsia*)

Family now subsumed in *Chappuisidae*

Unionicolidae (water mites)

Subfamily Unionicolinae (mostly in pools & lakes) (fly and stonefly hosts) (*Unionicola*)

Subfamily Pionatacinae (*Koenikea*)

Uropodidae Kramer, 1881 (*Cilliba*, *Discourella*, *Dithinozercon* (now in Dithinozerconidae)

Polyaspis (now in Polyaspididae), *Trichouropoda*, *Uropoda* (once in Veigaiidae), undet. genus in cave in Eddy Co., NM/ on bat gauno)

Veigaiidae Oudemans, 1939 (undet. Tp genus in IL; *Trigynaspida*, *Uropoda* (now in Uropodidae), *Veigaia*)

Wandesiidae (water mites) (*Wandesia*)

Zerconidae Canestrini, 1891 (*Paleozercon*, *Zercon*, *Zerconopsis*; new genera in WA) **Bibl.:** Blaszak 1984 (associated with mammal activity)

MITE species incl.

Acanthophthirius Perkins, 1925 (= *Ewingana* Radford, 1948) Myobiidae mites

Acanthophthirius (*Myotimyobia*) *caudatus* (*Myobia caudata* & *canadensis* Banks, 1910 or 1909; *Radfordia* c. Radford, 1950; *Binucus* c. Radford, 1954; *Neomyobia* c. Jameson, 1955) Dusbabek, 1969 (ectoparasite on AL *Corynorhinus rafinesquii macrotis*, *Myotis grisescens*, *M. keenii septentrionalis*, *Nycticeius h. humeralis*; AL, MD (rare) *Pipistrellus subflavus*, AL, IN? *Eptesicus f. fuscus*, MD *Pipistrellus hesperus* & NJ, MD, ON, WV *Myotis lucifugus* & AL, TN *Lasiurus borealis* bats)

Acanthophthirius (*Myotimyobia*) *caudatus caudatus* ((*Myobia caudata* Banks, 1910 or 1909) Dusbabek, 1969)(ectoparasite on *Myotis lucifugus* bats)

Acanthophthirius (*Myotimyobia*) *caudatus* ssp. *eptesicus* Fain & Whitaker, 1976 (ectoparasite on ON *Myotis lucifugus*; TX *Myotis velifer*; IN, OH, OR *Eptesicus fuscus*; OH *Lasiurus cinereus* & *Lasionycteris noctivagans* bats)

Acanthophthirius (*Myotimyobia*) *gracilis* Fain & Whitaker, 1976 (ectoparasite on *Myotis volans*, IL, IN *Myotis keenii* & IN *M. lucifugus*, *Lasiurus borealis*, *Lasiurus cinereus* bats)

Acanthophthirius (*Myotimyobia*) *lasiurus* Fain & Whitaker, 1976 (ectoparasite on IN *Lasiurus borealis* & *Lasiurus cinereus* bats)

Acanthophthirius *longa* (*Myobia longa* Ewing, 1938; *Ewingana bispinosa* Radford, 1952; *Myobia canadensis* Banks) Jameson, 1955 (ectoparasite on AL, CA, TX *Tadarida brasiliensis* bats)

Acanthophthirius (*Myotimyobia*) *lucifugus* Fain & Whitaker, 1976 (ectoparasite on IN, PA *Myotis lucifugus* & *M. sodalis* bats)

Acanthophthirius *nycticeus* Fain & Whitaker, 1987 (on IN *Nycticeius humeralis* bats)

Acanthophthirius *oregonensis* Brennan 1965 (on OR,SW *Pipistrellus hesperus* bats)

Acanthophthirius undet. sp. (on *Lasiurus borealis*, wTX *Eumops perotis*; IN *Myotis keeni* & *volans* (near *A. gracilis*), *Eptesicus fuscus*, *Lasiurus cinereus* & *Lasionycteris noctivagans* bats)

Acanthophthirius undescr. sp. or species (ectoparasite on FL *Myotis austroriparius* & NB bats)

Acarochelopodia Angelier, 1954 - Halacaridae mites

Acarochelopodia undet. sp. (interstitial? in HI intertidal sandy beach)

Acaromatis Trouessart & Neumann, 1893 - Halacaridae mites

Acaromatis *arenarius* Bartsch, 1977 (interstitial brackish and marine on US Atlantic beaches)

Acarus Linnaeus, 1768 - Acaridae mites

Acarus *immobilis* Griffiths, 1964 (Ac in one NS cave)

Acarus undet. sp. or species (Tx in KY(Mammoth C.) & IN)

Acomatacarus Ewing, 1942 - Trombiculidae mites, Subfamily Leeuwenhoekinae

Acomatacarus (*Acomatacarus*) *galli* Ewing, 1946 (ectoparasite on OK *Neotoma floridana* woodrats)

Acomatacarus (*Xenacarus*) *plumosus* Greenberg, 1951 (ectoparasite on IA *Neotoma micropus* & KS *N. floridana* woodrats)

Acotyledon Oudemans, 1903 - Acaridae mites

Acotyledon *neotomae* Faina & Whitaker, 1986 (ectoparasite on Western *Neotoma cinerea* woodrats)

Actacarus Schulz, 1937 - Halacaridae mites

Actacarus *illustrans* Newell, 1951 (interstitial brackish and marine on US Pacific beaches)

Actacarus *obductus* Bartsch, 1977 (interstitial brackish and marine on US Atlantic beaches)

Actacarus *pacificus* Bartsch, 1979 (interstitial? in HI intertidal sandy beach)

Albeckia Vercammen-Grandjean & Wakins, 1966 - Trombiculidae mite

Albeckia *albecki* Vercammen-Grandjean & Wakins, 1966 (ectoparasite on CA, TX *Antrozous pallidus* & SD *Myotis leibii* bats)

Albeckia senase = *Whartonia* s.

Abrolophus Berlese, 1891 - Erythraeidae mites

Abrolophus undesc. sp. (Ac in El Malpais Natl.Monument, nNM)

Acarochelopodia Angelier, 1954 – Halacaridae mites, Subfamily Acarochelopodinae

Acherontacarus Viets, 1932 - Acherontacaridae mites, Subfamily Acherontacarinae (once placed in Hydrovolziidae, subfamily Hydrovoltziinae & Limnohalacaridae, Subfamily Acherontacarinae (Hemipetra & Diptera hosts)

Alabidocarpus Ewing, 1929 - Chirodiscidae mites

Alabidocarpus calcaratus Lawrence, 1952 (ectoparasite on West Indies, Central America, South America bats/ ectoparsite on CA *Myotis yumanensis saturatus*; OR *Myotis californicus* & *M. volans* & MI *Myotis lucifugus* bats)

@*Alabidocarpus longipilus* (ectoparasite on CA *Myotis yumanensis* bats)

Alabidocarpus undet. sp. (ectoparasite on OH *Eptesicus fuscus* & *Lasiurus cinereus* bats)

"*Alabidocarpus tuscaloosae*" in J. White, 1960 (ectoparasite on AL *Eptesicus fuscus*, *Corynorhinus rafinesquii macrotis*, *Pipistrellus subflavus* bats)

Albaxona Szalay, 1944 - Aturidae mites, subfamily Axonopsinae

Albaxona (*Vietsaxona*) *nearctica* Cook, 1974 (VA hyporheic interstitial in stream gravel bar, Simpson Cr., Alleghany Co., VA)

Albia Thon, 1899 - Aturidae mites, subfamily Albilinae

Albia (*Albiella*) *caerulea* (*A. (Anchistalbia) c.* Marshall, 1927) (hyporheic in temperate NA interstitial)

Albia (*Albia*) *neogaea* Habeeb, 1966 (NY, ON surface streams & hyporheic in NY, ON silty sand river bars)

Alicorhagia Berlese, 1910 - Alicorhagiidae mites

Alicorhagia undet. sp. (hyporheic in CO)

Alicorhagia undescr. sp. (Tb? in El Malpais Natl. Monument, nNM)

Alliphis Halbert, 1923 Eviphididae mites

Alliphis undet. sp. (Tp or Tx in NS)

Amblyomma Koch, 1844 - Ixodidae mites. **Bibl.** E. Jones et al. 1972

Amblyomma americanum (*Acarus a.* Linnaeus, 1758; *Ixodes a.* Fabricius, 1805) (lone star tick) (parasite on goats, SC *Neotoma floridana* & NM *Neotoma micropus* woodrats & other mammals in TX caves/ Carries *Rickettsia*, *Coxiella burnetii*, *Fracisellatularensis*, blue tongue virus, Cache Valley virus),

Amblyomma cajennense (*Acarus c.* Fabricius, 1787) (Ac in Burnet, Llano Cos., TX)

Androlaelaps Berlese, 1903 (= *Atricholaelaps* Ewing, 1929; *Cyclolaelaps* Ewing, 1933; *Eubrachylaelaps* Ewing, 1929; *Haemolaelaps* Berlese, 1910; *Ischnolaelaps* Foneseca, 1936; *Turkiella* Zumpt & Till, 1953; *Zygolaelaps* Tipton, 1957) Laelapidae (= Laelaptidae) mites

Androlaelaps casalis casalis (*Haemogamasus* c. Berlese, 1887; *Atricholaelaps megaventralis* Strandtmann, 1947; *Haemolaelaps haemorrhagicus* Asunuma, 1952; *H. molestus* Oudemans, 1929; *Hypoaspis freemani* Hughes, 1948; *H. oculatus* Oudemans, 1915; *H. soarianus* Hull, 1925; *Iphis casalis* Berlese, 1887) (Tx in nests of *Hirundo fulva* swallows in cave in Edwards Co., TX; ectoparasite on AL *Tadarida brasiliensis* (rare) bats, UT, NV, OR? *Neotoma lepida*; GA, IN *N. floridana*; & OR *Neotoma cinerea* & *N. lepida* (probably) woodrats)

Androlaelaps fahrenheitsi (*Laelaps* (H.) f. Berlese, 1887 or 1911) (= *A. & Atricholaelaps glasgowi* (Ewing, 1925); *Atricholaelaps sigmondoni* Strandtmann, 1946; *A. strandtmanni* Fox, 1947; *Haemolaelaps cricetophilus* Vitzthum, 1930; *H. mohrae* Oudemans, 1928; *H. scalopi* Keegan, 1946; *Hypoaspis* (H) *eos* Zumpt & Patterson, 1951; *H. microti* Oudemans, 1926; *Laelaps californicus* Ewing, 1925; *L. glasgowi* Ewing, 1925; *L. (H.) stegemoni* Hefley, 1935; *L. virginianus* Ewing, 1925; *Liponyssus setiger* Ewing, 1920) (ectoparasite on *Neotoma* c. nests in caves, Siskiyou Co., CA; ectoparasite on *Myotis grisescens*. GA *Tadarida brasiliensis* & KS *Eptesicus fuscus* bats & UT *Neotoma lepida*, OR *Neotoma cinerea* & *N. fuscipes* & GA, IN *Neotoma floridana* woodrats)

Androlaelaps geomys (*Haemolaelaps* g. Strandtmann, 1949; *A. sigmondoni* Randolph & Eads, 1946) (ectoparasite on CO *Neotoma cinerea* woodrats)

Androlaelaps glasgowi (*Haemolaelaps* g. Ewing, 1926) (Tx parasite on *Myotis grisescens* & KS *Eptesicus fuscus* bats & *Neotoma floridana*, *N. pennsylvanica*, *N. cinerea*, UT, WY *Neotoma lepida* & wTX *Neotoma micropus* woodrats)

Androlaelaps johnstoni Eads and Hightower, 1951 (ectoparasite on TX *Neotoma micropus* woodrats)

Androlaelaps morlani (*Haemolaelaps* m. Strandtmann, 1949) (ectoparasite on *Neotoma albigula* & *N. micropus* woodrats)

Androlaelaps undet.sp. or species (Tx in VA; Tx in Mammoth Cave (Edmonson Co.) & cave in Hart Co., KY)

Androlaelaps utahensis = *Brevisterna* u.

Anomalohalacarus Newell, 1949 - Halacaridae mites

Anomalohalacarus litoralis Bartsch, 1981 (interstitial sublittoral on US Atlantic beaches)

Anomalohalacarus tenellus Bartsch, 1979 (interstitial brackish and marine on US Atlantic beaches)

Anomalohalacarus tenuis Bartsch, 1979 (interstitial brackish and marine on US Atlantic beaches)

Antricola Cooley & Kohls, 1942 - Ixodidae mites

Antricola coprophila (*Ornithodoros c.* McIntosh, 1935) (larvae Tx on AZ (mines), nMex. (Mines), TX *Leptonycteris n.* bats; adults guanobic)

Anystis von Heyden, 1826 (whirligig mites) Anystidae mites

Anystis undet. sp. or *agilis* Banks (CA,OR if *A. agilis* (whirligig)/Tx predator in CA)

Anystis undet. sp. (Ac in El Malpais Natl. Monument, nNM)

Apicriopsis Berlese, 1916 - Ameroseiidae mites

Apicriopsis undet sp. (on porcupine dung in one NS cave)

Aponomma Nbeumann, 1899 - Ixodidae mites

Aponomma undet. sp. (ectoparasite on CO *Neotoma cinerea o.* woodrats)

Aplodontopus Fain & Spicka, 1977 - Chortoglyphidae mites

Aplodontopus undesr. sp. (ectoparasite on IN *Neotoma floridana* woodrats)

Aplodontopus undet. sp. (ectoparasite on OR *Neotoma cinerea & fuscipes* woodrats)

Arenohydracarus Cook, 1974 - Arenohydracaridae mites

Arenohydracarus undet. sp. (shallow phreatic in Sycamore Cr. 32 km ne of Phoenix (Maricopa Co.), Big Sandy River, Santa Maria River and Bridle Cr., AZ)

Arenohydracarus eremitus Cook, 1974 (hyporheic in gravel bars in warm reocrene spring, Catron Co., NM)

Arizonacarus I.M. Smith & D.R. Cook, 1994 - Limnesiidae mites, subfamily Neomamersinae

Arizonacarus chiricahuensis I. Smith & D.Cook, 1994 (interstitial in gravels of hyporheic of streams in *Chiricahua Mts., seAZ)

Arrenurus Dugen, 1835 - Arrenuridae mites, subfamily Arrenurinae

Arrenurus (*Truncaturus*) *kennedyorum* Habeeb, 1963 (hyporheic in NM (Grant & Catron Cos.) & CA (Trinity Co.))

Arrenurus (*Truncaturus*) *loticus* Mullen, 1976 (hyporheic in MO (Shannon, Dent & Reynolds Cos.) & OK (Comanche Co.))

Arrenurus (*Truncaturus*) undesr.. sp. or species (Ozarks to SW, s. to Mex.)

Arrenurus (*Truncaturus*) undet. sp. (shallow phreatic in Sycamore Cr. 32 km ne of Phoenix (Maricopa Co.), AZ)

Arctoseius Thor, 1930 (= *Tristomus* Hughes, 1948) - Arctacaridae mites (also put in Ascidae)

Arctoseius cetratus (*Lasioseius c.* Sellnick, 1940; *A. bispinatus* Weis-Fogh, 1948; *A. halophilus* sensu Evans, 1954; *A. limburgensis* Nesbitt, 1954) Sellnick, 1940 (US/hyporheic in CO; Tx? in MO)

Arctoseius undet. sp. near *cetratus* (Tx detritivore? in Calaveras Co.,CA),
Arctoseius undet. sp. (NS/Tp or Tx)

Argas Latreille, 1795 - Argasidae mites
Argas (*Argas*) *cooleyi* (*Argas* c. McIvor, 1941; *A. (Alveonasus) c.*) Kohls & Hoogstraal (NV/
Tx? in CA condor nest, Ventura Co.,CA)

Argas undet. sp. (Kartchner C., AZ/ Tp)
Argas (*A.*) *reflexus* (Fabricius, 1794) (TTx? in Contra Costa Co.,CA)

Asca Heyden, 1826 - Ascidae mites
Asca undet. sp. (Jewel C.,SD/TTx?)

Atractides Koch, 1837 - Hygrobatidae mites, Subfamily Hygrobatinae
Atractides riparius Habeeb, 1957 (hyporheic in NB gravel bars)

Atractides undet. sp. or species (CO,NY hyporheic/ shallow phreatic in Sycamore Cr. 32 km ne
of Phoenix (Maricopa Co.), AZ)

Atractides sturgeonensis (Marshall, 1927) (MI river bed, hyporheic?)

Atricholaelaps Strandtmann, 1947 - Laelapidae (= Laelaptidae) mites
Atricholaelaps (*Ischnolaelaps*) *glasgowi* (*Laelaps* g. Ewing, 1925; *Atricholaelaps virginianus*
(Ewing) 1925; *A. g.* (Ewing) 1925) (ectoparasite on PA *Neotoma magister* woodrats)

Atricholaelaps sigmodoni Strandtmann, 1947 (on TX *Neotoma floridana* woodrats)

Aturus Kramer, 1875 - Aturidae mites, subfamily Aturinae
Aturus deceptor Habeeb, 1953 (eCanada, neUS hyporheic in river gravel, parasites on imagoes of
Chironomidae flies, subfamily Orthocladiinae)

Aturus mirabilis Piersig, 1897 (New Brunswick,ON, neUS hyporheic in river gravel, parasites
on imagoes of Chironomidae flies, Subfamily Orthocladiinae)

Aturus undet. sp. (CO, NY, PQ hyporheic)
Aturus undescr.. sp. (AB, BC, SK hyporheic)

Axonopsella Lundblad, 1930 - Aturidae mites, subfamily Axonopsinae
Axonopsella bakeri I.M. Smith & D. R. Cook, 1998 (FL, TX hyporheic interstitial and surface
stream water)

Axonopsis Piersig, 1893 - Axonopsidae mites (also put in Aturidae, subfamily Axonopsinae
Axonopsis (*Brachypodopsis*) *arpeda* Cook, 1974 (hyporheic in Wayne & Crawford Cos., MO)

Axonopsis (*Axonopsis*) *bimaculata* Cook, 1974 (hyporheic interstitial in Jackson Co., FL &

Carrol Co., AR)

Axonopsis (*Vicinaxonopsis*) *californica* Cook, 1974 (hyporheic interstitial in Japan & Monterey & Humboldt Cos., CA)

Axonopsis (*Brachypodopsis*) *dapsila* Cook, 1974 (hyporheic in NY (Hamilton Co.), ME (Aroostook Co.), NH (Carroll Co.), NJ (Sussex Co.), VA (Bath Co.) & WV (Pocohantas Co.))

Axonopsis (*Brachypodopsis*) *pallida* Habeeb, 1957 (rheophilic in FL, NC, OK, VA streams/ occasional hyporheic interstitial in OK)

Axonopsis (*Paraxonopsis*) *pumila* Cook, 1974 (hyporheic in Trinity, Monterey & Humboldt Cos., CA)

Axonopsis (*Brachypodopsis*) *rivophila* Habeeb, 1957 (rheophilic in NC, OH, KY, PA, VA streams/ occasional hyporheic interstitial in NC)

Axonopsis (*Axonopsis*) *sabulonis* Cook, 1974 (hyporheic interstitial in NB (Victoria Co.), KY (Russell Co.), ME (Aroostook Co.), NY (Perry Co.), NJ (Sussex Co.) & VA (Bath Co.))

Axonopsis (*Brachypodopsis*) *setoniensis* Habeeb, 1953 (ON hyporheic in river silt; in NJ, MI lakes & ponds; parasites on imagoes of Chironomidae flies, subfamily Orthocladiinae)

Axonopsis undet. sp. (MI interstitial),

Bakerdania Sasa, 1961 - Pygmephoridae mites

Bakerdania *quadrata* (Ewing) (= *B. sellnicki* Krczal, 1958) (seNM/ Tp?)

Bakerdania undet. sp. or species (ectoparasite on OR *Neotoma cinerea* and *fuscipes* woodrats; Tp or Tx in NS on porcine dung; NY freshwater sandy beach interstitial)

Bandakia Thor, 1913 - Anisitiellidae mites, Subfamily Anisitsiellinae

Bandakia *anisitsipalpis* Cook, 1963 (interstitial in NC small stream)

Bandakia *borealis* I. Smith, 1979 (spring seepage, ON (Little East River, Muskoka District)

Bandakia *fragilis* I. Smith, 1979 (interstitial in mosses & detritus in spring seepage in OR (Benton CO.))

Bandakia *longipalpis* Cook, 1963 (*B. elongata* Cook 1963; homonym of *Drammenia elongata* Thor (= *B. elongata*), a synonym of *B. concreta* Thor) (OR, MT (Gallatin Co.) hyporheic in sand and gravel bars)

Bandakia *oregonensis* I. Smith, 1979 (interstitial in mosses, detritus and gravel in spring seepage in OR (Benton CO.))

Bandakia *phreatica* Cook, 1974 (ME, ON, New Brunswick, NH, NS, NF interstitial hyporheic

in gravel bars; larvae parasitic in *Zavrelimyia* flies)

Bandakia similis Cook, 1963 (NC, VA seepage areas)

Bandakia undet. sp. (NY hyporheic)

Bandakia vietsi Cook, 1961 (spring seepage or streams in New Brunswick (Kent Co.0, NF, ON (Carleton & Petersborough Cos.) & MI))

Bandakiopsis I.Smith, 1979 - Anisitiellidae mites

Bandakiopsis fonticola I. Smith, 1979 (interstitial in mosses & detritus in spring seepage areas, scBC; larvae parasitic in *Dixa* flies)

Banksinoma Oudemans, 1930 - Thyrisomidae mites

Banksinoma undet. sp. (MO/Tp or Tx guanobic)

Bdella Latreille, 1795 - Bdellidae mites

Bdella undet. sp. (Tp in El Malpais Natl. Monument, nNM)

Bdellozonium Cook & Loomis, 1928 - Bdellidae mites

Bdellozonium undescr. sp. (HTx in WA)

Belba Heyden, 1826 - Damaeidae mite

Belba bulbipedata Packard, 1888 (= *Damaeus b.*) (*Mammoth C.,KY/Tb/ G1G2)

Belba undet. sp. (IA,KY(poss.),WI/ Tp?)

Beamerella Brennan, 1958 - Trombiculidae mites

Beamerella acutascuta Brennan, 1958 (ectoparasite on TX *Mormoops megalophylla* & Trinidad bats)

Beamerella texana (*Trombicula texana* Loomis & Crossley, 1963; *Tecomatlana texana*) Goff & Brennan, 1977. (type locality in Frio Cave, Uvalde Co., TX/ ectoparasite on wTX *Nyctinomops macrotis* & *Mormoops megalophylla* bats)

Bharatalbia Cook, 1967 - Aturidae mites, subfamily Axonopsinae

Bharatalbia (*Japonalbia*) *cooki* I. Smith, 1989 (interstitial, hyporheic, epigeal in CA, ON, OR rivers & streams)

Bimichaelia Sig Thor, 1902 - Bimichaelidae mites

Bimichaelia undet. sp. (NM/ Tp?)

Brachypoda Lebert, 1879 - Aturidae mites, subfamily Axonopsinae

Brachypoda (*Brachypoda*) *cornipes* Habeeb, 1956 (likely hyporheic as parasites of *Microcricetopus* & *Tanytarsus* fly larvae)

Brachypoda setosicaudata Habeeb, 1953 (in BC silt and moss in springs, parasites on imagoes of Chironomidae flies, subfamily Orthocladiinae)

Brachypoda undet. sp. (interstitial/ shallow phreatic in Sycamore Cr. 32 km ne of Phoenix (Maricopa Co.), AZ)

Brevisterna Keegan, 1949 - Haemogamasidae mites, subfamily Laelaptinae (also subsumed in Laelapidae (= Laelaptidae))

Brevisterna morlani Strandtmann & Allred, 1956 (on NM *Neotoma albigula albigula*, CO *Neotoma* & NM, TX *Neotoma micropus* woodrats)

Brevisterna utahensis (*Euhaemogamasus u.* Ewing, 1933) (Ectoparasite on TX *Neotoma mexicana*, CO, NV, UT, WY *Neotoma lepida*, AZ, CO, NM *Neotoma albigula* & CA *N. fuscipes* woodrats)

Bryobia Koch, 1836 - Tetranychidae mites

Bryobia parasitica (= ? *Ensliniella p.* Vitzthum, 1924) (Tp or Tx on NS porcupines?)

Bryobia praetiosa Koch, 1836 (clover mite/ Ac in one KS cave)

Bryobia undet. sp. (hyporheic in CO)

Caeculus Dufour, 1832 - Caeculidae mites

Caeculus archeri Mulaik, 1945 (type locality cave in Jackson Co., AL & karstic Montvale sprgs. in TN/ Pb? or Tp?)

Caeculus undet. sp. (Tx predator in Calaveras Co., CA; Ac in El Malpais Natl. Monument, nNM))

Caenobelba R.A. Norton, 1980 - Damaeidae mites

Caenobelba undet. sp. (Tp or Tx in OR C., OR)

Calotrachytes Berlese, 1916 - Polyaspididae mites (also put in Uropodidae)

Calotrachytes undet. sp. (WA/ Tp?)

Caligonella Berlese, 1910 - Caligonellidae mites

Caligonella undet. sp. (cave in Eddy Co., NM/ Tp?)

Caloglyphus Berlese, 1923 - Acaridae mites

Caloglyphus undet. sp(p). (1 sp. Tp? in MO; 4 sp. phoretic in WA)

Calvolia Oudemans, 1911 - Laelapidae (= Laelaptidae) mites

Calvolia undet. sp. (MO/ Tp or Tx guanobic)

Camisia von Heyden, 1926 - Camisiidae mites

Camisia undet. sp.(s) (Tx in OR C., OR; TTP in WA)

Carios Lagreille, 1796 – Argasidae mites

Carios kelleyi (Cooley & Kohls) (ectoparasite in *Myotis austroriparius* (likely) bat guano in GA cave (Decatur Co.))

Ceratozetes Berlese, 1908 - Ceratozetidae mites

Ceratozetes gracilis (Michael, 1884) (Midwest Ed/Tp? in IA,KY(Mammoth C.))

Ceratozetes near *gracilis* (Michael, 1884) (Tx detritivore? in Calaveras & Tuolumne Cos.(CA))

Ceratozetes undet. sp. or species (Wind C.,SD/TTx?; TTx in OR C.OR); on cricket guano in Mammoth C.(KY); poss. in MO)

Cerberothrombium Viets, 1934 - Stygothrombiidae mites, Subfamily Stygothrombiinae (Plecoptera hosts)

Cerberothrombium caudatum = *Ceuthothrombium c.*

Cerberothrombium ida = *Ceuthothrombium i.*

Cerberothrombium pauli-henri Habeeb, 1979 (hyporheic in Wheeler Gorge, Ventura Co., CA)

Cerberothrombium stella Habeeb, 1973 (hyporheic in Wheeler Gorge, Ventura Co., CA)

Ceuthothrombium Habeeb, 1979 Trombidiidae mites

Ceuthothrombium (*Cerberothrombium caudatum* Habeeb, 1955) Habeeb, 1979 (hyporheic in Salmon River & Beaver Brook, Madawaska Co., New Brunswick interstitial)

Ceuthothrombium cavaticum Robaux, Webb & Campbell, 1977 (Lake & Lechuguilla C.,Eddy Co.(NM) +cTX & Mexico/Tx,cricket (*Ceuthophilus*) parasite)

Ceuthothrombium ida (*Cerberothrombium ida* Habeeb, 1973) Habeeb, 1979 (hyporheic in Wheeler Gorge, Ventura Co., CA)

Ceuthothrombium poss. undescr. sp. or species (Tb in Kartchner C.,AZ; Tb larva parasitic on crickets in El Malpais Natl. Monument, nNM),

Ceuthothrombium vikrami (*Cerberothrombium vikrami* Habeeb, 1979) Habeeb, 1979 (hyporheic in CA & Rain Cr., Mogollon Mts., NM)

Chappuisides Szalay, 1943 - Chappuisididae mites, subfamily Chappuisidinae

Chappuisides acadianus I.M. Smith, 1992 (hyporheic in New Brunswick, NF, NS, PQ, NH)

Chappuisides (*Chappuisides*) *anomalus* I.M. Smith, 1992 (hyporheic in *Moccasin Creek, Tuolumne Co., CA)

Chappuisides (*Chappuisides*) *californicus* I.M. Smith, 1992 (hyporheic in Humboldt, Mendocino, Monterey & Trinity Cos., CA in gravels in riffles of large streams)

Chappuisides (*Chappuisides*) *cooki* I.M. Smith, 1992 (hyporheic in New Brunswick, NS, ME,

NY gravels in riffles of large streams and rivers)

Chappuisides (*Chappuisides*) *eremitus* Cook, 1963 (hyporheic in sand & gravels in rocky stream riffles in Gibbon River, Yellowstone National Park, WY)

Chappuisides (*Chappuisides*) *neomexicanus* I.M. Smith, 1992 (hyporheic in *Salix Cr., Mogollon Mts, Catron Co., NM)

Chappuisides (*Chappuisides*) *occidentalis* I.M. Smith, 1992 (hyporheic in NV, NM gravels in small streams in mts.)

Chappuisides (*Chappuisides*) *oregonensis* I.M. Smith, 1992 (hyporheic in sOR & possibly nCA in gravels of small streams)

Chatia Brennan, 1946 - Trombiculidae mites

Chatia setosa Brennan, 1946 (ectoparasite on OR *Neotoma fuscipes* & *cinerea* woodrats)

Chausseria Oudemans, 1937 (whirligig mites) - Anystidae mites

Chausseria undescrib.. sp. (Ac in El Malpais Natl. Monument)

Cheiroseius Berlese, 1916 – Ascidae mites

Cheiroseius nr. *curtipes* (Halbert, 1923) (ON groundwater interstitial)

Cheladonta Lipovsky, Crossley & Loomis, 1955 - Trombiculidae mites

Cheladonta *micheneri* Lipovsky, Crossley & Loomis, 1955 (ectoparasite on KS *Neotoma floridana* woodrats)

Chelohydracarus Smith, 1998 – Athienemanniidae mites

Chelohydracarus *navarrensis* Smith, 1998 (CA coastal hyporheic)

Chelomideopsis Romijn, 1920 - Athienemanniidae mites, Subfamily Athienemanniinae

Chelomideopsis *besselingi* (Athienemannia *schermerei* b. Cook, 1961) (MI,ON,PQ springs & seepages, likely hyporheic when parasitizing *Microspecta* & *Paratanytarsus* larvae)

Chelomideopsis *gledhilli* I. Smith, 1992 (NF, New Brunswick, NS interstitial? in gravel and detritus in helocene and rheocene springs)

Chelomideopsis *minuta* I. Smith, 1992 (wNA interstitial in gravel and detritus in small streams and rheocene springs)

Chelomideopsis *occidentalis* I. Smith, 1992 (BC, OR, WA groundwater interstitial? in detritus and gravel in pools and riffles in spring runs and small streams)

Chelomideopsis *siskiyousensis* I. Smith, 1992 (seOR interstitial in moss and detritus in seepage areas and springs and superficial gravels in rocky riffles of small streams)

Cheletonella Womersley, 1941 - Cheyletidae mites

Cheletonella undet. sp. (predator on ON bat guano)

Cheletonella vespertilionis Womersley, 1941 (ectoparasite on IN *Eptesicus fuscus* bats)

Cheyletus Latreille, 1796 - Cheyletidae mite

Cheyletus cacahuamilpensis Baker, 1945 (predator in CA bat guano; accidental? on OK (Tx) *Myotis velifer* bats)

Cheyletus hendersoni Baker, 1949 (type locality on Amummy@ in Arkansas C., AR/ ectoparasite)

Cheyletus malaccensis Oudemans, 1903 (ectoparasite on IN *Neotoma floridana* woodrats)

Cheyletus near *cacahuamilpensis* Baker, 1945 (Tx? in swOK (ectoparasite on *Myotis velifer* bats)

Cheyletus undet. sp. or species (Kartchner C., Coshise Co., AZ; ectoparasite on OR *Neotoma fuscipes* & *N. cinerea* woodrats)

Chiroptoglyphus O'Connor & Reisen, 1978 - Rosensteiniidae mite (once put in Dermanyssidae)

Chiroptoglyphus americanus O'Connor & Reisen, 1978 (guanophile on PA *Myotis lucifugus*, TX *Corynorhinus rafinesquii* (one bats) & OK *Myotis velifer* bats)

Chiroptoglyphus undet. sp. (parasite on TX *Leptonycteris nivalis* bats)

Chiroptonyssus Augustson, 1945 (also synonymized with *Ichoronyssus*) - Dermanyssidae mites, Subfamily Nycteriglyphinae

Chiroptonyssus haematophagus = *C. robustipes*

Chiroptonyssus robustipes (*Liponyssus r.* & *L. chilensis* Ewing, 1925; *Ichoronyssus r.* Fonseca, 1948b; *Liponyssus nyctinomius* Radford, 1938; *L. venezolanus* Hoffman, 1944; *C. texensis* Augustson, 1945; *Liponyssus hematophagus*; *Bdellonyssus hematophagus* Morlan & Strandtman, 1949; *Ornithonyssus haematophagus* Yunker, 1958; *C. h.*) Whitaker & Wilson? (type locality cave in Hardeman Co., TX) Tp guanobic/ ectoparasite on AK, AL, AZ, CA, FL, GA, NM, OK, TX, s.to Chile *Tadarida b*, NM, TX *Myotis californicus*, CA (accidental) *Myotis yumanensis*, GA *Myotis lucifugus*, OR *Lasiurus cinereus*, wTX *Pipistrellus hesperus*, *Eumops perotis*, *Nyctinomops macrotis* (= *Tadarida m.*), *Myotis velifer*; GA, AL (rare accidental) *Nycticeius humeralis*), wTX *Mormoops megalophylla* & AL, TX *Eptesicus fuscus* bats)

Chiroptonyssus texensis Augustson, 1945 (= *Liponyssus ipes* Ewing, 1925 in part) = *Liponyssus robustipes* Ewing, 1925

Chiroptonyssus venezolanus (Vitzthum, 1932) (ectoparasite on AZ, wTX *Nyctinomops macrotis* (= *Tadarida m.*) (near *C. venezolanus*) & wTX *Nyctinomops femorosaccus* (= *T. femorosacca*) bats)

Chortoglyphus Berlese, 1884- Chortoglyphidae mites (once put in Glycyphagidae)
Chortoglyphus arcuatus (Troupeau, 1879) (ectoparasite on IN *Neotoma floridana* woodrats)

Cilliba van Heyden, 1826 - Uropodidae mites
Cilliba undet. sp. (TTp in WA?)

Clathrosperchon Lundblad, 1936 - Rhynchohydracaridae mites, Clathrosperchoninae subfamily (beetle & bug hosts))

Clathrosperchon americanus Habeeb, 1953 (brooks, on rocks in moving water, interstitial hyporheic? in FL, NJ, PA, MO, AR streams)

Clathrosperchon undet. sp. (NY hyporheic)
Cocceupodes Sig Thor, 1934 - Eupodidae mites
Cocceupodes undet.sp. (on damp timber in one NS cave)

Comatacarus Ewing, 1942 - Trombiculidae mites
Comatacarus americanus Ewing, 1942 (ectoparasite on OR *Neotoma fuscipes* woodrats)

Cookacarus Barr, 1977 - Anisitiellidae mites
Cookacarus columbiensis Barr, 1977 (interstitial in mosses & detritus in spring seepage, BC)

Copidognathus Trouessart, 1888 - Halacaridae mites, Subfamily Copidognathinae
Copidognathus pygmaeus Bartsch, 1980 (interstitial brackish and marine on US Atlantic beaches)
Copidognathus undet. sp. or species (interstitial? in HI intertidal sandy beach; MA intertidal beach sand interstitial))

Coprolactistus Radovsky & Krantz, 1998 - Macronyssidae mites
Coprolactistus whitakeri Radovsky & Krantz, 1998 (predator on mites on IN *Eptesicus fuscus* & in Brazilian bat guano)

Cosmochthonius Berlese, 1910 - Cosmochthonidae mites
Cosmochthonius undet sp. (ectoparasite on IN *Neotoma floridana* woodrats)

Cowichania I.M. Smith, 1983 - Hydryphatidae mites, subfamily Cowichaninae
Cowichania interstitialis I.Smith, 1983 (hypogean, hyporheic and interstitial in sVancouver Island, BC)

Cryptonatica Dall, 1892 – Naticidae snails
Cryptonatica affinis (Gmelin, 1791) (*Natica clausa*) (AK marine infauna)

Ctenoglyphus Berlese, 1884 - Glycyphagidae mites
Ctenoglyphus undet. sp. (TTp in WA)

Cryptonyssus Radovsky, 1966 - Macronyssidae mites, Subfamily Ornithonyssinae

Cryptonyssus desultorius Radovsky, 1966 (ectoparasite on UT *Euderma maculatum*; wTX *Myotis yumanensis*; OR *Myotis lucifugus* & *volans*; CA, TX *Eptesicus fuscus*; Mex., wTX *Myotis velifer*; NV, Mex., OR *Myotis californicus*; IN *Myotis sodalis*; AZ, NV *Pipistrellus hesperus* bats)

Cryptonyssus flexus Radovsky, 1967 (on MI, MN, ND *Myotis lucifugus* & one MI *Lasionycterus noctivagans* bats)

Cunaxa von Heyden, 1826 - Cunaxidae mites

Cunaxa undet. sp. (MO/Tp?),

Cyclomonomia I.M. Smith, 1989 - Momoniidae mites, subfamily Cyclomoniinae

Cyclomonomia andrewi I. Smith, 1989 (interstitial in AB, BC, OR, WA, NV small streams)

Cyclothyas Lundbald, 1941 - Hydryphantidae mites, Subfamily Cyclothyadinae

Cyclothyas siskiyouensis Smith, 1983 (OR hyporheic)

Cyllibula Berlese, 1917 - Trombiculidae mites

Cyllibula (Wagenaaria) similis (Brennan, 1967) (ecotoparasite on wTX *Mormoops megalophylla* bats)

Cyta Heyden, 1826 - Bdellidae mites

Cyta undet. sp. (Wind C., SD/ TTx?)

Cyrtolaelaps Berlese, 1887 (*Protolaelaps* Tragardh, 1912) - Ologamasidae mites

Cyrtolaelaps undet. sp. or species (Tp in WA; ectoparasite on OR *Neotoma cinerea* and *fuscipes* woodrats)

Cyrtolaelaps (Gamaselliphis) undet. sp. (MA intertidal beach sand interstitial)

Cytonyssus Fain, 1960 - Macronyssidae mites

Cytonyssus undescr. sp. (ectoparasite on *Euderma maculatum* bats in wTX)

Demaues = *Belba*

Demodex Owen, 1843 - Demodicidae mites

Demodex nycticeii C.E. Desch, Jr., 1996 (ectoparasite on *Nycticeius humeralis* bats)

Dendrolaelaps Halpert, 1915 - Digamasellidae mites

Dendrolaelaps undet. sp. (CO/hyporheic),

Dendrolaelaps near *laticus* (*Brachychthonius l.* Berlese, 1910) (Tx? in MO),

Dentocarpus Dusbabek & Cruz, 1966 - Labidocarpidae mites (also put in Chirodiscidae)

Dentocarpus macrotrichus Dusbabek & Cruz, 1966 (Nearctic, wHemisphere/ ectoparasite on CA, TX *Tadarida brasiliensis mexicana* & AL, FL *Tadarida brasiliensis cynocephala* bats)

Dermacarus Haller, 1880 - Glycyphagidae mites

Dermacarus hypudaei (*Homopus h.* C.L. Koch, 1841; *Proctolaelaps h.*) (Tx? in MO; ectoparasite on IN *Neotoma floridana* woodrats)

Dermacarus spermophilus A.Fain & Whitaker, 1978 ectoparasite on OR *Neotoma cinerea* and *fuscipes* woodrats),

Dermacentor C.L.Koch, 1844 - Ixodidae mites

Dermacentor andersoni Stiles, 1908 (= *D. venustus* Marx in Neumann, 1897) (ectoparasite on AB, BC *Neotoma* woodrats & nest in Bida Cave, Coconino Co., AZ & MT *Myotis evotis* bats/ Rocky Mountain wood tick)

Dermacentor hunteri Cooley 1938 (on AZ, CA *Neotoma lepida* woodrat)

Dermacentor occidentalis Marx, 1892 (Pacific Coast tick/ ectoparasite on OR *Neotoma cinerea* & *fuscipes* woodrats/ western dog tick)

Dermacentor oenustus (ectoparasite on CO *Neotoma cinerea o.* woodrats)

Dermacentor parumapertus Neumann (epigeal in UT/ on WY, UT *Neotoma cinerea*; TX *Neotoma micropus*, & UT, WY *Neotoma lepida* woodrats)

Dermacentor pratti (ectoparasite on CO *Neotoma cinerea orolestes* woodrats)

Dermacentor undet. sp. or species (Tx in woodrat nest in Kaetan Cave, Grand Canyon, Coconino Co., AZ/ 2,000-3,000, 10,500 to 10,800 & 16,000 to 16,300 years BP in *Neotoma* woodrat nest in wTX (El Paso Co.) or sNM)

Dermacentor variabilis (*Ixodes v.* Say, 1821; *D. electus* Koch, 1844) Banks, 1907 (ectoparasite on GA, IN, SC *Neotoma floridana* woodrats, IN *Lasiurus borealis* bats & GA (Dade Co.) cave)

Dermanyssus de Geer, 1778 - Dermanyssidae mites

Dermanyssus americanus Ewing, 1923 (parasite on TX *Pipistrellus hesperus* bats)

Dermanyssus carnifex Koch, 1839 (*Spinturnix c.*) (ectoparasite on US *Pipistrellus* bats)

Dermanyssus gallinae (*Acarus g.* de Geer, 1778; *D. evotomydis* Ewing, 1933; *Ornithodoros g.*) (cosmopolitan/chicken, poultry, red or roost mite; red chicken mite/ on TX *Pipistrellus subflavus* (Tx) & *Myotis velifer* (Tx) bats & TX, UT, WY *Neotoma lepida* woodrats) **Bibl.:** George & Strandtman 1960

Dermatophagoides Bogdanov, 1864 – Epidermoptidae mites

Dermatophagoides pipistrelli Brennan, 1947 (ectoparasite on PA *Myotis lucifugus* bats)

Diamphidaxona Cook, 1974 - Hygrobatidae mite, (once in Aturidae, Subfamily Axonopsinae)

Diamphidaxona dolichosoma Cook, 1963 (hyporheic in Madison River, Gallatin Co., MT)

Diamphidaxona imamurai Cook, 1974 (phreatic sprs., Catron Co., NM/ Pb)

Diamphidaxona pallida Cook, 1963 (AR, MI, OK hyporheic)

Discourella Berlese, 1910 (= *Trachyuropoda* (*Discourella*) Berlese, 1910) Uropodidae mites

Discourella nr *dubiosa* (Schweizer) (IL/Tp)

Dithinozercon Berlese, 1916 -Dithinozerconidae mites (once put in Uropodidae)

Dithinozercon undet. sp.#1 (IA/Tp?)

Dithinozercon undet. sp.#2 (cave in Eddy Co.,NM/ Tp?)

Dorycranosus Woolley, 1969 - Limnesiidae mites

Dorycranosus near *parallelus* (*Liacarus p.* Hammer, 1967)(Tx detritivore? in Calaveras Co.,CA)

Echinonyssus Hirst, 1925 (= *Hirstionyssus* Fonseca, 1948) - Laelapidae (= Laelaptidae) mites
Subfamily Myonyssinae (was in Macronyssidae) **Bibl.:** C. Herrin 1970.

Echinonyssus bisetosus (*Hirstionyssus b.* Allred, 1957) (ectoparasite on UT, NV *Neotoma lepida* woodrats)

Echinonyssus hilli (*Hirstionyssus h.* Jameson, 1950) (ectoparasite on UT, WY *Neotoma lepida* woodrats)

Echinonyssus incomptis (= *Hirstionyssus i.* Eads & Hightower, 1952) (ecotoparasite on *Neotoma lepida* woodrats)

Echinonyssus neotomae (*Hirstionyssus n.* Eads & Hightower, 1952) (ecotoparasite on *Neotoma albigula*, *N. lepida* & *N. micropus*, OR *Neotoma fuscipes* & *N. cinerea* woodrats)

Echinonyssus obsoletus (*Hirstionyssus o.* Jameson, 1950) (ectoparasite on OR *Neotoma cinerea* woodrats)

Echinonyssus occidentalis (*Hirstionyssus o.*) (ectoparasite on UT, WY *Neotoma lepida* woodrats)

Echinonyssus triacanthus (*Hirstionyssus t.* Jameson, 1950) (ectoparasite on *Neotoma cinerea* & *N. lepida* woodrats)

Echinonyssus utahensis (*Hirstionyssus u.* Allred & Beck, 1966) (ectoparasite on UT *Neotoma lepida*, OR *Neotoma cinerea* & IN *Neotoma floridana* woodrats)

Elliotta Zacharda, 1980 - Rhagidiidae mites

Elliotta howarthi (*Flabellorhagidia h.* Elliott, 1976) Zacharda, 1980 (type locality cave in Klickitat Co. & cave in Skamania Co.,WA +ID?/ Tb/ G1)

Elliotta undescr. sp(p). 1-2 (Tb in WA)

Eltonella Audy, 1956 - Trombiculidae mites. **Bibl.:** Vercammen-Grandjean, 1965

Eltonella (*Coecicula*) *tibbettsi* (Brennan & White, 1960) (Tx in AL, TX)

Epidamaeus Bulanova-Za(c,k)hvatkina, 1957 - Damaeidae mites

Epidamaeus (subgenus *Akrodamaeus*) undet. sp.#1 (IA, MN, WI/ Tp?)

Epidamaeus undet. sp. #2 (cave in Eddy Co., NM/ Tp?)

Epidamaeus undet. sp. #3 (Tx detritivore? in Tuolumne Co., CA)

Erebaxonopsis Motas & Tanasachi, 1947 - Aturidae mites, subfamily Axonopsinae

Erebaxonopsis *nearctica* Cook, 1974 (interstitial hyporheic in gravel bar in Van Duzen River, (Humboldt Co.) & Moccasin Cr.(Tuolumne Co.), CA)

Erynetes Banks, 1904 - Erynetidae mites

Erynetes undet. sp. (MO/Tp? gaunobic & carrion)

Erythraeus Latreille, 1806 - Erythraeidae mites

Erythraeus undesc. sp. (Ac in El Malpais Natl.Monument, nNM)

Erythraeus undet. or undescr. sp. (ectoparasite on *Antrozous pallidus* bats)

Estellacarus Habeeb, 1954 - Aturidae mites, subfamily Axonopsinae

Estellacarus *unguitarsus* (*Brachypoda unguatarsa* Habeeb, 1953) Habeeb, 1954 (in silt & moss in BC springs, parasites on imagos of Chironomidae flies, subfamily Chironominae)

Estelloxus Habeeb, 1963 - Lebertiidae mites

Estelloxus *californiensis* Habeeb, 1963 (interstitial in silt & gravel in spring runs & springs in BC, CA, OR, WA)

Eubrachylaelaps Jameson, 1950 - Laelapidae (= Laelaptidae) mites

Eubrachylaelaps *debilis* Jameson, 1950 (Ac on WA bats; UT (Ac?) *Corynorhinus townsendii* & *Antrozous pallidus* bats)

Eubrachylaelaps *hollisteri* (Ewing, 1925) (ectoparasite on *Neotoma lepida* woodrats)

Eucheyletia Baker, 1949 - Cheyletidae mites

Eucheyletia *bishoppi* Baker, 1949 (ectoparasite on CA, OR *Neotoma fuscipes*, OR *Neotoma cinerea* & IN *Neotoma floridana* woodrats)

Eudusbabekia Jameson, 1971 - Myobiidae mites

Eudusbabekia undescr. sp. (ectoparasite on wTX *Nyctinomops macrotis* bats)

Eugamasus Berlese, 1893 (*Gamasus* (*Eugamasus*) Berlese, 1892) - Parasitidae mites

Eugamasus undet. sp.(Tp or Tx in KY, NS, PQ, VA, WV)

Eulaelaps Berlese, 1903 - Laelapidae (= Laelaptidae) mites

Eulaelaps stabularis (Koch, 1839) (= *Laelaps pedalis* Banks, 1909) (ectoparasite on OR *Neotoma fuscipes* & GA, IN *N. floridana* woodrats)

Euphthiracarus Ewing, 1917 - Euphthiracaridae mites

Euphthiracarus undet. sp. (Ttx in Wind C., SD)

Eupodes Koch, 1834 - Eupodidae mites

Eupodes undet. sp. (Tp in El Malpais Natl. Monument, nNM)

Euryparasitus Oudemans, 1901 (= *Eurylaelaps* Oudemans, 1902)- Euryparasitidae mites

Euryparasitus undet. sp. or species (Tp in WA; TTp in WA; ectoparasite on OR *Neotoma cinerea* and *fuscipes* woodrats)

Euschoengastia Ewing, 1938 (= *Euschongastia*) - Trombiculidae mites (cause dermatitis in domestic animals)

Euschoengastia brennani stimulans Wrenn & Loomis, 1974 (ectoparasite on CA *Neotoma fuscipes* woodrats)

Euschoengastia californica (*Schongastia c.* Ewing, 1925) (ectoparasite on CA *Neotoma fuscipes* & *N. lepida* woodrats)

Euschoengastia criceticola Brennan, 1948 (ID, AB, CA, MT, WY, CO, KS epigeal/ ectoparasite on KS *Neotoma micropus*; CA *Neotoma fuscipes* & *N. lepida* woodrats)

Euschoengastia diversa Farrell, 1956 (NB, KS, MO epigeal/ ectoparasite on KS *Neotoma floridana* woodrats)

Euschoengastia fasolla Brennan & Beck 1956 (ectoparasite on UT *Neotoma lepida* woodrats)

Euschoengastia finleyi Crossley, 1955 (ectoparasite on CO *Neotoma cinerea* woodrats)

Euschoengastia frondifera Gould, 1956 (ectoparasite on CA *Neotoma lepida* woodrat)

Euschoengastia furmani Gould, 1956 (ectoparasite on CA *Neotoma lepida* woodrats)

Euschoengastia hamiltoni Brennan 1947 (ectoparasite on AL, IN, MD, NY, VA *Eptesicus f. fuscus*; WV *Pipistrellus subflavus*; NY, WV *Myotis leibii* & NY (rare), ON, WV *Myotis lucifugus* bats)

Euschoengastia jonesi Lipovsky & Loomis, 1954 (on KS & OK (Tx) *Myotis velifer grandis* bats & KS *Neotoma micropus* woodrats)

Euschoengastia lacerta Brennan, 1949 (CA, e. to KS epigeal/ ectoparasite on KS *Neotoma micropus* woodrats)

Euschoengastia loomisi Crossley & Lipovsky, 1954 (TX, OK, KS epigeal/ ectoparasite on KS

Neotoma micropus woodrats)

Euschoengastia marginalis Wrenn & Somerby, 1974 (ectoparasite on sCA *Neotoma lepida* & *N. fuscipes* woodrats)

Euschoengastia libertatis Brennan & Yunker, 1966 (ectoparasite on MT *Neotoma* woodrats)

Euschoengastia mirocoxa Brennan, 1948 = *E. pipistrelli*

Euschoengastia oregonensis (Ewing, 1929) (ectoparasite on OR *Neotoma fuscipes* woodrat)

Euschoengastia peromysci Wrenn, 1984 (Epigeal MA s. to MS, w. to CA/ ectoparasite on CA,OR *Neotoma fuscipes* & AR, GA, KS, IN, OK, SC *Neotoma floridana* woodrats)

Euschoengastia pipistrelli Brennan, 1947 (type locality cave in Stone Co.,MO/ ectoparasite on KS *Neotoma micropus* woodrats & IN *Myotis austroriparius* & *Eptesicus fuscus*; KY, IL, IN, KS, NJ, NY, PA, SD *Myotis lucifugus*; AL, IN, PA *Myotis keeni*; KS (Tx) *Myotis velifer*; AL, IN, NY *Myotis sodalis*; AL *Myotis grisescens*; AL, AR, OK, KS *Myotis keenii septentrionalis* & AL (Tx), AR (Tx), GA (Tx), IN, KS, MO, OK (Tx), PA, WV *Pipistrellus subflavus* bats)

@*Euschoengastia pomerantzi* (ectoparasite on OR *Neotoma fuscipes* woodrats)

Euschoengastia radfordi Brennan and Jones, 1954 (ectoparasite on CA *Neotoma fuscipes* & *N. lepida* woodrats)

Euschoengastia setosa (Ewing, 1937) (ectoparasite on KS *Neotoma micropus*; IN, KS *Neotoma floridana* & SD *N. cinerea* woodrats)

Euschoengastia undet. sp. (ectoparasite on WY, UT *Neotoma cinerea* woodrats)

@*Euschoengastia simulansi* (ectoparasite on OR *Neotoma fuscipes* woodrats)

Euschoengastia staffordi Brennan & White 1960 (type locality in Bibb Co., AL/ ectoparasite on AL *Pipistrellus subflavus* & *Eptesicus fuscus* bats)

Euschoengastia stimulans Wrenn & Loomis, 1974 (ectoparasite on CA *Neotoma lepida* & *N. fuscipes* woodrats)

Euschoengastia utahensis Brennan & Beck, 1966 (ectoparasite on UT *Neotoma lepida* woodrats)

Euschoengastia velata Brennan & Yunker, 1966 (ectoparasite on MT *Neotoma cinerea* woodrats)

Euschoengastia undet. sp. or species (ectoparasite on UT, WY *Neotoma lepida* woodrats & CA *Myotis yumanensis* bats)

Euschoengastoides (*Trombicula* (E.) Loomis, 1954) Crossley, 1960 - Trombiculidae mites

Euschoengastoides arizonae Loomis, 1971 (ectoparasite on CA *Neotoma albigula* & *N. lepida* woodrats)

Euschoengastoides hoplai (*Trombicula* (E.) *hoplai* Loomis, 1954) Crossley, 1960 (ectoparasite on KS *Neotoma micropus* woodrats)

Euschoengastoides neotomae Loomis, 1971 (ectoparasite on CA, KS *Antrozous pallidus* bats & AZ, NM *Neotoma albigula*, IN *N. floridana*, NM *Neotoma albigula*, CA *Neotoma lepida* & KS *Neotoma micropus* woodrats)

Euschoengastoides tanigoshi Loomis, 1971 (ectoparasite on CA, Mexican *Eptesicus fuscus* bats/ on NM *Neotoma albigula* woodrats)

Euschoengastoides tumidus Loomis, 1971 (ectoparasite on NM *Neotoma albigula* woodrats)

Eustigmaeus Berlese, 1910 - Stigmaeidae mites

Eustigmaeus poss. undescr. sp. near *E. lirella* (Tp in Kartchner C., AZ)

Eutrombicula Ewing, 1938 - Trombiculidae mites. Bibl.: Wolfenbarger 1951-2

Eutrombicula alfreddugesi (*Microthrombidium a.* Oudemans, 1910; *Leptus irritans*, Riley, 1873; *Trombicula a.* Ewing, 1938; *T. (E.) a.* Jenkins, 1949) Ewing, 1938 (ectoparasite on GA, IN, KS, SC *Neotoma floridana* & KS *Neotoma micropus* woodrats; OK *Tadarida mexicana*, AL *Lasiurus borealis*, *Myotis keenii septrionalis* (Tx), *Eptesicus fuscus* (Tx) & KS *Myotis velifer grandis* bats)

Eutrombicula batatas (Linnaeus, 1758) (= *Trombicula E. a.*) (ectoparasite on AL *Lasiurus borealis* bats & CA *Neotoma lepida* & GA *Neotoma floridana* woodrats)

Eutrombicula belkini Gould, 1950 (ectoparasite on CA *Neotoma* woodrats)

Eviphis Belese, 1903 (= *Iphidioides* Oudemans, 1904; *Iphis* C.L. Koch, 1835, not C. L. Koch, 1839) Eviphididae mites

Eviphis undet. sp. (Ac? in cave in Edwards Co., TX)

Ewingana Dusabek, 1968 - Myobiidae mites

Ewingana (Doreyana) doreya Dusabek, 1968 (ectoparasite on Trinidad, TX *Nyctinomops macrotis* bats)

Ewingana (Doreyana) inequalis (Ewing, 1938) (ectoparasite on CA, FL *Antrozous pallidus* & AL (rare), CA, FL *Tadarida brasiliensis* bats)

Ewingana (Ewingana) longa (Ewing, 1938) (ectoparasite on AL, CA, FL, TX *Tadarida brasiliensis* bats)

Ewingana (*Doreyana*) undescr. sp. (ectoparasite on FL *Tadarida brasiliensis* bats)

Feltria Koenike, 1892 - Feltriidae mites

Feltria (*Azugofeltria*) *purpurotincta* (Habeeb, 1954) (surficial substrata in NE/ hyporheic in Little River near Grand Falls, New Brunswick)

Feltria (*Feltria*) *cornuta* Walter, 1927 (AB, SE hyporheic)

Feltria (*Feltria*) *cornuta americana* Cook, 1963 (= *F. (F.) cornuta c.*) (SE hyporheic n. to Great Lakes Basin, ON, PQ & west to Shannon Co.,MO)

Feltria (*Feltria*) *cornutopis* Cook, 1963 (hyporheic in CO, wSD, ND, MO, MT, OK, OR, TX, WAt)

Feltria (*Feltria*) *echinopalpis echinopalpis* Cook, 1963 (hyporheic in Hamilton Co., NY, New Brunswick & Victoria Co., PQ)

Feltria (*Feltria*) *echinopalpis projecta* Cook, 1970 (hyporheic in MT,CO,WY)

Feltria (*Feltria*) *exilis* Cook, 1970 (hyporheic in Johnson Co., WY)

Feltria (*Feltria*) *faceta* Cook, 1963 (hyporheic in ME,VT,NY,NJ,VA,OK)

Feltria (*Feltria*) *falcicornia* Cook, 1970 (hyporheic in Sheridan Co., WY)

Feltria (*Feltria*) *gennada* Cook, 1963 (hyporheic in Johnson Co., WY, Lane Co, OR & Lincoln Co.,MT)

Feltria *minuta* Koenike, 1892 (MT surface waters/ MT (Lake Co.) occasional interstitial hyporheic)

Feltria (*Neofeltria*) *ozarkensis* Cook, 1963 (OK (DE Co.) interstitial hyporheic)

Feltria undet. sp. (CO,NY/hyporheic)

Feltria undescr. sp. (ON, PQ hyporheic)

Feltria (*Neofeltria*) *virginiensis* Cook, 1963 (VA (Bath Co.) interstitial hyporheic)

Feltria (*Azugofeltria*) *testudo* (Cook, 1970) (hyporheic in Salmon Cr., Monterey Co., CA)

Fessonia von Heyden, 1826 - Smarididae mites

Fessonia probably undescr. sp. (Ac in El Malpais Natl. Monument, nNM)

Flabellorhagidia Elliott, 1976 - Rhagidiidae mites

Flabellorhagidia *howarthi* Elliott, 1976 = *Elliotta h.*

Flabellorhagidia *pecki* Elliott, 1976 (**type locality cave in Klickitat Co., WA & cave in Craters of the Moon Natl. Monument, Butte Co.,ID/ Tb G1G2)

Flabellorhagidia undescr. sp. (3 caves in Mt. Adams lava flows, Skamania Co.,WA/ Tp)

Forelia Haller, 1882 - Pionidae mites, Subfamily Tiphynae (=Hydrochoreutinae), Tribe Foreliini

Forelia (*Forelia*) *ovalis* Marshall, 1929 (hyporheic in WI)

Forelia undet. sp. (NY hyporheic; MI interstitial/ epigean)

Foveacheles Zacharda, 1980 - Rhagidiidae mites. Bibl.: Zacharda 1996

Foveacheles (*F.*) *auricularia* Zacharda & Elliott, 1985 (**type locality & 1 other cave in Siskiyou Co., CA/ Tp or Tb, only in caves, G1G2)

Foveacheles goffi Zacharda, 1982 (**?type locality cave in Kau Forest Res., HI Island & cave near Kawela, Molokai Island, HI./ Tb on rat guano/ G1 or G3 or G1G2)

Foveacheles holsingeri (= *Rhyncholophus* c. Packard, 1888; *Rhagidia cavicola* Banks in Call, 1897; *Rhagidia cavernarum* Holsingeri, 1965) Zacharda, 1985 (Mammoth & 1 other cave in Edmonson Co. + Hart Co. e to Pulaski Co. (KY), & s. to Grundy Co., TN + caves in Monroe? & Orange Co., IN/ Tp,Ed). **Bibl.:** Holsinger 1966; Oudermans, 1914

Foveacheles cf. *holsingeri* or maybe undescr. sp. (Tp in cave in Hardin Co., KY),
Foveacheles melanoseta = *Poecilophysis m.*

Foveacheles paralleloseta Zacharda, 1985 (*type locality cave in Wythe Co., VA/Tb?/G1/T&E VA S1)

Foveacheles undescr. sp.#1 (*HI Volcanoes Natl. Park/Tp or Tb)

Foveacheles tenorioae Zacharda, 1982 (**type locality cave in HI Volcanoes Natl. Park, cave near Volcano & cave in Kau Forest Res, Big Island, HI/ Tb/ G1G2)

Foveacheles (Usitorhagidia) titanica Zacharda & Elliott, 1985 (**?type locality cave in Tuolumne Co. & cave in Calaveras Co., CA/Tp or Tb/ G1 or G3)

Foveacheles tuktoyaktukensis Zacharda, 1980 (Canada, WV, epigean/Tp in WV, glacial relict?)
Bibl.: Zacharda 1985

Frontipoda Koenike, 1891 - Oxidae water mites

Frontipoda americana Marshall, 1914 (in ON, eNA lakes/ parasitic on chironomid flies/ interstitial?)

Frontipodopsis Walter, 1919 - Frontipodopsidae mites, Subfamily Frontipodopsinae

Frontipodopsis nearctica Cook, 1963 (AB, BC, CA, MT, WA hyporheic interstitial)

Galumna von Heyden, 1826 - Galumnidae mites

Galumna alata (= *Oribata a.* Packard, 1886) Packard, 1888 (*Galumna alata* (Hermann, 1804);

not clear if Mammoth species is *G.a.*; if it is not and it is a species confined to Mammoth, then name needs to be changed to a different species name due to prior name use of *Oribata alata* by Hermann) (Tp or Tb in *?Mammoth C.,KY/ G1G2?)

Galumna undescr. sp.#1 (Tp? in cave in Eddy Co.,NM)

Galumna undet. sp.#2 (Tp in IL,KY)

Gamasellodes Athias-Henriot, 1961 - Ascidae mites

Gamasellodes undet. sp(p). (Tp or Tb in cave in Custer Co.,SD; TTp in WA)

Gamasellus Berlese, 1892 (*Cyrtolaelaps* (*Gamasellus*) Berlese, 1892; *Gamasus* (*Laelogamasus*) Berlese, 1905)) Ologamasidae mites

Gamasellus undet. sp. (WA/TTp)

Gamasodes Oudemans, 1939 - Parasitidae mites (most feed with fly larvae and hitchhike on adult flies)

Gamasodes undet. sp. (Tp or Tb in OR C.,OR/ phoretic in WA)

Geholaspis Berlese, 1918 - Macrochelidae mites

Geholaspis undet. sp. (NS/Tp or Tx)

Gemmazetes T. Fujikawa, 1979 - Thyrisomidae mites

Gemmazetes nr. *cavatica* (Kuntz, 1962) (Tp glacial relict? & guanophile in Europe, IA, MN, WI)

Gemmazetes undet. sp. (cave in Eddy Co.,NM/ Tp?)

Geolaelaps Tragardh, 1952 - Laelapidae (= Laelaptidae) mites

Geolaelaps undescr. (poss.) sp. or species (cave in Eddy Co.,NM/Tp? gaunobic; Kartchner C.,AZ/Tp)

Geolaelaps undet. sp. (Ac or Tx in Kartchner C.in AZ & El Malpais Natl.Monument, nNM; Tx in NS)

Glycyphagus Hering, 1838 - Glycyphagidae mites

Glycyphagus domesticus (De Geer, 1778) ZR 115, 134 (Tp? On damp timber in one NS cave/ house mite; house dust mite/ alien?) House dust mites are up to 0.3 mm Their droppings contain enzymes used to digest skin. They are the important cause of asthma and cause other allergic diseases.

Gymnolaelaps Berlese, 1916 -Laelapidae (= Laelaptidae) mites

Gymnolaelaps undet. sp. or species (Tp? in Eddy Co.,NM; Tp in KY (Mammoth C.) or TN)

Haemaphysalis Koch, 1844 - Ixodidae mites

Haemaphysalis leporis-palustris (*Ixodes l.* Packard, 1869; *Gonixodes rostralis* Duges, 1888) Newmann, 1897 or Hunter & Hooker, 1907 (rabbit tick/ ectoparasite on FL *Neotoma floridana*, UT, WY *Neotoma lepida* & wTX *Neotoma micropus* woodrats/ rabbit tick)

Haemogamasus Berlese, 1889 (= *Euihaemogamasus* Ewing, 1933; *Groschaftella* Privora & Samsinak, 1957) Laelapidae (= Laelaptidae) mites, subfamily Haemogamasinae (also put in Haemogamasidae)

Haemogamasus alaskensis Ewing, 1925 = *H. ambulans*

Haemogamasus ambulans (*Dermanyssus a.* Thorell, 1872; *H. sternalis* Ewing, 1933; *H. alaskensis* Ewing, 1925; *Gamasus ovalis* Koch, 1879; *H. avisugus* Vitzthum, 1931; *H. pavlovsky* Bergetova, 1949; *H. twitchelli* Ewing, 1925) (Circumpolar epigeal/ Tx in OR C.,OR; parasite in WA/ carrier of Haemorrhagic fever virus/ ectoparasite on ME *Myotis lucifugus* bats & CA *Neotoma fuscipes*, UT *N. cinerea* & *N. lepida*? woodrats)

Haemogamasus liponyssoides Ewing, 1925 (= *Euhaemogamasus l.* Ewing, 1925) (ectoparasite on IN *Neotoma floridana* woodrats)

Haemogamasus casalis = *Androlaelaps c.*

Haemogamasus pontiger (*Laelaps (Eulaelaps) p.* Berlese, 1904; *Eulaelaps mawsoni* Womersley, 1937; *H. oudemansi* Hirst, 1914) (ectoparasite on OR, UT, WY *Neotoma lepida* woodrats)

Haemogamasus reidi Ewing, 1925 (= *Euhaemogamasus oregonensis* Ewing, 1933; *E. sciuropteri* Keegan, 1946; *H. nidiformis* Tipton and Saunders, 1971) (epigeal in VA, OR/ Tx in OR C.,OR; on OR *Myotis californicus* bat; parasite in WA; ectoparasite on OR *Neotoma cinerea* & *N. fuscipes* & IN *Neotoma floridana* woodrats)

Haemolaelaps Berlese, 1910 - Laelapidae (= Laelaptidae) mites

Haemolaelaps megaventralis (*Atricholaelaps m.* Strandtmann, 1947) (Ttx in TX *Petrochelidon fulva* cave swallow nest)

Halacarellus Viets, 1927 - Halacaridae mites

Halacarellus arenarius Bartsch, 1979 (interstitial in beaches in brackish lakes in neUS)

Halacarellus capuzinus (Lohmann, 1893) (beach, brackish & sublittoral interstitial in Mediterranean, Europe & US)

Halacarellus psammophilus (Krantz, 1976) (beach interstitial on Pacific Coast)

Halacarellus subscirpus Bartsch, 1978 (interstitial in neNA, nwEurope marine beaches & Greenland brackish marine)

Halacarellus subterraneus Schulz, 1933 (beach, brackish & stagnant freshwater interstitial in

Mediterranean, Europe & US)

Halacarus Gosse, 1855 - Halacaridae mites

Halacarus anomalus Trouessart, 1894 (MA intertidal beach sand interstitial)

Halacarus undet. sp. (PQ Gulf of St. Lawrence sandy marine interstitial)

Hamohalacarus Walter, 1931 - Halacaridae mite

Hamohalacarus subterraneus Walter in Bolivar & Jeannel, 1931 (*type locality cave in Lawrence Co., IN/ Tb/ G1G2)

Hannemania - Oudemans, 1911 - Trombiculidae mites

Hannemania dunni Sambon, 1928 (parasite on *Plethodon ouachitae* & *P. albagula* in Ouachita Mts.) **Bibl.:** C. Anthony 1995

Hannemania perplexa Brennan, 1947= *Whartonia perplexa*

Hannemania undet. sp. (ectoparasite on non-cave AR *Desmognathus bimleyorum* & *Eurycea multiplicata griseogaster* salamanders)

Heminothrus Berlese, 1913 - Camissidae mites

Heminothrus targionii (Berlese, 1885) (Tx or Ac in sON)

Hexidionis Vercammne-Grandjean & Loomis, 1967 - Trombiculidae mites

Hexidionis navajoe Lucas & Loomis, 1968 (ectoparasite on NM *Neotoma albigula* & *N. lepida* woodrats)

Hirstionyssus Fonseca, 1948 (treated as subgenus of *Neoichoronyssus* & as junior syn. Of *Echinonyssus*) - Laelapidae (=Laelaptidae) mites (once in Macronyssidae)

Hirstionyssus bisetosus = *Echinonyssus b.*; *H. hilli* = *E. h.*; *H. incomptis* = *Echinonyssus i.*
H. neotomae = *Echinonyssus n.*; *H. triacanthus* = *E. t.*; *H. utahensis* = *Echinonyssus u.*

Histiostoma Kramer, 1876 - Histiostomatidae mites (also put in Anotoidae) (worldwide genus)

Histiostoma guanophilus Nahunka, 1982 (*type locality in Carlsbad Caverns, Eddy Co., NM/ guanophile/ Tb)

Histiostoma (*Cavanoetus*) *pierrestrinatii* Nahunka, 1982 (*type locality in Carlsbad Caverns, Eddy Co., NM)

Histiostoma undescr.? sp. or species (Tp? in 2 caves in Eddy Co, NM; Tp in OR Caves, OR)

Histiostoma undet. species (WA/Tb phoretic in WA; 3 sp. phoretic on flies in WA; caves in Eddy Co., NM (may be *H.p.*, *H.g.* or new sp.; Tx or Tp in MO). **Bibl.:** Mahunka, 1982

Hologamasus Berlese, 1842 - Laelapidae (= Laelaptidae) mites

Hologamasus undet. sp. (cave in WV)

Horreolanus Mitchell, 1955 Bogatiidae mites, subfamily Horreolaninae

Horreolanus orphanus Mitchell, 1955. (IL (Vermilion Co.) interstitial groundwater from drainage tile)

Hydrachna Mueller, 1776 - Hydrachnidae mite (beetle & bug hosts)

Hydrachna undet. sp. (Tx or Tp in AK)

Hydrothrombium Robaux, 1969 - Stygothrombiidae mites, Subfamily Stygothrombiinae (Plecoptera hosts)

Hydrothrombium cooki Robaux, 1969 (hyporheic in AR, Jack=s Fork River, Shannon Co., MO & King=s River, Carroll Co., AR)

Hydrovolzia Thor, 1905 - Hydrovolziidae mites, subfamily Hydrovoltziinae

Hydrovolzia gerhardi Mitchell, 1954 (karst seepage *Rock Cr. Canyon, Kenkakee Co., IL/ interstitial?)

Hygrobat Koch, 1837 - Hygrobatidae mites, Subfamily Hygrobatinae

Hygrobat (*Mixobates*) *inermis* Cook, 1974 (hyporheic interstitial? in MT, WY streams)

Hygrobat (*Hygotetrabates*) *neooctoporus* Marshall, 1926 (hyporheic in IA streams)

Hygrobat undet. sp. (NY hyporheic)

Hypoaspis G. Canestrini, 1884 - Laelapidae (= Laelaptidae) mites, Subfamily Hypaspidinae (most species are soil fauna)

Hypoaspis (*Geolaelaps*) near *angusta* Karg, 1965 (Tp in IL)

Hypoaspis cavernicola (*Loelaps* (= *Ipis*?) c. Packard, 1888) (Tb or Tp in Mammoth C., KY)

Hypoaspis (*Pneumolaelaps*) *lubrica* (Voigts & Oudemans, 1904) (ectoparasite on *OR Neotoma cinerea* and *N. fuscipes* & IN *Neotoma floridana* woodrats)

Hypoaspis near *sardoa* (Berlese, 1892?) (ectoparasite on IN *Neotoma floridana* woodrats)

Hypoaspis undet. sp. or species (Tp in IL; VA/Tx?; Tp or Tx guanobic in MO/Tx in PQ; Tx parasite? in *Neotoma c.* nests in Shasta & Siskyou Cos.(CA); ***H.*** (*Cosmolaelaps*) (ectoparasite on IN *Neotoma floridana* woodrats)

Hypoaspis stygius - see *Macrocheles*

Hypoaspis near *subterranea* (Willmann, 1935) (Tp in IL)

Ichoronyssus Kolenati, 1858 (= *Spinolaelaps* Radford, 1940; *Chiroptonyssus*, *Lepronyssus*, see *Macronyssus*) Dermanyssidae mites

Ichoronyssus crosbyi (*Liponyssus c.* Ewing & Stover, 1915) (ectoparasite on AZ *Myotis velifer* & MO *Myotis subulatus* bats)

Ichoronyssus britannicus (*Liponyssus b.* Radford, 1941) (ectoparasite on CA *Myotis californicus*, *Myotis volans* and *Myotis thysanodes* bats)

"***Ichoronyssus jonesi***" in J. White, 1960 (type locality cave in Shelby Co., AL / caves in Colbert, Calhoun, Blount, Conecuh, Lauderdale, Marshall, Morgan & Shelby Cos., AL/ ectoparasite on AL *Corynorhinus rafinesquii* & *Myotis grisescens* bats)

Ichoronyssus longisetosus Furman, 1950 (ectoparasite on CA *Corynorhinus rafinesquii intermedius* & AL *Corynorhinus rafinesquii macrotis* bats)

Ichoronyssus robustipes (Ewing, 1925) (ectoparasite on AZ *Tadarida brasiliensis* bats)

Ichoronyssus undet. sp. or species (ectoparasite on KY *Myotis*; OR *Myotis lucifugus*, AZ *Leptonycteris nivalis* & *Pipistrellus hesperus*; AZ; *Nyctinomops femorosaccus* & CA *Myotis californicus* bats)

Ichoronyssus quadridentatus Strandtmann & Hunt, 1951 (also synonymized with *Macronyssus crosbyi*) (ectoparasite on GA *Eptesicus fuscus* & *Myotis lucifugus* bats)

Ichoronyssus undescr. sp. or species (ectoparasite on AL, MO, AR, OK *Myotis grisescens*, MD *Eptesicus fuscus* & KS *Myotis velifer incautus* bats)

Ischyropoda Keegan, 1951 - Laelapidae (= Laelaptidae) mites

Ischyropoda armatus Keegan, 1951 (ectoparasite on *Neotoma albigula* & *N. Micropus* woodrats & OR *Myotis californicus* bats)

Isobactrus Newell, 1947 - Halacaridae mites, Subfamily Rhombognathinae

Isobactrus setosus (Lohmann, 1889) (MA intertidal beach sand interstitial)

Ixodes Latreille, 1795 (=Pholeoixodes) Ixodidae mites. **Bibl.:** Cooley & Kohls, 1945

Ixodes (Ixodes) affinis Neumann, 1899 (ectoparasite on SC *Neotoma floridana* woodrats)

Ixodes (Ixodiopsis) angustus Newmann, 1899 (= *I. hexagonus* var. *c.* Nuttall & Warburton, 1911) (ectoparasite on ID, WA *Neotoma occidentalis*; ID, MT *Neotoma cinerea occidentalis* & OR *N. cinerea* woodrats)

Ixodes (Pholeoixodes) banksi Bishopp, 1911 (AL, AR, MI, WI most often from beavers/ Tx or Ac in MO)

Ixodes (Pholeoixodes) conepti Cooley & Kohls, 1943 (type locality cave in Comal Co., TX/ Tx in MO, seNM, TX),

Ixodes (Pholeoixodes) cookei Packard, 1869 (*I. cruciarius* Fitch, 1872; *I. hexagonus* var. *longispinosus* Neumann, 1901; I. h. var. *cookei* Packard) (Tx or Ac in KY(Mammoth C.), IN (WA Co.), MO, sON; ectoparasite in GA cave (Walker Co.)/ groundhog tick/ carrier of encephalitis virusus)

Ixodes dammini Spielman, Piesman & Corwin, 1979 (ectoparasite on CT bats)

Ixodes (Pholeoixodes) marxi Banks, 1908 (ectoparasite on IN *Neotoma floridana* woodrats)

Ixodes (Ixodes) minor (ectoparasite on GA, SC *Neotoma floridana* woodrats)

Ixodes neotomae Cooley, 1944 (ectoparasite on CA *Neotoma fuscipes* & *N. macrotis* woodrats)

Ixodes ochotonae Gregson, 1941 (ectoparasite on BC, OR *Neotoma cinerea* & OR *Neotoma fuscipes* & *N. macrotis* woodrats/ pika tick)

Ixodes (Ixodes) pacificus Cooley & Kohls, 1943 (ectoparasite on OR *Neotoma cinerea o.* & CA. *N. fuscipes* woodrats)/ carrier of lyme disease/ blacklegged tick)

Ixodes pratti Banks, 1908 = *Ixodes scapularis*

Ixodes undescr.? sp. (near *I. cookei*/ Tx or Ac in MO)

Ixodes (Ixodes) scapularis Say, 1821 (= *I. pratti* Banks, 1908; *I. Affinis* Neumann Banks, 1908; *I. ricinus* var. *scapularis* Say) (MO,s.states along coast to New England, w. to Great Lakes/black legged tick/suspected of causing ehrlichiosis) /Tx or Ac/ ectoparasite on *Neotoma cinerea o.* woodrats & CO *Neotoma cinerea orolestes* woodrats)

Ixodes sculptus Newmann, 1904 (ectoparasite on CA *Neotoma fuscipes* woodrats)

Ixodes (Ixodes) spinipalpis Hadwen & Nuttall in Nuttall, 1916 (ectoparasite on Alberta, OR *Neotoma fuscipes* & CA *Neotoma* woodrats)

Ixodes (Ixodiopsis) woodi Bishopp, 1911 (*I. angustus* var. *w.* Bishopp, 1911) ((ectoparasite on ID *Neotoma occidentalis*, IN *Neotoma floridana* & wTX *Neotoma micropus* woodrats)

Johnstoniana George, 1909 - Johnstonianidae mites

Johnstoniana undet. sp. (ectoparasite in WA?)

Kawamuracarus Uchida, 1937 - Limnesiidae mites, subfamily Kawamuracarinae

Kawamuracarus cramerae Smith & Cook, 2000 (NM hyporheic in gravel bars)

Kawamuracarus gilaensis Smith & Cook, 2000 (NM hyporheic in gravel bars)

Kawamuracarus longisetus Cook, 1963 (AZ, IN, MO, MS, TN hyporheic in gravel bars)

Kawamuracarus serratipalpis Cook, 1963 (AZ (Yavapai Co.) & NM hyporheic in gravel bars)

Koenikea Wolcott, 1900 - Unionicolidae mites, subfamily Pionatacinae

Koenikea (*Sespekoenikea*) *expansipalpis* D. Cook, 1974 (CA hyporheic in Ventura Co. streams)

Koenikea (*Tanaognathela*) *marshallae* Viets, 1930 (= *K. wolcottii* Viets) (eNA to MI interstitial, hyporheic in sluggish streams, epigeal in standing water)

Kongsbergia Sig Thor, 1899 - Aturidae mites, Subfamily Aturinae)

Kongsbergia undet. sp. (AK, AB, BC)

Laelaps Koch, 1836 (*Echinolaelaps*, *Macorlaelaps* Ewing, 1929; *Microtilaelaps*, *Myolaelaps*, *Rattilaelaps* Lange, 1955) Laelapidae mites

Laelaps *alaskensis* Grant, 1947 (ectoparasite on AK *Myotis lucifugus* bats)

Laelaps undet. sp. or species (Tp? in KY or TN; ectoparasite in GA cave (Walker Co.))

Laelaspis Berlese, 1904 (*Laelaps* (*Laelaspis*) Berlese, 1904) - Laelapidae (= Laelaptidae) mites

Laelaspis undet. sp. or species (Tx on mice in NM?; Tx or Ac in GA (prob. on bats))

Lebertia Neumann, 1880 - Lebertiidae mites

Lebertia *natans* Viets, 1926 (stream bottom, hyporheic? in NC, Europe)

Lebertia *pushorum* Habeeb, 1968 (springs in ON, New Brunswick (nr. *L. p.*); parasites in chironomidflies)

Lebertia undet. sp. (hyporheic in CO, NY)

Leiodinychus Berlese, 1917 - Leiodinychidae mites (also put in Uropodidae)

Leiodinychus undet. sp. (bat guano Tx in cave in Edwards Co., TX)

Lepronyssus = junior syn. of *Macronyssus*

Leptotrombidium Nagayo, Miyagawa, Mitamura & Itamura, 1916 (chiggers) - Trombidiidae mite

Leptotrombidium (*L.*) *myotis* (Ewing, 1929) (ectoparasite on CA, SD *Myotis evotis*; OR, SD *Myotis volans*; OR, ON, SD *Myotis leibii*, OR *Myotis californicus*, *Lasionycteris noctivagans*, *Pipistrellus hesperus*, *Corynorhinus townsendii* & *Antrozous pallidus*, IN, ON, OR *Eptesicus fuscus*; IN, MN, ND, ON, OR, SD *Myotis lucifugus*, ON *Myotis septentrionalis*, GA (Bartow Co.), ON *Pipistrellus subflavus*, SD *Myotis keeni* & *M. thysanodes* & OH *Lasiurus cinereus* bats) **Bibl.:** Ando 1978, 1983; J. Jones 1998

Leptotrombidium undet. sp. or species (ectoparasite on CA *Tadarida brasiliensis*, *Myotis yumanensis* & *Antrozous pallidus* bats)

Leptus Latreille, 1796 - Erythraeidae mites

Leptus undet. sp. or species (Tx in OR Caves, OR; taken only on their hosts, *Nelima*)

Harvestmen)

Leptus undesc. sp. (Ac in El Malpais Natl. Monument, nNM)

Lethaxona K. Viets, 1932 - Lethaxonidae mites (once in Aturidae, Subfamily Axonopsinae)

Lethaxona (*Lethaxona*) *flexipalpis* Cook, 1981 (hyporheic in Hunter Cr., Curry Co., OR)

Lethaxona (*Eolethaxona*) *oregonensis* Cook, 1963 (hyporheic in Big Creek, Lane Co., OR)

Lethaxona undet. sp. (OR interstitial)

Lethaxonella Cook, 1963 - Frontipodopsidae mites (once in Aturidae, Subfamily Frontipodopsinae)

Lethaxonella parva Cook, 1963 (AR, MO (Carroll Co.) hyporheic in streams)

Leeuwenhoekia Oudemans, 1911 - Trombiculidae mites, Subfamily Leeuwenhoekinae (also put in own family)

Leeuwenhoekia (*Comatacarus*) *americana* (*Comatacarus* a. Ewing, 1942) (ectoparasite on *CO Neotoma cinerea* & *C. mexicana* woodrats)

Liacarus Michael, 1898 - Liacaridae mites

Liacarus lectronus Higgins & Woolley, 1969 (on CA *Neotoma fuscipes* woodrats)

Liacarus undet. sp. (Tx or Ac in sON)

Limnesia Koch, 1836 - Limnesiidae mites, Subfamily Limnesiinae

Limnesia (*Limnesia*) *fulgida* Koch, 1835 (= *L. histrionica* Wolcott, 1903; *L. wolcottii* Piersig, 1905) (MI interstitial)

Limnesia undet. sp. (shallow phreatic in Sycamore Cr. 32 km ne of Phoenix (Maricopa Co.), AZ)

Linopodes C.L.Koch, 1835 - Eupodidae mites

Linopodes mammothia Banks in Call, 1897 (*Mammoth C., KY/ Tb)

Linopodes motatorius (Linne') (cave? in Franklin Co., MO)

Linopodes prob. undescr. sp. (Tp?, fungivore in Mariposa, Trinity & Tuolumne Cos., CA)

Linopodes undet. sp. or species (Tp in IL, IA; Tx or Ac in AB; Tp or Tx in NS, KY, TN; Tp in cave in WA Co., AR; Tp in WA; Tx? in HA?; Tp in El Malpais Natl. Monument, nNM)

Liponyssoides Hirst, 1913 (fatmites) Dermanyssidae mites

Liponyssoides becki (Allred, 1957) (ectoparasite on *Neotoma albigula* & *N. lepida* woodrats)

Liponyssus bacoti = *Ornithonyssus b.*

Listrophorus Pagenstecher, 1861 - Listrophoridae mites

Listrophorus neotomae Fain & Hyland, 1973 (ectoparasite on TX *Neotoma micropus* & GA

Neotoma floridana woodrats)

Ljanina Thor, 1898 - Aturidae, Subfamily Axonopsinae

Ljanina undet sp. near *bipillata* Thor, 1898 ssp. *purpurea*? Habeeb, 1953 (w.NA in hyporheic stream riffle gravels)

Ljanina undescr.. sp. (AB, BC, SK hyporheic)

Ljanina undet. sp. (NY hyporheic)

Lobohalacarus Viets, 1956 - Limnocharidae mites, Subfamily Porohalacarinae (also put in Halacaridae, Subfamily Halacarinae)

Lobohalacarus undet sp. (hyporheic & lake groundwater interstitial in Canadian Rockies area)

Lobohalacarus weberi w. (Romijn & Viets, 1924) (NY, West hyporheic, HA & RI caves, karst, groundwater interstitial & phreatic-fed springs; hypogean, hyporheic & surface waters in North Africa, Europe))

Loomisia Brennan & Reed 1972 - Trombiculidae mites

Loomisia univari Brennan 1965 = *Trombicula univari*

Lordalychus Grandjean, 1938 - Lordalychidae mites

Lordalychus undet. sp. (Ac in El Malpais Natl.Monument, nNM)

Lundbladia Viets, 1929 - Hydryphantidae mites, subfamily Thyadinae (water mites)

Lundbladia muscicola = *Trichothyas m.* Mitchell, 1953

Macrocheles Latreille, 1829 (*Andrholaspis* Turk, 1948; *Coprholaspis* Berlese, 1918;

Macrholaspis Oudemans, 1931; *Monoplites* Hull, 1925; *Nothrholaspis* Berlese, 1918 [part])-Macrochelidae mites. **Bibl.:** Krantz & Whitaker 1988

Macrocheles adenosticta Krantz & Whitaker, 1988 (= *M. adenostichus*) (in OR, CA *Neotoma fuscipes* woodrat nest; ectoparasite on OR *N. fuscipes* woodrats)

Macrocheles nemerdaria Krantz & Whitaker, 1988 (= *M. nemerdarius*) (ectoparasite on FL *Neotoma floridana* woodrats)

Macrocheles penicilliger (*Holostaspis p.* Berlese, 1904) Sellnick, 1940 (Europe in litter, bird nests, Italian? bat guano; petrel burrows and nematode culture in OR; assoc. with dung beetle *Dichotomius carolinus* in KY / Tx or Tp in cave in Taney Co.,MO)

Macrocheles undet. sp. or species (Tp or Tx guanobic in MO; Tp in cave in Sutton Co.,TX); Tp or Tx phoretic on KY Heleomyzidae flies; Tx or Ac in GA (prob. on bats); Tx in Mammoth C.,KY/ ectoparasite on swOK (Tx) *Myotis velifer* bats & IN *Neotoma floridana* woodrats))

Macrocheles undet. sp. (ectoparasite/guanobic in *Myotis grisescens* bat guano in GA (Walker

Co.))

Macrocheles undescr.? sp.1 (**?2 caves in Eddy Co.,NM/Tp?)

Macrocheles undescr. sp.#2 (*?cave in Eddy Co.,NM/Tp?)

Macrocheles undescr. sp.#3 (ectoparasite on OK *Myotis velifer* bats)

Macrocheles stygia (*Gamasus s.* Packard, 1888; *M. stygius*) Packard, 1888 (Tb or Tp in 2 caves in Carter Co. & Mammoth C.,KY/ caves only? / G1G2)

Macrocheles troglodytes (= *Gamasus* (or *Hypoaspis*? t. Packard, 1888) (*Mammoth C.,KY/ Tb/ G1G2)

Macronyssus Kolenati, 1858 (fatmites) (= *Lepronyssus* Kolenati, 1858; *Ichoronyssus* of authors, not Kolenati, 1858; *Hirstesia* Fonseca, 1948; *Longeonyssus* Grokhovskaya & Nguen-Huan-Hoe, 1961) (genus in Asia, Africa & NA) Macronyssidae mites, Subfamily Macronysinae. **Bibl.:** Uchikawa 1979

Macronyssus cavus Radovsky, 1967(*type locality cave in Mammoth Cave Natl.Park, Hart Co.,KY/ Tb? or (more likely) bat parasite)

Macronyssus crosbyi (*Liponyssus c.* Ewing & Stover, 1915; *Ichoronyssus c.*; *I. brittanicus* Furman, 1950; *I. quadridentatus* Strandtmann & Hunt, 1951) (Western Hemisphere to Chile/ Tp in cave in Cottle & Hardeman Cos., TX & Botetourt Co.,VA/ ectoparasite on MO *Eptesicus fuscus*; CA *Corynorhinus townsendii* & *C. rafinesquii*, OH *Lasiurus cinereus*, CA,OR *Myotis californicus* & *M. volans*, CA *M. thysanodes*, AK, CA, Canada, GA, IL, IN, MI, OH, ON, OR, PA, PEI, TX *M. lucifugus*, IL, IN, MI, PA *M. keeni*; PA *Myotis*; OK, wTX *M. velifer*; OR *Myotis evotis* & *M. leibi*; FL, IL, IN, MI, PA *M. austroriparius*; & IL, IN, MI, OH, PA *Myotis sodalis* bats/ Tx? in AZ, OK, TX *M. velifer*, CA, OR, TX *M. yumanensis*, & OK *Pipistrellus hesperus* bats)

Macronyssus near *cyclaspis* (*M.c.* known from Spain/ ectoparasite on TX *Corynorhinus townsendii* bats)

Macronyssus jonesi (*Ichoronyssus j.* White, 1956) (ectoparasite on *Eptesicus fuscus*?, FL, IL *Myotis austroriparius* & IL, IN, KS *Myotis grisescens* bats)

Macronyssus longisetosus (*Ichoronyssus l.* Furman, 1950) (Tx on KY (Mammoth C.), TX & MO (or *M. crosbyi* (Ewing & Stover) bats; ectoparasite on MT bats; OR,TX *Corynorhinus townsendii*, TX *Corynorhinus rafinesquii pallescens*, SW *Myotis velifer* & AL *Corynorhinus rafinesquii* bats)

Macronyssus macrodactylus Radovsky & Beck, 1971 (parasite on CA, IL, OR, SD *Lasionycteris noctivagans* bats)

Macronyssus undet. sp. (MO/Tp or Tx guanobic & bat ectoparasite)

Macronyssus undescr. sp. or species (Tx on AL, AR, KS, MO, OK)

Macronyssus unidens Radovsky, 1967 (Tp in cave in Armstrong Co., TX/ ectoparasite on IL, TX, WV (Tx) *M. lucifugus* ; AZ (Tx), SD, WY *Lasionycteris noctivagans*; NV, OK(Tx), TX (Tx) *Corynorhinus townsendii*; AZ (Tx) *Leptonycteris nivalis* ; KS, MO, MD (Tx) & OK (Tx) *Eptesicus fuscus* & OK (Tx) *Pipistrellus hesperus* bats)

Malaconothrus Berlese, 1904 - Malaconothridae mites

Malaconothrus undet. sp. (hyporheic in CO)

Melichares Hering, 1938 (= *Garmania* Nesbitt, 1951; *Mucroseius* Lindquist, 1962; *Orolaelaps* De Leon, 1963) - Ascidae mites

Melichares undet. sp. (Tx in Mariposa Co., CA)

Meramecia Cook, 1963 - Limnesiidae mites, subfamily Neomamersinae

***Meramecia* (*Meramecia*) *anisitsipalpis* (*Neomamersa* (*M.*) *a.* Cook, 1963)** (AR, IN, MO, OK interstitial in gravels of hyporheic of streams)

***Meramecia* (*Meramecia*) *ocularis* (*Neomamersa* (*M.*) *o.* Cook, 1963)** (AL, ME, New Brunswick, NY, OH, TN interstitial in gravels of hyporheic of streams)

***Meramecia* (*Meramecia*) *perplexa* (*Neomamersa* (*M.*) *P.* Cook, 1963)** (MO interstitial in gravels of hyporheic of streams)

***Meramecia* (*Meramecia*) *occidentalis* I. Smith & D. Cook, 1994** interstitial in gravels of hyporheic of streams in AZ, sCA, NM)

***Meramecia* (*Parameramecia*) *multiporta* I. Smith & D. Cook, 1994** (dry channel & shallow hyporheic in Sycamore Cr. 32 km ne of Phoenix (Maricopa Co.), AZ)

Microtrombicula Ewing, 1950 - Trombiculidae mites

Bibl.: Vercammen-Grandjean, 1965; Webb & Loomis, 1971, 1977; Webb, 1970

Microtrombicula merrihewi Ewing, 1950 (ectoparasite on *Tadarida b.* bats in AZ, CA, NM, OK, TX). **Bibl.:** R. Davis & Loomis, 1971

***Microtrombicula ornata* (*Trombicula o.* Loomis & Lipovsky, 1954)** (ectoparasite on NM *Neotoma albigula* & KS *N. micropus* woodrats)

Microtrombidium Haller, 1882 - Trombidiidae mites

***Microtrombidium sanborni* (*Zercon?* or *Sejus?* s. Packard, 1886) Vitzthum** (*type locality cave in Edmondsdon Co., KY)

Midea Bruzelius, 1854 - Mideidae mites

Midea determina Marshall, 1929 (=? *M. alaris* Young, 1968) (groundwater interstitial in ON)

Midea expansa Marshall, 1940 (groundwater interstitial in WI)

Midea undet. sp. (eNA interstitial hyporheic)

Mideopsis Neuman, 1880 - Mideopsidae mites, Subfamily Mideopsinae

Mideopsis (*Mideopsis*) *americana* (*Mideopsis americanus* Marshall, 1940) (likely hyporheic in temperate NA when parasitizing insect larvae)

Mideopsis (*Mideopsis*) *borealis* Habeeb, 1958 (= *M. orbicularis borealis*) (likely hyporheic in ON streams when parasitizing insect larvae/ Tx in Harrison Co.,IN/ water mite/ S4/G5)

Mideopsis (*Mideopsis*) *crassipes* Soar, 1904 (AB,ON, Palearctic streams, likely hyporheic when parasitizing *Cricotopus* larvae)

Mideopsis (*Xystonotus*) *interstitialis* Cook, 1976 (interstitial hyporheic in Bath & Hamilton Cos., VA, MO, ON, PQ)

Mideopsis (*Mideopsis*) *laversi* Cook, 1976 (hyporheic in CA (Mendocino & Trinity Cos.) & OR (Lane Co.))

Mideopsis (*Mideopsis*) *orbicularis* (Muller, 1776) (MI interstitial hyporheic; MT lake benthic)
Mideopsis orbicularis borealis = *M. b.*

Mideopsis (*Xystonotus*) *pallida* Cook, 1976 (interstitial hyporheic in Whitewater Cr., Catron Co.,NM)

Mideopsis (*Xystonotus*) *paramecia* Cook, 1976 (interstitial hyporheic in Shuyler Co.,NY)

Mideopsis (*Xystonotus*) *pumila* Cook, 1974 (interstitial hyporheic in sand bar or gravels in AB, ID, BC, OR, WA, MT, WY)

Mideopsis (*Xystonotus*) *sabulonis* Cook, 1976 (interstitial hyporheic in Bath Co., VA)

Mideopsis undet. sp. or species (CA, ON, PQ interstitial hyporheic; cave in Madison Co.,AL)

Mideopsis (*Xystonotus*) undet. sp. shallow hyporheic in Sycamore Cr. 32 km ne of Phoenix (Maricopa Co.), AZ)

Miyatrombicula Sasa, Kawashima & Egashira, 1952 - Trombiculidae mites (also placed as subgenus of *Trombicula*)

Miyatrombicula cynos (*Trombicula* (*M.*) *c.* Ewing, 1937) (ectoparasite on OR *Neotoma cinerea* & OK, KS *N. floridana* woodrats & on KS (Tx) *Myotis velifer grandis* bats)

Miyatrombicula jonesi (*Trombicula jonesae* Brennan, 1952) (IA, KS, IL epigeal/ ectoparasite on GA *Neotoma floridana* woodrats)

Monunguis Wharton, 1938 - Trombiculidae mites

Monunguis near *streblida* Wharton, 1938 (Tumbling Cr., Taney Co.,MO),

Morimotacarus Imamura, 1962 - Chappuisidae mites, subfamily Morimotacarinae (once put in Uchidastygacaridae)

Morimotacarus nearcticus I. Smith, 1992 (hyporheic in AB, BC, MT, WY stream gravels)

Multioppia Hammer, 1961 - Oppiidae mites

Multioppia undet. sp. (Tp or Tx guanobic in MO)

Mydopholeus McDaniel & Baker, 1962 - Rosensteiniidae, Subfamily Chiroptoglyphinae

Mydopholeus capillus McDaniel & Baker, 1962 (type locality cave in Carlsbad Caverns, Eddy Co., NM/ Tp? guanobic in NM)

Mydopholeus undet. sp. (rare ectoparasite on AL *Eptesicus fuscus* bats)

Mydopholeus wrenni Fashing, 1981 (*type locality cave in Woods Co.,OK/bat guanobic/ Tb or Tp)

Myianoetus Oudemans, 1929 (cosmopolitan) - Histiotomatidae mites

Myianoetus undescr. sp. (Tp or Tb in OR Caves, OR)

Myobia caudata = *Acanthophthirius (Myotimyobia) caudatus*

Myobia - See *Pteracarus*

Myocoptes Clapas, 1869 - Myocoptidae mites

Myocoptes (Myocoptes) neotomae Fain, Cudmore & Whitaker, 1984 (ectoparasite on GA, IN *Neotoma floridana* & OR *Neotoma cinerea* and *N. fuscipes* woodrats)

Nanorchestes Topsent & Trouessart, 1890 - Nanoorchestidae mites

Nanorchestes undet. sp. (Tp in El Malpais Natl.Monument, nNM)

Neoacarus Halbert, 1944 - Neoacaridae mites

Neoacarus expansus Cook, 1963 (hyporheic in stream gravel in OK (DE Co.) & MO (OR & Dent Cos.)

Neoacarus minimus Cook, 1968 (hyporheic in stream gravel in NH (Coos Co.), NY (Hamilton CO.) & VA (Bath Co.)

Neoacarus motasi Cook, 1963 (hyporheic in sand in Bath Co.,VA)

Neoacarus occidentalis Cook, 1968 (hyporheic in stream gravel in BC, CA (Shasta Co.), WA (Mason Co.))/ parasites in *Paratanytarsus* flies)

Neoacarus ozarkensis Cook, 1963 (hyporheic in stream gravel in Appalachian & Interior Highlands (MO (Dent, Shannon, Reynolds & Wayne Cos.), NY (Hamilton Co.), AR & WV (Pocahontas Co.))

Neoacarus similis Cook, 1963 (hyporheic in stream gravel in Appalachian & Interior Highlands (ME (Aroostock Co.), NB (Victoria Co.), NY (Hamilton Co.), MO (Shannon & Dent Cos.), AR & MT)

Neoacarus undet. sp. or species (hyporheic in CO, NY)

Neobrachypoda Koenike, 1914 - Aturidae mites, subfamily Axonopsinae
Neobrachypoda sp. near *ekmani* (Walter, 1911) (in silt & moss in BC springs)

Neoichoronyssus Fonseca, 1941 - Laelapidae (= Laelaptidae) mites (also placed in Macronyssidae, Subfamily Ornithonyssinae)

Neoichoronyssus (*Hirstionyssus*) *neotomae* Eads & Hightower, 1951 (on TX *Neotoma micropus* woodrats)

Neomamersa Lundblad, 1953 - Limnesiidae mites, subfamily Neomamersinae. **Bibl.:** D. Cook 1963.

Neomamersa (*Meramecia*) *anisitsipalpis* = *M.a.*
Neomamersa boultoni I. Smith & D. Cook, 1994 (AZ interstitial in gravels of hyporheic of streams)

Neomamersa californica I. Smith & D. Cook, 1994 (interstitial in gravels of hyporheic of streams in Humboldt, Monterey, Mendocino, Tuolumne & Ventura Cos., CA)

Neomamersa chihuahua I. Smith & D. Cook, 1994 (AZ, NM, wTX interstitial in hyporheic gravels of streams)

Neomamersa cramerai I. Smith & D. Cook, 1994 (interstitial in gravels of hyporheic of streams of Cochise Co., AZ)

Neomamersa (*Neomamersa*) *hexapora* D. Cook, 1969 (sAZ, sCA, NM (Catron Co.) interstitial in gravels of hyporheic of streams)

Neomamersa (*Neomamersa*) *lundbladi lundbladi* (N.I. D. Cook, 1963) D. Cook, 1969 (AR, MO, OH, OK interstitial in hyporheic gravels of streams)

Neomamersa (*Neomamersa*) *lundbladi paucipora* D. Cook, 1969 (seCA, swNM (Catron Co.), cAZ (Coconino Co.) hyporheic in gravel bars)

Neomamersa neomexicana I. Smith & D. Cook, 1994 (interstitial in hyporheic gravels of streams)

of Cochise Co., AZ)

Neomamersa (*Meramecia*) *ocularis* D.Cook, 1969 (NY (Hamilton Co.) hyporheic in gravel bars)

Neomamersa (*Meramecia*) *perplexa* D.Cook, 1963 (MO (Wayne, Dent & Reynolds Cos.) hyporheic in streams)

Neomamersa *psammicola* I. Smith & D.Cook, 1994 (AZ interstitial in gravels of hyporheic of streams; dry channel hyporheic & shallow hyporheic in Sycamore Cr. 32 km ne of Phoenix (Maricopa Co.), AZ)

Neomyobia Radford, 1948 - Myobiidae mites

Neomyobia *caudata* = *Acanthophthirius* (*Myotimyobia*) *caudatus*

Neomyobia *inaequalis* (*Radfordia inaequalis* Ewing, 1938; *Binucus i.* Radford, 1954) Jameson, 1955 (ectoparasite on AL, FL *Tadarida brasiliensis cynocephala* & CA *T. brasiliensis* & *Antrozous pallidus* (accidental) bats)

Neopygmephorus - Pygmephoridae mites, subfamily Neopygmephorinae

Neopygmephorus undescr. sp. (Tp in WA)

Neospeleognathopsis Fain & Lukoschus, 1979 - Ereynetidae mites

Neospeleognathopsis (*Speleomyotis*) *bastini* (Fain, 1958) (on MD, OH, PA *Eptesicus f.* bats)

Neotarsonemoides Kaliszewski M., 1984 - Tarsonemidae mites

Neotarsonemoides undet sp. (prob. fungivore in Kartchner C., Cochise Co., AZ)

Neotrombicula Hirt 1925 - Trombiculidae mites

Neotrombicula *californica* (*Trombicula* (*N.*) *c* Ewing, 1942) (ectoparasite on CA *Neotoma fuscipes* & *N. lepida* woodrats)

Neotrombicula *cavicola* (*Trombicula* (*N.*) *c.* Ewing, 1931) (ectoparasite on OR *Neotoma cinerea* and *N. fuscipes* & IN *Neotoma floridana* woodrats)

Neotrombicula *fitchi* (*Trombicula f.* Loomis, 1954) (ectoparasite on KS *Myotis velifer grandis* bats & *Neotoma micropus* woodrats)

Neotrombicula *harperi* (*Trombicula* (*N.*) *h.* Ewing, 1928) (ectoparasite on OR *Neotoma cinerea* woodrats)

Neotrombicula *lipovskyi* (*Trombicula* (*N.*) *l.* Brennan & Wharton, 1950) (ectoparasite on KS *Neotoma floridana* & *N. micropus* woodrats)

Neotrombicula *microti* (Ewing, 1928) no ZR (ectoparasite on Japanese, MI, NY, USSR, IN

Eptesicus fuscus bats & OR *Neotoma cinerea* woodrats)

Neotrombicula waynensis Brennan & Wharton, 1950 (ectoparasite on IN *Neotoma floridana* woodrats)

Neotrombidium Leonardi, 1901 - Neotrombidiidae mites. **Bibl.:** Borland, 1956

Neotrombidium undescr. sp. (*cave in OR Co., MO) **Bibl.:** Lindquist & Vercammen- Grandjean, 1971

Niphocephus Balogh, 1943 - Niphocephidae mites

Niphocephus undet. sp. (TTP in WA)

Nothrus Koch, 1835 - Nothridae mites

Nothrus undet. sp. (cave in Eddy Co., NM/ Tp?)

Notoedres Railliet, 1893 (= *Prosopodectes* G. Canestrini, 1897)- Sarcoptidae mites

Notoedres (*Bakeracarus*) *lasionycteris* (*Sarcoptes* l. Boyd & Bernstein, 1950) Fain, 1961 (ectoparasite on OH *Eptesicus* f. (Tx), OH *Lasiurus cinereus* & OH, PA *Lasionycteris noctivagans* bats; on bats & in guano in cave in Edwards Co., TX)

Notoedres (*Bakeracarus*) *lasionycteris corynorhini* Fain, 1961 (ectoparasite on North American *Lasionycteris nivalis* & *Corynorhinus townsendii* bats)

Notoedres myotis (*Sarcoptes* m. Hedeem, 1953) (ectoparasite on wTX *Myotis yumanensis* & wTX, AZ (Tx) *Myotis velifer* & CA *Antrozous pallidus* bats)

Notoedres (*Bakeracarus*) undet. sp. or species (ectoparasite on OR *Eptesicus fuscus* & *Corynorhinus townsendii*, FL *Tadarida brasiliensis cynocephala*, CA *Tadarida brasiliensis* (2 species, one near *N. tadaridae*)), CA *Myotis yumanensis* & ND, MN *Myotis lucifugus* bats; Tx on WV bats). **Bibl.:** Fain 1961

Nudomideopsis Szalay, 1945 - Nudomideopsidae mites (once subsumed in Mideopsidae, Subfamily Mideopsinae)

Nudomideopsis magnacetabula (*Mideopsis*. (*N.*) m. Smith, 1977) (New Brunswick, NF, ON, PQ interstitial in springs and seepages; hyporheic in sON)

Nudomideopsis sisulawensis Smith, 1983 (hyporheic? in southern coastal OR rheocene springs and seepages)

Nudomideopsis (*Allomideopsis*) *wichitaensis* I. Smith, 1990 (hyporheic in sand and gravel deposits in small streams of Wichita Mts., OK)

Nycteriglyphites Fain, Lukoschus & Whitaker, 1982 - Rosensteiniidae mites

Nycteriglyphites pennsylvanicus Fain, Lukoschus & Whitaker, 1982 (on OH guano assoc. with

Eptesicus f. bats & IN, PA guano assoc. with *Myotis lucifugus*; rare ectoparasite on AL *Eptesicus fuscus* bats) **Bibl.:** Dood 1987; Fain, Lukoschus & Whitaker 1982

Nycteriglyphites undet. sp. (on guano assoc. with NH *Myotis lucifugus*)

Nycteriglyphus Zakhvatkin, 1941 - Rosensteiniidae mites, Subfamily Nycteriglyphinae

Nycteriglyphus bifolium Strandtmann, 1962 (Carlsbad C., NM/Tp?) +wTX/Tp guanophile; on NM, TX *Tadarida brasiliensis* bats)

Nycteriglyphus fuscus Dodd & Rockett, 1985 (OH guanophile & ectoparasite on OH *Eptesicus f.* bats)

Nycteriglyphus undescr. sp. (ectoparasite on TX *Myotis yumanensis* & *M. velifer* & *Corynorhinus townsendii* bats)

Nycteriglyphus undet. sp. or species (ectoparasite on swOK *Myotis velifer* bats; guanophile in El Malpais Natl. Monument, nNM; fungivore or detritovore on ON bat guano)

Nycteriglyphus fuscus O'Connor, Whitaker & Easterla, 1977 (ectoparasite on *Leptonycteris nivalis* bat guano)

Nycteriglyphus texanus O'Connor & Reisen, 1978 (type locality on *Leptonycteris nivalis* bat guano in cave in Big Bend Natl. Park, Brewster Co., TX/ guanophile on OK *Myotis v.*, PA *M. lucifugus*, wTX, *Corynorhinus townsendii*, *Myotis yumanensis*, *Myotis velifer* & *Tadarida brasiliensis* & (near *N. texanus*) Kartchner C., Cochise Co., AZ)

Odontacarus Ewing, 1929 (= *Ocomatacarus* Ewing, 1942) Trombiculidae mites

Odontacarus dentatus (*Trombicula dentata* Ewing, 1929) Ewing, 1925 (*Acomatacarus galli* Ewing, 1946; *Acomatacarus* g. Ewing, 1946; *A. angulatus* & *A. polychaetus* Greenberg, 1952; *O. whartoni* Brennan & Jones 1959; *O. morlani* Brennan, 1959 (see below)) (ectoparasite on NM *Neotoma micropus* woodrats)

Odontacarus kromani Goff & Loomis, 1973 (on CA, Baja CA *Neotoma lepida* woodrats)

Odontacarus hirsutus (*Hannemania hirsuta* Ewing, 1931; *Acomatacarus hirsutus*) (ectoparasite on CA *Neotoma fuscipes* woodrats)

Odontacarus morlani Brennan, 1959 (considered a junior syn. of *O. dentatus* by some authors) (ectoparasite on *Neotoma micropus* woodrats)

Olabidocarpus Lawrence, 1948 - Listrophoridae mites (also put in Chirodiscidae)

Olabidocarpus americanus McDaniel & Lawrence, 1965 (ectoparasite on HI *Lasiurus cinereus semotus* & TX *Lasiurus intermedius* bats) **Bibl.:** McDaniel & Tenorio. 1979

“*Olabidocarpus taylori*” in J. White, 1960 (ectoparasite on AL *Tadarida brasiliensis*

cynocephala bats)

Olabidocarpus lawrenceii McDaniel & Coffman, 1970 (ectoparasite Tx? on TX *Tadarida b.m.* bats)

Olabidocarpus undet. sp. or species (ectoparasite on swOK *Myotis velifer* & IN *Eptesicus fuscus* bats)

“***Olabidocarpus wardi*** in J. White, 1960 (Big Spring Cave No.1 (type locality)/ ectoparasite on AL *Myotis grisescens*, *Myotis a. austroriparius* & *Myotis keenii septentrionalis* bats)

Olabidocarpus whitakeri McDaniel & Coffman, 1970 (type locality cave in Lawrence Co.,IN/ parasite on FL, IL, IN *Myotis austroriparius mumfordi* & IL, IN *M. grisescens*, & *M. keenii* bats)

Omartacarus Cook, 1963 - Omartacaridae mites, subfamily Omartacarinae

Omartacarus elongatus Cook, 1963 (Mex., MO,OK stream hyporheic)

Omartacarus mostly undesr. species (MO, OK, NM, CA. stream hyporheic)

Omartacarus undet. sp. (interstitial/ shallow hyporheic in Sycamore Cr. 32 km ne of Phoenix (Maricopa Co.), AZ)

Oppiella Jacot, 1937 - Oppiidae mites

Oppiella undet. sp. (Tp in cave in Eddy Co.,NM/ TTx, Tx or Tp in Wind & Jewel C.,SD)

Opsioristes Woolley, 1967 - Liacaridae mites

Opsioristes undet. sp.(TTp in WA)

Oregonacarus I. Smith, 1989 - Anisitsiellidae mites, Subfamily Anisitsiellinae

Oregonacarus rivulicolus I. Smith, 1989 (hyporheic in silt & detritus in rocky riffle in spring in Curry Co., OR)

Oribata alata – (this may be the valid name for *Galumna a.* in Mammoth) - see *Galumna*
Oribates lucifugus = *Uropoda l.*

Oribatella Banks, 1895 - Oribatellidae mites

Oribatella quadridentatus Banks, 1895?) (Tx ectoparasite on FL *Myotis austroriparius* bats)

Oribatella undet. sp. (Tx detritivore? in Calaveras Co.,CA),

Oribatula Berlese, 1896 - Oribatulidae mites

Oribatula minuta Berlese, 1896 (ectoparasite on IN *Neotoma floridana* woodrats)

Oribotritia Jacot, 1924 - Order Oribatida, Oribotritiidae, mites

Oribotritia undet. sp. (Ttp in WA)

Ornithodoros Koch, 1844 (mammal soft ticks). Ioxidae mites. **Bibl.:** McIntosh 1935

Ornithodoros (Alectorobius) brodyi Matheson, 1935 (Panama to TX/ Tx in cave each in Comal & Menard Cos., TX)

Ornithodoros (Alectorobius) concanensis Cooley & Kohls, 1941 (Tp in Edwards, Hardeman, Hays, Kinney, Travis & Uvalde Cos., TX; Tx in AZ mines; ectoparasite on TX *Eptesicus fuscus pallidus* woodrats & *Corynorhinus rafinesquii pallescens* & UT, CO *Pipistrellus hesperus* bats; on guano),

Ornithodoros cooleyi = *Argas c.*

Ornithodoros coprophilus McIntosh, 1935 (ectoparasite in AZ, Mex. bat guano)

Ornithodoros (Ornamentum) coriaceus C. Koch, 1844 (SA, sMex. To CA./pajaroello or talajas/ TTx in cliff swallow nest in Contra Costa Co., CA)

Ornithodoros dyeri Cooley & Kohls, 1940 (Tx in mines near Picacho, AZ, seCA & nMex.),

Ornithodoros (Alectorobius) dyeri Cooley & Kohls, 1940 ("bat cave" &/or rock crevices, San Bernardino Co. & 15 mi. n. of Yuma (both CA) & mine near Picacho (AZ))

Ornithodoros (Pavlovskyella) hermsi Wheeler, Herms, & Meyer, 1935 (W/ Tx in cave in Val Verde Co., TX; ectoparasite on UT, WY *Neotoma lepida* woodrats/ vector for relapsing fever)

Ornithodoros kelleyi Cooley & Kohls, 1941 (wNY, ePa, sWI, nMI, IL, IA, sIN, wCO, eUT epigeal/ ectoparasite on MO (Tx), wTX *Antrozous pallidus*, MO (Tx) *Pipistrellus hesperus*; AZ (Tx) *Corynorhinus townsendii*; AL *Myotis grisescens* & *Pipistrellus s. subflavus*; CA *Myotis californicus*; IL, IN, MI, MN, NY, OH, PA, VA, WI *Eptesicus fuscus*; wTX *Myotis yumanensis* & AL, IN, MD, WV *Myotis lucifugus* bats; associated with SK, AB bats)

Ornithodoros mormoops Kohls, Clifford & Jones, 1969 (ectoparasite on wTX (probably) *Mormoops megalophylla* bats)

Ornithodoros (Pavlovskyella) parkeri Cooley, 1936 (W/ ectoparasite on small mammals in CA)

Ornithodoros rossi Kohls, Sonenshine & Clifford, 1965 (Type locality in Crystal Cave, Catalina Mts., AZ/ ectoparasite on AZ *Leptonycteris sanborni*; CA *Macrotus californicus*, UT, wTX *Euderma maculatum*, wTX *Antrozous pallidus*, *Pipistrellus hesperus*, *Corynorhinus townsendii*, AL, wTX, UT *Eptesicus fuscus* & AZ *Leptonycteris nivalis* bats)

Ornithodoros undet. sp. or species (Carlsbad C., NM; 6 cos. in TX; Tx ectoparasite on AZ (Tx) *Leptonycteris nivalis* & BC *Eumops perotis californicus* bats)

Ornithodoros sparnus Kohls & Clifford, 1963 (ectoparasite on UT, AZ *Neotoma cinerea* & *N. lepida* woodrats)

Ornithodoros (Alectorobius) stageri Cooley & Kohls, 1941 (type locality cave in Medina Co., TX/ Tp? in OK & Comal, Medina, ?Uvalde Cos., TX/ ectoparasite on AZ (Tx), CA (Tx),

OK(Tx) *Myotis velifer*; TX *Myotis yumanensis*, CA *Antrozous pallidus* & AZ, CA, OK *Tadarida mexicana* & wTX *Nyctinomops macrotis* & *Tadarida brasiliensis* bats)

Ornithodoros (*Alectorobius*) *talaje* (ectoparasite on *Neotoma floridana baileyi* woodrats)

Ornithodoros (*Pavlovskyella*) *turicata* (*Argas t.* Duges, 1876; *O.t.* Neumann, 1896; *O. americanus* Marx, 1895) Francis, 1942 (AZ, CA, FL, NM, Mex., SA to seCO, sOK, FL/adobe tick, *turicata* or *pajaronela*/ TX in OK,TX/ suspected of transmitting Malta fever in TX & relapsing fever in TX & OK; on WTX *Neotoma micropus* woodrats/ relapsing fever tick) **Bibl.:** Francis, 1942; Francis, 1938

Ornithodoros (*Alectorobius*) *yumatensis* Cooley & Kohls, 1941 (ectoparasite on CA, AZ (Tx), *Myotis velifer*, AZ (Tx) *Corynorhinus townsendi*, *Myotis yumanensis*, *Myotis thysanodes*; NM, TX *Pipistrellus hesperus maximus* & *Tadarida brasiliensis mexicana*, FL *Myotis austroriparius* & sNM, TX *Eptesicus pallidus* bats/ Tx in CA, AZ, TX)

Ornithonyssus Sanborn, 1928 (fatmites) - Macronyssidae mites, Subfamily Ornithonyssinae

Ornithonyssus bacoti (*Liponyssus* (*Bdellonyssus*) *b.* Hirst, 1913) (tropical rat mite/ rats, mice, occasionally humans, livestock/worldwide/ ectoparasite on *Neotoma micropus* woodrats & GA, IN, TX *Neotoma floridana* woodrats)

Ornithonyssus gallinae = *Dermanyssus gallinae*

Ornithonyssus haematophagus (*Liponissus h.* Fonseca, 1935) (ectoparasite on GA *Myotis lucifugus* & *Tadarida cynocephala* bats)

Ornithonyssus sylviarum (Canestrini & Fanzago, 1877; *Liponyssus americanus* Banks, 1806) (ectoparasite on wTX *Myotis velifer incautus*, *Eptesicus fuscus* bats/ northern fowl mite) **Bibl.:** George & Strandtman 1960

Otorhinophila Wrenn & Loomis 1967 - Trombiculidae mites

Otorhinophila desertorum Loomis & Wrenn, 1973 (ectoparasite on *Neotoma lepida* woodrats)

Otorhinophila undet. sp. (on bats in wNA)

Oxus Kramer, 1877 - Oxidae water mites

Oxus (*Oxus*) *elongatus* Marshall, 1929 (in ON lake/ parasitic on chironomid flies/ interstitial?)

Paleozercon Blaszk, Cokendolpher & Polyak, 1995 - Zerconidae mites

Paleozercon cavernicolous Blaszk, Cokendolpher & Polyak, 1995 (fossil in sw. cave)

Panisopsis Koenike, 1896 - Hydryphantidae mites, subfamily Thyadinae (water mites)

Panisopsis (*Panisoides*) *setipes* (Thyas s. Viets, 1911) (Europe, MI seepage areas, interstitial groundwater?)

Paradamaeus Bulanova-Zachvatkina, 1957 (was subgenus of *Damaeus*)

Paradamaeus undet. sp(p). (Tp or Tx in OR C.,OR; TTp in WA)

Paramideopsis.Smith, 1983 - Nudomideopsidae (once subsumed in Mideopsidae) mites

Paramideopsis.susanae Smith, 1983 (AB, BC, ID, MT, NM, NV, OR, WA hyporheic? in gravel deposits in riffles of small streams, occasionally in moss and detritus in springs and seepages)

Parasoldanellonyx Viets, 1929 - Limnocharidae mites, Subfamily Limnohalacarinae (once in Halacaridae)

Parasoldanellonyx parviscutatus (Walter, 1917) (karst groundwater in Appalachian Highlands, Britain, central Asia, south & central Europe)

Parasitus Latreille, 1795 (*Carpais* Latreille, 1796; *Coleogamasus* Tichomirov, 1969; *Gamasus* Latreille, 1802 [part]) Parasitidae mites

Parasitus loricatus (*Gamasus n.* Wankel, 1861) (Czechoslovakia/ on porcupine dung in one NS "cave")

Parasitus niveus (*Gamasus n.* Wankel, 1861) (on damp timber in one New Brunswick cave)

Parasitus nr. *remberti* (Oudemans) (= *Vulgarogasmus r.*) (Tp relict in Europe, NS, IA),

Parasitus undet. species (Tx in CA,NS,PA,WV; Ac in El Malpais Natl. Monument, nNM))

Paraspinturnix Rudnick, 1960 - Spinturnicidae mite

Paraspinturnix globosus Rudnick, 1960. (*Spinturnix g.* (Rudnick, 1960) Domrow, 1972) (type locality cave in Green Co., IN (type locality)/ ectoparasite on OR *Myotis volans*, swOK (Tx) *Myotis velifer grandis*; IL, IN (Wyandotte C), KS, KY *M. grisescens.*, AB *Myotis lucifugus*, AL, IL, IN, OH *Myotis sodalis*, AZ & UT *Myotis* bats)

Pergamasus (Dielman, 1984) Berlese, 1903 - Parasitidae mites

Pergamasus undet. sp. (Tx, Tp or Ac in sON, PA, PQ; Tx or Tp in KY, VA, WV)

Perissopalla Brennan & White, 1960 - Trombiculidae mites

Perissopalla beltrani (*Hoffmanniella b.*, Hoffman, 1944) Brennan & White, 1960 (ectoparasite on AZ, CA, Mex. *Macrotus californicus* bats),

Perissopalla fragillatala Brennan & White, 1960 (ectoparasite on AL *Pipistrellus hesperus* & *Pipistrellus subflavus* bats)

Phreatobrachypoda Cook, 1963 - Aturidae, Subfamily Aturinae

Phreatobrachypoda (*Ameribrachypoda*) *acuta* Habeeb, 1975 (hyporheic in OR (Curry & Lane Cos.) & CA (Mendocino, Monterey, Ventura Cos.))

Phreatobrachypoda (*Phreatobrachypoda*) *gledhilli* I.Smith, 1991 (hyporheic in CA (Mendocino Co.))

Phreatobrachypoda (*Phreatobrachypoda*) *multipora* Cook, 1974 (hyporheic in OR (Curry & Grant Cos.) & nCA (Mendocino Co.))

Phreatobrachypoda (*Phreatobrachypoda*) *oregonensis* I.Smith, 1991 (hyporheic in OR (Curry & Grant Cos.))

Phreatobrachypoda (*Ameribrachypoda*) *robusta* Cook, 1974 (hyporheic in OR (Curry, Coos & Lane Cos.) & CA (Monterey & Mendocino Cos.))

Piersigia Protz, 1896 - Piersigiidae mites, subfamily Piersigiinae (water mites)

Piersigia *crusta* Mitchell 1955 (interstitial? from drainage tiles in field; swamps, temporary pools)

Piersigia *limnophila* Protz, 1896 (MI, IL, NJ drainage, tiles, interstitial?; parasite of hydrophilid beetle *Enochrus ochraceus*)

Pilogalumna Grandjean, 1956 - Galumnidae mites

Pilogalumna undet. sp. (cave in Eddy Co., NM/Tp?)

Pimeliaphilus Tragardh, 1904 - Pterygosomidae mites

Pimeliaphilus *plumifer* Newell & Ryckman, 1966 (CA, AZ, Mex. epigeal/ Tx? ectoparasite on *Triatoma rubida* (Triatominae reduviids in Hemiptera), Colossal C., AZ)

Piona Koch, 1842 Pionidae mites, subfamily Pioninae, Tribe Pionini

Piona undet. sp. (MI interstitial/epigeal)

Piona *triangularis* (Wolcott, 1902) (WI hyporheic)

Pionacercus Piersig, 1894 Pionidae mites, Subfamily Tiphyninae (=Hydrochoreutinae), Tribe Foreliini

Pionacercus (*Pionacercus*) *novus* Marshall, 1924 (hyporheic in AK, Canadian NW)

Pionacercus undet. sp. (MI interstitial/ epigeal)

Platyhydracarus I.M. Smith, 1989 - Athienemanniidae mites, Subfamily Athienemanniinae

Platyhydracarus *juliani* I.M. Smith, 1989. (AB, BC, ID, OR, MT, UT, WA, WY interstitial in gravel, silt and detritus in riffle sand pools in rheocrenes and small streams)

Platyhydracarus *parvipalpis* I.M. Smith, 1989. (AB, BC, ID, OR, MT, UT, WA, WY interstitial in gravel, silt and detritus in riffle sand pools in rheocrenes and small streams)

Plesiodamaeus Grandjean, 1954 - Gymnodamaeidae mites

Plesiodamaeus undet. sp. (cave in Taney Co., MO)

Palaeacarus Tragardh, 1932 - Palaeacaridae mites

Palaeacarus undet. sp. (Tp or Tx guanobic in MO)

Paracarpais Athias Henriot C., 1978 - Parasitidae mites

Paracarpais nr. *niveus* (*Gamasus n.* Wankel, 1861) (IA, Europe/Tp relict?)

Parasecia Loomis 1966 - Trombiculidae mites

Parasecia *gurneyi* = *Trombicula g.*

Penthalodes Baker, 1946 (cosmopolitan) - Penthalodidae mites

Penthalodes probably undescr. sp. (Tb & Tp in El Malpais Natl. Monument, nNM)

Penthalodes undet. sp. (Ac or Ttx in moss in El Malpais Natl. Monument, nNM)

Periglischrus Kolenati, 1857 - Spinturnicidae mites. **Bibl.:** Tibbets 1957.

Periglischrus strandtmanni Tibbetts, 1957 (ectoparasite on *Mormoops megalophylla* bat/ type locality cave in Uvalde Co., TX)

Periglischrus vorgasi Hoffman, 1944 (ectoparasite on AZ, wTX *Leptonycteris nivalis* bats)

Periseius Womersley, 1961 (*Psammonsella* Haq, 1965) Rhodacaridae mites, Subfamily Ologamasinae

Periseius nobskae (*Psammonsella n.* Haq, 1965; *P. schusteri* Hirschmann, 1966) (MA intertidal sandy interstitial)

Podocinum Berlese, 1882 - Podocinidae mites

Podocinum undet. sp. (Tp? in cave in Newton Co.,AR)

Poecilochirus G. & R. Canestrini, 1882 (= *Gamasoides* Berlese, 1904) - Rhagidiidae mites.

Bibl.: J. Brown 1989

Poecilochirus carabi G. & R. Canestrini, 1882) (= *P. necrophori* Vitzthum, 1931; *Gamasodes eurasiticus* Tragardh, 1937) (Tx guanobic in CA, MO)

Poecilochirus undet. sp(p). (Tp or Tx guanobic in MO; Tp in WA)

Poecilophysis Cambridge, 1876 (=Dentocheles) Parasitidae mites

Poecilophysis extraneostella Zacharda, 1985 (type locality cave in Lee Co.,VA & cave in Monroe Co.,WV)/Tp/ G1 or G3)

Poecilophysis (Dentocheles) melanoseta Zacharda & Elliott, 1985 (type locality cave in +other cave in Tuolumne Co. +other cave in Co. & Mariposa Co.,CA/ Tp, epigean & cave inhabiting)

Poecilophysis (Dentocheles) pratensis (*Scyphius p.* C.L. Koch, 1835; *Rhagidia whartoni* Strandtmann, 1971) Z.1980 (AK, Europe, HI (adventive),US/Tp in Mex., WV)

Poecilophysis undet. sp. (Kartchner C., Cochise Co.,AZ)

Poecilophysis (*Dentocheles*) *weyerensis* (*Bryobia* (or *Penthaleus*?) w. Packard, 1888 & Banks, 1907; *Rhagidia cavicola*? Banta, 1907, *Rhyncolophus* w. Packard, 1888; *Rhagidia* w. Holsinger, 1965; *Acarus*? w.) Holsinger, 1965a (type locality cave in Augusta Co.,VA +Tp in Europe, KY, Mex., MO, NM, New Brunswick, NS, TN, VA/ T&E VA S1) **Bibl.:** Elliott & Strandtmann 1971

Poecilophysis (*Wankelia*) *wolmsdorfensis* (*Rhagidia reflexa* w. Willmann, 1936) Zacharda, 1980 (Europe?/ Tb in Greenbrier & Randolph Cos.,WV/ WV T&E SUG3?)

Polidiscia Methlagl, 1928 - Johnstonianidae mites

Polidiscia undet. sp. (parasite in WA)

Polyaspis Berlese, 1881(= *Dyscritaspis* Camin, 1953) Polyaspididae mites (also put in Uropodidae)

Polyaspis undet. sp. (MO/Tp? guanobic)

Porohalacarus Sig Thor, 1922 – Halacaridae mites, Subfamily Halacarinae (also put in Porohalacaridae or in Limnohalacaridae)

Porohalacarus uniscutatus Bartsch, 1982 (NY nonkarst hyporheic)
Porohalacarus violacea = *Porolohmannella* v.

Porolohamannella Viets, 1933 – Halacaridae mites, Subfamily Lohmannellinae

Porolohamannella violacea Kramer (Kramer, 1879) (*Porohalacarus violacea*) (NY, Europe, Greenland, Japan hyporheic; brackish coastal waters)

Proctolaelaps Berlese, 1923 - Ascidae mites

Proctolaelaps hypudaei = *Dermacarus h.*

Proctolaelaps undet. sp. or species (Carlsbad C.(NM); ectoparasite on OR *Neotoma fuscipes* & *cinerea* & IN *Neotoma floridana* woodrats)

Protolimnesia Lundblad, 1927 - Limnesiidae mites subfamily Protolimnesinae

Protolimnesia (*Protolimnesella*) *ventriplacophora* I.M. Smith & Cook, 1996 (AZ, wTX hyporheic interstitial)

Prothoplophora Berlese, 1910 - Prothoplophoridae mites

Prothoplophora undet. sp. (Ac or Tx in OR C.,OR)

Psammonsella Haq, 1965 = *Periseius*

Pseudoparasitus Oudemans, 1902 (= *Hoplolaelaps* Berlese, 1903; *Laelaps* (*Hoplolaelaps*) Berlese, 1910; *Laelapsoides* Willmann, 1952; *Austrogamasellus* Domrow, 1957) -

Laelapidae (= Laelaptidae) mites

Pseudoparasitus austriacus (*Laelaspis austriacus* Sellnick, 1935; *Gymnolaelaps a.* Hunter, 1961) (epigean in Cuba, Mexico, most of US/ Tp or Tx in MO)

Pseudoschoengastia Lipovsky, 1951 - Trombiculidae mites

Pseudoschoengastia aeci Brennan, 1959 (ectoparasite on western *Neotoma lepida* woodrats)

Pseudoschoengastia farneri Lipovsky, 1951 (CO, KS, OK epigean/ ectoparasite on western *Neotoma lepida* & KS *N. micropus* woodrats)

Pseudoschoengastia hungerfordi Lipovsky, 1951 (ectoparasite on KS *Neotoma micropus* & *N. floridana* woodrats)

Pseudotorrenticola Walter, 1906 - Torrenticolidae mites, subfamily Torrenticolinae

Pseudotorrenticola chiricahua I.Smith, 1991 (hyporheic in sAZ gravel in rocky stream riffles)

Pteracarus Jameson & Chow, 1952 - Myobiidae mites

Pteracarus aculeus Dusa=bek & Lukoschus, 1973 in Dusa=bek, 1973 (on CA, OH, OR *Eptesicus fuscus* & Suriname bats)

Pteracarus chalinolobus (*Myobia c.* Womersley, 1941) Jameson & Chow, 1952 (ectoparasite on CA *Antrozous pallidus*, IN *Lasiurus cinereus*, AL, CA, NV, TX (Tx) *Corynorhinus rafinesquii*, AL, CA *Eptesicus fuscus*, CA *Myotis volans*, AL *Myotis sodalis*, *Myotis grisescens*, *Nycticeius humeralis* & *Pipistrellus subflavus*, IN *Lasiurus borealis*, IN, OR *Lasiurus cinereus* & CA *M. thysanodes* bats)

Pteracarus elegans Dusa=bek & Wilson, 1973 in Dusa=bek, 1973 (ectoparasite on CA, NV *Corynorhinus rafinesquii* bats)

Pteracarus completus completus Dusa=bek & Wilson, 1973 in Dusa=bek, 1973 (ectoparasite on HI *Lasiurus cinereus semotus*, KY *Lasiurus borealis* & IN *Lasiurus cinereus* bats)

Pteracarus completus vrazi Dusa=bek & Wilson, 1973 in Dusa=bek, 1973 (ectoparasite on KY *Lasiurus borealis* bats)

Pteracarus minutus (Radford, 1940) (ectoparasite on KY, IN *Pipistrellus subflavus* bats)

Pteracarus minutus occidentalis Dusa=bek & Wilson, 1973 in Dusa=bek, 1973 (type locality cave in Polk Co., GA/ on GA, IN, KY *Pipistrellus subflavus* & OR *Myotis volans* bats)

Pteracarus robustus Dusa=bek & Wilson, 1973 in Dusa=bek, 1973 (ectoparasite on CA *Antrozous pallidus* bats)

Pteracarus likely undescr. sp. (ectoparasite on CA *Myotis thysanodes* bats)

Pulaeus Den Heyer, 1980 - Cunaxidae mites

Pulaeus undet. sp. (ectoparasite on IN *Neotoma floridana* woodrats)

Pyemotes Amerling, 1861 - Pyemotidae mites

Pyemotes undet. sp. (Tx? parasite on insect in CA)

Pygmephorus Kramer, 1877 - Pygmephoridae mites

Pygmephorus mahunkei Smiley & Whitaker, 1979 (ectoparasite on Prince Edward Island *Myotis lucifugus* bats)

Pygmephorus spickai Mahunka, 1974 (ectoparasite on IN *Neotoma floridana* woodrats)

Pygmephorus whitakeri Mahunka, 1973 (ectoparasite on OR *Neotoma cinerea* woodrats)

Pygmephorus undet. sp. (Tp or Tx on NS porcupine dung)

Radfordia Ewing, 1938 - Trombiculidae mites (also put in Myobidae)

Radfordia floridensis (Ewing, 1938) (on FL *Tadarida brasiliensis* bats)

Radfordia neotomae Jameson & Whitaker, 1975 (ectoparasite on CA *Neotoma fuscipes* & OR *N. fuscipes* & *N. cinerea* woodrats)

Radfordiella Fonseca, 1948 - Macronyssidae mites, Subfamily Macronyssinae

Radfordiella oricola Radvosky, Jones & Phillips, 1971 (on wTX (Brewster Co.) *Leptonycteris nivalis* bats) **Bibl.:** Greenbaum & Phillips 1974

Rhagidia Thorell, 1871 (see *Robustocheles*, *Poecilophysis*) Rhagidiidae mites. **Bibl.:** Baltac, 1973; Womersley & Strandtmann, 1963

Rhagidia cavernarum = *Foveacheles holsingeri*

Rhagidia cavicola - See *R. cavernarum*

Rhagidia diversicolor (*Scyphius d.* C.L. Koch, 1838) Zacharda, 1980 (Europe,US/ Tp in WV)

Bibl.: Zacharda, 1985

Rhagidia grahami Elliott, 1976 - junior synonyms to *Robustocheles hilli*

Rhagidia hilli Strandtmann, 1971 - junior synonyms to *Robustocheles hilli*,

Rhagidia longisensilla Shiba, 1969 (Japan, AK/Tp? in cave in Newton Co.,AR). **Bibl.:** Baltac, 1974

Rhagidia undescr.? sp. cf. *hilli* Strandtmann, 1971 (AZ/Tb or disjunct Tp), cf. *R. grahami* (type locality cave in Uinta Mts., Duchesne Co., UT/Tp or Tb)

Rhagidia undescr. sp.#1 (*?cave in Craters of the Moon, National Monument, Butte Co., ID/ Tp?)

Rhagidia undescr. sp.#2 (WV/Tb?)

Rhagidia undescr. sp.#3 (IL/Tp?)

Rhagidia undet. sp. or species (Tp or Tx in AR, AZ, MO)

Rhagidia varia Zacharda, 1985 (type locality cave in Bath Co.+ Scott, Pulaski Cos., VA & caves in Greenbrier & Pocahontas Cos., WV (SU)/ Tb; *R.v.* may be complex of a few closely related but well differentiated species/T&E VA S2?, global G3) **Bibl.:** Zacharda & Wellbourn, 1982

Rhagidia weyerensis = *Poecilophysis w.*

Rhagidia whartoni Strandtmann, 1971 = junior synonym of *Poecilophysis pratensis*

Raphignathus Duges, 1833 - Raphignathidae mites

Raphignathus undet. or undescr. sp. (Ectoparasite on FL *Tadarida brasiliensis cynocephala* bats)

Rhodacaroides Willman, 1959 - Rhodacaridae mites

Rhodacaroides undet. sp. (Tp in WA)

Rhodacaropsis Willmann, 1935 - Rhodacaridae mites

Rhodacaropsis inexpectata Willmann, 1935 (Europe, MA intertidal beach sand interstitial)

Rhodacarus Oudemans, 1902 - Rhodacaridae mites

Rhodacarus pallidus Hull, 1918 (MA marine beach interstitial)

Rhodacarus undet. sp. (Kartchner C., Cochise Co., AZ/Tp)

Rhombognathides Viets - Halacaridae mites, Subfamily Rhombognathinae

Rhombognathides undet. sp. (MA intertidal beach sand interstitial)

Rhyncholimnochares Linneaus, 1758 - Limnocharidae mites, subfamily Rhyncholimnocharinae (also put in Rhynchohydracaridae)

Rhyncholimnochares (*Rhyncholimnochares*) *kittatinniana* Habeeb, 1954 (riffles in shallow streams in E karst areas incl. NY/ parasites on Elmidae beetles)

Rhyncholophus cavernarum = *Foveacheles holsingeri*

Rhyzoglyphus Clapar, 1869 - Acaridae mites

Rhyzoglyphus undet. sp. (cave in Taney Co., MO)

Robustocheles Zacharda, 1980 - Rhagidiidae mites

Robustocheles hilli (*Rhagidia h.* Standtmann, 1971) Z., 1980 (*Lewia*, *Rhagida h.*) (NA/Tp in AK, AL, AZ, GA, IN, KY, MO, NW, NWT, TN, UT, VA, WV, WA, epigeal elsewhere/ morphologically indistinguishable populations may represent a number of separate species)

Robustocheles mucronata (Willmann, 1936) (=R.(R.) m.) (Tx or Tp in Jefferson Co., WV)

Robustocheles occulta Zacharda & Pugsley, 1988 (type locality cave in n.Alberta + caves in AK, BC, IA, WA/ Tb) **Bibl.:** Peck & Christiansen 1990

Robustocheles undet. sp. (Tp or Tx genera & sp. in seAK)

Ropohalacarus Bartsch, 1989 – Halacaridae mites, Subfamily Ropohalacarinae
Ropohalacarus uniscutatus (Bartsch, 1982) (Pb in Eastern NA & nEurope)

Rutripalpus Sikolow, 1934 - Rutripalpidae mites
Rutripalpus canadensis I. Smith 1991 (interstitial, hyporheic in moss and leaf litter in limnocrone springs in NS)

Sancassania Oudemans, 1916 (= *Caloglyphus*) - Acaridae mites
Sancassania undescr. or undet. sp.#1 (*Kartchner C.,AZ/Tp)

Sancassania undescr. sp.#1 (Carlsbad C.(NM)/ Tb)
Sancassania undescr.? sp.#2 & sp.#3? (cave in Eddy Co.,NM/ Tb)

Saprolaelaps Leitner, 1946 - Rhodacaridae mites
Saprolaelaps subtilis Leitner, 1946 (MA intertidal beach sand interstitial)

Sasacarus Brennan & Jones, 1959 - Trombiculidae mites
Sasacarus whartoni (*Whartonia w.* Hoffman, 1951) (ectoparasite on OR *Antrozous pallidus* bats)

Sarcoptes Latreille, 1802 (itch mites) Sarcoptidae mites
Sarcoptes myotis = *Notoedes m.*

Scaptognathides - Halacaridae mites
Scaptognathides undet. sp. (interstitial? in HI intertidal sandy beach)

Scheloribates Berlese, 1908 - Scheloribatidae mites
Scheloribates laevigatus (Koch, 1836) (ectoparasite on IN *Neotoma floridana* woodrats)
Scheloribates undet. sp. (Tx detritivore? in Calaveras Co.,CA)

Schwiebea Oudemans, 1916 - Acaridae mites
Schwiebea undet. sp. (cave in Eddy Co.,NM/Tp on *Cambala reddelli* millipede)

Scutacarus Gras, 1845 - Scutacaridae mites
Scutacarus undet. sp. (phoretic in WA)
Scutacarus undescr.? sp. (cave in Eddy Co.,NM/ Tb)

Scutolebertia I.M. Smith, 1991 - Lebertiidae mites
Scutolebertia trinitensis I.M. Smith, 1991 (interstitial, hyporheic in gravels in rocky riffles in nCA)

Shibaia Zacharda, 1980 - Rhagidiidae mites

Shibaia longisensilla (*Rhagidia l.* Shiba, 1969) (Tp or Tx in AK, WA)

Soldanellonyx Walter, 1917 - Limnohalacaridae mites, Subfamily Limnohalacarinae (also put in Lohmannellinae & Halacaridae, Subfamily Halacarinae)

Soldanellonyx chappuisi Walter, 1917 (Europe, Asia, cave in Lawrence Co., IN/ Tb) **Bibl.:** Walter, 1931.

Soldanellonyx monardi Walter, 1919

Soldanellonyx monardi monardi Walter, 1919 (NY hyporheic & St in Lawrence Co.,IN; brackish coastal in HI/ caves, groundwater interstitial and hyporheic in Europe, Africa & Japan)

Soldanellonyx visurgis Viets, 1956 (NY, Europe, Black Sea hyporheic & epigean)

Soldanellonyx undet. sp. or species (rare CO hyporheic; Great Lakes benthic)

Speleocola Lipovsky, 1952 - Trombiculidae mites

Speleocola tadarida (*S. tadaridae* Lipovsky, 1952) (type locality cave in Woods Co.,OK/ ectoparasite chigger mite on KS, OK , TX (Ttx) *Tadarida b.* bats) **Bibl.:** Loomis & Lipovsky 1954

Speleorchestes Tragardh, 1909 - Nanorchestidae mites

Speleorchestes formicarum Tragardh, 1909 (CO hyporheic)

Speleorchestes undet. sp. or species (Wind C.(SD) TTx?; CO hyporheic)

Sperchon Kramer, 1877 - Sperchontidae mites, subfamily Sperchontinae

Sperchon (*Hispidposperchon*) *glandulosus* Koenike, 1886 (Europe & ON,BC, & temperate NA spring seepages & streams/ interstitial, epigean)

Sperchon plumifer acadiensis Habeeb, 1953 (on rocks in streams, hyporheic? In NB)

Sperchon undet. sp. (CO,NY/hyporheic/ epigean)

Sperchon texana J. Davis & Cook, 1985 (hyporheic in TX karstic streams/ parasitic on *Simulium* fly larvae)

Sphaerozetes Berlese, 1885 - Ceratozetidae mites

Sphaerozetes undet. sp. (TTp in WA)

Spinibdella Thor, 1930 - Actinedidae mites

Spinibdella undet sp.(predator on ON bat guano)

Spinturnix von Heyden, 1826 (*Pteroptus* Dufor, 1832) Spinturnicidae mites. **Bibl.:** Collins 1931

Spinturnix americanus (*Pteroptus a.* Banks, 1902) (type locality in IN cave n *Eptesicus fuscus* bat/ NA to Venezuela/ ectoparasite on AZ *Myotis leibii*; CO, OR, wTX *Myotis volans*; FL *Myotis*

austrorioriparius, AK, KS (rare) *Myotis grisescens*, OR *M. evotis*; AK, BC, GA, IL, IN, KS, MA, MD, MI, MN, ND, NY, ON, OR?, PA, Prince Edward Island, VA, WI, WV *M. lucifugus*; IN, ME *M. keenii*; CA, NV, OR, wTX *M. yumanensis*, TX *Myotis velifer*, NV *Myotis* sp., OR, TX *Antrozous pallidus* & AL, AR, AZ, BC, CA, DE, IN, KS, MN, PA, PQ, ON, sTX *Eptesicus fuscus*, AZ, wTX *Myotis thysanodes* & *M. subulatus* bats)

Spinturnix bakeri Rudnick, 1960 (type locality in IN cave on *Eptesicus fuscus* bats/ NA to Venezuela/ ectoparasite on KS (rare) *Myotis velifer*, CO, wTX *Myotis volans*, wTX, MI *M. lucifugus*, wTX *M. yumanensis* & AL, AR, BC, IN, MI, MN, ON, OR, PA, PQ, s, wTX *Eptesicus fuscus* bats)

Spinturnix banksi Rudnick, 1960 (type locality cave in Independence Co., AR/ ectoparasite on AL, AR, IL, KS, KY, MO, OK, TN *Myotis grisescens* bat; rare in AL *Myotis keenii* & *sodalis* bats)

Spinturnix carloshoffmanni Hoffman, 1944 (*S. grossus* Kohls & Jellison, 1948) (= junior syn. Of *S. americanus* by Whitaker & Wilson, 1974) (ectoparasite on KY, swOK *Myotis velifer grandis*, KS, OK, TX (Comal & Kimble Cos., wTX) *Myotis velifer incautus* & AZ (Tx) *Myotis thysanodes*, *M. subulatus* & *M. velifer* bats)

Spinturnix carnifex = *Dermanyssus c.*

Spinturnix echinipes (*Pteroptus e.* Banks, 1910) Stiles & Nolan, 1931 (ectoparasite on NY *Myotis lucifugus* bats)

Spinturnix globosus = *Paraspinturnix g.* Rudnick, 1960

Spinturnix iowae Keegan, 1943 (ectoparasite on IA, MD *Myotis lucifugus* bats)

Spinturnix myoti (Kolenati, 1856; *Pteroptus grossus* Banks, 1910) (ectoparasite on NM *Tadarida brasiliensis*? bats)

Spinturnix orri Rudnick, 1960 (= *S. americanus* in part) (ectoparasite on AZ, CA, Mex., OR, wTX, UT *Antrozous pallidus* & CA *Tadarida brasiliensis* bats)

Spinturnix rectalis J. White, 1960 (type locality cave in Lauderdale Co., AL/ ectoparasite on AL (Tx) *Myotis grisescens* bats)

Spinturnix undet. sp. or species (Tx ectoparasite on NS *Myotis*, FL, TN (Tx), TX (Tx) *Myotis austrorioriparius*; MD (Tx), ON *Eptesicus fuscus*, CA *Myotis californicus* (Tx), *thysanodes* (Tx) & *velifer* (Tx), *Choeronycteris mexicana*, ON *Myotis lucifugus* & AZ (Tx), CA *Corynorhinus rafinesquii pallescens* bats)

Spinturnix shermani J. White, 1960 (type locality cave in Citrus Co., AL/ Tx ectoparasite on AL *Myotis austrorioriparius a.* bats)

Spinturnix undet sp. or species (ectoparasite on OK *Myotis velifer*, CA, TX *Antrozous pallidus*

& ON *Myotis lucifugus* bats)

Steatonyssus Kolenati, 1858 - Macronyssidae mites, Subfamily Ornithonyssinae. **Bibl.:**
Radovsky & Furman 1963

Steatonyssus (*Steatonyssus*) *antrozo*i (S.a. Radovsky & Furman, 1963) Till & Evans, 1964
(ectoparasite on *Corynorhinus townsendii*; CA, NM, OK, TX *Eptesicus fuscus*; CA, NV, OK,
OR, TX *Antrozous pallidus*, CA *Tadarida brasiliensis* & wTX *Myotis yumanensis* bats)

Steatonyssus (*Steatonyssus*) *ceratognathus* (*Ceratonyssus ceratognathus* Ewing, 1923; S.c.
Fonseca, 1948) Till & Evans, 1964 (ectoparasite on AL *Lasiurus borealis*, OH Acommon bat@,
AL (Tx), GA, IN, OK, SC, TX *Nycticeius humeralis*, AL *Eptesicus fuscus* (rare) & *Myotis*
lucifugus (Tx) & AL(Tx, rare), GA, *Tadarida b.* bats)

Steatonyssus (*Steatonyssus*) *emarginatus* (S.e. Radovsky & Furman, 1963) Till & Evans, 1964
(ectoparasite on TX *Myotis yumanensis*, CA *Myotis* sp. & AZ, CA, NM, OR, TX *Pipistrellus*
hesperus bats)

Steatonyssus (*Steatonyssella*) *furmani* (S.f. Tipton & Boese, 1958; *Eschoengastia* f. Gould,
1956) Till & Evans, 1964 (ectoparasite on AL *Eptesicus fuscus* & AL(Tx), CA, IL, IN, KS, NY,
OR, TN *Lasiurus b. borealis* & wTX *Lasiurus cinereus* (rare) bats)

Steatonyssus (*Steatonyssus*) *joaquimi* (Fonseca, 1935) (ectoparasite on TX *Eptesicus fuscus*
pallidus & GA *Myotis lucifugus* bats)

Steatonyssus (*Steatonyssus*) *occidentalis* (*Ceratonyssus o.* Ewing, 1933; S.o. Radford, 1942)
Fonseca, 1948 (ectoparasite on IN *Myotis sodalis*, , TX *Myotis velifer*, DC, TN *Lasiurus*
borealis; BC, ON, MD *Myotis lucifugus*; AL, AZ, TX *Tadarida brasiliensis* (Devil's Sinkhole,
Edwards Co.); *Nyctinomops macrotis* & *Corynorhinus*; AL, CA, DE, IN, KS, MD, MI, NM
(Dona Ana Co. - ssp. *pallidus*), OH, OK, ON, OR, PA, TX, WV, wTX (ssp. *pallidus*) *Eptesicus*
fuscus, AL, IN, KS, MD, MI, OH, OR, TX, WV, wTX *Antrozous pallidus*, OR *Myotis* & DC
bats)

Steatonyssus (*Steatonyssus*) *radovskyi* Till & Evans, 1964 (ectoparasite on TX *Lasiurus*
borealis & *L. intermedius* bats)

Steatonyssus undet. sp. (ectoparasite on AZ *Tadarida brasiliensis* bats)

Steganacarus Ewing, 1917 - Phthiracaridae mites

Steganacarus undet. sp.#1 (Tp in IL)

Stereoglyphus Berlese, 1923 (= *Troglocoptes* Fain, 1966) (caves and decaying organics)
Acaridae mites

Stereoglyphus undescr. sp. (*cave in Walker Co, GA/ Tb)

Stratiolaelaps Berlese, 1916 - Laelapidae (= Laelaptidae) mites
Stratiolaelaps undet. sp. sp. #1-2 (cave in Eddy Co., NM/ Tp?)

Stygalbiella Cook, 1974 - Aturidae, Subfamily Axonopsinae)

Stygalbiella affinis Cook, 1974 (hyporheic in Trinity Co. & Van Duzen River, Humboldt Co., CA)

Stygalbiella arizonica Cook, 1974 (hyporheic in *Oak Cr., Coconino Co., AZ)

Stygalbiella chiricahua I.M. Smith & D.R. Cook, 1998 (hyporheic in AZ)

Stygalbiella yavapai I.M. Smith & D.R. Cook, 1998 (hyporheic in AZ, NM)

Stygameracarus I. Smith, 1990- Athienemanniidae mites, subfamily Stygameracarinae

Stygameracarus canadensis I. Smith, 1990 (hyporheic in ON)

Stygameracarus cooki I. Smith, 1990 (hyporheic in Comanche Co., OK)

Stygomomonia Szalay, 1943 - Momoniidae mites, Subfamily Stygomomoniinae (stonefly hosts)

Stygomomonia (*Allomomonia*) *atnarkicola* I.M. Smith, 1989 (AB, BC, CA, ID, MT, OR, WA gravel bars and gravel deposits in rocky riffles of streams)

Stygomomonia (*Stygomomonia*) *californiensis* I. Smith, 1991 (Coast Range in Ventura Co., CA, and western foothills of Sierra Nevadas, Tuolumne Co., CA hyporheic? in gravel bars and gravel deposits in rocky stream riffles)

Stygomomonia (*Stygomomonia*) *cooki* I. Smith, 1991 (western NY hyporheic? in gravel deposits in a small stream)

Stygomomonia (*Stygomomonia*) *imamurai* I. Smith, 1991 (**Rancheria Cr. 5 mi.s. of Boonville, Mendocino, CA hyporheic? in gravel bars in stream riffles)

Stygomomonia (*Allomomonia*) *mendocinoensis* I.M. Smith, 1989 (Mendocino Co, CA/ gravel bars and gravel deposits in rocky riffles of streams)

Stygomomonia (*Allomomonia*) *mittelli* Cook, 1989 (AB, BC, CA, ID, OR, MT, NV, WA gravel bars and gravel deposits in rocky riffles of streams)

Stygomomonia (*Allomomonia*) *moodyi* Mitchell, 1959 (ME, NH, VT, VA hyporheic in gravel bars and gravel deposits in rocky riffles of streams)

Stygomomonia (*Stygomomonia*) *neomexicana* Cook, 1968 (hyporheic in Whitewater Cr., Catron Co., NM & AB, BC in gravel bars and gravel deposits in rocky stream riffles)

Stygomomonia (*Stygomomonia*) *occidentalis* Cook, 1968 (nwCA, cCA (Tuolumne Co.), swOR, wWA (Kittitas Co.), MT (Lincoln Co.) hyporheic in gravel bars and gravel deposits in rocky

stream riffles)

Stygomomonia (*Stygomomonia*) *ozarkensis* Cook, 1968 (hyporheic in gravel bar 1.6 km w.of Colcord, DE Co., AR, in small stream)

Stygomomonia (*Allomomonia*) *pacifica* I.M. Smith, 1989 (OR,WA,CA,NV,NM,AZ gravel bars and gravel deposits in rocky riffles of streams)

Stygomomonia (*Stygomomonia*) *pallida* Cook, 1968 (New Brunswick, NS, ME, NY, VT, VA hyporheic? in gravel bars and gravel deposits in rocky stream riffles)

Stygomomonia (*Stygomomonia*) *plana* Cook, 1968 (mostly coastal nCA, OR, sWA in gravel bars and gravel deposits in rocky stream riffles)

Stygomomonia (*Stygomomonia*) *riparia* Habeeb, 1957 (hyporheic in most of East (Appalachia & Central Highlands, Coastal Plain, Central Lowland, Superior Upland) in gravel bars and gravel deposits in rocky stream riffles)

Stygomomonia (*Stygomomonia*) *separata* Cook, 1968 (AB, BC, CA, ID, MT, NV, OR, WA in gravel bars and gravel deposits in rocky stream riffles)

Stygomomonia undet. sp. (NY hyporheic),

Stygothrombium Viets, 1932 - Stygothrombiidae mites, Subfamily Stygothrombiinae (Plecoptera hosts)

Stygothrombium *karamani* Viets, 1932 (CO hyporheic; Macedonian karst groundwater)

Tectocephus Berlese, 1913 - Tectocephidae mites

Tectocephus undet. sp. (Jewel C.,SD/Tx, Tp or Tb),

Tecomatlana Hoffmann, 1947 - Trombiculidae mites

Tecomatlana (*T.*) *sandovali* Hoffmann, 1947 (Tx ectoparasite on AZ *Macrotus californicus* bats)

Tecomatlana (*T.*) *texana* Loomis & Crossley, 1963 = *Beamerella texana*

Tecomatlana (*T.*) *watkinsi* Vercammen-Grandjean, 1947 (ectoparasite on *Macrotus californicus* bats in Riverside & San Bernadino Cos.,CA & in Mex., AZ)

Testudacarus Walter, 1928 - Torrenticolidae mites, Subfamily Testudacarinae

Testudacarus *americanus* Marshall, 1943 (in silt and gravel in BC,CA spring run/ parasitic on *Rheocricotopus* flies / interstitial)

Teinocoptes Rodhain, 1923 - Ixodidae mites

Teinocoptes *lasionycteris* (*Sarcoptes l.* Boyd & Bernstein, 1950) Yunker, 1958 (ectoparasite on CA *Antrozous pallidus*, PA, TX *Lasionycteris n.*, TX *Tadarida brasiliensis*, WV, NJ *Myotis lucifugus*, TX (Tx), WV *Corynorhinus rafinesquii* & AL *Myotis grisescens* bats)

Teinocoptes undet. sp. or species (ectoparasite on CA *Antrozous pallidus*, *Myotis yumanensis* & *Tadarida brasiliensis* bats)

"***Teinocoptes tadarida***" in J.White, 1959 (ectoparasite on AL (Tx) & GA *Tadarida brasiliensis* & GA *Nycticeius humeralis* bats)

Teutonia Koenike, 1910 - Teutoniidae mites

Teutonia (*Teutonia*) *lunata* Marshall, 1924 (interstitial? in AK,BC pools, parasites on chironomid flies)

Teutonia undet. sp. (CO hyporheic; New Brunswick springs)

Thyas Koch, 1835- Hydryphantidae mites, subfamily Thyadinae (water mites) (bug, thysanoptera, springtails, trichoptera & fly hosts) Bibl.: D.Cook 1959

Thyas (*Thyas*) undet. sp. (interstitial?)

Torrenticola Thor, 1902 - Torrenticolidae mites, subfamily Torrenticolinae

Torrenticola (*Torrenticola*) *neoanomala* Habeeb, 1955 (nr. *T.(T.)* n. in silt in ON, New Brunswick streams & pools/ interstitial)

Torrenticola undet. sp. or species (CO (rare), NY hyporheic; parasites on chironomid flies in temperate NA/ interstitial)

Trichoecius Canestrini, 1899 - Myocoptidae mites

Trichoecius *gettingeri* Fain, Cudmore & Whitaker, 1984 (ectoparasite on IN *Neotoma floridana* woodrats),

Trichothyas Viets, 1926 - Hydryphantidae, Subfamily Thyadinae

Trichothyas (*Lundbladia*) *musicola* (L.m. Marshall, 1953) IL hyporheic? in karstic seepage in Rock Cr. Canyon, Kenkakee Co., IL, parasite of tipulid fly *Limonia humidicola* larvae)

Trichouropoda Berlese, 1916 - Uropodidae mites

Trichouropoda *orbicularis* (Acarus o. O.F. Mueller, 1776) (cave bat guano in IN)

Troglocoptes Fain, 1966 = *Stereoglyphus*

Trombicula Berlese, 1905 (larvae known as chiggers or red-bugs) Trombiculidae mites. **Bibl.:** Ewing, 1933; Loomis & Lipovsky 1954

Trombicula (*Eutrombicula*) *alfreddugesi* = *Eutrombicula a.*

Trombicula allredi Brennan & Beck, 1956 (ectoparasite on UT *Neotoma lepida* woodrats)

Trombicula (*Eutrombicula*) *batatas* (Acarus b. Linnaeus, 1758; *T. flui*, Ewing, 1931; *T. hominis*

Ewing, 1933; *Eutrombiculula h.* Ewing, 1938; *Acariscus h.* Ewing, 1943; *E.b.* Michener 1946) Thor & Willman, 1947 (ectoparasite on AL *Lasiurus b. borealis* bats)

Trombicula californica (*Schongastia peromysci* Ewing, 1925) (ectoparasite on CA *Neotoma* woodrats)

Trombicula crossleyi Loomis, 1954 (ectoparasite on KS *Neotoma micropus* woodrats)

Trombicula (*Miyatrombicula*) *cynos* = *Miyatrombicula c.*

Trombicula eptesici Brennan, 1947 = *T. myotis*

Trombicula fitchi = *Neotrombicula f.*

Trombicula (*Neotrombicula*) *harperi* = *Neotrombicula h.*

Trombicula gurneyi Ewing, 1937 (*Eutrombicula g.* Ewing, 1938; *T. (T.) g.* Wharton & Fuller, 1952; *T.g.g.* Loomis, 1955; *Parasecia g.* Loomis, 1966) (high plains epigeal/ ectoparasite on AL *Nycticeius humeralis h.* & MI *Eptesicus fuscus* bats & OK *Neotoma floridana* woodrats)

Trombicula gurneyi campestris. Loomis, 1955 (ectoparasite on KS *Neotoma micropus* woodrats)

Trombicula (*Euschogastoides*) *hoplai* Loomis, 1954 (ectoparasite on KS *Antrozous pallidus* bats & UT *Neotoma lepida* & KS *N. micropus* woodrats)

Trombicula jessiemae Gould, 1956 (ectoparasite on CA *Neotoma lepida* woodrats)

Trombicula (*Neotrombicula*) *jewetti* Brennan & Wharton, 1950 (on CA *Neotoma* woodrats)

Trombicula kansasensis Loomis, 1955 (ectoparasite on KS *Neotoma micropus* woodrats)

Trombicula (*Eutrombicula*) *lipovskyana* Wolfenbarger, 1953 (ectoparasite on KS, OK *Neotoma floridana*, NM *Neotoma mexicana* & CO *Neotoma lepida* woodrats & KS (Tx?) *Antrozous pallidus* bats)

Trombicula (*Neotrombicula*) *lipovskyi* = *N. l.*

Trombicula merrihewi Loomis & Lipovsky, 1954 (type locality cave in Woods Co., OK/ ectoparasite on OK *Tadarida mexicana* bats)

Trombicula montanensis Brennan, 1946 (ectoparasite on KS *Neotoma micropus* woodrats)

Trombicula myotis Ewing, 1929 (*Eutrombicula m.* Ewing, 1938; *Acariscus m.* Ewing, 1943; *T. eptesici* Brennan, 1947; *T. russicum* var. *m.* Fuller, 1952) (ectoparasite on TN *Myotis leibii*, MT, MO, PA, VA, WV *Eptesicus fuscus*, ME, ON, PA, WV, VA *Myotis lucifugus* & AZ *Myotis thysanodes* (Tx), *M. subulatus* & *M. velifer* (Tx) bats & OK, AR *Neotoma floridana* & KS *N micropus* woodrats)

Trombicula ornata Loomis & Lipovsky, 1954 = *Microtrombicula o.*

Trombicula sola Gould, 1956 (ectoparasite on CA *Neotoma lepida* woodrats)

@*Trombicula sproccsi* (ectoparasite on CA *Tadarida brasiliensis* & *Antrozous pallidus* bats)

Trombicula undet. sp. (ectoparasites on NM (Tx), TX (Tx) bats)

Trombicula sylvilagi Brennan & Wharton, 1950) (ectoparasite on KS *Neotoma floridana* woodrats)

Trombicula texana Loomis & Crossley, 1963 = *Beamerella* t.

Trombicula trisetica Loomis & Crossley, 1953 (ectoparasite on KS *Neotoma floridana* woodrats)

Trombicula tibbettsi Brennan & White, 1960 (ectoparasite on AL (Conceh & Lauderdale Cos.), TX *Myotis grisescens* & TX (Tx) *Mormoops megalophylla* bats)

Trombicula (*Leptotrombidium*) *twenti* Loomis, 1954 (ectoparasite on KS (Tx) *Antrozous pallidus* & *Myotis velifer* bats)

Trombicula univari (*Loomisia u.* Brennan, 1965) (ectoparasite on NM (near. *T.u.*), OR, TX, SW *Pipistrellus hesperus* bats)

Trombicula usitata Brennan, 1965 (*type locality cave in Uvalde Co., TX - Type locality / ectoparasite on TX *Mormoops megalophylla* bats)

Trombicula veanda Brennan, 1965 (ectoparasite on CA *Neotoma lepida* woodrats)

Trombidium Fabricius, 1776 - Trombiculidae mites

Trombidium undet. sp. (Tx or Ac in sON; prob. in MO),

Trimalaconothrus Berlese, 1916 - Malaconothridae mites

Trimalaconothrus undet. sp. (CO/hyporheic)

Trhypochthoniellus Berlese, 1904 - Trhypochthoniidae

Trhypochthoniellus crassus (*Hydronthrus c.* Warburton & Pearce, 1905) (Tx or Tp in cave in Orangeburg Co., SC)

Tydeus Koch, 1836 - Tydeidae mites

Tydeus undet. sp. (Wind C.,SD/TTx?)

Typhlodromus Scheuten, 1857 - Phytoseiidae mites

Typhlodromus undet. sp. (TTp in WA?)

Tyroglyphus Latreille, 1796 = *Acarus*

Tyrophagus Oudemans, 1923 (mushroom or mold mites) Acaridae mites

Tyrophagus undet. sp. or species (Tb or Tp in cave in Eddy Co.,NM; Ttx? in Wind C.,SD; ectoparasite on OR *Neotoma fuscipes* & IN *N. floridana* woodrats; NY freshwater sandy beach interstitial)

Tyrrellia Koenike, 1895 - Limnesiidae mites, Subfamily Tyrrellinae

Tyrrellia* (*Tyrrellia*) *circularis Koenike, 1895 (karst seepage *Rock Cr. Canyon, Kenkakee Co., IL/ interstitial?)

Tyrrellia* (*Tyrrellia*) *ovalis Marshall, 1932 (karst seepage *Rock Cr. Canyon, Kenkakee Co., IL/ interstitial?)

Uchidastygacarus Imamura, 1956 - Uchidastygacaridae mites, subfamily Uchidastygacarinae

Uchidastygacarus* (*U.*) *acadiensis I. Smith, 1983 (hyporheic in New Brunswick, NF, NH, NS, ON, PQ, NY gravels in riffles of large streams)

Uchidastygacarus* (*U.*) *appalachianus I. Smith, 1992 (*hyporheic in NC,VA gravels in riffles of small streams)

Uchidastygacarus* (*U.*) *imamurai Cook, 1963 (hyporheic in OR (Lane Co.) & MT (Lake Co.) gravels in riffles of streams)

Uchidastygacarus* (*U.*) *magnificus I.M. Smith, 1992 (*hyporheic in gravels in riffles of small streams of North Fork River, Mendocino Co.,CA)

Uchidastygacarus* (*Imamurastygacarus*) *ovalis Cook, 1974 (hyporheic in NC (Macon Co.) sand bars and rocky riffles in streams)

Uchidastygacarus* (*U.*) *virginiensis I. Smith, 1992 (*hyporheic in Standrock Brook, Giles Co.,VA)

Unionicola Halderman, 1842 – Unionicolidae mites

Unionicola undet. sp. (rare Virginian marine infauna)

Uropoda Latreille, 1806 - Uropodidae mites

Uropoda* *lucifugus Packard, 1886 (Tx or Ac in IN)

Utaxatax Habeeb, 1964 - Anisitiellidae mites, Subfamily Anisitsiellinae

Utaxatax* *californiensis Habeeb, 1964 (CA rivers, BC,OR spring runs & interstitial hyporheic?)

Utaxatax* *newelli (*Mamersella n.* Habeeb, 1959) Cook 1974 (BC,OR,WA spring runs, streams, interstitial hyporheic; larvae parasitic in *Dixa* & *Dixella* flies)

Utaxatax* *ovalis Cook, 1974 (*Salmon Cr., Monterey Co., CA)

Utaxatax undet. sp. (WA, OR, CA/ surface,interstitial aquatic)

Veigaia Oudemans, 1905 (= *Cyrtolaelaps* Berlese, 1892, not Berlese, 1887) (Europe, NA, Asia)
Veigaiidae mites. **Bibl.:**Hurlbutt 1963

Veigaia bakeri Farrier, 1957 (*?type locality in Wyandotte C., Crawford Co., IN & Tp in Carlsbad C.?, NM/ S1 G1 or G1G2/ Tb or Tp)

Veigaia kochi (Tragardh, 1901) (Italy/ Tx or Ac in sON)

Veigaia undet. sp. or species (Ac, Tp or Tx in GA (Walker Co.), NS; Tx or Ac in GA (prob. on bats))

Veigaia wyandottensis (*Laelaps* & *Holostaspis* w. Packard, 1886) Vitzthum, 1925 (*?type locality cave in Crawford Co./Tb, Tp or Tx in IN/ G1G2 **Bibl.:** Holsinger 1965; Hurlbutt 1984; Packard 1888

Victathrombium Habeeb, 1974 - Stygothrombiidae mites (Plecoptera hosts)

Victathrombium ivarum (Habeeb, 1974) (interstitial groundwater in Los Angeles Co., CA)

Vicinaxonopsis = Subgenus of *Axonopsis*

Volsellacarus Cook, 1963 - Neoacaridae mites

Volsellacarus ovalis Cook, 1963 (interstitial in MO (Reynolds, Shannon & Crawford Cos.), OH (WA Co.) & VA (Bath Co.))

Volsellacarus sabulosus Cook, 1963 (interstitial in OH (WA Co.) & VA (Bath Co.))

Volsellacarus undescr. sp. (hyporheic in ON)

Wagenaaria - Subgenus of *Cyllibula*

Walchia Ewing, 1931 - Trombiculidae mites, Subfamily Walchiinae

Walchia americana Ewing, 1931 (FL, n.to WI, w. to UT/ ectoparasite on KS *Neotoma micropus* & *N. floridana* woodrats)

Walchia senase = *Whartonia s.*

Wandesia Schechtel, 1912 - Protziidae mites, subfamily Wandsiinae (Plecoptera hosts)

Wandesia* (*Wandesia*) *centensis Habeeb, 1973 (hyporheic in Libby Creek west of Laramie, WY)

Wandesia* (*Wandesia*) *extendens Cook, 1974 (hyporheic interstitial in Gibbon River, Yellowstone Natl. Park, WY/ G1)

Wandesia* (*Mesowandesia*) *riparia Habeeb, 1954 (hyporheic in NJ stream bottom deposits)

***Wandesia* (*Partununiella*)** undet. sp. (interstitial groundwater? in WY, CA, NM stream bottom deposits)

Wandesia* (*Pseudowandesia*) *gaspensis Habeeb, 1955 (hyporheic in Little Caspapedia River, PQ)

Wandesia undet. blind sp. (interstitial/ phreatic in Sycamore Cr. 32 km ne of Phoenix (Maricopa Co.), AZ)

Wandesia undescr. sp. (hyporheic in E Mixedwood Plains)

Whartonia Ewing, 1944 - Trombiculidae mites

Whartonia *carpenteri* Cooley and Kohls. 1944 (ectoparasite on NM, TX *Antrozous pallidus*, *Tadarida brasiliensis mexicana* & NM, TX *Pipistrellus hesperus* bats)

Whartonia *glenii* Brennan, 1962 (on CA *Antrozous pallidus* bats) **Bibl.:** Vercammen- Grandjean et al., 1965

Whartonia *glenii californica* Watkins, 1965 in Vercammen-Grandjean, Watkins & Beck, 1965 (ectoparasite in AZ, CA, Mex. *Macrotus calif.* bat & in other Mex. bats)

Whartonia *perplexa* (*Hannemania* p. Brennan, 1947) (ectoparasite on MT, TX *Eptesicus fuscus*; TX *Myotis velifer*; OR *Myotis californicus*, AZ *Pipistrellus hesperus* & *Antrozous pallidus* & OR, NV *Antrozous pallidus* bats)

Whartonia *senase* (*Acomatacarus* s. Greenberg, 1952; *Walchia* s. Greenberg; *Albeckia senase*) Loomis, 1956 (cave (type locality) in Barber Co., KS/ ectoparasite on KS *Neotoma micropus* woodrats (rare), swOK *Myotis velifer grandis*, KS (Tx) *Myotis velifer incautus*, OR, TX *Pipistrellus Hesperus*, TX *Antrozous pallidus* & AL *Eptesicus fuscus* bats)

Whartonia *whartoni* Hoffman, 1951 = *Sasacarus w.*

Woolastookia Habeeb, 1854 - Aturidae, Subfamily Axonopsinae

Woolastookia *pilositarsa* (*Herbasacarus* p. Habeeb, 1954) Habeeb, 1974 (in eNA stream riffle gravel, parasites on imagoes of Chironomidae flies, subfamily Orthocladiinae)

Woolastookia sp. near *pilositarsa* (ON rivers, likely hyporheic as parasites on *Eukiefferella*, *Microcricotopus* & *Orthocladius* larvae)

Woolastookia *setosipes* (*Herbasacarus* s. Habeeb, 1954) Habeeb, 1974 (in BC stream riffle gravel, parasites on imagoes of Chironomidae flies, subfamily Orthocladiinae)

Woolastookia undet. sp. (interstitial/ (shallow phreatic in Sycamore Cr. 32 km ne of Phoenix (Maricopa Co.), AZ)

Yachatsia Cook, 1963 - Chappuisidae mites, subfamily Morimotacarinae mites (once put in Uchidastygacaridae)

Yachatsia *mideopsoides* Cook, 1963 (= *Y. euforma* Habeeb, 1976) (Hyporheic in AZ, BC, CA, ID, NM, NV, OR, WA, WY stream gravels)

Xenoryctes Zachvatkin, 1941 - Glycyphagidae mites

Xenoryctes sp. near *nudus* Fain & Whitaker, 1875(ectoparasite on OR *Neotoma fuscipes* woodrats)

Zercon C.L.Koch, 1836 (= *Triangulozercon* Jacot, 1938) Zerconidae mites - See *Microtrombidium*

Zercon undet. sp.(ectoparasite on IN *Neotoma floridana* woodrats)

Zerconopsis Hull, 1918 - Zerconidae mites

Zerconopsis undet sp. (in NS cave)

Zygoribatula Berlese, 1916 - Oribatulidae mites

Zygoribatula undet. or undescr. sp. or species (Tp? in cave in Eddy Co.,NM; Tp or Tb in Jewel C.,SD)

mixotroph - A speies who uses energy from organics & inorganics while using inorganic compounds as electron donors. Incl. species with autotrophy via endosymbionts

mold - Microbe fungi. Tufted molds in caves often cover scat, dead insects, bats, & wood. .

mold - see trace fossil

mole - See mammal, insectivore

molecular drive - When changes within genetic material affects evolution irrespective of natural selection. A mutation spreads through a popoulation until it is expressed in a large part of the population all at once.

Molluscs

Macroinvertebrate phylum typified by a nonsegmented, bilaterally body, & a radially or biradially symmetrical mantle & shell. Bole & Velkovrh, 1986. See **cephalopod** (nautilus), **clams**, **conchs**, & **mussels**, gastropods (**abalone**, **slug**, **snail**), **limpets**, **nudibranch**, oyster, **solenogasters** & tusk shell. Archimedes screws - Fossils in Bilbo Baggins C.(GA). Vaught, 1989; Bibl.: Abbott 1974; McMahon 1991; Morton 1967; Pennak 1978; Rehder 1992; Ruhoff 1973; Trueman & Clarke 1985

molting - Periodic shedding and regrowth of outer body covering. Because of food and growth limitations, cave species often have longer periods between molts compared to related surface species.

Monera - Old Kingdom for procaryotes. Now divided into Kingdoms Bacteria (=Eubacteria) & Archaea (=Archaeobacteria)

monestrous - Pertains to species that have a single estrous cycle per year.

monophyletic - A species group descended from a common ancestor

moonmilk - White clay, often carbonates & rarely sulfates. Like creamy cottage cheese when wet, like dried milk when dry. From Swiss dialect moonmilch, elf's or gnome's milk, as antibiotic activity was ascribed to magical little people. May result from evaporative concentration of magnesium &/or organic activity such as from bacterium *Macromonas bipunctata*, cyanobacteria (*Synechococcus elongatus* & *Gleocapsa* sp.), actinomycetes, or algae. Boyd, 1965; Caldwell 1977; Curl 1962; Northup, Dahm, et al. 2001; Ohde & Takii 1978. Incl. balloon, carbonates (aragonite, calcite (Mundmilch), dolomite, huntite, hydromagnesite, magnesite, monohydrocalcite, nesquehonite) conulite, crinkle, flowstone, phosphates (brushite, fluoroapatite, hydroxylapatite, & taranakite), rim & sulfate (barite, gypsum, jarosite, melanterite, mirabilite, & thenardite.). Cf. lublinitite.

morph - A variant form within a species

morphology - The form & structure of individuals excluding anatomy. Cf. physiognomy. Bibl.: Conde' 1953; Bechler 1975; Culver, Kane, et al. 1990; Dent & Kirby-Smith 1963; Dickson, 1976, 1977a; Dickson & Kirk 1976; Elliott 1976; Fong 1989; Fong & Ning Dai 1991; Ghaffar, et al. 1984; Hayes & Richmond 1993; Hoffman 1961; Holsinger & Culver 1970; Hyman 1928, 1937; Jeannel 1926-27; Jones 1989; Jones, Culver & Kane 1986; Langecker 1992; L. & Longley 1993a; LaVal 1965a; Levy 1981a; Minckley & Cole 1963; Naples, 1987; Peck, 1986a; Potter 1963; Schwetman 1967; Smith, L. 1920; Smith, S., & Potter 1963; Szeptycki 1977; Sweet 1980; Takahata, et al. 1981; Tumilson et al., 1990; Valentine 1964; Williams, A. 1976; Woodworth, 1891; Wortham et al. 1977; Zacharda, 1980

coloration - see pigmentation

body size - Man & Fong 1991; Van Zant, Poulson & Kane 1978

appendage elongation - Kane & Culver 1991; Studier & Lavoie 1991;

eyes - (see also sense, & regressive evolution) - Cunningham, 1893; Fong & Dai 1991; Kane & Culver 1991; Loeb 1915

reproductive - Aalbu, 1985; Williams, A. 1976.

sexual differences - Sever 1985;

wings - Liebherr 1988

mortality - Dickson 1978; Studier, Lavoie, Nevin & McMillin 1988a

mosquito - See Diptera: Culicidae.

moss animals - See Bryozoa.

Mosses (for club-mosses, see Pteridophytes)

Musci, class of bryophyte usually in three dimensions. Most are aliens in caves. See **liverwort**. Grout 1931; Mylroie 1972; Prior 1961. **Areas:** **AL:** Goldman; **KY:** Maheu 1926; **MN:** Thatcher 1947; **NM:** ; Lindsey 1949, 1951; **NA:** L. Anderosn et al. 1990; **NY:** Haring 1931; Haring 1930; Lindsey 1949, 1951; **VA:** Lang 1943.

Subclass Bryidae (incl. Dicranales)

Orders:

Bryales:

Aulacomniaceae (*Aulacomnium*)

Bartramiaceae (*Bartramia*, *Philonotis*)

Bryaceae (*Bryum*, *Leptobryum*, *Pohlia*, *Rhodobryum*, *Webera*)

Brachytheciaceae (*Bryhnia*)

Schistostegaceae (*Schistostega*)

Encalyptales: Encalyptaceae (*Encalypta*)

Fabroniaceae (*Clasmatodon*, *Schwetschkeopsis* (or put in Myriniaceae)

Mniaceae (*Mnium*, *Plagiomnium*)

Pterigynandraceae (*Myurella*)

Theliaceae (*Myurella*, *Thelia*)

Timmiaceae (*Timmia*)

Dicranales

Dicranaceae (*Dicranella*, *Dicranodontium*, *Dicranum*, *Leucobryum* , *Paraleucobryum*)

Ditrichaceae (*Ceratodon*, *Ditrichum*)

Rhabdoweisiaceae (*Rhabdoweisia*)

Fissidentales: Fissidentaceae (*Fissidens*),

Funariales: Funariaceae (*Funaria*, *Physcomitrium*),

Grimmiales

Grimmiaceae (*Grimmia*)

Hedwigiales

Hedwigiaceae (*Hedwigia*)

Hookeriales

Hookeriaceae (*Hookeria*)

Hypnales

Amblystegiaceae

(*Amblystegiella*, *Amblystegium*, *Campylium*, *Drepanocladus*, *Hygroamblystegium*)

Brachytheciaceae (*Brachythecium*, *Eurhynchium*, *Rhynchostegiella*)

Hypnaceae (*Hypnum*, *Taxiphyllum*)

Plagiotheciaceae (*Plagiomnium*, *Plagiothecium*)

Leucodontales

Anomodontaceae (*Anomodon*) (now in Thuidiaceae)

Leptodontaceae (*Forsstroemia*)

Neckeraceae (*Neckera*)

Thuidiaceae (=Anomodontaceae)]

(*Anomodon* (once put in Anomodontaceae), *Haplohymenium*, *Thuidium*)

Orthotrichales: Orthotrichaceae (*Orthotrichum*, *Ulota*)

Polytrichales

Polytrichaceae (*Catharinea*, *Polytrichum*)

Pottiales

Pottiaceae (*Barbula*, *Didymodon*, *Eucladium*, *Gymnostomum*, *Oxystegus*, *Tortella*, *Tortula*, *Trichostomum*)

Sphagnales

Sphagnaceae (*Sphagnum*)

Tetraphidales

Tetraphidaceae (*Georgia*)

MOSS species incl.:

Amblystegiella Loeske, 1903 - Amblystegiaceae mosses in Order Hypnales

Amblystegiella sprucei (Bruch., 1845) Loeske, 1903 (twilight zone in nNM)

Amblystegium Schimp. in Bruch, Schimper & Gumbel, 1853 (amblystegium moss)

Amblystegiaceae mosses in Order Hypnales

Amblystegium irriguum = *Hygroamblystegium i.*

Amblystegium serpens = *Hypnum s.*

Amblystegium serpens juratzkanum (A .s. W. P. Schimper, 1860) (NY, NV caves near lights)

Amblystegium undet sp. (Ttx in Mariposa Co., CA)

Amblystegium varium (Hedw.) Lindberg, 1879 (NA epigeal/ MN caves)

Anomodon Hook. & Tayl., 1818 (anomodon mosses) - Thuidiaceae mosses in Order Leucodontales (also put in Anomodontaceae)

Anomodon attenuatus (Hedw.) Huebener, 1833 (AL,KY),
Anomodon rostratus (Hedwig) W.P. Schimper, 1860 (AL,KY)
Anomodon viticulosus (Hedwig) W.J. Hooker & Taylor, 1818 (AL)

Aulacomnium Schwagr., 1827 - Aulacomniaceae moss in Bryales
Aulacomnium androgynum (*Muscorum* f. Hedw., 1827) Schwagr. (WV twilight zone)
Aulacomnium heterostichum (*Arrhenopterum* h. Hedw., 1801) Bruch & Schimp., 1841 (WV twilight zone)

Barbula Hedwig, 1801 (barbula moss) Pottiaceae mosses in Order Pottiales
Barbula reflexa (*Tortula* r. Bridel, 1806; *Didimodon fallax* var. *reflexus*) Bridel, 1819 [1818] (AL twilight zone)

Barbula unguiculata Hedwig, 1801 = *B. u.* forma *apiculata* (Hedwig) Moenkemeyer (MN twilight zone)

Bartramia Hedw., 1801 - Bartramiaceae mosses in Bryales
Bartramia pomiformis (Linneaus) Hedw., 1801 (*Plagiopus* p. Guim., 1919) (in WV twilight zone)

Brachythecium Schimper in Bruch, Schimper & Gumbel, 1853 - Brachytheciaceae mosses in Order Hypnales

Brachythecium collinum (Schleich. Ex. C. Mull. Hal., 1851) Schimp in B.S.G., 1853 (twilight zone in nNM)

Brachythecium oxycladon (Bridell, 1853) Kindberg, 1897 (AL)
Brachythecium rivulare Schimper in Bruch, Schimper & Gumbel, 1853 (KY)
Brachythecium rutabulum (*Hypnum* r. Hedwig, 1801) Schimper in Bruch, Schimper & Gumbel, 1853 (NY)

Bryhnia Kaurin, 1801 - Brachytheciaceae mosses in Order Bryales
Bryhnia graminicolor (*Bryum* g. Bridel, 1803) Grout (Ozarks/AL)

Bryum Hedwig, 1801 - Bryaceae mosses in Order Bryales
Bryum bimum (*Mnium bimun* Schreber, 1802) (VA)
Bryum caespiticiun Hedwig, 1801 (Ozarks/alien Tp in NY showcave)
Bryum capillare Hedwig, 1801 (Ozarks/alien Tp in NY showcave)

Campylium (Sullivant) Mitten, 1869 (campylium moss) Amblystegiaceae mosses in Order Hypnales

Campylium chrysophyllum (Bridel, 1826) J. Lange, 1887 (AL,MN, NV near lights)

Catharinea Ehrh. Ex F. Weber & D Mohr, 1803 - Polytrichaceae mosses
Catharinea crispa var. *densifolia* Lindb., 1868 (*Atrichum crispum* var. *densifolium* Paris, 1894)

Clasmatodon Hooker & Wilson in Wilson, 1842 - Fabroniaceae moss in Encalyptales
Clasmatodon parvulus (Hampe) Hook. & Wils. ex Sull. in Gray, 1856 (AL)

Ceratodon Bridel 1826 - Ditrichaceae moss in Order Dicranales
Ceratodon purpureus (Hedwig) Bridel, 1826 (MN, nNM, VA)

Drepanocladus (C. Mull. Hal., 1851 as subsect. of *Hypnum*) G.Roth, 1899 (brown mosses)
Amblystegiaceae mosses

Drepanocladus uncinatus (*Hypnum uncinatum* Hedw., 1801) Warnst., 1903 (twilight zone in nNM)

Dicranella (*Aongstroemia* sect. *Dicranella* Mull. Hal., 1848) Schimp., 1856 - Dicranaceae mosses in Dicranales

Dicranella heteromalla (*Dicranum heteromallum* Hedw., 1801) Schimp., 1856 (WV twilight zone)

Dicranodontium Bruch & Shimp., 1847 - Dicranaceae mosses in Dicranales
Dicranodontium longirostre (*Didymodon longirostris* F. Weber & D. Mohr, 1807) Bruch & Schimp., 1847 (WV twilight zone)

Dicranum Hedw., 1801 (dicranum moss) Dicranaceae mosses in Dicranales
Dicranum flagellare Hedw., 1801 (WV twilight zone)

Dicranum rhadocarpum Sullivant, 1849 (twilight zone in nNM)
Dicranum scoparium Hedw., 1801 (WV twilight zone)

Didymodon Hedwig, 1801 Pottiaceae mosses in Order Pottiales
Didymodon fallax var. *reflexus* = *Barbula reflexus*
Didymodon rigidulus Hedwig, 1801 (WV twilight zone)

Ditrichum Hampe, 1867 - Ditrichaceae mosses in Dicranales
Ditrichum tortile (*Trichostomum tortile* Schrad., 1802) Brockm., 1870 (WV twilight zone)

Encalypta Hedwig 1801 (candle snuffer mosses) Encalyptaceae mosses in Order Encalyptales
Encalypta procera Bruch, 1832 (AL)
Encalypta streptocarpa Hedwig 1801 (twilight zone)

Eucladium Bruch & Schimp. in Bruch, Schimper & Gumbel, 1853 - Pottiaceae moss in Pottiales
Eucladium verticillatum (Hedwig in Bridel) Bruch & Schimp. in B.S.G., 1846 (AL)

Eurhynchium Schimp. In B.S.G., 1854 (Eurhynchium moss) Brachytheciaceae mosses in Hypnales

Eurhynchium rusciforme (Necke, 1854) Milde, 1869 (MN, VA)

Eurhynchium surrulatum (Hedw.) Kindberb, 1870 (VA),

Eurhynchium Schimper in in Bruch, Schimper & Gumbel, 1853

Eurhynchium hians (Hedwig) Sande Lacoste, 1866 (AL)

Eurhynchium praelongum (Hedwig) Schimp. in B.S.G., 1854 (Europe/KY),

Fissidens Hedwig, 1801 - Fissidentaceae moss in Fissidentales

Fissidens bryoides var. *b.* Hedwig, 1801 (*F. minutulus* Sullivant, 1846) (Ozarks/AL),

Fissidens cristatus Wilson ex Mitten, 1859 (*F. dubius fide* Kattunen, 1987) (Ozarks/AL),

Fissidens subbasilaris Hedwig, 1801 (Ozarks/AL)

Fissidens taxifolius Hedwig, 1801 (Ozarks/AL)

Forsstroemia Lindberg, 1863 - Leptodontaceae mosses in Leucodontales

Forsstroemia trichomitria (Hedwig) Lindberg, 1863 (AL)

Funaria Hedwig, 1801 - Funariaceae mosses in Funariales

Funaria hygrometrica Hedwig, 1801 (Ozarks/ MN, NY),

Georgia Ehrh. & Mull. Hal., 1848 - Tetraphidaceae mosses in Tetraphidales

Georgia pellucida (*Tetraphis pellucida* Hedw., 1801) Rabenh., 1848 (WV twilight zone)

Grimmia Hedw., 1801 - Grimmiaceae mosses in Grimmiales

Grimmia apocarpa Hedw., 1801 (WV twilight zone)

Gymnostomum Nees & Hornschuch in Nees, Hornschuch & Sturm, 1823 - Pottiaceae moss in Pottiales

Gymnostomum aeruginosum (Smith, 1804) (Ozarks/AL)

Gymnostomum calcareum Nees & Hornschuch in Nees et al., 1823 (VA)

Haplohymenium Dozy & Molkenboer, 1846 - Haplohymenium moss in Leucodontales

Haplohymenium triste (Cesati in De Not.) Kindberg, 1899 (Ozarks/AL)

Hedwigia P. Beauv., 1804 - Hedwigiaceae mosses in Hedwigiales

Hedwigia albicans (*H. ciliata* ssp. *subnuda* Kindb., 1892) C. Mohr, 1901 (WV twilight zone)

Hookeria Sm., 1808 - Hookeriaceae mosses in Hookeriales

Hookeria sullivantii Mull.Hall, 1884 (WV twilight zone)

Hygroamblystegium Loeske, 1903 - Amblystegiaceae mosses in Hypnales

Hygroamblystegium tenax var. *tenax* (*Hypnum t.* Hedw., 1801; *Amblystegium irriguum* (*Hypnum i.* Hook & Wilson, 1855) Schimp., 1855) (WV twilight zone)

Hypnum Hedwig, 1801 - Hypnaceae mosses in Hypnales

Hypnum irriguum Hook. & Wilson, 1855 (*Amblystegium i.* Schimp., 1855; *A. serpens* var. *i.* Austin, 1870; *Hygroamblystegium i.* Loeske, 1903; *Hypnum fluminense* ssp. *i.* Kindb., 1894) (WV twilight zone)

Hypnum crista-castrensis Hedw., 1801 (WV twilight zone)

Hypnum cupressiforme Hedw., 1801 (twilight zone in nNM)

Hypnum imponens Hedw., 1801 (WV twilight zone)

Hypnum recurvans (*Leskea r.* Michx., 1803) P.Beauv., 1805 (WV twilight zone)

Hypnum revolutum (*Stereodon revolutus* Mitt., 1859) Lindb., 1866 (twilight zone in nNM)

Hypnum serpens (Hedwig, 1801) = *Amblystegium s.* Schimp. in Bruch, Schimper & Gumbel, 1853 (AL, NV near lights)

Leptobryum (Bruch & Schimp. in Bruch, Schimper & Gumbel, 1853) Wilson, 1855 - Bryaceae mosses in Bryales

Leptobryum pyriforme (*Webera pyriformis* Hedwig, 1801) Wilson, 1855 (Ozarks, WV, VA twilight zones)

Leucobryum Hampe, 1839 - Dicranaceae mosses in Hypnales

Leucobryum glaucum (*Dicranum glaucum* Hedw., 1801) Angstrom, 1845 (WV twilight zone)

Mnium Hedwig, 1801 - Mniaceae mosses in Encalyptales

Mnium affine = *Plagiomnium ciliare*

Mnium arizonicum Aman H.Magn. Or J.J. Amann, 1925 (Twilight zone in nNM),

Mnium cuspidatum = *Plagiomnium c.*

Mnium marginatum (Dickson ex Withering) Bridel ex Palisot de Beauvois, 1805 (Ozarks/AL)

Mnium hornum Hedw., 1801 (WV twilight zone)

Mnium punctatum = *P. r.*

Mnium rostratum = *Plagiomnium r.*

Mnium stellare = *P. s.*

Myurella Schimp. in Bruch, Schimper & Gumbel, 1853 - Theliaceae mosses in Encalyptales

Myurella sibirica (C. Mueller) Reimers, 1937 (Ozarks/AL)

Neckera Hedwig, 1801 - Neckeraaceae moss in Leucodontales

Neckera douglasii Hooker, 1829 (Ttx in Mariposa Co.,CA)

Orthotrichum Hedwig, 1801 - Orthotrichaceae moss in Orthotrichales

Orthotrichum strangularum Palisot de Beauvois, 1805 (AL)

Oxystegus ((S.O. Lindberg) ex. Limpricht) Hilpert, 1933 - Pottiaceae mosses in Pottiales

Oxystegus tenuirostris (Hook. & Taylor) A. J. Smith, 1977 (oxystegus moss/AL),

Paraleucobryum (Lindb., 1866 (as subgenus)) Loeske, 1907 (paraleucobryum moss)
Dicranaceae in Dicranales

Paraleucobryum enerve (*Dicranum e.* Thed., 1849) Loeske, 1849 twilight zone in nNM)

Paraleucobryum longifolium (Ehrh. ex. Hedw., 1801) Loeske, 1908 twilight zone in nNM)

Philonotus Brid., 1827 - Bartramiaceae mosses in Bryales

Philonotus fontana (*Mnium fontanum* Hedw., 1827) Brid., 1827 (WV twilight zone)

Plagiomnium Koponen, 1968 - Plagiotheciaceae mosses in Hypnales

Plagiomnium ciliare (C. Mueller) T. Koponen, 1977 (*Mnium affine* Blandow ex. Funck. var. *ciliare*; *Bryum a.* (Blandow ex Funck) Brid., 1819 (1818); *P.a.* (Blandow ex Funck) T.J. Kop., 1968) Anderson et al., 1990 (Ozarks, AL, WV twilight zones)

Plagiomnium cuspidatum (*Mnium c.* Hedwig, 1801) Anderson et al, 1990 (AL, Ozarks, WV twilight zones)

Plagiomnium punctatum (*Mnium p.* Aman, 1919) T. Koponen (Ozarks/ Tp alien? in AL; WV twilight zone)

Plagiomnium punctatum var. *elatum* (*Mnium p.* var. *e.* Bruch. & Schimp., 1838) . Koponen (WV twilight zone)

Plagiomnium rostratum (*Mnium r.* Schrader, 1802) (KY/plagiomnium moss)

Plagiomnium stellare (*Mnium r.* Reichard ex. Hedwig, 1801; *Stellariomnium s.*) (Ozarks/AL)

Plagiothecium Bruch & Schimp., 1852 - Plagiotheciaceae mosses

Plagiothecium cavifolium (Bridel) Iwatsuki, 1970 (AL),

Plagiothecium elegans (*Isothecium e.* Brid., 1827) Schimp., 1876 (WV twilight zone)

Plagiothecium elegans var. *gracilens* (Austin & Grout, 1910) R & C. (WV twilight zone)

Plagiothecium sylvaticum (*Hypnum s.* Brid., 1891) Schimp. 1851 var. *laxum* Mole. (WV twilight zone)

Physcomitrium (Bridel, 1826) Bridel, 1827 - Funariaceae mosses in Funariales

Physcomitrium undet. sp. (NV near lights)

Pohlia Hedwig, 1801 - Bryaceae mosses in Bryales

Pohlia cruda (*Mnium crudum* Hedw., 1801) Lindb., 1879 (twilight zone in nNM)

Pohlia nutans (Webera n.Hedw., 1801) Lindb., 1879 (twilight zone in WV)

Pohlia wahlenbergii (Weber & D.Mohr, 1807) Andrews in Grout, 1935 (Ozarks/Tp in WA; twilight zone in nNM; NV near lights)

Polytrichum Hedw., 1801 - Polytrichaceae mosses in Polytrichales

Polytrichum commune Hedw., 1801 (twilight zone in WV)

Polytrichum ohioense Renauld & Cardot, 1885 (twilight zone in WV)

Rhabdoweisia Bruch & Schimp., 1846 - Rhabdoweisiaceae mosses in Dicranales

Rhabdoweisia denticulata Wilson & Mitt., 1857 (WV twilight zone)

Rhabdoweisia fugax (*Weissia* f. Hedw., 1801) Bruch & Schimp., 1846 (WV twilight zone)

Rhapidostegium (B.S.G.) De Not. Ex De Not., 1867 = *Sematophyllum*

Rhodobryum (Schimp.) Limpricht & Rabenh., 1892 - Bryaceae mosses in Bryales

Rhodobryum roseum (*Mnium* r. Hedwig, 1801) Limpricht, 1892 (Ozarks/AL)

Schistotega D. Mohr & Dumort., 1829 (= *Catoptridium* Brid.) - Schistostegaceae mosses in Bryales

Schistotega pennata (*Gymnostomum pennatum* Hedw., 1801) F. Weber & D. Mohr, 1803 (luminous moss/ ME seacave)

Schistostega undet. sp. (US noncalcite caves)

Schwetschkeopsis Mueller, 1875 - Fabroniaceae mosses in Encalyptales

Schwetschkeopsis fabronia (*Schwagrichen*) Brotherus in Englem. & Prantz 1907 var. *calcareae* (Warnstorf) E.F. Waburg, 1962 [1967] (AL)

Sematophyllum Mitt., 1864 (= *Raphidostegium*) - Sematophyllaceae mosses

Sematophyllum carolinianum (*Hypnum* c. Mull. Hal., 1851; *Raphidostegium* n. (C. & M.) J. & S.) E. Britton, 1902 (twilight zone in WV)

Sematophyllum marylandicum (Mull. Hal.) E. Britton, 1902 (twilight zone in WV)

Sematophyllum novae-caesareae (*Hypnum* n. Austin, 1870; *Raphidostegium* n. (Aust.,) R. & C.) E. Britton, 1902 (twilight zone in WV)

Sphagnum Linneaus, 1753 - Sphagnaceae mosses in Sphagnales

Sphagnum compactum Lam. & DC., 1805 (*S. cymbifolium* ssp *compactum* (Lam. & DC.) Hartm., *S. cymbifolium* var. *compactum* (Lam. & DC.) Sw., 1829 (WV twilight zone)

Sphagnum imbricatum Hornsch. & Russow, 1865

Sphagnum imbricatum var. *affine* (Renauld & Cardot, 1885) Warnst., 1869 (WV twilight zone)

Sphagnum subsecundum Nees., 1819 (WV twilight zone)

Taxiphyllum M. Fleischer, 1923 - Hypnaceae mosses in Hypnales

Taxiphyllum deplanatum (Bruch & Schimper ex Sull.) Fleischer, 1923 (Ozarks/Tp in AL)

Taxiphyllum taxirameum (Mitten) Fleischer, 1923 (Ozarks/Tp in AL)

Thelia Sull. in Sullivan & Lesquereux, 1856 - Theliaceae mosses in Encalyptales

Thelia hirtella (Hedw.) Sullivant in Sull. & Lesquereux, 1856 (1857) (AL),

Thuidium Schimper in B.S.G., 1852 - - Haplohymenium moss in Leucodontales

Thuidium delicatulum (Hedwig) W.P. Schimper in B.S.G., 1852 (AL,WV twilight zone)

Thuidium microphyllum (*Hypnum m.* Hedwig, 1801) A.Jaeger, 1878 (WV twilight zone)

Thuidium recognitum (*Hypnum m.* Hedwig, 1801) Lindb., 1874 (WV twilight zone)

Thuidium pygmaeum W.P. Schimper in B.S.G., 1852 (AL)

Thuidium undet. sp. (VA)

Timmia Hedwig, 1801 - Timmiaceae in Encalyptales

Timmia megapolitana Hedwig, 1801 (Ozarks/ TTp in AL)

Tortula Hedw., 1801 - Pottiaceae mosses in Pottiales

Tortula ruralis (*Barbula r.* Hedw., 1801) Hedw., 1802 (twilight zone in nNM)

Tortella. (Lindb., 1879) (as subgenus of *Mollia*) Lindb., 1888 - Pottiaceae mosses in Pottiales

Torella caespitosa (*Barbula c. Schwagr.*, 1811) Limpr., 1888 (twilight zone in WV)

Torella viridis Paris, 1803 (twilight zone in nNM)

Trichostomum Bruch in F. Mueller, 1829 - Pottiaceae mosses in Pottiales

Trichostomum tenuirostre (W.J. Hooker & Taylor) Linberg, 1864 (AL)

Ulota D. Mohr, 1806 - Orthotrichaceae mosses in Orthotrichales:

Ulota americana (Beauv.) Limpr. = *U. curvifolia*

Ulota curvifolia (*Orthotrichum curvifolium* Wahlenb., 1812) Lilj., 1816. (= *U. curvifolia*) (WV twilight zone)

Webera Schreb., 1791 - Bryaceae mosses in Bryales

Webera sessilis Lindb., 1865 (WV twilight zone)

Weisia viridula Hedw. = *Oxystegus tenuirostris*

Moths, Skippers & Butterflies

Insects of Order Lepidoptera (moths, butterflies & skippers), Subclass Pterygota, Division Neoptera, Subdivision Endopterygota (=Holometabola), Section Panorpida or Mecopterida, Subsection Amphiesmenoptera, Superorder Amphiesmenoptera. Name from *lepidos*, “scaly” and *pteron*, “wing.” Syn. Heterocerca.

Moth is a nonscientific and traditional term for Lepidoptera that close their wings next to their body and which often fly at night. Unlike butterflies, larvae spin either a silken cocoon or make a silk-lined pupal cell and antennae tips are not clubbed shaped although those of some daytime flying moths may be swollen. Larvae (usually called caterpillars) have prolegs only on abdominal segments 3-6, at most, and the last segment in some leafminers have tiny prolegs. Some loopers have one or more pairs of prolegs missing. At least 3 pairs of ocellis and usually 6. Often in

twilight zone. Wingspan 2-300 mm (usually at least ≥ 5 mm. & < 80 mm). Hind wings are usually more oval and also smaller and with fewer veins. Body soft to leathery. Front wings are often triangular or trapezoidal but lanceolate in many micromoths. Most moths and skippers are drab but there are many exceptions. The head is usually small and the sucking mouthparts (haustellum), if present, forms a coiled tube beneath it. Antennae usually only about half the length of the body and of various shapes; some families have very long antennae, esp. in males. The thorax is stout due to large flight muscles. A few species have wingless females. The abdomen is slender, elongate and either cylindrical or more oval and stout (esp. if filled with eggs) The abdomen has no obvious cerci and reproductive organs are retracted into the body.

Almost all lepidopteran larvae feed on flowers, fruit, stems, and roots of flowering plants. A few are scavengers, gannophiles, carnivorous or parasites. Adults feed on nectar, sap, fruit and liquids from decaying animals or plants. About 148,000 known species with 11,600 species and 2,340 genera in the US and Canada.

Bibl.: Crawford 1975b, 1976c;; Heppner n.d.; Hodges et al. 1983; Holland 1903; Nielson 1989; A. Peterson 1965; Robinson 1980; Turquin 1994; W. Forbes 1923; M. Young 1997; **Areas:** eCanada: R. Morris 1980; East: Covell 1984; D. Wagner et al. 1997; **FL:** Kimball 1965; **MO:** Heitzman & Heitzman 1987; **NE:** McCabe 1991; **PA:** Titz 1952

Subclass Pterygota

 Infraclass Exopterygota

 Superorder Endopterygota

 Order Lepidoptera

 Suborder Glossata (= Microlepidoptera)

 Infraorder Heteroneura

 Division Ditrysia

 Section Tineina

 Subsection Tineina

 Superfamily Pyraloidea

 (Pyralidae) (also in Family Group Pyralidiformes)

 Superfamily Tineoidea

 (Gracillariidae, Lyonetiidae, Tineidae) (also in Tineiformes)

 Superfamily Yponomeutoidea

 (Acrolepiidae) (also in Tineiformes)

 Section Cossina

 Subsection Cossina

 Superfamily Tortricoidea

 (Tortricidae) (also in Family Group Tortriciformes)

Subsection Bombycina
("Macrolepidoptera") (includes butterflies)
Superfamily Noctuoidea
(Noctuidae) (also in Family Group Noctuiformes)

("Rhopalocera")
Superfamily Bombycoidea
(Saturniidae) (also in Family Group Bombyciformes)

Superfamily Geometroidea
(Geometridae) (also in Family Group Pyralidiformes)

ACROLOPHIDAE (tube moths) (*Acrolophus*) **Bibl.:** Hasbrouck 1964
Subfamily Amydriinae (*Amydria*)

GELECHIIDAE (twiler or gelechiid moths) **Bibl.:** Busck 1903; Hodges 1971, 1974, 1986
Subfamily Gelechiinae
Tribe Gelechiini (*Filatima*)

GEOMETRIDAE (geometrid moths & measuring worms; loopers, cankerworms; measuringworm moths) About 12,000 species. **Bibl.:** D. Ferguson 1985; McGriffin 1967-90; A. Packard 1876

Subfamily Ennominae

Tribe Anagogini (*Anagoga*)
Tribe Boarmiini (*Ectropis*)
Tribe Caberini (*Cabera*)

Subfamily Geometrinae
Tribe Geometrini (*Geometra*)

Subfamily Larentiinae
Tribe Eudulini (*Eubaphe*)
Tribe Eupitheciini (*Eupithecia*)

Tribe Hydriomenini (*Triphosa*)
Tribe Rheumapterini (*Mesoleuca*, *Rheumaptera*)

Subfamily Sterrhinae
Tribe Scopulini (*Scopula*)

GRACILARIIDAE (leafminer moths; leafblotch miners)
Subfamily Gracillariinae (*Caloptilia*)

LYONETIIDAE (lyonetiid moths)
Subfamily Lyonetiinae (*Lyonetia*)

NOCTUIDAE (owlet moths & underwings; noctuid moths, noctuids, millers, cutworms, armyworms). About 20,00 species with 3,500 in NA. **Bibl.:** Lafontaine & Poole 1991; Poole 1989; Poole & Gentili 1996; Rings et al. 1992; Rockburne & Lafontaine 1976; J. Smith 1895; J. Smith & Dyar 1898

Subfamily Acronictinae

Tribe Acronictini (*Acronicta*)

Subfamily Amphipyrinae

Tribe Apameini (*Apamea*) (also put in Saturnidae)

Tribe Feraliini (*Feralia*)

Subfamily Catocalinae (*Catocala*, *Hypocala*, *Scoliopteryx*)

Subfamily Herminiinae (*Idia*, *Phalaenostola*)

Subfamily Hypeninae (*Hypena*, *Schrankia*, undet. genus & sp. in CO)

Subfamily Noctuinae (= Agrotinae of authors)

Tribe Agrotini (*Agrostis*) (*Euxoa*)

Tribe Aniclini (*Peridroma*, *Pronoctua*)

Subfamily Plusiinae

Tribe Plusiini (*Syngrapha*) (also put in Abrostolini)

PSYCHIDAE (bagworm moths) (incl. *Hyalaracta*) **Bibl.:** D. Davis 1964

PTEROPHORIDAE (plume-winged moths) (Tx or Tp undet. sp. in Lewis and Clark C., Jefferson Co., MT)

PYRALIDAE (= Pyralididae) (snout moths; pyralid, grass, & wax moths; pyralid moths) About 10,000 species. **Bibl.:** Forbes 1923; Munroe 1972-3

Undet. genus & sp.? in CO

Group Pyralinina

Subfamily Pyralinae (*Pyralis*)

Subfamily Nymphulinae

Tribe Nymphulini (*Nymphula*, *Paraponyx*)

SATURNIIDAE (emperor moths; giant silkworm moths; wild or giant silk moths & day flying moths) **Bibl.:** D. Ferguson 1971-2; Tuskes et al. 1996

Subfamily Ceratocampinae (*Anisota*)

TINEIDAE (clothes or guano moths; tineid moths)

Subfamily Nemapogoninae (*Nemapogon*)

Subfamily Tineinae (*Monopis Tinea*)

TORTRICIDAE (leafroller & olethreutine moths; tortricids; fruit & bell moths)

Undet. Genus (bat gauno Tx in MO)

Subfamily Olethreutinae

Tribe Eucosmini (*Zeiraphera*)

Subfamily Tortricinae. Bibl.: J. Pwell 1964

Tribe Archipini (*Archips*)

Acrolophus Poey, 1832 (also put in Tineidae) Acrolophidae moth (49 species in US or Canada)

Acrolophus undet. sp. (Ac in Mold Hole, Travis Co., TX)

Agrotis Oschsenheimer, 1816 - Noctuidae moth, Subfamily Noctuinae, Tribe Agrotini (29 species in US or Canada)

Agrotis undet. sp. (Ac or Tx in HI)

Acronicta Oschsenheimer, 1816 (dagger moths) Noctuidae moth, Subfamily Acronictinae, Tribe Acronictini (75 species in US or Canada)

Acronicta undet. sp. (Ac in cave in Val Verde Co., TX)

Amydria Clemens, 1859 (= *Casape* Walker, 1864; *Amadria* Chambers (missp.); *Amadrya* C.1878 (missp.); *Neomeristis* Meyrick 1919) Acrolophidae moths, Subfamily Amydriinae (once put in Tineidae)

Amydria arizonella Dietz, 1905 (AZ epigeal/ Tp in AR, sNM)

Amydria near *effrenatella* Clemens, 1859, emend. by Stainton, 1872 (= *A. coloradella* Dietz, 1905) (Tp in Wyatt (Edwards Co.) & Felton (Sutton Co.), TX)

Amydria effrenatella Clemens, 1859 (*A. effrenatella* Stainton, 1872 (emend.); *A. coloradella* Dietz 1905; *Myrmecozela e.*) (Ac in Edwards, Sutton Cos., TX & Peddler's Tunnel, NS)

Amydria sp. prob. *arizonella* Dietz, 1905 (Tp in Irion, Cutton, Uvalde Cos., TX)

Amydria sp. prob. *curvistrigella* D.1905 (= *A. pandurella* D., 1905) (Tp in cave in Irion Co., TX)

Amydria undet. sp. (Tx in NV).

Anagoga Hubner, 1823 (*Azinephora* Stephens, 1827; *Numeria* Duponchel, 1829; *Axinophora* Agassiz, 1847 Emend.; *Anagoge* Stephens, 1850 Missp.) Geometridae moth, Subfamily Ennominae, Tribe Anagagini (1 species in US or Canada)

Anagoga occiduaria (*Numeria o.* Walker, 1861; *Ellopiia plagifasciata* W., 1863) (NF to NC, w. to BC, OR, s. to SD/ Tx or Ac in NWT/ American barred umber)

Anisota Hubner, 1820 (= *Adelocephala* Duponchel, 1841; *Adelocampa* Packard, 1905 (missp.) (oakworm moths) Saturniidae moth, Subfamily Ceratocampinae (also put in Noctuidae, Subfamily Amphipyryinae, Tribe Apameini) (6 species in US or Canada)

Anisota oslari Rothchild, 1907 (= *A. skinneri* Biederman, 1908; *A. neomexicana* Brehme, 1909) (royal moth, Carlsbad C.(NM))

Apamea Ochsenheimer, 1816 (= *Abronnias* Billberg, 1820; *Septis* Hubner, 1821; *Hama*, *Xylophasia* Stephens, 1829; *Syma* S.1850 (homo.); *Agrostobia* Boie, 1835; *Crymodes* Guenee, 1841; *Dimya* Moore, 1882; *Eurabila* Butler, 1889; *Eleemosia* Prout, 1901; *Protagrotis* Hampson, 1903; *Agroperina*, *Trichoplexia* H.1908; *Heteromma* Warren, 1911 (homo.); *Heterommiola* Strand, 1912; *Furvabromias*, *Loscopia* Beck, 1991) Noctuidae moth, Subfamily Amphipyryinae, Tribe Apameini (40 species in US or Canada)

Apamea amputatrix (*Hadena a.* Fitch, 1856; *Eurois pluviosa* Walker, 1865; *H. formosus* Ellsworth, 1918) (Labrador to NC, w. across s. Canada to OR, s. to MO/ Tx in cave in Uinta Mts,UT/ yellow-headed cutworm moth; yellow-headed cutworm)

Archips Hubner, 1822 - Tortricidae moth, Subfamily Tortricinae, Tribe Archipini (21 species in US or Canada)

Archips rosanus (*A. americanus* Linnaeus, 1758; *A. amerina* Linnaeus, 1761; *A.laevigana* D. & S., 1775) (Ac in cave in Hays Co., TX)

Cabera Treitschke, 1825 (*Sphecodes* Hubner, 1806 Unav.; *Deilinia* Hubner, 1825; *Cabera* Stephens, 1829 Homo.; *Cabira* Sodoffsky, 1837 emend.; *Dilina* Agassiz, 1847 Emend. *Cabiron* Unger, 1856 Emend.; *Deilinea* Holland, 1893 Missp.; *Dilinia* Hampson, 1895 Emend.) Geometridae moths, Subfamily Ennominae, Tribe Caberini (1 species in US or Canada)

Cabera exanthemata (= *Phalaena e.* Scopoli, 1763; *P. exanthemaria* Borkhausen, 1794; *Geometra striaria* Hubner, 1799; *P. approximaria* & *arenosaria* Hawaorth, 1809; *Deilinia bryantaria* Taylor, 1906) (Tx or Ac in NWT)

Caloptilia Hubner, 1825 (= *Poeciloptilia* Hubner, 1825; *Gracillaria* Haworth, 1828; *Ornix* Treitschke, 1833; *Coriscium*, *Gracilaria* (missp.) Zeller, 1839; *Calliptilia* Agassiz (emend.); *Antiolopha* Meyrick, 1894; *Gracilaria* Walsingham, 1907 (emend.); *Sphyrophora* Vari, 1961; *Cecidoptilia*, *Minyoptilia*, *Phylloptilia*, *Rhadinoptilia* Kumata, 1982) Gracilariidae moths, Subfamily Gracillariinae (63 species in US or Canada)

Caloptilia alnivorella (*Gracilaria a.* Chambers, 1875) (Ac or Tx in sON)

Catocala Schrank, 1802 - Noctuidae moth, Subfamily Catocalinae (110 species in US or Canada)

Catocala similis Edwards, 1864 (NY, SOn to FL, w. to MB,TX/similar underwing/Tx or Ac in OH)

Deileia = *Cabera*

Ectropis Hubner, 1825 (= *Boarmia* Stephens, 1829 (homo.); *Tephrosia* Boisduval, 1840; *Coenobita* Gistl, 1848) Geometridae moth, Subfamily Ennominae, Tribe Boarmiini (1 species in US or Canada)

Ectropis crepuscularis (*Geometra crepuscularia* Denius & Schiffermuller, 1775) (small, engrailed geometer/ NW, NE, central states/ Ac? in WA)

Eubaphe Hubner, 1823 (= *Ameria* Walker, 1854; *Euphanessa* Packard, 1864; *Leptidule* Butler, 1877) Geometridae moths, Subfamily Larentiinae, Tribe Eudulini (also put in Ennominae) (5 species in US or Canada)

Eubaphe mendica (= *Nudaria m.* W., 1854; *Eudule biseriata* Herrich-Schaffer, 1855)) (Tx in OH)

Eupithecia Curtis, 1825 (= *Arcyonia*, *Dyscymatoge*, *Eucymatoge*, *Hypepirritis*, *Leucocora*, *Tarachia*, *Tephroclystia* Hubner, 1825; *Eupithecia* Bruand, 1847 (homo.); *Eupithesia* Desmarest, 1847 (missp.); *Eupitecia* Rondani, 1872 (missp.); *Eupethecia* Grote, 1882 (missp.); *Epicaste* Gumpfenberg, 1887 (homo.); *Dietzia* Schutze, 1956, *Petersenia* S.1958; *Bohatschia* S.1960; *Heteropithecia*, *Neopithecia*, *Propithecia* Vojnits, 1985) Geometridae moths, Subfamily Ennominae, , Subfamily Larentiinae, Tribe Eupitheciini (157 species in US or Canada) **Bibl.:** McDonough 1949

Eupithecia undet. sp. (Tx or Ac in OR)

Epizeuxis = *Idia*

Euxoa Hubner, 1821 (= *Brotis*, *Exarnis*, *Metaxyja*, *Mimetes*, *Telmia* H.1821; *Pleonectopoda* Grote, 1873; *Carneades* G.1883; *Chorizagrotis* Smith, 1890; *Orosagrotis* Hampson, 1903; *Paragrotis* Dyar, 1903; *Mesoeuxoa* Corti, 1932; *Menada* Kozhantschikov, 1937; *Longivesica* Hardwick, 1970) Noctuidae moths, Subfamily Noctuinae, Tribe Agrotini (191 species in US or Canada)

Euxoa axillaris (*Agrotis a.* Grote, 1873; *A. introferens* Grote, 1875; *A. agrestis* G.1877) (Tx in cave in Uinta Mts, UT/ army cutworm)

Euxoa idahoensis (*Agrotis i.* Grote, 1878; *A. furtivus* Smith, 1890)) (Tx in cave in Uinta Mts, UT)

Feralia Grote, 1874 (= *Arthrochlora* & *Momophana* G.1875) Noctuidae moths, Subfamily Amphipyriinae, Tribe Feraliini (6 species in US or Canada)

Feralia jocosa (*Dipthera j.* Guenee, 1852) (seCanada to nFL, w. to ON, sMO, TX/A c or Tx in sON/ Jocose Sallow)

Filatima Busck, 1939 - Gelechiidae moths, Subfamily Gelechiinae, Tribe Gelechiini (55 species in US or Canada)

Filatima undet. sp. (Ac in cave in Edwards Co., TX) Gelechiidae moth

Geometra Hubner, 1799 - Geometridae moth, Subfamily Geometrinae, Tribe Geometrini
Geometra striaria Hubner, 1799 (*P. approximaria* & *arenosaria* Haworth, 1809; *Deilinia bryantaria* Taylor, 1906) (Tx or Ac in NWT)

Hyalarcta Meyrick & Lower, 1907 - Psychidae moth (1 species in US or Canada)

Hyalarcta huebneri (Westwood) (leaf case moth/Australian alien? Ac or Tx in sON)

Hypena Schrank, 1802 (= *Erchila* Billberg, 1820; *Herpyzon* H.1822; *Bomolocha*, *Ophiuche* H.1825; *Badausa* Walker, 1863; *Pelialia* W.1865; *Phanaspa* W.1866; *Euhypena*, *Macryhypena*, *Meghypena*, *Plathypena* G.1873; *Apanda*, *Mathura* Moore, 1882; *Hypoepa* Leech, 1889; *Anepischetos* Smith, 1900; *Placerobela* Turner, 1903; *Anepa* Swinhoe, 1905 (homo.) Noctuidae moths, Subfamily Hypeninae (4 species in US or Canada)

Hypena humuli Harris, 1841 (= *H. germanalis* Walker, 1859; *H. evanidalis* Robinson, 1870; *H. olivacea* Grote, 1873; *H. albopunctata* Tepper, 1881) (Tx or Ac in MO, PA; Tx? in WI/ hop looper)

Hypena scabra (= *Hyblaea* s. Fabricius, 1794 or, 1798; *Hypena erectalis* Guenee, 1854; *Poaphila revoluta* Walker, 1858; *Hypena subrufalis* Grote, 1872; *Plathypena* s.) (E/ TTx in IL, IN, OH, PA/ green cloverworm)

Hypocala Guenee, 1852 - Noctuidae moths, Subfamily Catocalinae (1 species in continental US or Canada)

Hypocala velans Walker, 1857 (epigean in Kauai, Oahu, Molokai, Maui, Hawaii/ Tp or Tx in HI)

Idia Hubner, 1813 (= *Epizeuxis* H., 1818; *Camptyllochila* Stephens, 1834; *Helia* Duponchel, 1845 (homo.); *Camptyllochila* Agassiz, 1847 emend.; *Helia* Guenee, 1854 (homo.); *Pseudaglossa* Grote, 1874) Noctuidae moths, Subfamily Hermiinae (15 species in US or Canada)

Idia near *lubricaulis* (*Epizeuxis* l. Geyer, 1832; *C. bistrigalis* Stephens, 1834; *Bleptina surrectalis* Walker, 1859; *Helia occidentalis* Smith, 1884; *E. intensalis*, *partitalis* S., 1980; *E. cobeta* S.1910/ Glossy Black Idia/ epigean in E/Tx or Ac in CA)

Lyonetia Hubner, 1825 (= *Agyromiges* Curtis, 1829 Emend.; *Argyromis* Stephens, 1829; *Nocturno* & *Lyonnetia* (missp.) Gistel, 1847; *Olethria* G., 1848; *Gracillaroides* Bruand, 1851; *Lyonetiola* Kuroko, 1964) Lyonetiidae moth, Subfamily Lyonetiinae (5 species in US or Canada)

Lyonetia near *siliciella* Busck, 1904 (Tx or Ac in NWT)

Mesoleuca Hubner, 1825 - Geometridae moths, Subfamily Larentiinae, Tribe Rheumapterini (2 species in US or Canada)

Mesoleuca undet. sp. (Ac? in WA)

Monopis Hubner, 1825 (= *Blabophanes* Zeller, 1852; *Hyalospila* Herrich-Schaffer, 1853)
Tineidae moth, Subfamily Tineinae (7 species in US or Canada)

Monopis prob. *crocicapitella* (*Tinea* c. Clemens, 1859; *T. hyalinella* Staudinger, 1870;
Blabophanes lombardica Hering, 1889; *B. heringi* Richardson, 1893) (AL, prob TN/ Tp) **Bibl.:**
Robinson 1980

Monopis undet. sp. (Ac or TTx in NWT)

Myrmecozela Zeller, 1852 - Tineidae moths
Myrmecozela sp. nr. *effrenatella* = *Amydria e.* in Acrolophidae

Nemapogon Schrank, 1802, emend. by Agassiz, 1847 (= *Brosia* Hubner, 1806 (Unav.);
Nemopogon Oken, 1815 (missp.); *Diaphthirusa* H.1825) Tineidae moth, Subfamily
Nemapogoninae (15 species in US or Canada)

Nemapogon undet. sp. (E/Tx in MO/ grain moth)

Nymphula Schrank (= *Elophila* Hubner, 1822; *Hydrocampus* Berthold; *Hydrocampe* Stephens;
Hydrocampe Latreille, 1829; *Pseudoparaponyx* Patocka, 1951; *Cyrtogramme* Yoshiyasu, 1985)
Pyralidae moths, Subfamily Nymphulinae, Tribe Nymphulini (1 species in US or Canada)

Nymphula *ekthlipsis* (*Hydrocampe* e. Grote, 1876) (TX hyporheic)

Paraponyx Hubner, 1825 - Pyralidae moths, Subfamily Nymphulinae, Tribe Nymphulini (6 species in US or Canada)

Paraponyx undet. sp. MI lake benthic)

Peridroma Hubner, 1821 - Noctuidae moths, Subfamily Noctuinae, Tribe Aniclini (1 species in continental US or Canada)

Peridroma undet. sp. (Tx in HI)

Phalaenostola Grote, 1873 - Noctuidae moths, Subfamily Herminiinae (4 species in continental US or Canada)

Phalaenostola *metonalis* Walker, 1859 (Tx? in WI)

Phereoeca Hinton & Bradley, 1956 (plaster bagworms) Tineidae moths (1 species in continental US or Canada)

Phereoeca walsinghami (Busck, 1933) (TTx in nests of *Hirundo fulva* swallows in cave in Edwards Co., TX; Ac in Enchanted Rock Cave, Llano Co., TX)

Plathypena scabra = *Hypena s.*

Pronoctua Smith, 1894 - Noctuidae moths, Subfamily Noctuinae, Tribe Aniclini (2 species in continental US or Canada)

Pronoctua typica S.1894 (Tx & TTx in nAZ)

Pyralis Linnaeus, 1758 - Pyralidae moths, Group Pyralinina, Subfamily Pyralinae (6 species in US or Canada)

Pyralis undet. sp. MI lake benthic

Rheumaptera Hubner, 1822 (*R. H.*, 1806 Unav.; *Eulype* H., 1825; *Eulypa* H., 1826 (missp.); *Melanippe* Duponchel, 1829; *Rheumatoptera* Gumpfenberg, 1887; *Rhumaptera* Kirby, 1897 Missp.) Geometridae moths, Subfamily Larentiinae, Tribe Rheumapterini (2 species in US or Canada)

Rheumaptera hastata (*Phalaena h.* Linnaeus, 1758; *Melanippe hastaria* Boisduval, 1840 Emend.; *M. gothicata* Guenee, 1857; *M. furcifascia* Walker, 1862) (Labrador to NC & TN, west across Canada, s. to SD/TTx or Ac in NWT/spear-marked black)

Schrankia Hubner, 1825 (= *Hypenodes* Guenee, 1854; *Hypenopsis* Dyar, 1913; *Translatix* Berio, 1991) - Noctuidae moth, Subfamily Hypenodinae

Schrankia undet. sp. (Tp in HI Volcanoes Natl. Park & Kazumura C., HI Island, HI)

Scoliopteryx Germar, 1810 (= *Pterodonta* R.L., 1817; *Ephemias* Hubner; *Euphais* H.1822; *Gonoptera* Berthold, 1827) Noctuidae moths, Subfamily Catocalinae (once in Hypeninae) (1 species in US & Canada)

Scoliopteryx libatrix (*Phalaena l.* Linnaeus, 1758; *Bombyx libatrix* Haworth, 1803 Emend.) (NA, Europe, Russia/ HTx cave orherald moth; scalloped owlet/ HTx in AL, AR, BC, CA, GA (Dade & Walker Cos.), IL, IA, IN(8 cos.; S4?/G4), KY (Mammoth C.), MB, MD, MO, New Brunswick, NJ, NM, NJ, NS, NY, OH, OK, sON, OR, PA, PQ, TN, UT, WA, WV, YK). Roeder & Fenton, 1973

Scopula Schrank, 1802 - Geometridae moths, Subfamily Sterrhinae, Tribe Scopulini (24 species in US or Canada)

Scopula undet. sp. (Ttx in Vancouver Island, BC)

Syngrapha Hubner, 1821 (= *Caloplusia* Smith, 1884; *Cornutiplusia* Kostrowicki, 1961; *Palaeographa* Kljutschko, 1983; *Aingrapha*, *Diasyngrapha*, *Microsyngrapha*, *Parsyngrapha* Beck, 1991) Noctuidae moths, Subfamily Plusiinae, Tribe Plusiini (also put in Abrostolini) (24

species in US or Canada)

Syngrapha *alias* (*Autographa a.* Ottolengui, 1902; *A. interalia* O.1919) (Ac or Tx in sON)

Tinea Linnaeus, 1758 (*T. Geoffroy*, 1762 (Unav.); *T. Muller*, 1764 (missp.); *Ses* Hubner, 1806 (Unav.); *Ses* H.1822; *Tinearina* Rafinesque, 1815 (emend.); *Acedes*, *Autoses* H., 1825; *Taenia* (missp.) W.1855; *Edosa* W.1866; *Chrysoryctis* Meyrick, 1886; *Dystinea* Börner, 1925; *Tineopsis* Zagulajev, 1960) Tineidae moth, Subfamily Tineinae (19 species in US or Canada)

Tinea irrepta Braun, 1926 (Tx? in wCO)

Tinea undescr. sp. (*? cave in Grand Canyon Natl. Park, Coconino Co, AZ)

Tinea undet. sp. (Tp or Tx in Carlsbad C.(NM)? & TX; Tx in AZ)

Triphosa Stephens, 1829 (= *Umbrosina* Bruand, 1847) Geometridae moths, Subfamily Larentiinae, Tribe Hydriomenini (4 species in US or Canada)

Triphosa haesitata h. (= *Scotosia* h. Guenee, 1857) (most of NA except nAK, nCanada/ tissue moth/ Htx in BC, CA, Manitoba, NS, ON, NV, OR, PQ, WA) Graham, 1968-a. Their wingspan is typically 3-4cm. Caterpillars feed on buckthorns, cascara (*Rhamnus* sp.), barberry, hawthorn and oak.

Triphosa haesitata affirmaria (= *Scotosia affirmata* Guenee, 1857) (Tx in sON & PQ)

Triphosa undet. sp. (Tx? in PQ)

Zeiraphera Treitschke, 1829 (*Ziophora* Agassiz, 1847 Amend.) Tortricidae moth, Subfamily Olethreutinae, Tribe Eucosmini (8 species in US or Canada)

Zeiraphera improbana (*Sciaphila i., destitutana, indivisana* Walker, 1863; *Cydia pseudotsugana* Kearfott, 1904) (Tx or Ac in NWT) Tortricidae moths, Subfamily Olethreutinae, Tribe Eucosmini

moth flies - See Diptera: Psychodidae

multivoltine - Species who have more than two broods or generations each year.

Musci - See mosses.

mucormycosis - Fungus disease contracted by breathing spores in the dirt. Not known from caves.

mushroom - **Fungi** with large/prominent fruiting bodies (esp. Class Hymenomycetes).

musk-ox - See mammal

muskrat - See mammal, muskrat

mutualism - An ecology type of relationship between two organisms in which both are benefitted. Incl. inquilism. Lavoie, Studier, Edwards & Apgar, 1985

mycelium - A mass of branching, threadlike filaments called hyphae; the vegetative part of fungi. Often found on tree roots & in organics.

mycophage - Syn: fungivore

mycorrhiza - Fungi part of a symbiotic or controlled or mutual parasitism with roots. Commonly seen in shallow caves.

microphthalmous - Syn: obligate (**troglobitic**) forms.

myriapod - Crustacean (Superclass Myriapoda). Incl. centipede, millipede, pauropod & symphylid.

myrmecophiles - non-ants who live closely with ants. May be mutualists, symbiotes or parasites. Myrmecophilous beetles known from caves. Syn.: ant guests, myrmecophilous beetles. Symphiles (true ant guests) are usually beetles who look like ants and produce exudates favored by ants.

Mysid - See shrimp

MYSTACOCARIDA

Tiny (<1mm. long) and worm-like, primitive in retaining overt segmentation of head

Kingdom Animalia

Phylum Arthropoda

Subphylum Crustacea

Class Maxillopoda

(barnacles, ostracods, mystacocarids, branchiurans, barnacles & copepods)

Subclass Mystacorida

Derocheilocarididae (*Derocheilocaris*)

Derocheilocaris Pennak & Zinn, 1943 - Derocheilocarididae mystacocarids

Derocheilocaris hessleri Friauf & Bennett, 1974 (FL, MS marine beach interstitial)

Derocheilocaris ingens Hessler, 1969 (ME marine beach interstitial)

Derocheilocaris typicus Pennak & Zinn, 1943 (FL to CT, MA, NH marine beach interstitial)

nannoplankton - 2-20 micron species

native - 1. Syn: endemic. 2. A species not introduced by humans.

natural selection - See also evolution - **Bibl.:** Culver, Jernigan, O'Connel & Kane 1994; Jernigan, Culver & Fong 1994; Jernigan & Fong 1994

naturalization - The beginning of a breeding population where they were not previously establish. Done for some cave species in California threatened by a dam.

nautiloid - Any cephalopod of subclass Nautiloidea, Endoceratoides, or Actinoceratoides, typified by a centrally located siphuncle & by a straight, curve, or coiled chambered external shell with less elaborate sutral flexures than in ammonoids.

Nearctic - Animal biogeographical region that includes NA s. to Mexico. Now combined with Palearctic to refer to the Holarctic.

necromass - Dead organics that is part of the primary production of an area.

necrophage - Scavenger who feeds on animal carcasses.

necrophytes - Plants which live on dead organisms. Syn.: saprophytes.

nektonic - Pertaining to a swimming pelagic species.

Nematode - -- See worms.

nemertine worms - See worm, ribbonworm.

neoendemic - Recently evolved endemic. Syn. progressive endemic.

neonate - A newborn young.

neoteny - Heterochrony retention of juvenile form & behavior even as a mature individual. Some cave salamanders are neotenic. Cf. pedomorphosis. Andrews, 1962; Baker, J., 1961; Andrews, M., 1962; Baker, J., 1961.; Bishop, S., 1944; Bishop et al., 1937; Bogart, 1967; Brandon, 1965; Brown, Bryce C. 1942, 1979; Burger, et al., 1950; Dundee, 1962; Kezer, 1952; McAllister & Fitzpatrick, 1985; Mitchell, R. & Smith, 1972; Norris et al., 1963; Potter & Rabb, 1960; Smith, H. & Potter, 1946; Sweet, 1977; Yeatman, 1967

neotype - A specimen designated as the type when the holotype or lectotype has been lost or suppressed by the ICZN.

nest - Organic fill organized into a home for woodrats, birds, etc.

Neuroptera

(= Planipennia) (lacewings, mantispids & antlions). Incl. Megaloptera: hellgrammite (larvae of dobsonflies in Corydalidae & Sisyridae), alderflies, dobsonflies, fishflies), lacewings, mantispid & aquatic Neuroptera (Sisyridae)). Of Class Insecta, Subdivision Endopterygota (=Holometabola). Name from neuron, "sinew" and ptron, "wing," from the old usage of nervation (or neuration) meaning "strengthening by sinews" and referring to the netlike pattern of

wing veins. The Neuroptera may not be a single order and is sometimes named the Section Neuropterida. The most primitive insect order with complete metamorphosis (holometabolism: egg, larvae, pupae, adults).

Wingspan 5-160 mm. Body soft-textured; shape various, but elongate, cylindrical (unlike flattened stoneflies), usually with long, narrow, simple abdomen. Most are dull brown, with some green, others black, and some tripicial species with wing markings in vivid colors. Antennae usually are long with many antennomeres, but some are short and not much longer than the head and thorax, rarely pectinate. Both wing pairs are similar, usually longer than the abdomen and held over it when not in use. Well developed legs with some raptorial front legs in predators. Abdomen without cercie.

Most larvae are carnivores, so are some adults but most feed on nectar and pollen. Larvae very different from adults (as in most other aquatics: stoneflies, caddisflies, mayflies) with a terminal pair of prolegs. Larvae cannot pass feces until it is excreted as meconium when the adult emerges. About 4,670 species in the world with 349 species in 61 genera in the US and Canada.

Bibl.: Oswald & Penny 1991; Froeschner 1947; J. Oswald & Penny 1991; Penny, Adams & Stange 1997; Poole & Lewis 1996a

Undet. Genus (8160 years old in *Neotoma* woodrat nest in Butler Mts., Yuma Co,AZ)

Suborder Planipennia; Infraorder Hemerobiiformia
Superfamily Hemerobiodea (once in Osmyloidea)

Sisyridae ((aquatic Neuroptera; spongillaflies) (*Climacia*) **Bibl.:** Parfin & Gurney
1956

Inhabit only freshwater lakes

Suborder Megaloptera (= Sialodea)
Superfamily Myrmeleontiodea

Myrmeleontidae (antlions & doodlebugs)
(*Myrmeleon*) **Bibl.:** N. Banks 1927; Stange & R. Miller 1990

Coryalidae (dobsonflies; dobsonflies & fishflies)
Corydalinae (dobsonflies & hellgrammites) (*Corydalus*; MO Tx or Ac genus)

Chauliiodinae (fishflies)
(*Dysmicohermes*, *Neohermes*, *Nigronia*, *Orohermes*, *Protochaulioides*)

Sialidae (alderflies) (*Sialis*) **Bibl.:** K. Davis 1903

Chauliodes Latreille, 1796 emend. Billberg, 1820 - Corydalidae Megaloptera, Subfamily Chauliiondinae (2 species in US or Canada)

Chauliodes pectinicornis (*Hemerobius p.* Linnaeus, 1763; *H. virginiensis* Drury, 1773) (E epigean /Tx or Ac in sON)

Chauliodes undet. sp. or species (Tx or Ac in MO; Ac in AR; Tx on AR (Marion Co.)

Corynorhinus townsendii ingens bats)

Climacia MacLachlan, 1869 - Sisyridae Neuroptera (3 species in US or Canada)

Climacia aureolaris (*Micromus a.* Hagen, 1861 (*C. dictyona* Needham, 1901; *Sisyra lampra* Nava, 1914) (Tx or Ac in sON)

Climacia undet. sp. (rare Virginian marine infauna)

Corydalus Latreille, 1802 (*Corydalis* Latreille, 1804 (missp.); *Coydalium* Oken, 1815 (missp.); *Corydalia* Billberg, 1830 (missp.)) Corydalidae Neuroptera, subfamily Corydalinae (3 species in US or Canada). **Bibl.:** Contreras-Ramos 1996

Corydalus cornutus (*Hemerobius c.* Linnaeus, 1758; *Corydalis cognata* Hagen, 1861) (NE, SE, TX epigean/ dobsofly/ IL, TX hyporheic) Bibl.: A. Brown 1974; Contreras-Ramos 1998

Corydalus undet. sp. (Tx or Ac in CA)

Dysmicohermes Munroe, 1953 - Corydalidae Megaloptera, Subfamily Chauliondinae (3 species in US or Canada)

Dysmicohermes crepusculus = *Orohermes c.*

Dysmicohermes disjunctus (*Chauliodes d.* Walker, 1866) (Ac or Ttx in Vancouver Island, BC)

Myrmeleon Linnaeus, 1767 – Myrmeleontidae Neuroptera

Myrmeleon undet. sp. (ant lion / TTX in TX)

Neohermes Banks, 1908 - Corydalidae Megaloptera, Subfamily Chauliondinae (5 species in US or Canada)

Neohermes concolor (*Chauliodes c.* Davis, 1903) (E epigean/ Tx in MO)

Neohermes Banks prob. *californicus* (*C.c.* Walker, 1853) (Tx or Ac in CA; hyporheic in CA intermittent streams during summer)

Nigronia Banks, 1908 - Corydalidae Megaloptera, Subfamily Chauliondinae (2 species in US or Canada)

Nigronia serricornis (*Chauliodes s.* Say, 1823; *C. maculatus* Rambur, 1842) (E,Mid-west/ dark fishfly/ Tx in MO; seVA hyporheic)

Orohermes - Corydalidae Megaloptera, Subfamily Chauliondinae (1 species in US or Canada)

Orohermes crepusculus (*Dysmicohermes c.* Chandler, 1954) (Tx or Ac in WA)

Protochauliodes Weele, 1909 - Corydalidae Megaloptera, Subfamily Chauliondinae (6 species in US or Canada)

Protochauliodes undet. sp. or species (phreatic in Sycamore Cr. 32 km ne of Phoenix (Maricopa Co.), AZ); sCA hyporheic)

Sialis Latreille, 1802 - Sialidae Megaloptera (24 species in US or Canada)

Sialis aequalis Banks, 1920 (seVa hyporheic)

Sialis californica Banks, 1920 (sCA hyporheic)

Sialis mohri Ross, 1937 (Virginian freshwater infauna)

Sialis undet. sp. or species (OR, PA hyporheic; in stream muds; rare Virginian marine infauna)

neuston – Species which live in association with the surface film of water. Cf. epineuston.

niche - 1. Ecological lifestyle of an organism, unique to that particular species. Cf. guild. Howarth, 1981d.

niche separation - See competition.

nitrification - Oxidation of ammonia or nitrite to nitrate by chemolithotrophic bacteria of the family Nitrobacteraceae or other microbes. Gram-negative aerobes can use chemical energy to fix nitrogen, converting it to organic nitrogen compounds. See bacteria (Nitrobacter, Nitrocystis), guano, saltpeter. Bibl.: Hill, Eller, et al., 1984; Lewis, W., 1991.

nitrifying bacteria - Those able to oxidize ammonia to nitrite (Nitrosomonas, Nitrosococcus, Nitrosospira, Nitrosocystis and Nitrosogloea) and nitrite to nitrate (Nitrobacter, Nitrocystis)

nitrisification - Oxidation of ammonia to nitrate by nitrifying bacteria. Incl. Nitrosomonas & Nitrosococcus in small cave pools.

nom. nud. - Abbrev. for *nomine nudum* (bare name).

Nom. Rej. Or *nom. Rejic.* - Abbrev. for *nomen rejiciendum* (rejected name).

Nomen dubium - A name whose application is uncertain. Such a name should be rejected.

nominal - A taxon which defines its rank.

nomogenesis - Hypothesis in which evolution is determined by more than just natural selection. Through heterochrony & molecular drive, may account for certain patterns in fossil record.

Nudibranchs – See sea slugs

nulliparous - Pertains to a female which has not given birth (includes individuals which are:

immature, mature but not inseminated, mature and primigravid).

nymph - Immature stage in the life cycle of acarid arachnids.

obligate cavernicoles - Syn: Tb.

obligate troglaxene - Syn: Habitual Tx.

obligate - Capable of surviving in only one environment.

obligate aerobes - Bacteria that cannot grow in the absence of free oxygen.

obsidian hydration dating - A method for determining the age of an artifact by the thickness of a hydrated outer layer.

occasional troglaxene - Syn: threshold Tx.

Odonata

(damselflies, dragonflies, darners). Of the insect order Odonata (or Odonoptera (= Odonata) & Megaseoptera) in Subclass Pterygota, Division Palaeoptera. (also put in Infraclass Pterygota, Division Odonata). Odontos means “toothed” and refers to the large adult mandibles. About 5,000 species divided into suborders Zygoptera (damselflies & darners) and Anisoptera (dragonflies).

Wingspread 20-190 mm., much larger in some species in Pennsylvanian times. Body thin and flexible, with large spines or setae, without scales but with a very fine pile or bloom of microsetae. Shape elongate and cylindrical. Head large with a slim neck that gives it great flexibility. Antennae are short, resembling setae. Thorax very large with many flight muscles. Hind wings similar to front wings. Abdomen cylindrical, long and slender with small apical cerci used during mating

They are the first very successful (diverse) group of flying insects; the earliest fossils are from the Pennsylvanian period. They retain ancient wing venation patterns but have advanced traits such as the forward placement of adult legs for scooping up prey, large, acute eyes and complex mating and courtship. Both adults and aquatic larvae are carnivorous with chewing mouthparts. The larvae’s labium shoots outward in front of the head to capture prey. Larve “breathe” through their anus, taking in oxygenated water by muscle contraction, and escaping predators by jet propulsion. Syn.: devil’s darning needles, snake doctors, mosquito hawks. 4,870 or so described species with about 403 in 83 genera in the U.S. and Canada.

All dragonflies hold their wings out from the body; the hind wings are broader near the base than the front wings; the eyes of the adults are not farther apart than the diameter of one of them. Most damselflies hold their wings, when at rest, over the abdomen; their front and hind wings are nearly the same shape. Adult eyes are widely separated and somewhat stalked. Most damselflies

and some dragonflies mate on plant stems while most dragonflies mate on the wing.

Bibl.: Corbet 1963 **Areas:** **AB:** Pritchard, 1988; **CA:** R. Smith & Pritchard 1956; **Canada:** E. Walker 1953, 1958, 1975; **FL:** Dunkle 1989-90; **NA:** Gloyd & Wright, 1959; Hynes 1988; Merritt & Cummins 1978; Needham & Westfall 1955; Ricker 1959; Stark, et al. 1986; Stewart & Stark 1988; Westfall & May 1996; Wright & Peterson 1944; **PQ:** A. Robert 1963; **World:** Tsuda 1986, 1991. Incl.

Recent Classification (Bechl 1997):

Suborder Anisoptera

 Evanisoptera

 Aeshnoptera

 Aeshnida

 Neoaeshnida

 Superfamily Aeshnodea

 Aeshnoidea (Gomphidae) (or put in Exophytica)

Suborder Euzygoptera

 Coenagriomorpha

 Coenagrionida

 Superfamily Coenagrionodea

 Coenagrionidae

Suborder Exophytica

 Gomphides

 Desmoproctida

 Oligophlebiata

 Gomphida

 Gomphidae

Suborder Zygoptera

 Caloptera

 Eucaloptera

 Caloptereygida

 Superfamily Calopterygoidea

 Calopterygidae

Traditional Classification:

Suborder Anisoptera Selys, 1854 (dragonflies; dragonflies & darners):

 Superfamily Cordulegastroidea

 Cordulegasteridae (biddies) (*Cordulegaster*)

Superfamily Aeshnoidea

Aeshnidae (darners) (*Aeshna*, *Basiaeschna*, *Boyeria*)

Gomphidae (clubtails; clubtailes or gomphid darners; gomphid dragonflies)

(*Erpetogomphus*, *Dromogomphus*, *Gomphus*, *Lanthus*, *Ophiogomphus*, *Progomphus*, *Stylurus*)

Superfamily Libelluloidea

Corduliidae (green-eyed skimmers) (*Epithea*)

Libellulidae (common skimmers)

(*Dythemis*, *Ladona*, *Libellula*, *Macromia* (put in Macromiidae))

Macromiidae (belted skimmers) (*Macromia*) (also put in Libellulidae))

Suborder Zygoptera

Superfamily Coenagrionoidea

Coenagrionidae (= Agrionidae of authors) (narrow winged or stalk-winged damselflies)

(*Argia*, *Enallagma*, *Telebasis*, *Zoniagrion*; Undet. genus & sp. In 1OK cave)

Superfamily Calopterygoidea

Calopterygidae (broad-winged damselflies) (*Calopteryx*)

AESHNIDAE (darners) (*Aeshna*, *Basiaeschna*, *Boyeria*)

CALOPTERYGIDAE (broad-winged damselflies) (*Calopteryx*)

COENAGRIONIDAE (= Agrionidae of authors) (narrow winged or stalk-winged damselflies)

(*Argia*, *Enallagma*, *Telebasis*, *Zoniagrion*; Undet. genus & sp. In 1OK cave)

CORDULEGASTERIDAE (biddies) (*Cordulegaster*)

CORDULIIDAE (green-eyed skimmers) (*Epithea*)

GOMPHIDAE (clubtails; clubtail or gomphid darners; gomphid dragonflies)

(*Erpetogomphus*, *Dromogomphus*, *Gomphus*, *Lanthus*, *Octogomphus*, *Ophiogomphus*, *Progomphus*, *Stylurus*)

LIBELLULIDAE (common skimmers)

(*Dythemis*, *Ladona*, *Libellula*, *Macromia* (put in Macromiidae))

MACROMIIDAE (belted skimmers) (*Macromia*) (also put in Libellulidae))

Aeschna Fabricius, 1775 (= *Aeshna* F.1775; *Cnemophila* Wallengren, 1894; *Rhionaeschna* Forster 1909; *Neureclipsa* Navas 1911; *Hesperaeschna* Cockerell 1913; *Secundaeschna* Gotz 1923; *Marmaraeschna* Clavert 19562; *Schizuraeschna* Calvet 1952; *Adversaeschna* Watson

1992)) Aeschnidae zygoptera darner (19 species in US or Canada)

Aeschna undet. sp. or species (blue darner/Tx or Ac in sON; VA, MD brackish benthic)

Aeschna umbrosa Walker, 1908 (epigean most of US (except AK, FL) & southern Canada/ Tx in cave in NS)

Argia Rambur, 1842 (= *Hyponeura* Selys, 1854; *Diargia* Calvert, 1909; *Chalcargia*, *Cyanargia*, *Heliargia*, *Leptargia* & *Micragia* Kennedy, 1920) (short-stalked darner; dancers)

Coenagrionidae Zygoptera Odonata (30 species in US or Canada)

Argia plana Calvert, 1902 (*A. vivida* Hagen p. (Calvert); *A. spegazzinii* Navas, 1934) (AR, AZ, CO, IL, IA, KS, MO, NE, NM, OK, SD, TX, WI, s. to Guatemala/springwater dancer/ Tx or Ac in AR)

Argia vivida Hagen, 1865 (AB, BC, AZ, CA, CO, ID, IA, MT, NE, NV, NM, OR, SD, UT, WA, WY/ vivid dancer/ sCA hyporheic)

Basiaeschna Selys, 1883 - Aeshnidae darners (1 species in US or Canada)

Basiaeschna janata (*Aeschna j.* Say, 1883) (epigean most of eUS w. to TX, OK, KS, n. to sCanada/ springtime darner/ MI lake benthic)

Boyeria Selys, 1883 - Aeshnidae darners (2 species in US or Canada)

Boyeria undet. sp. or species (IL, MI lake benthic)

Calopteryx Leach, 1815 (*Agrion* Fabricius, 1775 (also considered senior synonym); *Sylphus* Hagen, 1855; *Anaciagrion* Kennedy, 1920) Calopterygidae Odonata damselflies (5 species in US or Canada)

Calopteryx Leach, 1815 (*Agrion* Fabricius, 1775 (also considered senior synonym); *Sylphus* Hagen, 1855; *Anaciagrion* Kennedy, 1920)

Calopteryx maculata (*Agrion m.* Beauvois, 1805; *C. holosericea* Burmeister, 1839; *C. materna* & *opaca* Say, 1839; *C. papilionaria* Rambur, 1842; *C. floridana* Huggins, 1927) (epigean NS & NY w. to NV, Pacific, ne to Manitoba/ black wing; blackwinged darner/ Tx or Ac in AR/ IL river benthic)

Cordulegaster Leach, 1815 - Cordulegastridae Odonata dragonfly (8 species in US or Canada)

Cordulegaster obliqua fasciata (= *C. f.* Rambur, 1841) (epigean in ON & eUS, w. to TX, AR/ arrowhead spiketail/ seVA hyporheic)

Cordulegaster maculata Selys, 1854 (= *C. maculatus*) (epigean sCanada & eUS, w. to MN, MO, IL, TX/ twin-spotted spiketail/ Ac or Tx in Cave of the Bats, NS; seVA hyporheic)

Cordulegaster undet. sp. or species (NC hyporheic? & stream benthic & meiofauna; Tx in GA (WA Co.))

Dromogomphus Selys, 1854 - Gomphidae Odonata dragonflies (3 species in US or Canada)
Dromogomphus undet. sp. (VA, MD brackish benthic)

Dythemis Hagen, 1861 (pond skimmers) Libellulidae Odonata dragonflies (3 species in US or Canada)

Dythemis undet. sp. (skimmers/Tx or Ac in nMS)

Enallagma Charpentier, 1840 (= *Telleallagma*) Coenagrionidae Odonata damselflies (zygoterid) (37 species in US or Canada)

Enallagma undet. sp. or species (Tx or Ac in cave in Madison Co. & caves in AL; IL, MI lake benthic)

Epitheca Burmeister, 1839 - Corduliidae damselflies (10 species in US or Canada)
Epitheca undet. species (MI lake benthic)

Erpetogomphus Selys, 1857 (= *Herpetogomphus* Walsh, 1862 (emend.); *Calogomphus* & *Erpetocyclops* Carle, 1992) (snake darners) Gomphidae Odonata dragonfly (5 species in US or Canada)

Erpetogomphus undet. sp. (TX hyporheic)

Gomphus Leach, 1815 (= *Stylurus* Needham, 1897; *Thanatophora* Selys, 1850; *Gomphurus* Needham, 1901; *Hylogomphus* Needham, 1951 (Unav.); *Hylogomphus* Needham & Westfall, 1955; *Phanogomphus* & *Stenogomphurus* Carle, 1986) Gomphidae Odonata dragonfly (53 species in US or Canada)

Gomphus cavillaris Needham, 1902 (epigeal FL, n. to VA/ beaverpond clubtail/ seVA hyporheic)

Gomphus undet. sp. or species (common clubtails/ PA, seVA hyporheic; VA, MD brackish benthic)

Ischnura Charpentier, 1840 – Coenagrionidae Odonata dragonflies (14 species in US or Canada)
Ischnura undet. sp. or species (VA, MD brackish benthic)

Ladona - now as subgenus of *Libellula*

Lanthus Needham, 1897 - Gomphidae Odonata dragonfly (2 species in US & Canada)
Lanthus parvulus (*Gomphus p.* Selys, 1854) (seCanada and neUS, s. to SC, w. to MN/ northern pygmy clubtail/ WV hyporheic)

Libellula Linnaeus, 1758 (= *Leptetrum* & *Platetrum* Newman, 1833; *Pigiphila* Buchecker, 1876; *Plathemis* Hagen, 1861; *Holotania* Kirby, 1889; *Ladona* Needham, 1897; *Belonia*, *Eolibellula*, *Eurothemis*, *Neotetrum*, *Syntetrum* Kennedy, 1922) Libellulidae Odonata dragonfly (21 species)

in US or Canada)

Libellula* (*Plathemis*) *lydia Drury, 1770 (= *L. trimaculata* De Geer, 1773; *L. seva* Fabricius, 1793) (common whitetail/NA except AK, NWT, SK/ Tx or Ac in AR)

***Libellula* (*Ladona*) undet sp.** (MI lake benthic)

Macromia Rambur, 1862 - Macromiidae Odonata skimmer (Also put in Libellulidae) (9 species in US or Canada)

Macromia illinoiensis Walsh, 1862 (epigeal sCanada & eUS, w. to TX/ Illinois river cruiser/ pond in 1 NS cave)

Octogomphus Selys, 1873 – Gomphidae Odonata dragonflies (1 species in US & Canada)

***Octogomphus specularis* (*Neogomphus s.* Hagen, 1859)** (epigeal Pacific Northwest, BC, s. to n.Mex./ grappletail/ sCA hyporheic)

Ophiogomphus Hagen, 1874 (= *Ophionuroides* & *Ophionurus* Carle, 1986) (once put in Aeshnidae) Gomphidae Odonata dragonfly (14 species in US or Canada)

***Ophiogomphus severus montanus* (*O. m.* Selys, 1878)** Hagen, 1874 (AB, BC, s. to NV, MT, WY, UT, WA/ snake darner/CO hyporheic)

Progomphus Selys, 1854 - Gomphidae Odonata (4 species in US or Canada)

Progomphus obscurus (Rambur, 1842) (eUS, n. to CT, w. to OK, TX, KS/ common sanddragon/ Tx in GA (WA Co.)

***Progomphus* undet. sp.** (sandy hyporheic in TX)

Stylurus Needham, 1897 - Gomphidae Odonata (11 species in US or Canada)

***Stylurus notatus* (*Gomphus n.* Rambur, 1842)** (epigeal sCanada, eUS, w. to MO/ elusive clubtail/ Carolinian, Virginian freshwater infauna)

Telebasis Selys, 1865 - Coenagrionidae zygopterid Odonata (7 species in US or Canada)

***Telebasis salva* (*Agrion s.* Hagen, 1861; *T. boucardi* Selys, 1868)** (epigeal sNM, s,wAZ, seUT, sNV, n.,c.CA desert firetail/ Ac in cave in San Saba Co., TX; Tx? in Montezuma Well, AZ)

Bibl.: Runk 1996

Zoniagrion Kennedy, 1917 Coenagrionidae zygopterid Odonata (1 species in US or Canada)

***Zoniagrion exclamationis* (*Agrion e.* Selys, 1876)** (epigeal cCA/ Sierra damsel/ exclamation exclamationis/ Ac in seAK cave?)

oligotrophic - Adj. for waters or soils low in nutrients or primary productivity but usually with

an abundance of dissolved oxygen.

omnivore - See feeding

ontogeny - Growth & development of an organism from embryo to adult.

Opisthobranchia (sea slugs and allies). Gastropod superorder of Subclass Heterobranchia. Body is generally uncoiled to some extent and the shell is often lost or reduced. About 100 families. Orders incl. Anaspidea (sea hares), Nudibranchia ('true' **nudibranchs**), Thecosomata (shelled pteropods) & Gymnosomata (naked pteropods).

opossum - See Mammal, opossum.

opportunistic feeding - Pertains to a feeding habit where individuals consume the most abundant prey items.

orb - See Araneidae

organic acids. Incl. fulvic, humic. White, Smailer & Brennan, 1994; White, 1994

organics - See biomass

organotroph - Species that only metabolises organic compounds. Cf. heterotroph & lithotroph.

ornithocopros - Syn: **bird guano** (Def.#2).

orophilous - Pertaining to species living in mountainous areas.

orthogenesis - Evolution toward a "perfect form," determined by factors internal to the species. Singular or specific evolutionary trends over long periods & which appear independent of natural selection or other factors.

Orthoptera - Insect Order (**cockroaches, crickets**, grasshoppers, katydids, locusts, mantids (also put in own order), walking stick (now in Order Phasmatodea)) with only first two groups found much beyond the twilight zone. Area: NA: Rehn & Grant, 1961

Ostracods

Phylum Arthropoda, Class or Subphylum Crustacea in Class Maxillopoda, Class or Subclass Ostracoda Latreille, 1806. Ostracoda is divided into Subclass or Superorder Myodocopa (not found in freshwater) & Podocopa. Syns.: mussel & seed shrimps. Mostly 1-2 mm long, Amer. freshwater sp. seldom >3mm., usually <1mm. Unsegmented body encased by bivalve carapace with adductor muscle. Elliptical valves impregnated with calcite. Head appendages well developed but no more than two pairs of trunk limbs (may be absent). Mostly detritivores. Abdomen ends in furcae pair. Spermatophyte among longest of animals, can reach 1mm, 10 times longer than animal. Can swim short distances with antennulae & antennae. Aquatic on bottom or on aquatic plants. Predators, herbivores, filter feeders. Some, especially Entocytheridae, occur in

caves as comensals on crayfish, or as fossils in shaly limestones. About 2,300 known living sp., some 10,000 sp. vital as index fossils from Ordovician to Recent, oldest freshwater in Upper Devonian peak evolutionary development in Devonian. Ostracods may have arisen by neoteny from the larvae of barnacles that achieved sexual maturity and dropped the sessile stage.

Ostracod Bibl.: Danielopol 1994; Griffiths 1991; Hart & Hart 1969; Hartman 1973; Hobbs 1973, 1975; Hoff 1944a; Maguire 1960; Parasteno 1981. **Areas:** **AK:** Sars 1926; **Appalachia:** Klie 1931; **Canada:** Delorme 1970-1; Sars 1926; **CO:** Marmonier & Ward 1990; **FL:** Furtos 1933; Hart 1959; **GA:** Hobbs Jr. & Peters 1982; **IL:** Hoff 1942a; **IN:** Hobbs 1975; Goins 1972; Tressler 1969; **NC:** Hjobbs, Jr. & Peters 1977; **KY:** Hobbs Jr. & Peters 1976; **MA:** Furtos 1935; **NA:** Downes & Kavanaugh 1988; **NC:** Furtos 1933; Hobbs Jr. & Peters 1977; **OH:** Furtos 1933; **TN:** Hobbs Jr. & Peters 1970-6; **TX:** Tressler 1947, 1949; **US:** Forester 1991; **VA:** Hobbs Jr. & Peters 1970; Peters 1973; **WA:** Dobbin 1941; **West:** Ferguson 1966; World: Danielopol 1976; D., Marmonier, Boulton & Bonaduce 1994; Lescher-Moutoue' 1986.

Class or Subclass Ostracoda (in Class Maxillopoda if subclass)

Subclass Myocopa (or Ostracoda)

Order Cladocopina

Superfamily Cytheroidea

Family Candodidae

Subfamily Thalassocypridinae (*Dolerocypria*)

Family Cytheruridae

Subfamily Cytheropterinae (*Cytheropteron*)

Family Loxoconchidae (*Loxoconcha*)

Family Paracytherideidae (*Paracytheridea*)

Family Paradoxostomatidae (*Paradoxostoma*)

Family Parvocytheridae (*Parvocythere*)

Family Polycopidae (also put in Order Myodocopida)

(*Polycope*, *Saipanetta*) (also put in Order Podocopida)

Family Pectocytheridae (*Morkhovenia*)

Family Pontocyprididae (undet. genus: HI Island of Hawaii marine interstitial)

Family Psammocytheridae (*Psammocythere*)

Family Xestoleberididae (*Xestoleberis*)

Order Myodocopida (= Myodocoda or Myodocopina)

Suborder Myodocopa

Family Cypridinidae (*Megalocypris*, undet. genus in LA brackish beach sediment)

Family Sarsiellidae (*Sarsiella*)

Subclass Podocopa

(1-2 two pairs trunk appendages. Endopite = or >expodite, marine, freshwater)

Order Myodocopida

Suborder Myodocopina

Superfamily Cypridinoidea

Cypridae (all or most genera now in Candoniidae & Cyprididae)

(parthenogenesis common, males unknown in some species) (undet. genus in LA brackish beach sediment)

Cylindroleberididae

(*Asteropella*, *Bathyleberis*, *Diasterope*, *Leuroleberis*, *Parasterope*,

Postasterope,

Xenoleberis)

Philomedidae

(*Euphilomedes*, *Harbansus*, *Philomedes*, *Scleroconcha*)

Order Podocopida Sars, 1866

Suborder Podocopina

Infraorder Cypridocopina

Superfamily Cypridacea Baird, 1845

Candoniidae (*Fabaeformiscandona*, *Prionocypris* (now in Cyprididae))

Subfamily Candoninae (*Candona*, *Nannocandona*, *Pseudocandona*)

Entocytheridae) Cobanocytheridae (*Cobanocythere*, *Paracobanocythere*) (also put in

Cyprididae (*Cyclocypris*, *Cyprideis*, *Cypria*, *Megalocypris*)

Subfamily Cypridinae

(*Cypria*, *Eucypris*, *Prionocypris* (once in Cypridae), *Strandesia*)

Subfamily Cyclocyprinae Hoff 1942 (*Cyclocypris*, *Physocypris*)

Cypridopsidae (*Vargula*)

Subfamily Cypridopsinae (*Cavernocypris*, *Cypridopsis*, *Potamocypris*)

Ilyocyprididae (put in Cypridoidea)

Paracyprididae (*Aglaiocypris*)

Superfamily Cypridoidea (also put in Cypridacea)

Ilyocyprididae

Subfamily Ilyocyprinae (*Ilyocypris*)

Macrocyprididae (*Macrocyprina*)

Superfamily Cytheracea Baird, 1845

Cytheridae (also subsumed in Entocytheridae)

Subfamily Candoninae (*Pseudocandona*)

Cytherideidae (*Haplocytheridea*)

Entocytheridae (incl. *Enkylocythere*)

Subfamily Entocytherinae

(*Ankylocythere*, *Cymocythere*, *Dactylocythere*, *Donnaldsoncythere*,
Geocythere,
Sphaeromicola)
Hartocythere, *Ornithocythere*, *Phymocythere*, *Sagittocythere*,

Subfamily Limnocytherinae (also put in own family)

((*Limnocythere*, undet. genus in LA brackish beach sediment)

Subfamily Sphaeromicolinae (*Hobbsiella*, *Sphaeromicola*, *Uncinocythere*)

Limnocytheridae (subsumed in Entocytheridae)

Trachyleberididae (*Cythereis*)

Infraorder Darwinulocopina

Superfamily Darwinuloidea Brady & Norman, 1889

Darwinulidae (*Darwinula*)

Subclass Ostracoda

Order Msytaocaridada

Family Derocheilocarididae - See Mystacocaridida

Candodidae

Subfamily Thalassocypridinae (*Dolerocypria*)

Candoniidae Kaufmann, 1900 (*Fabaeformiscandona*, *Prionocypris* (now in Cyprididae))

Subfamily Candoninae (*Candona*, *Nannocandona*, *Pseudocandona*)

2 species of undet. genus or genera - parafluvial & shallow, deep, & dry channel

hyporheic in Sycamore Cr. 32 km ne of Phoenix (Maricopa Co.), AZ) Bibl.:Delorem

1970

Cobanocytheridae (*Paracobanocythere*) (also put in Entocytheridae)

Cylindroleberididae

(*Asteropella*, *Bathyleberis*, *Diasterope*, *Leuroleberis*, *Parasterope*, *Postasterope*,
Xenoleberis)

Cypridae (all or most genera now in Candoniidae & Cyprididae)
(parthenogenesis common, males unknown in some species) (undet. genus in LA
brackish beach sediment) Bibl.: Shaver 1951

Cyprididae Baird, 1845 (*Cyclocypris*, *Cyprideis*, *Cypria*)
Subfamily Cypridinae (*Cypria*, *Eucypris*, *Prionocypris* (once in Cypridae), *Strandesia*)
Subfamily Cyclocyprinae Hoff 1942 (*Cyclocypris*, *Physocypris*)

Cypridinidae (= Cypridininae)
undet. genus in brackish beach sediment at Lake Pontchartrain, LA

Cypridopsidae Kaufmann, 1900 (*Vargula*)
Subfamily Cypridopsinae (*Cavernocypris*, *Cypridopsis*, *Potamocypris*)

Cytheridae (also subsumed in Entocytheridae) (*Pseudocandona*)

Cytheruridae
Subfamily Cytheropterinae (*Cytheropteron*)

Cytherideidae (*Haplocytheridea*)
Darwinulidae (*Darwinula*)

Entocytheridae Hoff, 1942 (incl. *Enkylocythere*)
Subfamily Entocytherinae
(*Ankylocythere*, *Cymocythere*, *Dactylocythere*, *Donnaldsoncythere*, *Geocythere*,
Hartocythere, *Ornithocythere*, *Phymocythere*, *Sagittocythere*, *Sphaeromicola*)

Subfamily Limnocytherinae (also put in own family)
(*Limnocythere*, undet. genus in LA brackish beach sediment)

Subfamily Sphaeromicolinae (*Hobbsiella*, *Sphaeromicola*, *Uncinocythere*)

Ilyocyprididae Kaufmann, 1900
Subfamily Ilyocyprinae (*Ilyocypris*)

Limnocytheridae Klie, 1938 (subsumed in Entocytheridae)

Loxoconchidae (*Loxoconcha*)

Macrocyprididae (*Macrocyprina*)

Paracyprididae (*Agelaiocypris*)

Paracytherideidae (*Paracytheridea*)

Paradoxostomatidae (*Paradoxostoma*)

Parvocytheridae (*Parvocythere*)

Pectocytheridae (*Morkhovenia*)

Philomedidae (*Euphilomedes*, *Harbansus*, *Philomedes*, *Scleroconcha*)

Polycopidae (*Polycope*, *Saipanetta*)

Pontocyprididae (undet. genus: HI Island of Hawaii marine interstitial)

Psammocytheridae (*Psammocythere*)

Sarsiellidae (*Eusarsiella*, *Sarsiella*)

Trachyleberididae (*Cythereis*)

Xestoleberididae (*Xestoleberis*)

OSTRACOD species incl.

Aglaioocypris Sylvester-Bradley, 1947 – Paracyprididae ostracods

Aglaioocypris mauiensis Hartmann, 1991 (HI Maui Island marine interstitial)

Amboleberis L.S.Kornicker, 1981 - Cylindroleberididae ostracods

Amboleberis americana (Muller, 1890) (FL marine benthic)

Ankyloocythere Hart, 1962 - Entocytheridae ostracods, subfamily Entocytherinae . **Bibl.:** Hobbs Jr. 1966

Ankyloocythere ancycla Crawford, 1965 (AL, FL, GA, NC epigean /commensal on Tp crayfish *C.diogenes*, *bartoni*, *P. acutus* a.)

Ankyloocythere coryphodes Hobbs & Hart, 1966 (TN/commensal on Tp *Cambarus bartoni* b. crayfish)

Ankyloocythere didactylata Hobbs & Hart, 1966 (TN/commensal on Tp *Cambarus bartoni* crayfish)

Ankyloocythere burkerorum Hobbs, 1971 (no caves /commensal on Tp *Cambarus d. diogenes* crayfish)

Ankyloocythere copiosa (Hoff, 1942) (AR, IA, IL, IN, KY, LA, TN, WI/ commensal on Tp *O. immunis*, *virilis*, & *propinquus*, *P. acutus*, a. crayfish)

Ankyloocythere sinuosa (*Enkyloocythere* s. Rioja, 1942) (AL, AR, CA, GA, HI(alien), KY, LA, MS, OK/ Tp in TX) **Bibl.:** J. Baker 1969

Asteropella L. S. Kornicker, 1975 - Cylindroleberididae ostracods

Asteropella slatteryi L. S. Kornicker, 1981 (sCA marine infauna)

Bathyleberis L.S. Kornicker, 1975 - Cylindroleberididae ostracods

Bathyleberis garthi Baker, 1979 (sCA marine infauna)

Bathyleberis hancocki Baker, 1979 (sCA, WA (cf. *B.h.*) marine infauna)

Candona Baird, 1845 - Candonidae ostracods, subfamily Candoninae (genus dates from Silurian)

Candona candida Muller, 1776 (MA, MT, ND, OR, Europe, central Asia/ CO hyporheic)

Candona crogmanni Turner, 1894 (epigean in GA, OH/ MI interstitial)

Candona exilis Furtos, 1933 (MI interstitial)

Candona jeanelli Klie, 1931 = *Pseudocandona j.*

Candona undet. sp. or species (Pb? in 5 seAK caves; interstitial in MI, NH lake sediments and VA freshwater tidal marsh; seVA hyporheic)

Cavernocypris Hartmann, 1964 - Cypridopsidae ostracods, subfamily Cypridopsinae. **Bibl.:** Marmonier et al. 1989

Cavernocypris subterranea (Wolf, 1920) (*Head Spr., Bannock Co., ID/interstitial)

Cavernocypris wardi P. Marmonier, C. Meisch & Danielopol, 1989 (interstitial in CO, MT; spr. in MT, WY, NV, CO)

Cavernocypris undescr. sp. (parafluvial & shallow, deep, & dry channel hyporheic in Sycamore Cr. 32 km ne of Phoenix (Maricopa Co.), AZ)

Cobanocythere Hartmann, 1959 - Cobanocytheridae ostracods

Cobanocythere konensis Hartmann, 1991 (HI Island of Hawaii marine interstitial)

Cyclocypris Brady & Norman, 1889 - Cyprididae ostracods, Subfamily Cyclocyprinae

Cyclocypris undet. sp. (Tx or Tp in cave in Orangeburg Co., SC)

Cypria Zenker, 1854 - Cyprididae ostracods, subfamily Cyclocyprinae

Cypria lacustris Sars, 1926 (epigean in MI, TX/ MI interstitial)

Cypria turneri Hoff, 1942 (mostly in top 2 cm. of NH lake sediment)

Cypria undet. sp. or species (CO hyporheic; mostly in top 2 cm. of MI lake sediment))

Cyprideis Jones, 1856 – Cyprididae ostracods

Cyprideis stewarti Benson, 1959 (CA marine infauna?)

Cypridopsis Brady, 1867 - Cypridopsidae ostracods, subfamily Cypridopsinae.

Cypridopsis helvetica Kaufmann, 1900 (epigean in Ottawa, UT, OK/ Tp in cave each in Lampasas & Medina Cos., TX)

Cypridopsis near *vidua* (O.F. Muller, 1776) (NA/ commensal Tx or Tp in TX (near *vidua*); interstitial in VA freshwater tidal marsh)

Cypridopsis vidua obesa Brady & Robertson, 1869 (= *C.o.*) (artesian well at San Marcos,TX/Tx)
Reddell 1970

Cypris Mueller, 1776 - Cyprididae ostracods, Subfamily Cypridinae
Cypris undet. sp. (MS marine interstitial)

Cythereis Jones, 1849 - Trachyleberididae ostracods
Cythereis undet. sp. or species (MS, WA marine interstitial)

Cytheropteron Sars, 1866 – Cytheruridae ostracods, Subfamily Cytheropterinae
Cytheropteron? undet. sp. (HI Maui Island marine interstitial)

Dactylocythere Hart, 1962 - Entocytheridae ostracods, subfamily Entocytherinae
Bibl.: Hart & Hart 1974; Hobbs 1967

Dactylocythere ampliakis Hart & H.1966 (epigean in Warren & Christian Cos., KY/Tx or Tp in cave in Hart Co.,KY)

Dactylocythere arcuata (=Entocythere a. Hart & Hobbs, 1961) Hart, 1962 (**type locality cave & Russell C., Jackson Co.,AL/ commensal Tb on *Cambarus (E.) tenebrosus* crayfish/ G1G2)

Dactylocythere charadra Hobbs III, 1971 (*Sinking Cr.,Hoss Cove near Johnson City, WA Co.,TN/ commensal on *Cambarus* crayfish /Tp?)

Dactylocythere daphnioides (=Entocythere d. Hobbs, 1955) (commensal WV on prob. Tb *Cambarus nerterius* crayfish/ Tb)

Dactylocythere falcata Hobbs & Walton, 1961 (SE/Tp commensal on Tb *Cambarus* crayfish /Hiwasee Crayfish Ostracod/ NC Watch List)

Dactylocythere jeanae Hobbs, 1966 (NE, NC, VA /commensal on Tp? *Cambarus d. diogenes*)
Dactylocythere macroholca Hart & Hobbs, 1970 (KY/ commensal on Tp *C. laevis* crayfish)

Dactylocythere prionata (E.p. Hart & Hobbs, 1961) Hart, 1962 (type locality cave in Jackson Co. +cave & spr. in Jackson, Warren & Pulaski Cos.,KY/ commensal on St *O. a.packardi* & *O. tenebrosus c.* crayfish/ G3)

Dactylocythere runki Hart, 1955 (NC, VA/ TN commensal Tp? on *C. b. bartoni* crayfish)

Dactylocythere undescr. sp. (*cave in Pulaski Co., VA)

Dactylocythere steevesi (E.s. Hart & Hobbs, 1961) (type locality cave in Jackson Co.(AL) +KY(Edmonson (Mammoth Cave), Green, Hardin, Hart, Jefferson, Meade, Trigg,Warren,Wayne Cos.) & TN (Clay, Davidson, Franklin, Putnam Cos.)/ Tb commensal on KY *Cambarus tenebrosus*, *O.a.australis*, *O.a. packardi*, *O. pellucidus* crayfish/ G3G4). **Bibl.:** Hart, 1962

Dactylocythere susanae Hobbs III, 1971 (type locality cave in Orange Co. +Lawrence, Monroe, WA, Harrison & Owen Cos.,sIN) & Breckenridge, Hart, Pulaski & Rockcastle Cos.,cKY/ commensal on Tb *Cambarus tenebrosus*, *Oconectes inermis* i., St *O. australis* p. (KY) & a., also on cave Tb *O. i. testii*, Tp *C. laevis* (main host in IN) & *O. immunis*; epigeal on *O. laevis*/ G3G4)

Dactylocythere suteri Crawford, 1959 (GA, sVA, NC, PA, SC, TN epigeal/ Tx? commensal on *C.bartoni*, *d. diogenes* crayfish)

Dactylocythere unguata (*Entocythere u.* Hart & Hobbs, 1961) (type locality cave in Overton Co., TN/ Tp? commensal on *Orconectes pellucidus*, St. *Orconectes australis* p., Tx,Tp & Tb *Cambarus* crayfish in KY, TN). **Bibl.:**Hobbs III, 1971) Hart 1962

Darwinula Brady & Norman, 1885 - Darwinulidae ostracods

Darwinula undet. sp. (*paglioli* group) (parafluvial & shallow, deep, & dry channel hyporheic in Sycamore Cr. 32 km ne of Phoenix (Maricopa Co.), AZ)

Darwinula stevensoni (*Polycheles s.* Brady & Robertson, 1870; *Polycheles improvisa*) (interstitial in VA freshwater tidal marsh; mostly in top 2 cm. of NH lake sediment)

Diasterope Kornicker, 1975 - Cylindroleberididae ostracods

Diasterope pilosa (WA marine infauna)

Donnaldsoncythere Hart, 1962 - Entocytheridae ostracods, subfamily Entocytherinae

Donnaldsoncythere donnaldsonensis (*Entocythere d.* Klie in Bolivar & Jeannel, 1931) Hart, 1962 (type locality cave in Lawrence Co., + caves in 7 other cos.,IN/Tb,St commensal on *Orconectes i. inermis*, *O .i. testii*, *C. laevis* crayfish)

Donnaldsoncythere tuberosa (*E.t.* Hart & Hobbs, 1961) Hart, 1962 (type locality cave in Overton Co. & caves in Putnam Co., both TN +KY(Wayne Co.) & WV (Pocahontas Co.)/ commensal on *Orconectes australis* a., *inermis t.,i.* & *Cambarus tenebrosus* St or Tp crayfish in TN,KY/ G3G4)

Entocythere sinuosa = *Ankylocythere s.*

Eucypris Vavra, 1891 - Cyprididae ostracods, Subfamily Cypridinae

Eucypris undet. sp. (CO hyporheic)

Euphilomedes Poulsen, 1962 (clam shrimps) - Philomedidae ostracods

Euphilomedes carcharodonta (Smith, 1952) (AK, sCA, WA marine infauna)

Euphilomedes longiseta (*Philomedes l.* Juday, 1907) (sCA, WA marine infauna)

Euphilomedes producta Poulsen, 1962 (AK, sCA, WA marine infauna)

Eusarsiella Cohen & Kornicker, 1975 - Sarsiellidae ostracods

Eusarsiella childi L.S. Kornicker, 1986 (FL marine benthic)

Eusarsiella undet. sp. (WA marine infauna)

Eusarsiella thominx L.S. Kornicker, 1987 (sCA marine infauna)

Eusarsiella zostericola (Cushman, 1906) (FL, Virginian marine infauna)

Fabaeformiscandona Krstic, 1972 - Candoniidae ostracods

Fabaeformiscandona pennaki Marmonier & Ward, 1990 (CO, MT hyporheic)

Fabaeformiscandona (*Eucandona*) *wegelin*i (Petkovski, 1962) by Sywula, 1974 (Europe, CO & AZ hyporheic)

Fabaeformiscandona undet. sp. near *F. wegelin*i (Petkovski, 1962) (parafluvial & shallow, deep, & dry channel hyporheic in Sycamore Cr. 32 km ne of Phoenix (Maricopa Co.), AZ)

Haplocytheridea Stephenson, 1936 - Cytherideidae ostracods

Haplocytheridea setipunctata Stephenson, 1936 (FL, Virginian marine infauna)

Harbansus Kornicker, 1978 – Philomedidae ostracods

Harbansus bradmyersi Kornicker, 1978 (CA marine infauna?)

Hobbsiella Danielopol & Hart, 1985 - Entocytheridae, Subfamily, Sphaeromicolinae

Hobbsiella moria (Hart, 1962) D. & H., 1985 (*type locality cave in Uvalde Co., TX/Tb),

Ilyocypris Brady & Norman, 1889 - Ilyocyprididae ostracods, Subfamily Ilyocyprinae

Ilyocypris gibba (*Cypris* g. Ramdohr, 1808; *Ilyocypris* g. Ramdohr, 1808) Brady & Norman 1889 (epigeal in most of E, Midwest and Canadian Prairies/ interstitial in VA freshwater tidal marsh)

Ilyocypris undet. sp. or species (CO hyporheic; parafluvial & shallow, deep, & dry channel hyporheic in Sycamore Cr. 32 km ne of Phoenix (Maricopa Co.), AZ)

Leuroleberis L.S. Kornicker, 1981 - Cylindroleberididae ostracods, Order Myodocopina

Leuroleberis sharpei L.S. Kornicker, 1981 (sCA marine infauna)

Loxoconcha Sars, 1966 – Loxonconchidae ostracods

Loxoconcha undet. sp. (HI Island of Hawaii marine interstitial)

Macrocyprina G.W. Mueller, 1894 – Macrocyprididae ostracods]

Macrocyprina pacifica LeRoy, 1943 (CA marine infauna?)

Megalocypris Sars, 1898 – Cyprididae ostracods

Megalocypris undet. sp. (seVA hyporheic)

Morkhovenia Teeter, 1975 – Pectocytheridae ostracods

Morkhovenia inconspicua (Brady, 1880) (HI Island of Hawaii marine interstitial)

Nannocandona 1845 - Candoniidae ostracods, subfamily Candoninae
Nannocandona faba (Eckman, 1914) (Europe (bog) & CO hyporheic)

Paracobanocythere J. Gottwald, 1983 - Cobanocytheridae ostracods
Paracobanocythere hawaiiensis Goitwald, 1983 (HI Hawaiian, Kauai and Maui Islands marine interstitial)

Paracytheridea G.W. Muller, 1894 – Paracytherideidae ostracods
Paracytheridea undet. sp. (HI Island of Hawaii (Big Island) marine interstitial)

Paradoxostoma Fischer, 1855 - Paradoxostomatidae ostracods
Paradoxostoma kauaiensis Hartmann, 1991 (HI Kauai Island marine interstitial)
Paradoxostoma kunzi Hartmann, 1991 (HI Kauai Island marine interstitial))

Parasterope Kornicker, 1975 - Cylindroleberididae ostracods
Parasterope barnesi J.H. Baker, 1978 (WA marine infauna)
Parasterope muelleri (Skogsberg, 1920) (FL marine benthic)

Parasterope pollex Kornicker, 1996 (Virginian (rare), FL marine infauna)
Parasterope hulingsi Baker, 1978 (sCA marine infauna)

Parvocythere Hartmann, 1959 – Parvocytheridae ostracods
Parvocythere maueinsis Hartmann, 1991 (HI Maui Island marine interstitial)

Philomedes Lilljeborg, 1853 – Philomedidae ostracods
Philomedes dentata Poulsen, 1962 (CA, WA marine infauna)
Philomedes globosus (Lilljeborg, 1853) (Baffin Island (neCanada) marine infauna)

Phymocythere Hobbs & Hart, 1966 - Entocytheridae ostracods, subfamily Entocytherinae
Phymocythere phyma Hobbs & Hart, 1966 (VA, WV/on Tp *Cambarus bartoni* b. crayfish)

Physocypria Vavra, 1897 - Cyprididae ostracods, subfamily Cypridopsinae
Physocypria pustulosa (Sharpe, 1897) (US n. to WI/Tx in TX; MN lake interstitial burrower)
Physocypria undet. sp. (interstitial in VA freshwater tidal marsh)

Polycope Sars, 1866 – Polycopidae ostracods
Polycope hawaiiensis Hartmann, 1991 (HA Maui and Hawaiian Islands marine interstitial infauna)

Polycope (*Polycopiella*?) undet. sp. (HA Maui Island marine interstitial infauna)

Postasterope Kornicker, 1986 – Cylindroleberididae ostracods
Postasterope barnesi (*Parasterope* b. Baker, 1978)(sCA marine infauna)

Potamocypris Brady, 1870 - Cyprididae ostracods, subfamily Cypridopsinae
Potamocypris cf. *fulva* (Brady, 1868) (Ac, Tx or Tp in GA (Walker Co.)

Potamocypris undet. sp. (CO hyporheic)

Prionocypris Brady & Norman, 1896 - Cyprididae ostracods, subfamily Cypridinae

Prionocypris canadensis Sars, 1926 (= *Strandesia c.?*) (Alberta/CO, MT hyporheic),

Prionocypris undescr. sp.#1 (*cave in Travis Co., TX/Tb)

Prionocypris obesa (Brady & Robertson, 1869) (MI interstitial)

Psammocythere Klie, 1938 - Psammocytheridae ostracods

Psammocythere hawaiiensis Hartmann, 1991 (HI Island of Hawaii marine interstitial)

Pseudocandona Kaufmann, 1900 - Cytheridae ostracods, subfamily Candoninae

Pseudocandona cf. *albicans* (Brady, 1870) (CO, MT hyporheic)

Pseudocandona jeanneli (*Candona j.* Klie in Bolivar & Jeannel, 1931) (*type locality cave in Marengo C., Crawford Co., IN or Mammoth C., KY/ Tb)

Pseudocandona marengoensis (*Candona m.* Klie in Bolivar & Jeannel, 1931) (*type locality cave in Marengo C., IN/ Tb)

Pseudocandona undescr. sp.#1-3 (CO hyporheic)

Pseudocandona undescr. sp.#4 (Tb in GA (Dade Co.))

Pseudocandona undet. sp. (parafluvial & shallow, deep, & dry channel hyporheic in Sycamore Cr. 32 km ne of Phoenix (Maricopa Co.), AZ)

Rutiderma Brady and Norman, 1896 - Rutidermatidae ostracods

Rutiderma apex K.L. Kornicker & E. Harrison Nelson, 1997 (WA marine infauna)

Rutiderma lomae (Juday, 1907) (sCA, WA marine infauna)

Rutiderma rostratum Juday, 1907 (sCA marine infauna)

Rutiderma rotundum Poulsen, 1965 (sCA marine infauna)

Sagittocythere Hart & Hobbs, 1962 - Entocytheridae ostracods, Subfamily Entocytherinae

Sagittocythere barri (Hart & Hobbs, 1961) Hart & Hobbs, 1962 (type locality in cave in Madison Co., AL/ ectocommensal on *Orconectes pellucidus australis* crayfish in Jackson, Madison, Morgan Cos., AL; on *O.p. inermis* in Crawford, Harrison Cos. & on *O.p. testii* in Monroe Co. (also on unspecified crayfish in Greene, Lawrence Cos.), IN; on *Orconectes pellucidus packardii* in Pulaski & Rockcastle Cos., KY & on *Orconectes pellucidus p.* in Barren, Edmonson (also on *Cambarus tenebrosus* crayfish), Hart, Meade, & Trigg Cos., (also on unspecified crayfish in Breckenridge, Larue, Wayne Cos.), KY, & in Jackson, & Putnam Cos., TN/ G4)

Sagittocythere stygia (Hart & Hart, 1966) (*type locality in Mammoth C., Edmonson Co., KY/ ectocommensal on *Orconectes p. pellucidus* crayfish/ G1G2)

Saipanetta McKenzie, 1967 - Polycopidae ostracod
Saipanetta kelloughae Maddocks, 1972 (marine sublittoral interstitial)

Sarsiella Norman, 1869 - Sarsiellidae ostracods
Sarsiella undet. sp. (WA marine infauna)
Sarsiella texana Kornicker & Wise, 1962 (TX estuary marine infauna)

Scleroconcha Skogsberg, 1920 – Philomedidae ostracods
Scleroconcha trituberculata (*Philomedes t.* Lucas, 1931) (CA, WA marine infauna)

Sphaeromicola Paris, 1916 - Entocytheridae ostracods, Subfamily Sphaeromicolinae

Sphaeromicola moria Hart, 1978 (*type locality cave in Uvalde Co.,TX/Tb commensal on isopod *Cirolanides texensis* isopod/ G1G2) Hershler & Longley 1986,

Strandesia Vavra, 1895 - Cyprididae ostracods, subfamily Cypridinae
Strandesia canadensis = *Prionocypris c.*

Thermastrocythere Hobbs & Walton, 1966 - Entocytheridae ostracods, subfamily Entocytherinae

Thermastrocythere riojai (Hoff., 1943) (*Sinking Cr.,Hoss Cove near Johnson City, WA Co., TN/ Tp? or Tb)

Uncinocythere Hart, 1962 - Entocytheridae ostracods, subfamily Entocytherinae

Uncinocythere lucifuga (Walton & Hobbs, 1961) (ectocommensal on FL Tb *Procambarus* & *Cambarus alachua* crayfish),

Uncinocythere ambophora (*Entocythere a.* Walton & Hobbs, 1959) Hart, 1962 (ectocommensal on FL Tb *Procambarus morrissi* (cave in Putnam Co.) & *P. acherontis* (cave in Palm Sprs.,Seminole Co.,FL (type locality)/ caves only/ G3)

Uncinocythere equicurva Hoff, 1944 (ectocommensal Tx? in FL? on *Procambarus lucifugus a.* & *Cambarus alachua* crayfish)

Uncinocythere pholetera (*E.p.* Hart & Hobbs, 1961) Hart, 1962 (*type locality cave in Ripley Co.,MO/ ectocommensal on Tb *C. hubrichti* crayfish/ Tb/ G1G2)

Uncinocythere simondsi (*Entocythere s.* Hobbs & Walton, 1960) Hart, 1962 (creeks in AL, GA, IL, KY, MS, TN/ Tp ectocommensal in IN, MO & on KY crayfish *St Cambarus australis p.* crayfish)

Uncinocythere stubbsi Hobbs & Walton, 1966 (E to MI,SD/ ectocommensal in KY cave Tp on Tb *Cambarus pellucidus* crayfish)

Uncinocythere warreni Hobbs & Walton, 1968 (*?type locality cave in Decatur Co.(GA) & possibly caves in Jackson Co.,FL/ ectocommensal on *Cambarus cryptodytes* crayfish/ G1G2/ Tp &/or Pp/ caves only)

Uncinocythere xania (E.x. Hart & Hobbs, 1961) Hart, 1962 (type locality cave in Christian Co. + Green Co.,MO/Tp ectocommensal on Tb *Cambarus laevis* in IN; on MO St *C. setosus* & *C. pellucidus* & Tb *Orconestes inermis* i.; epigeal on *O. laevis* & *O. propinquus* crayfish/ G3)

Uncinocythere zancla Hobbs & Walton, 1963 (GA, KY, NC, TN/ ectocommensal on St and/or Tp *Cambarus*, KY on *Cambarus* crayfish/ caves only)

Vargula Skogsbwerg, 1920 - Cypridinidae ostracods

Vargula tsujii (sCA marine infauna)

Xenoleberis Kornicker, 1994 – Cyndroleberididae ostracods

Xenoleberis californica (*Baathyleberis* c. Baker, 1979) (CA marine infauna?)

Xestoleberis Sars, 1866 – Xestoleberididae ostracods

Xestoleberis hawaiiensis Hartmann, 1991 (HI Island of Hawaii (Big Island) marine interstitial)

Otariidae - See mammal, seal. Includes eared seals & sea lions.

otter - See mammal, carnivora

oxygen - Abbott 1960; Burbank, Edwards & Burbank 1948; Culver & Poulson 1971; Dickson & Franz 1980; Danielopol & Niederreiter 1987; Dresco-Derouet 1969; Fingerman 1955; Hadley, Ahearn & Howarth 1981; Holsinger & Poulson 1971; Hubbs, Baird & Gerald 1967; McAllister & Fitzpatrick 1985; Norris et al. 1963; Rees 1972; Roth, J. 1986; Wiens & Armitage 1961; Schlagel & Breder 1947

packrat - Syn: woodrat.

paedogenesis - Syn: neoteny.

paedomorphic - Syn: neotenic.

paedomorphosis - Evolution that results in retention of juvenile traits into adulthood. May be caused by neoteny, progenesis or post-displacement.

Palaearctic – Once a separate region, now subsumed in Holarctic. Incl. non-tropical Eurasia, nAfrica and much of Arabia

paleoanthropology - The study of the biotic and cultural evolution of hominids and abiotic and biotic factors that affect this process.

paleobiocoenosis - A fossil grouping with many members of a single community.

paleobotany - The study of plant fossils.

paleoecology - See ecology

paleoendemic - Survivors of a previous geologic period when the species was more widely distributed. Syn.: relict or conservative endemic, epibiont.

Paleolithic, Upper - The third & most recent division of the Paleolithic, characterized by the appearance of humans in the Americas & Australia.

Palpigrade

Arachnid of Order Palpigradi (= Palpigrada, Palpigradida). 1mm., eyeless, no respiratory system. Cephalothorax with 3 dorsal shields, anterior larger, two posterior smaller. Ventrally has a sternum divided into several plates. Abdomen segmented & extended by multiarticulated tail with many sensorial hairs. Chelicerae formed by three articles, the last two being a pincer. Pedipalps adapted for moving, first pair of legs tactile. Feed on springtails, etc. About 50 species, mostly in southern Europe, South America and sUS. Syn: microwhipscorpion. Bibl.: Briggs 1986a.

Kingdom Animalia

Clade Metazoa

Clade Eumetazoa

Clade Bilateria

Clade Protostomia

Clade Ecydsozoa

Phylum Arthropoda

Subphylum Chelicerata

Class Arachnida

Subclass Micrura

Order Palpigradi

Eukoeneriidae (undet. genus (Kartchner C., Cochise Co., sAZ); *Prokoeneria*)

Prokoeneria Börner, 1901 - Eukoeneriidae palpigrade

Prokoeneria undescr. sp. (*cave in Harney Co., OR)

Prokoeneria undet. or undescr. sp. or species (cave each in Amador & Calaveras Cos., CA)

palynology - See pollen

pandemic - Pertaining to broad ecologic conditions or widely distributed populations.

para-ecology - Syn: taphonomy.

para-epigean - Syn: pro-epigean.

parafluvial - Part of the active creek, stream or river channel without surface water.

parallelism - Independent evolution of similar traits in two or more genetically connected taxa by similar genetic & developmental pathways.

parapatric - Adj. for species with contiguous but non-overlapping geographic distributions.
Bibl. - See biogeography.

parapatric speciation - Occurs despite minor gene flow between demes. Selection apparently prevents homogenization of immigrant genes by interbreeding.

paraphyletic - Adj. for taxon with some but not all descendants of common ancestor. Cf. holophyletic.

parasite - An ecology type that derives its food, & usually some other benefit, from another species without killing it but usually causing it some harm. Incl. ectoparasites (live on host), endoparasites (live in host), facultative parasites (complete life cycle as free-living), obligate parasites (always live parasitically), holoparasites (require all nutrients from host), hemiparasites (only require some nutrients), hyperparasites (parasites on or in parasites). Cf. commensalism.

parasitism (see annelid, bats, bat fly, copepod, flea, mite, nematode, trematode, worm (cestode))
- Allen, S. 1933; Brandon 1967; Dyer 1975; Castle et al. 1987; Dyer & Peck 1975; Esser et al. 1985; Faulkner 1989a; France & Graham 1985; Jobling 1949; Keith 1973; Kohls & Jellison 1948; Moore J. 1894; Nichol & Whittaker 1978; Peck 1982c; Relsen et al. 1976; Poulson, Lavoie & Chandler 1990; Robaux et al. 1976-7; Ross 1961; Schmidt et al. 1992; Sprague & Couch 1971; Webb & Campbell 1977; Whittaker 1968; Whittaker & Zober 1978; C. Wilson 1944; Cain 1966; Radovsky 1967; Turner & Jones 1968; Whitaker, Yunkler & Maser 1983;

parasitoses - Diseases caused by parasites

parasitoid - Endoparasite that causes death of host

paratype - Specimens used in the description of a holotype & so designated by the author.

parietal - A threshold, wall species. R. Graham 1967

parous - Pertains to a female which has given birth (may include females which have been inseminated, not inseminated, pregnant, or lactating. See bat, maternity.

parthenogenesis - Self-fertilization of an embryo. Hubbs 1932. Found in cave isopods, crickets, amphipods, rotifers, flatworms, ostracods & thysanurans. Probably more common in hard-to-get-to habitats (such as caves & groundwater) than in more accessible habitats.

pauropod - Pauropoda, a class of myriapodous arthropods. 20 to 2000 per square meter in soils.
Order Tetramocerata, family Pauropodidae - undet. genus & species

(cave each in Linn Co.,IA & Pierce Co.,WI/Tp)

peccary - See mammal, ungulate

pelecypod - Syn: bivalve.

Peracarida - Superorder of Eumalacostracan crustaceans. Incl. mysids, Mictacea, tanaids, cumaceans, Spelaeogriphacea, isopods, & amphipods.

permanent resident - See troglobite & troglophile

pesticide - see human impacts

pesticides - See pollution

pH (see acidification under human impacts)

phenogram - A tree-like diagram that shows the amount of similarity between taxa.

phenology - Refers to the seasonal timing of the various life cycle processes.

phenotype - The structural, physiological, biochemical, behavioral & other traits of an organism. Cf. genotype.

pheromone - Chemical released by an animal & which elicits a response in other individuals of the same species. Sex pheromones (=sex attractants) are used to attract the opposite gender.

Aggregation pheromones attract members to a host plant or repel them if the density is too high.

Alarm pheromones communicate danger to other members of a species. Trail pheromones are used to mark trails for other members of a species.

pholeophile - Syn: troglophile.

phoresy - Dispersal by clinging to the body of a larger animal.

phoretic - Ecology type that appears parasitic but is on an animal for the ride. Not commensal or mutualistic.

Phoronida

Twelve recognized species in two genera (*Phoronis* and *Phoronopsis*) in this marine phylum.

They live in chitinous tubes on ocean bottoms. Unlike annelids, their gut is u-shaped with anus near the mouth. Lophophores can regenerate.

Kingdom Animalia

Clade Metazoa

Clade Bilateria

Clade Lophotrochozoa (=Lophoporata)

Phylum Phoronida

Phoronis Wright, 1856 - Phoronidae phoronid

Phoronis architecta Wright, 1856 (Virginian (rare), FL marine infauna)

Phoronis hippocrepi Wright, 1856 (FL marine benthic)

Phoronis mulleri (FL, LA marine benthic)

Phoronis psammophila Cori, 1889 (= *P. architecta* Andrew, 1890; *P. sabatieri* Roule, 1890)
(FL, TX estuary marine infauna & interstitial)

Phoronis undet. sp. or species (CA, TX, WA, Virginian infauna)

Phoronopsis - Phoronidae phoronids

Phoronopsis harmeri Pixell, 1912 (= *P. viridis* & *P. striata* Hilton, 1930; *Phoronis pacifica* Torrey, 1901) (AK, WA marine infauna)

phosphorescence - see bioluminescence

photo-autotroph - See bacteria

phototaxis - Species motion affected or directed by light

phreatic zone - Subsurface water saturated areas not affected by surface water flow. Below or adjacent to hyporheic areas.

phreatobia - Meiofauna fauna found in groundwater below the water table. Incl. phreatobite & hyporheic. (in title) - Crawford 1976d; Lewis, J. & Holsinger 1985

phreatobiology - Scientific study of the systematics, ecology & biogeography of freshwater meiofauna. Danielopol 1982

phreatobite - Phreatobia found only in subsurface water & at spring outlets. Abbrev. as Pb.
phycology - The study of algae.

phyletic gradualism - Morphologic evolution both gradual & continuous. Syn: gradualistic speciation. Cf. punctuated equilibria.

Phyllocarids

Subphylum Crustacea

Shrimp/turtle- like. About 25 primitive, marine species, .6-4 cm., elongate body and end in a large, 2-valved carapace with a small plate covering the head. 8 Abdominal segments (incl. telson) instead of 7 of other malacostracans. 8 pairs of similar, foliaceous, biramous thoracic appendages produce current for filter feeding. Differ from malacostracans in their extra abdominal 'phyllopodous' thoracic appendages. From intertidal to about 400 meters esp. in low oxygen areas, one in hydrothermal areas.

Subclass Malacostraca

Subclass Phyllocarida,

Superorder or Order Leptostraca

Order Nebaliacea or Leptostraca
Family Nebaliidae (*Nebalia*)

Nebalia (= *Epinebalia*) Leach, 1814 - Nebaliidae phyllocarid crustacean

Nebalia daytoni Vetter, 1996 (sCA, BC, WA marine infauna)

Nebalia pugettensis (Clark, 1932) (sCA, BC, WA marine infauna)

phylogenetic tree - A dendrogram or other diagram showing evolutionary relationships between related taxon.

phylogenetic systematics - 1. The study of the evolutionary history of taxon. 2. Such a study by means of cladism.

phylogenetics - Bibl. - See evolution

phylogeny - The evolutionary history (=genealogy) of any group of organisms and the relationships between different taxa.

phylum - A major group in taxonomy below sub-kingdom & kingdom. Incl. Nematomorpha, Anthozoa, Annelida, archeocyatha, Arthropoda, Chilopoda, Dioplopda, Symphyla

physiognomy - The form & structure of natural communities. Cf. morphology.

physiology (see metabolism) - Ahearn & Howarth 1982

phytogenic rock - Biogenic rock directly resulting a species actions.

phytokarst - Produced by boring algae and/or fungi, typically with small to medium scale sharp ridges & points. Black phytokarst is biokarst where algal attack produces randomly oriented spongelike surfaces like lacework with a black coating.

phytophage - Animal which feeds on living green plants. Bibl. - See scavenger.

phytoplankton - Photosynthetic (algae and cyanobacteria) species suspended in water.

picoplankton - .2 to 2 microns, mostly cyanobacteria

pictographs - Faulkner 1992

pigment - Chemical that imparts color to an object by reflecting or transmitting only certain light rays & absorbing others. Many Tbs have lost pigment. Bibl. - See evolution, regressive.
caratenoids: Wolfe & Cornwell 1964

pika - See mammal

pill bug - Syn: isopod.

pinniped - Of Mammal order Pinnipeda; in sea caves. Incl. **Mammal**, seal, sea lion, & **walrus**.

pioneer - A species or individual that colonizes a depauperate or barren area.

plague - Can be carried by Ttx rodents in West. Control by DDT polluted some caves in CA,OR.
Kartman 1962

plankton - Biocoenoses of aquatic species, floating in open water. Cf. neuston. Incl. zooplankton & phytoplankton (plants). Freshwater limnoplankton are mostly the size equivalent of meiofauna & incl. microplankton (.05-1mm; incl. **rotifers**, most **worms**) & nanoplankton (<50 microns; incl. most algae, protists (ciliates, esp. Phytoflagellates), monera). Larger but rarer are mesoplankton (1-5mm), especially small crustaceans (most **branchiopods**, **isopods**, **amphipods**). Eulimnoplankton live in open waters of large lakes. Holo plankton in ponds may also be benthic esp. as juveniles. Telmatoplankton in small ponds & puddles often burrow into mud & form resistant resting stages during drought. Currents carry species from other biocoenoses to form tychoplankton (amoebas, **rotifers**, **nematodes**, chironomid **fly** larvae).
Bibl.: Scott 1909

planthopper - See Homoptera

plants - Cole 1982-3; fossil - Madsen & Rhode 1990; Van Devender 1977; Well 1969. See pollen. *Celtis* hackberry seeds replaced by calcite in MT)) Moreland 1961

Platyhelminthes (flatworms) (see worms)
Animal of clade Bilateria, Phylum of worms with four classes: **Turbellaria**, **Trematoda**, Monogenea (both commonly called flukes), & **Cestoda** (see worms, tapeworms). May form a sister group to both protostomes and deuterostomes, arising before those groups diverged.

pleiotropic - Pertaining to a gene that has more than one phenotypic effect.

plesiotypical - Conservative or unmodified attribute or morphic trait. Syn.: plesiomorphic

pleosponge - Syn: archeocyathid & included with fossil sponge.

pollen - paleo - Brook, Burney, Cowart & Ellwood 1990; Brook, Keferl & Nickmann 1988; Brook, Burney & Cowart 1990; Bushman 1969; Mulewich 1988

pollution (see **bats**, **human impacts**) - Green, Elliott & Crawford 1990; Holsinger 1963, 1966; Hobbs III 1995b; Nicholas 1963; Praeger 1972; Schindel 1984; K. Simon 1994; Simon & Buikema 1997 Steever 1995; Febbroriello 1983; George 1973; Holsinger 1963; Mahler 1997; Rusterholtz 1989; Steever 1992a; Thenhaus 1973

bacterial - Butoryak 1988; Nemetz et al. 1994;

carbide - Lavoie, 1980a. 1981d; Peck 1969; Garrison 1968; Hoey 1979

chlorination - Matthews, Bosnak et al. 1977

coliform - Hoey 1971; Simon & Buikema 1997

dieldrin - Luckens & Davis 1965;

DDT - Butcher, Kirknel, & Zabik 1969

gasoline/oil - Estes 1984; Hobbs III 1987, 1989

heavy metals - Bosnak & Morgan 1981; Dickson, Briese, & Giesey 1979, 1981; Dickson, Giesey & Briese 1982; Lewis 1996; Plenet et al. 1992; Vermeer 1972; Plenet 1995

ions - Scanlon 1990

monitoring - Plenet 1995; Plenet et al. 1992; Poulson 1988;

nitrites - E. Wells & Krothe 1989

nutrient enrichment - Hakenkamp 1991; Holsinger & Buikema 1979a; Jablonsky 1992a; Simon & Buikema 1997; Stolzenburg 1995

polyestrous - Pertains to species that have two or more estrous cycles per year.

polygyny - A mating system involving the access of a single male to more than one female during a mating season.

polymorphic - Occurring in several different forms. Noun: polymorphism.

polyphyletic - Evolving from more than one group of organisms. A polyphyletic group is a taxon in which not all species evolved from a common ancestor

polyphyly - Presence of taxa of members who are polyphyletic.

polythetic - Taxon classification based on traits common to most of the members of that group.

polytomy - A node in a phylogenetic tree with more than two descendant nodes.
polytrophic - See omnivore.

polytopism - The independent origin of a species or group in more than one area.

polytypic - Adj. for species with distinct geographic races or subspecies.

polytypy - A species with several forms separated geographically. Adj. polytypic. Cf. polymorphism.

polyvoltine - Adj. for species with several generations per season. Cf. univoltine.

population - The number & distribution of individuals in a species. Incl. abundant, accidental, alien, age/stage/size, barriers, biodiversity, breeding, casual, (fairly) common, communities, density/cover, distribution, endemic, extinct, extirpated, growth (decrease, increase, seasonal, stable), irregular, local, migrant, mortality, nesting, permanent, range, & uncommon. Bruce 1976; Dickson 1982; Green 1964, 1964a; Hellman 1989; Jegla, Poulson & Cooper 1965; Kane 1981, 1982; Kane & Ryan 1983; Laing, Carmody & Peck 1976a; Mitchell 1970; Peck 1975; Poulson 1969; Studier et al 1988; Swofford 1982;

ecology - Collins & Holsinger, 1981; Conrads, 1969;
fluctuations - A. Williams 1980; Studier, Lavoie, Nevin & McMillin 1988a
seasonality - Keith 1975a

sex ratios - Culver & Holsinger 1969; Goad 1983; Kane 1981; Tinkle & Patterson 1965;
Tinkle & Milstead

structure - Studier, Lavoie, Nevin & McMillin 1988

porcupine - See mammal, rodent

post-partum estrus - Anestrus immediately following birth. Cf. polyestrous.

potamon - The spring zone below the rhithron extending to the sea or a large lake, where the annual range of monthly mean temperature rises above 20° Centigrade, where the flow is slow (except during seasonal peaks such as spring floods) in temperate and polar regions, and during the monsoon in the tropics) and nearly laminar over substrates of predominantly sand with some mud and silt; where there may be partial light extinction from turbidity and where oxygen deficiencies may develop.

prairie dog - See mammal, rodent

pre-adapted - Possessing adaptations that would contribute to survival in a habitat other than the immediate one because of similarities in living conditions in the two habitats. Insects that live in low nutrient litter, for example, may be pre-adapted to cave life. The current preferred term is exadaptation because preadaptatino implies a preparation for adapting to a new environment.

predation & prey (see **feeding**) - Burger, J. et al. 1992; Culver 1975; Griffith 1990; Kane 1974, 1984; Kane & Poulson 1973; Man & Fong 1991; Munson & Keith 1984; Newman & Waters 1984; Norton 1984; Richards, P. 1989, 1991; Romero, A. 1985a; Studier 1996; Weeks & Hespenheide 1985

predator - An ecology type in which a species kills & eats other species for food.

present - Syn: current.

prey - A living animal captured for food by another animal.

primary productivity - In a body of water, the rate of photosynthetic carbon fixation by plants & bacteria forming the base of the food chain. Cf. productivity.

pro synon. - Abbrev. for pro synonymon (as synonym).

pro-epigean - Said of the area from a cave entrance to the limit of the twilight zone. Incl. threshold troglaphiles (TTp) & troglloxenes (Ttx)

procaryotes - Species who lack nuclei. Now divided into Kingdoms Bacteria (=Eubacteria) & Archaea (=Archaeobacteria),

procyonid - In Procyonidae, **mammal** carnivore family that incl. coatimundi & ringtails.

producers - Species that make their food from sunlight or other nonliving substances.

production - 1. Growth of lake organisms. 2. Rate of total amount of organisms grown.

productivity - Aquatic fertility. 2. The capacity of a lake to produce a particular organism. 3. Primary productivity. Incl. bottlenecks (nutrient & energy). 4. Production.
Bibl.: Corey, 1987; Hendry, et al. 1993; Lewis, W., 1991; Momot & Gowing, 1977a; Weingartner, 1977; Wood, et al., 1993

progenesis - Paedomorphosis more complete than neoteny, where development is cut short by early onset of maturity & adult resembles the juvenile stage of its ancestor.

pronghorn - Artiodactyl **mammal** ungulate.

protandry - Hermaphroditism in which the female stage follows the male stage.

Proteobacteria (= purple bacteria) – A phylum of Gram-negative bacteria divided into five groups (alpha, beta, gamma, delta & epsilon (a deep division within delta)). Many proteobacteria photosynthesize differently than other bacteria and use bacterial chlorophyll a. except where it has been lost in some species. Closest relatives of heterotrophs may be chemolithotrophs. Anaerobes and aerobes sometimes are closely related. Aerobic respiration has arisen independently several times.

protists - See protozoa.

protocols - Nicholas & Brucker 1965; Poulson 1988

Protostomia – One of the two clades of Bilateria animals. All animal embryos form a hollow gastrula with an indentation (blastophore) that sometimes becomes the mouth in Protostomia but never in Deuterostomia. Includes all bilaterians except Pterobranchia, Echinodermata, Enteropneusta (acorn worms) and chordates.

protonymph - First nymphal instars in many mite life cycles.

Protists

Informal superphylum that includes all kingdoms of animal-like protists (and sometimes protophytes) whose members are mostly unicellular, although some form colonies and others may have more than one nucleus. Once considered a kingdom or phylum. Their plant-like counterparts, protophytes, are usually known as various **algae** (sometimes placed there are the

grass-green flagellates (Division Euglenophycota; Class Euglenophyceae; Order Euglenales: Euglenaceae). Plant-like counterparts, protophytes, are usually known as various algae & diatoms. Protozoa incl. several phyla of unicellular or colonial organisms that may have little in common with each other. Some protists have differences in somatic and generative (reproductive) cells but different tissues are never formed.

Bibl.: Gittleson 1969; Gittleson & Hoover 1969, 1970; Golemansky 1994; Kofoed, 1899; Plafkin 1975; Sprauge & Couch 1971; Thompson & Olson 1988; McDonald & Evans 1956; Rossman 1959

Subkingdom Myxobionta

Division Acrasiomycota

Order Dictysteliida (=Acrasiales) (cellular slime molds)

Dictyosteliaceae (*Dictyostelium* (also put in Mycetozoida), *Polysphondylium*)

Phylum Ascomycota = Haplospora

Phylum Ciliata

Subphylum Ciliophora (ciliates) (also in own phylum or class under Mastigophora))

Class Ciliata (= Ciliata)

Subclass Holotricha

Order Microthoracida

Subclass Choreotrichia

Order Oligotrichida

Subphylum Cnidosporia (or as class under Subphylum Mastigophora)

Class Oligomonophorea

Subclass Peritrichia or Oligohymenophorea

Order Peritrichida (also put in Subphylum Cnidosporia)

Subclass Holotrichia (incl. Enchelyidae, Prorodontidae)

Order Gymnostomatida (incl. Colepidae)

Class Coccidiasina

Order Eucoccidiorida

Class Litostomatea (or as order under Subclass Rhabdophora)

Subclass Haptoria

Order Haptorida

Order Pharyngophorida

Class Heterotrichea

Order Amorphida

Order Odontostomatida

Class Oligohymenophorea (or as Subclass under Class Cyrtophora)

Subclass Hymenostomatia (or as order)

Order Hymenostomatida

Order Astomatida

Order Sessilida

Class Polyhymenophorea

Order Heterotrichida

Class Sporozoasida

Order Archigregarinorida

Suborder Aseptatorina (Lecudinidae: *Monocystella*)

Order Coccidia: Suborder Adeloerina (Klossiellidae: *Klossiella*)

Subclass Telosporea

Order Eugregarinorida

Subphylum Oligomenophora: Hymenostomata

Orders Hymenostomatida & Hypotrichida

Class Nassophorea (or as subclass under Class Cyrtophora)

Subclass Nassophoria (or as order)

Order Peniculida

Class Phyllopharyngea

Subclass Phyllopharyngia (or as order under Subclass Cyrtophora)

Order Cyrtophorida

Order Exogenida

Class Kinetofragminophoba (=Prostomatea (once incl. Prostomatida))

Subclass Gymnostomata

Infraorder Karyorelictea

Orders Crytophorida, Karyorelictida, Prorodontida

Subclass Hypostomatia

Order Synhymeniida

Subclass Suctoria (or as order under Subclass Phyllopharyngea)

Order Automatida

Order Exogenida

Order Gymnostomatida

Order Hymenostomatida
Order Scuticociliatida

Subclass Vestibulifera
Order Trichostomatida

Phylum Microspora, (Amblyosporidae
Class Myxozoa (Subclass Myxosporea: order Bivalvulida)
Class Ascetospora

Phylum Myxozoa (now considered Cnidarians by some authors)
Class Myxosporea
Order Bivalvulida

Class Microsporea
Order Microsporida

Phylum Sarcomastigophora (amebas, flagellates, opalinids)
Subphyllum Mastigophora
Order, Class or Division Cryptophyta

Class Phytomastigophorea
Order Chrysomonadida
Order Cryptomonadida

Order Dinoflagelladi
Order Euglenida
Order Volvocida

Subclass Spirotrichia
Order Armophorida
Infraorder Spirotrichea

Order Heterotrichida (= Heterotrichea)
Order Rhabdomonadales
Order Stichotrichida (= Sticotrichea)

Subclass Zoomastigia
Order Protomastigida (now in Zoomastigophorea)
Order Proteomyxida (now in Sarcodina)

Order Mycetozoida
Order Protomonadina
Order Amoebida

Division: Euglenophycota

Class Euglenophyta or Euglenophyceae (zooflagellates or Zoomastigophorans)

Order Sphenomonadales

Order Heteronematales

Subclass Euglenozoa

Order Zoomastigophorea (or class; nonphotosynthetic flagellates)

Subclass Zoomastigina (also elevated to Class Zoomastiphora)

Order Cercomonadida

Order Protomonadina

Order Kinetoplastida

Order Protomastigida (also placed in Prostomatea

Order Phytomastigophorea (also as class)

Superclass or Phylum Rhizopoda

(Sub)class Filosea (now in Rhizopoda)

Class Lobosea

Division Protophyta,

Subclass Gymnamoebia

Order Schizopyrenida

Subclass Testaceolobosa

Superorder Reticulobosa

Order Beggiatoales

Order Arcellinida.

Superclass, Class or Subphylum Sarcodina

Order Aconchulinida

Suborder Gromiina (or as Order Gromiida)

Euglyphidae (or in Euglyphina)

Suborder Euglyphina

Euglyphidae (or in Gromiina) (*Euglypha*,

Paraeuglypha)

Cypoderiidae (*Cyphoderia*)

Vampyrellidae (*Astrodisculus*, *Nuclearia*)

Order Sarcodina

Subclass Lobosea

Order Amoebida

Class Actinopodea

Subclass Radiolaria Or Order Radiolarida

Subclass or Order Proteomyxida

(Sub) class Filosea (now in Rhizopoda)

Subclass Heliozoida (heliozoans; sun animalcules)

(or Order Helizoda or Class Heliozoa)

Order Actinophryida

Order Centrohelida

Order Ciliophryida (= Ciliophrida)

Order Rotosphaerida: Heterophrys (now in Centrohelida)

Class Nassophorea (also put in Ciliophora)

Subclass Nassophoria

Order Euplotida

Order Peniculida (see above)

Order Schizomycetes

Class Rhizopodea

Order Foraminifera (=Foraminiferida)

Suborder Fusulinidea

Superfamily Fusulinacea (*Parafusulina*)

Suborder Textulariina

Superfamily Lituolacea

Lituolidae

Subfamily Haplophragmoidinae

(*Haplophragmoides*)

Suborder or Order Rotaliina

Elphidiidae (*Elphidiella*)

Order Aconchulinida

Suborder Euglyphina

Euglyphidae (or in Gromiina) (*Euglypha*, *Paraeuglypha*)

Cypoderiidae (*Cyphoderia*)

Vampyrellidae (*Astrodisculus*, *Nuclearia*)

Suborder Gromiina

Euglyphidae (*Euglypha*)

Order Actinophryida

Actinophryidae (*Actinophrys*)

Order Amoebida

Suborder Bubulina

Superfamily Gymnamoebia

Amoebidae (*Amoeba*)

Suborder Thecina

Discamoebidae (*Vannella*)

Suborder Tubulina: Hartmannellidae (*Hartmannella*, *Saccamoeba*)

Order Armophorida = Heterotrichida

Order Arcellinida

Diffugiidae (*Diffugia*)

Arcellidae (*Arcella*, *Centropyxis*),

Hyalospheniidae (*Wailesella*)

Nebelidae (*Nebela*)

Paraquadrulidae (*Quadrullella*)

Order Archigregarinorida

Suborder Aseptatorina

Lecudinidae: *Monocystella*)

Order Astomatida

Haptophryidae (now in Euglinida) (*Cepedietta*, *Haptophrya*)

Order Bivalvulida

Sphaerosporidae (*Chloromyxum*)- protist?, metazoan, bilaterian

Order Centrohelida

Heterophryidae (*Heterophrys*) (once in Raphidiophryidae)

Raphidiophryidae (also put in Phaneraxohelida & Centroplasthelida)

(*Heterophrys* (now in Heterophryidae), *Oxnerella*, *Raphidiophrys*, *Raphidocystis*)

Order Cercomonadida

Superfamily Zoomastigophorea

Cercomonadidae (*Cercomonas*)

Order Chrysomonadida

Ochromonadidae (also put in Order Ochromonadales) (*Spumella*)

Superfamily Chromulinacea: Chromulinaceae (*Monas*, *Oikomonas*)
(also put in Chrysophyta algae)

Superfamily Dinobryacea: Dinobryaceae (*Codonoeca*)

Order Ciliophrida (=Ciliophryida)

Heliozoa: Dictyochophyceae (*Ciliophrys* (pedinellid))

Order Coccidia

Suborder Adeloerina

Klossiellidae (*Klossiella*)

Order Colpodida

Colpodidae (*Colpoda*)

Order Cryptomonadida

Goniomonadidae (*Chilomonas*, *Goniomonas*)

Order Crytophorida

Suborder Chlamydodontina:

Chilodonellidae (*Chilodonella*)

Chlamydomonadidae (*Chlamydomon*, *Chlamydomonas*, *Sphaenochloris*)

Suborder Dysteriina

Dysteriidae (*Trochilia*)

Order Cryptophyta

Cryptophyceae (*Guillardia*)

Katablepharidaceae (*Cryptaulax*)

Order Dinoflagellida

Gymnodiniaceae (*Gymnodinium* (or in Gynodiniidae), *Amphora* (now in algae Pennales))

Suborder Diniferina

Peridiniidae (*Ceratium*, *Peridinium*)

Order Eucoccidiorida

Suborder Eimeriorina: Eimeriidae (*Archeococcia*, *Eimeria*, *Isospora*)

Suborder Haemospororina: Plasmodiidae (*Polychromophilus*)

Order Euglenida

Suborder Scytomonadina

Peranamaceae (*Anisonema*)

Petalomonadeae (*Petalomonas*, *Scytomonas*) (see below)

Suborder Euglenina
Superfamily Euglenoidea
Euglenaceae (*Trechelomonas*)

Euglenophyceae (*Astasia*, *Colacium*, *Distigma*, *Entosiphon*)
Euglenidae (*Euglena*, *Phacus*)

Order Eugregarinorida
Suborder Aseptatorina
Lecudinidae (*Lankesteria*) (also in Diplocystidae in same suborder)

Order Exogenida
Podophryidae (*Podophyra*, *Sphaerophyra*)

Order Gromiida
Infraorder? Filosea

Suborder Gromiina
Pseudodiffugiidae (*Pseudodiffugia*)

Suborder Euglyphina
Euglyphidae (*Trinema*)

Order Gymnostomatida
Actinobolinidae (*Actinobolinida*) (or in Pharyngophorida)
Rhabdophorina: Placidae (*Placus*) (or in Prorodontida)

Colepidae (once in Prorodontida) (*Coleps*)
Prorodontidae (*Prorodon*, *Pseudoprorodon*, *Rhagdosoma*, *Urotricha*)

Order Haptorida
Enchelyidae (also put in Subclass Holotrichia) (*Enchleys*)
Lacrymariidae (*Lacrymaria*) (also put in Enchelyidae)
Spathidiidae (*Spathidium*)

Order Heteronematales
Peranemeae or Peranemaceae (*Peranema*, *Urceolus*)
Peranemidae or Peranemaceae (*Heteronema*)

Suborder Heteronematina
Haptophryidae (*Heteronema*, *Haptophrya*)

Order Heterotrichida
Suborder Heterotrichina
Caenomorphidae (*Caenomorpha*)

Holostichidae (*Paraholosticha* (now in Urostylidae), *Trichotaxis*)

Keronidae (*Epiclintes*)

Peritromidae (*Peritromus*)

Spirostomidae (*Blepharisma*, *Gruberia*, *Metopus*, *Spirothomum*)

Urostylidae (*Paraholosticha* (also put in Holostichidae), *Paraurostyla*, *Urostyla*)

Superfamily Heterotrichea

Metopidae (*Metopus*) (also put in Order Armophorida)

Superfamily Stentoridea

Stentoridae (*Stentor* (large ciliate))

Suborder Prorotrichina

Didiniidae (*Didinium*)

Suborder Sporadotrichina

Oxytrichidae (*Gastrostyla*, *Oxytricha*, *Stylonychia*, *Tachysoma*, *Urosoma*)

Suborder Rhabdomonadina

Rhabdomonidae (*Gyropaigne*)

Bobonidae (*Rhynchomonas*) (also put in Kinetoplastida),

Petalomonadeae (*Scytomonas*) (put in Heteronematina but of uncertain affinity)

Suborder Hymenostomatida

Urocentridae (*Urocentrum*)

Suborder Peniculina

Parameciidae (*Paramecium*),

Suborder Hymenostomatina

Tetrahymenidae (*Tetrahymena*)

Turaniellidae (*Colpidium*)

Suborder Ophryoglenina

Ophryoglenidae (*Ophryoglena*)

Suborder Tetrahymenina

Tetrahymenidae

Order Hypotrichida (*Balladyna*, *Stichotricha*) (all now in Stichotrichida)

Aspidiscidae (*Aspidica*)

Euplotidae: (*Euplotes*)

Order Kinetoplastida (families now subsumed in Protomastigida)

Trypanosomatidae (also put in Protomastigida) (*Heteromyoxuris*)

Bobonidae: Bodoninae: *Bodo*, *Cercobodo*. *Pleuromonas*, *Rhynchomonas*),

Order Loxodida

Geleidae (*Geleia*)

Loxodidae (*Loxodes*)

Order Microsporida

Amblyosporidae (*Amblyopsora*)

Order Microthoracida

Discotrichidae (*Discotricha*)

Order Odontostomatida

Epalkellidae (*Saprodinium*)

Order Oligotrichida

Halteriidae (*Halteria*)

Strombidiidae (*Strombidium*)

Suborder Tintinnina

Codonellidae (*Coldonella*)

Order Peniculida

Frontoniidae (*Frontonia*),

Urocentridae (*Urocentrum*)

Suborder Frontoniina

Lembadionidae (*Lembadium*)

Order Pleruostomatida

Amphileptidae (*Litonotus*, *Loxophyllum*)

Order Proteomyxida: Aspidiscidae (*Aspidisca*, *Nucleria*)

Order Protomonadina: Craspedomonadidae (*Salpingocoea*)

Order Protomastigida

Katablepharidaceae (*Phyllomitus*)

Bobonidae: *Bodo*, *Cercobodo*. *Pleuromonas*, *Rhynchomonas*)

Trypanosomatidae (*Leptomonas*, *Trypanosoma*)

(also put in Suborder Trypanosomatina, Order Hypermastigida)

Order Pharyngophorida

Actinobolinidae (Actinobolinida) (or in Gymnostomatida)

Tracheliidae (*Dileptus*) (now in Prostomatida)

Order Prostomatida (*Prorodon* (now in Prorodontida))

Suborder Haptorina

Enchelyidae (*Chilophrya*)

Spathidiidae (*Perispira*, *Spathidium* (now in Haptorida))

Tracheliidae (*Dileptus*)

Suborder Prostomatina

Metacystidae (*Metacystis*)

Order Rhabdomonadales

Rhabdomonidae (*Rhabdomonas*)

Order Schizopyrenida: Vahlkampfiidae (*Tetramitis*, *Vahlkampfia*)

Order Scuticociliatida

Suborder Philasterina

Cinetochilidae (*Cinetochilum*)

Loxocephalidae (*Loxocephalus*)

Philasteridae (*Loxocephalus*, *Paranophrys*, *Paraureonema*, *Paratetrahymena*)

Pseudocohnilembidae (*Pseudocohnilembus*)

Uronematidae (*Uronema*)

Suborder Poleuronematina

Cyclidiidae (*Cyclidium*, *Cristigera*)

Pleuronematidae (*Pleuronema*)

Order Sessilida

Suborder Sessilina

Epistylidae (*Epistylis*),

Vorticellidae (*Vorticella*, *Vortex?*), Vaginicolidae (*Cothurina*),

Order Sphenomonadales

Suborder Sphenomonadina

Anisonemidae or Anisonemataceae (*Anisonema*)

Petalomonadidae (*Petalomonas*, *Rhyncomonas*, *Scytomonas* (or uncertain classification))

Order Stichotrichida

Amphisiellidae (*Eschaneustyla*)

Suborder Stichotrichina

Spirofilidae (*Balladyna* (now in Heterotrichida Holostichidae), *Stichotricha*)

Urostylidae - now in Heterotrichida

Suborder Sporadotrichina
Trachelostylidae (*Trachelostyla*)

Order Synhymeniida
Scaphidiodontidae (*Chilodontopsis*)

Order Trichostomatida
Suborder Trichostomatina
Coelosomididae (*Conchostoma*)

Order Volvocida (*Lobomonas*, *Phacotus*, *Polytoma*) (all now in green algae)

Actinophrys Ehrenberg, 1830 – Order Actinophryida: Actinophryidae protists
Actinophrys sol Ehrenberg, 1830 (soil/Mammoth C., KY & cave in Rockcastle Co., KY))

Amblyospora Hazard & Oldacre, 1975 - Order Microsporida, Amblyosporidae protists

Amblyospora californica Hazard & Dacre, 1975 (*A. (Thelohania) c.*) - parasite in *Tp Acanthocyclops vernalis* copepod)

Amoeba Bory de St. Vincent, 1822 (see *Hartmannella*) Order Amoebida, Amoebidae protists
Amoeba guttula Dujardin (Kudo) (AL, KY)
Amoeba limax = *Hartmannella limax*

Amoeba proteus Leidy (?) (MI benthic; TX aquatic)
Amoeba radiosa Ehrenberg (Kudo) (Mammoth C., KY)

Amoeba undet. sp. or species (cave in Rockcastle Co., KY; MN lake benthic) Daniels 1973
Amoeba vespertilio Penard (Kudo) (cave in Madison Co., AL)

Anisonema (Dujardin, 1841) emend. Stein, 1878 - Order Sphenomondales, Anisonemataceae protists (also put in Anisonemidae)

Anisonema acinus Dujardin, 1841 (Kudo) (Mammoth C., KY),
Anisonema undet. sp. (MN lake benthic)
Anisonema dextotaxum = *Metanema d.*

Arcella Ehrenberg, 1832 - Order Arcellinida, Arcellidae protists
Arcella aculeata = *Centropyxis a.*
Arcella dentata Ehrenberg (MN hyporheic)

Arcella discoides Ehrenberg (MN hyporheic)
Arcella undet. sp. or species (cave in Rockcastle Co., KY; AK freshwater pond interstitial)
Arcella vulgaris Ehrenberg, 1830 (Kudo) (soil; MN hyporheic & lake benthic/Mammoth C., KY)

Archeococcia Schmidt, Duszynski & Martin 1992 - Order Eucoccidiorida, Eimeriidae protists

Archeococcia antiquus Schmidt, Duszynski & Martin 1992 (*type locality cave in Mohave Co., AZ/ extinct in *Nothrotheriopsis* s. ground sloth dung)

Archeococcia nothrotheropsidae Schmidt, Duszynski & Martin 1992 (*type locality cave in Mohave Co., AZ/ extinct in *Nothrotheriopsis* s. ground sloth dung)

Aspidisca Ehrenberg, 1830 (= *Aspidicopsis* Ghosh, 1921; *Onychaspis* Stein, 1859; *Coccudina* Dujardin, 1841) - Order Proteomyxida, Aspidiscidae protists

Aspidisca andrewi Meresehkowski, 1877 (cave in Madison Co., AL)

Aspidisca costata (Dujardin, 1841) (MN lake benthic)

Astasia Dujardin, 1841 - Order Euglinida, Euglenophyceae protists

Astasia klebii Lemmermann (MN lake benthic)

Astrodisculus Greeff, 1869 - Order Aconchulinida, Vampyrellidae protists

Astrodisculus laevis Christen (Leedale) no ZR (Mammoth C., KY)

Astrodisculus radiosa Greeff (Kudo) no ZR (Mammoth C., KY),

Balladyna Kowalewsky, 1882 - Holostichidae protists, Order Heterotrichida

Balladyna elongata Roux (Kudo) (Mammoth C., KY)

Blepharisma Perty, 1849 - Spirostomidae protists, Order Heterotrichida

Blepharisma elongatum (*Apgaria e.* Stokes, 1884) Kahl, 1926 (US marine interstitial)

Blepharisma lateritium (AK freshwater pond interstitial; MN hyporheic)

Blepharisma undet. sp. (MN lake benthic)

Bodo Ehrenberg, 1836 - Order Protomastigida, Bobonidae protists

Bodo caudatus (Dujardin, 1841) Stein, 1875 (KY, AL)

Bodo celer Klebs (Pascher) no ZR (AL, KY, TN)

Bodo compressus Lemmermann (Pascher) no ZR (AL, KY)

Bodo edax (Kent, 1880) Klebs, 1892 (common in soils/ cave in Jackson Co., AL)

Bodo globosus Stein (Pascher) ZR 133 (common in soils/Tp or Tx? in KY, TN)

Bodo lens Muller (Pascher) no ZR (AL, KY),

Bodo minimus Pascher no ZR (Tx or Tp in KY, AL; in polluted MA aquifer)

Bodo mutabilis Klebs (Pascher) no ZR (AL),

Bodo undet. sp. or species (2 caves in UT; cave in Rockcastle Co., KY; AK freshwater pond interstitial)

Bodo uncinatus Kent (Pascher) no ZR (Mammoth C.,KY)

Bodo variabilis (Stokes) Lemmermann, 1914 (Mammoth C.,KY)

Caenomorpha Perty, 1852 - Caenomorphidae protists

Caenomorpha medusula (AK freshwater pond interstitial)

Centropyxis Stein, 1859 Order Arcellinida, Arcellidae protists

Centropyxis aculeata var. *ecornis* (*Arcella a.* Ehrenberg) (MN hyporheic)

Centropyxis aculeata var. *ecornis* (*Arcella a.* Ehrenberg; *C.e.* E.1879) Leidy (Germany, Mammoth C.,KY)

Centropyxis ecornis (Ehrenberg) Leidy (MN hyporheic)

Centropyxis undet. sp. (MI sandy freshwater interstitial)

Ceratium Schrank, 1703 – Peridiniidae protists (also treated as fungi in Dinophyta
Dinophyceae: Peridiniales: Peridinaceae)

Ceratium carolinianum (Bailey) Jorgenson (MN hyporheic)

Ceratium hirundinella (O.F. Muell.) Dujardin (MN hyporheic)

Cercobodo Krassilotchick, 1886 - Order Kinetoplastida, Bobonidae protists

Cercobodo crassicauda Alexieff (Pascher) (AL, KY)

Cercomonas Dujardin, 1841 (probable syns. = *Cercobodo*, *Dimastigamoeba*, *Mukdenamonas*, *Changia*, *Reptomonas*, *Cercomastix*)

Cercomonas crassicauda (Alexieff) (AL cave & cave in Rockcastle Co., KY),

Cercomonas undet sp. (in polluted MA aquifer)

Chilomonas Ehrenberg, 1832 - Order Cryptomonadida, Goniomonadidae protists

Chilomonas emarginata no ZR (Mammoth C.,KY)

Chilomonas oblonga (cave in Rockcastle Co., KY),

Chilomonas paramecium Ehrenberg, 1832 (MN lake benthic)

Chilodonella Strand, 1926 - Order Cryptophorida, Chilodonellidae protists

Chilodonella caudata Stokes (Kudo) (cave each in TN; Madison Co., AL & KY; TX aquatic)

Chilodonella cucullulus (*Colpoda c.* Myller, 1786; *Chilodon c.* Ehrenberg or Catkins, 1902)
(KY, TX aquatic)

Chilodonella undet sp. (MN lake benthic)

Chilodontopsis (Blochmann, 1895) Deroux, 1978 - Scaphidiodontidae protists

Chilodontopsis vorax (*Chilodon v.* Stokes, 1886) Kahl, 1928 (US marine interstitial)

Chilophrya Kahl, 1930 - Enchelyidae protists

Chilophrya (*Urotricha l.* Edmonson, 1920) Kahl, 1930 (US marine (Devil=s Lake) interstitial)

Chlamydodon Ehrenberg, 1835 - Order Cryptophorida, Chlamydomonadidae protists

Chlamydodon lynchelliformis Borror, 1972 (NH marine interstitial)

Chlamydomonas Ehrenberg, 1833 - Order Cryptophorida, Chlamydomonadidae protists

Chlamydomonas undet. sp. (MN lake benthic)

Chloromyxum Mingazzini, 1890 - Order Bivalvulida, Sphaerosporidae protists

Chloromyxum salamandrae S.J. Upton, C.T. McAllister & S.E. Trauth, 1995 (endoparasite in non-cave? AR *Desmognathus brimleyorum*, *Eurycea multiplicata griseogaster* & Tb *Eurycea neotenes* salamanders)

Ciliophrys Cienkowski, 1875 - Order Ciliophryida, Dictyochophyceae protists

Ciliophrys marino Caullery (Kudo) (Mammoth C., KY)

Cinetochilum Perty, 1852 - Cinetochilidae protists, Order Scuticociliatida

Cinetochilum margaritaceum (Ehrenberg, 1831) Perty? (MN lake benthic)

Codonella – Order Oligotrichida ,Codonellidae protists

Codonella cratera (Leidy) (MN hyporheic)

Codonoeca James-Clark, 1868 – Order Ochromonadales, Dinobryaceae protists

Codonoeca inclinata Kent (Mammoth C.,KY)

Colacium Ehrenberg, 1833 - Order Euglenida, Euglenophyceae protists

Colacium vesiculosum Ehrenberg, 1938 (Mammoth C.,KY)

Coleps Nitzsch, 1827 - Order Gymnostomatida, Colepidae protists

Coleps hirtus (Muller, 1786) N. (MI, MN lake benthic; AK freshwater pond interstitial)

Coleps striata Smith, 1897 (LA marine interstitial)

Colpidium Stein, 1860 - Turaniellidae protists

Colpidium undet. sp. AK freshwater pond interstitial)

Colpoda Muller, 1773 (= *Kolpoda*, *Repoma*)- Order Colpodida, Colpodidae protists

Colpoda steini Maupas, 1883 (Mammoth C.,KY)

Colpoda undet. sp. or species (Logan & Neff C.,UT & Mammoth C.,KY?; MN lake benthic)

Cothurnia Ehrenberg (1832) Vaginicolidae protists

Cothurnia undet. sp. or species (MI benthic & hyporheic)

Cristigera Roux, 1899 (pleuronematids) Cyclidiidae protists

Cristigera cirrifera Kahl, 1928 (TX aquatic)

Cristigera minor Penard, 1922 (TX aquatic)

Cryptaulax Skuja, 1948 - Katablepharidaceae protists

Cryptaulax vulgaris Skuja, 1948 (in polluted MA aquifer)

Cryptomonas Ehrenberg, 1831 = *Guillardia*

Cryptomonas emarginata (= *Chilomonas e.*?) (in polluted MA aquifer)

Cyathomonas truncata = *Goniomonas t.*

Cyclidium Mueller, 1786 - Cyclidiidae protists

Cyclidium glaucoma (Mueller, 1773) (Kahl) (AL, KY)

Cyclidium marinum Borror, 1963 (FL marine interstitial)

Cyclidium undet. sp. (cave in Rockcastle Co., KY; MN lake benthic)

Cyphoderia Schuluberger, 1845 - Cypoderiidae protists

Cyphoderia ampulla (Ehrenberg, 1840) (MI benthic & hyporheic)

Dictyostelium Brefeld, 1869 (dictyostelid cellular slime molds) (once in fungi or green algae)

Dictyosteliaceae protists in Order Dictyosteliida

Dictyostelium giganteum Singh (GA cave)

Dictyostelium mucoroides Brefeld, 1869 (WV & GA caves)

Dictyostelium purpureum E. S. Olive (MO, WV & GA caves)

Dictyostelium rosarium Raper & Cavender or Cavender and Raper (MO, WV; in bat guano in Blanchard Spr. C., AR)

Dictyostelium undet. sp. (NV near lights)

Dictyostelium sphaerocephalum (Oudemans, 1885) Sacch. & March. (WV)

Didinium Stein, 1859 - Didiniidae protists, Order Heterotrichida

Didinium nasatum (Muller, 1786) Kahl, 1930 (MN lake benthic)

Diffugia Leclerc, 1815 - Diffugiidae protists

Diffugia acuminata Ehrenberg, 1838 (MI benthic & hyporheic)

Diffugia constricta (Ehrenberg) (MI benthic; Mammoth C., KY)

Diffugia corona Wallich, 1864 (MI hyporheic)

Diffugia globulosa Ehrenberg, 1838 (Germany, Mammoth C., KY; MN hyporheic)

Diffugia lebes Penard (MI hyporheic)

Diffflugia lobostoma Leidy, 1879 (MI benthic & hyporheic)

Diffflugia undet sp. or species (cave in Rockcastle Co., KY; AL caves; AK freshwater pond interstitial)

Diffflugia spiralis Ehrenberg (MI benthic & hyporheic)

Diffflugia urceolata Carter (MI hyporheic)

Dileptus Dujardin, 1840 - Order Pharyngophorida, Tracheliidae protists

Dileptus anser (Muller, 1786) (MN lake benthic; US, European marine interstitial; AK freshwater pond interstitial)

Dileptus gigas Claparede & Lachmann (soil/MI benthic)

Dileptus monilatus (Stokes, 1886) Kahl, 1931 (US marine interstitial)

Discotricha Tuffrau, 1954 – Microthoracidae protists

Discotricha papillifera Tuffrau, 1954 (ME, NH marine interstitial)

Distigma Ehrenberg, 1838 - Order Euglinida, Euglenophyceae protists

Distigma (Astasia) proteus Ehrenberg (MN lake benthic)

Eimeria Schneider, 1875 - Order Eucoccidiorida, Eimeriidae protists. Bibl.: Duszynski, Reduker & Parker 1988

Eimeria albigulae Levine, Ivens & Kruidenier, 1957 (endoparasite in AZ, NM *Neotoma albigula* & NM, UT *Neotoma cinerea* & NM *Neotoma micropus* woodrats)

Eimeria antonelli Straneva & Gallati, 1980 (endoparasite in PA *Neotoma floridana* woodrats)

Eimeria antrozoi Duszynski, Scott, Aragon, Leach & Perry, 1999 (endoparasite in feces of NM *Antrozous pallidus* bats)

Eimeria arizonensis Levine, Ivens & Kruidenier, 1957 (endoparasite in NM (cf. *E.a.*) *Antrozous pallidus* bats)

Eimeria balpahe Ernst, Chobotar & Anderson, 1967 (endoparasite in NM *Neotoma albigula* woodrats)

Eimeria barleyi Straneva & Gallati, 1980 (endoparasite in PA *Neotoma floridana* woodrats)

Eimeria californicensis Duszynski, Scott, Aragon, Leach & Perry, 1999 (endoparasite in CA, NM *Myotis californicus* bats)

Eimeria catronensis Scott & Duszynski, 1997 (endoparasite in NM *Myotis lucifugus* & *M. yumanensis* bats)

Eimeria chobotari Ernst, Chobotar & Anderson, 1970 (endoparasite in NM *Neotoma albigula*

& *N. micropus* woodrats)

Eimeria dusii Wheat & Ernst, 1974 (endoparasite in AL *Neotoma floridana* woodrats)

Eimeria eumopos Marinkelle, 1968 (endoparasite in CA (Baja?) *Eumops trumbulli* bats)

Eimeria evoti Duszynski, Scott, Aragon, Leach & Perry, 1999 (endoparasite in NM *Myotis evotis* bats)

Eimeria glaucae Wheat & Ernst, 1974 (endoparasite in AL *Neotoma floridana* woodrats)

Eimeria humboldtensis Duszynski, Scott, Aragon, Leach & Perry, 1999 (endoparasite in CA *Myotis californicus* bats)

Eimeria jacksonensis Duszynski, Scott, Aragon, Leach & Perry, 1999 (endoparasite in SC *Nycticeius humeralis* bats)

Eimeria knoxjonesi Duszynski & McAllister, 1995 (endoparasite in NM *Neotoma albigula* woodrats)

Eimeria ladronensis Reducker & Duszynski, 1985 (endoparasite in NM, UT *Neotoma cinerea* & NM *Neotoma albigula* & *N. micropus* woodrats)

Eimeria langebarteli Iveris, Kruidenier & Levine, 1959 (endoparasite in NM *Neotoma albigula* woodrats)

Eimeria macyi Wheat, 1975 (endoparasite in AL *Pipistrellus subflavus* bats)

Eimeria neotomae Henry, 1932 (endoparasite in CA *Neotoma fuscipes* woodrats)

Eimeria operculata Levine, Ivens & Kruidenier, 1957 (endoparasite in AZ *Neotoma stephensi* woodrats)

Eimeria pilarensis Scott & Duszynski, 1997 (endoparasite in NM *Myotis ciliolabrum* & CA, NM *M. yumanensis* bats)

Eimeria residua Henry, 1932 (endoparasite in CA *Neotoma fuscipes* woodrats)

Eimeria rioarribaensis Duszynski, Scott, Aragon, Leach & Perry, 1999 (endoparasite in NM, Mex. *Myotis ciliolabrum* bats)

Eimeria strangfordensis Straneva & Gallati, 1980 (endoparasite in PA *Neotoma floridana* woodrats)

Eimeria undescr. sp. (endoparasite in NM *Lasiurus cinereus* bats)

Eimeria subflavus Wheat, 1975 (endoparasite in AL *Pipistrellus subflavus* bats)

Elphidiella Cushman, 1936 - Elphidiidae protists

Elphidiella hannai (WA marine infauna)

Enchleys Nitzsch, 1817- Order Haptorida, Enchelyidae protists

Enchleys gracilis Mansfeld (Kudo) no ZR (Alexander C.,TN)

Entosiphon Stein, 1878 - Order Euglinida, Euglenophyceae protists

Entosiphon undet sp. (MN lake benthic)

Epiclintes (Stein, 1862) Carey & Tatchell, 1983 - Keronidae protists, Order Heterotrichida

Epiclintes radiosa Calkins, 1902 (MA marine interstitial)

Epistylis Ehrenberg, 1830 - Epistylididae protists

Epistylis undet. sp. or species (Mammoth C.,KY; MN lake benthic)

Eschaneustyla Stokes, 1886 – Amphisiellidae protists brachytone Stokes (MN hyporheic)

Euglena Ehrenberg, 1830 - Euglenidae protists (also put in algae)

Euglena acus Her. (MN hyporheic)

Euglena acus Her. var. *angularis* Johnson (MN hyporheic)

Euglena chlamydophora Mainx (MN hyporheic)

Euglena deses . Ehr. (MN hyporheic)

Euglena proxima Dangeard (MN hyporheic)

Euglena undet sp. (MN lake benthic)

Euglena terricola Dangeard (MN hyporheic)

Euglypha – Euglyphidae - Gromiina protists

Euglypha alveolata Dujardin (MN hyporheic)

Euglypha ciliata Ehrenberg (MN hyporheic)

Euglypha laevis Ehrenberg (MN hyporheic)

Euplotes Ehrenberg, 1830 - Order Hypotrichida, Euplotidae protists

Euplotes aediculatus Pierson, 1943 (US marine interstitial)

Euplotes charon (Muller, 1786) Ehrenberg, 1830 (Mammoth C.,KY/ Europe marine interstitial)

Euplotes minuta Yocum, 1930 (WA marine interstitial)

Euplotes patella (Muller, 1773) (KY caves; AK freshwater pond interstitial)

Euplotes undet sp. or species (MN lake benthic & hyporheic)

Frontonia Ehrenberg, 1838 - Order Peniculida, Frontoniidae protists

Frontonia acuminata (Ehrenberg, 1833) (AK freshwater pond interstitial)

Frontonia leucas (Ehrenberg, 1833) (KY cave soil; MN lake benthic; AK freshwater pond)

interstitial)

Gastrostyla Englemann, 1862 - Oxytrichidae protists, Order Hetertrichida

Gastrostyla stenocephala (*Oxytricha s.* Borror, 1963) Borror, 1972 (FL marine interstitial)

Geleia Kahl, 1933 - Geleiididae protists

Geleia simplex Faure-Fremiet (CT marine interstitial)

Goniomonas Stein, 1878 - Order Cryptomonadida, Goniomonadidae protists

Goniomonas truncata (*Monas t.* Fresenius 1858; *Cyathomonas t.* Fisch 1885) (Mammoth C., KY; in polluted MA aquifer)

Gruberia Kahl, 1930-5 - Spirostomidae protists, Order Heterotrichida

Gruberia calkinsi Beltra=n, 1933 (MA marine interstitial)

Guillardia D. Hill & Wetherbee, 1990 (= *Cryptomonas*) Cryptophyceae protists

Guillardia undet sp. (MN lake benthic; in polluted MA aquifer)

Gymnodinium Stein, 1878 - Dinoflagellida Gymnodiniaceae (or in Gynodiniidae) protists

Gymnodinium tenuissimum Laut. (Mammoth C.,KY),

Gyropaigne Skuja, 1939 - Rhabdomonidae protists, Order Rhabdomonadales

Gyropaigne lefevrei Bourrelly & Gores (Leedale) (cave in Madison Co.,AL)

Halteria Dujardin, 1841 - Order Oligotrichida, Halteriidae protists

Halteria grandinella (Muller, 1773) (Kudo) (soil in Mammoth C.,KY; MN lake benthic),

Halteria undet. sp. (cave in Rockcastle Co., KY)

Haplophragmoides - Lituolidae foraminifera, Subfamily Haplophragmoidinae

Haplophragmoides undet. sp. (MS marine interstitial)

Haptophrya Stein,1867 - Order Euglinida, Haptophryidae protists

Haptophrya gigantea Maupas, 1879 (endoparasite in *Typhlotriton spelaeus* salamander),

Hartmannella Alexeief, 1912 - Hartmannellidae protists (once put in Order Amoebida, Amoebidae)

Hartmannella limax (*Amoeba limax* Dujardin, 1841) (Mammoth C.,KY)

Heteronema Dujardin, 1841 - Heteronematales, Superfamily Astasiaaea, Peranemidae protists

Heteronema cryptocercum Skuja, 1939 (TX aquatic)

Heteronema undet. sp. (MN lake benthic)

Heterophrys Archer, 1876 - Heterophryidae protists in Order Centrohelida protists

Heterophrys glabrescens Penard (Kudo) no ZR (AL, KY caves)

Holosticha diademata (Rees, 1844) (NH tidal marsh interstitial)

Holosticha (Keronopsis) rubra (Ehrenberg, 1838) (FL marine interstitial sands)

Isospora Schneider, 1881 - Order Eucoccidiorida, Eimeriidae protists

Isospora hightoni Upton, McAllister & Trauth, 1993 (endoparasite in non-cave AR *Plethodon cinereus albagula* salamander)

Isospora peromysci Davis, 1959 (endoparasite in NM *Neotoma micropus* woodrats)

Klossiella Smith & Johnson, 1902 - Klossiellidae protist in Order Coccidia

Klossiella undet. sp. (in *Myotis sodalis* bats)

Kolpoda Mueller, 1773 = *Colpoda*

Lacrymaria Bory de St. Vincent, 1826 - Order Haptorida, Lacrymariidae protists (also put in Enchelyidae)

Lacrymaria pupula Muller, 1786) Kahl, 1930 (Sauta C.,AL)

Lacrymaria undet. sp. (AK freshwater pond interstitial)

Lankesteria - Order Eugregarinorida, Lecudinidae protists (also put in Diplocystidae)

Lankesteria undet. sp. (endoparasite in *Sphalloplana percoeca* flatworm in Jackson Co.KY)

Lembadion Perty, 1849 - Lembadionidae protists

Lembadion bullinum Perty, 1841 (MN lake benthic)

Leptomonas Kent, 1880 - Trypanosomatidae protists, Order Hypermastigida

Leptomonas undet. sp. or species (hyperparasite in *Myodopsylla gentilis* fleas parasitizing OK *Tadaridia brasiliensis* bats)

Leucophrys Mueller [1830] - See Tetrahymena

Litonotus Wresniowski, 1870 - Amphileptidae protists

Litonotus undet. sp. (MN lake benthic & hyporheic)

Lobomonas P.A. Dangeard, 1898 – (now in Volvocales protists)

Lobomonas undet. sp. (MN lake benthic)

Loxocephalus Eberhard, 1862 - Philasteridae protists, Order Scuticociliatida

Loxocephalus plagiis (*Dexioptricha p.* Stokes, 1885) Kahl, 1931 (US Atlantic marine interstitial)

Loxocephalus wassi Thompson, 1963 (US Atlantic marine interstitial)

Loxodes Ehrenberg, 1830 - Order Loxodida, Loxodidae protists
Loxodes magnus Stokes, 1887 (US marine interstitial; MN hyporheic)

Loxodes rostrum (O.F. Muller, 1786) (MI benthic)
Loxodes undet. sp. or species (MN lake benthic & hyporheic)

Loxophyllum Dujardin, 1841 - Amphileptidae protists
Loxophyllum helus Stokes, 1884 (US marine interstitial)
Loxophyllum undet. sp. (MN lake benthic)

Metacystis Kahl, 1926 - Metacystidae protists
Metacystis striata Stokes, 1893 (US marine interstitial)

Metopus Claparede & Lachmann, 1858 - Metopidae protists
Metopus es (Claparede; & Lachmann, 1858) Kahl, 1930-5 (MN lake benthic; (AK freshwater pond interstitial)

Metopus spiralis Smith, 1897 (TX freshwater; LA marine interstitial)

Microcystis - see bacteria

Monocystella Valkanov, 1935 - Lecudinidae protists in Order Archigregarinorida
Monocystella undet. sp. (endoparasite in *Sphalloplana percoeca* flatworm in Jackson Co.KY)

Nassula Ehrenberg, 1833 - Nassulidae protists, Order Nassulida, Suborder Nassulina
Nassula undet sp. (AK freshwater pond interstitial)

Nebela - Nebelidae protists
Nebela collaris Ehrenberg (MN hyporheic)

Nuclearia Cienkowski, 1865 - Order Aconchulinida, Vampyrellidae protists
Nuclearia delicatula (KY)

Ophyroglena Ehrenberg, 1831 - Ophryoglenidae protists
Ophyroglena undet. sp. AK freshwater pond interstitial

Oxnerella Dobell, 1917 - Raphidiophyryidae protists, Order Centrohelida
Oxnerella maritima Dobell, 1917 (Kudo) (Mammoth C.,KY)

Oxytricha (Bory St. Vincent, 1826) Ehrenberg, 1832 - Oxytrichidae protists, Order Heterotrichida

Oxytricha bifaria Stokes, 1887 (NH marine interstitial)

Paraholosticha Kahl, 1930-5 - Urostylidae protists, Order Heterotrichida (once put in

Holostichidae)

Paraholosticha polychaeta Borror, 1966 (NH tidal marsh interstitial)

Paramecium Muller, 1773 - Order Hymenostomatida, Parameciidae protists

Paramecium bursaria (Ehrenberg, 1831) (TX aquatic),

Paramecium caudatum Ehrenberg, 1833 (KY,TX aquatic)

Paramecium micromultinucleatum (VA)

Paramecium bursaria (Ehrenberg, 1831 (TX aquatic)

Paramecium calkinsi Woodruff, 1921 (US marine interstitial)

Paramecium caudatum Ehrenberg, 1833 (MN lake benthic)

Paramecium undet. sp. or species (cave in Rockcastle Co., KY; MN hyporheic)

Paramecium trichium (Stokes, 1885) Wenrich, 1926 (US marine interstitial)

Paranophrys Thompson & Berger, 1965 - Philasteridae protists, Order Scuticociliatida

Paranophrys magna Borror, 1972 (NH marine interstitial)

Parafusulina - Superfamily Fusulinacea foram

Parafusulina undet. sp. (extinct Permian fossil in Lechuguilla C., Eddy Co., NM)

Paratetrahymena Thompson, 1963 - Philasteridae protists, Order Scuticociliatida

Paratetrahymena wassi Thompson, 1963 (VA marine interstitial)

Parauremonema Thompson, 1967 - Philasteridae protists, Order Scuticociliatida

Parauremonema virginianum Thompson, 1967 (VA marine interstitial)

Peranema Dujardin, 1841 (= *Pseudoperanema* Christen 1962 (ICBN)) Peranemaeae protists

Peranema undet. sp. or species (MN lake benthic; MN hyporheic)

Peranema trichlophorum Ehrenberg (Kudo) no ZR (Tx? in Mammoth C.,KY & Rockcastle Co., KY/ flagellate)

Paraeglypha Penard, 1902 – Euglyphidae protists

Paraeglypha reticulata Penard, 1902 (MN hyporheic)

Peridinium Ehrenberg, 1832 - Peridiniidae protists (also treated as fungi in Dinophyta
Dinophyceae: Peridinales: Peridinaceae)

Peridinium undet. sp. - Peridiniidae (MN hyporheic)

Perispira Stein, 1859 - Spathidiidae protists

Perispira strephosoma Stokes, 1886 (US marine interstitial)

Peritromus Stein, 1867 - Peritromidae protists, Order Heterotrichida

Peritromus californicus Kirby, 1935 (CA marine interstitial)

Petalomonas Stein, 1859 (= *Copromonas* Dobell, 1908; Huber-Pestalozziomonas Skvortzov, 1967; *Pentamonas* Lackey, 1962; *Thylakomonas* Schwewiakoff, 1982; *Trinagulomonas* Lackey, 19409) Order Sphenomonadales, Petalomonadiae protists (dinoflagellates)

Petalomonas mediocanellata (Ac or Tx in KY)

Petalomonas pusilla Skuja, 1948 (Ac or Tx in KY).

Petalomomas undet. sp. (MN lake benthic)

Phacotus. Perty, 1852 - Chlorophyceae in Chlamydomonadales or Volvocales protists (now in green algae (also put in Phacotaceae)

Phacotus lenticularis (Ehrenberg, 1831) (MN lake benthic)

Phacus Dujardin, 1841 - Euglenidae protists in Order Euglenales (also put in algae)

Phacus acuminatus Stokes (MN hyporheic)

Phacus pleuronectes (*Lercaria* p. O.F. Muller, 1773) (Europe, KY) (protist)

Phacus pleuronectes var. *hyalinus* (KY)

Phacus undet. sp. (Mammoth C.,KY)

Phacus spirogyra var. *maxima* Prescott (MN hyporheic)

Phacus striqueter (Ehr.) Dujardin (MN hyporheic)

Phyllomitius Stein, 1878 – Order Protomastigida, Katablepharidaceae protists

Phyllomitius amylophagus (Kudo) Klebs, 1892 no ZR (Mammoth C.,KY)

Pleuronema Dujardin, 1836 - Pleuronematidae protists

Pleuronema balli Small, 1968 (US marine interstitial)

Pleuronema setigerum Calkins, 1902 (MA marine interstitial)

Podophyra Ehrenberg, 1835 [1834] - Order Exogenida, Podophryidae protists

Podophyra cyclopus Ehrenberg, 1835 [1834] (on *Cyclops* in Mammoth C.,KY),

Podophyra undet. sp. or species (MN lake benthic & hyporheic)

Polychromophilus Dionisi, 1899 ZR 125 - Plasmodiidae protists, Order Eucoccidiorida

Polychromophilus undet sp. (endoarasite in FL *Myotis austroriparius* bats)

Polysphondylium Olive (dictyostelid cellular slime molds) (once in fungi or green algae)
Dictyosteliaceae protists in Order Dictyosteliida

Polysphondylium discoideum = *Dictyostelium d.* (KY, WV)

Polysphondylium violaceum Raper (MO,WV)

Polytoma Ehrenberg, 1838 - Order Volvocida, Chlorophyceae protists (now put in green algae)

Prorodon eres (AK freshwater pond interstitial)

Prorodon undet. sp. (MI benthic)

Protococcus - Put in algae

Pseudocohnilembus - Pseudocohnilembidae protists, Order Scuticociliatida

Pseudocohnilembus hargisi Thompson, 1964 (VA marine interstitial)

Pseudocohnilembus longisetus Evans & Thompson, 1964 (VA marine interstitial)

Pseudocohnilembus marinus Thompson, 1964 (VA marine interstitial)

Pseudoprorodon Blochmann, 1886 - Prorodontidae protists

Pseudoprorodon undet. sp. or species (AK freshwater pond interstitial; MN hyporheic)

Pseudodifflugia Schlumberger, 1845 - Order Gromiida, Pseudodifflugiidae protists

Pseudodifflugia gracilis Schlumberger, 1845 (Kudo) (cave in Madison Co., AL)

Pyxidicula – Put with diatoms

Quadrulella Cockerell, 1911 – Paraquadrulidae protists

Quadrulella symmetrica Wallich (MN hyporheic)

Raphidiophrys Archer, 1867 - Raphidiophryidae protists

Raphidiophrys pallida Schulze, 1874 (Kudo) (Mammoth C., KY)

Raphidocystis Penard, 1904 - Order Centrohelida, Raphidiophryidae protists

Raphidocystis infestans Wetzel (Mammoth C., KY)

Reticularia Bull., 1791 - Phylum Sarcodina, Class Reticularia

Reticularia undet. sp. (endoparasite in UT *Neotoma cinerea* cinereus woodrats)

Rhabdomonas Fresenius, 1858 - Rhabdomonidae protists, Order Rhabdomonadales

Rhabdomonas costata Korschikow (Leedale) (Mammoth C., KY)

Rhagdstoma Kahl, 1926 - Prorodontidae protists, Order Gymnostomatida

Rhagdstoma undet. sp. (MN lake benthic)

Rhynchomonas Klebs, 1893 - Order Kinetoplastida, Bobonidae protists

Rhynchomonas nasuta Klebs, 1892 (AL, KY)

Saccamoeba Frenzel, 1892 Amoebida: Tubulina, Hartmannellidae protists

Saccamoeba gorgonia (*Amoeba* g. Penard) (Kudo) no ZR (Mammoth C., KY)

Salpingoeca James-Clark, 1868 - Protomonadina, Craspedomonadidae protists

Salpingoeca amphoridium J.Clark (Mammoth C.,KY)

Saprodinium Lauterborn, 1908 - Epalxellidae protists undet. sp. (AK freshwater pond interstitial)

Scytomonas Stein, 1878 - Petalomonadidae protists

Scytomonas pusilla Stein, 1878 (Caraway & Lackey) (KY,TN/euglenoid),

Scytomomas undet. sp. (MN lake benthic)

Sieboldiellina (N.N. pro *Discophrya* Stein, 1860)

Sieboldiellina planariarum (holotrichous ciliate (endoparasite in cave *Planaria occulta*)

Spathidium Dujardin, 1841 - Order Haptorida, Spathidiidae protists

Spathidium undet. sp. or species (MI benthic; AK freshwater pond interstitial)

Sphaenochloris - Chlamydomonadidae protists

Sphaenochloris urceolata Kent, 1880-1882 (Mammoth C.,KY)

Sphaerophrya Claparede & Lachmann, 1859 – Podophyridae protists

Sphaerophrya undet. sp. (MN hyporheic)

Spirothomum Ehrenberg, 1834 - Spirostomidae protists, Order Heterotrichida

Spirothomum ambiguum Ehrenberg, 1838 (MI benthic; Europe marine interstitial/ VA c.?)

Spirothomum loxodes Stokes, 1885 (US marine interstitial)

Spirothomum teres Claparede & Lachmann, 1858 (MI, MN lake benthic; Europe marine interstitial; AK freshwater pond interstitial)

Spumella Cienkowski - Ochromonadidae protists

Spumella elongata (in polluted MA aquifer)

Spumella guttula (in polluted MA aquifer)

Stentor Oken, 1815 - Order Heterotrichida, Stentoridae protists

Stentor coerulens Ehrenberg (MI benthic)

Stentor roeseli Ehrenberg, 1835 (MN lake benthic; Europe marine interstitial)

Stentor undet. sp. (AK freshwater pond interstitial)

Strombidium Claparede & Lachmann, 1859 - Strombidiidae protists

Strombidium undet. sp. (AK freshwater pond interstitial)

Stylonychia Ehrenberg, 1830 - Oxytrichidae protists, Order Heterotrichida

Stylonychia mytilis AK freshwater pond interstitial)

Stylonychia putrina Stokes, 1885 (US marine interstitial)

Stylonychia undet. sp. (MN lake benthic)

Tachysoma Stokes, 1887 - Oxytrichidae protists, Order Heterotrichida

Tachysoma parvistyla Stokes, 1887 (US marine interstitial)

Tetrahymena Fergason, 1940 - Tetrahymenidae protists

Tetrahymena patula (*Leucophrys patula* Ehrenberg, 1831) Corliss, 1951 (MI benthic),

Tetrahymena undet. sp. or species (KY caves; AK freshwater pond interstitial) Corliss 1973

Tetramitis Perty, 1852 - Vahlkampfiidae protist of Order Schizopyrenida

Tetramitis undet. sp. (Neff C., UT)

Trachelomonas Ehrenberg, 1835 - Euglenaceae protists (also put in algae)

Trachelomonas acanthostoma (Stokes) Deflandre (MN hyporheic)

Trachelomonas varians (Lemm.) Deflandre (MN hyporheic)

Trachelomonas verrucosa (*T. lemmermannii* form. *verrucosa* Skuja, 1955) Stokes (KY)

Trachelomonas volvocina Ehr. (MN hyporheic)

Trachelostyla Kahl, 1932 - Trachelostylidae protists

Trachelostyla pediculiformis (Cohn, 1866) (FL, NH marine interstitial)

Trichotaxis Stokes, 1891 - Holostichidae protists, Order Heterotrichida

Trichotaxis pulchra Borror, 1972 (NH marine interstitial)

Trimyema Lackey, 1925

Trimyema undet. sp. AK freshwater pond interstitial)

Trinema Dujardin, 1841 - Euglyphidae protists, Order Gromiida

Trinema enchelys (Ehrenberg, 1838) (Kudo) (Mammoth C., KY; MN hyporheic)

Trinema lineare Penard (MN hyporheic)

Trochilia Dujardin, 1841 - Dysteriidae protists

Trochilia fluviatilis Smith, 1897 (LA marine interstitial)

Trochaminna undet. sp. (MS marine interstitial)

Trypanosoma Gruby, 1843 - Order Protomastigida or Kinetoplastida, Trypanosomidae protists

Trypanosoma ambystomae (endoparasite in non-cave CO *Ambystoma tigrinum* salamanders)

Trypanosoma* (*Schizotrypanum*) *cruzi Chagas, 1909 (endoparasite in wTX *Tadarida brasiliensis* & OK *Myotis velifer* & *M. grisescens* bats)

Trypanosoma* (*Schizotrypanum*) *hedricki Bower & Woo, 1981 (endoparasite in sON *Eptesicus f.* bats)

Trypanosoma kansasensis Upton, Fridell & Tilley, 1993 (endoparasite in KS *Neotoma floridana* woodrat)

Trypanosoma (*Schizotrypanum*) *myoti* Bower & Woo, 1981 (endoparasite in sON *Myotis lucifugus* bats)

Trypanosoma protracta protracta (Uhler, 1894) (endoparasite in CA *Neotoma fuscipes* woodrats)

Trypanosoma ogawai Miyata, 1977 (endoparasite on bats)

Trypanosoma undet.sp. (endoparasite in OK *Myotis velifer* bats)

Trypanosoma (*Schizotrypanum*) *verspertilionis* Battaglia, 1904 (Europe, NA/ endoparasite in AZ, sCA, VA *Eptesicus fuscus*, *Corynorhinus townsendii*; CA *Myotis yumanensis sociabilis* (rare), *M. californicus*, *Antrozous pallidus pacificus*, *Eptesicus fuscus bernardinus* (rare), *Corynorhinus rafinesquii* (rare) & *Tadarida mexicana*; AZ *Myotis velifer* & CA, TX *Pipistrellus hesperus*) bats) **Bibl.:** Mitchell, 1956

Urocentrum Nitzsch, 1827 - Urocentridae (=Calceolidae) protists, order Hymenostomatia
Urocentrum turbo Mueller, 1786) (TX aquatic)

Uronema Dujardin, 1964 - Uronematidae protists, Order Scuticociliatida
Uronema nigricans Thompson & Evans, 1968 (US marine interstitial)

Uronychia Stein, 1859 - Order Hypotrichida, Euplotidae protists
Uronychia setigera Calkins, 1902 (MA marine interstitial)

Urosoma Kowalewski, 1882 - Oxytrichidae protists, Order Heterotrichida
Urosoma caudata Stokes, 1887 (US marine interstitial)

Urosoma macrostyla (*Opisthotricha emarginata* Stokes, 1885) Wrzesniowski, 1870 (US marine interstitial)

Urosoma undet. sp. (MN hyporheic)

Urostyla Ehrenberg, 1830 - Urostylidae protists
Urostyla undet. sp. (MI benthic)

Urotricha Claparede & Lachmann, 1858 - Prorodontidae protists
Urotricha agilis (*Balanitozoon a.* Stokes, 1886) Kahl, 1930 (US marine interstitial)

Vahlkampfia Chatton & Lalung-Bonnaire, 1912 - Vahlkampfiidae protist
Vahlkampfia limax (Dujardin) (MN lake benthic)
Vahlkampfia undet. sp. or species (KY, TX aquatic; cave in Rockcastle Co., KY))

"***Vortex***" Ehrenberg, 1831 - Order Sessilida, Vorticellidae? protist
"***Vortex***" *cavicolens* Packard, 1883 (may not be valid species) (1-2 caves in Carter Co., KY/scKY/Tb?) Packard, 1886.

Vorticella Linnaeus, 1767 - Order Sessilida, Vorticellidae protist
Vorticella microstoma Ehrenberg, 1838 (Kahl) (AL,KY)

Vorticella undet. sp. or species (MN lake benthic; sandy hyporheic in TX; AK freshwater pond interstitial; MN hyporheic)

Wailesella – Hyalospheniidae protists
Wailesella eboracensis Wailes (MN hyporheic)

Protostomia - A branch of the Bilateria of the animal kingdom. Incl. mollusks, onychoporan worms, tardigrades, and arthropods.

Proturans (= Myriotomata) An order of Class Ellipura (=Entognatha), Superclass Hexapoda. .6-2.5 mm long, soft-bodied, elongate, blind soil hexapods lacking antennae with the appendages of the first thoracic segment, the front legs, serving as antennae. The mouth-parts are of a primitive sucking type with mandibles long and thin but not forming a sucking tube such as found in winged insects.. The abdomen lacks cerci but has a well-developed telson and three basal segments (sometimes two) with paired appendages. Feed on fungi in moist areas such as moldy soil around roots. Likely to be found in caves but not yet reported from US or Canadian caves. About 260 species worldwide with 20 species in nine genera reported in the US and Canada. Bibl.: Nosek 1973, 1978; Tuxen 1960, 1964

provenance - A place of origin.

psammobiotic - Adj. for aquatic species who live almost exclusively in sand sediments.

psammon - Interstitial aquatic life (especially on or between sand grains) of both freshwater lentic (standing water) and marine habitats. Interstitial aquatic life in the hyporheic zone of freshwater lotic (running water) habitat is the hyporheos. Few species are epipsammon (living on the sand surfaces). Most are mesopsammon, living in spaces between the grains, especially **cnidarians nematodes**, polychaetes **worms** and **copepods**. Psammoxenes are species commonly found in bodies of water and interstitially within the first 100 cm of the bodies of water. Like troglomenes, they cannot complete their life cycle in that habitat. Psammophiles tend to be found further back in the sand. Like troglomenes, they can spend their entire lives in that habitats but are found in other habitats as well. Epipsammon live on sand grain surfaces while mesopsammon live within cavities between sand grains. Endopsammon include burrowing animals.

psammophilic - Aquatic species which prefer living in sandy sediments but also live in other regions of the littoral.

psammoxenic - Aquatic species found occasionally in sandy sediments but generally live elsewhere and normally die in sandy sediments if they stay too long.

Pseudoscorpions

Arachnid of Order Pseudoscorpiones (= Pseudoscorpionida, Chelonethida).

A peculiarity of the pseudoscorpion is their ability to run backwards, especially if it brushes against another animal representing a potential danger. They seem to be able to move backwards faster than they can forwards.

The first pair of mouthparts, the chelicerae, possess glands, but whereas in spiders similar glands secrete venom, in pseudoscorpions, they produce silk. This silk is used for making nests and shelters used during the period of moulting. A pseudoscorpion moults four times in the course of its 2-3 years of life.

The construction of its shelter is done systematically. The animal first selects a site and collects tiny fragments of wood and sand grains and arranges these in a circle around itself. On this it lays down a layer of silk in which the debris finally becomes embedded. Then more sticks and stones are laid on this and more silk added to cement them until a slicken igloo results. In the later stages of construction, the opening of the igloo is very small yet the animal manages to climb in and out to collect building materials. When complete the false scorpion is fully imprisoned. It then gives the shelter a final lining of silk. The igloo is just large enough for the animal to be stretched out to moult, hibernate or lay eggs. The animal has to break through the wall of the shelter to be free again.

Food for a pseudoscorpion are primarily springtails and mites which are seized with the large pedipalps and chewed. Unlike other small animals, such as spiders, a pseudoscorpion eats all of its prey leaving no remains at all.

Certain species of pseudoscorpions use a form of travel called phoresia, or hitch hiking. One of them may grab the leg of a fly and be carried off, holding on by one claw. The large harvestmen spider is also used by pseudoscorpions for transport. As many as eight pseudoscorpions have been seen riding at one time on the legs of a harvestmen spider.

Approximately one-sixth of the 2,000 described species and subspecies of pseudoscorpions world wide are reported from caves.

Bibl.: Beier, 1936, 1940, 1948; Chamberlin, J. 1929a, 1931; Harvey 1991-2; Heurtault 1994; Muchmore 1982. **Areas:** **AR:** C. Hoff 1945a; **CO:** Hoff 1961; **HI:** Muchmore 1979a; 1998a; **IN:** Beier 1932, 1932a; Hagen, 1879; Muchmore 1993; **KY:** Beier 1932, 1932a, Packard, 1884; Hagen, 1879; **MI:** Nelson 1975; **MO:** Muchmore & Alteri 1974; **NA:** Hoff 1958; **NM:** Hoff 1959; **OR:** Benedict 1978b, 1979; Benedict & Malcom 1972, 1977; **SD:** C. Hoff 1963; **VA:** Beier 1932, 1932a

Kingdom Animalia

Clade Metazoa

Clade Eumetazoa

Clade Bilateria

Clade Protostomia

Clade Ecydsozoa

Phylum Arthropoda
Subphylum Chelicerata
Class Archnida

Subclass Lipoctena or Dromopoda
Superorder Haplocnemata
Order Pseudoscorpiones

Suborder Monophryonida
Superfamily Feaelloidea (Pseudogarypidae)
Superfamily Cheiridioidea

Superfamily Cheliferoidea
(Cheliferidae, Chernetidae) Paxton 1885

Superfamily Chthonioidea (Chthoniidae)
Superfamily Garypoidea (Garypidae)

Superfamily Neobisioidae
(Bochicidae, Ideoroncidae, Neobisiidae,

Syarinidae)

Families incl.

Bochicidae

Subfamily Leucohyinae (*Leucohya*)

Cheiridiidae H.J. Hansen (*Apocheiridium*, *Cheiridium*) Chamberlin (1924),

Chernetidae (*Dinocheirus*, *Hesperochnes*, *Neoallochnes*, *Tejachernes*, *Tuberochnes*)

Cheliferidae (*Chelifer*)

Chthoniidae Daday, 1888 (*Aphrastochthonius*, *Apochthonius*, *Chthonius*, *Kleptochthonius*,
Lechytia, *Mexichthonius*, *Mundochthonius*, *Neochthonius*, *Pseudotyrannochthonius*,
Tyrannochthonius, *Vulcanochthonius*)

(unidentified Tx or Ac genera in San Bernardino & Tulare Cos., CA)

Bibl.: J. Chamberlin 1929a, 1962

(undescribed genera incl. 2 undescribed sp. & *Tyrannochthonius* h. Muchmore, 1979d)

Bibl.: Muchmore, 1998

Garypidae Simon, 1893 (*Archeolarca*, *Larca*)

Ideoroncidae Chamberlin, 1930 (*Albiorix*)

Neobisiidae Chamberlin, 1930 (*Alabamocreagris*, *Americocreagris*, *Australinocreagris*,
Fissilicreagris, *Halobisium*, *Lissocreagris*, *Microbisium*, *Microcreagris*, *Minicreagris* ,

Novobisium, *Parobisium*, *Saetigerocreagris*, *Trisetobisium*, *Tartarocreagris*) **Bibl.:** Chamberlin 1962

Pseudogarypidae Chamberlin, 1923 (*Pseudogarypus*) **Bibl.:** Benedict & Malcolm 1978

Syarinidae Chamberlin, 1930 (*Chitrella*, *Chitrellina*)

Alabamocreagris Curcic, 1984 - Neobisiidae pseudoscorpion

Alabamocreagris mortis (*Microcreagris m.* Muchmore, 1969) (= *Lissocreagris mortis m.*)
**(type locality & 1 other cave in Jackson Co., AL/ Tb/ G1G2)

Alabamocreagris pecki (*M.p.* Muchmore, 1969) Curcic, 1989 ** (type locality & 1 other cave in Marshall Co., AL/ G1G2)

Albiorix Chamberlin, 1930 - Ideoroncidae pseudoscorpion

Albiorix anophthalmus Muchmore 1999 (*type locality cave in Pima Co., AZ/ Tb/ G1G2)

Americocreagris Curcic, 1982 - Neobisiidae pseudoscorpions

Americocreagris columbiana (*Microcreagris c.* Chamberlin, 1962) Curcic, 1984 (type locality in well in Clatskanie Co., OR/ Tp in cave in Columbia Co. + caves or cave in Klickitat Co., WA/ Ed?/ G3G4)

Apocheiridium Chamberlin, 1924 - Cheiridiidae pseudoscorpion. **Bibl.:** Benedict, 1978c

Apocheiidium reddelli Muchmore 1992 (*type locality cave in Edwards Co., TX/ Tb or Tp/ G1G2)

Apochthonius Chamberlin, 1929 - Cheiridiidae pseudoscorpion (see *Kleptochthonius*)

Apochthonius coecus (*Chthonius c.* Packard, 1884) Muchmore, 1963b ** (Grand (= Weyer's) & 1 other cave in Augusta Co., VA/ Tb/ T&E VA S1, global G1)

Apochthonius colecampi Muchmore, 1967c (type locality cave in Benton Co. & cave in Crawford & Franklin Co., MO/ Tb/ G1G2)

Apochthonius diabolus Muchmore, 1967e (*type locality cave in Washington Co., AR/ Tb/ G1G2)

Apochthonius forbesi Benedict, 1979b (*type locality cave in Deschutes Co., OR/ Tb/ G1G2)

Apochthonius grubbsi Muchmore, 1980a (prob. valid but may = *A. similis*) (*type locality & 3 othe caves in Calaveras Co., CA/ Tb/ G1G2)

Apochthonius hobbsi Muchmore, 1994 (*type locality cave in Ross Co.,OH/blind Tb/ G1G2)

Apochthonius holsingeri Muchmore, 1967e (**type locality cave in Bath Co.? + 1 cave in Bath Co., VA/ Tb/ G1G2)

Apochthonius hypogeus Muchmore, 1976b (*type locality cave in Augusta Co.VA/ Tp?)

Apochthonius indianensis Muchmore, 1967c (****?type locality cave in Spring Mill State Park & 1 other cave in Lawrence Co. + 2 caves in Orange Co., IN/ Tb/ G1 or G3)

Apochthonius magnanimus Hoff, 1956 (San Miguel & Eddy Cos.,NM/ Tx or Ac)

Apochthonius malheuri Benedict & Malcolm, 1973a (*type locality cave in Harney Co.,OR/ Tp/ FC-2 T&E; critically imperiled in OR Natural Heritage list/ G1) **Bibl.:** Benedict & McEvoy, 1995

Apochthonius minimus R. O. Schuster, 1966 (WA/ Tp?)

Apochthonius minor Muchmore, 1976b ** (type locality cave in Chatooga Co. & cave in Dade Co., GA/ Tb or Tp)

Apochthonius mysterius Muchmore, 1976b (*type locality cave in Perry Co.,MO/ Tb/ G1G2)

Apochthonius paucispinosus Muchmore, 1967 (*type locality cave in Tucker Co.,WV/ Dry F. Valley cave pseudoscorpion/ Tb/ G1)

Apochthonius russelli Muchmore, 1976b (**Russell (Russell C. Natl. Monument) & other cave in Jackson Co., AL/ Tb? / G1G2)

Apochthonius undescr.? sp(p). (Tp or Tb in IL; Tp in Blanchard Spr.; Tb in OH)

Apochthonius undet. sp.#1 (Calaveras, Mariposa & Tuolumne Cos.,CA)

Apochthonius undet. sp.#1 sp.>1 (prob.) (Blanchard Spr. & other cave in AR/ Tb or Tp)

Apochthonius titanicus Muchmore, 1976b (*Blanchard Springs C.,Stone Co., AR/ G1G2)

Apochthonius typhlus Muchmore, 1967 **** (type locality & 1 other cave in Stone Co.,MO + 2 caves in Newton Co.,AR/ Tb/ G1G2)

Archeolarca Hoff & Clawson, 1952 - Garypidae pseudoscorpion. **Bibl.:** Muchmore 1981

Archeolarca aalbui Muchmore, 1984e (*Mitchell C.,San Bernadino Co.,CA/CA T&E "S1 G1 or G1G2, Federal Species of Concern/Aalbu's Cave Pseudoscorpion/Tb)

Archeolarca cavicola Muchmore, 1981 (*type locality cave in Grand Canyon Natl. Park,Coconino Co., AZ/ Grand Canyon Pseudoscorpion/ federal species of concern/ Tb/ G1G2)

Archeolarca guadalupensis Muchmore, 1981 (*type locality cave in Guadalupe Mts. Natl. Park, Culberson Co., TX/ Tb/ federally listed as endangered/ G1/ Guadalupe cave pseudoscorpion/ G1)

Archeolarca rotunda Hoff & Clawson, 1952 (epigean in UT, NM, OR, WY/ Tx in woodrat nests in UT)

Archeolarca indet. (undet.?) sp. (cave in Valencia Co.,NM)

Archeolarca welbourni Muchmore, 1981 (type locality & 2 other caves in Wupatki Natl. Monument,Coconino Co.,AZ/ Tb? / G1G2)

Aphrastochthonius Chamberlin, 1962 - Chthoniidae pseudoscorpions. **Bibl.:** Muchmore 1972a, 1976, 1980

Aphrastochthonius grubbsi Muchmore, 1984e (*type locality cave in Calaveras Co.,CA/Federal T&E Category 2/ Tb/ G1G2)

Aphrastochthonius pachysetus Muchmore, 1976 (*type locality cave in Eddy Co.,NM/ Tb/ G1G2)

Aphrastochthonius pecki Muchmore, 1968 (*type locality cave in Jefferson Co.,AL/ Tb/ G1G2)

Aphrastochthonius russelli Muchmore, 1972 (type locality cave in Russell C.,Jackson Co.,Al & caves in Mexico/ Tb)

Aphrastochthonius similis Muchmore, 1984e (*type locality cave in Calaveras Co.,CA/CA T&E G1S1, Federal Species of Concern/Carl. Cave Pseudoscorpion/ Tb/ G1G2)

Aphrastochthonius undescr. sp.#1 (Travis, Williamson Cos.,TX/ Tb)

Aphrastochthonius sp.#2 (Comal Co., TX/ Tb)

Aphrastochthonius sp. #3 (Bandera Co., TX/ Tb)

Aphrastochthonius tenax J.C. Chamberlin, 1962 (type sp.) ** (type locality cave in Blount Co. & cave in Marshall Co., AL/ Tb/ G1 or G1G2)

Australinocreagris Curcic, 1984 - Neobisiidae pseudoscorpion

Australinocreagris grahami (= *Microcreagris* g. Muchmore, 1969) Curcic, 1984 (type locality & 1 other cave in Calaveras Co. & cave or caves in Tuolumne Co.,CA/ Tb/ G1G2)

Australinocreagris ozarkensis (*Microcreagris* o. Hoff, 1945) Curcic, 1984 (*type locality cave in WA Co.,AR/ Tb/ G1G2)

Australinocreagris reddelli = *Tartarocreagris* r.

Australinocreagris texana = *Tartarocreagris* t.

Chamberlinochthonius Vachon, 1952 - see *Kleptochthonius*

Chelifer Geoffroy, 1762 - Cheliferidae pseudoscorpion

Chelifer cancroides (*Acarus c.* Linnaeus, 1758) (global epigean/ Tx? in Mammoth C.,KY)

Chelifer undet. sp. (predator on ON bat guano)

Cheiridium Menge, 1855 - Cheiridiidae pseudoscorpion

Cheiridium firmum Hoff, 1953 (IL/Tx or Ac in MO cave)

Cheiridium reyesi Muchmore, 1992 (*type locality cave in Kinney Co.,TX/ Tb/ G1G2)

Chitrella Beier, 1932 - Syarinidae pseudoscorpion. **Bibl.:** Malcom & Chamberlain 1961; Muchmore 1973b

Chitrella archeri Malcolm & J.C.Chamberlin, 1960 (type locality cave & likely other caves in Grundy Co. + cave or caves in Smith Co.,TN/ Tb/ S3?G3)

Chitrella cavicola (*Obisium c.* Packard, 1884; *Microcreagris* (?) *c.* (P) Beier, 1932) (Endless (=Newmarket) C.,Rockingham Co.,VA & cave in Berkeley Co.,WV/Tb or Tp/ G3)

Chitrella elliotti Muchmore 1992 (*type locality cave in Sutton Co.,TX/ Tb/ G1G2)

Chitrella major Muchmore, 1992 (*type locality cave in Verde Co.,TX/ Tb/ G1G2)

Chitrella regina Malcolm & J.C.Chamberlin, 1960 (**type locality & 1 other cave in Greenbrier Co.,WV/Tb?/WV T&E S1 rank & global G1 rank; Federal Species of Concern/ Royal syarinid pseudoscorpion/ G1)

Chitrella undescr. sp. (VA/ T&E VA S1, global G1/ Tb)

Chitrella (*Ephippiochthonius*) undescr. sp. (OH/Tb)

Chitrella undet. sp. (Tb? in cave in Culberson Co., TX)

Chitrella superba Muchmore 1973 (*type locality cave in Shenandoah Co.,VA/ Tb/ G1)

Chitrella welbourni Muchmore 1992 (*type locality cave in Eddy Co.,NM/ Tb? / G1G2)

Chitrella transversa (*Obisium t.* Banks, 1909; *Microcregris t.* Beier, 1932) Hoff, 1956 (CO, NM/ Tp?)

Chitrellina Muchmore 1996b - Syarinidae pseudoscorpion

Chitrellina chiricahuae Muchmore 1996b (*type locality cave in Cochise Co.,AZ/ Tb/ G1G2)

Chthonius C.Koch, 1843 - Chthoniidae pseudoscorpions

Chthonius packardi = *Kleptochthonius p.*

Chthonius paludis (J. Chamberlin, 1929) (Ttp in GA (Walker Co.))

Chthonius (*Ephippiochthonius*) *tetrachelatus* (*Scorpio t.* Preyssler, 1790) (E/Tx in AL, IL, IN (WA Co.), OH, KY, TN, ?TX, VA)

Chthonius virginicus Chamberlin, 1929 (epigean in MD, NC, VA, DC/Ac or Tx in IL, IN (Harrison & Jefferson Cos.), OH, VA; Tp in GA (Dade Co.)). **Bibl.:** Muchmore, 1981b

Dinocheirus Chamberlin, 1929 - Chernetidae pseudoscorpions. **Bibl.:** Muchmore 1974

Dinocheirus astutus Hoff., 1956 (NM epigean/Tx or Tp in NM, UT(poss.))

Dinocheirus cavicolus Muchmore, 1992 (= *D. cavicola*) ***?(type locality cave in Val Verde Co. & 2 caves in Kinney Co.,TX/ Tb/ G3)

Dinocheirus undet. sp. (cave each in Edwards & Hays Cos.,TX/ Tb?)
Dinocheirus stercoreus - see *Neoallochernes*

Dinocheirus texanus Hoff & Clawson, 1952 (TX woodrat nests; epigean in Cameron Co.,TX/ Tp in cave in Uvalde Co.,TX)

Dinocheirus venustus Hoff & Clawson, 1952 (woodrat nests, KS ,MO/Tx or Tp in Comal, Edwards, Medina, Val Verde Cos., TX)

Fissillicreagris Curcic, 1984 - Neobisiidae pseudoscorpions

Fissillicreagris imperialis (*Microcreagris i.* Muchmore, 1969) M.& Cokendolpher, 1995
*** (type locality & 2 other caves in Santa Cruz,CA/Tb/vandalized, logging/CA T&E G1S1, Federal Species of Concern)

Halobisium J.C. Chamberlin, 1930 - Neobisiidae pseudoscorpion
Halobisium undet. sp. (Tx or Ac in sea cave, Santa Cruz Co.,CA)

Hesperochernes Chamberlin, 1924 - Chernetidae pseudoscorpion. **Bibl.:** Muchmore 1974
Hesperochernes holsingeri Muchmore, 1994a (*type locality cave in Jefferson Co.,IN/ Tb/ G1G2)

Hesperochernes mimulus Chamberlin, 1952 (epigean in NH/ Ac or Tx in caves in Calaveras Co.,CA),

Hesperochernes mirabilis (*Parachelifer m.* Banks, 1895; Chelifer, *Pseudozoana* & *Chelodamus m.*) (type locality cave in Barren Co., KY/ caves in Adair, Barren, Carter, Christian, Edmonson (Mammoth Co.), Hart, Jackson, Rockcastle, Warren, Woodford Cos., KY + caves in nAL (Blount, Colbert, De Kalb, Jackson, Jefferson, Lauderdale, Madison, Marshall Cos.), nGA (Chattooga, Dade, Floyd & Walker Cos.), IN (Harrison, Jefferson & Washington Cos. – Se G3G4), TN (Anderson, Bedford, Cannon, Clay, De Kalb, Fentress, Giles, Hickman, Jackson, Marion, Putnam, Roane, Van Buren, Warren, Wayne, White Cos.), sOH, VA (Bath, Giles, Highland, Lee, Roanoke, Rockingham, Scott & WA Cos.)/ bat guano Tp or TTp in IN(cave in Harrison Co.)/ KY, TN IN T&E)

Hesperochnes molestus Hoff, 1956 (epigean in rodent nests in NM/ Tx in NM; Tp in cave in TX)

Hesperochnes occidentalis (*Pseudozaona o.* Hoff & Bolsterli, 1956) (type locality cave in Washington Co.(AR)/ Tx or Tp in AR (Boone, Greene, Lawrence, Maron, Newton, Randolph, Searcy Cos.), MO (Barry, Camden, Carter, Chistian, Crawford, Dent, Franklin, Hickory, Howell, Madison, Oregon, Ozark, Phelps, Pulaski, Shannon, Taney, Texas Cos.)), OK (Delaware Co.); Tb in Edwards Co.,TX/ G4G5)

Hesperochnes riograndensis Hoff & Clawson, 1952 (woodrat nest in Socorro Co., NM/ Tx in NM; Tp in Irion, Terrell Cos.,TX & Socorro Co.,NM)

Hesperochnes unicolor (*Chelanops u.* Banks, 1908; *H.u.* Hoff, 1947) (epigean near Austin, TX/ Ac or Tx in Hays, Williamson Cos., TX)

Heterochthonius Chamberlin, 1929 = *Kleptochthonius*

Kleptochthonius Chamberlin, 1949 (= *Apochthonius*, *Heterochthonius* in part) - Chthoniidae pseudoscorpions. **Bibl.:** Malcolm & Chamberlin 1961; Muchmore 1965, 1966, 1970, 1974

Kleptochthonius (C.) affinis Muchmore, 1976a ** (type locality & 1 other cave in Claiborne Co.,TN/ Tb/ S1S2? G1G2)

Kleptochthonius (C.) anophthalmus Muchmore, 1970a (C.a.) (type locality cave in *Bath Co.,swVA/Tb/T&E VA S1, global G1 or G1G2)

Kleptochthonius (C.) attenuatus Malcom & J.C.Chamberlin, 1961 (*type locality cave in Hart Co., KY/ Tb/ G1G2)

Kleptochthonius (C.) barri Muchmore, 1965 (type locality cave in Grundy Co., +Warren Co.,TN/ S3?G3)

Kleptochthonius (C.) binoculatus Muchmore, 1974d (*type locality cave in Scott Co.,VA/T&E VA S1, global G1)

Kleptochthonius (C.) cerberus Muchmore & Chamberlin, 1961 (*White Cave in Mammoth C. System, KY/ G1G2)

Kleptochthonius (C.) charon Muchmore, 1965 (*type locality cave in Bledsoe Co.,TN/ Tb/ S1S2? G1G2)

Kleptochthonius (C.) daemonius Muchmore, 1965 (*type locality cave in Van Buren Co.,TN/ Tb/ S1S2? G1G2)

Kleptochthonius (C.) erebicus Muchmore, 1965 (*type locality cave in Wayne Co.,KY/ Tb/ G1G2)

Kleptochthonius (C.) gertschi Muchmore & C., 1961 (*type locality cave in Lee Co., VA/T&E VA S1, global G1/ Tb)

Kleptochthonius griseomanus Muchmore, 2000 ** (type locality & 1 other cave in Harrison Co, IN/ Tp or Tx (known only from caves))

Kleptochthonius (C.) hageni Muchmore, 1963 (type locality in Mammoth C./+cKY/ Tb/ G1G2)

Kleptochthonius (C.) henroti (*C.h.* Vachon, 1952a; K.h. Drewry, 1989) Muchmore & C., 1961 (type locality & >5 other caves in Greenbrier Co. & cave in Pocahontas Co., WV/Tb/WV T&E S1 rank & global G1 or G1G2 rank; Federal Species of Concern/ Greenbrier Valley cave pseudoscorpion)

Kleptochthonius (C.) hetricki Muchmore, 1974d (K.h. Drewry, 1989) (*Organ (part of Greenbrier Cave System), Greenbrier Co., WV/ WV T&E S1 rank & global G1 rank; Federal Species of Concern/ Tb/ Organ Cave pseudoscorpion)

Kleptochthonius (C.) hubrichti Muchmore, 1965 ** (type locality & at least one other cave in Barren Co., KY/ Tb/ G1 or G1G2)

Kleptochthonius (C.) infernalis Muchmore & Chamberlin, 1961 (*type locality cave in Cumberland Co., TN/ Tb/ S1S2? G1G2)

Kleptochthonius (C.) krekeleeri Muchmore, 1965 (type locality cave in Adair Co. + caves in Rockcastle & Powell Cos., KY/ Tb/ G3)

Kleptochthonius (C.) lewisorum Muchmore, 2000 (*type locality cave in Harrison Co., IN/ Tb)

Kleptochthonius (C.) lutzi Muchmore & Chamberlin, 1961 (*type locality cave in Lee Co., VA & Claiborne Co., TN/ T&E VA S1, global G1/ Tb)

Kleptochthonius (Kleptochthonius) magnus Muchmore, 1966a *** (type locality cave in Franklin Co. (TN) & cave each in Dade & Walker Co., GA/ Tp or Tb/ S1S2? G1G2)

Kleptochthonius (Chamberlinochthonius) microphthalmus Malcolm & J.C. Chamberlin, 1961 (*type locality cave in Warren Co., KY/ Tb guanophile/ State T&E/ G1G2)

Kleptochthonius moestus (*Chthonius m.* Banks, 1891; *Apochthonius m.* Chamberlin, 1929) (epigean in IL, IN, MO, NM, NC, NY, PA, WV/ Tx in MD(prob.) & KY)

Kleptochthonius (C.) myopius Malcolm & J.C. Chamberlin, 1961 (*type locality cave in De Kalb Co., TN/ Tb/ S1S2? G1G2)

Kleptochthonius (Kleptochthonius) multispinosus (*Heterochthonius m.* Hoff, 1945) Hoff, 1951 (AL, IL, KY, MS, MO, NC, TN, VA/ Tp? or Tx in AL)

Kleptochthonius* (*Chamberlinochthonius*) *orpheus Muchmore, 1965 (*K.o.* Muchmore, 1970) (*type locality cave in Monroe Co., WV/WV T&E S1 rank & global G1 rank; Federal Species of Concern/ Tb/ *orpheus* cave pseudoscorpion/ G1)

Kleptochthonius* (*C.*) *packardi (*Blothrus p.* Hagen, 1879; *Chthonius p.* Hagen, 1880) Muchmore, 1963 (Wyandotte C. (IN) (extirpated?) + cave in Crawford Co., 4 caves in Harrison CO) & cave in Orange Co., IN/ Tb, S1 G3 (some localities may be undesc. sp.)

Kleptochthonius* (*C.*) *pluto Muchmore, 1965 (= *Microcreagris p.*) (*type locality cave in Overton Co., TN/ Tb/ S1S2? G1G2)

Kleptochthonius* (*C.*) *proserpinae Muchmore, 1965 (*K.p.* Muchmore, 1970) (*type locality cave in Greenbrier Co., WV/WV T&E S1 rank & global G1 rank; Federal Species of Concern/ Tb/ *proserpina* cave pseudoscorpion/ G1)

Kleptochthonius* (*C.*) *proximosetus Muchmore, 1976a (**type locality & 1 other cave in Lee Co., VA/Tb/T&E VA S1, global G1/ Tb/ G1)

Kleptochthonius* (*C.*) *regulus Muchmore, 1970 (*type locality cave in Tazewell Co., VA/T&E VA S1, global G1)

Kleptochthonius* (*C.*) *rex Malcolm & J.C. Chamberlin, 1961 (*type locality cave in Pickett Co., TN/ Tb/ S1S2? G1G2)

Kleptochthonius* (*C.*) *similis Muchmore, 1976a (**type locality & one other cave in Lee Co., VA/ T&E VA S1, global G1/ Tb)

Kleptochthonius undescr. sp.#1 (AL/Tp?)

Kleptochthonius undescr. sp.#2 (*Organ C., WV/ Tb)

Kleptochthonius undescr. sp.#3 (*cave in Hancock Co., TN/ Tb)

Kleptochthonius undescr. sp.#4 (*cave in Augusta Co., VA/Tb/ T&E VA S1, global G1)

Kleptochthonius undescr. sp. #6? (*?cave in Coronation Island, AK)

Kleptochthonius* (*C.*) *stygius Muchmore, 1965 (*type locality cave in Putnam Co., TN/ Tb/ S1S2? G1G2)

Kleptochthonius* (*C.*) *tantalus Muchmore, 1966a (*type locality cave in Franklin Co., TN/ Tb/ S1S2? G1G2)

Larca Chamberlin, 1920 - Garypidae pseudoscorpion. **Bibl.:** Muchmore 1981

Larca chamberlini Benedict & Malcolm, 1978 (OR, CA epigean/Tp in Calaveras & Tuolumne Cos., CA)

Larca laceyi Muchmore, 1981 (type locality & 2 other caves in Calaveras Co.,CA/CA T&E G1S1, Federal Species of Concern/ Lacey's Cave Pseudoscorpion/ Tb/ G1G2)

Lechytia Balzan, 1891 - Chthoniidae pseudoscorpions

Lechytia sini Muchmore, 1975 (epigean in IN, FL, TX/ Ac or Tx in Williamson Co.?,TX)

Leucohya J.C. Chamberlin, 1946 - Bochicidae pseudoscorpions, subfamily Leucohyinae

Leucohya texana Muchmore, 1986a (*type locality cave in Uvalde Co.,TX/ Tb/ G1G2)

Lissocreagris Curcic, 1981 (=Microcreagris) Neobisiidae pseudoscorpions

Lissocreagris eurydice (*Microcreagris e.* Muchmore, 1969) (*type locality cave in Jackson Co.,AL/ Tb/ G1G2)

Lissocreagris mortis (*Microcreagris m.* Muchmore, 1969) = *Alabamocreagris m.*

Lissocreagris nickajackensis = *Microcreagris n.*

Lissocreagris pluto (M.s. J.C.Chamberlin, 1962) (*type locality cave in Marshall Co., AL/ Tb)

Lissocreagris persephone (M.p. J.C.Chamberlin, 1962) ****(type locality & 3 other caves in Marshall Co.,AL/ Tb/ G1G2)

Lissocreagris pumila = ***Minicreagris pumila***

Lissocreagris undescr. sp.#1 *** (2 caves in Marshall Co. & one in Hampton Co.,AL/ Tb?)

Lissocreagris subatlantica (M.s. Chamberlin, 1962) Curcic, 1981 (type locality cave in Colbert Co.,AL +Morgan Co.(AL) & nGA (Chattooga Co.)/ Ep or surface Ac in GA?/ Tb or Tp in AL; endogean)

Lissocreagris valentinei (*Microcreagris v.* J.C.Chamberlin, 1962) Curcic, 1981 (*type locality cave in Lee Co.,VA & cave or caves in Claiborne Co.,TN/ Tb/T&E VA S1, global G1 or G1G3)

Mexichthonius Muchmore1975 - Chthoniidae pseudoscorpions

Mexichthonius exoticus Muchmore1996b (*type locality cave in Travis Co.,TX/ Tb/ G1G2)

Microbisium J.C. Chamberlin, 1930 - Neobisiidae pseudoscorpions

Microbisium parvulum (*Obisium p.* Banks, 1895; *M. confusum* Hoff, 1946) Chamberlin, 1930 (epigean in Canada to El Salvador and Costa Rica/ Tp in Bell, Bexar, Burnet, Coryell, San Saba, Travis Cos.,TX)

Microcreagris Balzan, 1892 - Neobisiidae pseudoscorpions. **Bibl.:** Curcic, 1984, 1989; Muchmore 1969

Microcreagris columbiana = *Americocreagris c.*; *Microcreagris eurydice* = *Lissocreagris e.*

Microcreagris fallax = *Trisetobisium f.*; *Microcreagris grahami* = *Australinocreagris g.*

Microcreagris grandis Muchmore, 1962 (Lehman C. & one cave system, Great Basin Natl.Park, White Pine Co., NV/ Tb, Tm) **Bibl.:** Bridgemon 1967

Microcreagris imperialis = *Fissilicreagris i.*

Microcreagris infernalis = *Tartarocreagris i.*

Microcreagris mortis = *Lissocreagris m.*

Microcreagris nickajackensis Muchmore, 1966 (= *Lissocreagris n.*) ** (Nickajack C. (flooded by dam), Marion Co., TN) & cave in Jackson Co., AL/ Tb/ G1G2)

Microcreagris pecki = ***A labamocreagris p.***

Microcreagris persephone = ***Lissocreagris persephone***

Microcreagris phyllisae Chamberlin, 1930 = *Saetigerocreagris p.*

Microcreagris pluto = ***Kleptochthonius (C.) pluto***

Microcreagris pumila = *Minicreagris p.*

Microcreagris reddelli = *Australinocreagris r.*

Microcreagris undescr. sp. = *Lissocreagris undescr. sp.*

Microcreagris undet. sp. (Calaveras & Mariposa Cos., CA)

Microcreagris valentinei = *Lissocreagris v.*

Minicreagris Curcic 1989 - Neobisiidae pseudoscorpions

Minicreagris pumila (*Microcreagris p.* Muchmore, 1969) Curcic, 1989 (type locality cave in Blount Co. & caves in Chatooga Co., GA + se VA/ Tp or Tx in GA, VA; epigean in AL, GA. TN)

Mundochthonius Chamberlin, 1929 - Chthoniidae pseudoscorpions. **Bibl.:** Muchmore (1968)

Mundochthonius cavernicolus Muchmore, 1968e (type locality cave in Monroe Co., IL + Lincoln Co., MO/ Tb G3G4)

Mundochthonius holsingeri Benedict & Malcolm, 1974 (*type locality cave in Shenandoah Co., VA/ Tb/ T&E VA S1, global G1)

Mundochthonius (seems to be) undescr. sp. (near *M. cavernicolus*) (*cave in Mark Twain National Forest, Oregon Co., MO/ TTp?)

Mundochthonius undet. sp. (Epigean in Tuolumne Co, CA/ Tb)

Neoallochernes Hoff, 1947 - Chernetidae pseudoscorpions

Neoallochernes incertus Muchmore, 1992 (*type locality cave in Eddy Co., NM/ Tb/ G1G2)

Neoallochernes undet. sp. (Tp in cave each in Coryell & Val Verde Cos., TX)

Neoallochernes stercoreus (*Dinocheirus* s. Turk, 1949; *Tejachernes* s. Hoff, 1957) (type locality cave in Comal Co. & caves in Bexar, Blanco, Burnet, Comal, Edwards, Kendall, Ker, Kinney, Mason, Medina, Terrell, Uvalde, Val Verde Cos.,TX & in cave in Grand Canyon, Cococino Co., AZ/ Tp gaunobic/ G3)

Neochthonius Chamberlin, 1929 - Cheiridiidae pseudoscorpions. **Bibl.:** Muchmore, 1969a
Neochthonius imperialis Muchmore 1996 (*type locality cave in Santa Cruz Co.,CA/ Tb/ G1G2)
Neochthonius undescribed sp(s). (epigean &/or Tp? in Calaveras & Tuolumne Cos.,CA)

Neochthonius undet. sp(s). (epigean &/or Tp? in Calaveras, Tulare & Tuolumne Cos.,CA),
Neochthonius troglodytes Muchmore, 1969a (type locality cave in Calaveras Co. +Tuolumne Co.,CA/Tb G3)

Novobisium Muchmore, 1967 - Neobisiidae pseudoscorpions
Novobisium ingratum (*Neobisium* i. Chamberlin, 1962) Muchmore, 1967 (type locality cave in Jackson Co.,AL/epigean in AL,TN / Ac, Tp or Tx in AL, TN)

Obisium - See *Chitrella*

Parobisium J. Chamberlin, 1930 - Neobisiidae pseudoscorpion

Parobisium charlotteae Chamberlin, 1962 (*type locality cave in Deschutes Co.,OR/Tp or Tb/ G1G2, caves only)

Parobisium undescribed sp. (*cave in Skamania Co.,WA/Tb?) Benedict (1977),

Parachelifer Beier, 1932 - See *Hesperochernes* m.

Pseudogarypus Ellingsen, 1909 (= *Cerogarypus*) - Pseudogarypidae pseudoscorpion
Pseudogarypus hypogeus Muchmore, 1981 ** (type locality & one other cave in Wapatki Natl. Monument, Navajo Co., AZ/ Tp, hypogean/ G1G2)

Pseudogarypus orpheus Muchmore, 1981 ** (type locality cave in Calaveras Co. & cave in Tuolumne Co.,CA/ CA T&E G1S1, Federal Species of Concern/ Tb/ G1G2)

Pseudogarypus spelaeus Benedict & Malcolm, 1978 (*type locality cave in Shasta Co.,CA/ Tb/ G1G2)

Pseudozoana occidentalis = *Hesperochernes* o.

Pseudozoana mirabilis = *Hesperochernes* m.

Pseudotyrannochthonius Beier, 1930 - Chthoniidae pseudoscorpions
Pseudotyrannochthonius gracilis undescribed ssp. (OR C.,OR) **Bibl.:** Benedict 1977
Pseudotyrannochthonius utahensis Muchmore, 1967 (UT/ Tp,Tx or Ac in WA)

Saetigerocreagris Curcic, 1984 - Neobisiidae pseudoscorpions

Saetigerocreagris phyllisae (*Microcreagris p.* Chamberlin, 1930) Curcic, 1984 (Coronado Beach in kelp & nearby cave, Los Angeles Co.,CA/ Tx?,epigean in CA)

Tartarocreagris Curcic, 1984 - Neobisiidae pseudoscorpions

Tartarocreagris comanche Muchmore 1992 (*type locality cave in Travis Co.,TX/ Tb/ G1G2)

Bibl.: Muchmore 2000

Tartarocreagris infernalis Muchmore 1969 ** (type locality & probably one other cave in Williamson Co.,TX/ Tb/ G1G2)

Tartarocreagris intermedia Muchmore 1992 (*type locality cave in Travis Co.,TX/ Tb/ G1G2)

Tartarocreagris texana (*Microcreagris t.* Muchmore, 1969; *Australinocreagris t.* Curcic, 1989) Curcic, 1984 (To. C. pseudoscorpion) (type locality & at least four other caves in Travis Co. , TX/T&E/ Tb/ G3 or (less likely) G1)

Tartarocreagris reddelli (*Microcreagris r.* Muchmore, 1969; *Australinocreagris r.* Curcic, 1989) Muchmore, 1992 ***? (type locality cave in Travis Co. & 2 caves Williamson Co., TX/ Tb/ G3 or (less likely) G1)

Tartarocreagris undescr. 1-5 sps. (Bexar, Burnet, Travis & Williamson Cos.,TX/Tb) **Bibl.:** Muchmore 2000

Tejachernes Hoff, 1957 - see *Neoallochernes*

Trisetobisium Curcic, 1982 - Neobisiidae pseudoscorpion

Trisetobisium fallax (*Microcreagris f.* Chamberlin, 1962) (type locality cave in Colbert Co.,AL / Tp or Tx in AL; endogean & Tx or Ac in NC)

Tuberochernes Muchmore, 1997 - Chernetidae pseudoscorpions

Tuberochernes aalbui Muchmore, 1997 (*type locality cave in Inyo Co.,CA/ Tb / G1G2)

Tuberochernes ubicki Muchmore, 1997 (*type locality cave in Santa Cruz, AZ/ Tb/ G1G2)

Tyrannochthonius Chamberlin, 1929 - Chthoniidae pseudoscorpions. **Bibl.:** Muchmore, 1996a; Muchmore & Chamberlin 1995

Tyrannochthonius aladdinensis C. 1995 (*type locality cave in Madison Co.,AL/ Tb/ G1G2)

Tyrannochthonius aralu Chamberlin., 1995 (*type locality cave in Madison Co.,AL/ Tb/ G1G2)

Tyrannochthonius archeri Chamberlin., 1995 (*type locality cave in Morgan Co., AL/ Tb/ G1G2)

Tyrannochthonius attenuatus Muchmore 1996 (*type locality cave in Madison Co.,AL/ Tb/ G1G2)

Tyrannochthonius averniculus Chamberlin., 1995 (**type locality & 1 other cave in Marshall

Co.,AL/ Tb/ G1G2)

Tyrannochthonius barri Muchmore, 1996 (*type locality cave in Marshall Co.,AL/ Tb/ G1G2)

Tyrannochthonius binoculatus Muchmore, 1996 (*type locality cave in Jackson Co.,AL/ Tb/ G1G2)

Tyrannochthonius chamberlini Muchmore, 1996 (*type locality cave in Calhoun Co.,AL/ Tb/ G1G2)

Tyrannochthonius charon Muchmore, 1996 (*type locality cave in Jackson Co.,AL/ Tb/ G1G2)

Tyrannochthonius diabolus Muchmore, 1996 (*type locality cave in ,Jackson Co.,AL/ Tb/ G1G2)

Tyrannochthonius erebicus Muchmore, 1996 (**type locality & 1 other cave in Jackson Co.,AL/ Tb/ G1G2)

Tyrannochthonius felix Muchmore, 1996 (*type locality cave in Jackson Co.,AL/ Tb/ G1G2)

Tyrannochthonius fiskei Muchmore, 1996 (*type locality cave in Franklin Co.,TN/ Tb/ S1S2? G1G2)

Tyrannochthonius gnomus Muchmore, 1996 (*type locality cave in Marshall Co.,AL/ Tb/ G1G2)

Tyrannochthonius halopotamus Muchmore, 1996 (*type locality cave in Jackson Co.,AL/ Tb/ G1G2)

Tyrannochthonius howarthi = Undescr. Genus *h.* (see above undescr. genus in Chthoniidae)

Tyrannochthonius hypogeus Muchmore, 1996 (*Mammoth C.,KY/ Tb/ G1G2)

Tyrannochthonius infernalis Muchmore, 1996 (*type locality cave in Jackson Co.,AL/ Tb/ G1G2)

Tyrannochthonius jonesi Chamberlin, 1995 (*type locality cave in Blount Co.,AL/ Tb/ G1G2)

Tyrannochthonius nergal Chamberlin, 1995 (type locality cave in Madison Co.,AL/ Tb/ G1G2)

Tyrannochthonius orpheus Muchmore, 1996 (*type locality cave in Madison Co.,AL/ Tb/ G1G2)

Tyrannochthonius osiris Muchmore, 1996 (*type locality cave in Jackson Co.,AL/ Tb/ G1G2)

Tyrannochthonius parvus Muchmore, 1996 (*type locality cave in Blount Co.,AL/ Tb/ G1G2)

Tyrannochthonius pecki Muchmore, 1996 (type locality & 2 other caves in Madison Co.,AL/ Tb/ G1G2)

Tyrannochthonius pholeter Muchmore, 1996 (*type locality cave in Madison Co.,AL/ Tb/ G1G2)

Tyrannochthonius pluto Muchmore, 1996 (*type locality cave in Marshall Co.,AL/ Tb)

Tyrannochthonius pupukeanus Muchmore, 1983 (**type locality cave in Oahu & Maui lowland dry cave, HI/ Tb/ G1)

Tyrannochthonius satan Muchmore, 1996 (*type locality cave in Marshall Co.,AL/ Tb/ G1G2)

Tyrannochthonius sheltae Muchmore, 1996 (*type locality cave in Madison Co.,AL/ Tb/ G1G2)

Tyrannochthonius skeletonis Muchmore, 1996 (*type locality cave in Jackson Co.,AL/ Tb/ G1G2)

Tyrannochthonius undescr. sp.#1 (*cave in Maui, HI/ Tb)

Tyrannochthonius undescr. sp.#2 (Bexar Co.,TX/Tb)

Tyrannochthonius steevesi Muchmore, 1996 (*type locality cave in Pickett Co.,TN/ Tb/ S1S2? G1G2)

Tyrannochthonius stygius Muchmore, 1996 (*type locality cave in Jackson Co.,AL/ Tb/ G1G2)

Tyrannochthonius stonei Muchmore, 1989 (*type locality cave in Maui, HI/ Tb/ G1G2)

Tyrannochthonius tartarus Muchmore, 1996 (*type locality cave in Marshall Co.,AL/ Tb/ G1G2)

Tyrannochthonius tenuis Muchmore 1995 (*type locality cave in Madison Co.,AL/ Tb/ G1G2)

Tyrannochthonius texanus Muchmore 1992 (type locality cave in Travis Co. +Bexar, Blanco, Coryell, Edwards, Hays, & Val Verde Cos.,TX/ Tp, Ep/ G3)

Tyrannochthonius torodei Muchmore, 1996 (*type locality cave in Jackson Co.,AL/ Tb/ G1G2)

Tyrannochthonius troglodytes Muchmore, 1986a (type locality & 1 other cave in Llano Co.,TX/ Tb/ G1G2)

Psocoptera

(=Corredentia & Copeognatha) (booklice (=book-lice) & barklice; psocids & trogiids) - Insect Order of Division Neoptera, Subdivision Acercaria, Section Psocodea. Name derives from Greek psokos, meaning “rubbed small,” hence “gnawed,” a reference to its feeding method. Booklice refers to a common habitat in old books, old papers. They also live in stored cereals. 1.5-5 mm. (rarely less than 1 mm or as large as 10 mm). Oval; pale or dusky; antennae long and slender, at least half the length of the body and often longer than the body. Biting mandibles. Wings rarely reduced in size or absent; the front pair larger than the hind pair and both membranous; venation with few or no cross veins. Some species can jump. Abdomen oval, without cerci. The coxae have organs presumably used for courtship sounds. Sperm is transferred in a spermatophore.

Facultative parthenogenesis. Nymphs resemble adults and are often gregarious. Among the first species to colonize new lands. Barklice are common scavengers in some birds nests. About 3,200 species in 33 families, 230 genera, mostly tropical. 297 known species in 78 genera and 28 families in US and Canada. Earliest fossils in Permian. **Bibl.** Smithers, 1972; Mockford 1993; Mockford & Gurney, 1956; Smithers 1967, 1972

Undet. Genus in Carlsbad C.(NM), NW caves & ectoparasite on FL *Tadarida brasiliensis cynocephala* bats).

Suborder Troctomorpha

Family Group Amphientometae

Amphientomidae (tropical barklice)

Subfamily Amphientominae (tropical barklice) (*Lithoseopsis*)

Family Group Nanopsocetae

Liposcelididae (booklice)

Subfamily Liposcelidinae (*Liposcelis*)

Suborder Psocomorpha

Family Group Psocetae

Caeciliidae (lizard barklice) (*Caecilius*)

Myopsocidae (mouselike barklice) (*Myopsocus*)

Psocidae (=Psyllipsocidae, psocidae or cave barklice family) (most genera, *Psocatropos*) (also put in Superfamily Eupsocida)

Ectopsocidae (outer barklice) (*Ectopsocopsis*)

Elipsocidae (damp barklice)

Subfamily Elipsocinae (Subfamily not used by Mockford 1993) (*Elipsocus*)

Pseudocaeciliidae (false lizard barklice) (undet. Tx? genus in WA)

Suborder Trogiomorpha:

Family Group Atropetae

Trogiidae (granary booklice)

Subfamily Trogiinae (*Atropos*, *Cerobasis*, *Trogium*)

Family Group Psocatropetae

Prionoglaridae (large-winged psocids) (*Speleketor*) **Bibl.:** Mockford, 1984

Psyllipsocidae (also = Psocidae) (cave barklice) (*Dorypteryx* (once put in Trogiidae))

Psocatropos, *Psyllipsocus*; undet. genera(s) (cave in Bisbee Co.,AZ/ Tp?;

Kartchner C.,AZ/Tp) **Bibl.** Badonnel & Lienhard (1994); Mockford, 1993

Atropos = *Trogium*

Caecilius Curtis, 1837 - Caeciliidae psocoptera (29 species in US or Canada)

Caecilius aurantiacus (*Psocus a.* Hagen, 1861) Hagen, 1866 (Tx or Ac in cave in Great Smoky Mts. Natl. Park., TN)

Cerobasis Kolbe, 1882 (= *Hyperetes* Kolbe, 1880; *Tichobia* Kolbe, 1882; *Albardia* Jacobson & Binachi, 1904; *Myhopsoenema* Enderlein, 1905; *Zlinia* Obr, 1948) Trogiidae psocoptera, Subfamily Trogiinae (3 species in US or Canada)

Cerobasis guestfalicus (H.g. Kolbe; *H. pinicola* Kolbe, 1881; *T.alternan*, *C.muraria* Kolbe, 1882; *H. tessulatus* Hagen, 1883) (Tp or Tx in Mammoth C.,KY)

Dorypteryx Aaron, 1883 (*Dolopteryx* Smithers, 1958) (see *Psyllipsocus*) Psyllipsocidae psocoptera (2 species in US or Canada)

Dorypteryx pallida Aaron, 1884 (*D. albicans* Ribaga, 1907) (Tp or TTx in Augusta Co., VA)

Ectopsocus McLachlan, 1899 (= *Micropsocus* Enderlein, 1901; *Chaetopsocus* Pearman, 1929) Ectopsocidae psocoptera (1 species in US or Canada)

Ectopsocus vachoni Badonnel, 1946 (= *E. dimorphus* Mockford & Gurney, 1956) (Ttx in Sutton, Travis Cos., TX)

Elipsocus Haen, 1866 (= *Cabarer* Navas, 1908) Elipsocidae psocoptera, Subfamily Elipsocinae (Subfamily not used by Mockford 1993) (6 species in US or Canada)

Elipsocus or *Myopsocus* undet. sp. (Tp or Tx in Mammoth C.,KY),

Hyperetes tessulatus = *Cerobasis guestfalicus*

Liposcelis Motschulsky, 1852 (= *Termes* Muller, 1776 (Homo.) Liposcelididae Psocoptera, Subfamily Liposcelidinae (24 species in US or Canada)

Liposcelis decolor (Pearman, 1925) (Tp in GA (Bartow & Walker Cos.)

Liposcelis bostrychophilus Badonnel, 1931 (Ac in 1 NS cave)

Liposcelis undet. sp. or species (TTx in Edwards, Irion, Llano, Pecos, Travis Cos., TX; Tx in Carlsbad C.,NM; undet sp.(predator on ON bat guano))

Lithoseopsis E.L. Mockford, 1993 - Amphientomidae psocoptera, Subfamily Amphientominae (2 species in US or Canada)

Lithoseopsis hellmani (= *Pseudoseopsis h.* Muchmore & Gurney, 1956) (Mexico/ Tp in cave

each in Hayes & Travis Cos.,TX)

Myopsocus Hagen, 1866 (= *Phlotodes*, *Rhaptoneura* Enderlein, 1910) Myopsocidae family (3 species in US or Canada)

Myopsocus or *Elipsocus* undet. sp. (Tp or Tx in Mammoth C.,KY)

Pseudoseopsis hellmani = *Lithoseopsis h.*

Psocatropos Ribaga, 1899 (= *Psocinella* Banks, 1900; *Axinopsocus* Enderlein, 1903; *Vulturops* Townsend, 1912; *Gambrella* E.1931; *Psocatropos* Bandonnel, 1931 (Emend.) Psyllipsocidae psocoptera (1 species in US or Canada)

Psocatropos microps (A.m. Enderlein, 1903; *Psocinella slossonae* Banks, 1900 (syn.?); *V. floridanus* Corbett & Hargreaves, 1915; *Psocatropos lesnei* Bandonnel, 1931) (Tp? In Kendall, Travis Cos., TX)

Psyllipsocus de Selys Longchamps, 1872 - Psyllipsocidae psocoptera (2 species in US or Canada)

Psyllipsocus ramburii Selys-Longchamps, 1872 (book-louse) (*P. troglodytes*, *D. hageni* Banks, 1897, *Psocus pedicularius* Rambur, 1842 (Homo.); *Ocelloria gravonymph* Weber, 1906; *Nymphopsocus t. & algericus* Enderlein, 1909; *Fita vestigator* Navas, 1913; *Fabrella convexa* Lacroix, 1915; *Psyllipsocus brachypterus* Bandonnel, 1943) (worldwide epigeal, caves, Canada to Mexico)/Tp in AL, AR, AZ, CA, GA, IL, KY (Mammoth C.), MI, MO, NM, NV, TN, TX)
Bibl. Peck & Richardson 1976

Psyllipsocus pallida = *Dorypteryx p.*

Psyllipsocus undet. sp. (2 caves in Tuolumne Co., CA/Tp; Comal & Travis Cos., TX/Tp)

Psyllipsocus probable undescr. sp. (*type locality cave in Kerr Co.,TX/ Tp)

Speleketor Gurney, 1943 - Prionoglaridae psocoptera (3 species in US, genus related to *Sensitibilla* in Africa)

Speleketor flocki Gurney, 1943 (**type locality cave in Pima Co., Az & cave in Clark Co., seNV/ Tb)

Trogium Illiger, 1898 (*Atropos* Leach, 1815; *Clothilla* Westwood, 1841) Trogiidae psocoptera, Subfamily Trogiinae (3 species in US or Canada)

Trogium divinatoria (*Termes* & *Liposcelis d.* O.F. Muller, 1776; *Atropos d.*) (Tp or Tx in Mammoth C.,KY)

psychrophilic - Cold-adapted species showing growth temperature optimum of <15o C..

psychrotolerant - Species able to grow at low temperatures and showing a growth optimum >15°C.

Pteridoiphytes - Phylum Pteridophyta usually divided into four classes: Psilophytales, clubmosses, horsetails and ferns

pubertal - Pertains to a male undergoing spermatogenesis for the first time, or a female undergoing first estrus.

punctuated equilibria - Punctuational evolution at the species level.

punctuated gradualism - Phyletic gradualism alternating with morphologic stasis.

punctuational evolution - Periods of rapid shape change separated by much slower/static evolution.

pupa - Inactive stage in certain insects during which larva gradually reorganizes tissues while becoming an adult.

Pycnogonids - See sea spiders

quantum evolution & speciation - Rapid speciation in small populations due to founder effect and/or genetic drift. Usually starts with loss of most of the populations. Cf. punctuated equilibrium.

rabbit, (jack) - See mammal, rabbit

rabies - Microbe (virus) hazard from mammal bites & rarely from airborne guano.. See microbe.

raccoon - See mammal, carnivore, raccoon

racemization age method - Dating based on the chemical racemization of amino acids, where an optically active amino acid over time is converted to a mixture of two isomers which possess no optical activity.

radiation - The migration of a taxon into different habitats & accompanied by genetic changes,

radiocarbon age - Syn: carbon-14 age. Hunt 1955

radiocarbon - Radioactive carbon, esp. carbon-14, but also carbon-10 & -11.

rare - Population usually present with 1 to 5 individuals per year.

rarity - Bibl - See biogeography.

rearing - Lamb & Willey 1987

recessive gene - One masked phenotypically by a dominant allele in species heterozygous for that gene.

rectilinear evolution - Continued change of a similar type & direction over a long period of time but, unlike orthogenesis, without stating how the change is determined.

refugium or refugia - A refuge either from abiotic changes, predators, or competitors. High, rough ceilings provide small-scale r. for cave crickets at Mammoth C. (LaVoie, Poulson, & Helf, 1996. Cf. relict.

regeneration - Krichinskaya 1986; Putnam 1875; Rose & Shostak 1968; Stone 1964; Zeleny 1906

regressive evolution - Loss of morphologic or behavior traits, as in size reduction on islands or eye loss in Tbs. Since there is never a return to the presumed original genetics Romero (1985) argues for substituting the term convergent evolution.

rehabilitation - Restoration of certain desired traits but not all of the original attributes.

relapsing fever - Spirochete microbe hazard from *Borrelia* sp. in *Ornithodoros* ticks. Vectored mainly by rodents. Intermittent fever occurs in 1-2 weeks. Known from TX, KS, CA *Antrozous pallidus* bats have *Borrelia* but its relation to human disease is unknown. **Bibl.:** Bruce 1934; Coleman & Wright 1942; Cooley 1942; Eads et al 1956; M. Graham 1931; Lawrence & Terrell 1942; W. Lewis 1990a; Weller & Graham 1945; Wiseman 1945. Bohls 1942; Bohls & Schuhardt 1933; G.Davis et al. 1941; G. Davis 1940, 1942; Kemp et al. 1942; D. Lawrence & Terrell 1942; Weller & Graham 1930; Wisener 1976; Wisseman 1945

relative humidity - See humidity

relict distribution - Patchy distribution of species in widely scattered locations is evidence for former dominance of the group to which the species belongs, &/or which delimits former domains since fragmented by continental drift.

relict - 1. A type of species belonging to ancient groups whose fortunes have waned through geological time. Cf. living fossil. Many troglaphiles showing little morphologic change may be relicts; their closest surface relatives having become extinct. Incl. glacial, hygrophilic, & marine. See biogeography (bibl.).

reproduction (see also sex ratios): Barclay 1995; Cyr et al. 1991; Kunz & Stern 1995; McCracken 1984; McCracken & Bradbury 1977; Bradshaw, 1962; Cockrum 1955; Druecker 1972; Guthrie 1939; C. Hartmann 1933; Krutzsch 1975; R. Miller 1939; A. Parkinson 1981; O. Pearson, Koford & Pearson 1952; Petterson 1958; Racey et al. 1987; Reeder 1939; Wai-Ping & Fenton 1988; J. Whitaker & Mumford 1971-2; Whitaker & Mumford 1971-2; Wimsatt 1945;

reproduction (see morphology, population, sex ratio) - Clergue-Gazeau & Thorn, 1976; Clergue-Gazeau 1974; Corey, 1987; Holt, 1949; Reseritarits & Aldrige, 1988; Strenth & Longley,

1990; Studier et al 1988-a

asexual - Krichinskaya, 1986.

copulation - Bechler 1981

courtship - Man & Fong 1991; Organ 1968; Parzefall 1982, 1991;

crowding effects - Green 1964, 1964a

cycles - Hobbs, III 1976; Jegla 1964, 1966, 1969; Jegla & Poulson, 1970; Palunas 1989;
Studier, Lavoie, Nevin & McMillin 1988

eggs - Cyr 1989; Franz 1964; Martin et al 1977; Relyea & Sutton 1974; Studier 1996;

fertility - Kane 1981; Jegla 1966

hybridization - Peck 1983; Sweet 1982, 1984

interactions with predations - Man & Fong 1991

parthenogenesis - Chiba, Cutkomp & Halberg 1973; Glesener & Tilman 1978; Lamb 1973;
Lamb & Wiley 1975, 1986-7, 1989

pheromones & sex detection - Hazlett 1985; Tierney, Thompson & Dunham 1984

spermiogenesis - Shasy & Biesele 1968

strategies - Cooper & Cooper 1978, 1978a; Davies et al., 1977; Northup 1989; Martin,
R.F.1982; Palunas, 1989

Reptile - Of the class Reptilia, one of the vertebrates. Accidental in NA caves. **Areas:** **AR:** Duellman 1955; **CA:** Brattstrom 1953, 1958; **CO:** Douglas 1966; Hammerson 1986; **FL:** Carr & Goin 1955; Holman 1958-9; McDiarmid 1978; **GA:** 1958-9; McDiarmid 1978; **HI:** McKeown 1996; **IL:** : R. Olson 1956; **IN:** Hay, 1891; Minton 1972; Richards 1980d; **IN:** Butler, 1887; **KS:** J. Bruickelman 1946; J. Collins 1982; B. & Smith 1946; H. Smith 1950; Tihen 1939; Webb 1970; **KY:** Barbour 1971; Chenoweth 1949; **MD:** Franz 1969; McCauley 1945; **MO:** Holman 1965; **MN:** Breckenridge 1944; Oldfield & Moriarty 1994;: New England: DeGraaf & Rudis 1983; **NM:** Van Devender & Worthington 1977; **MO:** Myers 1959; **NA:** Collins 1990, 1997; **NV:** Brattstrom 1958; **OH:** Conant 1938, 1951; Langlois 1964; **OK:** Black 1975; **Ozarks:** Dowling 1958; **PA:** Conant 1974; A. Smith 1945; McCoy 1982; **TN:** Blair 1961; **TX:** Strecker & Williams; **VA:** Hutchinson 1956; Tobey 1985; **WV:** Green 1964; **TX:** Raun 1971; Paleo: Fay 1984; Gehlbach 1965; Holman 1995;

resilience - The speed and/or degree that an ecosystem returns to original conditions following displacement or disturbance. See extirpation.

resistance - The ability of an ecosystem to resist change.

retrogression - The change from a more specialized to a less specialized organization or structure in a species during its development.

rheocrene - Spring with sand or gravel as substrate. Cf. holocrene.

rheophile - A taxon that favors or thrives in a habitat with flowing water.

rheotaxis - Movement or orientation in response to a current, usually water. A species who does this is rheotactic.

rhithron - The spring zone extending from the hypocrenon to the point where the annual range of monthly mean temperature does not exceed 20° Centigrade, where the current is fast and turbulent; where the substrate is composed of large particles, mainly fixed boulders, stable cobble, and gravels with some sand, silt and mud in sheltered patches, and where dissolved oxygen is near saturation.

rhizosphere - The surface of roots and immediately surrounding soil areas, a zone of high biologic activity.

riffle - Shallow water 2" to 1' deep, moderately swift moving water and a rocky stream bottom with gravel 1/4" to 10" diameter.

ringtail - See mammal, ringtail

riparian - Vegetated area adjacent to waterbodies.

Rocky Mountain Spotted Fever - Transmitted by ticks. Symptoms include sudden onset of fever lasting for 2-3 weeks (if untreated). Lethargy, deep muscle pain, severe headache, & chills. Rash may appear on limbs around the 3rd day, & spread rapidly.

roost - Where bats or birds sleep or rest. Incl. deserted, distribution (ceiling, crevice, single, groups of 2-10, groups >10, wall), hibernaculum, migratory, moth wings, night, nursery, occasional, scratches, summer, & transitory.

root scales - See Homoptera, Family Ortheziidae.

Rotifers

Aquatic Phylum Rotifera (less often put in class Rotatoria within phylum Aschelminthes). Acoelomate, unsegmented, bilaterally symmetrical. About 1,800 species. .4 to 2.5 mm long with fusiform or sac-like (bottom dwellers) but sometimes with spherical (surface floating forms) or with a flower-like shape (sessile). The rear end is bordered by a double-ciliated ring in many species and is used for locomotion and food collection. Syn.: wheel animalcules. **Areas:** **Canada:** Chengalath, 1977, 1984; **KS:** Velez, 1964

Kingdom Animalia

Clade Bilateria

Clade Protostomia

Clade Lophotrochozoa

Phylum Rotifera

Class Bdelloidea

Order Bdelloidea

Adinetidae (*Adineta*)

Habrotrochidae (*Philodina*) (put in Philodinidae by most authors)

Philodinidae (*Dissotrocha*, *Philodina*, *Rotaria*)

Class Eurotatoria (=Monogononta Plate, 1889)

Order Collothecaceae

Collothecidae (*Collothea*)

Order Flosculariaceae

Conochilidae (*Conochilus*)

Filiniidae (*Filinia*)

Testudinellidae (*Pompholyx*, *Testudinella*)

Subclass Pseudotrocha

Order Ploimida (=Ploima) (undet.family in VA)

Asplanchnidae (*Asplanchna*)

Brachionidae (*Brachionus*, *Colurella*, *Cyrtonia*, *Kellicottia*,

Keratella,

Lepadella, *Lophocharis*, *Mikrocodides*, *Mytilina*, *Notholca*,

Paracolurella,

Plationus, *Platyias*, *Squatinella*, *Trichotria*, *Wolga*)

Dicranophoridae (*Dicranella*, *Dicranophorus*, *Keratella* (put in

Brachionidae

by most authors), *Notholca*, *Wierzejskiella*)

Euchlanidae (*Euchlanis*)

Gastropidae (*Ascomorpha*, *Gastropus*)

Lecanidae (*Lecane*, *Monostyla*)

Notommatidae (*Aspelta*, *Cephalodella*, *Encentrum*, *Eothinia*,

Erignatha,

Itura, *Monommata*, *Myersinella*, *Notommata*, *Pedipartia*,

Pleurotrocha,

Proales, *Proalides*, *Resticula*, *Rousseletia*, *Scaridium*,

Taphrocampa)

Proalidae (*Bryceella*)

Synchaetidae (*Polyarthra*, *Synchaeta*)

Trichocercidae (*Diurella*, *Elosa*, *Macrochaetus*, *Trichocerca*)

Adinetidae (*Adineta*)

Asplanchnidae (*Asplanchna*)

Brachionidae (*Brachionus*, *Colurella*, *Cyrtonia*, *Kellicottia*, *Keratella*, *Lepadella*, *Lophocharis*, *Mikrocodides*, *Mytilina*, *Notholca*, *Paracolurella*, *Plationis*, *Platyias*, *Squatinella*, *Trichotria*, *Wolga*)

Collothecidae (*Collotheca*)

Conochilidae (*Conochilus*)

Dicranophoridae (*Dicranella*, *Dicranophorus*, *Keratella* (put in Brachionidae by most authors), *Notholca*, *Wierzejskiella*)

Euchlanidae (*Euchlanis*)

Filiniidae (*Filinia*)

Gastropidae (*Ascomorpha*, *Gastropus*)

Habrotrochidae (*Philodina*) (put in Philodinidae by most authors)

Lecanidae (*Lecane*, *Monostyla*)

Notommatidae (*Aspelta*, *Cephalodella*, *Encentrum*, *Eothinia*, *Erignatha*, *Itura*, *Monommata*, *Myersinella*, *Notommata*, *Pedipartia*, *Pleurotrocha*, *Proales*, *Proalides*, *Resticula*, *Rousseletia*, *Scaridium*, *Taphrocampa*)

Philodinidae (*Dissotrocha*, *Philodina*, *Rotaria*)

Proalidae (*Bryceella*)

Synchaetidae (*Polyarthra*, *Synchaeta*)

Testudinellidae (*Pompholyx*, *Testudinella*)

Trichocercidae (*Diurella*, *Elosa*, *Macrochaetus*, *Trichocerca*)

Adineta Hudson & Gosse, 1886 - Adinetidae rotifers

Adineta barbata Janson, 1893 (epigeic in moss in PA, MA, VA, Canada; AB lake benthic; VA hyporheic)

Adineta vaga (*Callidina* v. Davis, 1873) (hyporheic in Ninnescah River, KS)

Ascomorpha Perty, 1859 (= *Sacculus* Gosse, 1851) - Gastropidae rotifers

Ascomorpha agilis Zacharias, 1893 (NJ lake interstitial psammoxene)

Ascomorpha agilis var. *americana* de Beauchamp, 1932 (NJ lake interstitial psammoxene)

Ascomorpha ecaudis Perty, 1850 (NJ lake interstitial psammoxene)

Ascomorpha saltans Bartsch, 1870 (NJ lake interstitial psammoxene)

Aspelta Harring & Myers, 1928 Notommatidae rotifer
Aspelta angusta Harring & Myers, 1928 (VA hyporheic)

Aspelta asper (*Encentrum a.* Harring, 1913) (NJ lake interstitial psammoxene; hyporheic in Ninnescah River, KS)

Aspelta circinator (*Encentrum g.* Gosse, 1886; *Dicranophorus giraffa*) (NJ lake interstitial psammoxene; KS hyporheic)

Aspelta beltista Harring & Myers, 1928 (MI interstitial & NJ lake psammoxene)
Aspelta egregia Myers, 1936 (NJ beach lake interstitial psammophile)

Aspelta imbuta Harring & Myers, 1928 (NJ lake interstitial psammoxene)
Aspelta undet. sp. (NY freshwater sandy beach interstitial)

Asplanchna Goose, 1850 - Asplanchnidae rotifers
Asplanchna girodi De Geurne, 1888 hyporheic in Ninnescah River, KS

Brachionus Pallas, 1766 - Brachionidae rotifers
Brachionus angularis Goose, 1851 (hyporheic in Ninnescah River, KS)
Brachionus bidentatus Anderson, 1889 (TX aquatic; hyporheic in Ninnescah River, KS)

Brachionus calyciflorus Pallas, 1766 (hyporheic in Ninnescah River, KS)
Brachionus caudatus Barrois & Daday, 1894 (hyporheic in Ninnescah River, KS)
Brachionus nilsoni (Ahlstrom, 1940) (= *B. urceolaris n.*) (hyporheic in Ninnescah River, KS)

Brachionus quadridentatus Hermann, 1783 (hyporheic in Ninnescah River, KS)
Brachionus undet. sp. (CO hyporheic)

Brachionus urceolaris Muller, 1773 (hyporheic in Ninnescah River, KS)
Brachionus urceolaris nilsoni = *B. n.*
Brachionus variabilis Hampel, 1896 (hyporheic in Ninnescah River, KS)

Bryceella Remane, 1929 - Proalidae rotifers
Bryceella undet. sp. (interstitial in US sandy beaches)

Bryceella tenella (*Stephanops tenellus* Bryce, 1897; *Squatinella tenella* Harring, 1913) (NJ beach lake interstitial psammophile)

Cephalodella Bory de St Vincent, 1826 - loricata Notommatidae rotifers

Cephalodella forficula (*Notommata f.* Ehrenberg, 1831; *Diaschiza acronota* Gosse, 1887; *D. caeca* Dixon-Nuttall, 1903; *D. f.* Harring, 1913; *D. paeta* Gosse, 1886; *D. laeve* Eichwald, 1847) Harring & Myers, 1924 (TX aquatic)

Cephalodella apocolea Myers, 1924 (epigeal in NJ/ NJ, SC & WI (rare) lake beach sand interstitial psammophile; OH hyporheic)

Cephalodella auriculata (*Diaschiza* a. Mueller, 1773; *Diaschiza lacinulata* Levander, 1894; *Plagiognatha l.* Dumjardin, 1841) Harring & Myers, 1924 (NJ, MI & rare WI lake beach sand interstitial & hygrosammon; VA hyporheic)

Cephalodella catellina (*Cercaria catellina* O.F.Muller, 1786; *Diaschiza c.* Weber & Montet, 1918; *Diglena c.* Ehrenberg, 1830) Sasulim, Kabanov & Neiswestnova, 1927 (rare WI lake beach sand interstitial psammophile; hyporheic in Ninnescah River, KS)

Cephalodella compacta Wiszniewski, 1934 (lakeshore interstitial or hyporheic in Europe & Eastern Coastal Plain & Central Lowlands in US; NJ beach lake interstitial psammobiotic)

Cephalodella delicata Wulfert, 1937 (VA hyporheic)

Cephalodella elongata Myers NJ beach lake interstitial psammophile)

Cephalodella eva (Gosse, 1887) (NJ lake interstitial psammoxene; SC lake benthic)

Cephalodella exigua (Gosse, 1886) (WI lake beach sand rarity & NJ beach interstitial psammophile common; AB lake benthic (nr. *C.e.*); hygrosammon in Ninnescah River, KS; MN hyporheic)

Cephalodella forficula (Ehrenberg, 1831) (NJ, SC lake interstitial psammoxene; hygrosammon in Ninnescah River, KS; VA hyporheic)

Cephalodella galbina Myers (NJ lake interstitial psammoxene)

Cephalodella gibba gibba (Ehrenberg, 1832) (= *C. g.*) (CO, MI, ON hyporheic; WI lake beach sand interstitial; NJ beach interstitial psammophile; hygrosammon in Ninnescah River, KS)

Cephalodella gibba microdactyla Koch-Althaus, 1963 (VA hyporheic)

Cephalodella gracilis (Ehrenberg, 1832) (rare WI lake beach sand interstitial; NJ beach interstitial psammoxene; hygrosammon in Ninnescah River, KS)

Cephalodella hoodii (Gosse, 1886) (VA hyporheic)

Cephalodella innesi Myers, 1924 (NJ lake interstitial psammoxene)

Cephalodella inquilina Myers, 1924 (NJ lake interstitial psammoxene)

Cephalodella intuta Myers, 1924 (NJ lake interstitial psammoxene)

Cephalodella megalcephala (Glasscott, 1893) (MI interstitial; rare WI lake beach sand interstitial; NJ lake interstitial psammoxene; hygrosammon in Ninnescah River, KS; VA hyporheic)

Cephalodella misgurnus Wulfert, 1937 (cf. *C. m.* - hygrosammon in Ninnescah River, KS)

Cephalodella mucronata Myers, 1924 (NJ lake interstitial psammoxene)
Cephalodella obvia Donner, 1950 (cf. *C. o.* hygropsammon in Ninnescah River, KS)

Cephalodella physalis Myers, 1924 (NJ lake interstitial psammoxene)
Cephalodella remanei Wiszniewski, 1934 (rare WI lake beach sand interstitial; NJ lake interstitial psammophile)

Cephalodella undet. sp. or species (CO hyporheic; (NY freshwater sandy beach interstitial; MN hyporheic)

Cephalodella undescr. sp. #1-2 (hyporheic in Ninnescah River, KS)
Cephalodella sterea (*Furcularia s.* Gosse, 1887; *Diaschiza s.* Dixon-Nuttall & Freemann, 1903) (hyporheic in Ninnescah River, KS)

Cephalodella tantilla Myers, 1924 (NJ lake interstitial psammophile)
Cephalodella tenuior (*Diaschiza t.* Gosse, 1886) Harring & Myers, 1924 (NJ lake interstitial psammoxene)

Cephalodella ventripes Dixon-Nuttall, 1901 (hyporheic in Ninnescah River, KS)

Collothea Harring, 1913 - Collothecidae rotifers
Collothea pelagica (*Floscularia pelagica* Rousselet, 1893) Harring, 1913 (hyporheic in Ninnescah River, KS)

Collothea wiszniewski (= *Cephalodella w.* Edmondson & Hutchinson, 1934?) (hyporheic in Ninnescah River, KS)

Colurella Bory De St. Vincent, 1824 (= *Colurus* Ehrenberg) Brachionidae rotifers
Colurella adriatica Ehrenberg, 1831((VA, KS hyporheic)

Colurella aemula Myers, 1934 (NJ lake interstitial)
Colurella anodonta Carlin, 1939 (VA hyporheic)

Colurella colurus (*Monurus colurus* Ehrenberg, 1831; *C. amblytelus* von Hofsten, 1909; *Colurus grillator*, *Monura loncheres* Gosse, 1887; *Colurus rotundatus* Daday, 1890) (WI lake beach sand & Fl marine sands interstitial psammophile; hyporheic in Ninnescah River, KS)

Colurella colurus forma *compressa* (Lucks, 1912) (Fl marine sands interstitial psammophile)
Colurella dicentra (Gosse, 1886) (Fl marine sands interstitial psammophile)

Colurella gastracantha (Hauer, 1924) (VA hyporheic)
Colurella hindeburgi (Steinecke, 1917) (VA hyporheic)

Colurella obtusa (*Colurus dicentrus* Gosse, 1886) (rare WI lake beach sand interstitial; NJ lake interstitial psammoxene; VA, KS hyporheic)

Colurella sinistra Carlin, 1939 (OH psammobiotic & hyporheic)

Colurella undet. sp. (NY freshwater sandy beach interstitial)

Colurella tessellata (*Colurus t.* Glascott, 1893) (NJ lake interstitial psammoxene)

Colurella uncinata (*Brachionus uncinatus* O.F. Muller, 1773; *Colurus micromela*; *Monura m.* Gosse, 1887) Bory de St. Vincent, 1824 (rare WI lake beach sand interstitial; hyporheic in Ninnescah River, KS)

Conochilus Ehrenberg, 1834 - Conochilidae rotifers

Conochilus hippicrepis (Linza h. Schrank, 1830; *C. volvox* Ehrenberg, 1834) (SC lake benthic)

Cyrtonia Rousselet, 1894 - Brachionidae rotifers

Cyrtonia tuba (*Notommata t.* Ehrenberg, 1834; *Proales hyalina* Stokes, 1897) Rousselet, 1894 (NJ lake interstitial psammoxene)

Dicranella Myers, 1936 - Diacranophoridae rotifers

Dicranella gracilis = *Pedipartia g.* Myers, 1936

Dicranophorus Nitzsch, 1827 - Dicranophoridae rotifers

Dicranophorus artamus Haring & Myers, 1928 (MI interstitial groundwater; NJ interstitial lakshore sediment, psammophile; VA hyporheic)

Dicranophorus capucinus Haring & Myers, 1928 (Europe, NJ, OH, WI lake beach sand interstitial, psammophile)

Dicranophorus epicharis Haring & Myers, 1928 (MI interstitial; hyporheic in Ninnescah River, KS)

Dicranophorus erdestes Haring & Myers, 1928 (MI interstitial; NJ lake interstitial psammoxene)

Dicranophorus forcipatus (Cercaria f. O.F. Muller, 1786) Haring, 1913 hyporheic in Ninnescah River, KS)

Dicranophorus haueri Haring & Myers, 1936 (NJ lake interstitial psammoxene)

Dicranophorus hercules Wiszniewski, 1934

Dicranophorus hercules var. *capucinoides* (Wiszniewski, 1932) (Hungary, Poland, NJ, MI lakeshore sand interstitial, psammobiotic)

Dicranophorus lutkeni (Arthroglena l. Bergendal, 1892; *Diglena dromius* Glascott, 1893; *D.l.* Weber & Montet, 1918) (rare WI lake beach sand interstitial; NJ lakeshore sand interstitial, psammobiotic)

Dicranophorus prionacis (Haring and Myers, 1928) (rare WI lakeshore sand interstitial)

psammophile)

Dicranophorus proclastes Harring & Myers, 1937 (NJ lake interstitial psammoxene)

Dicranophorus robustus Harring & Myers, 1937 (NJ lake interstitial psammoxene)

Dicranophorus rostratus (Dixon-Nuttall & Freeman, 1902) (MI interstitial; NJ lake interstitial psammoxene)

Dicranophorus undet. sp. (NY freshwater sandy beach interstitial)

Dicranophorus thysanus Harring & Myers, 1928 (NJ lake interstitial psammoxene)

Dicranophorus uncinatus (*Arthroglena u.* Milne, 1886) Harring, 1913 (KS, MI, NY, ON hyporheic)

Dissotrocha Bryce, 1910 - Philodinidae rotifers

Dissotrocha aculeata (Ehrenberg) = *D. hertzogi a.*

Dissotrocha hertzogi aculeata W. Koste, 1996 (hyporheic in Ninnescah River, KS (or new species); AB lake benthic; VA hyporheic)

Dissotrocha undet. sp. (CO,KS hyporheic)

Dissotrocha macrostyla (*Philodina m.* Ehrenberg, 1838; *P. pannosa* Bailey, 1851; *Philoidna tuberculata* Gosse, 1886) (NA,SA,Carib/lakes bogs, MI interstitial; MN,SC lake benthic; NJ lake interstitial psammoxene; VA hyporheic)

Diurella - now subgenus of *Trichocerca*

Diurella bidens = *T. b.*; *Diurella brachyura* = *T. b.*; *Diurella cavia* = *T. c.*;

Diurella collaris = *T. c.*; *Diurella edmonsoni* = *T. e.*; *Diurella insignis* = *T. i.*

Diurella insolens = *T. i.*; *Diurella intermedia* = *T. i.*; *Diurella porcellus* = *T. p.*

Diurella stylata = *T. s.*; *Diurella tenuior* = *Trichocerca t.*; *Diurella tigris* = *T. t.*

Diurella tortuosa = *T. t.*; *Diurella uncinata* = *T. u.*

Elosa Lord, 1891 - Trichocercidae rotifers

Elosa worralli Lord, 1891 (rare WI lake beach sand interstitial; NJ ocean beach interstitial; NJ lake interstitial psammophile)

Encentrum Ehrenberg, 1838 - Notommatidae rotifers

Encentrum felis Muller, 1773 (NJ lake interstitial psammoxene)

Encentrum insolitum Myers, 1936 (NJ, WI beach lake interstitial, psammobiotic)

Encentrum lucidum Harring and Myers (NJ lake interstitial psammoxene)

Encentrum marinum (*Furcularia m.* Dujardin, 1841; *Distemma platyceps* Gosse, 1887) Harring, 1913 (freshwater interstitial & Fl marine sands interstitial psammophile; hyporheic in Ninnescah River, KS)

Encentrum (*Paracentrum*) *semiplicatum longipes* Wulfert, 1936 (= *E.l.*) (hygropsammon in Ninnescah River, KS)

Encentrum striatum Althaus (Fl marine sands interstitial psammobiont)
Encentrum? undet. sp. (NY freshwater sandy beach interstitial)

Encentrum (*Wierzejskiella*) *velox* Wiszniewski, 1932 (hyporheic in Ninnescah River, KS; hyporheic or interstitial beach sediment & psammobiotic in Italy, Germany, Poland, NJ, NY, OH, WI)

Encentrum villosum Harring & Myers, 1928 (East US marine sands interstitial)

Eothinia Harring & Myers, 1922 - Notommatidae rotifers
Eothinia undet. sp. hyporheic in Ninnescah River, KS

Erignatha Harring & Myers, 1922 - Notommatidae rotifers

Erignatha clastopis (*Encentrum c.* Gosse, 1886) Harring & Myers, 1922 (NJ lake interstitial psammoxene; VA hyporheic)

Euchlanis Ehrenberg, 1832 - Euchlanidae rotifer
Euchlanis alata Voronkov, 1911 (NJ lake interstitial psammoxene)
Euchlanis arenosa Myers, 1936 (MI, NJ, OH, WI lakeshore interstitial, psammobiotic)

Euchlanis callysta Myers, 1936 (NJ lake interstitial psammoxene)
Euchlanis dilatata Ehrenberg, 1832 (VA, KS hyporheic)
Euchlanis incisa Carlin, 1936 (VA hyporheic)

Euchlanis inquieta Myers, 1936 (NJ, OH, WI lakeshore interstitial)
Euchlanis lyra Hudson, 1886 (hyporheic in Ninnescah River, KS; cf. - AB lake benthic;)

Euchlanis meneta Myers, 1930 (NJ lake interstitial psammoxene; cf. - hyporheic in Ninnescah River, KS)

Euchlanis parva Rousselet, 1892 (hyporheic in Ninnescah River, KS; NJ lake interstitial psammoxene)

Euchlanis pellucida Harring = *E. triquetra* var. *mucronata*
Euchlanis triquetra Ehrenberg, 1838 (hyporheic in Ninnescah River, KS)

Euchlanis triquetra var. *mucronata* Ahlstrom, 1938 (= *Dapidia carinata*, *D. lata* Carlin-Nilsson, 1934; *Euchlanis longobardica* Manfredi, 1927; *E. pellucida* Harring, 1921) (NJ lake interstitial psammoxene)

Filinia Brory De St. Vincent, 1824 (= *Triarthra* Ehrenberg, 1832; *Fadeewella* Smirnow, 1928) -

Filiniidae rotifers

Filinia longiseta longiseta (Ehrenberg, 1834; *F. l.*; *F. limnetica* Fadeew) hyporheic in Ninnescah River, KS

Gastropus (Imhof, 1898) - Gastropidae rotifers

Gastropus hytopus (*Notommata h.* Ehrenberg, 1838; *G. bretensis* Linder, 1904) (NJ lake interstitial psammoxene)

Gastropus stylifer Imhof, 1891 (NJ lake interstitial psammoxene)

Euchlanis undet. sp. (MN lake benthic)

Itura Harring & Myers, 1928 - Notommatidae rotifers

Itura aurita aurita (*Diglena a.* Ehrenberg, 1830) (hyporheic in Ninnescah River, KS)

Itura aurita var. *intermedia* Wulfert, 1835 (= *I. itermedia*) (hyporheic in Ninnescah River, KS)

Itura undescr. sp.? (hyporheic & psammobiotic in Ninnescah River, KS)

Kellicottia Ahlstrom, 1938 (= *Anuraea* Ehrenberg) - Brachionidae rotifers

Kellicottia longispina (*Keratella l.* Kellicott, 1879) (Tx? in MN; CO hyporheic)

Keratella Bory de St. Vincent, 1822- Brachionidae rotifers

Keratella americana Carlin, 1943 (hyporheic in Ninnescah River, KS)

Keratella cochlearis forma *c.* (Gosse, 1851) (eNA/ interstitial, Tx? in MN; NJ lake interstitial psammoxene; hyporheic in MN, KS)

Keratella cochlearis (*Anuraea c.* Gosse, 1851) form. *tecta* (hyporheic in Ninnescah River, KS)

Keratella hiemalis Carlin, 1943 (hyporheic in Ninnescah River, KS)

Keratella quadrata (*Branchionus q.* O.F. Muller, 1786) (nNA/ Tx? in MN) &

Keratella longispina = *Kellicottia l.*

Keratella serrulata (*Anuraea s.* Ehrenberg, 1838) NJ lake interstitial psammoxene)

Keratella undet. sp. (Ac or Tx in AR)

Keratella tecta = *K. cochlearis* form. *tecta*

Keratella tropica Apstein, 1907 (hyporheic in Ninnescah River, KS)

Lecane Nitzsch, 1827 (= *Cathypna* Gosse, 1886; *Distyla* Eckstein, 1883; *Monostyla* Ehrenberg, 1830) Lecanidae rotifers

Lecane agilis (*Distyla a.* Bryce, 1892) (NJ lake interstitial psammoxene)

Lecane aquila Harring and Myers, 1926 (NJ lake interstitial psammoxene)

Lecane (*Monostyla*) *arcuata* (*Cathypna a.* Bryce, 1892) (cf. *L.a.* - Fl marine sands interstitial

psammophile)

Lecane (*Monostyla*) *bull*a (*Monostyla* b. Gosse, 1851; *M. incisa* Daday, 1897; *M. bipes* Stokes, 1896) (KS, VA hyporheic)

Lecane (*Monostyla*) *bull*a var. *styrax* (Harring and Myers, 1926) (NJ lake interstitial psammoxene)

Lecane clara (*Distyla* c. Bryce, 1892; *C. sulcata* Murray, 1913; *Diglena beauchampi* von Hofsten, 1923) Harring, 1913 (rare WI lake beach sand interstitial; NJ ocean beach & lake interstitial, psammophile; OH psammobiotic & hyporheic)

Lecane (*Monostyla*) *closterocerca* (*Monostyla* c. Scyhmarda, 1859; *M. cornuta* f. *anglica* Bryce, 1924) (rare WI lake beach sand interstitial; NJ ocean beach interstitial; MN, KS, VA hyporheic; KS; NJ lake interstitial psammoxene)

Lecane (*Monostyla*) *copeis* (Harring & Myers, 1926) (Cf. *L. c.* hyporheic in Ninnescah River, KS)

Lecane (*Monostyla*) *cornuta* (*Tricoda* c. O.F. Muller, 1786; *M. c.*, *Notommata* c. Ehrenberg, 1830; *M. robusta* Stokes, 1896; *M. rotundata* Jakubski; *M. truncagta* Turner, 1892) (KS, VA hyporheic)

Lecane (*Monostyla*) *crenata* Harring, 1913 (SC lake benthic)

Lecane crepida Harring, 1914 (MI lake beach sand interstitial)

Lecane flexilis (*Dystyla* f. Gosse, 1889) (MI interstitial; NJ, WI lake beach sand interstitial, psammophile; MN, VA hyporheic)

Lecane (*Monostyla*) *furcata* (L.f. Murray, 1913) (hyporheic in OH; Daday (NJ lake interstitial psammoxene; OH hyporheic; cf. *L.(M.)f.* -KS hyporheic; Daday)

Lecane (*Monostyla*) *hamata* (L.h. Stokes, 1896) (MI, WI lake beach sand interstitial; MN, KS, VA hyporheic)

Lecane hastata (Murray, 1913) (hyporheic in Ninnescah River, KS)

Lecane inermis (*Distyla* i. Bryce, 1892; *Lecane amorpha* Harring, 1914) Harring, 1913 (hyporheic in Ninnescah River, KS; Fl marine sands interstitial psammophile) **Bibl.:** H. Miller 1930

Lecane inquieta Myers, 1936 (NJ, WI, Sweden lakeshore interstitial, psammobiotic)

Lecane lauterborni Hauer, 1924 (OH hyporheic)

Lecane cf. *levistyla* (*Cathypna* l. Olofsson, 1917) Retowski, 1933 (hyporheic & psammobiotic)

in Ninnescah River, KS)

Lecane ligona (*Cathypna l.* Dunlop, 1901) Harring, 1913 (NJ lake interstitial psammoxene)

Lecane luna (*Cathypna l.* Mueller, 1776; *Cercaria l.* Muller, 1776; *Euchlanis l.* Ehrenberg, 1832) Nitzsch, 1827 (hyporheic in Ninnescah River, KS; MN lake benthic; MI lake beach interstitial; Fl marine sands interstitial psammophile)

Lecane* (*Monostyla*) *lunaris (*M.l.* Ehrenberg, 1832) Ehrenberg, 1838 (AB lake benthic; MI lake beach interstitial psammoxene; OH, KS, VA hyporheic)

Lecane mira (*Cathypna m.* Murray, 1913) Harring & Myers, 1926 (NJ lake interstitial psammoxene)

Lecane* (*Monostyla*) *mitella Myers, 1936 (NJ lakeshore interstitial; psammobiotic)

Lecane mucronata Harring & Myers, 1928 (MI, NJ lake interstitial, psammobiotic)

Lecane nana (Murray, 1913) (MI, WI lake beach sand interstitial)

Lecane* (*Monostyla*) *obtusata (*L.o.* Murray, 1913) (AB lake benthic; VA hyporheic)

Lecane ohioensis (*Cathypna o.* Herrick, 1885) (MI, WI lake beach sand interstitial psammophile; MN hyporheic)

Lecane papuana (*Cathypna p.* Murray, 1913; *L. paxiasna* Hauer, 1940; *L. paradox* (Steinecke, 1924)) (hyporheic in Ninnescah River, KS)

Lecane paraclosterocerca (Pennak, 1939) (WI lakeshore interstitial psammobiotic; OH psammobiotic & hyporheic)

Lecane pertica Harring & Myers, 1926 (NJ lake interstitial psammobiotic)

Lecane ploenensis (*Cathypna p* Voigt, 1902) Harring, 1913 (SC lake benthic)

Lecane pomiformis (Edmondson, 1938) (MI lake beach interstitial)

Lecane* (*Monostyla*) *pyriformis (*M. p.* Daday, 1905; *M. truncata* Murray, 1913) (OH, KS hyporheic)

Lecane* (*Monostyla*) *psammophila (*Monostyla p.* Wiszniewski, 1932) (MI, NJ, OH, Poland, USSR lakeshore interstitial or hyporheic; MN, NJ, OH psammobiotic & hyporheic)

Lecane pygmaea = *L. (M.) furcata*

Lecane pyriformis (Daday, 1905) (OH hyporheic)

Lecane pyrrha Harring & Myers, 1926 (NJ lake interstitial psammoxene)

Lecane* (*Monostyla*) *quadridentata (*M.q.* Ehrenberg, 1932) (NJ lake interstitial psammoxene; VA hyporheic)

Lecane (*Monostyla*) *scutata* (*M. s.* Harring & Myers, 1926) (WI lake beach sand interstitial psammophile; hyporheic in Ninnescah River, KS; NJ lake interstitial psammoxene)

Lecane (*L.*) *signifera s.* (Jennings, 1896) (MI interstitial)

Lecane undet. sp. or species (NY freshwater sandy beach interstitial; MN hyporheic)

Lecane stichaea Harring, 1913 (NJ lake interstitial psammoxene)

Lecane tenua Myers, 1936 (NJ lakeshore interstitial, psammobiotic)

Lecane tenuiseta Haring, 1914 (VA hyporheic)

Lecane vastita Harring & Myers, 1926 (OH psammobiotic & hyporheic)

Lecane verecunda Harring & Myers, 1926 (WI lake beach sand interstitial psammophile)

Lepadella Bory de St. Vincent, 1826 (= *Metopidia* Ehrenberg, 1830) - Brachionidae rotifers

Lepadella acuminata (*Metopidia a.* Ehrenberg, 1834) Dujardin, 1841 (OH, KS, VA hyporheic)

Lepadella benjamini Harring, 1916 (NJ lake interstitial psammoxene)

Lepadella ehrenbergi ((*H.*) *e.* Perty, 1850) Harring, 1913 (TX aquatic)

Lepadella cf. *eurysterna* (Myers, 1942) (VA hyporheic)

Lepadella ovalis (*Brachionus o.* O.F. Muller, 1896; *Metopidia solidus* Gosse, 1851; *Squamella oblonga* Ehrenberg, 1834)) (NJ, WI lake beach sand interstitial psammophile)

Lepadella patella (*Branchionus p.* Muller, 1786 (MN, OH, KS hyporheic; MI, NJ lake beach sand interstitial psammophile)

Lepadella rhomboides (*Metopidia r.* Gosse, 1886) (TX aquatic; hyporheic in Ninnescah River, KS)

Lepadella undet. sp. (NY freshwater sandy beach interstitial; MN hyporheic)

Lepadella triptera (*Metopidia t.* Ehrenberg, 1830)

Lepadella triptera var. *alata* Myers, 1934 (Sumatra/ MI, NJ lake beach sand interstitial psammophile)

Lepadella venefica Myers, 1934 (NJ lake interstitial psammoxene)

Lindia Dujardin, 1841 - Lindiidae rotifers

Lindia annecta Harring and Myers, 1922 (NJ lake interstitial psammoxene)

Lindia undet sp. or species (Fl marine sands interstitial psammobiont; NY freshwater sandy beach interstitial; MN hyporheic)

Lindia (*Halolinda*) *tecusa* Harring and Myers, 1922 (WI lake interstitial & marine sands interstitial)

Lindia torulosa Dujardin, 1841 (KS, VA hyporheic)

Lophocharis Ehrenberg, 1838 (= *Oxysterna* Oroso, 1910) - Brachionidae rotifers

Lophocharis naias Wulfurt, 1942 (hyporheic in Ninnescah River, KS)

Lophocharis salpina (*Lepadella* s. Ehrenberg, 1834; *Lophocharis oxysternum* Iroso, 1913; *Metopidia* o. Bilfinger, (1894); *O. major* Iroso, 1910) Harring, 1916 (hyporheic in Ninnescah River, KS)

Macrochaetus Perty, 1850 (= *Polychaetus* s. Perty, 1850) Trichoceridae rotifers

Macrochaetus subquadratus (*Polychaetus* s. Perty, 1850) (NE/ MI interstitial),

Microcodides Bergendal, 1892 (= *Mikrocodides*) Brachionidae rotifers

Microcodides chlaena (*Stephanops* c. Gosse, 1886; *M. dubius* Bergendal, 1892; *M. orbiculodiscus* Jennings, 1894) (MI interstitial; (NJ lake interstitial psammoxene)

Monommata Bartsch, 1870 - Notommatidae rotifers

Monommata astia Myers, 1930 (NJ lake interstitial psammoxene)

Monommata diaphora Myers, 1930 (NJ lake interstitial psammoxene)

Monommata grandis Tessin, 1890 (NJ lake interstitial psammoxene)

Monommata undet. sp. (WI lake beach sand interstitial psammophile)

Monostyla Ehrenberg, 1830 = subgenus of *Lecane*

Myersinella Wiszniewski, 1936 - Notommatidae rotifers

Myersinella tetraglena (*Myersina* t. Wiszniewski, 1934) Wiszniewski, 1936 (NJ lakeshore interstitial)

Mytilina Bory de St. Vincent, 1826 (= *Salpina*) Brachionidae rotifers

Mytilina mucronatas (*Brachionus* m..O.F. Muller, 1773)

Mytilina mucronata var. *brevispina* (Ehrenberg, 1832) (MI lake beach sand interstitial)

Mytilina mucronata redunca (Ehrenberg, 1832) (MI interstitial)

Mytilina ventralis (Ehrenberg, 1832) (VA hyporheic)

Notholca Gosse, 1886 - Brachionidae rotifers

Notholca bipalium = *N. striata*

Notholca acuminata (*N. striata* a. Ehrenberg, 1832) (MI interstitial; hyporheic in Ninnescah River, KS)

Notholca salina (*Notholca squamula salina* Focke, 1961) (Fl marine sands interstitial psammophile)

Notholca striata (*Brachionus bipalium* O.f. Muller, 1786) Carlin, 1943 (= *N. s. bipalium*)

Harring, 1913) (Fl marine sands interstitial psammophile)

Notholca undet. sp. (CO hyporheic)

Notommata Ehrenberg, 1830 - Notommatidae rotifer

Notommata bennetchi Myers, 1942 (PA hyporheic, lakeshore interstitial)

Notommata cerebrus (*Copeus c.* Gosse, 1886) (NJ lake interstitial psammoxene)

Notommata contorta (*Diglena c.* Stokes, 1897) (NJ lake interstitial psammoxene)

Notommata copeus Ehrenberg, 1934 (near *N.c.* - AB lake benthic)

Notommata diasema Myers, 1936 (NJ lake interstitial psammobiotic or psammophilic)

Notommata fasciola Myers, 1933 (NJ lake interstitial psammoxene)

Notommata galena Harring and Myers (NJ lake interstitial psammoxene)

Notommata glyphura Dwulfert, 1935 (hyporheic in Ninnescah River, KS)

Notommata pachyura (*Copeus p.* Gosse, 1886) Harring, 1913 (NJ lake interstitial psammoxene)

Notommata saccigera Ehrenberg, 1832 (NJ lake interstitial psammoxene)

Notommata undet. sp. or species (MI lake beach interstitial; ON hyporheic)

Notommata tripus Ehrenberg, 1938 (NJ lake interstitial psammoxene)

Paracolurella Myers, 1936 - Brachionidae rotifers

Paracolurella undet. sp. (NJ lake interstitial)

Pedipartia Myers, 1937 - Notommatidae rotifer

Pedipartia gracilis (*Dicranella gracilis* Myers, 1936) (NJ lakeshore interstitial, psammobiotic)

Philodina Ehrenberg, 1930 - Philodinidae rotifers

Philodina acuticornis Milne, 1916 (VA hyporheic)

Philodina flaviceps Bryce, 1906 (VA hyporheic)

Philodina roseola Ehrenberg, 1830 (near *P.r.* - AB lake benthic)

Philodina rugosa Bryce, 1903 (VA hyporheic)

Philodina undet. sp. or species (KS, CO hyporheic)

Plationus H. Segers, G. Murugan, H.J. Dumont, 1993 – Brachionidae rotifers

Plationus patulus (Muller, 1786) (VA hyporheic)

Platyias Harring, 1913 - Brachionidae rotifers

Platyias quadricornis (*Brachionus q.* Ehrenberg, 1932) Harring, 1913 (KS hyporheic)

Pleurotrocha Ehrenberg, 1830 - Notommatidae rotifers

Pleurotrocha petromyzon Ehrenberg, 1830 (KS hyporheic)

Polyarthra Ehrenberg, 1834 -Synchaetidae rotifers

Polyarthra remata Skorikov, 1896 (KS hyporheic)

Polyarthra undet. sp. (CO hyporheic)

Polyarthra trigla = *P. vulgaris*

Polyarthra vulgaris Carlin, 1943 (KS hyporheic; MN lake benthic; NJ lake interstitial psammoxene)

Pompholyx Gosse, 1851 - Testudinellidae rotifers

Pompholyx complanata Gosse, 1851 (KS, VA hyporheic)

Proales Gosse, 1886 - Notommatidae rotifers

Proales decipiens (*Notommata d.* Ehrenberg, 1832) (WI lake beach sand interstitial psammophile; NJ lake interstitial psammoxene)

Proales doliaris (Rousselet, 1895) Harring & Gosse, 1886 (NJ lake interstitial psammoxene)

Proales fallaciosa Wulfert, 1937 (VA hyporheic)

Proales granulosa Myers NJ lake interstitial psammoxene))

Proales longidactyla Edmondson, 1948 (MI lakeshore interstitial)

Proales minima (*Pleurotrocha m.* Montet, 1915) (KS, OH, VA hyporheic)

Proales similis de Beauchamp, 1907 (KS hyporheic)

Proales sordida Gosse, 1886 (NJ lake interstitial psammoxene))

Proalides de Beauchamp, 1907 - Notommatidae rotifers

Proalides tentaculatus de Beauchamp, 1907 (KS hyporheic)

Resticula Harring & Myers, 1924 - Notommatidae rotifers

Resticula melandocus (Gosse, 1887) (NJ lake interstitial psammoxene))

Rotaria Scopoli, 1777 (*Rotifer* Cuvier, 1798; Schrank, 1803) Philodinidae rotifers

Rotaria neptunia (Ehrenberg, 1832) (= *R. neptunoida* Harring, 1913) (MN lake benthic; KS hyporheic)

Rotaria rotatoria (*Brachionus r.* Pallas, 1766; *Rotifer vulgaris* Schrank, 1801) (US, NH, Carib., SA/ MI interstitial; MN lake benthic; KS, VA hyporheic; NJ, SC lake interstitial psammoxene)

Rotaria sordida (*Callidina s.* Western, 1893) Harring, 1913 (NJ lake interstitial psammoxene)

Rotaria undet. sp. or species (KS, MN hyporheic)

Rotaria tardigrada (*Rotifer tardigradus* Ehrenberg, 1832) Harring, 1913 (NJ lake interstitial psammoxene; KS hyporheic)

Rotaria tridens (*Rotifer t.* Montet, 1915) Remane, 1929 (US, NH, MI?, Europe, Japan, Peru,

Carib./ MI interstitial)

Rotaria vulgaris = *R. rotatoria*

Rousseletia Haring, 1913 - Notommatidae rotifers

Rousseletia corniculata Haring, 1913 (NJ lake interstitial psammoxene)

Scaridium Ehrenberg, 1830 - Notommatidae rotifers

Scaridium longicaudum (*Trichoda longicaudata* O.F. Muller, 1786; *Eudactylota eudactylota* (Gosse, 1886)) (MI lake beach interstitial; VA hyporheic)

Scaridium undet. sp. (NY freshwater sandy beach interstitial)

Squatinella Bory de St.Vincent, 1826 - Brachionidae rotifers

Squatinella longispina (*Stephanops longispinatus* Tatem, 1867) (= *S. leydigi longispina*) (NJ lake interstitial psammoxene)

Synchaeta Ehrenberg, 1832 - Synchaetidae rotifer

Synchaeta longipes Gosse, 1887 (NJ lake interstitial psammoxene; KS hyporheic)

Synchaeta oblonga Ehrenberg, 1831 (NJ lake interstitial psammoxene; KS hyporheic)

Synchaeta pectinata Ehrenberg, 1832 (NJ lake interstitial psammoxene)

Synchaeta undet. sp. (MN lake benthic)

Synchaeta stylata Wierzejski, 1893 (NJ lake interstitial psammoxene)

Synchaeta tremula (*Vorticella t.* O.F. Muller, 1786) Ehrenberg, 1832 (NJ lake interstitial psammoxene)

Taphrocampa Gosse, 1851 - Notommatidae rotifers

Taphrocampa annulosa Gosse, 1851 (MI, NJ lake interstitial psammophile)

Testudinella Bory de St.Vincent, 1826 - Testudinellidae rotifers

Testudinella dicella (Myers, 1934) (*Testudinella tridentata dicella*) (NJ lake interstitial psammoxene)

Testudinella epicopta Myers, 1934 (NJ lake interstitial psammoxene)

Testudinella incisa (*Perodina i.* Ternetz, 1892) (NJ lake interstitial psammoxene)

Trichocerca Lamarck, 1901 - Trichocercidae rotifers

Trichocerca (*Diurella*) *bicristata* (*Diurella b.* Gosse, 1887) (NJ lake interstitial psammoxene)

Trichocerca (*Diurella*) *bidens* (*Diurella b.* Lucks, 1912) (NJ lake interstitial psammoxene)

Trichocerca (*Diurella*) *brachyura* (*Diurella b.* Gosse, 1851) (NJ lake interstitial psammoxene)

Trichocerca (*Diurella*) *capicina multicrinis* Kellicott, 1894 (= *T. c.*) (NJ lake interstitial psammoxene)

Trichocerca (*Diurella*) *cavia* (*Diurella c.* Gosse, 1886) (NJ lake interstitial psammoxene)
Trichocerca (*Diurella*) *collaris* (*Diurella c.* Rousselet, 1896) (NJ lake interstitial psammoxene)

Trichocerca (*Diurella*) *edmonsoni* (*Diurella e.* Myers, 1936) (NJ lake interstitial; NJ lake interstitial psammoxene)

Trichocerca (*Diurella*) *eukosmeta* Myers, 1934 (NJ lakeshore interstitial)
Trichocerca (*Diurella*) *inernis* (*Mastigocerca i.* Gosse, 1887; *Rattulus gracilis* Jennigs, 1903; *Acanthodactylus g.* Tessin, 1886) (MI lake beach sand interstitial)

Trichocerca (*Diurella*) *insignis* (*Diurella i.* Herrick, 1885) Carlin, 1939 (MI lake beach sand interstitial)

Trichocerca *insolens* Myers, 1936 (MI, NJ, WI lakeshore interstitial, psammobiotic)
Trichocerca (*Diurella*) *intermedia* (*Coelopus i.* Stenroos, 1898; *Diurella intermedia* Jennings, 1903) (MI, NJ, WI lake beach sand interstitial psammophile)

Trichocerca (*Diurella*) *lophoessus* (*Mastigocerca l.* Gosse, 1887) Haring, 1913 (SC lake benthic)

Trichocerca (*Diurella*) *longiseta* (*Vaginaria l.* Schrank, 1802) (NJ lake interstitial psammoxene)
Trichocerca *multicrinis* = *T. capicina m.*

Trichocerca *neeli* Edmondson, 1948 (MI lakeshore interstitial)
Trichocerca (*Diurella*) *porcellus* (*Diurella p.* Gosse, 1886) (NJ lake interstitial psammoxene)
Trichocerca (*Diurella*) *rattus* (*Trichoda r.* Muller, 1776) (NJ lake interstitial psammoxene)

Trichocerca *rousseleti* (*Coelopus r.* Voigt, 1901) (KS hyporheic)
Trichocerca undet. sp. or species (NY freshwater sandy beach interstitial; MN hyporheic)
Trichocerca (*Diurella*) *stylata* (*Diurella s.* Gosse, 1851) (NJ lake interstitial psammoxene)

Trichocerca (*Diurella*) *taurocephala* (*Diurella t.* Hauer) (MI lake beach sand interstitial; FL marine sands interstitial psammobiont; KS, VA hyporheic)

Trichocerca (*Diurella*) *tenuior* (*Diurella t.* Gosse, 1886) (NJ, WI lake beach sand interstitial psammophile; KS, VA hyporheic)

Trichocerca (*Diurella*) *tigris* (O.F. Muller, 1786) (*Diurella t.*) (MI interstitial; WI sandy lakeshore interstitial; MN beach & lake benthic; MI, NJ lake interstitial psammophile)

Trichocerca (*Diurella*) *tortuosa* (*Diurella t.* Myers, 1936) (NJ lake interstitial)
Trichocerca (*Diurella*) *uncinata* (*Diurella u.* Voigt, 1902) (NJ lake interstitial psammophile)
Trichocerca *wiszniewskii* Varga, 1938 (MI lakeshore interstitial)

Trichotria Bory De St. Vincent, 1927 - Brachionidae rotifers

Trichotria eukosmeta Myers, 1934 (NJ lake interstitial; NJ lake interstitial psammobiotic)

Trichotria tetractis (*Dinocharis t.* Ehrenberg, 1830) (MI, NJ, AB lake interstitial psammoxene; KS, OH hyporheic)

Trichotria tetractis var. *caudata* (Lucks) (NJ lake interstitial psammoxene)

Trichotria undet sp. (MN hyporheic)

Wierzejskiella Wiszniewski, 1934 - Dicranophoridae rotifers

Wierzejskiella velox = *Encentrum* (*W.*) v.

Wierzejskiella undet. sp. or species (interstitial in US sandy beaches & OH sandy hyporheic; OH psammobiotic & hyporheic)

Wolga Skorikov, 1903 - Brachionidae rotifers

Wolga spinifera (*Distyla s.* (Western, 1894)) Skorikov, 1908 KS hyporheic

Salamanders

Lizardlike amphibian of kingdom Animalia, phylum Chordata, subphylum Vertebrata, class Amphibia, Subclass Lepospondyli, order Caudata

Bibl.: C. Anderson, 1976; Anon. 1960; Barr 1953c; Clergue-Gazeau 1974, 1975; J. Cooper 1978; Cram & Anderson 1976; LaVal 1965a; Storage 1977; Swingle, 1922; Valentine 1964c; Vandel 1961; Wortham et al. 1977; Piatt 1935; Wake 1966 H. Fowler & Dunn 1917; Blair 1968; J. Davis 1956; Hilton 1947; Valentine 1964

Areas: **AL:** Knight 1969; Mount 1976; Valentine 1962; Penn 1940; Rosman 1964; **AR:** Crowell 1981; C. Smith 1960; Ireland & Altig 1983; McAllister & Fitzpatrick 1985; Thurow 1963; **AZ:** Duellman 1955; **CA:** Brode 1978; Funkhouser 1951; **CO:** Hammeson 1986; **CT:** Klemens 1991; **GA:** Vi8tt 1982; **HI:** McKeown 1996; **IA:** Clerge-Gazeau 1974; Bury 1971; **IL:** R. Olson 1956; Cagle 1942; H. Smith 1961; Rossman 1960; **IN:** Blanchard 1926; Hay, 1891; Reynolds 1937; Rubin 1968; Thurow 1963; **KS:** Collins 1974; H. Smith 1950; Ireland & Altig 1983; Tihen 1937; Thurow 1963; **KY:** Barbour 1971; Bishop 1926; Walston & Wilder 1977; Rafinesque, 1832a; Reagan 1974; Grant 1936; Weller 1930; **MD:** Cooper 1967; **MN:** Oldfield & Moriarty 1994; **MO:** T.R. Johnson 1977; P.W. Smith 1948; Hershey 1964; Hurter 1911; Ireland & Altig 1983; Kezer 1955; H. Marx 1958; Peters 1946, 1952; Thurow 1963; **MS:** Cliburn & Middleton 1983; **NC:** Eaton & Eaton 1956; Knight 1972; **NE:** Conant 1942a; **New England:** DeGraaf & Rudis 1983; **NY:** Bishop 1941a; Cooper 1962; **OH:** Seibert & Brandon 1960; H. Smith 1973; Cooper 1967; Duellman 1951; **OK:** Black 1973; Blair 1952; Dundee & Bragg 1950; Ireland & Altig 1983; Ortenburger 1930; Rudolph 1978; **Ozarks:** Besharse & Hollfield 1976; Saugey et al. 1988; C. Dowling 1956; Dundee 1958-9; **PA:** Cooper 1967; Mohr 1944; **TN:** A.F. Scott 1991; Malnate, 1891; Redmond 1985; Redmond & Scott 1996; C. Walker & Weller 1932; **TX:** J. Baker, 1956-7-b, 1960; Burt 1938; Chippendale 1991; Raun

1971; H. Smith & Buechner 1947; Strecker & Williams, 1927; Sweet 1978, 1979; Brame 1962; Chippindale & Hillis 1993; C Curtis & Tinkle 1952; Curtis 1951; Eaton 1956; Haurwitz 1993, 1997; Hurter 1906; Kellogg 1932; J. Larsen & Guthrie 1974; H. Marx 1958; Noble 1927; Price 1993; Raun 1986; Reddell, 1966. 1977; Reed 1920; Terent'ev 1965; R. Thomas 1974; Wake 1972, 1974; Wittstein-Westersheim 1922; Wheeler 1900; US: Bishop 1947; J. Cooper 1978; Cope, 1889; VA: Cooper 1962; Netting & Wilson 1940; Newman 1954; Clifford 1968, 1974; Cooper 1967; J. Fowler 1944; R. Hoffman & Kleinpeter 1948; Hutchison 1956; H. Marx 1958; West: Halliday 1959; World: Brame 1967. WV: Carey 1973; Clifford 1968; Cooper 1962; Green 1937, 1942, 1956; Green & Brant 1967; Netting 1936; Storage 1978. Brandon 1962; Cooper 1967

Albinism: Brame 1962.

Biology: Duellman & Trueb 1994

Competition - Rudolph 1978, 1979a

Conservation - Anon. 1989

Defense: Brodie 1973, 1977;

Evolution: T. Jones & Thompson 1993; Lombard & Wake 1976; Noble 1927; Ozeti & Wake 1969; Wake, Roth & Wake 1983;

Habitat effects on temperature: Fedfer & Lynch 1982;.

Habitat selection of pH - Mushinsky & Brodie 1975;

Metamorphosis- hlenhuth 1921; Wells, Wallen et al. 1954; Wilbur & Collins 1973; Wilder 1925

Morphologic adaptation - LaVal 1965, 1967;

Neoteny - Collins 1978; Pierce & Smith; Reese & Smith 1951

Osteology: J. Jarsen 1963

Oxygen consumption - McAllister & Fitzpatrick 1985;

Post larval changes - J. Moore 1900

Sound transmission - Hilton 1949;

Suborders

Ambystomatoidea (also as superfamily)

Ambystomatidae (mole salamanders) (*Ambystoma*) Tihen 1958,

Cryptobranchidae (hellbenders and giant salamanders) (*Cryptobranchus*)

Plethodontidae (*Aneides*, *Batrachoseps*, *Desmognathus*, *Dicamptodon*, *Ensatina*, *Gyrinophilus*, *Haideotriton*, *Hemidactylum*, *Hydromantes*, *Plethodon*, *Pseudotriton*, *Typhlomolge* /lungless salamanders)
Hemidactyliine

Bibl.: Eaton 1956; C. Dunn 1926; Hilton 1947; Noble 1927; Palunas 1989

Salamandroidea (also as superfamily)

Proteidae (= Necturidae) (Olms, mudpuppies, proteids, necturids, waterdogs) (*Necturus*)

Salamandridae (salamandrids, newts & salamanders) (*Notophthalmus*, *Taricha*, *Triturus*)

Sirenoidea (also as superfamily)

Sirenidae (sirens) (*Pseudobranchius*)

All Tb species, except *Gyrinophilus subterraneus*. & *Typhlotriton spelaeus*, are neotenic, retaining gills as adults so they can live permanently below water

Ambystoma Tschudi, 1838 (mole salamanders) (= *Rhyacosiredon*) Ambystomatidae salamanders (16 species in US or Canada)

Bibl.: J. Anderson & Graham 1967; Brandon 1961; Detwiler & Laurens 1921; Valentine & Dennis 1964

Ambystoma cingulatum Cope, 1868 (SC s. to sGA & nFL, w. to sAL, sMS/ flatwoods salamander/ TTx or Ac in FL)

Ambystoma gracile (*Siredon g.* Baird, 1859 "1857") (northwestern salamander/ seAK to CA/ Tx in OR, WA)

Ambystoma jeffersonianum (*Salamandra j.* Green, 1827) (Jefferson's salamander/s.Canada to sIN, VA, KY/ Pleist. in Worm Hole C.,WV/ TTx or Ac in KY,WV (2 caves))

Ambystoma maculatum (*Lacerta m.* Shaw, 1802) (spotted salamander/ Pleist. in Worm Hole (WV) C. & Pleist./Holocene in Cheek Bend C. (TN)/E to eTX,sGA,eIL & MI/ Tx in AR, OH, TN; Tx or Ac in IL, KY, MD, PA) **Bibl.:** Whiteford & Hutchinson 1962-3, 1965

Ambystoma macrodactylum Baird, 1849 (long-toed salamander/ sBC to cCA, e.to Alberta, ID, MT/ Tx in WA?)

Ambystoma opacum (Gravenhorst, 1807) (marbled salamanders/ Pleist. in Worm Hole C.,WV/ sNH to nFL,seTX, eIL, seMI epigean/ Tx in IL, NJ, OH; TTX in FL; TTx or Ac in KY, NJ)

Ambystoma talpoideum (*Salamandra t.* Holbrook, 1838) (SC to nFL w. to eTX, n. in MS Basin to seOK & sIL; disjunct in swNC & eTN/ mole salamander/ TTX or Ac in FL)

Ambystoma tigrinum mavortium Bard (Barred tiger salamanders/ neNE to extreme neWY epigean/ Tx or Tp in OK; Ac? in nCO(1 cave)) J. Black 1969,

Ambystoma tigrinum t. (*Salamandra t.* Green, 1825) (tiger salamander/AB to SK, s.to FL,Mex., absent in Appalachians, new England, Far West (may be *A. californiense* Gray, 1853 in CA)/ Pleistocene/ Holocene fossil & Tp or Tx in Cheek Bend C. (TN)/ Tx in KS, OK, eWA?/ G5 T&E in FL(S3)/ Tp in nFL, TX, NC & NY; TTx or Ac in CO, KY) **Bibl.:** Banta 1912; Beidleman 1954; Black 1969a; Tihen 1942

Ambystoma tigrinum melanosticum (*Siredon lichenoides m.* Baird, 1860) (sBC to cAB, se to sWY, nwNB epigean/ blotched tiger salamander/ Ttx in OR)

Aneides Baird, 1849 (climbing salamanders) Plethodontidae salamanders (5 species in US or Canada)

Aneides aeneus (*Plethodon a.* Cope & Packard, 1881) (type locality in Nickajack C. mouth, TN/ Appalachians from s.OH & swPA to n.AL & neMS/ arboreal, rock crevices/ Tx in TN; Ac or Tx in NC, VA (one cave), WV?/ green salamander/ NC T&E; GA T&E S2, TN T&E, G3G4 global rank) **Bibl.:** Gordon 1952; Gordon & Smith 1949, 1967

Aneides flavipunctatus (*f.*) (*Plethodon f.* Strauch, 1870) (black salamanders/ nwCA to extreme swOR/ Tx or Ac in CA; Ttx or Ac in sOR mine)

Aneides lagubris l. (*Salamanda l.* Hallowell, 1849) (arboreal salamanders/wCA to Baja/ Tx or Ac in CA)

Batrachoseps Bonaparte, 1841 (slender salamanders) Plethodontidae salamanders (8 species in US or Canada)

Batrachoseps attenuatus (*Salamandrina a.* Eschscholtz, 1833) (may incl. *B.r.*) (garden slender salamander/ seCA to Baja/ Tx or Ac in CA (Sierras))

Batrachoseps relictus Brame & Murray, 1968 (also incl. in *B.a.* or as subspecies of *B. pacificus* (*Hemidactylium p.* Cope, 1865)/sCA & nw Baja CA)) (wc, swCA & Great Valley & nwBaja CA) (Tx or Ac in CA)

Cryptobranchus Leuckart, 1821 (hellbender) Cryptobranchidae salamanders (1 species in US)

Cryptobranchus alleganiensis (Daudin, 1803) (swNY to nAL,TN, KY,GA, MO, NY, PA/ hellbender/ Pleistocene/Holocene fossil (prey item?) in Cheek Bend C. (TN) & Mammoth C., KY; Ttx or Ac in nAL (one cave))

Desmognathus Baird, 1850 (dusky salamanders; dusky and seal salamanders; seal salamanders) Plethodontidae salamanders (3 species in US or Canada) (11 species in US or Canada)

Desmognathus auriculatus (*Salamandra a.* Holbrook, 1838 (dusky salamander/ seSC s. to cFL, w.to seMS/Tx in TX; Ac in GA)

Desmognathus fuscus brimleyorum (*D.b.* Stejneger, 1895) (dusky salamander/ Ouachita Mts of swAR & seOK & in neTX/ Tx in TX). **Bibl.:** McCallister et al. 1995

Desmognathus fuscus conanti (*D.c.* Rossman, 1958) (spotted dusky salamander/ sIL,wTN,wSC to Gulf/ Tx or Ac in MS, PA, WV) **Bibl.:** Wood & Fitzmaurice 1948

Desmognathus fuscus f. (*S.f.* Green, 1818) Rafinesque northern spotted or dusky salamander/ seCanada to neLA, & nwSC, NC, GA/TTx or Ac in GA, KY(1cave), MS, NJ (1cave), TN(1cave); Tx in OH, WV, VA; Tx or Ac in PA/ IL T&E)

Desmognathus monticola monticola Dunn, 1816 (Appalachian Seal Salamander) (wPA sw to extreme wFL/ TTx or Ac in nFL, PA,WV(one cave), VA (2 caves))

Desmognathus ochrophaeus Cope, 1859 (mountain dusky salamander/w ofHudson R. in NY to ne GA & ne AL/ Tx in MD?, PA, VA(one cave?), WV)

Desmognathus quadramaculatus (*Salamandra quadra-maculata* Holbrook, 1840) eVA e.to Henry Co.,VA, s. to ne GA/Ac or Tx in TN(1cave)

Desmognathus undet. sp. (Ac in Walker Co., GA)

Dicamptodon Strauch, 1870 (giant salamanders) Plethodontidae salamanders (3 species in US or Canada)

Dicamptodon tenebrosus (Baird & Girard, 1852) (BC to nCA/ Pacific giant salamander/ TTx & Ac in n,cCA; Tx in sOR; surface hyporheic in WA, OR, nCA stream gravels)

Dicamptodon ensatus (Eschscholtz, 1833) (Pacific giant salamander/ Tx or Ac in CA (Santa Cruz Co., Sierras))

Ensatina Gray, 1850 (ensatina) Plethodontidae salamanders (1 species in US or Canada)

Ensatina eschscholtzi croceator (epigean interior mountains of Kern Co.,CA/ TTx in Crystal Cave, Tulare Co., CA/ yellow-blotched ensatina or salamander; small ensatina/ G5T2T3 S2S3)

Ensatina eschscholtzi e. Gray, 1850 (may incl. *Dicamptodon ensatus* (Triton e. Eschscholtz, 1833)) (ensatina/ sBC to sCA/TTp or Tx in cCA,OR, WA; Tx in CA) **Bibl.:** C. Brown 1970; Funkhouser 1950; Hetherington 1979; Rosenberg 1994

Ensatina eschscholtzi platensis (Jimenez de la Espada, 1875) ((Sierra Nevada Mts, e. of Great Valley/ California/ TTX or Ac in Sequoia Natl. Park)

Ensatina eschscholtzi xanthoptica Stebbins, 1949 (epigean in San Francisco Bay and opposite side of Great Valley in Sierran foothills/ yellow-eyed ensatina/ TTx in Calaveras Co., CA)

Eurycea Rafinesque, 1822 (brook salamanders) (see *Typhlomolge*) (11 species in US or Canada) **Bibl.:** J. Baker 1960c, 1961; Chippindale 1992; Mitchell & Reddell 1965; Mitchell & Smith 1972; Sweet 1977, 1978, 1978b, 1982, 1984

Eurycea bislineata b. (*Salamandra b.* Green, 1818) (two-lined salamander/seCanada to Gulf of Mexico/ Pleistocene/ Holocene fossil (Tx?) in Cheek Bend C. (TN); Tx in MS, WV; TTx or Ac in FL, KY, MD, NJ (2cave), NY(1 cave), PA, VA/ G5). **Bibl.:** Burns 1965. Mittleman 1942

Eurycea bislineata wilderae (= *E.w.* Dunn, 1926) (swVA & extreme wNC,eTN to nGA in sBlue Ridge Mts./ Ac or Tx in TN(1cave)/ Blue Ridge two-lined salamander) **Bibl.:** Rossman 1964

Eurycea chisholmensis Chippendale, Price, Wiens & Hillis, 2000 (type locality in Big Boiling (= Main, Salado, Sire) Sprs. & Robertson Springs at Salado, Bell County, TX/ Edwards Plateau spring or Chilsholm Trail or Salado Springssalamander/ G1)

Eurycea guttolineata Holbrook, 1838) (= *E.g. longicauda*) (VA sw to nwFL & w to MS R./three-lined salamander/Tx in MS, NJ; Tp in FL; Tx or Tp in Walker Co., GA; KY State T&E/ G5) **Bibl.:** Carlin 1997; R. Gordon 1953; A. Williams 1976

Eurycea latitans Smith & Potter, 1946 (= *E. neotenes* Wright & Wright, 1938; *E. neotenes latitans* Schmidt,1953; *E. neotenes* (in part)/ *E. tridentifera* Sweet, 1978, 1984) (a hybrid between *E. neotenes* & *E. tridentifera*) (Cascade Cavern(s) salamander/ type locality in Cascade C., Kendall Co., + Kerr & Comal Cos., TX/ Tb/ G3)

Eurycea longicauda guttolineata (*E. g.* Holbrook, 1838) = *E.g.*

Eurycea longicauda l. (*Salamandra l.* Green, 1818) (longtail(ed) or dark-sided salamander/ sNY & nNJ sw to nAL & w to sIL epigean / Pleistocene/Holocene fossil (Tp?) in Cheek Bend C., TN) Tp or Tx in AL, nFL, GA (Walker Co.), IL, KY, MD, MO, MS, NC, NJ, OK, TN, VA, WV; Tp in AR, MO, OH; Ttx in PA; Tx in TN(2c.)/ NC & NY Special Concern T&E; KS T&E/ G5) **Bibl.** Buhlmann 2000

Bibl.: J. Anderson & Martino 1967; Collins 1990; Franz 1964; Hutchison 1956; Mohr 1943, 1944; Franz & Harris 1965; Franz 1967, 1977; A. Williams 1976 ; Ireland 1979

Eurycea longicauda melanopleura (Cope, 1893) (dark sided salamander/mostly Ozarks in seKS, neOK, swAR, sMO/ Tp in AR (Stone Co.), IL; Tp or Tx in swMO) **Bibl.:** C. Smith 1964; Woolley 1969, 1981; Mittleman 1942

Eurycea lucifuga Rafinesque, 1822 *lucifuga* (cave salamander/limestone areas in s.Appalachians (nAL, neGA, swVA, seWV) to Ozark Plateau (nAR, sMO, neOK) & sIN, extreme sOH, swKS, central KY, sIL, extreme neMS & central TN/ Tp in AL (Colbert Co.), AR (Izard Co.), GA (Walker Co.), IL, IN, KY, MO, OK, PA?, swVA, WV; Tx in GA, IL, TN/ VA & KS Endangered T&E; OK T&E/ G5)

Eurycea lucifuga **Bibl.:** Barret & Benjamin 1977; Clergue-Gazeau & Thorn 1976; Cliburn & Middleton 1983; Cudmore & Rubin 1983; Dyer & Peck 1975; Fowler 1944; Green, Brant & Dowler 1968; Hutchison 1956a, 1958; Jaeger 1972; Krusling & Davis, 1992; Merkle 1967; Merkle & Guttman 1977; Middlefauf 1943; Myers 1958; Organ 1968; Peck 1974b; Peck & Richardson 1976; Phillips 1977; Rafinesque, 1822; Sinclair 1965; C. Smith 1964; D.D. Smith 1985; D.D. Smith, Balch & Castle 1985; Stone 1964; Strohlein & Christensen 1987; Valentine 1962; Walston & Wilder 1977, 1979; A.Williams 1976, 1980; Woods & Wake 1968; Woolley 1969, 1981; Burns 1965; Graham 1959; Meyers 1958; Minckley 1959; Reese & Smith 1951

Eurycea multiplicata griseogaster (Moore & Hughes, 1941) (graybelly salamander/seKS & eOK,nwAR, seMO/adult Tp in AR,OK/KS T&E) **Bibl.:** Ireland 1971; McAllister & Fitzpatrick 1985; McCallister & Trauth 1995; Putnam, 1832a; Tumlison, Cline & Zwank 1990; C. Dundee 1965;

Eurycea multiplicata m. (Spelerpes m. Cope, 1869) (epigean in ncAR, sw to seOK/ many-ribbed salamander/ TX in AR, OK/ G4) **Bibl.:** Banta & McAtee 1906.

Eurycea nana Bishop, 1941 = valid species (San Marcos salamander/ G1) or = *E. neotenes*

Eurycea naufragia Chippindale, Price, Wiens & Hillis, 2000 (type locality in Lake Georgetown. springs, possibly one cave & prob. Cowan Cr. drainage, all associated with drainages of the south, middle and north forks of the San Gabriel River, Williamson Co., TX/ Pb?/ Georgetown salamander) / G1)

Eurycea neotenes Bishop & Wright, 1937 (= *E. neotenes neotenes* Bishop & Wright, 1953; *C. neotenes latitans*, C. L.; *E. nana* Bishop, 1941- may be hybrid of *E. tridentifera* & *neotenes* according to Chippindale, 1995 (type locality cave in Bexar Co.,TX/ Bandera, Bandera, Blanco, Comal, Kendall, Real, Travis, Uvalde, Val Verde Cos., TX/ G3 or (less likely) G1; Federally threatened T & E (*E. nana*)/ Tb/ TX cave salamander; TX salamander)

Eurycea neotenes **Bibl.:** Bruce 1976; Kezer 1952a; Sever 1985; Smith & Potter 1946; Sweet 1977,1978a,1982,1984; B. Brown 1967

Eurycea porphyriticus = *Gyrinophilus p.*

Eurycea pterophila Burger, Smith & Potter, 1950 (= *E. neotenes pterophila* Schmidt, 1953) (Stream from Fern Bank Spr.+ other sprs. & 2 caves in Hays Co. / Blanco River Sprs. or fern bank Salamander/ Tp/ G2)

Eurycea quadridigitata (Salamandra q. Holbrook, 1842; *Manculus q.* Mittleman 1967) (SE to seOK, swAR/dwarf (four-toed) salamander/coastal plain from seNC to cFL & seTX/Tx or TTx in TX/ NC T&E/ G5)

Eurycea rathbuni & robusta (see *Typhlomolge*)

Eurycea sosorum P.T. Chippindale, A.H. Price, D.M. Hillis, 1993 (= *E. sosoensis*) (Barton Springs salamander/ Tp/Pb? In Barton Cr. watershed (Barton Springs Pool with nearby Eliza & Sunken Gardens Springs, Travis Co., TX/ G1/ Proposed T&E) **Bibl.:** Elliott 1996; Russell 1994; US Fish & Wildlife Service 1984a, 1992a; O'Donnell 1997

Eurycea undescr. sp.#1 (springs along Pedernales River, Blanco, Gillespie, seKimble Cos., TX/ Pedernales River spring salamander / G1)

Eurycea undescr. sp.#2 (*Comal Springs, Comal Co., TX/ Comal Springs salamander/ G1)

Eurycea undescr. sp.#3? ("Carson Cave group", caves and springs in Kerr, Bandera, Real, Edwards., nMedina, Uvalde, Kinney (prob.), Val Verde (likely) Cos., TX)

Eurycea undescr. sp. #4? (*?cave in Real Co.,TX)

Eurycea undescr. sp.#5? (may be part of sp. #3) (Murphy's Spr. & Sabinal Canyon Spr., Uvalde Co., TX/ Pb)

Eurycea tonkawai Chippendale, Price, Wiens & Hillis, 2000 (type locality in *Bull Cr. watershed from confluence with Lake Austin in Travis County upstream to its headwaters west of Jollyville in nc. Travis Co., possibly Brush Cr. watershed and nearby watersheds in Travis & Williamson Cos. (Cedar, Long Hollow, & Walnut Creeks)/ caves, springs and spring runs in Jollyville Plateau/ Jollyville Plateau salamander/ G1?) **Bibl.:** Chippendale, 1885; 1997; Cole 2000; S. Sweet 1978a

Eurycea tridentifera Mitchell & Reddell, 1965 (= *Typhlomolge t.* Wake, 1966) (type locality & 1 other cave in Comal Co. + cave each in Kendall & Bexar Co., TX/ w.Comal, n.Bexar, s.Kendall Cos.,TX/ Hon. Cr. Cave salamander; Comal blind salamander/ St, Tb) **Bibl.:** Sweet 1984,

Eurycea troglodytes Baker, 1957 (Val. Fa. Salamander/*cave type locality in Medina Co.,TX/ G1G2/St, ?extinct, last seen in 1985, recharge dam flooded cave/ G1, GX or (less likely) G3 (for *E. t.* complex) **Bibl.:** Reddell 1988

Eurycea tynerensis Moore & Hughes, 1939 (Oklahoma salamander/ swMO, nwAR, neOK/ Tx or adult Tp in AR, MO?,OK/ OK T&E G3 rank) **Bibl.:** Kezer 1952a; Tomlinson & Cline 1990;

Eurycea waterlooensis Hillis, Chamberlain, Wilcox & Chippindale, 2000 (type locality in Springs nr. Austin, Buttercup Cr. karst, Travis County, TX/ Pb?/ Austin blind salamander)

Gyrinophilus Cope, 1869 (spring salamanders; cave and spring salamanders; cave salamanders) Plethodontidae salamanders (4 species in US or Canada) **Bibl.:** McCrady 1954; Besharse & Holsinger 1977; Brandon 1962a, 1964, 1971; Bruce 1979; Cooper 1974; Cooper & C. 1970; J. Craig et al 1956; Grobman 1959; Martof & Rose 1962, Brandon 1967; Bruce 1979;.D. Craig et al. 1956; Mittleman & Jopson 1941; Valentine & Dennis 1964

Gyrinophilus danielsi d. = *G. porphyriticus d.*
Gyrinophilus duryi = *G.porphyriticus d.*

Gyrinophilus gulolineatus Brandon, 1965 (= *G. pallescens g.*) (**cave type locality in Roane Co. + cave in Grundy Co.,TN/ St/ TN T&E/ B. cave salamander) **Bibl.:** Godwin 1995; Yeatman & Miller 1985

Gyrinophilus lutescens (*Triturus l.* Rafinesque, 1832a) Mittleman, 1942 (n,e.KY/ Tx?)

Gyrinophilus pallescens gulolineatus = *G. g.*

Gyrinophilus palleucus necturoides Lazell & Brandon, 1962 or McCrady, 1954 (cave type locality in Grundy Co.,TN/ St/ Big-mouth cave salamander/TN T&E, G4G5T3T4) **Bibl.:** Brandon 1967

Gyrinophilus palleucus p. McCrady, 1954 (Tennessee cave salamander) (cave type locality in Franklin Co. + Marion & Jackson Cos.,scTN +neAL (Colbert, Jackson & Madison Cos.), nwGA (2 caves in Walker Co.,state listed T&E/ Irvingtonian Pleist.? in Hamilton C., WV)/ St?, Tb/ TN state amphibian & T&E, TN S2 G2G3) **Bibl.:** Buhlmann & Wynn 1991

Gyrinophilus palleucus Bibl.: Anon. 1984b, 1986a; Ashton 1986; Besharse & Brandon 1973; Brandon 1962, 1967a, 1971-a; Brandon et al. 1986; J.Cooper 1968; B. Miller 1994; Simmons 1976a; Yeatman 1967; Miller & Walther 1994

Gyrinophilus porphyriticus danielsi (Blatchley, 1901) (Blue Ridge Spr. Salamander/(Tx in high Smokies of NC, TN)

Gyrinophilus porphyriticus subterraneus = *G. s.*

Gyrinophilus porphyriticus duryi (Weller, 1930) (KY Spr. Salamander/swOH to extreme swVA/ Tp? in KY, VA, WV)

Gyrinophilus porphyriticus p. (*Salamandra p.* Green, 1827) (sME, adjacent Canada to AL, nGA, neMS/ TTx in AL, KY, MD, MS, PA, cTN, VA, WV; Tp in GA (Walker Co.) & WV; Tp or Tx in PA/ Northern Spr. Salamander/ KY endangered T&E; MA,PA Special Concern T&E)

Gyrinophilus porphyriticus **Bibl.:** Brandon 1967; Bruce 1972, 1978; Collazo & Marks 1994; Culver 1973; Brandon 1967

Gyrinophilus subterraneus Besharse & Holsinger, 1977 (= *G. porphyriticus s.*) (WV Spr. Salamander/ * cave type locality in Greenbrier Co.,sWV/St, Tb /VA Endangered T&E/ G1 or G1Q) **Bibl.:** Howard, Raesly et al. 1984

Haideotriton Carr, 1939 (Georgia blind salamander) Plethodontidae salamanders (1 species in US)

Haideotriton wallacei Carr 1939 (Georgia Blind Salamander) (well at Albany (Dougherty Co.) & cave each in Decatur & Walker Co.,swGA + seAL? & in several caves n. of Marianna, Jackson Co.,FL/ Pb/ GA state T&E, FL T&E S2 Species of Concern, global G2 rank). **Bibl.:** Brandon 1968; H. Harris 1968; D. Lee 1969a,c; Peck 1973a; Middlekauff 1943; Warren 1959

Hemidactylium Tschudi, 1838 (four-toed salamanders) Plethodontidae salamanders (1 species in US or Canada)

Hemidactylium scutatum (*Salamandra scutatum* Schlegel in Temminck & Schlegel, 1838) (Four-toed Salamander) (E to nwFL, se & neGA,nwSC & nwNC/ Tx in OH; Tx or Ac in WV

(one cave)) **Bibl.:** Green 1941

Hydromantes Gistel, 1848 (web-toed salamanders) Plethodontidae salamanders (3 species in US or Canada) **Bibl.:** Gorman 1955, 1964

Hydromantes brunus Gorman 1954 (Limestone Salamander) Lower Merced Canyon, Mariposa Co., CA/ Tx/ CA T&E Threatened G1S1, Federal Species of Concern) **Bibl.:** Gorman 1964

Hydromantes platycephalus (*Spelerpes p.* Camp 1916) (Mount Lyell Salamander) (high elev. Sierra Nevada Mts. from Sonora Pass s. to Sequoia Natl. Park, CA/Tx/CA T&E G3G4S2S3, Federal & CA Species of Concern) **Bibl.:** L. Adams 1942

Hydromantes shastae Gorman & Camp, 1953 (Shasta Salamander) (cave type locality in entrance to cave, Shasta Co., CA/ nCA near Shasta Reservoir headwaters, Shasta Co., CA/ Tx or Tp during dry weather /CA T&E G1G2, S1S2 Threatened, Federal Species of Concern). **Bibl.:** Wake et al. 1978; Bury 1971; Bury, Fellers & Ruth 1969; Honegger 1970

Manculus quadridigitatus = *Eurycea q.*

Necturus Rafinesque, 1819 (waterdogs & mudpuppies; mudpuppies; waterdogs) Proteidae salamanders (5 species in US or Canada)

Triturus Rafinesques, 1815 – Salamandridae salamanders sierra (Tx or Ac in Sierras, CA)

Necturus maculosus (*Siren m.* Rafinesque, 1818) (seManitoba to sPQ, s. to nGA, LA/ Pleistocene/Holocene fossil (prey item?) in Cheek Bend C. (TN)

Necturus undet. sp. (Rancholabrean extralimital n. in Arredondo Site, Alacua Col., FL; Tx or Ac in nAL? (one cave) **Bibl.:** Brandon 1969; Kingsbury 1905; Norris 1911

Notophthalmus Rafinesque, 1820 (eastern newts; North American newts; Eastern American salamanders) Salamandridae salamanders (3 species in US or Canada)

Notophthalmus undet. sp. (extralimital e. in Irvingtonian Fyllan C., TX),

Notophthalmus viridescens v. (*Triturus (N.)* v. Rafinesque, 1820) (Eastern Newt/ NS w. to Great Lakes, s to nw SC, cGA & AL/ Pleistocene/Holocene fossil (Tx?) in Cheek Bend C. (TN)/ TTx or Ac in KY, NJ, PA, WV (one cave); Tx in OH)

Plethodon Tschudi, 1838 (forest or woodland salamaders) Plethodontidae salamanders (27 species in US or Canada) **Bibl.:** Grobman, 1944; Hairston 1951; Highton 1956; Murphy 1917

Plethodon aeneus = *Aneides aeneus*

Plethodon albagula Grobman, 1944 (= *P. glutinosus a*) (Edwards Plateau, scTX/white-throated, light throat or western slimy salamander/ Tx in cTX)

Plethodon angusticlavius Grobman, 1944 (= *P. cinereus a.*) (red-backed salamander./Tx in AR; TX or Ac in MO). **Bibl.:** Highton 1997; Thurow 1963

Plethodon caddoensis Pope & Pope 1951 (now incl. in *P. glutinosus* group) (Caddo Mts of Montgomery & Polk Cos.,AR/ Caddo Mountain salamander/ Tx in mines in AR)

Plethodon cinereus angusticlavius = *P.a.*

Plethodon cinereus c. (*Salamandra c.* Green, 1818) Grobman (neUS & se.Canada/(eastern) redback or zig-zag salamander/ Tx or Ac in AR, IN, MD, eMO, NJ, OK, PA, VA, WV; Tx in OH; KY species of concern) **Bibl.:** J. Cooper 1956; Highton & Webster 1976; Lancaster 1994; Mohr 1952a; Wise 1995

Plethodon cinereus serratus = *P.s.*,
Plethodon dixi = *Typhlomolge wehrlei*

Plethodon dorsalis (*P. cinereus d.* Cope, 1889) (zigzag salamander/ IN, sIL,wNC to TN, nAL, neMS, Ozarks of AR, OK epigeal/ Pleistocene/Holocene fossil (Tx?) in Cheek Bend C, TN); Ttx in AL, AR, IL, IN, KY, MS, TN ; Ac in GA/NC T&E). **Bibl.:** B. Miller, et al. 1998; Thurow 1957

Plethodon glutinosus albagula = *P.a.*

Plethodon glutinosus g. (*Salamandra g.* Green, 1818) (slimy salamander/E, w.to IL, KY, TX/ Pleistocene/Holocene fossil (Tx or Tp) in Cheek Bend C., TN); Tx or Tp in AL, AR, GA, IN, IL, IN, KY, MD, MO, MS, NJ, OK, TN, TX, VA (or Ttx), WV (or Ttx); Ac or TTx in PA; Tp in AL; Tx in NC, OH, TN; Ttp or Ttx in FL, PA)

Plethodon glutinosus g. **Bibl.:** Highton 1956, 1962; Adler & Britton 1986; Brode & Gunther 1958; Gail 1993; Dawley 1984; Early 1974; Grover Humphries 1956; Jaeger 1972; Kerr 1968; Kuss 1985; Michael 1986; Moody 1993; Okey 1916; Peabody 1978; Peck 1974b; Pope & Fowler 1949; Powders 1967; Thurow 1951; Vernberg 1955; Wells & Gordon 1958; Varnedoe & Mohr 1959; Wilbur 1996

Plethodon glutinosus grobmani = *P.g.*

Plethodon glutinosus group (Tx in IN)

Plethodon grobmani Allen & Neill, 1949 (= *P. glutinosus grobmani*) (southeastern slimy salamander/ Tx in FL)

Plethodon hoffmani Highton, 1972 West Branch of Susquehanna River Valley in cPA, sw in Appalachians to New River, WV/ valley and ridge salamander/ Ttx or Ac in PA, WV, VA)

Plethodon larselli Burns, 1954 (Kentucky salamander) (now in Lower Columbia River gorge,

sWA (Skamania Co.) & nOR (Multnomah, Hood River Cos.) Larch Mountain salamander/ TTP in nOR, sWA(or Tp)/ State Candidate T&E in WA) **Bibl.:** Aubry et al. 1987; Herrington 1985; Herrington & Larsen 1985; Humphries 1956,

Plethodon longicrus Adler & Dennis, 1962 (incl. in *P. glutinosus* group) (Tx in NC) **Bibl.:** Martof 1977; Rubin 1969

Plethodon ouachitae Dunn & Heintze, 1933 (Ouachita Mts., Polk & Scott Cos.(swAR) & Latimer & LeFlore Cos.(seOK)/Rich Mt. salamander/Tx in OK/OK T&E) . **Bibl.:** C. Anthony 1995; Black 1974a; Black & Puckette 1974c; Kuss 1985

Plethodon petraeus Wynn, Highton & Jacobs, 1988 (P. Mt. salamander/ rare Tx in Walker Co., GA/ may be declining due to collecting) **Bibl.:** C. Camp 1985

Plethodon richmondi Netting & Mittleman, 1938 (=P.r.r.) (wPA to seIN,s.to nwNC, neTN/ ravine salamander/ migratory Tp or Tx in PA, WV; Tx in MD). **Bibl.:** Cooper 1962a; Duellman 1954; Cooper 1967

Plethodon serratus (*P. cinereus* s. Grobman, 1944) (= *P.cinereus* s.) (cLA, Ouachita Mts (AR, OK), MO, seTN & swNC/ southern redback salamander/ Tx in OK; Ac in Ga (Walker Co.) **Bibl.:** Buhlmann 2000

Plethodon welleri Walker, 1931 (Weller's salamander/ neTN,adjacent nwNC,VA/ Tx or Ac in IN). **Bibl.:** Thurow 1963

Plethodon wehrlei Fowler & Dunn, 1917 (swNY to ncNC, VA, w.to seOH & Letcher Co., KY/ Wehrle's salamander/ Tx & Tp (color/pattern phases restricted to certain caves) in VA (3 caves) & WV; Tx or Ac in PA/ NC T&E; KY T&E; TN T&E) **Bibl.:** J. Cooper 1962c

Pseudobranchius Gray, 1825 (dwarf sirens) Sirenidae salamanders (1 species in US)

Pseudobranchius robustus (robust dwarf siren/extinct Pleist. In late Rancholabrean Reddick I Site, (Marion Co.), Arrendondo Site, Alacua Co. & type locality in Haile (Rancholabrean) Site (A.Co.), FL)

Pseudotriton Tschudi, 1838 (red & mud salamanders; mud salamanders; red salamanders) Plethodontidae salamanders (2 species in US or Canada) **Bibl.:** Grobman 1959; Martof & Rose 1962; Mittleman 1942

Pseudotriton montanus diastictus (*P. d.* Bishop, 1941) (w. of Appalachians to sOH,seTN, Gulf Coast/ midland mud salamander/ Tp)

Pseudotriton montanus Baird, 1941 (coastal plain & Piedmont,sNJ to cFL,low elevations west of Appalachians from sOh to seTN)

Pseudotriton montanus diastictus Bishops, 1941 (type locality in Cascade Caverns, Carter Co., KY/ midland mud or red salamander/ epigean west fo Appalachians, s. to OH to sTN/ Tx or Ac

in KY)

Pseudotriton ruber (*Salamander r.* Latreille in Sonnini & Latreille, 1801) (NY to nwFL, w.to LA(not coastal plain)/northern red salamander/ Tx in AL, MS, WV; Ac in GA; Ttx or Ac in NJ (one cave)) **Bibl.:** Buhlmann 2000

Pseudotriton ruber r. (*P.r.* Latreille in Sonnini & Latreille, 1801) (Tx in TN; TTx or Ac in KY, MD, PA, TN, VA)

Pseudotriton ruber schencki (Brimley, 1912) (south of French Broad River in NC Blue Ridge Mts. To Smokies/ Blackchin red salamander/ Tx in Great Smokies, Blount Co.,TN)

Pseudotriton ruber vioscai Bishop, 1928 (sGA to seLA, n.to wTN/ southern red salamander/ TTx & Tx in MS)

Taricha Gray, 1850 (Western American salamanders; Pacific newts) Salamandridae salamanders (3 species in US or Canada)

Taricha granulosa (*Salamandra g.* Skilton, 1849) (epigean in NW coast from cCA to AK/ rough-skinned newt/ possible Ttx or Ac in Prince Albert Cave, Mt. St.Helens area, WA)

Taricha rivularis (*Triturus r.* Twitty, 1935) (nCA in Sonoma, Mendocino, Humboldt & DelNorte Cos./ red-bellied newt) (endogean, HTx in CA)

Taricha torosa (t.) (*Triton t.* Rathke, 1833) (Ca coast n. to nMendocino Co. + w.slopes of Sierras/ California newt/ epigean, Tx or Ac in CA)

Triturus sierrae (Tx or Ac in Sierras, CA)

Typhlomolge Stejneger, 1896 (Texas blind salamanders) Plethodontidae salamanders.. **Bibl.:** Chippindale 1992; Potter & Sweet 1981; Brandon 1970; Chippindale, Price et al. 2000 (place *Typhlomolge* as junior syn. of *Eurycea*).

Typhlomolge robusta (*Eurycea r.* Longley, 1978) Potter & Sweet 1981 (robust blind or Blanco blind salamander) (*river fissure, Hays Co.,TX/ last seen in 1948, may be extinct/ St/ G1 or GX). **Bibl.:** Anon. 1968a; Potter & Sweet 1981, 1984

Typhlomolge rathbuni Stejneger, 1896 (= *Eurycea r.* Mitchell & Reddell, 1965) (Frontis-piece C) (Texas blind salamander) (artesian well from San Marcos Pool & Purgatory Cr.,Hays Co.,+ Kendall & Comal Cos.,TX/ Pb/ Federally endangered T&E)

Typhlomolge rathbuni **Bibl.:** Bechler 1986; E.Benedict 1979; S.Bishop, 1947; Blackford, 1899; Eigenmann, 1900; Hilton, 1956; Hunsaker & Johnson, 1959; Kingsbury & R., 1909; Longley 1978a, 1978a; Norman, 1900; Platt, 1935; Potter & Sweet 1981, H.Reed, 1920; Sever 1985; L. Smith, 1920; Stejneger, 1892; Uhlenhuth, 1919, 1921-a; Eigenmann, 1899; Honegger 1968

Typhlomolge wehrlei (= *Plethodon dixi*) (Dixie C. salamander, *Dixie C., New Dixie & Blankenship C., Roanoke Co., VA). **Bibl.:** Cooper 1962a; J. Fowler 1951, 1952; Netting 1936; H. Fowler 1952; J. Fowler 1951; Fowler 1951;

Typhlotriton Stejneger, 1893 (grotto salamanders) Plethodontidae salamanders.
Typhlotriton braggi C. Smith, 1968 (subsumed in *Typhlotriton s.*)

Typhlotriton spelaeus Stejneger, 1892 (incl. *T. nereus* according to Brandon, 1970) (cave type locality in Barry Co., MO/Ozark Plateau in nAR (Baxter, Benton, Boone, Carroll, Fulton, Independence, Izard, Lawrence, Marion, Newton, Searcy, Sharp, Stone, WA, Cos.), eKS Cherokee Co.), sMO (Laclede, OR & Shannon Cos.) & neOK (Adair, Cherokee, DE, Ottawa Cos.)/ Tb/ KS T&E S1, MO State T&E Watch List, global G4G5 rank/ Ozark blind or grotto salamander)

Typhlotriton spelaeus Bibl.: Alt 1910; Besharse 1973; Besharse & Brandon 1974, 1974a; Besharse & Hollyfield 1976, 1977; Blair 1939; Brandon 1961, 1962b, 1967b, 1968a, 1971; Dyer 1975; Kezer 1952; Noble & Pope 1928; Potter 1963; Stone 1964-a,c; P. & Sweet 1981; Sweet 1964; Wilkens 1980; William 1975; Wratherred & Harvey 1971; Brandon 1970; C. Dodd 1980; Eigenmann 1900; Eigenmann & Denny 1909; Hilton 1909, 1945; Kezer 1952, 1955; Pyle 1964; L. Stone 196a,b

saltpetr - Fliermans & Schmidt, 1977; Hill, 1981, 1993; Hill, Eller, Fliermans & Hauer, 1983; Lewis, 1993

sanguivorous - Adj. for species which feed on blood. See flies, bats, mites.

saprophage - Scavenger feeding on dead organic material. Syn: saprogene.

saprophyte - Plant type which obtains its energy heterotrophically from dead organic matter. See fungi. Holoesaprophytes get all their carbon from dead organics. Hemisaprophytes use some inorganics for their carbon. Facultative saprophytes are saprophytes only for a certain period in their life cycle. Polysaprophytic species live in waters with high concentrations of decomposing organics. Oligosaprophytic species live in low organic mountain lakes and streams, and most cave waters.

saprotroph - Species which obtain most of their food by absorbing decaying organics. Plant saprotrophs are called saprophytes (syn.: saprobe, saprovore).

scaphopod - Any fossil macroinvertebrate, bottom-dwelling, marine univalve mollusk of the class Scaphopoda, with an elongate body surrounded by mantle & a tubular calcareous shell open at both ends.

Class Scaphopoda

Order Dentaliida

Dentaliidae (*Dentalium*)

Dentalium Linnaeus, 1758 – Dentaliidae scaphopod

Dentalium laqueatum A.E. Verrill, 1885 (reticulate tuskshell/ wFL Gulf of Mex. marine infauna)

Dentalium pilsbryi Rehder, 1942 (LA Gulf of Mex. marine infauna)

Dentalium texasianum Philippi, 1848 (Texas tuskshell/ wFL, TX Gulf of Mex. marine infauna)

scavenger - Detritivore that feeds on dead animal matter. Incl. coprophage, necrophage, saprophage.

Schiner-Racovitza System - Classification that divides species according to supposed ecologic dependency on caves. See terminology (bibl.)

schizomid - see whipscorpion.

sciaphilic - Referring to a taxon that prefers shaded habitat.

scorpion, sun or wind - see solifugid.

Scorpionflies & allies – See Mecoptera

Scorpions

Arthropod of Order Scorpiones (=Scorpionida) About 600 species. 4-9 cm. Body has a short prosoma with 6 pairs of limbs and a long opisthosoma divided into mesosoma and metasoma. The rear end of the opisthosoma (15-90 segments) can be moved in all directions. And the end of the opisthosoma is a telson modified to a venom gland with a sting. Small, pincer-like chelicerae and large, strong pedipalps usually with the last segment enlarged into large pincers.

Scorpions are predatory carnivores that feed on insects and spiders, capturing the prey with their pedipalps and killing them with their sting. Jawlike appendages near the mouth crush the prey, over which the scorpion then discharges a digestive fluid and sucks up the liquefied prey. Young scorpions are born alive and are then carried on the mother's body for a short time.

Few scorpions are dangerous to humans, and ordinarily they do not attack unless disturbed. The only species in the United States with a potentially fatal sting, *Centruroides sculpturatus*, is yellow to yellow brown with two black stripes on the back. They inject venom with a sharp sting at the end of their tails. The sting from most species produces pain and swelling. Serums are available to relieve the more severe symptoms. The *centruroides* scorpion is found in Arizona.

All scorpions fluoresce under UV light ("blacklight"). Longwave ultraviolet light is reflected as visible light in the green range. In darkness, the scorpions appear to glow. This fluorescence is caused by an unidentified substance in a very thin layer in the cuticle of the scorpion called the hyaline layer. Newly molted scorpions do not fluoresce. As the new cuticle hardens, the

fluorescent quality increases. This indicates that the fluorescent factor is either secreted by the scorpion shortly after molting or that the fluorescence is a by-product of the tanning process. Alcohol in which scorpions have been preserved may also fluoresce.

The hyaline layer of the cuticle is very tough stuff. It is often found in scorpion fossils. Even after hundreds of millions of years, while all the other layers of the cuticle have been lost, this hyaline layer remains embedded in fossil rocks and still fluoresces.

Kingdom Animalia

Clade Metazoa

Clade Eumetazoa

Clade Bilateria

Clade Protostomia

Clade Ecydsozoa

Phylum Arthropoda

Subphylum Chelicerata

Class Archnida

Subclass Cteidophora or Dromopoda

Order Scorpiones

Superfamily Buthoidea Simon, 1879

Buthidae Simon, 1879 (*Centruroides*, *Isometrus*),

Chactidae (*Superstitionia* (now in Superstitionidae)

Vaejovoidea Thorell, 1876

Superstitionidae Stahnke, 1940

Subfamily Superstitioninae Stahnke, 1940

Tribe Superstitionini (*Superstitionia*)

Vaejovidae Thorell, 1876 (undet. AC genus in Kartchner C., Coshise Co., AZ)

Subfamily Uroctoninae Mello-Leitao, 1934 (*Uroctonus*)

Subfamily Syntropinae (*Pseudouroctonus*)

Subfamily Vaejovinae Thorell, 1876

(*Serradigitus*, *Superstitionia* (now in Superstitionidae), *Vaejovis*)

Centruroides Marx in Howard, 1890 - Buthidae scorpions

Centruroides carolinensis = *Vaejovis c.*

Centruroides undet. sp. (6,000 year old fossil in Neotoma woodrat midden, Puerto Blanco Mts., Pima Co., sAZ/ 0 to 1,000 & 9,400 to 10,300 years BP in Neotoma woodrat nest in wTX (El Paso Co.) or sNM)

Centruroides vittatus Say, 1821 (Ac in TX)

Isometrus Hemprich & Ehrenberg, 1828 - Buthidae scorpions

Isometrus maculatus (DeGeer, 1778) (alien in HA/ lesser brown scorpion/ Tx or Ac in HA (one cave))

Pseudouroctonus Stahnke, 1974 - Vaejovidae, subfamily Syntropinae

Pseudouroctonus reddelli (*Uroctonus r.* Gertsch & Soledad, 1972) (type locality cave in Uvalde Co., & other caves & epigean in Balcones Fault Zone & Edwards Plateau, TX Hill Country, Williamson, Travis, Burnet, Real, Bandera, Bexar, Comal, Edwards, Hays, Kerr, Kimble, Medina, Uvalde, and Val Verde Cos., TX/ Tp). **Bibl.:** Stockwell 1986

Pseudouroctonus iviei (*Vaejovis i.* Gertsch & Soleglad, 1972) (Epigean in nCA (Sierra, Trinity, Placer, Butte, Eldorado, Plumas, Yuba, Shasta, Napa, Sonoma, and Mendocino Cos.) /Tp or Tx in El Dorado & Shasta Cos., CA)

Serradigitatus Stahnke, 1974 - Vaejovidae scorpions, subfamily Vaejovinae

***Serradigitatus gertschi* g.** (= *Vaejovis g.* Williams, 1968) (San Ysidro, San Diego County, south to San Ignacio, Baja California Sur, and islands of Gulf of California epigean/ Ep & Tx in cave in Calaveras & Tuolumne Cos.,CA)

Superstitionia Stahnke, 1940 - Superstitionidae scorpions, subfamily Superstitioninae

Superstitionia donensis (Stahnke, 1937) (TX/epigean, Tx or Ac)

Uroctonus Thorell, 1876 - Vaejovidae scorpions, subfamily Urctoninae

Uroctonus glimmei (Hjelle, 1972) (epigean Tx or Ac in cave in Shasta Co., CA)

Uroctonus grahami Gertsch & Soleglad, 1972 (*cave type locality in Shasta Co.,CA/ Tb)

Uroctonus mordax m. (= *U.m.* Thorell, 1876 (Klickitat Co., WA, s. to OR Coast Ranges and most of CA s. to Los Angeles County,CA epigean/mordant scorpion/Tp? in Amador, El Dorado, Mariposa & Tulare Cos.,CA)

Uroctonus sequoia = *Uroctonites s.*

Uroctonites Williams and Savary, 1991 - Vaejovidae scorpions, subfamily Urctoninae (4 species in US)

Uroctonites sequoia (*Uroctonus s.* Gertsch & Soleglad, 1972) (*cave type locality in Sequoia-Kings Canyon Natl. Park, Tulare Co., CA/ Tp)

Vaejovis C.L.Koch, 1836 - Vaejovidae scorpions, subfamily Vaejovinae

Vaejovis carolinensis (Palisot de Beauvois, 1805) (= *Vasejovis c.*) (Tx or Ac in TN)

Vaejovis gertschi = *Serrdigitus g.*; *Vaejovis iviei* = *Pseudourocturnis i.*; *Vaejovis reddelli* = *P. r.*

Vaejovis undet. sp. or species (Ac or Ttx in El Malpais Natl. Monument, nNM; fossil in Neotoma woodrat midden, Puerto Blanco Mts., Pima Co., sAZ; 13,500 years old in *Neotoma* nest, Ajo Mts., Pima Co., AZ))

Sea Cucumbers

(holothroids) Holothuroid echninoderms with a body like a cucumber & a flexible body wall. Elongated cylindrical bodies averaging 10-20 cm. (longest up to 2 m.). Mouth and anus are at opposite ends. Skin leathery and pliable with calcareous skeleton reduced to minute sclerites or spicules. About 1,100 known species. Creeps along the floor of submarine caves but no cavernicoles known.

Kingdom Animalia

Clade Metazoa

Clade Eumetazoa

Clade Bilateria

Clade Deuterostomia

Phylum Echinodermata

Subphylum Echinozoa

Class Holothuroidea

Subclass Apodacea

Order Apodida

Family Chirodotidae (*Chiridota*)

Family Synaptidae (*Leptosynapta*, *Taeniogyrus*)

Order Molpadiida

Family Caudinidae (*Paracaudina*)

Family Molpadiidae (*Eupyrgus*, *Molpadia*)

Subclass Aspidochirotacea

Order Aspidochirotida

Family Stichopodidae (*Parastichopus*)

Subclass Dendrochirotacea

Order Dendrochirotida

Family Cucumariidae

(*Cucumaria*, *Pentamera* (also put in Phyllophoridae), *Pseudocnus*,

Thyone,

Thyonella)

Family Phyllophoridae (*Havelockia*)

Family Psolidae (*Lissothuria*, *Psolus*)

Family Sclerodactylidae (*Eupentacta*, *Sclerodactyla*)

Chiridota Eschscholtz, 1829 - Chiridotidae sea cucumbers

Chiridota albatrossii Edwards, 1907 (BC marine infauna)

Chiridota laevis (O. Fabricius, 1780) (PQ Gulf of St. Lawrence sandy marine interstitial)

Chiridota undet. sp. (VA marine infauna)

Chiridota tuftsi (VA marine infauna)

Cucumaria Blainville, 1830 - Cucumariidae sea cucumbers

Cucumaria calcigera (WA marine benthic)

Cucumaria crucigera (WA marine benthic)

Cucumaria curata Cowles, 1907 (WA marine benthic)

Cucumaria fallax Ludwig, 1874 (WA marine benthic)

Cucumaria frondosa (Gunnerus, 1770) (NB, PEI, PQ Gulf of St. Lawrence sandy marine interstitial)

Cucumaria lissoplaca H.L. Clark, 1924 (WA marine benthic)

Cucumaria lubrica Clark, 1901 (WA marine benthic)

Cucumaria miniata (Brandt, 1835) (WA marine benthic)

***Cucumaria* (C.) pseudopopulifera** Deichmann, 1938 (WA marine benthic)

Cucumaria piperata Stimpson, 1864 (WA marine benthic)

***Cucumaria pseudocalcigera* (*Pentamera p.* Deichmann, 1938)** (WA marine benthic)

Cucumaria pseudocurata Deichmann, 1938 (WA marine benthic)

Cucumaria pulcherrima (VA marine benthic)

Cucumaria trachyplaca Clark, 1924 (WA marine benthic)

Eupentacta - Sclerodactylidae sea cucumbers

Eupentacta* (*Cucumaria*) *chronhjelmi (WA marine infauna)

Eupentacta pseudoquinquesemita Deichmann, 1938 (WA marine infauna)

Eupentacta quinquesemita (Selenka, 1867) (WA marine infauna)

Eupyrgus - Molpadiidae sea cucumbers

Eupyrgus scaber Lutken, 1857 (NB, PEI, PQ Gulf of St. Lawrence sandy marine interstitial)

Havelockia Pearson, 1903 - Phyllophoridae sea cucumbers

Havelockia benti (Deichmann, 1937) (WA marine infauna)

Havelockia scabra (Virginian marine infauna)

Leptosynapta Verrill, 1867 – Synaptidae sea cucumbers
Leptosynapta clarki Heding, 1928 (WA marine infauna)
Leptosynapta crassipatina H.L. Clark, 1924 Carolinian marine infauna)

Leptosynapta inhaerens (Carolinian, WA marine infauna)
Leptosynapta tenuis (MA, Carolinian, Virginian marine infauna)
Leptosynapta transgressor Heding, 1928 (WA marine infauna)

Lissothuria Verrill, 1867 - Psolidae sea cucumbers
Lissothuria nutriens (*Thyonepsolus nutriens*, Clark, 1901) (Ttx in CA sea caves)

Molpadia Risso, 1826 – Molpadidae sea cucumbers
Molpadia intermedia (WA marine infauna)

Paracaudina Heding, 1931 – Caudinidae sea cucumbers
Paracaudina chilensis (J. Mueller, 1850) (WA marine infauna)

Parastichopus Clark, 1922 - Stichopodidae sea cucumbers
Parastichopus californicus (*Stichopus californicus* Stimpson, 1857) (Ttx in CA sea caves)

Pentamera (also name for beetle genus) - Cucumariidae sea cucumbers (also put in Phyllophoridae)

Pentamera calcigera (Stimpson, 1851) (NB, PEI, PQ Gulf of St. Lawrence sandy marine interstitial)

Pentamera pseudopopulifera (AK marine infauna)
Pentamera pulcherrima (Virginian marine infauna)
Pentamera undet. sp. (Carolinian marine infauna)

Pseudocnus Panning, 1949 – Cucumariidae sea cucumbers
Pseudocnus undet. sp. (WA marine infauna)

Psolus Jaeger, 1833 - Psolidae sea cucumbers
Psolus chitinoides H.L. Clark, 1901 (WA marine infauna)

Psolus phantapus (Strussenfeldt, 1765 (NB, PEI, PQ Gulf of St. Lawrence sandy marine interstitial)

Sclerodactyla - Sclerodactylidae sea cucumbers
Sclerodactyla briareus (Carolinian marine infauna)

Taeniogyrus Semper, 1868 – Synaptidae sea cucumbers
Taeniogyrus undet. sp. (WA marine infauna)

Thyone Oken, 1815 - Cucumariidae sea cucumbers

Thyone briareus (NC marine infauna)

Thyonella - Cucumariidae sea cucumbers

Thyonella gemmata Purtales, 1852 (Carolinian marine infauna)

Sea Spiders

Pycnogonids, a class of marine arthropods with over 1,000 species.

Order Pantopoda

Family Ammotheidae (*Achelia*)

Family Nymphonidae (*Nymphon*)

Family Phoxichilidiidae (*Anoplodactylus*, *Phoxichilidium*)

Order Pycnogonida

Family Callipallenidae (*Callipallene*) (once in Pallenidae)

Family Pycnogonidae (*Pycnogonum*)

Achelia Hodge, 1864 - Ammotheidae sea spiders

Achelia chelata (CA, WA marine infauna)

Achelia sawayai (Carolinian marine infauna)

Achelia spinosa (Stimpson, 1853) (NB, PQ, PEI Gulf of St. Lawrence sandy marine interstitial)

Anoplodactylus Wilson, 1878 - Phoxichilidiidae sea spiders

Anoplodactylus erectus (WA, Virginian marine infauna)

Anoplodactylus petiolatus (Kroyer, 1844) (Virginian marine infauna)

Anoplodactylus viridintestinalis (WA marine infauna)

Callipallene Flynn, 1929 – Callipallenidae (once in Pallenidae) sea spiders

Callipallene brevirostris (Johnston, 1837) (MA, Carolinian & Virginian marine infauna)

Callipallene pacifica (WA marine infauna)

Nymphon Fabricius, 1794 - Nymphonidae sea spiders

Nymphon grossipes (O. Fabricius, 1780) (WA, Gulf of St. Lawrence (NB, PEI, PQ) sandy marine interstitial)

Nymphon pixellae (WA marine infauna)

Phoxichilidium Milne-Edwards, 1840 - Phoxichilidiidae sea spiders

Phoxichilidium femoratum (Rathke, 1799) (WA, Gulf of St. Lawrence (NB, PEI, PQ) sandy marine interstitial)

Pycnogonum Brunnich, 1764 – Pycnogonidae sea spiders
Pycnogonum undet. sp. (WA marine infauna)

sea lion - Pinniped **mammal** of family Otariidae.

Sea Slugs, Nudibranchs, and Allies

Phylum Mollusca

Class Gastropoda,

Subclass Heterobranchia (=Euthyneura)

Subclass, superorder or Cohort Opisthobranchia
(sea slugs, sea hares, sea butterflies, canoe shells, & others)

Order Acochlidioidea (= Acochlidiomorpha)

Asperspinidae (*Asperspina*, *Microhedyle*, *Unela*)
Microhedylidae (*Hedylopsis*)

Order Nudibranchia

Suborder Doridina or Doridoidea

Superfamily Anadoridoidea
Family Corambidae (*Doridella*)
Family Polyceratidae *Polycera*

Suborder Eolidioidea

Superfamily Cleioprocata
Family Aeolidiidae (*Aeolidia*)

Superfamily Acleioprocata
Family Pseudovermidae (*Pseudovermis*)

Suborder Doridoidea Odhner 1934

Superfamily Anadoridoidea

Tribe Non-Suctoria

Family Aegiretidae (now in Suborder Phanerobranchia)
Family Notodorididae (*Aegires*) (also put in Aegiretidae)

Superfamily (or Suborder) Doridacea
Family Kentrodorididae (*Jorunna*)

Superfamily Eudoridacea Odhner, 1934
Family Cadlinidae Bergh, 1891

Subfamily Cadlininae Bergh, 1878 (*Cadlina*) (now in Chromodorididae)

Family Chromodorididae (*Cadlina*)

Suborder or Superfamily Eueolidoidea
Facelinidae (*Cratena*)

Suborder Phanerobranchia
Superfamily Anadoridoidea
Family Aegiretidae (once in Suborder Doridoidea)

Aegires Leven, 1844 – Notodorididae nudibranch (once in Aegiretidae) (1 species in US or Canada)

Aegires albopunctatus MacFarland, 1905 (salt-and-pepper doris/ Ttx in Ca sea caves)

Aeolidia Cuvier, 1797- Aeolidiidae nudibranch (1 species in US or Canada)

Aeolidia papillosa (Linnaeus, 1761) (shag-rug aeolis/ ME sea cave)

Asperspina Rankin, 1979 - Asperspinidae sea slug

Asperspina riseri (Morse, 1976) = *Hedylopsis r.*

Cadlina Bergh, 1878 – Chromodorididae nudibranchs (once in Cadlinidae, subfamily Cadlininae) (9 species in US or Canada)

Cadlina limboughorum Lange, 1962 (Conrad Limboughs' nudibranch; yellow-edge cadlina) (OR sea caves)

Cadlina luteomarginata MacFarland, 1905 (WA marine infauna)

Facelinidae (*Cratena*)

Cratena Bergh, 1864 – Facelinidae nudibranch

Cratena pilata (Gould, 1870) (rare/ Virginian marine infauna)

Doridella Verrill, 1870 – Dorididae nudibranch

Doridella obscura A.E. Verrill, 1870 (Carolinian, Virginian, MA marine infauna)

Hedylopsis Thiele, 1931 – Microhedylidae sea slug (also put in Hedylopsidae) (1 species in US or Canada)

Hedylopsis riseri M.Morse, 1976 (ME marine interstitial)

Jorunna Bergh, 1876 - Kentrodozidae nudibranch (1 species in US or Canada)

Jorunna pardus D.W. Behrens & R. Henderson, 1981 (leopard spot nudibranch; leopard jorunna) (TTx in CA)

Polycera Cuver, 1817 – Polyceratidae nudibranchs

Polycera undet. sp. WA marine infauna

Pseudovermis Periaslavzeff, 1891 - Pseudovermidae nudibranch

Pseudovermis undet. sp. (ME marine interstitial)

Unela Marcus, 1953 – Microhedylidae sea slug (also put in Asperspinidae) (2 species in US or Canada)

Unela remanei Marcus, 1953 (sand slug/ FL, Mex., Brazil marine beach interstitial)

Sea Spiders - Phylum Pygogoniad (=Pantopoda)

Tanystylum Miers, 1879 - Tanystylidae

Tanystylum orbiculare (Virginian marine infauna)

Sea Stars - Echinoderm of class Stelleroidea and Class or Subclass Ophiuroidea (ophiuroids, brittle stars, serpent stars), with 5-20 arms. Includes brittle stars. Common in sea caves below the mid-tide mark.

Phylum Echinodermata

Class Stelleroidea

Subclass Asteroidea

Order Paxillosida

Suborder Cribellina

Porcellanasteridae (*Ctenodiscus*)

Order Platyasterida

Family Luidiidae (*Luidia*)

Order Forcipulatida

Suborder Asteriadina

Family Asteriidae (*Leptasterias*, *Asterias*, *Pisaster*, *Pycnopodia*)

Order Valvatida

Suborder Asteriadina

Asteropseidae (*Dermasterias*)

Suborder Granulosina

Family Goniasteridae (*Mediaster*)

Order Spinulosida
Suborder Eugnathina
Family Solasteridae (*Crossaster*, *Solaster*)

Class Ophiuroidea (or subclass of Stelleroidea)

Order Ophiurida
Suborder Chilophiurina
Family Ophiuridae (*Ophiopenia*, *Ophiura*)

Suborder Gnathophiurina
Family Amphiuridae
(*Amphiodia*, *Amphipholis*, *Amphiura*, *Axkiognathus*, *Diamphiodia*,
Dougaloplus,
Microphiopholis, *Micropholis*, *Ophiophragmus*, *Unioplus*)

Family Ophiactidae (*Hemipholis*, *Ophiactis*)

Family Ophiothricidae (*Ophiothrix*)

Amphiodia Varrill, 1899 - Amphiuridae sea stars

Amphiodia atra (rare Virginian marine infauna)

Amphiodia digitata Nielsen, 1932 (CA, WA marine infauna)

Amphiodia occidentalis (Lyman, 1960) (WA marine infauna)

Amphiodia periercta H.L. Clark, 1911 (WA marine infauna)

Amphiodia pulchella (Lyman, 1869) (wFL Gulf of Mex. marine infauna)

Amphiodia psara H.L. Clark, 1935 (WA marine infauna)

Amphiodia urtica (*Ophiophragmus u.* Lyman, 1860) (CA, WA marine infauna)

Amphipholis Ljungman, 1966 - Amphiuridae sea stars

@*Amphipholis macraspis* (WA marine infauna)

Amphipholis pugetana (Lyman, 1860) (AK, WA marine infauna)

Amphipholis squamata (Delle Chiaje, 1829) (WA, Carolinian marine infauna)

Amphipholis strongyloplax (H.L. Clark, 1911) (WA marine infauna)

Amphioplus Verrill, 1899 - Amphiuridae sea stars

Amphioplus abdita (FL Gulf of Mex. marine infauna)

@*Amphioplus cuneatus* (FL Gulf of Mex. marine infauna)

Amphioplus sepultus G. Hendler, 1995 (Carolinian marine infauna)

Amphioplus thrombodes (Carolinian, wFL Gulf of Mex. marine infauna)

Amphiura Forbes, 1843 - Amphiuridae sea stars

Amphiura carchara H.L. Clark, 1911 (WA marine infauna)

Asterias Linnaeus, 1758 - Asteriidae sea stars

Asterias forbesi (Desor, 1848) (MA marine infauna)

Asterias rubens Linne=, 1758 (NB, PEI, PQ Gulf of St. Lawrence sandy marine interstitial)

Axiognathus - Amphiuridae sea stars

Axiognathus pugetana (Lyman) s (OR marine infauna)

Crossaster Muller & Troschel, 1840 – Solasteridae sea stars

Crossaster papposus (*Solaster p.* Linnaeus, 1767 (WA marine infauna)

Ctenodiscus Mueller & Troschel, 1842 – Porcellanasteridae sea stars

Ctenodiscus crispatus (Retzius, 1805) (BC marine infauna)

Dermasterias Perrier, 1881 – Asteropseidae sea stars

Dermasterias imbricata (Grube, 1857) (WA marine infauna)

Diamphiodia - Amphiuridae sea stars

Diamphiodia craterodmeta (AK marine infauna)

Dougaloplus - Amphiuridae sea stars

Dougaloplus amphacanthus (McClendon, 1909)(sCA marine infauna)

Hemipholis – Ophiactidae sea stars

Hemipholis elongata (Say, 1825) (Carolinian, e,wFL, LA marine infauna)

Leptasterias Verrill, 1866 - Asteriidae sea stars

Leptasterias groelandica (Steenstrup, 1857) (NB, PQ Gulf of St. Lawrence sandy marine interstitial)

Leptosynapta Verrill, 1867 - Synaptidae sea stars

Leptosynapta albicans (Selenka, 1867) (CA marine infauna)

Leptosynapta inhaerens (MA, Russian marine infauna)

Leptasterias (*Leptasterias*) *tenera* (Stimpson, 1862) (PEI Gulf of St. Lawrence sandy marine interstitial)

Luidia - Luidiidae sea stars

Luidia foliolata (WA marine infauna)

Mediaster Stimpson, 1857 – Goniasteridae sea stars

Mediaster aequalis Stimpson, 1857 (WA marine infauna)

Microphiopholis – Amphiuridae sea stars

Microphiopholis atra (Stimpson)) (= *Micropholis a.*) (wFL Gulf of Mex., Carolinian, LA marine infauna)

Microphiopholis gracillima (Carolinian marine infauna)

Micropholis Thomas, 1966 - Amphiuridae sea stars

Micropholis atra = *Microphiopholis a.*

Micropholis gracillima (Stimpson, 1852) wFL Gulf of Mex. marine infauna)

Micropholis undescr. sp. (wFL Gulf of Mex. marine infauna)

Ophiactis Luetken, 1856 – Ophiactidae sea stars

Ophiactis rubropoda (Carolinian marine infauna)

Ophiopenia Luetken, 1855 - Ophiuridae sea stars

Ophiopenia disacantha Clark, 1911 (AK marine infauna)

Ophiopenia tetracantha Clark, 1911 (AK marine infauna)

Ophiophragmus - Ophiuridae sea stars

Ophiophragmus brachyatis (wFL Gulf of Mex. marine infauna)

Ophiophragmus filograneus (Lyman, 1875) (Carolinian, wFL Gulf of Mex. marine infauna)

Ophiophragmus pulcher H.L. Clark, 1918 (wFL Gulf of Mex. marine infauna)

Ophiophragmus wurdemanii (Lyman, 1860) (wFL Gulf of Mex., NC marine infauna)

Ophiothrix Mueller & Troschel, 1840 - Ophiothricidae sea star

Ophiothrix spiculata LeConte, 1851 (Ttx in CA sea caves)

Ophiura Lamarck, 1816 - Ophiuridae sea stars

Ophiura brevispina (Say, 1825) (OR marine infauna)

Ophiura luetkenii (Lyman, 1860) (CA, OR, WA marine infauna)

Ophiura robusta (Ayres, 1851) (NB, PEI, PQ Gulf of St. Lawrence, ME sandy marine interstitial)

Ophiura sarsi Lutken, 1855 (BC, ME, OR, WA marine infauna)

Solaster Forbes, 1839 – Solasteridae sea stars

Solaster stimpsoni Verrill, 1880 (WA marine infauna)

Unioplus - Amphiuridae sea stars

Unioplus micraspis (Clark) (AK, OR marine infauna)

Unioplus euryaspis (Clark) OR marine infauna)

Sea Urchins - Echinoderm with a globular shape & a covering of calcareous plates, commonly with sharp movable spines. Common in sea caves partly or fully submerged at low

tide.

Class Echinoidea (sea urchins & sand dollars)

Subclass Euechinoidea

Superorder Atelostomata

Order Spatangoida

Suborder Hemiasterina

Schizasteridae (*Moira*, *Brisaster*)

Superorder Echinacea

Order Arbacioida

Arbaciidae (*Arbacia*)

Order Echinoida

Family Strongylocentrotidae (*Strongylocentrotus*)

Superorder Gnathostomata

Order Glypeasteroida

Suborder Scutellina

Family Dendrasteridae (*Dendraster*)

Family Echinarachniidae

Family Mellitidae (*Mellita*)

Subclass Perischoechnoidea

Order Cidaroida

Family Cidaridae (*Eucidaris*)

Arbacia Gray, 1835 Arbaciidae sea urchins

Arbacia punctulata (Lamarck, 1816) (VA marine infauna)

Brisaster Gray, 1855 – Schizasteridae sea urchins

Brisaster latifrons (A. Agassiz, 1898) (WA marine infauna)

Dendraster Agassiz in Agassiz & Desor, 1847 - Dendrasteridae sea urchins

Dendraster excentricus (Escholtz, 1831) (WA marine infauna)

Echinarachnius Echinarachniidae sea urchins

Echinarachnius parma (Lamarck, 1816) (Virginian, Gulf of St. Lawrence (NB, PEI, PQ) sandy marine interstitial)

Eucidaris Pomel, 1883 - Cidaridae sea urchins

Eucidaris thouarsi (Valenciennes, 1846) (Ttx or Tp in CA sea caves)

Mellita L. Agassiz, 1841- Mellitidae sea urchins

Mellita fresnelii (Audouin) (NC marine infauna)

Mellita quinquesperforata (Leske, 1778) (LA, VA marine infauna)

Mellita tenuis Clark, 1940 (wFL Gulf of Mex. marine infauna)

Moiria Agassiz, 1872 – Schizasteridae sea urchins

Moiria atropos T.L. Erwin, 1983 (WA marine infauna)

Strongylocentrotus Brandt, 1835 - Strongylocentrotidae sea urchins

Strongylocentrotus droebachiensis (O.F. Muller) (AK, WA infauna; NB, PEI, PQ Gulf of St. Lawrence sandy marine interstitial)

Strongylocentrotus purpuratus (WA infauna)

Strongylocentrotus undet. sp. (Ttx or Tp in CA sea caves)

seal - Pinniped **mammal** of family Otariidae (eared seal, sea lion) & Phocidae (earless seal & true seal)

seasonality - See temporal

selection, (natural) - Nonrandom differential survival or reproduction of groups of organisms in successive generations. Incl. directional.

semelparous - Where most individuals of a species breed only once and then die.

semivoltine - Having two generations or brood every two years or seasons.

senses (see also feeding, regressive in evolution). Peck 1977

chemical feeding stimulants - Tierney & Atema 1986

chemoreceptors - Hodgson 1957; Peck 1976b

easthetasc sensilla - Tierney & Dunham 1984

eyes (see evolution) - Culver 1986, 1987; Parker, 1890; John 1957; Jones & Culver 1989; Noble & Pope 1928; Stone 1964a-c; Thompson 1967; Wells 1957, 1959; Wilkens 1980

light sensitivity - Maguire 1960-a; P. Wells 1952, 1957, 1959; P. Wells & C. Harris 1954; Welsh 1934

magnetic field - Phillips 1977

neuromast - Hill 1969

pheromonal (see reproduction) - Bechler 1986

taste - Hill 1969; Packard, 1889

touch - Bechler 1986; thigmotactic - Hill 1969; Tierney & Dunham 1984;

vibrations - Howarth, Hoch & Asche 1990

sensitive - T&E species of special concern. Incl. overall sensitive & those sensitive to pollution. See endangered (bibl.)

sensory - see senses, regressive evolution

sensu lato - Referring to the wide application in a taxon's name. Sensu strictu refers to a narrow interpretation.

Shannon-Wiener index of diversity - Ratio of number of species to their communal importance as in biomass, productivity, etc.

shrew - See mammal, shrew

Shrimp

Crustacean of Phylum Arthropoda, subphylum Chelicerata, Class Malacostraca, Subclass Eumalacostraca, Superorders Eucarida (Order Decapoda), Peracarida (Order Mysida) & Hoplocarida (Order Stomatopoda). Also a name for two suborders of macrurous crustaceans. Large, fringed pelopods adapted for swimming. Long and slender legs. Chelipeds may be present. Body is laterally compressed with a keel-shaped, serrated rostrum in many species. Most benthic but some pelagic. Larger species are often called prawns. For mussel & seed shrimps, see ostracod. Anchialine ones often control red color by expansion or contraction of chromatophores.

Shrimp Bibl.: Bouchard 1978, 1986; Hobbs III 1994a; Parry 1957; Cooper 1978.; Ortmann, 1892 ; Vandel 1964

Superorder Eucarida

Order Decapoda

Suborder Dendrobranchiata

Superfamily Penaeoidea

Penaeidae (*Panaeus*, *Trachypenaes*)

Superfamily Sergestoidea

Sergestidae (*Acetes*)

Suborder Pleocyemata (= Natantia) (see also crabs)

Infraorder Caridea (shrimps)

Superfamily Atyoidea

Atyidae (also placed in Oplophoroidea)

(*Antecaridina*, *Atyoida*, *Calathaemon*, *Halocaridina* *Palaemon*, *Palaemonias*)

Superfamily Alpheoidea

Alpheidae (*Alpheus*, *Automate*, *Eualus*, *Heptacarpus*, *Metabetaeus*)

Hippolytidae (*Calliasmata*, *Heptacarpus*, *Hippolyte*, *Latreutes*, *Tozeuma*)

Superfamily Crangonoidea

Crangonidae (*Crangon*, *Mesocrangon*, *Neocrangon*)

Superfamily Palaemonoidea

Palaemonidae (*Periclimenes*)

Subfamily Palaeomoninae (*Macrobrachium*, *Palaemonetes*, *Palaemon*)

Subfamily Pontoniinae (*Palaemonella*)

Superfamily Pandaloidea

Ogyrididae (*Ogyrides*, *Ogyris*)

Pandalidae (*Pandalus*)

Superfamily Pasiphaeidea

Pasiphaeidae (*Leptochela*, *Pasiphaea*)

Superfamily Procaridoidea

Procarididae

(*Antecaridina*, *Halocaridina* (both also put in Atyidae), *Procaris*, *Vetericaris*)

Superfamily Processoidea

Processidae (*Ambidexter*, *Processa*)

Infraorder Thalassinidea (mud and ghost shrimp)

Superfamily Thalassinidea

Axiidae (*Axiopsis*)

Callianassidae (*Neotrypaea*)

Subfamily Callianassinae (*Callianassa*)

Superorder Hoplocarida

Order Stomatopoda (mantis shrimp)

Suborder Unipeltata

Superfamily Squilloidea

Squillidae (*Squilla*)

Superorder Peracarida

Order Mysida (=Mysidacea) (mysids, Mysid or opossum shrimps)

Suborder Mysida

Stygiomysidae Caroli, 1933 (*Stygiomysis*)

Periclimenes Costa, 1844 – Palaemonidae shrimp

Periclimenes americanus (Kingsley, 1878) (American grass shrimp/ wFL Gulf of Mex. marine infauna)

Periclimenes longicaudatus (Stimpson, 1869) (longtail grass shrimp/ LA, wFL Gulf of Mex. marine infauna)

Alpheidae Rafinesque, 1815 (snapping shrimp) (*Automate*, *Eualus*, *Heptacarpus*, *Metabetaeus*)

Atyidae De Haan, 1849 (*Antecaridina* (also in Procarididae), *Atyoida*, *Calathaemon*, *Halocaridina* (once in Procarididae), *Palaemon*, *Palaemonetes* (put in Palaemonidae by Holthius 1952), *Palaemonias*) **Bibl:** Bouchard 1976); Hobbs, Hobbs, & Daniel 1977; Kemp 1912; Kingsley, 1899

Axiidae (*Axiopsis*)

Callianassidae (*Neotrypaea*)

Crangonidae (*Crangon*, *Mesocrangon*, *Neocrangon*)

Hippolytidae Dana, 1852 (*Calliasmata*, *Hippolyte*, *Latreutes*, *Tozeuma*)

Ogyrididae (*Ogyrides*, *Ogyris*)

Palaemonidae Rafinesque, 1815 (once put in Atyidae)

Subfamily Palaeomoninae (*Macrobrachium*, *Palaemonetes*, *Palaemon*)

Subfamily Pontoniinae (*Palaemonella*)

Pasiphaeidae (*Leptochela*, *Pasiphaea*)

Procarididae Dana, 1853 (*Antecaridina*, *Halocaridina* (both also put in Atyidae), *Procaris*, *Vetericaris*) **Areas:** **HI:** Holthius 1973; Maciolek 1983; **KY:** Bouvier 1925.

Processidae (*Ambidexter*, *Processa*)

Sergestidae (*Acetes*)

Squillidae (*Squilla*)

Stygiomysidae Caroli, 1933 (*Stygiomysis*)

Acetes H. Milne-Edwards, 1830 – Sergestidae shrimp

Acetes americanus Ortmann, 1893 (wFL Gulf of Mex. infauna)

Acetes carolinae Hansen, 1933 (Virginian marine infauna)

Alaocaris (see *Palaemonetes*)

Alpheus Weber, 1795 – Alpheidae shrimp

Alpheus armillatus Milne Edwards, 1837 (wFL Gulf of Mex. marine infauna)

Alpheus heterochaelis Say, 1818 (Virginian marine infauna)

Alpheus lobidens de Haan, 1850 (*A. crassimanus* Heller, 1862; *A. inopinatus* Holthuis & Gootlieb, 1958) (anchialine HI caves)

Alpheus normanni Kingsley, 1878 (Virginian marine infauna)

Ambidexter Chace, 1971 - Processidae crabs

Ambidexter symmetricus Manning & Chace, 1971 wFL Gulf of Mexico infauna)

Antecaridina Edmondson, 1935 - Procarididae shrimp (also put in Atyidae)

Antecaridina lauensis (Edmondson, 1935) (Maui, HI to Red Sea/ hypogean, anchialine caves/ Pb) **Bibl.:** Maciolek 1983; Maciolek & Brock 1974

Alpheus undet. sp. (wFL Gulf of Mex. marine infauna)

Atyoida Randall. 1840 - Atyidae shrimp

Atyoida bisulcata Randall. 1840 (anchialine pools in HA/'opae kala 'ole/G4S4)

Automate De Man, 1888 – Alpheidae shrimp

Automate undescr. sp. wFL Gulf of Mex. marine infauna)

Axiopsis Borradaile, 1903 – Axiidae shrimp

Axiopsis spinulicauda (Rathbun, 1902) (AK, WA marine infauna)

Calathaemon A.J. Bruce & J.W. Short, 1993 - Atyidae shrimp

Calathaemon holthuisi (Strenth, 1976) (Edwards Aquifer TX/Pb in cave in Hays Co.),

Calliasmata Holthius, 1973 - Hippolytidae shrimp

Calliasmata pholidota Holthius, 1973 (Egypt, Maui, HI/ hypogean, anchialine cave, Pb/ Federal Species of Concern; HI S2.2, global G2). **Bibl.:** Maciolek 1983, 1986

Callianassa Leach, 1814 - Callianassidae shrimp, Subfamily Callianassinae

Callianassa californiensis Dana, 1854 (OR marine infauna burrower)

Crangon Fabricius, 1798 (sand shrimp) Crangonidae shrimp]

Crangon alaskensis = *Neocrangon a.*

Crangon communis Rathbun, 1899 (WA marine infauna)

Crangon crangon (*Crago c.* Linnaeus, 1758; *C. vulgaris* Fabricius, 1758; *C. septemspinosus*?) (Europe, NA North Atlantic epigean/ MA marine infauna)

Crangon dalli Rathburn, 1902 (WA marine infauna)

Crangon franciscorum Stimpson, 1856 (WA marine infauna)

Crangon septemspinosa Say, 1818 (WA, Virginian (rare) marine infauna)

Eualus Thallwitz, 1892 – Hippolytidae shrimp

Eualus subtilis A. Carvacho & R. Olson, 1984 (WA marine infauna)

Eualus pusiolus (Kroyer, 1841) (WA marine infauna)

Halocaridina Holthuis, 1963 - Atyidae shrimp

Halocaridina palahemo Kensley & Williams, 1986 (*cave type locality in Big Island, HI/ anchialine St/Federal Species of Concern; HI S1.1, global S2)

Halocaridina rubra Holthius, 1973 (Maui, HI, Oahu/ 'opae ula/ hypogean, anchialine cave, Pb).

Bibl.: Bailey-Brock 1993

Heptacarpus Holmes, 1900 – Hippolytidae shrimp

Heptacarpus brevirostris (Dana, 1852) (WA marine infauna)

Heptacarpus stimpsoni Holthius, 1947 (CA marine infauna)

Heptacarpus flexus (Rathbun, 1902) (WA marine infauna)

Heptacarpus stimpsoni Holthuis, 1947 (WA marine infauna)

Hippolyte Leach, 1814 – Hippolytidae shrimp

Hippolyte clarki Chace, 1951 (WA marine infauna)

Hippolyte pleuracanthus Stimpson (Virginian marine infauna)

Hippolyte zostericola (Smith, 1873) (zostera shrimp/ FL Gulf of Mex. marine infauna)

Latreutes Stimpson, 1860 - Hippolytidae shrimp

Latreutes parvulus (Kingsley, 1878) (wFL Gulf of Mexico infauna)

Leptochela Stimpson, 1860 - Pasiphaeidae shrimp

Leptochela serratorbita Bate, 1888 (combclaw shrimp/ wFL Gulf of Mex. marine infauna)

Macrobrachium Bate, 1868 - Palaemonidae shrimp, Subfamily Palaemoninae

Macrobrachium carcinus (Linnaeus, 1758) (Costa Rica, Mex. & PR caves/ Tp in Marion & Putnam Cos.(FL) & Edwards Plateau (TX); pools fed by subterranean waters in St. Augustine & Silver Springs, FL /bigclaw river shrimp),

Macrobrachium grandimanus (Randall, 1840) (= *Palaemon* & *Bithynis* g.; *M. gracilimanus*) (HI anchialine pools, estuaries/ HI T&E S3?, global G3? rank/Hawaiian prawn; opae oeha'a)

Mesocrangon Zarenkov, 1965 – Crangonidae shrimp

Mesocrangon munitella (Walker, 1898) (AK, WA marine infauna)

Metabetaeus Borradaile, 1898 - Alpheidae shrimps

Metabetaeus lohena Banner & Banner, 1960 (*Cape Kinau, Maui, HI/ hypogean, anchialine

caves, Pb/ Federal T&E Species of Concern; HI S1.3, global G1 rank)

Neocrangon Zarenkov, 1965 - Crangonidae shrimp

Neocrangon alaskensis (= *Crangon a.* Lockington, 1877) (sCA, WA marine infauna)

Neotrypaea Manning & Felder, 1991 - Callianassidae shrimp

Neotrypaea californiensis (Dana, 1854) (AK, CA, WA marine infauna)

Neotrypaea gigas (Dana, 1852) (WA marine infauna)

Ogyrides Stebbing, 1914 - Ogyridae shrimp

Ogyrides alphaerostris (Kingsley, 1880) (GA, NC, Virginian, e,wFL marine infauna)

Ogyrides undescr. sp. (sCA marine infauna)

Ogyris Stimpson, 1860 -Ogyrididae shrimp

Ogyris alphaerostris = *Ogyrides a.*

Palaemon Weber, 1795 - Palaemonidae shrimp, Subfamily Palaemoninae. **Bibl.:** Ortmann, 1891

Palaemon debilis Dana, 1852 (pool at Makalawena, HI/Pb?/anchialine pool shrimp/G1S1.3)

Palaemonella Dana, 1852 - Palaemonidae shrimp, Subfamily Pontoninae

Palaemonella burnsi Holthuis, 1973 (Pool Group I, Cape Kinau (Maui) & Koloko Pond & other open coastal ponds on HI Island/HI T&E S3.3, global G1 rank)/Federal T&E Species of Concern/open ponds; Ac (probably) in anchialine pools) **Bibl.:** Maciolek 1983, 1986

Palaemonetes Heller, 1869 (= *Aleocaris*) Palaemonidae shrimp

Bibl.: Anon. 1980a; Fleming 1969); Hobbs,H.III & Daniel 1977); kezer & Bradbury 1952; Holthuis 1949, 1952); Strenth 1976); Collins & Strenth 1992

Palaemonetes (Alaocaris) antrorum Benedict, 1896 (artesian well & cave in Hays Co. +Bexar & Uvalde Cos.,TX/ Pb/ Balcones cave shrimp) Neher 1902); Strenth 1991; S.& Longley 1990

Palaemonetes (Palaemonetes) cummingi Chace, 1954 ** (cave type locality in Alachua Co. & cave in Jackson Co., Aucilla-Suwannee hydrologic subregion, ncFL/T&E/ FL or Squirrel Chimney Cave Shrimp) **Bibl.:** Dobkin 1971; Dobkin & Manning 1964); USFWS 1990

Palaemonetes (Alaocaris) holthuisi Strenth, 1976 (A.h.) (*cave type locality in Hays Co., TX/ Pb/ Purgatory cave shrimp)

Palaemonetes (Palaemonetes) paludosus (Gibbes, 1850) (Tx & stygoxene in Leon Co.,FL/ riverine grass shrimp)

Palaemonetes pugio Holthuis, 1949 (NC marine infauna)

Palaemonetes undescr.? sp. (Silver Spr.,FL/Pb?)

Palaemonetes texanus Strenth, 1976 (San Marcos River in San Marcos, TX/ Pb/ Texas river shrimp)

Palaemonias Hay, 1901 - Atyidae shrimp, Subfamily Palaeomoninae. **Bibl.:** Cooper & Cooper 1974

Palaemonias alabamiae Smalley, 1961 (type locality (extirpated?) & four other caves (total of three cave systems) in Madison Co. & cave in Jackson Co., AL/ Alabama cave or atyid shrimp, federal T&E) **Bibl.:** Cooper & C. 1964; C. 1975; Hartfield 1990; Jacobson & Hartfield 1997; USFWS 1988a,e; Cooper 1989

Palaemonias ganteri Hay, 1901 (Kentucky cave or Mammoth Cave s.) (Roaring R. & Golden Triangle area in Mammoth-Flint Ridge System, Edmonson & Hart Cos., KY/ Federal T&E) *Palaemonias ganteri* **Bibl.:** Leitheuser 1984; Lisowski 1979, 1982, 1983, Lisowski et al. 1982-6); Norkin 1980; USFWS 1983, 1988; Fage 1932; Fage 1931; Hay 1902; Stroh 1998

Pandalus Leach, 1814 – Pandalidae shrimp

Pandalus jordani Rathbun, 1902 (WA marine infauna)

Panaeus – Panaeidae shrimp

Panaeus duorarum (pink shrimp/ wFL Gulf of Mex. marine infauna)

Pasiphaea Savigny, 1816 - Pasiphaeidae shrimp

Pasiphaea pacifica Rathbun, 1902 (WA marine infauna)

Procaris Holthuis, 1973 - Procarididae shrimp

Procaris hawaiana Holthuis, 1973 (Cape Kinau (Maui) & Lua o Palehemo (HI), HI/ hypogeal, anchialine cave & pools, Pp/ Federal Species of Concern; HI S1.2, global G2) **Bibl.:** Maciolek 1983, 1986; Kensley & Williams 1986

Processa Leach, 1815 – Processidae shrimp

Processa hemphilli Manning & Chace, 1971 wFL Gulf of Mex. marine infauna)

Processa bermudensis (Rankin, 1900) (wFL Gulf of Mex. marine infauna)

Squilla Fabricius, 1793 - Squillidae shrimp

Squilla empusa Say, 1818 (mantis shrimp/ Virginian (rare), MA, RI infauna)

Stygiomysis Caroli, 1933 - Stygiomysidae mysid shrimp

Stygiomysis undet. sp. (FL?/ Pb?)

Tozeuma Stimpson, 1860 – Hippolytidae shrimp

Tozeuma carolinense Kingsley, 1878 (wFL Gulf of Mexico infauna)

Trachypenaeus Alcock, 1901 – Penaeidae shrimp

Trachypenaeus constrictus (Stimpson, 1871) (roughneck shrimp/ wFL Gulf of Mex. marine infauna)

Vetericaris Kensley & Williams, 1986 - Procarididae shrimp

Vetericaris chaceorum Kensley & Williams, 1986 (*cave type locality in Big Island, HI/ anchialine/ hypogeal St/Federal Species of Concern; HI S1.1, global G1)

sibling species - Closely related species often with a common ancestor. Identical or nearly identical in form but are reproductively isolated. See speciation. **Bibl.:** Laing, Carmody, & Peck 1976

sideswimmer - Syn: amphipod.

Silverfish, Bristletails & Allies

Paraphyletic, rather primitive wingless insects in Superclass Hexapoda, Class Insecta, Superorder Thysanura

Subclass Apterygota, Order (sometimes Subclass) Archaeognatha (=Thysanura in part; Microcoryphia, Micro-coryphia) (jumping bristletails; bristletails)

Subclass Dicondylia, Infraclass Thysanura, Order Zygentoma (three-pronged bristletails or bristletails, silverfish, firebrats; silverfish & allies) (= Thysanura)

Both subclasses once considered a part of Order Thysanura and monophyletic Entognatha (see springtails, proturans & diplurans).

Archaeognatha (Microcoryphians) (= (jumping) bristletails) are differentiated from Zygentoma by having contiguous (touching) eyes. They are considered the most primitive of true insects. The name Microcoryphia derives from the Greek micro, “small,” and coryphia, “head,” and refers to the primitive type of head (the mandible moves vertically on the head and is equivalent to the swing of a walking leg). May once have been a link between Apterygota (mainly wingless insects) and Pterygota (mainly winged insects) but are now a secondarily highly specialized group of soil insects. Flightless insects 10-12 mm. Long; body soft, with flexible integument; white, gray or yellowish gray to brown; body somewhat flattened, with pigmented scales. With externally visible mouth parts. Large compound eyes (ocelli present) meet dorsally. Thorax strongly arched. Unlike the thysanurans, the ommatidium is primitive, resembling that of springtails, with only a single-layered retina and other details. Abdominal segments 2 through 9 with ventral styles and 1 through 7 usually with one or two pairs of exsertile vesicles. Immature stages resemble the adult with no noticeable external metamorphosis. Long thin antennae with as many as, or > 30 segments. Abdomen with 11 segments usually ending in three 'tails' (two cerci and a telson). >720 species worldwide, 20 species in 12 genera in the US and Canada.

Bibl.: N. Banks 1879b; Mendes 1994; A. Packard 1873a; Remington 1954; Wygodzinsky 1961, 1972

Bristletails hide day in crevices and under bark. They feed at night on algae, lichens and plant debris. They commonly occur at seashores above the high water mark or in other rocky areas especially at dusk.

All members of the Order Zygentoma (=Thysanura) have a 2-20 mm. Long teardrop/carrot/fish-shaped body and get their common name of bristletail because of the 3 long, bristlelike or taillike appendages on the posterior/rear end of their body. The body is soft, with flexible integument. The body shape is flattened or convex, with or without scales. Compound eyes are small or absent. They never meet dorsally. Also unlike Microcoryphia, the jaws have an advanced structure. Ocelli are absent except in one family. Antennae are short to nearly as long as the body, with many segments. Abdomens have short styli on segments 2 through 9 but are sometimes absent on some segments. The median apical abdominal filament is usually only slightly longer than the lateral cerci. Color is white, gray, brown, or ground color. Silverfish is a common name for species of this group whose bodies are covered with silvery scales. Those in Zygentoma without silvery scales are usually called firebrats or three-pronged bristletails. About 320 species have been recorded with 18 species and 12 genera in the United States and Canada.

The silverfish female lays about 1-3 eggs per day, placing them in cracks, under objects, or left exposed. During its lifetime, Silverfish females may lay over 100 eggs which commonly hatch in three to six weeks. Developmental time (egg to adult) is 3-4 months under favorable conditions (72-80° F (22-27° C) and 75-97% RH), but may require up to 2-3 years otherwise. Young silverfish and firebrats resemble adults except being smaller, white and take on the adult color in four to six weeks. Adults may live two to eight years. Firebrats lay about 50 eggs at one time in several batches. Eggs hatch in about two weeks under ideal conditions. Silverfish and firebrats, depending on the species, may reach maturity in three to twenty-four months.

Order Microcoryphina (jumping bristletails; bristletails)

Superfamily Machiloidea

Machilidae (jumping bristletails) (*Machilus*; *Machilinus* (now in Meinertellidae),
Mesomachilis, *Neomachilis*, *Pedetontus*, undet. genus or genera (CA, sON/Tx or Ac)
Bibl.: Sturm & Bach 1992

Meinertellidae (rock bristletails) (*Machilinus* (also put in Machilidae))

Order Zygentoma (three-pronged bristletails, silverfish, firebrats; silverfish & allies)

Superfamily Lepismatoidea

Labidostommatidae (or in Labidostommatoidea (=Nicoletiellidae by some authors)
(*Lapidostomma*, *Nicoletiella*: once put in Nicoletiellidae))

Lepismatidae (silverfish & firebrats) (*Allocrotelsa*, *Prolepismina*)
Bibl.: Wygodzinsky 1972

Lepidotrichidae (=Lepistatidae?) (forest silverfish)

Bibl.: Paclt 1967; Wygodzinsky 1961 (undet. Tx genus in AZ)

Nicoletiidae (subterranean silverfish) (= Labidostommatidae by some authors)
(*Battigrassiella*, *Nicoletia*, *Texoreddellia* (subfamliy Cubacubaninae); undescr.
genus in

*cave in Ward Co.,TX/ Tb) **Bibl.:** Paclt 1963; Riddell 1994; Wygodzinsky 1963

Allocrotelsa Silvestri, 1935 (= *Stachisma* Wygodzinsky) Lepismatidae (silverfish & firebrats) of
order Zygentoma (1 species in US or Canada)

Allocrotelsa spinulata (*Lepisma s.* Packard, 1873) (epigean in TN, SC, FL, AR, OK, TX, AZ,
CA, WA, OR/ Tx in Marshall Bat Cave, Val Verde co., TX)

Battigrassiella Paclt, 1963 (= *Grassiella* Silvestri, 1912 (Homo.) Nicoletiidae silverfish
Battigrassiella undet. sp. (?Tx in cave in Val Verde Co., TX)

Grassiella = *Battigrassiella*

Lapidostoma Kramer, 1879 - Labidostommatidae bristletails

Lapidostoma undet. sp. (Tx or Tp in Van Buren Co.,TN)

Machilinus Silvestri 1905 - Meinertellidae microcoryphians (once in Machilidae) (2 species in
US or Canada)

Machilinus undet. sp.(Ac in El Malpais Natl. Monument, nNM)

Machilis Latreille, 1806 (genus not known from NA according to Wygodzinsky & Schmidt,
1980)

Machilidae bristletails (microcoryphians) (1 species in US or Canada)

Machilis cavernicola (*Triura c.* Tellkamp, 1844) (likely not a valid species) (*?Mammoth
C.,KY/Tp, Tb or Tx)

Machilis strenua Silvestri = *Mesomachilis s.*

Machilis variabilis Say, 1821 prob. = *Pedetontus*

Mesomachilis Silvestri, 1911 - Machilidae bristletails (microcoryphians) (5 species in US or
Canada)

Mesomachilis strenua (*Machilis s.* Silvestri, 1911)(CA epigean/ Tx in IL?, nMS)

Neomachilis Silvestri, 1911 - Machilidae microcoryphians (1 species in continental US or
Canada)

Neomachilis undet. sp. (Tx? in HI)

Nicoletia Gervais, 1842 - Nicoletiidae thysanurans (2-4 species in US or Canada)

Nicoletia meinerti Silvestri, 1905 (alien Tx in HI)

Nicoletia undescr. sp. #1 (AL?,GA/Tp or Tb), poss. sp.#2 (Kartchner C.,AZ/Tp)

Nicoletia undet. sp. or species (Kartchner C. (AZ/Tb or Ed); AL/Tp,Ed; HI/alien Tp; Ac or Tx in KY(Mammoth C.))

Nicoletia texensis = ***Texoreddellia t.***

Nicoletiella R. Canestrini, 1882 - Nicoletiidae silverfish

Nicoletiella undet. sp. or species (Tx, fungivore in Tuolumne Co.,CA; Ac in El Malpais Natl. Monument, nNM))

Pedetontus Silvestri, 1911 (described as subgenus of *Petrobius* Leach, 1809) - Machilidae bristletails (1 species in US & Canada)

Pedetontus saltator Wygodzinsky & Schmidt, 1980 (MA, CT, NJ, PA epigeal/ Tx in IN(prob.), OH, TN(prob.); Tx or Tp in cave in Skagit Co.,WA (or undescr. sp.))

Prolepismina Silvestri, 1940 - Lepismatidae silverfish

Prolepismina undet. sp. (?Ac in cave in Val Verde Co., TX)

Texoreddellia Wygodzinsky, 1973 - Nicoletiidae thysanuran silverfish, subfamily Cubacubaninae (1 species in US or Canada)

Texoreddellia texensis (= *Nicoletia t.* Ulrich, 1902; *N. wheeleri* Silvestri, 1905) W.1973 (type locality cave in Hays Co.,TX/ Tb in Edward's Plateau & cTX(Bexar, Comal, Edwards, Hays, Kendall, Kinney, Mason, Medina, Menard, Pecos, Real, San Saba, Terrell, Travis, Uvalde, Val Verde, Williamson Cos., TX)/ G3)

Similarity Index - A measure of how similar two communities are species wise.

Simpson Index - An index of biodiversity based on the probability of randomly choosing two different species.

Siphonoptera - See flea.

sister groups - The twin result of cladogenesis. They are grouped as the same taxon rank, such as two lineages formed by the splitting of a single parent taxon.

skink - See Lizard.

skunk - See mammal

slime molds - See fungi

slime, cave - Small white to off-white, brown or red, fairly circular dots up to 3 cm wide in cold caves but can cover large areas & be up to half an inch thick; algae-like, gelatinous, or with water beads. Mostly bacteria, especially actinomycetes, but can include fungi & amorphous minerals. Streptomyces may be symbiotic with Fusarium. Sometimes is silvery reflective & has concentric bands of color, like lichens. Fed upon by fungus gnats (OR C.(NM) & Lava Beds (CA)) & crane flies (HI Volcanoes Natl Park). Doesn't flake off like moonmilk. Syn: wall fungus.

slime mold - See fungi.

Slugs (See also snail)

Shellless gastropod of order Stylommatophora, Subclass Euthyneura (=Pulmonata)

Bibl.: Crawford 1976e; Fullington 1978. Areas: NE: Chichester & Getz 1973.

Slugs use their muscular foot located on the ventral surface for locomotion. Slugs have two sets of tentacles. The upper, longer pair are optic tentacles with eyes located on the end. The lower tentacles are sensory organs and are shorter than the optic tentacles. Inside the mouth, which is ventral and caudal to the sensory tentacles, is a radula, a feeding organ present in many mollusks. The radula is a belt of as many as 27,000 teeth pointed toward the back of the mouth, which slides back and forth to “chew” plant material and help move material toward the back of the throat. The odontophore, which has muscle and cartilage, functions to support the radula. The mantle covers the front of the back beginning at the back of the head. The mantle is important in snails because it secretes the shell, and it is thought to provide some protection for slugs. The hole found on the right side of the mantle is called the pneumostome, and is a breathing hole. The slug is able to open and close the pneumostome. Other holes under the mantle are the genital opening and the anus.

A slug's coating of slime absorbs water, keeping them moist. Slime also protects the slug-so well that it can crawl unharmed along the edge of a razor blade. Slime probably also has a scent that helps slugs find other slugs. Slugs hermaphroditic (each slug contains organs of both sexes), live from one to six years. Slugs help decompose organic material, disperses seeds and spores, and excretes a nitrogen-rich fertilizer.

Infraorder Aulacopoda

Order Stylommatophora

Suborder Signurethra

Superfamily Arionacea (incl. Endodontacea)

Arionidae (*Hemphillia*)

Ariolimacinae (*Ariolimax*)

Arioninae (*Arion*)

Anadeninae (*Prophysaon*)

Philomycidae (*Megapallifera*, *Pallifera*, *Philomycus*, *Phyllomycus*)

Limacidae (*Deroceras*, *Limax*)

Ariolimax Morch, 1860- Arionidae slugs, Subfamily Ariolimacinae (3 species in US or Canada)

Ariolimax (*Ariolimax*) *columbianus* (Gould, 1851) (epigean in OR, CA, WA, BC, swAK/ TTx in CA, OR, WA/ Pacific bananslug)

Arion Fe'russac, 1819 - Arionidae slugs, Subfamily Arioninae (10 species in US or Canada)

Arion fasciatus Nillson in part, 1822 (= *A. circumscriptus* Johnston, 1828; *Limax* f.; *Arion hortensis* in part Binney, 1851; *A. fuscus* Muller, Smith & Prime, 1870) (Ac or Tx in sON; Tx in Frenchmen's cave, NS/ orange banded arion)

Deroceras Rafinesque, 1820 - Limacidae slugs (6 species in US or Canada)

Deroceras (*Derocerus*) *laeve* (Muller, 1774) (NE, MW, ON epigean/ Tx or Ac in sON/ meadow or marsh slugs)

Deroceras laeve gracile (Rafinesque, 1820) (Tx in MO & Frenchmen's Cave, NS/ meadow or marsh slug)

Deroceras (*Agriolimax*) *reticulatum* (Muller, 1774) (nEuropean/Tx or Ac alien in nON/ field grayslug)

Hemphillia Bland & Binney, 1872 (7 species in US or Canada)

Hemphillia camelus Pilsbry & Vanatta, 1897 (NW/ pale jumping slug/ Tx in MW)

Limax Linnaeus, 1758 - Limacidae slugs (4 species in US or Canada)

Limax (*Limax*) *maximus* Linnaeus, 1758 (sMW, SE/ n,cEurope/ giant gardenslug/ Tx or Ac alien in TN)

Limax undet. sp. (Tx in IN)

Megapallifera Hubricht, 1956 - Philomycidae slugs (3 species in US or Canada)

Megapallifera mutabilis (*Pallifera m.* Hubricht, 1951; *Mesodon pallifera*?) (changeable mantleslug) (**Mesodon p.* in Nameless Cave, Crawford Co., MO/Tp, classification uncertain),

Megapallifera ragsdalei (*Eumelus wetherbyi* r. Webb, 1951 or 1950; *Pallifera r. & mutabilis*) (nwAR, swIL, s,eMO, eOK/ Ttx? in AR,IL,OK; Tp? in MO,talus,cliff/ Ozark mantleslug) **Bibl.:** Hubricht 1976

Megapallifera undet. sp. (Ttx or Ac in Carter Co., MO)

Pallifera Morse, 1864 (mantled slugs) - Philomycidae slugs (10 species in US or Canada)

Pallifera secreta Cockerell, 1900 (Ac or TTx in KY/severed mantleslug) & undet. sp. (MO/Tp)

Philomycus Rafinesque, 1820 - Philomycidae slugs (8 species in US or Canada)

Philomycus carolinianus (Bosc(.), 1802) (E/Tx in MO, OK/ Carolina mantleslug)

Philomycus togatus (*Limax t.* Gould, 1841) Hubricht, 1968 (NE (except New England) to ON/Tx or Ac in ON/ toga mantleslug)

Prophysaon Bland & Binney, 1973 - Arionidae slugs (9 species in US or Canada)

Prophysaon* (*Prophysaon*) *andersoni (J.G. Cooper, 1872) (reticulate taildropper/T x in CA, OR, WA)

Snails

(see also **Slugs** (Shelless Stylommatophora) and **Abalone**

Order Archaeogastropoda (=Vetigastropoda))

Class Gastropoda

Subclass Euthyneura (=Pulmonata)).

About 35,000 species, all hermaphrodite, gill replaced by vascular network ("lung) in mantle cavity, a few freshwater species have secondary gills), operculum usually absent.

Often endemic & abundant in CaCO₃ areas because of much calcium for shells. Many species secrete enzymes that dissolve arthropod exoskeletons. A few fossils (Bogan & Grady 1991) but most are extant:

Bibl.: A.H. Clark 1970; Coan 1986; Crawford 1976e; Hubricht 1985, Hershler 1990, Hershler & Holsinger; Morton 1979; Thompson 1976; Vaught 1989.

Areas **AK:** Dall 1910; Roth & Sattler, 1991; **AR:** Hinkley 1915; **AL:** Archer 1941; Bogan & Pierson 1993; Clench 1974; Clench & Turner 1956; Hubricht 1965; Stein 1976; B. Walker 1906, 1928; **CA:** Roth & Reynolds 1990; Smith 1957; D. Taylor 1966, 1981; Ingram 1946, 1948-9; **Canada:** Clarke 1981; East: Burch 1962; Burch & Van Devender 1980; Hubricht 1985; Morrison 1949; **FL:** Clench & Turner 1956; Franz, Lee & Stifel 1971; F.G. Thompson 1984; Morrison 1951; F. Thompson 1976; **GA:** Brook, Keferl & Nickmann 1988; Clench & Turner 1956; **IL:** F. Baker 1939; **HI:** T. Miller 1989; Cowie, Evenhuis & Christensen 1995; Cowie 1997; **IN:** Goodrich 1944; J. Lewis 1992; **KY:** Bickel 1967; Branson 1970; Hubricht 1968, 1968a-b; Goodrich 1937; **MI:** Berry 1943; Goodrich & van der Schalie 1939; Winslow 1926; **MO:** Hubricht; Hinkley 1915; Pilsbry & Ferris 1906; Wu et al. 1997; Richards 1980; **NA:** Burch 1979, 1982; K. Brown 1991; W. Miller et al. 1984 Pilsbry 1939-48; Turgeon 1988; **NM:** Metcalf 1970; D. Taylor 1987; **NY:** Harman & Berg 1971; **OK:** Hinkley 1915; Webb 1955; **OR:** Henderson 1929, 1936a; **PA:** Dearolf 1938; **SC:** Mazyck 1913; Wood 1982; **SE:** Hubricht 1960; SW: Pilsbry & Ferris 1906; **TN:** Hubricht 1968a; **TX:** Fullington 1978; Hubricht, 1940a; Murray & Roy 1968; Strecker 1935; B. Wallace 1918; Cheatum & Fullington 1971, 1973; Pilsbry & Ferris 1906; Pilsbry 1900; **UT:** Chamberln & Jones 1929; **US:** Burch 1982a; **VA:** Morrison 1939, 1943; **WA:** Henderson 1929, 1936a; West: Henderson 1924, 1936; D. Taylor 1975; **WI:** Baker 1928; **WV:** MacMillan 1949.

Gastropod clades incl.

Order Heterostropha or Valvatida –

Superfamily Acteonoidea

Superfamily Pyramidelloidea

Pyramidellidae (*Boonea*, *Eulimastoma*, *Fargoa*, *Odostomia*, *Petitilla*, *Pyramidella*, *Sayella*, *Turbonilla*)

Superfamily Valvatoidea (also put in Order Mesogastropoda)

Valvatidae (*Valvata*)

Eogastropoda (incl. true **limpets** or Patellogastropoda and their extinct coiled ancestors)
Orthogastropoda (Vetigastropoda, Neritopsina, Caenogastropoda, Heterobranchia (incl. Pulmonates and opisthobranchs))

Subclass Euthyneura

Order Archaeogastropoda (=Archeoplumonata, Aspidobranchia, Diotocardia)
(see **Abalone**)

Carychiidae (now in Basommatophorea)

Ellobiidae (once in order Bassamatophora)

Basommatophora (or superorder) (= Subclass Pulmonata)

(One pair of nonretractable tentacles, and an eye near each tentacle base)

Superfamily Ancyloidea

Ancylidae (*Laevape*)

Superfamily Auriculoidea

Carychiidae (also put in Archaeogastropoda) (*Carychium*) (once in Ellobiidae)

Superfamily Camenoidea

Megomphicidae (put in Order Stylommatophora)

Superfamily Cerithioidea

Thiaridae - now in Order Neotaenioglossa

Superfamily Corbiloidea

Cyrenidae(see **Clams**)

Sphaeriidae (see **Clams**)

Vitrinidae – now in Stylommatophora

Ellobiidae - now in Archaeopulmonata

Superfamily Lymnaeoidea

Lymnaeidae

Subfamily Lymnaeinae (*Fossaria*, *Lymnaea*, *Stagnicola*)

Superfamily Physacidae

Physidae (also put in Order Neotaenioglossa) (*Aplexa*, *Physa*, *Physella*)

Superfamily Planorbacea

Ancylidae (now in Superfamily Ancyloidea)

Planorbidae (also put in Order Neotaenioglossa)

Planorbinae

Planorbini: *Gyraulus*, *Ferrissia* (now in Ancyloidea)

Helisomini: *Helisoma*, *Menetus*, *Micromenetus*, *Planorbella*

Helisomini: *Promenetus*

Order Neritimorpha (also subsumed in Archaeogastropoda)

Superfamily Helicinoidea

Helicinidae (once in Order Archaeogastropoda) (*Helicina*, *Hendersonia*,
Oligyra)

Superfamily Neritoidea

Neritidae (once in Order Archaeogastropoda)

Neritiliinae (*Neritilia*)

Order Stylommatophora (land snails) (= Geophila in part) (incl. Arionidae (see slug))

(Two pairs of retractable tentacles with upper pair eyed at tips)

(many authors now drop superfamilies or use order endings)

Humboldtianidae (*Humboldtiana*) (once Helminthoglyptidae or Xanthonychidae)

Vertiginidae

Superfamily Camenoidea

Megomphicidae

Megomphicinae (=Ammonitellidae) (*Ammonitella* (also put in
Thysanophoridae),

Glyptostoma, *Megomphix*)

Suborder Heterurethra

Succineidae (now in Aulacopoda)

Suborder Aulacopoda (or infraorder)(see also **Slugs**)

Superfamily Arionoidea

Discidae (*Anguispira*, *Discus* (both once put in Endodontidae)),
Nematodiscus

(also put in Endodontidae), *Speleodiscoides*)

Endodontidae (*Anguispira*, *Discus* (both now in Discidae), *Helicodiscus*

(once in Helicodiscidae), *Nematodiscus* (now in Discidae),

(*Speleodiscoides*) (also put in Helicodiscidae)

Helicodiscidae (or in Helicinoidea) (see Endodontidae)
(*Helicodiscus*, *Speleodiscoides* (now in Discidae))

Philomycidae (see **Slugs**)
Punctidae (*Punctum*)

Superfamily Limacacea (also put in Suborder Sigmurethra)
Limacidae (*Deroceras*, *Limax* (see **Slugs**), *Nesovitrea*
(now in Vitrinidae or Zonitidae))

Zonitidae),
Paravitrea,
in
Vitrinidae (now includes Zonitidae according to some authors)
(*Gastrodonta*, *Glyphyalina* *Hawaiiia* *Mesomphix* (last 3 retained in
Mesovitrea, *Nesovitrea* (last 2 retained in Zonitidae), *Ogaridiscus*,
Pristiloma (but retained in Zonitidae), *Speleodiscoides* (once put in in
Helicodiscidae & Endodontidae, now in Discidae) *Ventridens* (retained
Zonitidae) *Vitrea*, *Zonites*, *Zonitoides*)

Zonitidae (subsumed in Vitrinidae by some authors)
Gastrodonta, *Glyphyalinia*, *Hawaiiia*, *Mesovitrea*, *Nosovitrea*,
Ogaridiscus,
Paravitrea *Pristiloma*, *Speleodiscoides* (now in Discidae), *Ventridens*,
Vitrea)

Subfamily Zonitinae
Tribe Zonitini (*Zonitoides*)

Superfamily Succineacea
Succineidae (once in Suborder Heterurethra, also put in **Slugs**)
(*Catinella*, *Novisuccinea*, *Succinea*)

Suborder Mesurethra
Infraorder Holopodopes

Superfamily Achatinacea
Achatinidae (*Euglandina* (once also put in Oleacinidae, now in Spiraxidae)
Spiraxidae (*Euglandina*) (once put in Oleacinidae & Achatinidae)

Superfamily Bulimulacea
Buliminidae (once subsumed in Hydrobiidae)
(*Bulimulus* (once in Orthalicidae), *Horatia*, *Rabdotus*)

Urocoptidae (also put in Suborder Sigmurethra) (*Holospira*)

Superfamily Rhytidacea

Haplotrematidae (also put in Suborder Sigmurethra, Infraorder Holopodopes)
(green snails) (*Haplotrema*)

Suborder Orthurethra

Superfamily Cionellacea

Amastriidae (*Leptachatina*)

Cionellidae (*Cionella Cochlicopa*) (both put in Hydrobidae)

Superfamily Pupillacea

Pupillidae (*Chaenaxis*, *Columnella*, *Gastrocoptinae*, *Gastrocopta*,
Pupillinae,
Pupilla, *Pupisoma*, *Pupoides*, *Vertigo*)

Valloniidae (*Vallonia*)

Suborder Sigmurethra

Superfamily Limacacea (put in Suborder Aulacopoda)

Infraorder or Suborder Holopoda

Superfamily Helicoidea

Bradybaenidae (*Monadenia*)

Helminthoglyptidae (also put in Camaenacea & Helicacea)
(*Lyrodes*, *Helminthoglypta*, *Humboldtiana* (now in
Humboldtianidae),
Monadenia (now in Bradybaenidae), *Sonorella*)

Oreohelicidae (*Oreohelix* (also put in Thysanophoridae))

Polygyridae

Subfamily Polygyrinae

(*Allogona*, *Daedalochila*, *Euchemotrema*, *Mesodon*, *Millerelix*,
Neohelix,
Patera, *Polygyra*, *Stenotrema*, *Trilobopsis*)

Tribe Vespericonini Emberton, 1994 (*Vespericola*) (coiled
snails)

Superfamily Camaenacea

Helminthoglyptidae (now in Helicoidea)

Superfamily Helicacea

Helicidae (*Helix*, *Trichia*)

Helminthoglyptidae (now in Helicoidea)

Xanthonychidae (*Humboldtiana* (now in Humboldtianidae), *Lyrodes*,
Monadenia (now in Bradybaenidae), *Helminthoglypta* (now in
Helminthoglyptidae), *Sonorella* (now in Helminthoglyptidae))

Superfamily Oleacinacea
Oleacinidae (*Euglandina* (now in Spiraxidae))

Subclass Opisthobranchia

Order Archaeopulmonata

Superfamily Ellobioidea

Ellobiidae (once in order Basommatophora)

Order Cephalaspidea (= Bullomorpha)

Superfamily Acteonoidea

Acteonidae (*Acteon*, *Rictaxis*)

Actinidae

(also put in Order Heterostropha & Order Opisthobranchia, Suborder
Cephalaspidea) (*Acteon*)

Bullidae (*Bulla*)

Haminoeidae (*Haminoea*)

Philinidae (*Philine*)

Superfamily Philinoidea

Aglajidae (aglajids) (*Melanochlamys*)

Cylichnidae (*Acteocina*, *Cylichnella*, *Cylichna*, *Tornatina*)

Retusidae (*Retusa*)

Subclass Prosobranchia

Order Mesogastropoda (also put in Subclass Streptoneura)

Superfamily Calyptraeacea (now in Order Neotaenioglossa)

Family Calyptraeidae (now in Order Neotaenioglossa)

Subclass Streptoneura

Order Architaenioglossa (= Mesogastropoda in part)

Superfamily Viviparacea

Viviparidae (also put in Order Neotaenioglossa) (*Cameloma*)

Superfamily Polygyracea (put in Order Stylommatophora)

Polygyridae, Thysanophoridae (both in Order Stylommatophora)

Order Ctenobranchiata (radula is a transverse row of 7 teeth)

Amnicolidae (now in Superfamily Trucatelloidea, Hydrobidae)

Order Mesogastropoda (=Ctenobranchiata) (=Architaenioiglossa & Neotaenioiglossa)
(also put in Subclass Prosobranchia)

Superfamily Calyptraeacea (now in Order Neotaenioiglossa)
Family Calyptraeidae (*Crepidula*)

Superfamily Naticoidea
Naticidae (*Polinices*, *Cryptonatica*, *Neverita*,
undet.genus in LA brackish beach sediment)

Superfamily Littorinoidea
Littorinidae (now in Order Neotaenioiglossa)

Order or Suborder Neogastropoda (radula has a transverse row of 3 teeth)

Superfamily Conoidea
Conidae (*Pyrgocyathara*, *Kurtzia*, *Kurtziella*)
Turridae (*Crassispira*, *Pyrgospira*)

Superfamily Muricoidea (=Muricacea)
Cystiscidae (*Granulina*)

Columbellidae (also put Order Caenogastropoda, Superfamily Buccinacea)
(*Anachis*, *Astyris*, *Parvanachis*)

Nassariidae (*Nassarius*)

Melongenidae (also put in Superfamily Buccinacea)
(*Buscon*, *Busycotypus*, *Melongena*)

Muricidae (also put in order Stenoglossa) (*Acanthina*, *Eupelura*, *Thais*,
Urosalpinx)
Olividae (*Oliva*)

Superfamily Volutacea
Marginellidae (*Marginella*, *Prunum*)

Order Neotaenioiglossa

Superfamily Epitonioidae
Epitoniidae (*Epitonium*)

Superfamily Cerithiacea
Pleuroceridae (once put in order Mesogastropoda)
(*Elimia*, *Goniobasis*, *Leptoxis*, *Lithasia*, *Pleurocera*)

Superfamily Littorinacea

Littorinidae (also placed in Superfamily Littorinoidea under order Mesogastropoda)
(undet.genus in LA brackish beach sediment; *Littorina*, *Nodilittorina*)

Superfamily Physacea
Physidae (put in Basommatophora)

Superfamily Planorbacea
Planorbidae (put in order Basammatophora)

Superfamily Polygyracea (put in Order Architaenioglossa)

Superfamily Rissoacea
Pomatiopsidae (once placed in order Mesogastropoda) (*Pomatiopsis*)
Rissoidae (*Alvania*, *Rissonia*, *Schwartziella*)

Thiaridae (once placed in orders Mesogastropoda & Basommatophora)
(*Melanoides*, *Tarebia*)

Superfamily Trucatelloidea
Hydrobiidae (*Onobops*, *Gilla*, *Heleobops*, *Hydrobia*, *Lartetia*, *Littoridinops*,
Texadina, *Texapyrgus*)

Amnicolinae (*Amnicola*, *Dasyscias*, *Hauffenia*, *Horatia*, *Lyogyrus*). Undescr.

Pb

genera & sp. in cave in Econfinia Basin, nwFL.

Cochliopinae (*Antroseletes*) (also in Littoridininae), *Cionella*, *Cochliopa*
(tribe Cochliopini) (both also put in Cionellidae), *Texapyrgus*, *Tryonia*)

Emmerciinae (*Holsingeria*)

Fontigentinae Taylor, 1966 (*Fontigens*)

Hydrobiinae]

(*Aphaostracon*, *Phreatoceras*, *Phreatodrobia*, *Tryonia* (now in

Cochliopinae)

Lithoglypinae (*Antrobia*, *Antrorbis*? *Balconorbis*, *Holsingeria* (once put in
Emmerciinae)), *Phreatoceras*, *Phreatodrobia* (once in E. &

Hydrobiinae)

Undescr. Pb genera & sp. in Coosa Basin, neAL

Littoridininae (*Tryonia*)

Nymphophilinae (*Cincinnatia*, *Dasycias*, *Marstonia*, *Orygoceras*,
Phreatodrobia)

(now in Littoridininae), *Pyrgulopsis*).
Undescr. genera & sp. (*Heleobops* group) in Devils, Rio Grande Basins,
scTX..

Superfamily Viviparacea
Viviparidae (put in Architaenioglossa)

Infraorder Discopoda
Superfamily Cerithioidea

Cerithiidae (*Bittium*, *Bittium*, *Cerithium*, *Diastoma*)
Modulidae (*Modulus*)
Potamididae (*Cerithidea*)

Superfamily Naticoidea
Naticidae (*Natica*, *Neverita*, *Sinum*, *Tectonatica*)

Superfamily Rissooidea
Barleeiidae (also put in Neotaenioglossa) (*Barleeia*)
Vitrinellidae (*Cochliolepis*, *Vitrinellidae*)

Superfamily Vanikoroidea
Vanikoridae (*Megalomphalus*)

Infraorder Ptenoglossa
Eulimidae (*Strombiformis*)

Families & subfamilies incl.

Achatinidae Swainson, 1840 (*Euglandina* (once also put in Oleacinidae, now in Spiraxidae)
Acteonidae (*Acteon*, *Rictaxis*)
Aglajidae (aglajids) (*Melanochlamys*)
Amastridae (*Leptachatina*)

Amnicolidae Tyron, 1862 - subsumed as Amnicolinae Martens, 1858 in Hydrobiidae
Subfamily Bythiniinae (now subsumed in Hydrobiidae) (*Amnicola*, *Fontigens*)

Ammonitellidae - subsumed in Megomphicidae
Ancylidae (*Ferrissia* (also put in Planorbidae), *Laevape*)

Barleeiidae (Barleeiidae (also put in Neotaenioglossa) (*Barleeia*)
Bradybaenidae (*Monadenia*)

Bythiniinae = Amnicolinae
Bulimulidae (once subsumed in Hydrobiidae) (*Bulimulus* (once in Orthalicidae), *Horatia*,
Rabdotus)

Carychiidae Jefferys, 1829 (*Carychium*) (once in Ellobiidae)
Cionellidae (*Cionella Cochlicopa*) (both put in Hydrobiidae)

Cerithiidae (*Bittium*, *Bittium*, *Cerithium*, *Diastoma*)
Columbellidae (*Anachis*, *Astiris*, *Mitrella*)

Conidae (*Pyrgocyathara*, *Kurtzia*, *Kurtziella*)
Cylichnidae (*Tornatina*)
Cystiscidae (*Granulina*)

Discidae (*Anguispira*, *Discus* (both once put in Endodontidae)), *Nematodiscus* (also put in Endodontidae), *Speleodiscoides*)

Ellobiidae (*Carychium* (put in Carychiidae))

Endodontidae (see **Slug**) (*Anguispira*, *Discus* (both now in Discidae), *Helicodiscus* (once in Helicodiscidae), *Nematodiscus* (now in Discidae), (*Speleodiscoides*) (also put in Helicodiscidae))

Emmericiinae (*Fontigens* (also put in Amnicolinae, Bulimulidae & Hydrobiidae))
Littoridininae (*Antrobia*, (also in Lithoglypinae), *Antrosetes*, *Balconorbis*,
Phreatodrobia (once in Nymphophilinae), *Stygopyrgus*)

Eulimidae (*Strombiformis*)

Haplotrematidae H.B. Baker, 1925 (green snails) (*Haplotrema*) Bibl.: Roth 1991
Helicidae (*Helix*, *Trichia*)

Helicinidae Latreille, 1825 (*Helicina*, *Hendersonia*, *Oligyra*)
Helicodiscidae Pilsbry, 1948 (see Endodontidae) (*Helicodiscus*, *Speleodiscoides* (now in Discidae))

Helminthoglyptidae (*Lyrodes*, *Helminthoglypta*, *Humboldtiana* (now in Humboldtianidae), *Monadenia* (now in Bradybaenidae), *Sonorella*)
Humboldtianidae (*Humboldtiana*) (once Helminthoglyptidae or Xanthonychidae)

Hydrobiidae Troschel, 1857. **Bibl.:** Hershler & Holsinger, 1990; Hershler & Landeye 1988; Kabat & Hershler 1993 (*Gilla*, *Hydrobia*, *Lartetia*, *Littoridinops*, *Texadina*, *Texapyrgus*)

Amnicolinae Tryon, 1862 (*Amnicola*, *Dasyscias*, *Hauffenia*, *Horatia*, *Lyogyrus*). Undescr. Pb genera & sp. in cave in Econfinia Basin, nwFL.

Cochliopinae (*Antrosetes*) (also put in Littoridininae), *Cionella*, *Cochliopa* (tribe Cochliopini) (both also put in Cionellidae), *Texapyrgus*, *Tryonia*).
Bibl.: Hershler & Thompson 1992

Nymphophilinae Taylor, 1966 (*Cincinnatia*, *Dasycias*, *Marstonia*, *Orygoceras*, *Phreatodrobia* (now in Littoridininae), *Pyrgulopsis*).

Undescr. general & sp. (*Heleobops* group) in Devils, Rio Grande Basins, scTX.

Bibl.: Hershler & Longley 1986b; Morrison 1969,

Emmerciinae (*Holsingeria*)

Fontigentinae Taylor, 1966 (*Fontigens*)

Hydrobiinae (*Aphaostracon*, *Phreatoceras*, *Phreatodrobia*, *Tryonia* (now in Cochliopinae)

Lithoglypinae (or as subfamily) (*Antrobia*, *Antrorbis*? *Balconorbis*, *Holsingeria* (once put in Emmerciinae)), *Phreatoceras*, *Phreatodrobia* (once in E. & Hydrobiinae) **Bibl.:** R. Thompson 1984. Undescr. Pb genera & sp. in Coosa Basin, neAL

Littoridininae (*Tryonia*)

Limacidae Rafinesque, 1815 (*Deroceras*, *Limax* (see **Slugs**), *Nesovitrea* (now in Vitrinidae or Zonitidae))

Littorinidae Gray, 1840 (*Littorina*)

Lymnaeidae

Lymnaeinae (*Fossaria*, *Lymnaea*, *Stagnicola*)

Marginellidae (*Marginella*, *Prunum*)

Megomphicidae

Megomphicinae (=Ammonitellidae) (*Ammonitella* (also put in Thysanophoridae), *Glyptostoma*, *Megomphix*)

Melongenidae (also put in Superfamily Buccinacea) (*Buscon*, *Busycotypus*, *Melongena*)

Mesodontidae = Polygyridae

Micromelaniidae Thiele, 1928 (*Antroseletes*: now in Hydrobiidae)

Modulidae (*Modulus*)

Muricidae (*Acanthina*, *Eupleura*, *Thais*, *Urosalpinx*)

Nassariidae (*Nassarius*)

Natacidae (*Natica*, *Neverita*, *Sinum*, *Tectonatica*)

Neritidae Rafinesque, 1815

Neritiliinae (*Neritilia*)

Oleacinidae (*Euglandina*) (now put in Spiraxidae)

Olividae (*Oliva*)

Oreohelicidae (*Oreohelix* (also put in Thysanophoridae))

Orthalicidae Albers-Martens, 1860 = Bulimulidae

Physidae (*Aplexa*, *Physa*, *Physella*) **Bibl.:** Te 1973, 1978

Planorbidae

Planorbinae

Planoorbini: *Gyraulus*, *Ferrissia* (now in Ancyliidae)

Helisomimi: *Helisoma*, *Menetus*, *Micromenetus*, *Planorbella*

Helisomini: *Promenetus*. **Bibl.:** Baker 1945

Pleuroceridae (*Elimia*, *Goniobasis*, *Leptoxis*, *Lithasia*, *Pleurocera*)

Polygyridae

Subfamily Polygyrinae Pilsbry, 1895

Tribe Vespericonini Emberton, 1994 (*Vespericola*) (coiled snails)

(*Allogona*, *Daedalochila*, *Euchemotrema*, *Mesodon*, *Millerelix*, *Neohelix*, *Patera*,
Polygyra, *Stenotrema*, *Trilobopsis*)

Subfamily Tridopsinae (*Tridopsis*) **Bibl.:** emberton 1994

Potamididae (*Cerithidea*)

Pomatiopsidae Stimpson, 1865 (*Pomatiopsis*)

Punctidae (*Punctum*)

Pupillidae Turton, 1831 (*Chaenaxis*, *Columnella*, *Gastrocoptinae*, *Gastrocopta*, *Pupillinae*,
Pupilla, *Pupisoma*, *Pupoides*, *Vertigo*)

Pyramidellidae

(*Boonea*, *Eulimastoma*, *Fargoa*, *Odostomia*, *Petitilla*, *Pyramidella*, *Sayella*, *Turbonilla*)

Retusidae (*Retusa*)

Rissoidae (*Alvania*, *Rissonia*, *Schwartziella*)

Sphaeriidae (*Sphaerium*) (see **Clams**)

Spiraxidae Baker, 1955 (*Euglandina*) (once put in Oleacinidae & Achatinidae)

Succineidae Beck, 1837 (*Catinella*, *Novisuccinea*, *Succinea*)

Thiaridae (*Melanoides*, *Tarebia*)

Thysanophoridae Pilsbry, 1926 (*Oreohelix* (now in Oreohelicidae))

Turridae (*Crassispira*, *Pyrgospira*)

Urocoptidae Pilsbry & Vanatta, 1898 (*Holospira*)

Valloniidae (*Vallonia*)

Vanikoridae (*Megalomphalus*)

Vertiginidae (*Vertigo* (now subsumed in Pupillidae))

Vitrinellidae (*Cochliolepis*, *Vitrinellidae*)

Vitrinidae (now includes Zonitidae according to some authors) (*Gastrodonta*, *Glyphyalina*, *Hawaiiia*, *Mesomphix* (last 3 retained in Zonitidae), *Mesovitrea*, *Nesovitrea* (last 2 retained in Zonitidae), *Ogaridiscus*, *Paravitrea*, *Pristiloma* (but retained in Zonitidae), *Speleodiscoides* (once put in in Helicodiscidae & Endodontidae, now in Discidae) *Ventridens* (retained in Zonitidae) *Vitrea*, *Zonites*, *Zonitoides*)

Viviparidae (*Campeloma*)

Xanthonychidae Strebel & Pfefer, 1879 (*Humboldtiana* (now in Humboldtianidae), *Lyrodes*, *Monadenia* (now in Bradybaenidae), *Helminthoglypta* (now in Helminthoglyptidae), *Sonorella* (now in Helminthoglyptidae))

Zonitidae (subsumed in Vitrinidae by some authors) *Gastrodonta*, *Glyphyalina*, *Hawaiiia*, *Mesovitrea*, *Nesovitrea*, *Ogaridiscus*, *Paravitrea*, *Pristiloma*, *Speleodiscoides* (now in Discidae), *Ventridens*, *Vitrea*)

Subfamily Zonitinae

Tribe Zonitini (*Zonitoides*)

Acanthina Wiederman, 1839 - Muricidae snails (4 species in US or Canada)

Acanthina paucilirata (Stearns, 1871) (*Gastrocopta p.*; *Retinella p.* Morrison; *Hyalinia p.* Von Martens, 1892;) (SE to OK,AZ,Guatemala/ Pleist.? fossil in Kartchner Cave, AZ/ Tp or Tx in GA,KY,TN)

Acteocina - Cylichnidae snails

Acteocina caniculata (Say, 1826) (channeled barrel-bubble/ TX Gulf of Mex. marine infauna)

Acteocina bidentata (d'Orbigny, 1841) (*Cylichnella b.*) (two-tooth barrel-bubble/ MA, Virginian, wFL Gulf of Mex. marine infauna)

Acteocina harpa (Dall, 1871) (*Cylichnella b.*) (harp baby-bubble/ AK marine infauna)

Acteon Montfort, 1810 – Acteonidae snails

Acteon punctostriatus = *Rictaxis p.*

Allogona Pilsbry, 1939 - Polygyridae snails

Allogona profunda (Say, 1821) (NY to NC, w. to MN,IA,NB,MS/ broad-banded forestsnail/ subfossil? Ac or Tx in AL)

Alvania Risso, 1826 (= *Alvinia*) - Rissoidae snails

Alvania compacta (Carpenter, 1864) (AK marine infauna)

Ammonitella Cooper, 1918 - Megomphicidae snails (1 species in US or Canada)

Ammonitella yatesii (J.G. Cooper, 1869) Cooper, 1918 (type locality cave in Calaveras Co. +Fresno & El Dorado Cos., CA/Tp/ tight coin)

Amnicola Gould & Haldeman in Haldeman, 1840 (= *Euamnicola*) (see *Fontigens*) Hydrobiidae snails, Subfamily Amnicolinae (7 species in US or Canada) **Bibl.:** Hershler & Thompson 1988

Amnicola aldrichi = *Fontigens a.*,

Amnicola (A.) aldrichi antroecetes Hubricht, 1940 = *Fontigens antroecetes*

Amnicola (A.) antroecetes = *Fontigens a.*

Amnicola (A.) cora Hubricht, 1979 (*stream in cave in Independence Co.,AR/ Tb/ Foushee cavesnail/ S1G1, State species of Concern)

Amnicola proserpina = *Fontigens p.*

Amnicola undet. or undescr. sp. or species (*cave in OH-TN River drainage & other cave in KY)

Amnicola (Lyogyrus) retromargo = *Lyogyrus r.*

Amnicola (A.) stygius Hubricht, 1971 (**type locality & 1 other cave in Perry Co, MO/ Tb/ MO State T&E Status Uncertain/ stygian amnicola)

Anachis H. & A. Adams, 1855 – Columbelloidae snails

Anachis obesa (C.B. Adams, 1845) = *Parvanachis o.*

Anachis ostreicola Sowerby, 1882 = *Parvanachis o.*

Anachis semiplicata Stearns, 1873 (Gulf dovesnail/ LA marine infauna)

Anguispira Morse, 1864 - Discidae snails (13 species in US or Canada)

Anguispira alabama (*A. cumberlandiana a.* G.H. Clapp, 1920) Pilsbry, 1948 (nAL, cTN/ sinks, TTx?/ Alabama tigersnail or disc)

Anguispira alternata angulata = *Helisoma anceps*

Anguispira alternata a. (Say, 1816; A.a. Pilsbry, 1948) (Canada to AL, nAR, nGA, MS, TN epigeal/ flamed tigersnail or disc/ Tx in FL, KY(one cave), MD, MO, OH, sON, OK, PA, WV)

Anguispira alternata crassa (valid subspecies?, not list in Turgeon et al., 1998) (subfossil? Ac or Tx in AL/flamed tigersnail or disc)

Anguispira kochi kochi (Pfeiffer,1821) Pilsbry, 1948 (*A. k. strontiana* (Clapp); *A.k. roseoapicta* (Clapp)) (PA, TN, OH & KY/ Tx in KY(Holocene extralimital in one cave),OH; Tx or Ac in IN/ banded tigersnail or globe)

Antrobia Hubricht, 1971 - Hydrobiidae snails, Subfamily Lithoglypinae (1 species in US)

Antrobia culveri Hubricht, 1971 (T. Cr. Cavesnail/ *type locality cave in Taney Co., MO/ Federal Species of Concern T&E,priority 7; MO State T&E) **Bibl.:** Hershler & Thompson, 1992

Antrorbis Hershler & Thompson, 1990 - Hydrobiidae snails, Subfamily Lithoglypinae (1 species in US)

Antrorbis breweri Hershler & Thompson, 1990 (type locality cave in *Coosa R. Basin, DeKalb Co.,AL/ Tb/ Manitou Cavesnail/extinct? in type locality (entrance closed by metal door))/ G1 S?, Previous federal T&E candidate)

Antroselates Hubricht, 1963 - Hydrobiidae snails, Subfamily Cochliopinae (once put in Littoridininae & Micromelaniidae, Subfamily Emmericiinae) (1 species in US)

Antroselates spiralis Hubricht, 1963 (Mammoth C./ Edmonson Co.(Mammoth C., KY) & lower Blue River drainage in Crawford & Harrison Cos.(IN)/Federal Species of Concern T&E; KY State T&E Sensitive Species/Tp,streams/Shaggy Cavesnail) **Bibl.:** Lewis 1993a; Lewis & Lewis 1995

Aphaostracon F. Thompson, 1968 - Hydrobiidae snails, Subfamily Hydrobiinae (9 species in US or Canada)

Aphaostracon asthenes F. Thompson, 1968 (*Blue Spr., Volusia Co.,FL/ federal T&E Review Status, FL S1 T&E/ Blue Spring hydrobe)

Aphaostracon chalarogyus F. Thompson, 1968 (*Magnesia Spr., Alachua Co.,FL/federal T&E Review Status, FL S1 T&E/ freemouth or Magnesia Spring hydrobe)

Aphaostracon hypohyalinum F. Thompson, 1968 (ncFL in sprs. In lower Suwannee River and its tributary (Santa Fe River) and neary landlocked spr., Wakulla Co., ncFL/ Suwanee hydrobe)

Aphaostracon monas (Pilsbry, 1899) F. Thompson, 1968 (*Wekiwa Spr., Orange Co.,FL/ Wekiwa Hydrobe/ federal T&E Review Status, FL G1S1 T&E)

Aphaostracon pycnum or *pycnus* F. Thompson, 1968 (Alexander Spr. Run, Lake Co., ncFL/ dense hydrobe)

Aphaostracon theiocrenetum or *thiocrenetus* F.Thompson, 1968 (*Clifton Spr.,FL/ FL G1S1 T&E/Clifton Spr. hydrobe)

Aphaostracon xynoelictum or *xynoelictus* F.Thompson, 1968 (*Fenney Spr.,FL/water filled sinks, immediately adjacent spr. run, Sumter Co.,FL/ T&E review status, FL G1S1 T&E/ Fenny Spr. Hydrobe)

Appalachina Pilsbry, 1939 = *Mesodon* only in part. See Emberton 1994

Aplexa Fleming, 1820 - Physidae snails (1 species in US or Canada)

Aplexa elongata (Say, 1821) (= Eurasian *A. hypnorum*?; *Bulla h.* Linnaeus, 1758 according to some authors) (ON to Saskatchewan & AK, eSiberia, NE to WA,s.to ID,UT,WY/ Ac or Tx in sON; n. extralimital fossil in Moore Pit (Dallas Co.),TX/ lance aplexa) **Bibl.:** Starobogatov & Strelezkaja 1967 & Te 1978, 1980

Arion – See Slugs

Astyris H. Adams & A. Adams, 1853 – Columbellidae snails

Astyris gausapata (Gould, 1850) (East Pacific/ shaggy dovesnail/ AK marine infauna)

Astyris lunata (Say, 1826) (*Mitrella lunata*) (lunar dovesnail/ Virginian, MA, wFL, TX marine infauna)

Balconorbis Hershler & Longley, 1986 - Hydrobiidae snails, Subfamily Lithoglyphinae (1 species in US)

Balconorbis uvaldensis Hershler & Longley, 1986 (G.Ligocky Well,*Uvalde Co.,Edwards Aquifer,scTX/ Balcones ghostsnail/ Pb) **Bibl.:** Hershler &Thompson, 1992

Barleeia Clark, 1853 – Barleeiidae snails

Barleeia subtenuis Carpenter, 1864 (AK marine infauna)

Bittium Gray, 1847 – Cerithiidae snails

Bittium alternatum = *Bittiolium a.*

Bittiolium – Cossmann, 1906 – Cerithiidae snails

Bittiolium alternatum (Say, 1822) (rare Virginian, wFL Gulf of Mex. marine infauna)

Bittiolium varium (*Diastoma varium* (Pfeiffer, 1840)) (grass cerith/ TX marine infauna)

Boonea Robertson, 1978 – Pyramidellidae snails

Boonea impressa (impressed odostome/ rare Virginian, wFL, TX Gulf of Mex. marine infauna)

Boonea seminuda (C.B. Adams, 1839) (half smooth odostome/ Virginian marine infauna)

Bulimulus Leach, 1815 (see *Rhabdotus*) Bulimulidae snails (1 species in US)

Bulimulus guadalupensis (Bruguiere, 1789) (Tx in cave in Murray Co., OK/ West Indian bulimulus)

Bulla Linnaeus, 1758 – Bullidae snails

Bulla striata Bruguiere, 1792 (wFL, LA Gulf of Mex. marine infauna)

Busycon Roding, 1798 – Melongenidae snails

Busycon canaliculatum (Linnaeus, 1758) = *Busycotypus canaliculatus*

Busycon carica (Gmelin, 1791) (NC marine infauna)

Busycotypus – Melongenidae snails

Busycotypus canaliculatus (*Busycon canaliculatum* (Linnaeus, 1758) (channel welk/ Virginian, NC marine infauna)

Campeloma Rafinesque, 1819 - Viviparidae snails (16 species in US or Canada)

Campeloma undet. sp. (Tx or Ac in OH/campeloma)

Carychium (H.C. Lea) Muller, 1774 - Carychiidae snails (10 species in US or Canada) **Bibl.:**

Greene 1984 (Europe, NA)

Carychium exiguum (= *Pupa e.* Say, 1822; *C. existelium* & *euphaeum* Boorguignat, 1857)

(James Bay (Canada) to US Gulf Coastal Plain/Tx or Ac in cave in Putnam Co., TN/ obese thorn)

Carychium exile e. I. Lea, 1842 (E except FL, LA/ Tp in AL, KY(Mammoth C.), IN, MO, TN/ ice thorn) **Bibl.:** Hobbs III, 1995a; Hobbs III 1994

Carychium undet. sp.#1 (East/MO TTP?)

Carychium stygium Call, 1897 (*Zospeum s.?* Call, 1897) (type locality in Mammoth C., Edmonson Co., & caves in Barren, Hart, Jackson, Rockcastle, Simpson, Warren Cos., KY & one cave in ncTN (Sumner Co.)/ Tb/ TN State T&E, S2 G3G4/ cave thorn) **Bibl.:** Hubricht 1958a, 1960

Catinella Pease, 1871 - Succineidae snails (15 species in US or Canada)

Catinella (*Mediappendix*) cf. *gabbi* ((*Succinea g.* Tyron, 1866) Burch, C. Patterson & R. Natarajan, 1966 (WA, OR, Inyo Co., CA/ extralimital fossil in Kokoweef C., CA/ riblet ambersnail)

Catinella gelida (*S. grosvenori g.* Baker, 1927) (glacial relict calciphile in non-cave cracks & crevices in 14 sites in neIA (Winneshiek, Allamakee, Clayton & Dubuque Cos./ frigid ambersnail)

Cerithidea Swainson, 1840 - Potamididae snails

Cerithidea costata (E.M. da Costa, 1778) (BC marine infauna)

Cerithidea scalariformis (Say, 1825) (w,eFL marine infauna)

Cerithium Bruguiere, 1789 – Cerithiidae snails

Cerithium varium Menke, 1828 (grass cerith/ TX marine infauna)

Chaenaxis Pilsbry & Ferris, 1906 (originally described as subgenus of *Bifidaria*) Pupillidae snails (1 species in US or Canada)

Chaenaxis tuba (Pilsbry and Ferris, 1906) (36,000 +/- 360 yrs. B.P. in Kartchner C., sAZ; 11,470

+~170 to present in *Neotoma* packrat middens in Waterman Mts., Pima Co., AZ)

Cincinnatia Pilsbry, 1891 (siltsnail) Hydrobiidae snails, Subfamily Nymphophilinae (13 species in US or Canada)

Cincinnatia mica Thompson, 1968 (*Spring along west bank of Ichetucknee River, about 1 mi. Ne of US Hwy. 27, Suwannee Co., FL)

Cincinnatia monroensis (Dall, 1885) (*Benson's Mineral Spring near Enterprise, Volusia Co., FL/ thought to be extinct)

Cincinnatia parva F. Thompson, 1968 (*Blue Spr., Volusia Co., FL/ cave spr. & spr. run/ T&E review status/ pygmy siltsnail)

Cincinnatia petrifons F. Thompson, 1968 (*Rock Spr., Orange Co., FL/ cave spr./ Rock Springs siltsnail)

Cincinnatia ponderosa F. Thompson, 1968 (*Sanlando Spr., Seminole Co., FL/ cave spr. to 300 yds. downstream, Little Wekiva R. to about 500 yds. from cave/ T&E review status/ ponderous siltsnail or spring snail)

Cincinnatia vanhyningi (Vanatta, 1934) (*Seminole Spr., Lake Co., FL/ water filled cave entrance, spring run/ federal T&E review status, FL T&E GIS1/ Seminole siltsnail)

Cincinnatia wekiwae F. Thompson, 1968 (*Wekiwa Spr., Seminole Co., FL/ cave spr. to short distance downstream/ T&E review status/ Wekiwa siltsnail)

Cionella Jeffrys, 1829 - Hydrobiidae snails, Subfamily Cochliopinae (European usage is consistently now *Cochlicopa*) (also put in Cionellidae) (4 species in US or Canada)

Cionella morseana (*Cochlicopa morseana* Doherty, 1878; *C. lubrica* D.; *Ferussacia subcylindrica* L., Sargent, 1891) (epigean in AL, KY, MI, NC, NY, OH, TN, VA/ Appalachian pillar/ Tx in MO)

Cerithium Bruguiere, 1789 – Cerithiidae snails

Cerithium muscarum Say, 1822 (fleyspeck cerith/ wFL Gulf of Mex. marine infauna)

Cochliolepis Stimpson, 1858 – Vitrinellidae snails

Cochliolepis striata wFL Dahl, 1899 (striate scalesnail/ wFL Gulf of Mexico infauna)

Cochliopa Stimpson, 1865 - Hydrobiidae snails, Subfamily Cochliopinae, tribe Cochliopini

Cochliopa texana Pilsbry, 1935 (classification uncertain as all other species recently restricted to Costa Rica and Panama) (Phantom Lake Spr. (Jeff Davis Co.) +Reeves Co., TX/ cave-fed spr./ state park in part)

Crassispira Swainson, 1840 -Turridae snails
Crassispira ostrearum Stearns, 1872 = *Pyrgospira o.*

Crepidula Lamarck, 1799 - Calyptraeidae snails (14 species in US or Canada)
Crepidula aculeata (Gmelin, 1791 (Ttx in CA seacaves)
Crepidula fornicata (Linnaeus, 1758) (wFL, TX Gulf of Mex. marine infauna)

Crepidula convexa Say, 1822 (Virginian marine infauna)
Crepidula maculosa Conrad, 1846 (Virginian, wFL Gulf of Mexico marine infauna)
Crepidula plana (Say, 1822 (Virginian, wFL Gulf of Mex. marine infauna)

Cryptonatica Dall, 1892 – Naticidae snails
Cryptonatica affinis (= *Natica clausa* Broderip & Sowerby G.B.I, 1829) (AK marine infauna)

Cylichna Loven, 1846 – Cylichnidae snails
Cylichna attonsa Carpenter, 1865 (BC marine infauna)

Cylichnella - Cylichnidae
Cylichnella bidentata (d'Orbigny, 1841) = *Acteocina b.*

Daedalochila Beck, 1837 (= *Polygyra* by some authors) Polygyridae snails (15 species in US or Canada)

Daedalochila triodontoides (Bland, 1861) Branson, 1962 (*Polygyra texasiana* (Moricand, 1833) Pilsbry, 1940; *P. scintilla* & *polita* Pilsbry & Hinkley, Branson, 1962; *P. rexroadensis* Taylor, 1960) (paleo & Tx or Ac in TX/ marsh liptooth)

Daedalochila tamaulipasensis (Lea, 1912) (= *D. triodontoides* (Bland, 1861) according to some authors) (northern extralimital paleo & Ac or Ttx in cave in Uvalde Co., TX)

Dasyscias F. Thompson & Hershler, 1991 - Hydrobiidae snail, subfamily Amnicolinae (1 species in US or Canada)

Dasyscias franzi F.T. & 1991 (*type locality in Choctawhatchee-Yellow-Escambia hydrologic subsystem, WA Co., FL/ Tp, Pb/ shaggy ghostsnail/ G1S1)

Diastoma Deshayes, 1850 – Cerithiidae snails
Diastoma varium (Pfeiffer, 1840) = *Bittium v.*

Discus Fitzinger, 1833 (see *Pyramidula*, *Patulas*) - Discidae snails (12 species in US or Canada)
Discus campestris = *Planorbella c.*

Discus catskillensis (Pilsbry, 1896) (*Pyramidula striatella c.* Pilsbry, 1898; *P. cronkhitei catskillensis* Walker, 1906; *Discus c.* (P., 1898); *Pyramidula c.*) (ME to PA, w. to SD/ angular disc/ Tx in sON, New Brunswick (on damp timber))

Discus conkhitei = *D. whitneyi*

Discus macclintocki (*D.m. angulata* F.C. Baker, 1928; *Planorbula m.*) Pilsbry, 1948 (Pleistocene disc or Iowa Pleistocene snail) (until 1982 known to live only in cave in Clayton Co., IA/ Tx glacial relict, IL State T&E). **Bibl.:** Ferst 1981; Hubricht 1955; T. Ross 1998; US Fish & Wildlife 1984

Discus nigrimontanus (Pilsbry, 1924; *Patula* or *Pyramidula n.* P.1948) (nAL, sIA, seKY, nMO, wNC, swVA/ Tx in MO/Black Mountain disc)

Discus patulus (Deshayes, 1830) (sON,WI to LA & up Appalachians to nNY/ Tx or Tp in TN; subfossil? Ac, Tp or Tx in AL, AR/ domed disc)

Discus* (*Discus*) *whitneyi (*D. conkhitei* Pilsbry, 1948, *Helix c.* Newcomb, 1865; *Gonyodiscus cronkhitei* Berry, 1922; *Pyramidula c.* Dall, 1905; *G.c. anthonyi* Henderson, 1924; *D. c.c.* , 1936; *Helix striatella* Anthony, 1840; *Patula s.* Morse, 1864; *Pyramidula c.*) P.1948 (ME ot MD, w. to WA,CA?/ angular or forest disk/ Tx or Ac in sON; Tx? in OH)

Elimia A. Adams, 1841 (= *Goniobasis*, *Macrolimen*, *Melasma*) Pleuroceridae snails (86 species in US or Canada)

Elimia clavaeformis (*Melania c.* Lea, 1841) (Upper TN R. tributaries in VA, TN, NC/ Tx or Ac in Hancock Co., TN/ club elimia)

Elimia clenchi (Goodrich, 1924) (= *Patera c.*? (Rehder, 1932)) (AL, AR/ Ttx in FL/ slackwater elimia)

Elimia curreyana (Lea, 1841) (*Goniobasis c.*) (Tx or Ac in one KY cave/ amber elimia)

Elimia curvicostata (Reeve, 1861) (streams in wGA & wFL, rivers & creeks of sw AL/ Ttx in FL, subterranean aquifers in WA Co., FL/ graphite elimia)

Elimia edgariana (*Goniobasdis e.* I. Lea, 1841) (streams of Cumberland, Elk & Duck Rivers, TN/ Tx? in De Kalb Co.,TN/ Cumberland elimia)

Elimia laqueata l. (*Goniobasdis l.* Say, 1829) (Green River & tributaries, KY; tributaries of middle Cumberland R., TN; tributaries of TN River, TN & AL/ subfossil? Ac or Tx in AL/panel elimia)

Elimia undesc. ssp. (*cave in Rutherford Co., TN/ Tb?)

Elimia livescens l. (Menke, 1830) (Missourian, St. Lawrence River drainage from Great Lakes to Lake Champlain & PQ, alien in Hudson River basin/ Ac or Tx in OH/liver elimia)

Elimia potosiensis (group)? (I. Lea, 1841) (Ozarks of AR, MO, OK/ Tx in MO/ pyramid elimia)

Elimia potosiensis ozarkensis (E.o. Call, 1886) (spr. in Shannon, Carter, WA, Dent & Camden Cos., MO/ Tx in Shannon, Carter, WA. cos., MO) **Bibl.:** Goodrich, 1939

Elimia near? *semicarinata* (Say, 1829) (near? or hybridized? with *E. indianensis* (valid species?)) (fine-ridged c.\ tributaries of OH & Scioto Rivers, OH to Blue River, IN; Licking to Salt River, creeks of Green R., KY/ Tx in IN),

Elimia simplex (Say, 1825) (headwaters of upper TN R. in VA, TN, NC; tributaries of Kenawha R. in WV/ Tx in seVA/ smooth elimia) **Bibl.:** Goodrich 1940

Elimia undet. sp. or species (Tb in Rutherford Co., TN; Tp or Tx in cave in Rockcastle Co., KY)

Elimia vanhyningiana (Goodrich, 1921) (= *E. catenaria* v.) Rock (Orange Co.) & Alexander & Seminole (Lake Co.) Springs/ goblin Elimia/ G1)

Epitonium Roding, 1798 – Epitoniidae snails

Epitonium angulatum (Say, 1830) (angulate wentletrap/ wFL Gulf of Mex .marine infauna)

Epitonium greenlandicum (G. Perry, 1811) (Greenland wenteltrap / Virginian marine infauna)

Epitonium rupicola (Kurtz, 1860) (wFL marine infauna)

Epitonium tollini Bartsch, 1938 (LA marine infauna)

Euchemotrema Archer, 1939 (= *Stenotrema* in part, see Emberton 199) Polygyridae snails (5 species in US or Canada)

Euchemotrema fraternum (Say, 1824) (*Stenotrema* f.; *S.f. cavum*; *S.f.f.*) (NH to AL, w. to IA, IN, MN, MO, OK/ upland pillsnail/ Tx or Ac in PA; Tx in OH)

Euchemotrema leai (A. Binney, 1841) (Tx in one KY cave/ lowland pillsnail)

Euglandina Fischer & Crosse, 1870 - Spiraxidae snails (3 species in US or Canada)

Euglandina (*Euglandina*) *rosea* (Fe'russac, 1818) Pilsbry, 1946 (AL, FL, GA, SC epigeal/ Tp in nMS (probably); Tx in nwFL/ rosy wolfsnail) **Bibl.:** Franz, Lee & Stifel 1971

Eulimastoma Bartsch, 1904 – Pyramidellidae snails

Eupleura H. Adams & A. Adams, 1853 – Muricidae snails

Eupleura caudata (Say, 1822) (Virginian marine infauna)

Eupleura sulcidentata Dall, 1890 (wFL Gulf of Mexico marine infauna)

Eulimastoma Bartsch, 1904 – Pyramidellidae snails

Eulimastoma teres (Bush, 1885) (TX marine infauna)

Fargoa Robertson, 1978 – Pyramidellidae

Fargoa bushiana (Bartsch, 1909) / Virginian marine infauna)

Ferrissia Walker, 1903 – Ancyliidae snails (once in Planorbidae) (6 species in US or Canada)
Ferrissia rivularis (Say, 1817 (= *F. kirklandi* (Walker, 1918)) (creeping ancyliid/ Tx in MO)
Ferrissia undet. sp. or species (Tx or Ac in MN; rare Virginian marine infauna)

Fontelicella hendersoni = *Pergulopsis h.*

Fontigens Pilsbry, 1933 - Hydrobiidae snails, Subfamily Fontigentinae (14? species in US or Canada) **Bibl.:** Hershler, Holsinger & Hubricht 1980; Hubricht 1976; Hubricht, Holsinger, & Hershler 1990; Taylor 1966; Hershler & Holsinger 1990

Fontigens aldrichi aldrichi Call & Beecher, 1886 (= *Amnicola aldrichi* Call & Beecher, 1886) (spr. in Reynolds Co., MO/ springs in IL, MD, MO (disjunct), OH, VA/ Pp & Tp in IL?, MD, MO, OH?, VA/ Hoosier amnicola)

Fontigens aldrichi antroecetes = *F. antroecetes*

Fontigens aldrichi insolita Hubricht, 1940 (Coldwater Spr., near Coldwater (Wayne Co.) + Meramec Spr., Phelps Co., MO/ Pb?, spr.)

Fontigens antroecetes (*F. aldrichi antroecetes* Hubricht 1972; *Amnicola antroecetes a.* Hubricht, 1940) (uncertain classification) (type locality cave in St. Clair Co., sw IL, + Perry, St. Louis, Pulaski & Shannon Cos., se. & e MO/ Pb, Tb, St/ enigmatic cavesnail/ MO State T&E) **Bibl.:** Peck & Lewis 1978

Fontigens cryptica Hubricht, 1963 (**spr. 3 mi. w. of Bethlehem (Clarke Co.) & cave in Harrison Co., IN/ spring, Pp/ hidden springsnail/ S1 G1)

Fontigens holsingeri Hubricht, 1976 = *F. tartarea*

Fontigens near *nickliniana* (*Paludina n.* Lea, 1838) (cool, shallow spr. PA to WI, ON to AL/ Pb? in 3 caves in Lee Co., VA)

Fontigens nickliniana (*Paludina n.* Lea, 1838) (cool shallow spr. PA (hardwater) to WI, ON to AL/ Pp in IL, MI, WV, VA/ watercress snail)

Fontigens orolibas Hubricht, 1957 (spr. in Shenandoah Natl. Park & Blue Ridge Parkway, VA/ Tp?, Pb in Warren, Giles, Tazewell Cos., VA/ Blue Ridge springsnail or cavesnail)

Fontigens proserpina (*Amnicola p.* Hubricht, 1940) (type locality cave in Jefferson Co. + sprs. at Glencoe Cr. & Osage Hills Golf Course (Kirkwood), cave in Ste. Genevieve Co.) & spr. (St. Louis Co.), MO/ Tp, Pp/ eMO T&E/ Proserpine Cavesnail) **Bibl.:** Hubricht 1942

Fontigens undescr. sp.#1 (*?type locality in cave in Greenbrier Co., WV/ Tb/ S1 G1)

Fontigens undescr. sp.#2 (Harrison Co., IN/ Pb) **Bibl.:** Lewis 1993

Fontigens undet. sp. (Pb in WA Co., MD)

Fontigens tartarea Hubricht, 1963 (stream in Organ C.(Greenbrier Co.) +Randolph, Tucker, Monroe, & Pocohontas Cos.,WV (incl. *F. holsingeri* Hubricht, 1976 (cave in Randolph Co.) +Pocahontas Co.,WV/ Tb, Pb, St/ WV T&E S2 rank & global G2 rank/ Greenbrier or organ cavesnail)

Fontigens turritella Hubricht, 1976 (type locality & 1 other cave in Greenbrier Co.,WV & VA (2 caves in Warren Co.(VA) according to H.H.H. 1990)/ Tb, St, Pb/ WV T&E S1 rank & global G1 rank/ Greenbrier cavesnail)

Fossaria Westerlund, 1885 - Lymnaeidae snails (22 species in US or Canada)

Fossaria (*F.*) *humilis* (Say, 1822) (= *Lymnaea h.*) (sNJ s. to SC/ PA spr./Pb?/ marsh f.)

Fossaria modicella (Say, 1825) (*L.m.*)(NS & NJ w.to BC, nw to NWT. s. to CA, AZ, TX, AL/ Ac or Tx in sON/ rock f.)

Fossaria parva (I. Lea, 1841) (*L.p.*) (CT to ID, s. to AZ, sNM, OK, KY, n. to PQ, Great Slave Lake/ Tx? in MO/ pygmy f.)

Fossaria undet. sp. (Ac in OH/fossaria)

Gastrocopta Wollaston, 1878 - Pupillidae snails (25 species in US or Canada)

Gastrocopta (*Albinula*) *armifera* (*Pupa a.* Say, 1821; *Bifidaria a. & clappi* Sterki, 1909; *P. moreletiana* Grasset, 1856) Pilsbry, 1948 (ME to FL, w. to ND, CO,NM/TP or Tx in MO; Tx in MD; Pleistocene extralimital in Dry Cave, NM /armed snaggletooth)

Gastrocopta nickliniana = *Fontigens n.*; *G. orolibas* = *F. o.* ; *G. paucilirata* = *Acanthina p.*
G. rimula = *G. r.*; *G. roemeri* = *G. r.*; *G. sculptilis* = *G. s.* = *G. specus* = *G. s.*

Gastrocopta (*A.*) *contracta* (*Pupa c.* Say, 1822; *P. deltostoma* Kurster, 1852; *P. nebraskana* Binney, 1855-7; *Bifidaria c.*) Pilsbry, 1906 (ME to FL, w.to Mex./paleo & TTx or Ac in TX; Tx in OH/ bottleneck snaggletooth)

Gastrocopta holsingeri (Sterki, 1889) (E to MW, n. to MI /dry limestone ledges, Tx?)

Gastrocopta perversa (Gould, 1840) (36,000 +/- 360 yrs. B.P. in Kartchner C., sAZ; extralimital Pleistocene in Dry Cave, seNM)

Gastrocopta procera (Gould, 1840) (36,000 +/- 360 yrs. B.P. in Kartchner C., sAZ;)

Gastrodonta Albers, 1850 - Zonitidae snails (once in Vitrinidae) (2 species in US or Canada)

Gastrodonta interna i. (*G.i.* Say, 1822) Pilsbry, 1946 (WV w.to IN, e.to NC, s.to cAL/Tx in AL, TN, VA, WV/ brown bellytooth/ VA Species of Concern)

Gillia Stimpson, 1865 – Hydrobiidae snails

Gillia altilis (I. Lea, 1841) (buffalo pebblesnail/ Virginian marine infauna)

Glyphyalinia Martens, 1892 - Zonitidae snails (25 species in US or Canada)

Glyphyalinia cryptomphala c. (SE to AL/ Tx in cKY/ /thin glyph)

Glyphyalinia cryptomphala solida H.B.Baker (Tx or Tp in Warren Co.,KY/ thin glyph)

Glyphyalinia cryptomphala (*Retinella* c. G.H. Clapp, 1915) Hubricht, 1964 (Tp in AL, GA, KY, TN; Tp or Tx in cKY/ / thin glyph)

Glyphyalinia cumberlandiana (G.H. Clapp, 1919) (*Carocolla* c. Lea, 1840; *R.c.* Pilsbry, 1946; *Helix* c. Binney, 1851; *Patula* c. B., 1875; *Pyramidula* c. Clapp, 1920) Hubricht, 1964 (neAL, seKY, wNC, wTN, wVA, WV/sinks,TTx?/ hill glyph or Cumberland disc)

Glyphyalinia indentata (Say, 1823) Pilsbury, 1946 (R.i.p. H. Baker, 1930; *Zonites i.* var. *umbilicatus* Cockerell, 1890; *Gastrocopta i.*; R.i.) (E,MW/Tp or Tx in KS,OK; Tx in IN; prob.Tp in TX;Ep/ extralimital Pleist.? fossil in Kartchner Cave, AZ/ carved glyph; indented terrestrial snail /S4G4) **Bibl.:** Zilch, 1959

Glyphyalinia latebricola Hubricht, 1968 (*Gastrocopta l.*) (Ep, Tp in 2 caves in Madison Co.,Burwell Mt. near Jeff, neAL/ stone glyph)

Glyphyalinia lewisiana (R.l. Clapp, 1908; *Gastrocopta l.*) Pilsbry, 1946 (AL, nAR, KY, sMO, MS, TN, WV, wVA/ pale glyph/ Cp, Tx in MO)

Glyphyalinia pecki Hubricht, 1966 (*Gastrocopta p.*)**(type locality & 1 other cave in Jefferson Co.,AL/ Tb/ blind glyph)

Glyphyalinia praecox (H.B. Baker, 1930) (Ac, Tx or Tp in GA (Bartow Co.)

Glyphyalinia rhoadsi (Pilsbry, 1899) (Ac, Tx or Tp in GA (WA Co.)

Glyphyalinia rimula Hubricht, 1968 (G.r.) (seKY, ncTN, swVA, swWV/ tongued glyph; karst glyph snail/ Ep, Tp in Cannon Co.,TN & Corydon area caves, Harrison Co., IN/ imperiled)

Glyphyalinia roemerii (R.r. Pilsbry & Ferris, 1906; *Gastrocopta r.* Zilch, 1959) (Tp in Medina, Hays, Travis, Uvalde & Williamson Cos., TX/ pretty glyph)

Glyphyalinia sculptilis (R. s. Bland, 1858; *Gastrocopta s.* Zilch, 1959) Pilsbry, 1946 (SE except FL/ TTx in GA (Bartow Co.), KY/ suborb glyph)

Glyphyalinia specus Hubricht, 1965 (type locality cave in Barren Co. & Mammoth C., Edmondson Co., both KY + cKY(5cos.), nAL (Jefferson, Jackson & Madison cos.), nwGA (Chattooga, Dade & Walker cos.), eTN (Bedford, Cannon,Grundy, Jackson, Sullivan, Van Bure Cos.),seWV (Monroe Co.)/ Tb on cricket guano/ Texas or hollow glyph)

Glyphyalinia wheatleyi (R.w. Bland, 1883; *Gastrocopta w.*) Hubricht 1964 (E to MS, AL, AR, GA, KY, NE, PA, TN, WV, VA/ Tx or Ac in MO sinks, TTx?; Tx in IN/bright glyph; Wheatley's terrestrial snail/ S4G4)

Glyptostoma Bland & Binney, 1873 - Megomphicidae snails
Glyptostoma (Megomphix) californicum = *Megomphix californicus*
Goniobasis - see *Elimia* & *Hadoceras taylori* - see *Phreatocereas*

Granulina di Monterosato, 1884 – Cystiscidae snails
Granulina ovuliformis (d'Orbigny, 1841) (teardrop marginella/ wFL Gulf of Mexico infauna)

Gyraulus Agassiz in Charpentier, 1837 - Planorbidae snails (5 species in US or Canada)
Gyraulus (Torquis) circumstriatus Tyron, 1866 (CT n.to PQ, w.to Alberta, s.to Rockies in NM/ disk gyro/ Ac or Tx in sON)

Gyraulus (Torquis) parvus (Say, 1817) (NA epigean /Tx? in FL/ ash gyro)

Haminoea Turton & Kingston, 1830 – Haminoeidae snails
Haminoea antillarum (d'Orbigny, 1841) (TX, wFL Gulf of Mex. marine infauna)
Haminoea solitaria (Say, 1822) (Virginian marine infauna)

Haminoea succinea (Conrad, 1846) (TX Gulf of Mex. marine infauna)
Haminoea virescens (G.B. Sowerby II, 1833) (East Pacific/ green glassy-bubble/ AK marine infauna)

Haplotrema Ancey, 1881 - Haplotrematidae snails (11 species in US or Canada)
Haplotrema (H.) alameda Pilsbry, 1930 (*H.a. fieldi* Pilsbry, 1930) (Calavareas to Tulare Cos., CA/ Ac or Tx in Amador & Tuolumne Cos., CA/ Alameda lancetooth)

Haplotrema concavum (*Helix c.* Say, 1821; *Macrocyclus c.* Morse, 1864; *Helix planorboides* Ferussac, 1821; *H. dissidens* Deshayes, 1850; *Selenites c.* Ancey, 1882; *Circinaria c.* Pilsbry, 1900) H. Baker, 1930 (ON to AR, nFL, MS/ Tx in FL & MD; subfossil? Ac or Tx in AL/grayfoot lancetooth)

Haplotrema (H.) alameda (H. a. fieldi) Pilsbry, 1930) (epigean? in Fresno & Tuolumne Cos., CA)

Haplotrema (H.) costatum A.G. Smith, 1957 (*C. #12-19, Tulare Co., CA/ costate lancetooth/ Tp)

Haplotrema (Ancomena) keepi (*Selenites vancouverensis* var. *k.* Hemphill, 1890) H. Baker, 1930 (Tx in Mendocino & Alameda Cos., CA/ Tx or Tp in Shasta Co., CA/ glassy lancetooth)

Haplotrema (Ancomena) minimum (*Selenites vellicata* & var. *minim* Ancey, 1888; *S. vancouverensis* Hemphill in Binney, 1892; *Circinaria* var. *kelseyi* Hemphill, 1911) H. Baker,

1942 (Napa Co., midCA/Tx or Tp in Santa Cruz Co.,CA/CA lancetooth)

Haplotrema undet. sp. (Ac or TTX in 2 caves in Mt. St. Helens area, WA)

Haplotrema vancouverense I. Lea, 1839 (=Helix v. Lea, 1839; *Macrocyclus* v. Binney, 1878; *Circinaria* v. Pilsbry, 1908; *Helixvellicata* Forbes, 1850) Henderson, 1929 (Ac in WA/robust lancetooth),

Hauffenia (see *Phreatodrobia*),

Hawaiiia Gude, 1911 - Zonitidae snails (also put in Vitrinidae) (25 species in US or Canada)

Hawaiiia minuscula (A. Binney, 1840) Pilsbry, 1946 (KS, MN, OK, TX, e. to FL, ME/ Tx in IL?, KY(one cave); Tx or Ac in MO, TX/ minute gem/ extralimital fossil in Kokoweef C.,CA)

Heleobops F.G. Thompson, 1968 – Hydrobiidae snails

Heleobops undet. sp. (wFL marine infauna)

Helisoma Swainson, 1840 - Planorbidae snails (2 species in US or Canada)

***Helisoma* (H.) anceps a.** (*Planorbis a.* Menke, 1830) (ne Canada to nFL, TX, nwMex.,w.to NT, Alberta, MT, OR/ two ridge rams-horn/ Tx in MD & OK; Tx or Ac in PA, MN)

Helix Linnaeus, 1758 - see *Polygyra*

Helminthoglypta Pfeiffer, 1857 - Helminthoglyptidae snails (69 species in US or Canada)

Helminthoglypta allyniana a. (S.S. Berry, 1920) (= junior syn. of *H. willetti* S.S. Berry, 1920 or *H. petricola* S.S. Berry, 1916 according to one author) (epigean and Tx or Ac in cave in Tulare Co., CA/ Sierra shoulderband)

***Helminthoglypta* (H.) cypreophila** (W.G. Binney & Bland, 1869) (Tp in Amador, Calaveras, Shasta Cos., CA/ foothill shoulderband)

***Helminthoglypta* (H.) crotalina** S.S. Berry, 1928 (Ac or Tx in cave in Tulare Co., CA/ sidewinder shoulderband)

***Helminthoglypta* (H.) exarata** (Pfeiffer, 1857) (Tx or Ac in cave in Santa Cruz Co.,CA/ Santa Cruz shoulderband)

***Helminthoglypta* (H.) napaea** S.S. Berry, 1938

***Helminthoglypta* (H.) cf. napaea yosemitensis** (Pilsbry, 1939) (Ac or Tx in cave in Mariposa Co.,CA/ bigtree shoulderband)

***Helminthoglypta* (H.) ferrissi** Pilsbry, 1924 (Ac or Tx in cave in Mariposa Co.,CA/kings shoulderband),

***Helminthoglypta* (H.) nickliniana n.** (I. Lea, 1838) (Ac or Tx in marine cave in Santa Cruz Co.,

CA/Coast Range shoulderband)

Helminthoglypta* (H.) *nickliniana (I. Lea, 1838)

Helminthoglypta* (H.) *nickliniana anachoreta (Lea, 1838) (Ac or Tx in marine cave in Napa Co., CA/ Coast Range shoulderband)

Helminthoglypta proles (Hemphill in W.G. Binney, 1892) (Ac or Tx in cave in Plumas Co., CA/ Yosemite shoulderband)

Helminthoglypta undet. sp. (Epigean? in cave in Tuolumne Co.,CA)

Helminthoglypta* (H.) *tularensis (Hemphill in W.G. Binney, 1892) (Tx in Fresno & Tulare Cos.,CA/Tulare shoulderband)

Helicina Lamarck, 1799

Helicina orbiculata o. & *tropica* = *Oligyra* o.

Helicodiscus Morse, 1864 - Helicodiscidae snails (22 species in US or Canada)

Helicodiscus* (*Troglodiscus*) *barri Hubricht, 1962 (type locality cave in Dickson Co.,TN /nAL (Colbert, Lauderdale & Madison Cos.),nGA (Chattooga Co.) & scTN (Anderson, Davidson & Dickson Cos./ Tb on raccoon dung/ raccoon coil/ G1G2)

***Helicodiscus eigenmanni* e.** Pilsbry, 1900 (type locality cave in Hays Co., TX +West,Mexico/Tp in TX/ Mexican coil)

Helicodiscus hadenoecus Hubricht, 1962 (type locality cave in Van Buren Co.,TN/Barren Co.(KY) & DeKalb, Van Buren, White, Jackson Cos.(TN) & Madison Co.(AL)/ cricket coil/ Tp, endogean, upper hypogean)

Helicodiscus inermis H. B. Baker, 1929 (= *H.singleyanus* i. Baker) (GA,KS,NJ/Tp or Tx in AL, FL, MD, MI, MO, TX, VA; Tp in TN/ extralimital Pleist.? fossil in Kartchner Cave, AZ/ VA T&E S2 rank & global G4 rank/oldfield coil)

Helicodiscus* (*Hebetodiscus*) *intermedius Morrison, 1942 (= junior syn. of *H. inermis* according to Hubricht, 1962, 1985) (AL/TTp or Tp in cave in Uvalde Co., TX)

Helicodiscus multidentis Hubricht, 1962 (= *H. enneodon*) (type locality cave in DeKalb Co., TN/ seKY, neTN, swVA/ rock, Ed?,Tp? in DeKalb & Putnam Cos.,TN/VA T&E S2 rank, & global G3 rank/twilight coil)

Helicodiscus notius notius Hubricht, 1962 (= *H.n.n.* Hubricht, 1985) (KS to TX, e. to MD, s. to Jamaica/ Ed, Tp in AL, FL, KY (Mammoth C.), MO, TN (/ tight coil)

Helicodiscus notius specus Hubricht, 1962 (***)type locality cave in Barren Co.,KY & 2 caves in Sullivan Co.,TN/ Tb on cricket guano/ tight coil/ KY State T&E/ G1?)

Helicodiscus parallelus (*Helix lineata* Say, 1817; *Planorbis p.* Say, 1821; *Helix lineatus* Morese, 1864) Pilsbry, 1906 (MN s. TX, Fl n. to ME, eCanada/ Tp? in TN; Tx or Ac in AL, sOn; Tx in MD & OH; subfossil? /compound coil)

Helicodiscus (Pseudiscus) punctatellus Morrisson, 1942 (type locality cave in near Mammoth C./ scKY, ncTN/ Tp, glacial relict?/T N State T&E; KY Sensitive Species/ punctate coil)

Helicodiscus shimeki Hubricht, 1962 (epiean IA to ME, s. in Appalachians to WV /Tx or Ac in sON/ VA T&E/ temperate coil)

Helicodiscus (Hebetodiscus) singleyanus (Pilsbry, 1889) (epigean most of sUS/ Pleist.? fossil in Kartchner Cave, AZ)

Helicodiscus undescr. sp. or species (*?near *H. barri* in cave in Rockcastle Co.,KY & caves in eTN/ Tb or Tp) **Bibl.:** Seibert 1973

Helicodiscus undet. sp. (cave in Murray Co.,OK)

Helicodiscus triodus Hubricht, 1958 (East in limestone rubble /Tp? in 2 caves in Greenbrier Co. & 1 cave in Monroe Co.,WV/ VA T&E S2 rank & global G3 rank; OK T&E S1? Species of Concern / tallus coil)

Hendersonia Dall, 1905 - Helicinidae snails (1 species in US or Canada)

Hendersonia occulta (*Helicina o.* Say, 1831; *H. occulina* Owen, 1852; *H. rubella* Green, 1832; *H.o. rubella* Morrison, 1928) H. Baker, 1922 (PA to NC,IA,TN, MI & ON(disjunct), WI/ Tx? in MD, WV/ MO T&E R/cherrystone snail or drop)

Holospira Martens, 1860 - Urocoptidae snails (24 species in US or Canada)

Holospira arizonensis Stearns, 1890 (Ac in Cochise Co.,AZ/ Arizona holospira)

Holospira ferrissi Pilsbry, 1905 (Tx mine in AZ/ stocky holospira)

Holopsira undet. sp. (Pleist.? fossil in Kartchner Cave, AZ)

Holsingeria Hershler, 1989 - Hydrobiidae snails, Subfamily Lithoglypinae (1 species in US)

Holsingeria unthinksensis Hershler, 1988 (*type locality cave in Lee Co.,VA, E?/ Tb/Unthanks Cave Snail/ VA T&E/ G1S2) **Bibl.:** Hershler & Thompson 1990

Horatia Bourguignat, 1887 (See *Phreatodrobia*). **Bibl.:** Binder 1957; Bole & Volkovrh 1986; Bouters 1974; Hubricht, 1940a (Old World genus, undetermined &/or undescr. species ascribed to this genus likely are in *Phreatodrobia*)

Horatia micra = *Pheatodrobia m.*

Humboldtiana Jhering, 1892 (threeband snails) Xanthonychidae snails

Humboldtiana cheatumi (*Lyrodes c.* Pilsbry, 1935) (Phantom Lake Spr. & spr. at Balmorhea, Reeves Co.,TX/cave fed spr./state park in part/Davis Mountain threeband)

Hydrobia Hartmann, 1821 - Hydrobiidae snails (2 species in US or Canada)

Hydrobia minuta (Totten, 1834) (interstitial in PQ salt marsh)

Hydrobia truncata (Vanatta, 1924) (Virginian marine infauna)

Inflectarius Pilsbry, 1939 = *Mesodon* in part. See Emberton 1910 (11 species in US or Canada)

Inflectarius inflectus (Say, 1821) (*Mesodon i.* Pilbry, 1940; *M. i .mobilensis* (Clapp) Pilsbry, 1940; *M. i. edentatus* (Sampson) Branson, 1962 (Onondaga C.,Crawford Co.,MO/ IL, IN, KY, nFl to VA, sMI, eMO, eTX, eOK/ Tp in AL, IL, IN, KY(Mammoth C.), MO, OH, OK; Tp or Tx in KY/ lidded oval; shagreen)

Kurtzia Bartsch, 1944 - Conidae mollusk

Kurtzia arteaga (Dall & Bartsch, 1910) (East Pacific/ beaded mangelia/ AK marine infauna)

Kurtziella Dall, 1918 - Conidae mollusk

Kurtziella limonitella (Dall, 1884) (punctate mangelia/ Virginian marine infauna)

Kurtziella cerina Kurtz & Stimpson, 1851 (Virginian marine infauna)

Kurtziella atrostyla (Tryon, 1884) (brown-tip mangelia/ wFL Gulf of Mex. marine infauna)

Laevapex Walker, 1903 – Ancyliidae snails

Laevapex fuscus (C.B.Adams, 1841) (dusky ancyliid/ Virginian marine infauna)

Lartetia Bourguignat, 1869 - Hydrobiidae snails (1 species in US or only in Laurasia)

Lartetia undescr. sp.(= *Fontigens turritella*?) (*Skyline C.,Warren Co.,VA/Tb)

Leptachatina Pease, 1870 - Amastridae snails

Leptachatina undet. sp (amastrid land snail/ subalpine lava tube, HI)

Leptoxis Rafinesque, 1819 (= *Mudalia*) Pleuroceridae snails (25 species in US or Canada)

Leptoxis (*Mudalia*) *carinata c.* (Bruguiere, 1792) (= *Discus patula*; *Helix p.* Deshayes, 1830) NY to NC, SC?/ (Tx in PA/crested mudalia),

Leptoxis (*Mudalia*) *carinata nickliniata* (I. Lea, 1841) (Hot Sprs., Bath Co., VA/ phreatophile?)

Lithasia Haldeman, 1840 (= *Angitrema*, *Athearnia*, *Eurycaelon*, *Glittella*, *Megara*, *Meseschiza*) Pleuroceridae snails (10 species in US or Canada)

Lithasia (*L.*) *obovata* (Say, 1829) (OH River and tributaries in IL, IN, KY, OH, PA, TN/ Tx or

Tp in DeKalb Co.,TN; (Tx or Ac in one KY cave)/ Shawnee rocksnail)

Lithasia* (*Angitrema*) *verrucosa (Rafinesque, 1820) (branch of OH River near Cincinnati to lower part of river/lower Wabash River; lower eTN headstreams of TN River to Marshall Co, KY; Black & Spr. Rivers, AR/ subfossil? Ac or Tx in AL/Varicose Rocksnail/ AL T&E; GA,KY & TN Species of Concern)

Littoridinops Pilsbry, 1952 - Hydrobiidae snails

Littoridinops palustris F.G. Thompson, 1968 (bantam hydrobe/ wFL marine infauna)

Littoridinops tenuipes (Couper, 1844) (henscomb hydrobe/ Virginian marine infauna)

Littorina Ferussac, 1822 - Littorinidae snails (10 species in US or Canada)

Littorina* (*L.*) *irrorata (Say, 1822) (marsh periwinkle/ wFL marine infauna)

Littorina undet. sp. or species (ME sea caves; WA marine infauna)

Littorina ziczac (Gmelin, 1791) = *Nodilittorina z.*

Lyogyrus Gill, 1863 - Hydrobiidae snails, subfamily Amnicolinae (9 species in US or Canada)

Lyogyrus retromargo (*Amnicola r.* F.G.Thompson, 1968) Hershler & Thompson, 1990 (FL peninsular w. of St. John's River in Clay & Putnam w. to Dixie Co./ Tp in Shallow Spr.,Hamilton Co.,FL/indented duskysnail)

Lymnaea Lamarck, 1799; *Lymnaea caperata* = *Stagnicola c.*; *Lymnaea catascopium* = *S. c.* ;

Lymnaea elodes = *S. e.* ; *Lymnaea humilis* = *Fossaria h.*; *Lymnaea modicella* = *F. m.*

Lymnaea (*Fossaria*) *parva* = *F. p.* ; *Lyrodes cheatumi* = *Humboldtiana c.*

Macromphalina Cossman, 1888 (= jr. syn. of *Megalomphalus*) – Vitrinellidae snails

Macromphalina floridana Moore, 1965 = *Megalomphalus floridanus*

Marginella Lamarck, 1799 - Marginellidae

Marginella lavalleenana (wFL Gulf of Mex. marine infauna)

Marginella aureocincta Stearns, 1872 (wFL Gulf of Mex. marine infauna)

Marginella apicina Menke, 1828/ Virginian marine infauna)

Marstonia F.C. Baker, 1926 - Hydrobiidae snails, Subfamily Nymphophilinae

Marstonia ogmorhaphis = *Pyrgulopsis o.*

Megalomphalus Brusina, 1871 – Vanikoridae snails

Megalomphalus floridanus (*Macromphalina floridana* Moore, 1965) (Florida macromphaline/wFL Gulf of Mexico infauna)

Megomphix H.B.Baker, 1930 - Megomphicidae snails (3 species in US or Canada)

Megomphix californicus (A.G. Smith, 1960) (= *Glyptostoma* (*Megomphix*) *californicum*) (nCA/

Natural Bridge megomphix/ Ac or TTx in Trinity Co., CA)

Melanochlamys Cheesman, 1881 – Aglajidae snails

Melanochlamys diomedea (Bergh, 1894) (East Pacific/ albatross aglaja/ AK marine infauna)

Melanoides Olivier, 1804 - Thiaridae snails (1 species in US or Canada)

Melanoides tuberculatus (Mueller, 1774) (alien from seAsia, now in TX,AZ/ Tx? in FL/red-rim melania)

Melongena Schumacher, 1817 – Melongenidae snails

Melongena corona (Gmelin, 1791) (crown conch/ wFL Gulf of Mex. marine infauna)

Menetus H. & A. Adams, 1855 - Planorbidae snails

Menetus sampsoni = *Micromenetus* s.

Mesodon Rafinesque, 1821 (in part = *Appalachina* Pilsbry, 1939; *Inflectarius* Pilsbry, 1939; *Patera* Albers, 1850 in part) Polygyridae snails (10 species in US or Canada) **Bibl.:** Emberton 1988

Mesodon appressus a. = *Patera appressa*

Mesodon elevatus (Say, 1821) (subfossil? Ac or Tx in AL/proud globe)

Mesodon clausus (Say, 1821) (OH to AL, w. to MN, OK, mostly transappalachian from Gulf Coastal Plain to n.Interior Basin/ subfossil? Ac or Tx in AL/yellow globelet),

Mesodon elevatus (Say, 1821) (SE, n. to KY/ Tx or Ac in one KY cave/ proud globe)

Mesodon inflectus (Say, 1821) = *Inflectarius inflectus* P.1940 (*M. i. mobilensis* (Clapp) Pilsbry, 1940; *M. i. edentatus* (Sampson) Branson, 1962 (Onondaga C. (type locality), Crawford Co., MO/epigean in AL, IL, IN, KY, nFl to VA, sMI, eMO, eTX, eOK/ Tp in AL, IL, IN, KY (Mammoth C.), MO, OH, OK; Tp or Tx in KY/lidded oval)

Mesodon laevior (*Mopalia l.* Pilsbry, 1918) (SE, n. to KY/ Tx in KY(Mammoth C.))

Mesodon normalis (Pilsbry, 1900) (*Polygyra andrewsae normalis*) (SE, n. to KY/ grand globe/ Ac or Tx in cave in Claiborne Co.,TN)

Mesodon pallifera = *Megapallifera mutabilis*?

Mesodon perigraptus (Pilsbry, 1894) Pilsbry, 1940 (SE, n. to MO/ logs, leaf litter, urban, Tx in AL, GA, MO, TN; subfossil? Ac or Tx in AL/engraved bladetooth)

Mesodon rugeli (Shuttleworth, 1852) (subfossil? Ac or Tx in AL/deep tooth shagreen)

Mesodon roemeri (*Cylindrella r.* Pfeiffer, 1848; *Holospira r.*) (NM & TX epigean/ Tx in TX/ Texas oval)

Mesodon sargentianus (C.W. Johnson & Pilsbry, 1892) Pilsbry, 1940 (= *Triodopsis obstricta occidentalis*; *Pergulopsis s.*) (neAL/ Ttp,Cp/ grand bladetooth)

Mesodon undet. sp. or species (Tx, Tp or Ac in nMS, PA; Ttx in MO (Carter Co.); Ac, Tx or Tp in GA (Walker & Bartow (or *Triodopsis*) Cos.))

Mesodon thyroidus (Say, 1816) (TX to MN, e. to cFL, New England/ Tx in FL, eMO/ white-lip globe)

Mesodon zaletus (A. Binney, 1837) Pilsbry, 1940 (*M. z. ozarkensis* Pilsbry & Ferris,) (E river bluffs, ravines, mts., QB,ON s.to mostly Appalachians /Tx in MO; Tx or Ac in PA/ toothed globe) **Bibl.:** Pilsbry, 1949; Branson, 1962

Mesomphix Rafinesque, 1818 – Zonitidae snails (also put in Vitrinidae) (14 species in US or Canada)

Mesomphix californicus = *Glyptostoma c.*

Mesomphix inornatus (*Helix i.* Say, 1821; *Zonites i.* Binney, 1900; *Omphlin i.* Walker, 1906) Pilsbry, 1911 (ON, QB, VT s.to VA, w. to IN, OH, KY, TN/ Ac or Tx in MD/ plain button)

Mesomphix vulgatus (*H. perlaevis* v. H.B. Baker, 1933; *Helix laevigata* Rafinesque; M.l. Ferussac, 1821; *Zonites l.* Binney, 1878; *H. lucubrata* Binney, 1851) (PA to FL, w. to IL, LA/ subfossil? Ac or Tx in AL/common button)

Micromenetus F.C. Baker 1945 - Planorbidae snails) (5 species in US or Canada)

Micromenetus sampsoni (*Menetus (Micromenetus) s.* "Ancey" Sampson, 1885; *Menetus s.* Sampson, 1913) (classification uncertain) (AR,IL/ Tx in MO)

Millerelix Pratt, 1981 (once a subgenus of *Polygyra*) Polygyridae snails) (11 species in US or Canada)

Millerelix dorfeuilliana (*Polygyra d.* I. Lea, 1838) Pilsbry, 1940 (Tx in MO, OK/ oakwood liptooth)

Millerelix mooreana (*Polygyra m.* W. G. Binney, 1858) (Tx & paleo in cave in Val Verde Co., TX/ grassland liptooth)

Millerelix troostiana (= *Polygyra t.*) (Moricand, 1833) (Nashville liptooth/ Tx or Ac in cave Edmondson Co.,KY)

Mitrella Risso, 1826 – Columbellidae snails

Mitrella lunata (Say, 1826) = *Astyris l.*

Modulus Gray, 1842 – Modulidae snails

Modulus modulus (Linnaeus, 1758) (buttonsnail/ wFL Gulf of Mexico infauna)

Monadenia Pilsbry, 1897 - Xanthonychidae snails) (15 species in US or Canada)

Monadenia* (*Shastelixa*) *churchi Hanna & A.G. Smith, 1933 (Epigean? & Tx in Shasta & Trinity Cos., CA/ sensitive sp./Klamath sideband)

Monadenia* (*Corynadenia*) *circumcarinata (Stearns, 1879) (keeled sideband/Epigean? & Tx or Ac in Tuolumne Co., CA)

***Monadenia* (*M.*) *fidelis* f.** (Gray, 1834) (CA,OR,WA/Pacific sideband/ Tx or Ac in WA)

Monadenia* (*C.*) *hillebrandi (Newcomb, 1864) (Epigean? & Tx or Ac in cave in Fresno Co.,CA/ Mariposa sideband)

Monadenia* (*C.*) *hillebrandi mariposa = *M. mariposa*

Monadenia* (*Corynadenia*) *mariposa A.G. Smith, 1957 (=M. hillebrandi m.) (Epigean? & Tx in Naruoisa & Tuolumne Cos.,CA/ Mariposa sideband),

Monadenia* (*M.*) *marmoratis S.S. Berry, 1940 (marble sideband) (Epigean? & Tx in Siskiyou Co., CA/ Sierra sideband)

Monadenia mormonum hillebrandi (Newcomb, 1864) = *M.h.*

Monadenia* (*Corynadenia*) *mormonum m. (Pfeiffer, 1857) (Sierra sideband/Tp in CA;/ Sierra sideband)

Monadenia undescr. sp. (*Arothii*@ Frest, 1999) (epigean in Josephine Co./ Tx in OR C., OR)

Monadenia* (*Shastelixa*) *troglodytes t. Hanna & A.G. Smith, 1933 (fossil type in Samwel C.,CA/ Shasta sideband/ Federal T&E Candidate Category 2/TTp? in CA, common near or in c. mouths/ Shasta sideband) Roth 1981

Monadenia* (*Shastelixa*) *troglodytes wintu Roth, 1981 (likely Tx in nSierras, CA)

Monadenia* (*Corynadenia*) *tuolumneana (S.S. Berry, 1955) (epigean? & Tx or Ac in Tuolumne Co., CA/ Tuolumne sideband)

Nassarius Dumeril, 1806 - Nassariidae snails

Nassarius acutus (Say, 1822) (sharp nassa/ TX Gulf of Mex. marine infauna)

Nassarius albus (Say, 1826) (white nassa/ wFL Gulf of Mex. marine infauna)

Nassarius mendicus (Gould, 1850) (lean western nassa/ AK marine infauna)

Nassarius obsoletus (Say, 1822) (eastern mudsnail/ NC, Virginian marine infauna)

Nassarius trivittatus (Say, 1822) (threeline mudsnail/ RI marine infauna)

Nassarius vibex (Say, 1822) (bruised nassa/ MA, NC (rare), wFL, TX Gulf of Mex. rare marine infauna)

Natica Scoploi, 1777 – Naticidae snail

Natica clausa Broderip & Sowerby G.B.I, 1829 = *Cryptonatica affinis*

Natica pusilla = *Tectonatica p.* Say, 1822 (wFL Gulf of Mexico infauna)

Nematodiscus (Pilsbry, 1948 (as subgenus of *Discus*; still treated as such by Turgeon et al. 1998)) Discidae snails

Nematodiscus (*Nematodiscus*) *selenitoides* (*Zonites s.* Pilsbry, 1890; *Discus (N.) s.* Pilsbry, 1948; *Goniodiscus s.* H. Baker, 1929) (epigean in Mariposa Co,CA/Tp? in cave in Mariposa Co.,CA/ file disc)

Neohelix von Ihering, 1892 (once a subgenus of *Xolostrema*) Polygyridae snails) (7 species in US or Canada)

Neohelix albolabris (*Polygyra a.* Say, 1816; *Triodopsis albolabris*; Pilsbry, 1940; *Xolostrema a.a.* Webb, 1952) Emberton, 1988 (IN,E wooded hill sides, ravines, under logs,rocks,leaf litter, urban/Tx or Ac in sON, PA; Tx in KY, MD, VA; subfossil? Ac or Tx in AL/western whitelip)

Neohelix alleni (Sampson, 1883 or Wetherby in Sampson, 1883; *Polygyra a.* Hubricht, 1965 (*T.albolabris allenis* Pilsbry, 1940; *X. albolabris allenis* Webb, 1952) Emberton, 1988 (same habitat as *T.albolabris*/ Tx in MO/western whitelip)

Neritilia Van Martens, 1879 - Neritidae snails, Subfamily Neritiliinae

Neritilia hawaiiensis E.A. Kay, 1979 (anchialine pools Awakee-Paeula, Haena, Luahinewai) s.of Kakoko Point, HI Island/ HI Species of Concern S1.1, global G1)

Neritilia undescr. sp. #1 & #2 (HI anchialine pools/HI T&E S1?, global G1?)

Nesovitrea Cooke, 1921 – Zonitidae snails (also put in Vitrinidae) (4 species in US or Canada)

Nesovitrea binneyana (*Retinella b.* E.S. Morse, 1864) Hubricht, 1962 (ME to PA, w. to CA, WA/ Tx or Ac in sON; Tx in OH/ blue grass)

Neverita Risso, 1826 – Naticidae snails

Neverita duplicata (*Polinices duplicatus* Say, 1822) (shark eye/ LA, MD, NC, Virginian marine infauna)

Nodilittorina Martens, 1897 – Littorinidae snails

Nodilittorina ziczac (Gmelin, 1791) (*Littorina z.*) (zebra periwinkle/ TX marine infauna)

Novisuccinea Pilsbry, 1948 - Succineidae snails (4 species in US or Canada)

Novisuccinea undescr. sp. (N. "Minnesota A" Hoagland & Davis, 1987) ((glacial relict calciphile in non-cave cracks & crevices in 13 sites in Fillmore & Olmstead Cos., MN & Winneshiek Co., IA/ Minnesota Pleistocene ambersnail)

Novisuccinea undescr. sp. (N. "Minnesota B" Hoagland & Davis, 1987) ((glacial relict calciphile in non-cave cracks & crevices in 17 sites in Fillmore & Olmstead Cos., MN & Winneshiek Co., IA/ Minnesota Pleistocene ambersnail)

Odostomia Fleming, 1813 - Pyramidellidae snails

Odostomia engonia Bush, 1885 (Virginian (rare), MA marine infauna)

Odostomia gibbosa Bush, 1909 (Virginian, FL, TX Gulf of Mex. marine infauna)

Odostomia engonia (Virginian marine infauna)

Odostomia impressa Say, 1822 (LA marine infauna)

Odostomia seminuda (C.B. Adams, 1839) (LA marine infauna)

Odostomia undet. sp. (AK marine infauna)

Ogaridiscus Chamberlin & Jones, 1929 (once a subgenus of *Pristiloma*) Zonitidae snails (2 species in US or Canada)

Ogaridiscus subrupicola (*Hyalina s.* Dall, 1877) Riedel, 1980 (*Ogaridiscus s.* Chamberlin & Jones, 1929; *Vitrea s.* var. *s.* Dall, 1895)) (type locality cave in Tooele Co., UT & epigena in ID & OR/ southern tightcoil/ Tx or Tp?)

Ogaridiscus spelaeum Dall, 1895 (also subsumed in *P. subrupicola*) = *Pristiloma spelaeum* & *P. juniperum*)

Oligyra Say, 1818 - Helicinidae snails (1 species in US)

Oligyra orbiculata Say, 1818 (*H. hanleyana* Pfeiffer, 1848; *Helicina o.* Say, 1852; *O. tropica* Pfeiffer, 1852) (AR, SE, OK, TN, Mex./ Tx in TX/globular drop)

Onobops F.G. Thompson, 1969 – Hydrobiidae snails

Onobops undet. sp. (wFL brackish marine infauna)

Oreohelix Pilsbry, 1904 - Oreohelcidae snails (41 species in US or Canada)

Oreohelix handi Pilsbry & Harris, 1918 (extralimital fossil in Kokoweef C., CA/ spring mountainsnail)

Oreohelix strigosa (Gould, 1846) (rocky mountainsnail/ Ttx? in CO)

Orygoceras Brusina, 1882 - Hydrobiidae snails, Subfamily Nymphophilinae (1? species in US)

Orygoceras undescr.? sp. (Roaring Spr., Real Co., TX/ phreatophile?)

Paravitrea Pilsbry, 1898 Zonitridae snail (also put in Vitrinidae) (41 species in US or Canada)

Paravitrea petrophila (*Zonites p.* Bland, 1883; *Z. p. sinistrorsus* Cockerell, 1893; *Vitrea p.* Pilsbry, 1906) Binney, 1885 (SE n. to VA, TX/ Tx, Ac or alien Tp in TX/ Cherokee supercoil)

Paravitrea significans (Bland, 1866) Pilsbry, 1946 (AR, IL, IN, OK, TN epigeal /domed supercoil/ Tx in MO)

Paravitrea undet. sp. (MS/Tp)

Parvanachis Radwin, 1968 (also treated as subgenus of *Anachis*) – Columbelloidea snails

Parvanachis elongata (*Anachis elongata* C.B. Adams, 1845) (wFL Gulf of Mex. marine infauna)

Parvanachis obesa (*Anachis o.* C.B. Adams, 1845)(fat dovesnail/ wFL, Virginian (rare) Gulf of Mexico infauna)

Paranachis ostreicola (*Anachis o.* Sowerby, 1882 (oyster dovesnail/ wFL, TX Gulf of Mex. marine infauna)

Patera Pilsbry, 1939 (= *Mesodon* in part according to some authors) Polygyridae snails, Subfamily Polygyrinae, Trube Vespericonini (14 species in US or Canada)

Patera appressa (*Polygyra a.* Say, 1821) Pilsbry, 1940 (VA to IN, s. to nAL/ TTx in TN, KY (Mammoth & 3 other caves) / talus,river bluffs, roadsides, urban/ flat bladetooth)

Patera sargentiana (C.W. Johnson & Pilsby, 1892) Emberton, 1991 (*Mesodon & Pergulopsis sargentianus*) (Jackson & Madison **Co., AL/ grand bladetooth/ federal Species of Concern T&E/ Tp),

Pallifera mutabilis & ragsdalei = *Megapallifera m. & r.*

Petitilla Wise, 1996 –Pyramidelloidea snails

Petitilla crosseana (Dall, 1885) (*Sayella c.*) (TX Gulf of Mexico marine infauna)

Philine Ascanius, 772 - Philinidae snail (15 species in US or Canada)

Philine bakeri Dall, 1919 (WA marine infauna)

Philine sinuata Stimpson, 1850 (ME, MA, CT sublittoral marine interstitial)

Phreatoceras Hershler and Longley, 1986 (= *Hadoceras*) Hydrobiidae snails, Subfamily Lithoglypinae (1 species in US)

Phreatoceras taylori (= *Hadoceras t.* Hershler & Longley, 1986) Hershler & Longley, 1987 ((Roaring Spr., 7.6mi.w. of Camp Wood/Nueces & Brazos R. Basins, *Real Co.,scTx/ Tp, Pb, springs?/ nymph trumpet)

Phreatodrobia Hershler in H. & Longley, 1986 - Hydrobiidae snails, Subfamily Lithoglypinae (9 species in US)

Phreatodrobia conica Hershler & Longley, 1986 (Hueco Spr., Comal Co.(Edwards (Balcones Fault Zone) & possibly Cow Cr. Aquifers in Comal & Bexar Cos., TX/ Pb/ Hueco cavesnail/ G1)

Phreatodrobia coronae Hershler & Longley, 1987 (cavesnail/ sprs. near Del Rio, Val Verde Co.,swTX/ Pb/ G1)

Phreatodrobia imitata Hershler & Longley, 1986 (= *Physa i.*) (Verstraeten Well, Edwards Aquifer (Falcones Fault Zone) in the *Von Ormy Section of Bexar Co., TX/ Pb/ mimic cavesnail/ G1)

Phreatodrobia micra (*Hauffenia m.* Pilsbry & Ferriss, 1906; *Valvata* & *Horatia m.*) Hershler & Longley, 1986 (drift on Guadalupe R.,4mi.n.of New Braunfels +Artesian Well & caves and groundwater in Hays, Comal & Kendall Cos.,sTX/ Tb G3 or G2G3/ flattened cavesnail) **Bibl.:** Pilsbry 1916

Phreatodrobia nugax n. (*V.micra n.* Pilsbry & Ferriss, 1906; *Horatia n.* Taylor, 1975) Hershler & Longley, 1986 (drift debris of Guadalupe R.,(Comal Co.)+Travis, Hays, Kendall, Bexar, Uvalde Cos.,*scTX/ phreatic G3T3/ domed cavesnail)

Phreatodrobia nugax inclinata Hershler & Longley, 1986 (*Longhorn Portland Cement Co.well/ domed cavesnail/ Pb/ G1)

Phreatodrobia plana Hershler & Longley, 1986 (San Marcos Spr.,Hays Co.,Edwards Aquifer (Falcones Fault Zone) & poss. Glen Rose Aquifer in Hays & Comal Cos., TX/ Pb G1 or G3T3/d isc cavesnail)

Phreatodrobia punctata Hershler & Longley, 1986 (San Marcos Spr.,Hays Co.,Edwards Aquifer (Falcones Fault Zone) in Hays & Travis Cos., TX/ Pb G3 or (less likely) G1/ high-hat cavesnail)

Phreatodrobia rotunda (= *Physa r.*) Hershler & Longley, 1986 (San Marcos Sprs. & cave in Comal Co., *Edwards (Balcones Fault Zone) Aquifer, Bexar & Hays Co.,TX/ Pb/ beaked cavesnail)

Phreatodrobia? undet. sp. (near *Horatia*) (artesian well at San Marcos, TX/Pb?) Hubricht, 1940

Phreatodrobia? undescr. sp. (near *Horatia*) (*?cave in De Kalb Co., Al/Pb) **Bibl.:** Hubricht 1940

Physa Draparnaud, 1801 (most sp. also put in *Physella*) Physidae snails (6 species in US or Canada) **Bibl.:** Dawson, 1911; D. Taylor, 1988

Physa anatina = *Physella gyrina a.*; *Physa aurea* - see *Physella*

Physa heterostropha = *Physella h.* ; *Physa spelunca* = *Physella s.*

Physa undet. sp. (Tp in MO, WV/ Tx or Ac; Tx or Ac in MN)

Physella Haldeman, 1843 - Physidae snails (33 species in US or Canada)

Physella gyrina (Say, 1821) (tadpole physa)

Physella* (P.) *gyrina aurea (*Physa aurea* & *gyrina* Say, 1821; *P. crocata* Clench & Turner, 1956) (E to AL, MT/Ac or Tx in AR, sON, MO; n. extralimital fossil in Moore Pit (Dallas Co.), TX/ tadpole physa)

Physella* (P.) *gyrina anatina (Lea, 1864) (WI, SD sw to CO, NV; TX, AR n to IL, NB/ Tx in AR, TX)

Physella heterostropha (*Physla h.* Say, 1817) (PA spr./ pewter physa/ Pb?, Tx or Ac in 2 caves in WV)

Physella spelunca (*Physa s.* R. Turner & Clench, 1974) (*type locality cave in Big Horn Co., WY/Pb, Tb?/cave physa)

Physella undet. sp. (CO hyporheic)

Physella virgata v. (Gould, 1855) (NB w.to CA, MT, e.to TX, n.to KS/Tx in OK, TX/protean physa)

Planorbella Haldeman, 1840 - Planorbidae snails (20 species in US or Canada)

Planorbella armigera a. (Say, 1821) (NB w.to seON, w.to SK, nw to Mackenzie R., s.to GA, LA, w.to NB, MT/n. extralimital fossil in Moore Pit, TX/ thicklip rams-horn)

Planorbella campestris (Dawson, 1875) (= *Discus c.*) (meadow rams-horn/ TTx or Ac in Coronation Island c., seAK)

Pleurocera Rafinesque, 1818 - Pleuroceridae snails (19 species in US or Canada)

Pleurocera canaliculata (Say, 1821) (Tx or Ac in one KY cave/ silty hornsnail)

Polinices Montfort, 1810 – Naticidae snails

Polinices duplicatus (Say, 1822) = *Neverita duplicata*

Polinices mamillaris (Lamarck, 1822) (NC marine infauna)

Polinices pallidus (Broderip and G.B. Sowerby I, 1829) (palen moonsnail/ AK marine infauna)

Polygyra Say, 1818 (= *Daedalochila* Beck, 1837 in part) Polygyridae snails

Polygyra appressa - See *Mesodon*; *Polygyra dorfueilliana* = *Millerelix d.*

Polygyra hirsuta = *Stenotrema hirsutum*; *Polygyra mooreana* = *Millerelix m.*

Polygyra undet. sp. (Tx or Ac in Mammoth C., KY)

Polygyra tamaulipasensis = *Daedalochila t.*; *Polygyra texasiana* = *Daedalochila triodontoides*

Polygyra troostiana = *Millerelix t.*

Pomatiopsis Tryon, 1862 - Pomatiopsidae snails (5 species in US or Canada)

Pomatiopsis lapidaria (*Cyclostoma l.* Say, 1817) (epigean aquatic in AL, GA, IA, IL, IN, KY, MO, MS, NC, eND, OK, sON, eSD, TN, VA, WI, WV; occasional occurrences in NM, nTX/ Tx or Ac in AR, OH/ slender walker)

Pristiloma Ancey, 1887 – Zonitidae snails (also put in Vitrinidae) (13 species in US or Canada)
Pristoloma cavator Roth, 1998 (extinct? Tx? /* type locality cave in Shasta Co., CA/ all fossil snails except one with dried flesh remains)

Pristiloma (*Priscovitrea*) *chersinella* (*Helix c.* Dall, 1886; *Zonites c.* Binney, 1883) (southern & middle Sierras/ Ac or Tx in Tuolumne Co., CA/ black-foot tightcoil)

Pristiloma juniperum A.G. Smith, 1957 = junior syn. of *P. spelaeum*

Pristiloma (*Priscovitrea*) cf. *nicholsoni* H.B. Baker, 1930 (*P. (Priscovitreaops) n.* Baker, 1931) (epigean? in Santa Cruz Co., CA/ riparian tightcoil)

Pristiloma undet. sp. (Epigean? in Shasta & Tuolumne Cos., CA)
Pristiloma subrupicola = *Ogaridiscus s.*

Pristiloma (*Priscovitrea*) *spelaeum* (Dall, 1895) (*P. subrupicola* ssp. *spelaeum*; *Vitrea s.* var. *spelaea*; *Ogaridiscus subrupicola*) (type locality cave in Calaveras Co. & cave in Plumas Co., CA/ Tx?/ southern tightcoil/ Tp or Tx)

Promenetus F.C. Baker, 1935 - Planorbidae snails (2 species in US or Canada)

Promenetus umbilicatellus (Cockerell, 1887) (AK s. to OR, nUT, CO, NM, eOK, e to eOH, wNY, AB, SK, MB, TX/ umbilicate sprite/ TTx or Ac in Prince of Wales Island cave, seAK)

Prophysaon - see slug

Prunum Herrmannsen, 1852 – Marginellidae snails

Prunum apicinum (Menke, 1828) (queen marginella/ wFL Gulf of Mex. marine infauna)

Punctum Pilsbry, 1898 - Punctidae snails (7 species in US or Canada)

Punctum californicum Pilsbry, 1898 (Ep/Tx or Ac in CA/ ribbed spot),

Punctum randolphi (Dall, 1895) (conical spot/ Tx? in cave in Tooele Co., UT)

Pupilla Leach in Fleming, 1828 - Pupillidae snails, Subfamily Pupillinae (5 species in US or Canada)

Pupilla blandi E.S. Morse, 1865 (Pleistocene extralimital fossil in Dry Cave, NM/ rocky mountain column)

Pupilla (*P.*) *hebes* (Ancey, 1881) extralimital fossil in Kokoweef C., CA/ crestless column)

Pupisoma Stoliczka, 1873 - Pupillidae snails, Subfamily Pupillinae (3 species in US or Canada)

Pupisoma dioscoricola (*Helix d.* C. B. Adams, 1845; *H. punctum* Morelet, 1851; *Microphysa d.* Binney; *P. americanum* Moellendorff, 1899) P., 1920 (FL, TX, Mex./s. extralimital fossil in Moore Pit, TX/ yam babybody)

Pupoides Pfeiffer, 1854 - Pupillidae snails, Subfamily Pupillinae (4 species in US or Canada)

Pupoides albilabris (C.B. Adams, 1841) (36,000 +/- 360 yrs. B.P. in Kartchner C., sAZ)

***Pupoides* undet. sp.** (C.B. Adams, 1841) (36,000 +/- 360 yrs. B.P. in Kartchner C., sAZ)

Pupoides hordaceus (Gabb, 1866) (Pleistocene extralimital fossil in Dry Cave, NM/ ribbed dagger)

Pyramidella Lamarck, 1799 –Pyramidellidae snails

Pyramidella crenulata (Holmes, 1860) (MA, wFL, TX Gulf of Mex. marine infauna)

Pyrgocythara –Woodring, 1928 – Conidae snails

Pyrgocythara plicosa (C.B. Adams, 1850) (plicate mangelia/ wFL Gulf of Mexico infauna)

Pyrgospira Swainson, 1840 -Turridae snails

Pyrgospira ostrearum (*Crassispira ostrearum* Stearns, 1872) (Virginian marine infauna)

Pyrgulopsis Call & Pilsbry, 1886 (= *Fontelicella*, *Pygophorus*) (Springsnails) Hydrobiidae snails, Subfamily Nymphophilinae (68 species in US or Canada) **Bibl.:** Frest 1995; Hershler 1994; Taylor 1966; Thompson 1968

Pyrgulopsis chupaderae (*Fontelicella c.* Taylor, 1987) Hershler, 1994 (Chupadera springtail; pyrg snail/ NM/ spring, Pb?)

Pyrgulopsis fairbanksensis Hershler & Sada, 1987 (*Fairbanks Spr.,Ash Meadows karstic sprs., Nye Co., NV/ Fairbanks springsnail/ federal Species of Concern T&E)

Pyrgulopsis gilae (*Fontelicella g.* Taylor, 1987) Hershler, 1994 (Gila springsnail, snail or pyrg / NM/ federal Species of Concern T&E/ Pb?)

Pyrgulopsis hendersoni (*Amnicola h.* Pilsbry, 1933; *Fontelicella h.*) (*Point of Rocks spr. complex, Ash Meadows karstic sprs.,Nye Co.,NV/ Harney Lake springsnail/ federal Species of Concern T&E)

Pyrgulopsis isolata Hershler & Sada, 1987 (*Ash Meadows karstic spr.,Nye Co.,NV/ elongate-gland springsnail/ federal Species of Concern T&E/)

Pyrgulopsis montezumensis Hershler in Hershler & Landye, 1988 (*Montezuma Well, Yavapai

Co., AZ/Pb/Montezuma Well springsnail/ federal Species of Concern)

Pyrgulopsis morrisoni Hershler, 1988 (Page s., AZ/ federal Species of Concern T&E/ spring, Pb?)

Pyrgulopsis nanus Hershler & Sada, 1987 (*Ash Meadows karstic sprs., Nye Co., NV/ distal gland springsnail)

Pyrgulopsis ogmophaphe (*Marstonia o.* Thompson, 1977) (Owen Spr., Sequatchie, Marion Co., TN/ karst spring, phreatophile?)

Pyrgulopsis pachyta (*Marstonia p.* Thompson, 1977) (armored marstonia or snail/ AL spr./federal Species of Concern T&E/ e T&E)

Pyrgulopsis pecosensis (*Fontelicella p.* Taylor, 1987) (karstic Blue Spring, Eddy Co., NM/ Pecos springsnail)

Pyrgulopsis roswellensis Taylor, 1987 (Roswell spring, NM/ spring, Pb?)

Pyrgulopsis sargentianus = *Patera s.*

Pyrgulopsis thermalis Taylor, 1987 (NM/spring, Pb/ New Mexico hot springsnail or New Mexico hot spring pyrg/ federal Species of Concern T&E)

Pyrgulopsis thompsoni Hershler, 1988 (Huachuca s./AZ/spring, Pb?)/ federal Species of Concern T&E),

Rabdotus Albers, 1850 – Bulimulidae snails (also put in Orthalicidae)(4 species in US or Canada)

Rabdotus dealbatus (Say, 1821) (= *Bulimulus a. mariae* Pilsbry, 1946; *B.a.* Hubricht, 1960); *R.a.a.*, *R.a. hesperius* Pratt, 1969) (Central and Southern US, Mexico epigeal/ Tx in MO/ KY State T&E/ whitewash rabdotus)

Retinella (see *Nesovitrea*, *Glyphyalina c.p.*)

Retusa T. Brown, 1827 – Retusidae snails
Retusa canaliculata (Say, 1826) (FL marine infauna)

Rictaxis Dall, 1871 – Acteonidae snails
Rictaxis punctocaelatus (Carpenter, 1864) (AK marine infauna)

Rictaxis punctostriatus (*Acteon p.* C.B. Adams, 1840) (pitted baby-bubble/ Virginian, wFL, TX Gulf of Mex. marine infauna)

Sayella Dall, 1885 – Pyramidellidae snails

Sayella crosseana (Dall, 1885) = *Petitilla c.*

Sayella chesapeakea Morrison, 1939 (MA, Virginian marine infauna)

Sayella hemphillii (Dall, 1884) (*S. livida* Rehder, 1935) (wFL Gulf of Mexico marine infauna)

Sayella producta (= *Odostomia p.* C.B. Adams, 1840) (odostome/ Virginian marine infauna)

Sayella chesapeakea Morison, 1939/ Virginian marine infauna)

Schwartziella Ponder, 1985 - Rissoidae snails

Schwartziella catesbyana (*Rissoina catesbyana* D'Orbigny, 1840) (LA, wFL Gulf of Mexico infauna)

Sinum Roding, 1798 – Naticidae snail

Sinum perspectivum (Say, 1831) (white baby ear/ wFL Gulf of Mexico infauna)

Sonorella Pilsbry, 1902 (talusnails) Helminthoglyptidae snails (2? species in US or Canada) .

Bibl.: W. Miller 1967

Sonorella reederi W. B. Miller, 1984 (type locality near Rampart Cave, Mohave Co.,AZ/ Tx? in AZ)

Sonorella undet. sp. or species (Pleist.? fossil in Kartchner Cave, AZ; late Pleist. or early to middle Holocene in Tse'an Bida C., Grand Canyon, nAZ)

Speleodiscoides A.G. Smith, 1957 - Discidae snails (1 species in US)

Speleodiscoides spirellum A.G. Smith, 1957 (fossil type in Samwel C., CA/Tx or Tp in CA/glass coil). **Bibl.:** W.Miller 1972

Stagnicola Leach, 1830 - Lymnaeidae snails (24 species in US or Canada)

Stagnicola (*Hinckleyia*) *caperata* (Say, 1829; *Lymnaea c.*) (PQ,MA w to CA,MT, n to Yukon, s. to MD, IN, CO/ extralimital (sub)fossil in TX/ wrinkled marshsnail)

Stagnicola aff. *catescopium* (*Lymnaea c.* Say, 1867 or 1817) (NS w. to ND; Great Slave Lake s. to nIA, nOH & MD/ Tx or Ac in PA/woodland pondsnailed)

Stagnicola cockerelli (Pilsbry & Ferris, 1906) (= *Fossaria cockerelli*) (Pleistocene TTx? In seNM)

Stagnicola elodes (*Lymnaea e.* Say, 1821) (New England w. to MT, OR, CA?, s. to NM, Canadian Interior Basin, MT/ marsh pondsnailed/ Ac or Tx in nON)

Stenotrema Rafinesque, 1819 (= *Euchemotrema* Archer, 1939 in part, long used as subgenus of *S.*) Polygyridae snails (26 species in US or Canada)

Stenotrema fraternum = *Euchemotrema f.*

Stenotrema hirsutum (*Helix h.* Say, 1817) Pilsbry, 1940 (MA, ON, s. to AL, w. to MN, KS, MS/ Tx or Ac in MD; Tx in KY, NJ/ hairy slitmouth)

Stenotrema leai = *Euchemotrema l.*

Stenotrema morosum Hubricht, 1978 (valid species?, not listed in Turgeon et al., 1998) (neTN/ Pleist. to Recent fossil/Tb?)

Stenotrema undet. sp. (Tp in nMS)

Stenotrema spinosum (I. Lea, 1830) (AL, GA, TN, VA epigean / subfossil? Ac or Tx in AL/carinate slitmouth)

Stenotrema stenotrema (Pfeiffer, 1842) (VA ot GA, w. to OH, MO, OK, LA/ subfossil? Ac or Tx in AL/ inland slitmouth)

Stygopyrgus Hershler & Longley, 1986 - Hydrobiidae snails, Subfamily Littoridininae (1 species in US)

Stygopyrgus bartonensis Hershler & Longley, 1986 (*Barton Spr., Travis Co., scTX/ Pb/ Barton cavesnail)

Succinea Draparnaud, 1801 - Succineidae snails (21 species in US or Canada)

Succinea forsheyi I. Lea, 1864 (*S. haleana* Lea, 1864; *S. halei* Lea; *S. witteri* Shimek, 1913; *S. concordialis* Gould, 1848; *S. forsheyi* I. Lea, 1864; *Physa h.*) (SE to TX, AR epigean/ Tp in 2 caves in Monroe Co., IL & cave each in Crawford Co., MO & Christian Co., MO)/ spotted ambersnail) **Bibl.:** Rehder 1934

Succinea cf. *gabbi* = *Catinella g.*

Tarebia Adams, 1854 - Thiaridae snails (1 species in US or Canada)

Tarebia granifera (Lamarck, 1822) (seAsia alien/Tx? in FL/ quilted melania)

Tectonatica Sacco, 1890 – Naticidae snails

Tectonatica pusilla orbigny, 1842 (*Natica p.* Say, 1822)(miniature moonsnail/ wFL Gulf of Mexico infauna)

Texadina Abbott & Ladd, 1951 - Hydrobiidae snails

Texadina sphinctostoma (Abbott & Ladd, 1951) (narrowmouth hydrobe/ AL, TX marine infauna)

Texapyrgus Thompson & Hershler, 1991 - Hydrobiidae snails, Subfamily Cochliopinae (1 species in US)

Texapyrgeus longleyi Thompson & Hershler, 1991 (*rheogene spr., Devils R., Slaughter Bend, Amistad Natl. Rec. Area, Val Verde Co., TX/ striated hydrobe/ Pb?),

Thais Roding, 1798 - Muricidae snails

Thais lapillus (Linnaeus, 1758) (ME sea cave)

Tornatina A. Adams, 1850 – Cylichnidae snails

Tornatina inconspicua (Olsson & McGinty, 1958) (wFL Gulf of Mex. marine infauna)

Trichia Hartmann, 1840 - Helicidae snails (2 species in US or Canada)

Trichia hispida (Linnaeus, 1758) (Ac alien in NS)

Trilobopsis Pilsbry, 1939 - Polygyridae snails (5 species in US or Canada)

Trilobopsis roperi (Pilsbry, 1889) (Shasta chaparral/Epigean, Ttx in Shasta Co., CA/ Shasta chaparral),

Triodopsis Rafinesque, 1819 - Polygyridae snails (27 species in US or Canada) **Bibl.:** Emberton 1988; Vagvolgyi 1968

Triodopsis albolabris = *Neohelix a.*; *Triodopsis alleni* = *N. a.*

Triodopsis caroliniensis = *Xolostoma c.*; *Triodopsis fosteri* = *X.f.*

Triodopsis fradulenta (Pilsbry, 1894) (NY to NC, w. to MI, MO/ Tx or Ac in PA; /baffled threetooth)

Triodopsis hopetonensis (Shuttleworth, 1852) (VA, s. to AL/ Tx in FL/ magnolia threetooth)

Triodopsis undet. sp. or species (Ttx in Carter Co., MO; Ac, Tx or Tp in GA (Bartow Co. (or *Triodopsis*)))

Triodopsis tridentata juxtidens (= *T. j.*) (Pilsbry, 1894) (NC, VA, WV/ Tx in MD/ northern threetooth)

Triodopsis tridentata (t.) (*Polygyra t.* Say, 1816) (NH, n. to AL, w. to MI, MS, MO, IL, IN, MO, WV, VA/ Tx or Ac in KY, PA/ northern threetooth)

Triodopsis vulgata (*Triodopsis fraudulenta* v. Pilsbry, 1940; *T. neglecta* v. Pilsbry; *T. hopetonensis claibornensis* Lutz) (AL, GA, IN, KY, MI, MS, NC, TN, VA, WV, mostly mid-Appalachians & w. in ne. Interior Basin/ Tp? in IL; subfossil? Ac or Tx in AL/ baffled/ dished threetooth)

Tryonia Stimpson, 1865 - Hydrobiidae snails, Subfamily Cochliopinae (once in Hydrobiinae & Littoridininae) **Bibl.:** Hershler 1999 (22 species in US or Canada) **Bibl.:** Hershler & Sada 1987; Hershler, 1989; Hershler & Landye 1988; H. & Thompson 1987, 1992; Taylor 1987

Tryonia adamantina Taylor, 1987 (diamond tryonia or diamond Y springsnail/ Tx? in TX)
Tryonia circumstriata (Leonard and Ho, 1960) (Gonzales Spring, TX)

Tryonia kosteri Taylor, 1987 (Koster's springsnail/ ,NM/candidate T&E)
Tryonia stocktonensis Taylor, 1987 = junior syn. of *T. circumstriata*

Turbonilla Risso, 1826 – Pyramidellidae snails
Turbonilla interrupta Virginian, wFL Gulf of Mex .marine infauna)
Turbonilla conradi (wFL Gulf of Mex. marine infauna)

Turbonilla undescr. sp. (wFL Gulf of Mex. marine infauna)
Turbonilla viridaria (wFL Gulf of Mex. marine infauna)

Urosalpinx Stimpson, 1865 – Muricidae snails
Urosalpinx cinerea (Say, 1822) (Atlantic oyster drill)

Vallonia Risso, 1826 - Valloniidae snails (8 species in US or Canada)
Vallonia cyclophorella Sterki, 1892, ex Ancey; ms (*Helix costata* form *cyclophorella* Cockerell, 1890) (WY, NV, CA, OR/ silky vallonia/ Pleistocene fossil in Kokoweef C.,CA/silky vallonia)

Vallonia gracillicosta Reinhardt, 1883 (Pleistocene extralimital fossil in Dry Cave, Eddy Co.,seNM)

Vallonia undescr.? sp. (extinct? fossil in Kokoweef C.,CA)

Valvata O.F. Muller, 1774 – Valvatidae snails
Valvata undet. sp. (Virginian marine infauna)

Ventricallus - See *Zonitoides*

Ventridens Pilsbry, 1946 – Zonitidae snails (also put in Vitrinidae) (22 species in US or Canada)

Ventridens demissus (*Helix* d. Binney, 1843; *Gastrodonta* d. Pilsbry, 1900; *Zonitoides* (*Ventricallus*) d. Riedel, 1980) (SE, n. to VA, KY/ perforate dome/ Tx in KY(one cave), FL)

Ventridens undet. sp. (Ac, Tx or Tp in GA (Walker Co.)

Vertigo Muller, 1774 - Pupillidae snails (32 species in US or Canada)
Vertigo brierensis Leonard, 1972 (glacial relict calciphile in non-cave cracks & crevices in 2 sites in Galena Group areas in IA)

Vertigo hubrichti hubrichti (*V. gouldi* h. Pilsbry, 1934) (glacial relict calciphile in non-cave cracks & crevices in 23 sites in IA(Winneshiek Co.) MN (Fillmore Co.) & WI (Grant Co.))

Vertigo hubrichti variabilis Frest, 1991 (glacial relict calciphile in non-cave cracks & crevices in 48 sites in IA, MN, WI)

Vertigo iowaensis Frest, 1991 (glacial relict calciphile in non-cave cracks & crevices in 6 sites in IA (Allamakee, Clayton & Howard Cos.)/ Iowa Pleistocene vertigo)

Vertigo meramecensis Van Devender, 1979 (glacial relict calciphile in non-cave cracks & crevices in MO (2sites),IA (13sites) & perhaps 3 sites in Fillmore & Olmstead Cos., MN/ Tx in MO/MN T&E; IO T&E/ bluff vertigo)

Vespericola Pilsbry, 1939 (*Vespericolini* Emerton, 1994) Polygyridae snails, Subfamily Polygyrinae, Tribe Vespericonini (16 species in US or Canada)

Vespericola shasta (S.S.Berry, 1921) (Shasta or Siskiyou hesperian/Epigean & Tx in Shasta Co.,CA/ Shasta hesperian)

Vitrea Fitzinger, 1833 - Zonitidae snails
Vitrea petrophila = *Paravitrea petrophila*

Vitrinella C.B. Adams, 1850 – Vitrinellidae snails

Vitrinella floridana Pilsbry & McGinty, 1946 (Florida vitrinella/ TX marine infauna)

Xolotrema Rafinesque, 1819 (once a subgenus of *Triodopsis*) Polygyridae snails (4 species in US or Canada)

Xolotrema caroliniensis (*Triodopsis c.*) (I. Lea, 1834) Emberton, 1988 (SC, n. to AL, w. to TN, LA/ subfossil? Ac or Tx in AL/blunt wedge)

Xolotrema fosteri (F. C. Baker, 1921) (*Triodopsis f.* Pilsbry, 1940; *T. f. hubrichtii* Pilsbry, 1940; *T.h.* Leonard & Fryie, 1960) (NJ, IN to IA, s. to MS,LA/ Tp or Tx in IL,MO/ bladetooth wedge)

Zonitoides Lehmann, 1862 (= *Ventricallus* Pilsbry, 1946) Zonitidae snails, Subfamily Zonitinae, Tribe Zonitini (7 species in US or Canada)

Zonitoides (Zonitoides) arboreus (Say, 1816) (NA (except AK,nCanada) near logs & in urban areas/ quick gloss/ epigean in most of East, Central US, n. to sCanada/ Tx in IL (4caves), IN (Lawrence Co.), KY(Mammoth C.), NJ, ON (2 caves), NS (1 cave), TN, TX, WV, VA; Tp or Tx in AL, GA (Decatur Co.), MO; Ttp in cave in Rockcastle Co., KY)

Zonitoides nitidus (Muller, 1774) Pilsbry, 1946 (NE, ON w.to eSD,s.to IN, WV, MD/ Tx or Ac in sON/ black gloss)

Zonitoides demissus = *Ventridens d.*

Zonitoides kirbyi R.W. Fullington, 1974 (TTp or Tx in eOK,scMO (Camden & Christian & Pulaski Cos.), swTX (Dickens Co. epigean)/ shadow gloss)

Zonitoides limatulus (*Helix l.* A. Binney, 1840) (Tx or Ac in cave in Edmondson Co., KY/dull

gloss)

Zospeum Bourguignat, 1856 - See *Carychium*

Snakes

Class Reptilia, Subclass Sauria, Infraclass Lepidosauria, Order Squamata, Suborder Serpentes.

Bibl.: Benedict 1976b; Drada 1968; Stechert 1980; Archeol.: Athens 1989; **Areas; FL:** Auffenberg 1963; Holman 1958; **MO:** Barnholtz 1960-a; **OK:** Black 1974; **TX:** Fowler 1948. **UT:** D. Cox & Tanner 1995; Woodbury & Hansen 1950

Families incl.

Boidae (boas, pythons & anacondas)
Subfamily Erycinae (*Charina*)

Colubridae (colubrids; culubrid snakes; harmless snakes) (*Carphophis*, *Coluber*, *Diadophis*, *Elaphe*, *Heterodon*, *Hypsiglena*, *Lampropeltis*, *Masticophis*, *Nerodia*, *Opheodrys*, *Oxybelis*, *Pituophis*, *Regina*, *Rhadinaea*, *Salvadora*, *Storeria*, *Tantilla*, *Thamnophis*, *Trimorphodon*, *Virginia*)

Elapidae (elapids; front-fanged snakes; cobras & allies) (*Micrurus*)

Viperidae (pit vipers & vipers) (*Agkistrodon*, *Crotalus*)

Agkistrodon Beauvois, 1799 (copperheads, cottonmouths) Viperidae snake (2 species in US or Canada)

Agkistrodon contortrix c. (Linnaeus, 1766) (southern copperhead/ eNC to nwFL, w to e,cTX, seOK, AR, wTN, sMO to swIL/ TTX in AR (Baxter Co., TX)

Carphophis Gervais, 1843 (worm snakes) Colubridae snake (1 species in US or Canada)

Carphophis amoenus (Say, 1825) (Worm Snake/sNew England to c.GA, w. to seNB, eKS, eOK, extreme neTX/ Ranchlabrean extralimital in Arrendondo & Haile Sites, Alacua Co., FL & Conrad Fissure (AR))

Charina Gray, 1849 (= *Calabaria*, *Lichanura*) (rubber boas) Boidae snakes, Subfamily Erycinae Bonaparte, 1831 (1 species in US or Canada)

Charina bottae (Blainville, 1835) (rubber boa/epigean in WA,OR,CA/ Tx or Ac in WA)

Coluber Linnaeus, 1758 - Colubridae snake

Coluber constrictor Linnaeus, 1758 (racer/ sBC to sON, eMex to nGuatamala;all US except AK/ Ac in NJ?, OH)

Crotalus Linnaeus, 1758 (rattlesnakes) Viperidae snakes (13 species in US or Canada). **Bibl.:** Benedict 1976f; Crawford 1975d

Crotalus adamanteus Palisot de Beauvois, 1799 (Lower coastal plain, seNC to Florida Keys, w. to sMS and extreme eLA/ eastern diamondback rattlesnake/ TTx in FL)

Crotalus atrox (Bair & Girard, 1853) (seCA e.to cAR, s.to nMex./ western diamondback rattlesnake; TTx in NM, OR, TX) **Bibl.:** Benedict 1976f; Chantell 1970

Crotalus horridus h. (Linnaeus, 1758) (timber rattlesnake/swME s.to FL, w.to seMN & cTX/ extralimital fossil in s.IN/ TTx in NJ, OH; Ac in SC) **Bibl.:** R.Richards 1991.

Crotalus lepidus (Kennicott, 1861) (rock rattlesnake/ seAZ, wc,seNM, se. to Jalisco, through Trans-Pecos to scTX/ TTx in cave in Edwards Co., TX)

Crotalus molossus (Baird & Girard, 1853) m. (black-tailed rattlesnake/ AZ, e.to cTX, s. to cMex./ TTx in San Saba, Terrell Cos., TX)

Crotalus oreganus. Rafinesque, 1818 = *Crotalus viridis oreganus*

Crotalus potterensis Brattstrom, 1953 (questionable sp./extinct in Potter Cr. C.,CA).

Crotalus viridis oreganus Holbrook, 1840 (*C. oreganus* Rafinesque, 1818) (scBC s. to OR (except se) to w. of Sierra Nevadas in CA s. to Kern Co./ northern Pacific rattlesnake/ Ttx in OR)

Diadophis Baird & Girard, 1853 (ring-necked snakes) Colubridae snakes, subfamily Xenodontinae (1 extant species in US or Canada)

Diadophis elinorae Auffenberg, 1963 (extinct Pleist. in Inglis sink, Citrus Co.,FL)

Diadophis punctatus p. Linnaeus, 1766) (sNJ to FL/ southern ring-necked snake/ TTx in FL; Ac in KY, NJ; Ttx or Ac in AL)

Diadophis punctatus stictogenys Cope, 1860 (extreme sIL, s. in MS Valley to Gulf, MobileBay w. to eTX/ Mississippi ring-necked snake/ Tx or Ac in AR; Tx in MS)

Dryinoides Auffenberg, 1958 (extinct ring-necked snakes) Colubridae snakes, subfamily Xenodontinae

Dryinoides cf. undet. sp. (extinct Pleist. in Inglis sink, Citrus Co.,FL)

Elaphe Fitzinger in Wagler, 1833 - Colubridae snake (7 species in US or Canada)

Elaphe guttata g. (Linnaeus, 1766) (sNJ to sFL w. to LA/ corn snake/ Tx or Ac in MS, TX; Tx in FL,WV (feeds on *Ceuthophilus* crickets)

Elaphe guttata emoryi (Baird & Girard, 1853) (LA, swIL w. to CO,UT, eNM, s. to Mex./ Great

Plains rat snake/ predation on OK *Myotis velifer* bats)

Elaphe obsoleta (Say in James, 1823) (eON,sVT s. to sFL, w. to wTX, adjacent Mex. n.. to swMN & sMI/ rat snake/ Rancholabrean extralimital, Schultze C., TX/ Ac in OH; TTx in FL, TX; Ttx or Ac in NJ) **Bibl.:** Sexton & Hunt 1980

Elaphe obsoleta bairdi (Yarrow, 1880) (Baird's rat snake/ cTX w.to Big Bend, adjacent Mex./ TTx in TX)

Elaphe obsoleta o. (Say, 1823) (VT to NC, sw to cGA, n.to scIL, s.to nLA,OK, n.to swMN, sMI/ black rat snake/ Tx or Ac in AR; Tx in KL, MD, MO(eating bats), WV)

Elaphe obsoleta quadrivittata (Holbrook, 1836) (NC to n,cFL/ yellow ratsnake; chicken snake/ Tx in FL),

Elaphe obsoleta spiloides (Dumeril, 1854) (sIL, swIN to MS, e.to swGA, nwFL/ gray ratsnake/ Tx in FL)

Elaphe obsoleta lindheimeri (Baird & Girard, 1853) (sLA to ecTX/TTx in TX)

Elaphe triaspis (*Senticolis t.* Cope, 1866) (eAZ s. to Costa Rica/ green rat snake /Tx or Ac in AZ)

Elaphe subocularis (Brown, 1901) (Trans-Pecos rat snake/ scNM, swTX, adjacent Mex./ TTx in Pecos, Val Verde Cos., TX)

Elaphe vulpina (Baird & Girard, 1853) (Great Lakes w. to seSD, eNB, nMO/ fox snake/ extralimital Wisconsinan fossil in Bell C.,AL & Conrad Fissure (AR))

Heterodon Latreille in Sonnini & Latreille, 1801 (hog-nosed snakes) Colubridae snakes (3 species in US or Canada)

Heterodon nasicus Baird & Girard, 1852 (western hog-nosed snake/ now in seAB and nw Manitoba, s. to seAZ, TX,nMex, disjunct in MN, IA, IL, MO, AR/ Pleist. extralimital in Inglis sink, Citrus Co., FL)

Heterodon platyrhinos Latreille in Sonnin & Latreille, 1801 (eastern longnosed or hognose snake) (ecMN to sNH, s.to sFL, w.to eTX, wKS/ Ac in Fenceline Sink (Burnet Co., TX) & NJ)

Hypsiglena Cope, 1860 (night snakes) - Colubridae snakes (1 species in US)

Hypsiglena torquata (Gunther, 1860) (SW to eOR, scWA, sCA/ night snake/ ?Tx in cave I Edwards Co., TX)

Lampropeltis Fitzinger, 1843 (kingsnakes, milk snakes) Colubridae snakes (6 species in US or Canada)

Lampropeltis calligaster (Harlan, 1827) (prairie kingsnake) (cMD to nFL, w.to seNB, eTX/

extralimital in C. Without A Name, & Miller's C. (11,000BP), Llano Co., TX) cTX)

Lampropeltis getulus (Linnaeus, 1766) (sNJ to nFL, w. to swOR, s. to Baja, Zacatecas, Mex/
common kingsnake/ Ac in OH)

Lampropeltis mexicana (Garman, 1884) gray-banded kingsnake

Lampropeltis mexicana blairi Flury, 1950 x *L. m. alterna* (Brown, 1901) (= *L. a.* Garstka, 1982)
(Trans-Pecos s. to Mex./gray-banded kingsnake/Ac or Tx in cave in Edwards Co., TX),

Lampropeltis pyromelana (Cope, 1867) (ncAZ, s. to nMex., disjunct in seNV, wAZ & scNM/
Sonoran mountain kingsnake/ Pleist. fossil in Vulture C., AZ)

Lampropeltis triangulum (Lapepede, 1788) (swPQ, seM, sON, c, seMN s. to most of E, s. to
Venezuela/ Sonoran mountain kingsnake/ extralimital e. in late Wisconsinan Smith Cr. C., NV/
Ac or Ttx in NJ)

Liochlorophis Oldham & Smith, 1991 - Colubridae snakes (1 species in US or Canada)

Liochlorophis vernalis (= *Opheodrys vernalis* (Harlan, 1827) (*Coluber v.*) (smooth green
snake/ now in NS w. to seSK, s. to NC & neKS; seID & WY s. to ne, seUT & eNM, wTX/
Pleist. extralimital in Inglis sink, Citrus Co., FL, Worm Hole C., WV; Williams C. (TX) &
Anderson Pit (IN)/ Ac in NJ)

Masticophis Baird & Girard, 1853 (coachwhips, whipsnakes, racers) Colubridae snakes (4
species in US or Canada)

Masticophis flagellum (Shaw, 1802) (coachwhip/ nc. to sFL, w. to swTN, LA, seKS, sMO s. to
wLA, eTX/ TTx in TX; feeding on bats)

Masticophis taeniatus (Halliwell, 1852) (striped whipsnake/ sWA se to sNM, w, cTX, s. to
wcMex./ TTx in TX; feeding on bats)

Masticophis flagellum f. (Shaw, 1802) (swNC, swTN, swIL, NB, e.CO, ncNM, swUT,
wc, sNVA, sCA, s. to FL, TX, cMex./ coachwhip/ TTx in OK (hibernating); TTx in TX (feeding on
bats); Late Pleist. in Smith Cr. & Baker C., NV)

Micrurus Wagler, 1824 (American coral snakes) Elapidae snakes (1 species in US or Canada)

Micrurus fulvius (Linnaeus, 1766) (northern coral snake)

Micrurus fulvius tenere (Linnaeus, 1766) (Texas or North American coral snake/ sAR, wLA,
sTX to neMex./ TTx in TX)

Natrix = *Nerodia*

Nerodia Baird & Girard, 1853 (water snakes) Colubridae snakes (7 species in US or Canada)

Nerodia fasciata f. (Linnaeus, 1766) (coastal plain of NC to sFL, w. to eTX, n. in MS Valley to

extreme sIL/ banded watersnake/ Tx in FL)

Nerodia sipedon (Linnaeus, 1758) (ME to NC coast, nw SC & GA to sAL,eLA, w. to eCO,ne through MN to sOn & PQ/ northern water snake/ Pleist. in Worm Hole C.,WV/ Tx or Ac in OH, TN)

Nerodia undet. sp. (Ac or Ttx in AL)

Opheodrys Fitzinger, 1843 (green snakes) Colubridae snakes (1 species in US or Canada)

Opheodrys aestivus (Linnaeus, 1766) (NS w.to seSK, s.to NC,neKS,seID & W s. into ne,seUT, eNM, seTX/ rough green snake/ Tx in OH,TX; extralimital sw. in Pleist. Fowlkes C., TX)

Opheodrys vernalis = *Lichlorophis* v.

Oxybelis Wagler, 1830 (vine snakes) Colubridae snakes (1 species in US or Canada)

Oxybelis aeneus (Wagler, 1824) (extreme sAZ, s. to Brazil/ brown vine or Mexican vine snake/Tx or Ac in AZ),

Pituophis Holbrook, 1842 (bullsnakes, gopher snakes, pine snakes) Colubridae snakes (1 species in US or Canada)

Pituophis melanoleucus (Daudin, 1803) (pine gopher s./ SE, MW, W, swCanada/ TTx in CA)

Pituophis melanoleucus catenifer Blainville, 1835 (= *P.c.*) (wOR to w,c TX/ Pacific gopher snake /Late Pleist. in NV)

Pituophis melanoleucus sayi (Schlegel, 1837) (sAB to s,cWI & wIN, s. through c.,wTX to neMex./ bullsnake/ TTx or Ac in OK),

Regina Baird & Girard, 1853 (crayfish snakes) Colubridae snakes (4 species in US or Canada)

Regina intermedia Meylan, 1982 (extinct Pleist. in Inglis sink, Citrus Co.,FL)

Rhadinaea Cope, 1863 (pine woods snakes) Colubridae snakes (1 species in US or Canada)

Rhadinaea flavilata Cope, 1871 (coastal plain of NC s. to FL, w. to eLA/ pine woods s./ s.extralimital in late Wisconsinian Cheek Bend C., TN)

Salvadora Baird & Girard, 1853 (patch-nosed snakes) Colubridae snakes (3 species in US or Canada)

Salvadora grahamiae Baird & Girard, 1853 (mountain patch-nosed snake/ seAZ to ncTX, s.to Mex./ Ac in TX)

Senticolis = *Elaphe*

Storeria Baird & Girard, 1853 (brown- & red-bellied snakes) Colubridae snakes (2species in US or Canada)

Storeria occipitomaculata (Storer, 1839) (eTX, e. of MS River/ red-bellied snake/ Tx or Ac in OK & Baxter & Stone Co., AR)

Storeia undet. sp. (Pleist. in Worm Hole C., WV)

Tantilla Baird & Girard, 1853 (black-headed snakes) Colubridae snakes

Tantilla gracilis Baird & Girard, 1853 (flat-headed snake/ seIL to eNB, s. to eTX, adjacent Coahuila/ Ac or Tx in TX)

Thamnophis Fitzinger, 1843 (garden snakes, ribbon snakes) Colubridae snakes (11 species in US or Canada)

Thamnophis cyrtopsis (Kennicott, 1860) (black-necked garter snake/ sUT, sCO s. to eAZ, NM, swTX, nMex./ TTx in TX)

Thamnophis cyrtopsis ocellata Cope, 1880 (*T.o.*) (Edwards Plateau w. to Big Bend/ eastern black-necked garter snake/ TTx in TX)

Thamnophis elegans (Baird & Girard, 1853) (swMB, cBC s. to cNM & CA, sAZ, e.to extreme swSD & wOK/ western terrestrial garter snake/ TTx in CA)

Thamnophis marcianus marcianus (Baird & Girard, 1853) (checkered garter snake/ c,wTX, swKS, wOK, sNM, sAZ/ TTx in TX)

Thamnophis sirtalis s. (Linnaeus, 1758) (sON w to eMN, eIA, e,sMO, AR, eTX to Atlantic coast from sNF to sFL/ Eastern garter snake/ Ttx in NJ, PA)

Thamnophis undet. sp. (Pleist. in Worm Hole C., WV)

Trimorphodon Cope, 1861 (lyre snakes) Colubridae snakes (1 species in US or Canada)

Trimorphodon biscutatus (Dumeril, Bibron & Dumeril, 1854) (sCA e. to wTX, s. to Mex./ lyre snake/Tx or Ac in AZ; Pleist. fossil in Vulture C., AZ))

Virginia Baird & Girard, 1853 (earth snakes) Colubridae snake (2 species in US or Canada)

Virginia valerie Baird & Girard, 1853

Virginia valerie elegans Kennicott, 1859 (eVA to nFL, w.to eTX,n.to sMO/smooth earth snake/ Tx or Ac in AR (Baxter & Stone Cos.), OK)

Virginia striatula (Linnaeus, 1788) (eVA to nFL, w.to eTX, n.to s.MO/rough earth snake/ s. extralimital in Clark's C., VA)

social organization: Bradbury 1977; Ramsey 1995

soil animals - Species who live in the soil either all the time or during a major part of their life cycle. Incl. euedaphon (natural pores), epedaphon & edaphobites (surface, larger cavities in litter & hemiedaphon (burrowers & diggers). Bellinger 1954; Dindal 1990; DiSalvo et al. 1970; Domsch et al. 1980; Drake 1980; Eisenbeis & Wichard 1987; Feldhake & Vestal 1984- 5; Goodey 1963; Griffiths 1978; Kethley 1991

soil biology - The study of the makeup and actions of soil communities and populations. Syn.: pedobiology.

Solenogastres

A class of Lower Mollusca. Incl.

Class Aplacophora (solenogasters)

Subclass Chaetodermomorpha

Family Chaetodermatidae (*Chaetoderma*)

Subclass solenogastres

Order Cavibelonia

Family Meiomeniidae (*Meiomenia*, *Meioherpia*)

Subclass Euthyneura

Order Aeochlidioidea

Hedylopsidae (*Hedylopsis*) (now in Order Acochlidioidea)

Subclass Prosobranchia

Order Caenogastropoda

Superfamily Rissoidea

Family Caecidae (*Caecum*)

Caecum Fleming, 1813 - Caecidae prosobranch mollusks (33 species in US or Canada)

Caecum californicum Dall in Orcutt, 1885 (*C. cooperi* of Carpenter, 1864 not Smith, 1862) (CA marine infauna)

Caecum (Elephantulum) clava Folin, 1867 (TX sublittoral marine interstitial)

Caecum crebricinctum Carpenter, 1864 (CA marine infauna)

Caecum (Meioceras) cubitatum Folin in Folin & Pe=rier, 1868 (FL, NC, Brazil, TX sublittoral marine interstitial)

Caecum dalli Bartsch, 1920 (CA marine infauna)

Caecum imbricatum Carpenter, 1858 (imbricate caecum/ wFL, LA Gulf of Mex .marine infauna)

Caecum* cf. *johnsoni Winkley, 1908 (wFL (cf. *C.j.*), TX Gulf of Mex .marine infauna)

Caecum nitidum Stimpson, 1851 (wFL, LA Gulf of Mex .marine infauna)

Caecum pulchellum Stimpson, 1851 (beautiful caecum/ wFL (cf. *C.j.*), TX, LA Gulf of Mex .marine infauna)

Caecum regulare Carpenter, 1858 (wFL Gulf of Mex .marine infauna)

Caecum (*Meioceras*) *sandwichensis* Folin, 1881 (HI sublittoral marine interstitial)

Caecum (*Caecum*) *textile* Folin in Folin & Pe=rier, 1867 (West Indies, FL sublittoral marine interstitial)

Caecum strigosum de Folin, 1868 (FL marine benthic)

Caecum (*Fartulum*) *vesttum* Folin in Folin & Pe=rier, 1870 (TX sublittoral marine interstitial)

Chaetoderma Loven, 1844 - Chaetodermatidae chaetogaster

Chaetoderma undet. sp. (BC marine infauna)

Meiomenia Morse, 1979 - Meiomeniidae solegastres mollusk

Meiomenia arenicola Salvini-Plawen, 1985 (FL, NC marine sublittoral sandy interstitial)

Meiomenia swedmarki Morse, 1979 (WA marine sublittoral interstitial)

Meioherpia Salvini-Plawen, 1985 - Meiomeniidae solegastres mollusk

Meioherpia atlantica Salvini-Plawen, Rieger & Sterrer, 1985 (NC, Bermuda marine sublittoral interstitial)

Microhedyle Hertling, 1930 - Asperspinidae opisthobranch mollusks (also put in Microhedylidae) (1 species in US or Canada)

Microhedyle fundensis Rankin (ME marine beach interstitial)

Solifugids

Arachnid of Order Solifugae (= Solpugida), Subclass Solifugidae. Both thorax & abdomen segmented & joined by clear waist. The prosoma has a proterosoma and two free segments, the opisthosoma, is segmented. The carapace has a pair of large median eyes. Chelicerae big & strong, with two segments for grabbing. About 800 species. Incl. false spiders, sun spiders or scorpions & **wind scorpions**. Expected to be rare Ttx or Ac in SW. Putnam, 1883.

Kingdom Animalia

Clade Metazoa

Clade Eumetazoa

Clade Bilateria
Clade Protostomia
Clade Ecdysozoa

Phylum Arthropoda
Subphylum Chelicerata
Class Arachnida

Subclass Dromopoda
Order Solifugae

sonar - A system for detecting obstacles by emitting sounds & intercepting echoes that bounce back. Used by bats, oilbirds & some swiftlets when they flying in caves.

speciation - Creation of new species. See also evolution. Incl. allopatric (clinal), area effect, centrifugal, parapatric, quantum & sympatric. Barr 1959e, 1985a-b; Barr & Holsinger 1985; Causey 1960; Gertsch, 1992; Goodnight & G. 1960; Hoch 1996; Holsinger 1966c, 1967e; Howarth 1987b; Howarth, Hoch & Asche 1987; Hubbs 1961; Kane, 1991; Krekeler 1958a; Laing & Carmody & Peck 1976, 1976a; Lee et al. 1977; Noble 1930; Sbordoni 1982; Valentine 1943, 1945; Willaims 1954

sibling species - Laing, Carmody, & Peck 1976

species of concern or at risk - see endangered

species, fossil - Incl. algae, bryozoan/coral, brachiopod, crinoid, foram, gastropod, nautiloid, pelecypod, scaphopod, sponge, & vertebrate.

species - The basic taxonomic unit in bio-classification. Usually based on evolutionary kinship (phylogenetic) or the potential for natural interbreeding.

species richness - Biodiversity measured by the number of species compared to the number of individuals in a community.

species group - A complex of morphologically related species that exist allopatrically. Experimental breeding of certain pairs of species in these groups often result in hybrids. Syn.: superspecies.

speleobiont - Syn: cavernicole.

speleothem formation - Davis, Palmer & P., 1990

Spiders

Order Araneae arachnid. With abdominal silk spinnerets, usually with venom & 2- part body

(prosoma and opisthosomal (abdomen)) separated by a narrow pedicle. Prosoma covered with a top carapace (tergal shield) and a nonsegmented bottom shield. Strong chelicerae have fang-like subchela with venom glands. Leg- or feeler-like pedipalps and four pairs of legs. Spinnerets arise on body segments 10 and 11 but move to the rear during embryonic development. 2-8 (usually 8) eyes may be lost during evolution of cave or interstitial forms. Most primitive forms with book lungs but replaced by tracheae in more advanced forms. Only one species aquatic although some hunt on the water's surface. Dominate as predators in most tropical caves. Most cave spiders occupy areas near entrances and twilight areas of caves where they prey on flying and crawling insects who also naturally occupy these areas of the cave. Installation of artificial lighting has encourages spiders to migrate into and occupy deeper areas of the caves. First known from Devonian. About 22,000 known species.

Spider Bibl.: Archer 1942; Brignoli 1983; Comstock 1940; Fage 1929, 1931; Muma 1945a; Petrunkevitch 1911, 1939; Vogel 1967; Packard, 1875; **Areas. Appalachians:** R. Hoffman 1963; **AL:** Archer 1940, 1940a, 1942, 1944; Hentz, 1850, 1875; **CO:** Vogel & Ayre 1961; CT:Kaston 1948; **HI:** Brignoli 1973; Suman 1964; Tenorio & Beatty 1978; **IL:** Rapp 1946, Kaston 1955; **IN:** F. Elliot 1953; Emerton, 1877; Fage 1931; Kyser 1966; **KY:** Packard, 1875; Chamberlin 1925; Emerton, 1877; Fage 1931; Kingsley, 1888; Levi 1971; Luck 1907; Marx, 1890; **MD:** Muma 1944; Muma 1945; **NA:** Banks 1910; Keyserling, 1881-92; Roth 1985, 1993; Petrunkevitch 1911; Vogel 1967; **NC:** Fage 1931; **NM:** Crosby 1926; **NY:** Crosby & Bishop 1928; **OH:** Barrows 1918; Beatty 1970; **OK:** N. Banks et al. 1932; Branson 1966, 1968; **TN:** Marx, 1890; Petrunkevitch 1925; **TX:** Jackman 1997; Lehtinen 1967; Rowland & Reddell 1976; **US:** 1953; Emerton 1961; Levi 1971; **VA:** 1953; Emerton, 1877; Fage 1931; Marx, 1890; **WI:** H. Field; Levi & Field 1954; Levi & Kaspar 1958; **WV:** Muma & Muma 1943; **WY:** Levi & Levi, 1951, Lowrie & Gertsch, 1955.

Kingdom Animalia

Clade Metazoa

Clade Eumetazoa

Clade Bilateria

Clade Protostomia

Clade Ecdysozoa

Phylum Arthropoda

Subphylum Chelicerata

Class Arachnida

Subclass Lipoctena or Micrura

Superorder Megoperculata

Order Araneae

Suborder Mesothelae (trap door spiders)

Suborder Opisthothelae

(all following suborders also subsumed in

this one)

	Infraorder Ecribellatae (=Araneomorphae) (subsequent orders also subsumed in
Opisthothelae)	
	Suborder Labidognatha (=Haplogynae) (=primitive hunters & weavers) (Caponiidae, Dysderidae, Filistatidae,
Ochyroceratidae,	Oonopidae, Pholcidae, Telemidae)
	Superfamily Orbicularia Uloboridae
	Suborder Ecribellatae Superfamily Gnaphosoidea Gnaphosidae
	Superfamily Amaurobioiidea Amaurobiidae
	Suborder Araneomorpha Superfamily Araneoidea (aerial web spinner) Araneidae, Mysmenidae, Nesticidae,
Linyphiidae,	Symphytognathidae, Tetragnathidae,
Theridiidae,	Theridiosomatidae)
	Superfamily Dictynoidea (Amaurobiidae, Angelenidae, Dictynidae,
Stiphidiidae,	Tengellidae & Uloboridae
	Superfamily "Dionycha" (=Clubionoidea)
(=running s.)	(Clubionidae, Corinnidae, Gnaphosidae,
Liocranidae,	Philodromidae, Thomisidae, Salticidae)
	Superfamily Hypochiloidea (=four-lunged true
s.)	Forster et al. 1987 (Hypochilidae)
	Superfamily Lycosoidea (Agelenidae,
Ctenidae, Lycosidae,	

Miturgidae, Pisauridae)

Infraorder Mygalomorphae
(Ctenizidae, Cyrtaucheniidae,

Dipluridae, Nemesiidae,

Theraphosidae)

SPIDER families incl.

Agelenidae (funnel (web) s.) (See also Dictynidae) **Bibl.:** Kishida 1955; Roewer 1954; Roth & Brame 1972 (*Agelenopsis*, *Blabomma* (now in Dictynidae), *Calummia* (now in Hahniidae), *Cicurina* (now in Dictynidae), *Coelotes* (see *Coras* in Amaurobiidae), *Coras* (now in Amaurobiidae), *Corinna* (now in Corinnidae), *Cryphoea* (now in Hahniidae), *Cybaeus*, *Cybaeozyga* (both in Cybaeidae), *Dirksia* (now in Hahniidae), *Hololena*, *Meta* (now in Tetragnathidae), *Rualena*, *Tegenaria*, *Wadotes* (now in Amaurobiidae) **Family Agelenidae**

Back:

Funnel weavers or grass spiders

Most Agelenidae spiders have elongated spinners. These spiders are known by their common name as 'funnel weavers'. Sometimes spiders of this family as well as the spiders of the family Theridiidae are called 'cobweb' spiders. The spiders weave a tubular funnel shaped web as a retreat at one end of the silken sheet of the web. The prey that lands on the sheet is caught and consumed in the retreat. The egg sac is made in the funnel and the male often stays with the female. As the second common name suggests, they can be found between grass.

Amaurobiidae (*Amaurobius*, *Arctobius*, *Arcuphantes* (now in Linyphiidae), *Callobius*, *Coelotes*, *Coras*, *Cybaeopsis*, *Pimus*, *Telema* (now in Telemidae), *Theotima* (now in Ochyroceratidae), *Titanoeca* (now in Titanoecidae), *Usofila* (now in Telemidae), *Wadotes*)

The members of the Amaurobiidae family have a most peculiar and unselfish characteristic in taking care of their offspring. The female becomes mature during her second year of life. She lies only around 40 eggs and spins a closed breeding chamber where she stays with her eggs. After the spiderlings have consumed the egg yolk, they eat their mother before they emerge from the chamber. Most Amaurobiidae members hide in holes in trees or man made constructions. Their size is between 7 and 12 mm. The web usually extends around the entrance of the hole. These spiders can also be spotted inside our houses during the night.

The Amaurobiidae are also called night spiders because they are active at night. All five species are quite large with firm legs and may live for several years. The head-breast part is pear shaped and the spider resembles the *Coelotes*. But when identifying the spider, the dark raised head part will remove any doubt.

Another important family characteristic is the woolly combed catching silk, which often has a shiny blue color. It is a cribellate web. The spider combs its silk with a comb or calamistrum located on her rear legs. The comb is made of a row of small, stiff hairs.

The silk comes from an organ called the cribellum and contains a lot of small spinnerets that deliver the small threads of silk. All spiders with a cribellum (Amaurobiidae, Eresidae, Uloboridae and Dictynidae) are incorporated in a group called the Cribellatae.

Anapidae (*Gertschanapis*)

Antrodiaetidae (foldingdoor or folding trapdoor spiders) (*Antrodiaetus*)

Araneidae (orbweavers, orb, orb-web or cave spiders) (= Argiopidae in part) (*Acanthepeira*, *Araneus*, *Argiope*, *Argyrodes* (now in Theridiidae), *Azilla* (now in Tetragnathidae), *Calisoga* (now in Nemesiidae), *Cyclosa*, *Epeira* (now in Araneus), *Metellina*, *Meta* (both in Tetragnathidae), *Metepeira*, *Neoscona*, *Pseudometra*, *Tetragnatha*, (both now in Tetragnathidae), *Theridiosoma* (now in Theridiosomatidae), *Zygiella*) About 2,550 species. Most build typical orb webs.

Argiopidae - once included Theriodisomatidae and Tetragnathidae, now subsumed in Araneidae
Attidae - subsumed in Salticidae

Caponiidae (caponiid spiders) (*Orthonops*)

Clubionidae (Sac or running (in part) spiders. Bibl. Dondale and Redner, 1982
(*Agroeca*, *Corinna* (now in Corinnidae), *Liocranoides* (also put in Tenggellidae), *Neoanagraphis*, *Phrurotimpus*, *Scotinella* (both now in Liocranidae), *Teminlus* (now in Miturgidae), *Titiotus* (now in Tenggellidae, subsumed by some authors in *Liocranoides*))

Corinnidae (antmimic (sac) spiders) (*Castianeira*, *Corinna*)

Ctenidae (wandering spiders (see also Gnaphosidae). Bibl. Peck, 1981
(*Anahita*, *Corinna* (now in Corinnidae), *Ctenus*, *Leptoctenus*)

Cteniziidae = Cyrtauchenidae

Cybaeidae (also subsumed in Agelenidae) (*Auchicybaeus*, *Cybaeozyga*, *Cybaeus*)

Cyrtaucheniidae (= Ctenizae) (trapdoor spiders (*Aptostichus*))

Dictynidae (meshweb weavers and hackled ban weavers (in part; dictynid spiders). **Bibl.**
Chamberlin and Gertsch 1958; Katon 1978 (*Blabomma*, *Cicurina*, *Dictyna*, *Lathys*, *Yorima*))

Diguetidae (*Diguetia*)

Dipluridae (funnelweb spiders or sheetweb tarantulas) (*Calisoga* (now in Nemesiidae), *Microhexura*)

Dolomedidae (subsumed in Piisauridae)

Dysderidae (typical cribellate spiders) (*Dysdera*)

Erigonidae (dwarf or micryphantid spiders) (all genera also placed in Linyphidae, subfamily

Erigoninae) (*Ceraticelus*, *Ceratinops*, *Ceratinopsis*, *Eperigone*, *Erigone*, *Islandiana*, *Tapinocyba*) **Bibl.** Bishop 1936; Chamberlin 1948; Millidge 1984, 1987

Filistatidae (crevice weavers) (*Filistatinella*, *Kukulcania*)

Gnaphosidae (groundoor running (in part) spiders) (*Callilepis*, *Drassyllus*, *Gnaphosa*, *Herpyllus*, *Hyptiotes* (now in Ulorboridae), *Micaria*, *Neonagraphis* (now in Clubionidae), *Rachodrassus*, *Scotophaeus*, *Sergiolus*, *Talanites*, *Urozelotes*, *Zelotes*)

Hahniidae (funnel web spiders (in part)) **Bibl.** Opell and Beatty 1976; Rower 1954 (*Calymmaria* (also put in Agelenidae (Chamberlin & Ivie 1937) & Stiphidiidae), *Cryphoeca*, *Dirksia* (once in Agelenidae), *Hahnia*, *Hahnistea*)

Hypochilidae (four-lunged true spiders) **Bibl.** Forster and Gray 1987; Forst, Platnick and Gray 1987; Gertsch 1958a (*Hypochilus*)

Leptonetidae (sheet weaver group). **Bibl.:** Gertsch 1973, 1974; Brignoli 1977; Platnick 1986 (*Appaleptoneta*, *Archoleptoneta*, *Calileptoneta*, *Leptoneta*, *Neoleptoneta*)

Linyphiidae ((sheetweb & dwarf weavers, line-weaving & dwarf s.) (see also Erigonidae) **Bibl.:** Hormiga 1995; Poulson 1981, 1985; Roth 1988.

undescr. genus? sp.#1 (Amador & Tuolumne Cos., CA/Tb) & sp.#2 (Tulare Co., CA/Tb),
Subfamily Linyphiinae (Tulare Co., Tb? (or poss. Pimosa new sp. #3), new genus?
(subalpine lava tube (CSJ000000*002), HI) & undet.genus or genera (Tx or Tp in MS; Tx
or
Tp in 4 seAK caves)

(*Agyneta*, *Anacornia*, *Anthrobia*, *Arcuphantes*, *Bathyphantes*, *Centromerus*, *Ceraticelus*,
Ceratinops, *Ceratinopsis*, *Eperigone*, *Eridantes*, *Erigone*, *Eulaira*, *Frontinella*, *Gnathonaroides*,
Grammonota, *Islandiana*, *Jalapyphantes*, *Lepthyphantes*, *Linyphanthes*, "Linyphia", *Masoncus*,
Meioneta, *Microneta*, *Nerienne*, *Oaphantes*, *Oreonetides*, *Oreophantes*, *Phanetta*, *Phrurotimpus*
(now in Liocranidae), *Pimosa* (now in Pimoidae), *Pityohyphantes*, *Porrhomma*, *Sciates*,
Scotinotylus, *Scylaceus*, *Sisicottus*, *Sisicus*, *Tennesseeellum*, *Troglohyphantes*, *Tuganobia* (now in
Nesticidae)

Subfamily Erigoninae (*Anacornia*, *Ceraticelus*, *Ceratinops*, *Ceratinopsis*, *Eperigone*,
Erigone, *Halorates*, *Islandiana*, *Tapinocyba*; undet. genus in BC) (all put in own family)

Subfamily Linyphiinae

(*Agyneta*, *Anthrobia*, *Arcuphantes*, *Bathyphantes*, *Centromerus*, *Eulaira*, *Frontinella*,
Jalapyphantes, *Lepthyphantes*, *Linyphanthes*, *Meioneta*, *Microneta*, *Nerien*, *Oaphantes*,

Porrhomma, *Sisicus*, *Tapinocyba*, *Tennesseeellum*)

The Linyphiidae is a very large family of more than 3500 species worldwide. Most of the spiders

of this family weave sheet like webs and the spider hangs under the web. Above the sheets the spider inserts scaffolding of threads. Insects fly against these strands and falls onto the web where they are caught. The spiders are so small and light weight that they have the capability of “flying” through the air by means of their threads. They are referred too as dwarf spiders. In the British Isles, they are called money spiders.

Liocranidae (lioncranid spiders) (*Liocranoides*, *Phurotimpus* (also put in Clubionidae), *Scotinella* (See Gnaphosidae)

Loxoscelidae (recluse spiders or sendentary weaver group) (*Loxosceles* (now in Sicariidae)

Lycosidae (wolf spiders (*Adelocosa*, *Allocosa*, *Alopecosa*, *Gladicosa*, *Hogna*, *Lycosa*, *Pardosa*, *Pirata*, *Schizocosa*, *Trochosa*, *Varacosa*)

Metidae = Tetragnathidae

Micryphantidae (midget spiders) - Subsumed in Linyphiidae

Mimetidae (pirate spiders, aerial web spinner group) (*Mimetus*)

Miturgidae (miturgid spiders) - See Tenggellidae (*Teminius*)

Mysmenidae (dwarf cobweb spiders, aerial web spinner group) (once in Symphytognathidae and Theridiidae) **Bibl.** Forster and Platnick 1977; Gertsch 1960 (*Calodipoena*, *Maymena*, *Microdipoena*, *Trogloneta*)

Nemesiidae (*Calisoga*) (also put in Ctenizidae)

Nesticidae (cave (cobweb) spiders) **Bibl.:** Gertsch 1984 (*Eidmannella*, *Gaucelmus*, *Ivesia*, *Howaia*, *Nesticella*, *Nesticus*)

Ochryceratidae (line weaver group) (*Theotima*)

Oonopidae (jumping spider group) (*Oonopinus*)

Philodromidae ((running) crab spiders) (*Ebo*, *Misumenops* (now in Thomisidae), *Philodromus*, *Thanatus*, *Tinebo*)

Pholcidae (cellar or house spiders or daddylonglegs (name also used for harvestmen). (undet. Ac or.Ttx genus in HI; *Modisimus*, *Pholcus*, *Physocyclus*, *Psilochorus*, *Smeringopus*)

Pimoidae Hormiga 1994 (*Pimoida*)

Pisauridae (nursery web or fisher spiders) (incl. Dolomedidae) **Bibl.** Rower 1954 (*Cispiolus* (also put in Pholcidae), *Dolomedes*, *Pisaurina*)

Plectreuridae (*Kibramoa*)

Salticidae (jumping spider group((incl. Attidae) (*Bavia*, *Habronattus*, *Metaphidippus*, *Pelegrina*, *Phidippus*) The largest family of spiders, about 4,000 species.

Scytodidae (spitting spiders) (*Scutodes*, *Scytodes*)

Segestriidae (segestriid spiders) (*Adriadna*)

Selenopidae (selenopid crab spiders) (*Selenops*)

Sicariidae (six-eyed sicariid spiders) (=Loxoscelidae) (*Loxosceles*)

Stiphidiidae (*Calymmaria* (also put in Agelenidae & Hahniidae))

Symphytognathidae (dwarf orbweavers) Bibl. Forster 1958 - See Mysmenidae (*Anapistula*)

Tarantulidae = Phryniidae

Tengellidae (Hackled band or typical cribellate spiders, also subsumed in Miturgidae) (*Zorocrates* (now in Zorocratidae, also put in Zoropsidae), *Titiotus* (also put in Clubionidae, subsumed by some authors in *Liocranoides*)

Telemidae (primitive line and sheet weaver group) **Bibl.** L Brignoli 1973; Marx 1891 (Telema, Usofila (also put in Ochryceratidae and Amaurobiidae)

Tetragnathidae (longjawed orb weaver group; stretch spiders) (*Azilla*, *Glenognatha*, *Leucauge*, *Meta*, *Metellina*, *Pimoida* (put in Linyphiidae or more recently in Pimoidae), *Tetragnathina*) **Bibl.:** Mormiga 1995

About 50 species belongs to the Tetragnathidae. They probably arose from the same evolutionary line as the Araneids because they also build orb webs. The family of the Tetragnatha is often found in damp, swampy habitats. These spiders have long slim bodies and their abdomen has a metal shiny look. They build orb webs with an open center like the Metidae.

Theridiidae (cobweb weavers, tangled-web spinners or cobweb or comb-footed spiders). **Bibl.** Levi and Levi 1962; Levbi and Randolph 1975 (*Achaearanea*, *Argyrodes*, *Ctenium*, *Dipoena*, *Enoplognatha*, *Latrodectes*, *Robertus*, *Rugathodes*, *Steatoda*, *Theridion*, *Theridula*, *Thymoites*, *Tidarren*)

Thridiosomatidae (ray (orb) spiders (also put in Araneidae) (*Theridiosoma*)

Thomisidae (crab spiders) - See Philodromidae (*Misumena*, *Misumenops*, *Thanatus* (put in *Philodromidae*), *Xysticus*)

Titaneocidae (Titanoeca (once put in Amaurobiidae)

Triaenonychidae (*Sclerobonus*)

Uloboridae (hackled (band) or cribellate orb weavers, feather legged or featherfoot spiders)

Bibl.: Numa and Gertsch 1964; Opell 1979, 1983 (*Hyptiotes*, *Philoponella*, *Uloborus*; undet. TTX or Ttp genus in HI.

Zorocratidae (*Zorocrates* (once in Zoropsidae & Tengellidae)

Zoropsidae (*Zorocrates* - put in Zorocratidae)

SPIDER genera and species incl.

Acanthepeira Marx, 1883 - Araneidae spiders (3 species in US or Canada)

Acanthepeira stellata (*Epeira* s. Walckenaer, 1805; *E. nobilis*, *E. cerasiae*, *E. iris*, *Plectana* s. Walkenaer, 1842; *Acrosoma stellatum* Butler, 1873; *Cyrtarachne mexicana*, *C. dugesi* O.P. –Cambridge, 1893; *Marxia nobilis*, M. s. McCook, 1894; *Araneus* s. Simon, 1895; *Araneus iris* Petrunkevitch, 1911; *A. venusta* Bryant, 1949) (East US, e Canada to Mexico epigean/ Tx in Harrison Co., IN/ star(bellied) orb-weaver spider)

Achaeearanea Strand, 1929 (= *Cryptachaea*, *Hentziectypus*, *Parasteatoda*; Archer, 1946; *Theridion* in part) (17 species in US or Canada) (mostly litter sp.) Theridiidae spiders. **Bibl.:** Levi 1959, 1955, 1963

Achaeearanea canionis (*Theridion* c. Chamberlin & Gertsch, 1929) Levi, 1955 (CA, NM, UT, wTX epigean/mesic epigean, non-disjunct TTP or Tx in AZ; TTP in Culberson Co., TX; Tp, Tx or Ac in WA)

Achaeearanea fresno Levi, 1955 (Tp in Calaveras & Fresno Cos., CA)

Achaeearanea porteri (*T.p.* Banks, 1896; *T. redemptum* Gertsch & Mulaik, 1936) Levi, 1955 (type locality cave in Owen Co., IN/ epigean in eUS to West Indies, Panama/ Tp in AL, AR, FL, GA, IN, KY (Mammoth C.), MD?, MO (Laclede Co.), TX (Kimble Co.))

Achaeearanea rupicola (*Theridion* r. Emerton, 1882) (sCanada to KS & FL/ Tp in AL, IL)

Achaeearanea schullei (*Theridion* s. Gertsch & Mulaik, 1936) (T.s. Levi, 1955) (Mex., FL, TX/ Tx or Tp in AZ mine & human made tunnel),

Achaeearanea undet. sp. (Tx in MO; TX/ TTP in TX; TTx in nAZ)

Achaeearanea tepidariorum (*Theridion* t. C.L.Koch, 1841; *T. pallidum* Walckenaer, 1842; *T. vulgare* Hentz, 1850; *Steatoda* t. Thorell, 1856; *T.t.* Blackall; *T. marmoreum* Holmberg, 1876; *T. varium* Urquhart, 1885; *Parasteatoda* t. Archer, 1946) Levi, 1955 (common house, house or

domestic s./cosmopolitan, may be native to SA/Tp in AL, GA (Bartow & Dade Cos.), HI(alien), IL, IN(Crawford, Harrison, WA Cos.), MD, OK, TN, TX, WV, VA; TTP in AR; Tx or Tp in MO, OH, sON) **Bibl.:** Cady 1984; E. Young 1983

Adelocosa Gertsch, 1973 (= *Solicosa* Roewer, 1960) Lycosidae spiders (one species in US)

Adelocosa anops Gertsch, 1973 (**cave type locality & 2 other Koloana lowland dry caves cave (one presumed destroyed), Koloa, Kauai, HI/ Tb/ Federal T&E ; HI S1.2/ Kaua'i cave wolf spider or pe'e pe'e maka'ole/ threatened by surface activities such as vegetation removal, grading, filling, paving, agricultural development, and chemical and biological controls employed to control non-native plants) **Bibl.:** Finnley 1978; Hadley, Ahearn & Howarth 1981

Agelenopsis Giebel, 1869 (grass spiders, mostly litter sp.) Agelenidae spiders Chamberlin & Ivie 1941

Agelenopsis aleenae Chamberlin & Ivie, 1935 (SW/Ac in TX)

Agelenopsis aperta (Agelena a. Gertsch, 1934) Chamberlin & Ivie, 1941; *A. gertschi* Schenkel, 1950; *A. aperta guttata* (sCA, SW, Mex. epigean/ TTx or Ac in TX)

Agelenopsis emertoni Chamberlin & Ivie, 1935 (OH, TX/ Tx in MO)

Agelenopsis pennsylvanica (Agelena p. C.L. Koch, 1843; *A. americana* Keyserling; *A. naevia* (var.) Comstock, 1912; *Agelena p.* Exline) Chamberlin & Ivie, 1941 (US epigean, OH/ grass spider/ Tx in IL)

Agelenopsis undet. sp.#1 (NM hyporheic)

Agroeca Westring, 1862 – Liocranidae spiders (once in Clubionidae) (6 species in US or Canada)

Agroeca undet. sp. (Tx or Ac in seAK)

Agyneta Hull, 1911 (= *Argyneta* Hack., 1954 (misspelling) (= incl. *Meioneta* Hull, 1920 as a subgenus for some authors) - Linyphiidae spiders, Subfamily Linyphiinae (3 species in US or Canada, 49 in Nearctic, cosmopolitan) **Bibl.:** Hippa & Oksala 1985

Agyneta undescr. sp. (HI Volcanoes Natl. Park/ Tb?)

Agyneta undet. sp. (Tx or Ac in seAK)

Allocosa Banks, 1900 (*Moenkhausiana* Petrunkevitch, 1910; *Glieschiella* Mello-Leitao, 1932; *Araucaniocosa* Mello-Leitao, 1951) Lycosidae spiders (18 species in US or Canada)

Allocosa parallela (*Pardosa p.* Banks, 1898; *Schizocosa celerior* Chamberlin, 1910; *S.p.* Gertsch & Davis) Roewer, 1955 (Ac in TX)

Alopecosa Simon, 1885 (*Jollecosa*, *Solicosa* Roewer, 1960) Lycosidae spiders (8 species in US)

or Canada)

Alopecosa kochi (*Tarentula kochii* Keyserling, 1877; *Lycosa brunneiventris* Banks, 1894; *L. k.* Chamberlin, 1908; *Pardosa heretica* Chamberlin, 1925; *T. gertschi*, *Lycosa jollensis* Schenkel, 1951; *Jollecosa jollensis* Roewer, 1955; *A. kochii* Dondale & Redner, 1990) (Nearctic, NA/ Tx in 2 caves in Calaveras Co., CA)

Amaurobius C.L. Koch, 1837 (= *Walmus* Chamberlin, 1947) Amaurobiidae spiders (25 species in US or Canada)

Amaurobius borealis Emerton, 1909 (*Walmus b.* Chamberlin, 1947; *Callioplus b.* Kaston, 1948) (eCanada to SK, NE/ Tx in mine in PA)

Amaurobius ferox (*Clubiona f.* Walckenaer, 1830; *A. cryptarum* C. Koch, 1837; *Ciniflor mordax* Blackwall, 1859; *A. mordax* Canestrini & Pavesi, 1870; *A. corsicus* Simon, 1874; *A. peninsulanus* Banks, 1898; *C. f.* Lessert, 1910) C.L. Koch, 1839 (eCanada, NE/ Tx in 4 caves in WA Co., MD)

Anacornia Chamberlin & Ivie, 1933 - Linyphiidae spiders (2 species in US or Canada)

Anacornia microps Chamberlin & Ivie, 1933 (NW, UT epigean/ Tx in WA)

Anacornia proceps Chamberlin, 1948 (UT epigean /Tp in cave in Uinta Mts., UT)

Anahita Karsch, 1879 (once in Clubionidae) - Ctenidae spiders (1 species in US)

Anahita punctulata (*Ctenus p.* Hentz, 1844; *Arctosa animosa* Simon, 1864) Simon, 1897 (seUS to TX/wandering spider/Tp? in AL, TN; Ac in cave in Comal Co., TX; Tx in Harrison Co., IN (S1/G3))

Anapistula Gertsch, 1941 - Symphytognathidae spiders (1 species in US)

Anapistula secreta Gertsch, 1941 (US to Columbia, Bahamas, Jamaica/ Tp in cave each in Travis & Williamson Cos., TX)

Anapistula undescr.? sp. (*? cave in Travis Co., TX/ Tp?)

Anthrobia Tellkamp, 1844 - Linyphiidae spiders (also placed in Leptonetidae), Subfamily Linyphiinae

Anthrobia mammothia Tellkamp, 1844 (type locality in Mammoth C.(KY)/KY (Wayne, Jackson Cos.), TN (Smith, Warren Cos.), WV (Greenbrier, Mercer, Pocahontas Cos.), VA (Alleghany, Bath, Scott, Smyth Cos.)/ Tb/ T&E VA S1, global G3G4) **Bibl.:** Poulson 1977, 1981

Anthrobia undescr.? sp. (*?Tb cave in Bartow Co., GA)

Antrodiaetus Ausserer, 1871 (= *Brachybothrium* Simon, 1884; *Acattyma* L. Koch, 1878) Antrodiaetidae spiders (11 species in US) **Bibl.:** Coyle, 1971

Antrodiaetus pacificus (*Brachybothrium pacificum* Simon, 1884) (Tx or Tp in BC)

Antrodiaetus unicolor (*Mygale u.* Hentz, 1842; *A. accentuatus* (Simon, 1884); *A. angustatus* (Atkinson, 1886); *A. gracilis* (Hentz, 1842); *A. marxi* (A.1886)) (c.& s. Appalachians, w. to Ozarks/ probably *A.u.*: Ttx or Ac in TN(2 caves); Tp in GA (Dade & Walker Cos.))

Appaleptoneta Platnick, 1986 - Leptonetidae spiders (7 species in US)

Appaleptoneta barrowsi (*Leptoneta b.* Gertsch, 1974) Platnick, 1986 (*type locality cave in Blount Co, AL/ Tp?)

Appaleptoneta credula (*Leptoneta c.* Gertsch, 1974; *Neoleptoneta c.*) Platnick, 1986 (*type locality cave in Lauderdale Co.,AL/ Tp?)

Appaleptoneta fiskei (*Leptoneta f.* Gertsch, 1974; *Neoleptoneta f.*) Platnick, 1986 (type locality & at least one other cave in Walker Co.,*nwGA/ Tp)

Appaleptoneta georgia = *Neoleptoneta g.*

Appaleptoneta jonesi (*Leptoneta j.* Gertsch, 1974; *Neoleptoneta j.*) Platnick, 1986 (*type locality cave in Jefferson Co.,AL/Tp?)

Appaleptoneta undescr. sp.#1-4 or 5 (AL &/or GA (*? cave in Walker Co.)/ Tb)

Aptostichus Simon, 1891 - Cyrtaucheniidae spiders (5 species in US)

Aptostichus undet. sp. (Tx? in Calaveras & Tuolumne Cos.,CA)

Aranea (see *Tegenaria* & *Meta* in TETRAGNATHIDAE)

Araneus Clerck, 1757 (*Cathaistela* Archer, 1958; *Amamrotypus*, *Cambridgepeira*, *Conaranea* , *Conepeira* Archer, 1951; *Neosconella* F.O. P. –Cambridge, 1903; *Atea* C. Koch, 1837)
Araneidae spiders (43 species in US or Canada) **Bibl.:** Levi, 1971

Araneus cavaticus (*Epeira c.* Keyserling, 1882; *E. cinerea* Emerton, 1884; *Aranea c.* Comstock, 1940) Petrunkevitch, 1911 (E US & adjacent Canadian, sw to AL & TX/ type in Mammoth C./ barn spider/ TTx in AL,KY(Mammoth C.), epigeal in OH)

Araneus diadematus Clerck, 1757 (cosmopolitan?, Russian Far East/ alien in NW & MA to Great Lakes/garden or cross spider/Tx or Ac in sOn; Ac in WA)

Araneus illaudatus (*Aranea illaudata* Gertsch & Mulaik, 1936; *A. pima* Levi, 1971) Levi, 1970 (*A. pima* Levi, 1971) (Ac in TX)

Araneus miniatus (*Epeira m.* Walckenaer, 1841; *E. scutulata* Hentz, 1847; *Larinia nigrofoliata* Keyserling; *E. scutulata* Keyserling, 1892; *E. floridensis* Petrunkevitch, 1911; *Aranea miniata*,

A. f. Archer, 1941; *Conepeira partita*, *C.m.*, *C. dawsoni*, *C.n.* Archer, 1951) Levi, 1973 (SE/ TTx in cave in Morgan Co.,AL)

Araneus undet. sp. (TTx or Ac in NWT)

Archaeearanea - See *Achaeearanea*

Archoleptoneta Gertsch, 1974 - Leptonetidae spiders (2 species in US)

Archoleptoneta schusteri Gertsch, 1974 (most of CA, ground litter/Tp in Amador, Tulare & Tuolumne Cos.,CA)

Arctobius Lehtien, 1967 - Amaurobiidae spiders (1 species in US & Canada)

Arctobius agelenoides (*Amaurobius agelenoides* Emerton, 1919; *Hesperauximus a.* Chamberlin, 1947) Lehtinen, 1967 (AK,wCanada, Finland, Russia/ Tx or Ac in cave in AB)

Arcuphantes Chamberlin & Ivie, 1943 - Linyphiidae spiders, Subfamily Linyphiinae (7 species in US or Canada)

Arcuphantes arcuatulus (Roewer, 1942) (near *A.a.*: Tx in Tulare Co.,CA) (see undescr. sp. below)

Arcuphantes cavaticus Chamberlin & Ivie, 1943 (Tp in NW (CA?,OR?,WA?))

Arcuphantes potteri Chamberlin & Ivie, 1943 (type locality cave in Shasta Co. +Calaveras & Plumas Cos.,CA/Tp in nCA, seOR, WA)

Arcuphantes probable new sp. near *arcuatulus* (Roewer, 1942) (Tp in *?cave in Tulare Co.,CA)

Argiope Audouin, 1826 (*Austrariope*, *Chaetargiope*, *Coganargiope*, *Heterargiope* Kishida, 1936; *Brachygea* Caporiacco, 1947) – Araneidae spiders (once in Dipluridae) (7 species in US or Canada)

Argiope aurantia Lucas, 1833 (*Nephila vestita* C. L. Koch; *Epeira a.* Lucas, 1840; *E. cophinaria*, *E.ambitoria* Walckenaer; *E. riparia*, *E. sutrix* Hentz, 1847; *E. personata* O.P. –Cambridge, 1893; *A. godmani* O.P. –Cambridge, 1898; *Miranda c.* O.P. –Cambridge, 1903; (yellow garden argiope or s., black & yellow garden s., writing s.) (Canada to Costa Rica/ Ac or TTx in TX)

Argyrodes Simon, 1864 (= *Argyrodina* Strand, 1926; *Ariamnes* Thorell, 1869; *Conopistha* Karsch, 1881; *Microcephalus* Restrepo, 1944; *Neospintharus* Exline, 1950; *Rhomphaea* L.Koch, 1872; *Spheropistha* Yaginuma, 1957) Theridiidae spiders (17 species in US or Canada)

Argyrodes argyrodes (*Linyphia a.* Walckenaer, 1841; *L. gibbosa* Lucas, 1846; *A. eperiae* Simon, 1866; *A. gibbosus* Simon, 1873; *Aranea epeira* O.P. –Cambridge, 1880; *Conopistha a.* Brignoli; *A. ammonia* Denis, 1947) Simon, 1881 (HI (alien), India, Melanesia, Mediterranean to West Africa, Seychelles/ Tp or Tx in HI)

Argyrodes trigonum (*Theridion t.* Hentz, 1850) Emerton, 1882 (Canada, e. to NE, eTX/ Tx in IN)

Argyrodes undet. sp. (TX in Coryell, Hays, San Saba, Val Verde Cos., TX)

Ariadna Audouin, 1826 (= *Citharoceps* Chamberlin, 1924; *Segestriella* Purcwell, 1904) - Segestriidae spiders) (5 species in US or Canada)

Ariadna bicolor (*Pylarus b.* Hentz, 1842; *P. pumilus* Hentz, 1842; *A. pallida* C Koch, 1843; *A. rubella* Keyserling, 1877; *A. mexicana* Banks, 1898; *A. philosopha* Chamberlin, 1924) Emerton, 1902 (CA, SE/ Ac in cave each in Edwards & Lampasas Cos., TX)

Auchicybaeus Gertsch, 1933 - Cybaeidae spiders

Auchicybaeus ovalis = *Meta menardi*

Azilia Keyserling, 1882 - Tetragnathidae spiders (1 species in US)

Azilia affinis O.P.-Cambridge, 1893 (= *A. vagepicta* Simon, 1895; *A. mexicana* Banks, 1898) (Costa Rica to TX, Gulf/ TTp or TTx in FL)

Azilia vagepicta = *A. affinis*

Bathyphantes Menge, 1866 (= *Bathyphantoides* Kaston, 1948; *Oreodia* Hull, 1950) (mostly litter sp.) - Linyphiidae spiders, Subfamily Linyphiinae (19 species in US or Canada). **Bibl.:** Ivie 1969

Bathyphantes (B.) *alameda* Ivie, 1969 (epigean in CA, OR, BC/ Tp in cave in Santa Cruz, CA)

Bathyphantes alascensis (*Lepthyphantes a.* Banks, 1900) Ivie, 1969 (AK, BC, CA, OR, WA epigean/ Tp in AK, BC, OR, WA & Shasta, Siskiyou? & Trinity Cos.,CA)

Bathyphantes (B.) *alboventris* (*Diplostyla a.* Banks, 1892) Petrunkevitch, 1911 (= *B. albiventris* Petrunk., 1911) (epigean in KY, NY, NJ, IN, IL, OH, PA, WI, NE, ON, TN, VA, WV / Tp or Tx in IL, MO, VA; Tp in IN (Orange Co./S4/G4))

Bathyphantes crosbyi = *B. reprobus*

Bathyphantes (B.) *diasosnemus* Fage, 1929 (= *B. hubbsi* Chamberlin & Ivie, 1943) (Subway C. (type locality) ,Shasta Co.,CA/epigean in nCA, sOR, WA/ Tp or Tx in OR,WA; Tp in nCA; near *B.(B.) d.*: Tp? in cave in Tulare Co., CA)

Bathyphantes hubbsi = *B. diasosnemus*

Bathyphantes (B.) *keenii* (*Diplostyla k.* Emerton, 1917) Ivie, 1969 (epigean in Russian, AK, BC, CA, WA/ TTp in BC, WA)

Bathypantes* (B.) *orica Ivie, 1969 (epigean in CA, OR, WA, BC/ Tx in Santa Cruz Co.,CA)

Bathypantes* (B.) *pallidus (*Diplostyla p.* & Banks, 1892; *B. banksi* Petrunkevitch, 1911; *B. nigrinus* Comstock,1940) Banks, 1892 (Nearctic, NA (all n. states & provinces, n. to NT, s. to AZ, NC / Tp in IL, MO, WV; Tx in IN (Crawford Co.(S4/G4), leaf litter)

Bathypantes* (B.) *reprobus (*Lepthyphantes r.* Kulczynski, 1916; *Diplostyla crosbyi* Emerton, 1919; *B. rupestris* Holm, 1945) Pakhorukov, 1981 (Nearctic in ME, NY, NH, AK, PQ, ON, MB, NT, boreoalpine, deciduous leaf litter/ Tx or Ac in sON)

***Bathypantes* undet. sp.** (near *B. diasosnemus*) (Kings Canyon Natl. Park,CA/ Tp or Tx)

Bathypantes* (*Weyerphantes*) *weyeri (*Linyphia w.* Emerton, 1875) Berland, 1931 (type locality cave in Augusta Co.,VA + AR (WA Co.),KY (Barren, Edmondson (Mammoth C.), Pulaski, Warren Cos.),PA (Lancaster Co.),WI (Richland Co.) & WV (Pocahontas Co.) & PQ/ Tb/ T&E VA S1 & WV S1, global G3G4) **Bibl.:** Holsinger et al. 1976; Harker & Barr 1979; Peck & Christiansen 1990

Bavia Simon, 1877 - Salticidae spiders) (1 species in US)

Bavia aericeps Simon, 1877 (*Acompse suavis* L. Koch, 1879) (Philippines to New Guinea, eAsia, Pacific Islands, HI(alien)/ Tp or Tx)

Blabomma Chamberlin & Ivie, 1937 Dictynidae spiders (also put in Agelenidae) (9 species in US)

***Blabomma* undescr. sp.#1** (**2 caves in Calaveras Co.,CA/Tb)

***Blabomma* undescr. sp.#2** (*cave in Calavaras Co.,CA/Tb)

***Blabomma* undescr. sp.#3** (*cave in Shasta Co.,CA/Tb)

***Blabomma* undescr. sp.#4** (*cave in Tulare Co.,CA./Tb)

Blabomma* undescr. sp.#5** (? Three caves in Calaveras Co.,CA/ Tb)

***Blabomma* undescr. sp.#6** (*cave in Amador Co.,CA/ Tp)

***Blabomma* undescr. sp.#7** (*cave in Amador Co.,CA/ Tp)

***Blabomma* undescr. sp.#8** (> 5 caves in Calaveras Co.CA/Tb)

***Blabomma* undescr. sp.#9** (>5 caves in Mariposa Co.,CA/Tp)

***Blabomma* undescr. sp. #10** (*cave in Amador Co., CA/ Tp)

***Blabomma* undescr. sp. #11** *cave in Calaveras Co., CA/ Tp)

***Blabomma* undescr. sp.#12** (*cave in Santa Cruz Co.,CA/ Tp)

***Blabomma* undescr. sp. #13** (*cave in Tuolumne Co.,CA/ Tb)

***Blabomma* undescr. sp.#14** (*cave in Tuolumne Co.,CA/Tp)

Blabomma undescr. sp, #15 (*cave in Tuolumne Co.,CA/Tp)

Blabomma undet. sp. (3 caves in Calaveras Co.,CA/Tp)

Calileptoneta Platnick, 1986 - Leptonetidae spiders (5 species in US)

Calileptoneta undescr. sp. (or same as below) (*?Crystal C., Tulare, CA/ Tb)

Calileptoneta undescr. sp. (Trinity Co.,CA/ Tb)

Calisoga Chamberlin, 1937 (= *Hesperopholis* Chamberlin & Ivie, 1939) - Nemesiidae spiders (also put in Ctenizidae) (3 species in US)

Calisoga theveneti (*Brachythele t.* Simon, 1891) Raven, 1985 (Sierras/ Tx or Tp in Calaveras Co.,CA)

Callilepis Westring, 1851 - Gnaphosidae spiders (5 species in US or Canada)

Callilepis imbecilla (*Pythonissa i.* Keyserling, 1887; *C. munda* Chamberlin, 1935) Comstock, 1912 (US/ Tx or Ac in OK) **Bibl.** Platnick & Shadab 1981

Callilepis undet. sp. (Ac in TX)

Callobius Chamberlin, 1947 - Amaurobiidae spiders (25 species in US or Canada) **Bibl.:** Leech, 1974 (mostly litter sp.)

Callobius bennetti (*Ciniflo b.* Blackwall, 1846; *Amaurobius sylvestris* Emerton, 1888) Chamberlin, 1947 (Eastern Nearctic/ Tx in IL, IA, IN, KY, MD (Rocky Gap C, Allegheny CO.), MO, MN, ON)

Callobius nevadensis (*Amaurobius n.* Simon, 1884; *A. utahensis*, *Auximus pallescens* Chamberlin, 1919; *C. pallescens* Chamberlin, 1920; *C. shastus*, *A.s.* Chamberlin & Ivie, 1947) Chamberlin, 1947 (CA, MT, NV, OR, WA epigean/ epigean in Subway C.,Shasta Co., CA)

Callobius rothi Leech, 1972 (WA to CA epigean/ Tx or Tp in Sonoma Co., CA)

Callobius undet. sp. or species (NW; Tp or Tx in Kings Canyon Natl. Park,CA; Tx in Shasta Co.,CA; NM hyporheic)

Callobius tehama Leech, 1972 (Tx in Butte, Lassen, Shasta & Tehama Cos., CA)

Callobius tibialis = *Cybaeopsis t.*

Calodipoena Gertsch & Davis, 1936 - Mysmenidae spiders (1 species in US)]

Calodipoena incredula Gertsch & Davis, 1936 (= *Mysmena i.* Levi, 1956) (US, Bahamas, Cuba/ Ac in cave in Hardeman Co., TX)

Calymmaria Chamberlin & Ivie, 1937 Hahniidae spiders (once in Agelenidae, also put in Stiphidiidae) (11 species in US or Canada) **Bibl.:** Heiss 1982; Lehtinen 1967 (perhaps 31 sp., only 12 described)

Calymmaria cavicola (*Tegenaria c.* Banks, 1896) Chamberlin & Ivie, 1937 (syn. of *T. persica*?) (type locality cave in Crawford Co., IN/ epigean in E/ cave funnel web spider/ Tp in AL (Walker Co.), GA (Dade & Walker Cos.), IL, IN (S1), TN, VA, WV; TTx in KY (Mammoth C; Edmonson, Rockcastle, Pulaski, Wayne Cos.), OH)

Calymmaria shastae Chamberlin & Ivie, 1937 (Epigean, Ac or Tx in cave in Calaveras Co., CA)

Calymmaria undet. sp. (epigean in cave in Calaveras, Plumas, Tulare & Tuolumne Cos., CA; Tp? in cave in Walker Co., GA)

Calymmaria probable undescr. sp. (*?in cave in Tulare Co., CA/ Tp)

Castianeira Keyserling 1879 - Corinnidae spiders

Castianeira longipalpus (*Herpyllus l.* Hentz, 1847; *Agroeca tristis* Keyserling; *Geotrecha pinnata* Emerton, 1890; *Thargalia longipalpis*, *T. pinnata* Marx, 1889; *T. perplexa* Banks, 1892; *Corinna media*, *C. pacifica* Banks, 1896; *C. pinnata* Bryant, 1908; *C. tristis*, *C. longipalpis*, 1910) Dondale & Redner, 1982 (Nearctic/ Tx or Tp in TN, Blount Co.)

cave spiders - See Araneidae

Chasmocephalon Pickard-Cambridge, 1889 - Anapidae spiders

Chasmocephalon shantzi = *Gertschanapis s.*

Centromerus Dahl, 1886 (*Atopogyna* Millidge, 1984) (9 species in US or Canada) (mostly litter sp.) Linyphiidae spiders, Subfamily Linyphiinae. **Bibl.:** Ivie 1969; Van Helsdingen 1973

Centromerus cavernarum (*Linyphia c.* L. Koch, 1872; *Troglobyphantes c.* Simon, 1884; *Taranucnus c.* Enslin, 1906; *C. satyrus* Millidge & Locket, 1947; *C. derscoi*, *C. jacksoni* Denis, 1952) Pro'szyn'ski & Utochkin, 1977 (European epigean and Tp/ non-native Tp in GA)

Centromerus cornupalpis (*Erigone c.* O. Pickard-Cambridge, 1875; *Microneta c.* Emerton, 1882; *M. complicata* Levi & Field, 1954; *Atopogyna c.* Millidge, 1984) Kaston, 1948 (US, Canada epigean in MA, CT, NY, MI, NH, OH, IL, VI, NC, MO, WI, TN, UT, WY, NF, NS, ON/ Tp or Tx in IL, MO, VA, WV; Tx in IN (Harrison & Orange Cos./S4/G4))

Centromerus denticulatus (*Microneta denticulata* Emerton, 1909; *C. claytoni* Chamberlin & Ivie, 1944) Kaston, 1948 (Eastern Nearctic, Mex. to US, epigean in ME, MA, CT, MI, NC, GA, TN, AL, PQ, ON, MB/ Tp in nAL, GA, OK, esTN)

Centromerus latidens (*Microneta l.* Emerton, 1882; *Meioneta luteola* Banks, 1892; *Bathypantes l.* Crosby & Bishop, 1928; *Meioneta l.* Ivie, 1969) Kaston, 1948 (E, Canada,

endogean in CT, GA, TN, MO, FL, WV, KY, NY, NH, OH, AL, MD, MI, TX, NF, ON/ **Tp** or **TTx** in AL, AR, IL, KY (Mammoth C.), OK, TX; Tp in FL, MO; Tx in IN (WA Co./S4/G4))

Centromerus longibulbis (*Microneta l.* Emerton, 1882) Kaston, 1948 (US epigean in ME, MA, NH, NY, NF, PQ, ON, MB, [SK], [AB], BC/ Tx or Ac in NY (1 cave))

Centromerus serratus (*Erigone s.* O.P.-Cambridge, 1875; *Tmetiscus s.*, *T. probosus*, *Sintula longulus*, *S. balteatus* Simon, 1884; *C.b.* Lessert, 1904; *Parasintula b.* Dahl, 1912) Lessert, 1910 (Europe epigean & Tp/ prob. Tp or Tx alien in cave in Mercer Co., WV)

Centromerus undet. sp. (cave in Tucker Co., WV/ Tp?)

Ceraticelus Simon, 1884 - Linyphiidae spiders, subfamily Erigoninae (31 species in US or Canada)

Ceraticelus minutus (*Ceratinella minuta* Emerton, 1882; *Erigone m.* Marx, 1890) Banks, 1892 (Eastern Nearctic, incl. ME, MA, CT, NY, NH, PA, VA, NC, OH, MI, WI, MN, MO, GA, PQ, ON, MB / Tx or Ac in Manitoba, leaf litter)

Ceraticelus undet. sp. or species (cave in Carter Co., KY & cave in WV)

Ceratinops Banks, 1905 - Linyphiidae spiders (9 species in US or Canada)

Ceratinops inflatus (*Lophocarenum inflatum* Emerton, 1923) Crosby & Bishop, 1933 (= *C. inflata*) (epigean in WA, BC, OR?, AK?/ Tp or (less likely) Tx in Calaveras, Mariposa, Tulare Cos., CA)

Ceratinopsis Emerton, 1882 - Linyphiidae spiders, subfamily Erigoninae (25 species in US or Canada)

Ceratinopsis interpres (*Erigone i.* O.P.-Cambridge, 1874; *Notionella i.* Banks, 1905) Bishop & Crosby, 1905 (Ed, epigean in MA, NH, NY, CT, MD, PA, VA, DC, NC, KY, MO, SC, NB, PQ, ON/ **Tp** or **Tx** in WA Co., MD)

Cicurina Menge, 1871 (= *Moguracicurina* Komatsu, 1947; *Terilus* Simon, 1886) Dictynidae spiders (also put in Agelenidae) (102 species in US or Canada, Nearctic in Europe and Palearctic in Asia) **Bibl.:** Cokendolpher, J. C. & J. R. Reddell 2001.

Bibl.: Bonnet 1956; Chamberlin & Ivie 1940; Comstock 1912; Exline 1936; Gertsch 1992; Kaston 1978; Petrunkevitch 1911; Simon 1898; Chamberlin & Ivie 1940; Gertsch 1992; Exline 1936

Cicurina (*Cicurella*) *arcuata* Keyserling, 1887 (*C. complicata* Emerton, 1890; *Coelotes gnavus* Banks, 1892; *Tegenaria c.* Emerton, 1902) (Nearctic, AL, LA, NC, NM, VA/ Tx in GA, IL, IN (Crawford, Harrison Cos., S1/G3); leaf litter)

Cicurina* (*Cicurella*) *arkansa Gertsch, 1992 (Tp in East Fork Fissure, Williamson Co., TX)

Cicurina* (*Cicurella*) *bandera Gertsch, 1992 (*type locality cave in Bandera Co.,TX/ Tb/ G1G2)

Cicurina* (*Cicurella*) *bandida Gertsch, 1992 (**type locality & 1 other cave Travis Co.,TX/ Tb/ / federally listed as endangered/ Bandit cave spider/ G1)

Cicurina* (*Cicurella*) *baronia Gertsch, 1992 (*type locality cave in Bexar Co., TX/ Tb/ / federally listed as endangered/ R. B. cave spider/ G1)

Cicurina* (*Cicurella*) *barri Gertsch, 1992 (*Caverns of Sonora(=Mayfield) C.,Sutton Co.,TX/Tb/ G1G2)

Cicurina* (*Cicurella*) *breviaria Bishop & Crosby, 1926 (= *C. exlinae* Bishop & Crosby, 1940; *C. atomaria* Exline, 1938;) (E/ endogean, Tp or Tx in AL,TN (Bedford Co.), Appalachia)

Cicurina* (*Cicurella*) *brevis (Tegenaria b. Emerton, 1889; *C. creber* Banks, 1892) Chamberlin & Ivie, 1940 (Nearctic, BC, MO, WA?/ Tx? in AR, KY, NC, ON, TN, VA; Ac in NS, ON; leaf litter)

Cicurina* (*Cicurella*) *browni Gertsch, 1992 (*type locality cave in Williamson Co.,TX/ Tb/ G1G2)

Cicurina* (*Cicurella*) *buwata Chamberlin & Ivie, 1940 (nomina inquirenda by Gertsch 1992) (type locality in cave near Austin (about W.97o58',N30o21'), Travis Co. + Bandera, Bell, Bexar,Comal, Coryell, Edwards, Hays, Kendall, Kerr, Kimble, Kinney, Lampasas, Medina, Menard, , Real, San Saba, Sutton, Travibs, Uvalde, Val Verde Cos.,TX/ Tb)

Cicurina* (*Cicurella*) *cavealis Bishop & Crosby, 1926 (type locality cave in Boone Co.,MO/E/ Tp in AR, IL, MO)

Cicurina* (*Cicurella*) *caverna Gertsch, 1992 (*type locality cave in Kimble Co.,TX/ Tb/G1G2)

Cicurina* *caliga Cokendolpher & Reddell, 2001 (*type locality cave in Bell Co.TX/ Tb/ G1)

Cicurina* (*Cicurella*) *coryelli Gertsch, 1992 (*type locality cave in Coryell Co.,TX/ Tb/G1G2)

Cicurina* (*Cicurella*) *cueva Gertsch, 1992 (**type locality & 1 other cave in Travis Co.,TX/ Tb/ / federally listed as endangered, G1)

Cicurina* (*Cicurella*) *delrio Gertsch, 1992 (**type locality & 2 other caves in Val Verde Co.,TX/ Tb)

Cicurina* (*Cicurella*) *deserticola Chamberlin & Ivie, 1940 (AZ, NM, UT epigean/ Tp in cave in Eddy Co., NM)

Cicurina* (*Cicurella*) *elliotti Gertsch, 1992 (type locality cave in (Williamson Co. + caves in

Travis Co.,TX/ Tb/ G3)

Cicurina exlinae = *C. breviarua*

Cicurina (*Cicurella*) *ezelli* Gertsch, 1992 (*type locality cave in Hays Co.,TX/ Tb/G1G2)

Cicurina (*Cicurella*) *gatita* Gertsch, 1992 (*type locality cave in Bexar Co.,TX/ Tp)

Cicurina (*Cicurella*) *gruta* Gertsch, 1992 (*type locality cave in Edwards Co.,TX/ Tb/G1G2)

Cicurina (*Cicurella*) *holsingeri* Gertsch, 1992 (*type locality cave in Seminole Canyon State Historical Park,Val Verde Co.,TX/ Tb/G1G2)

Cicurina *caliga* Cokendolpher & Reddell, 2001 (*type locality cave in Bell Co.TX/ Tb/ G1)

Cicurina (*Cicurella*) *joya* Gertsch, 1992 (*type locality cave in Comal Co.,TX/ Tb?)

Cicurina (*Cicurella*) *machete* Gertsch, 1992 (*type locality cave in San Saba Co.,TX/ Tb/G1G2)

Cicurina (*Cicurella*) *madla* Gertsch, 1992 (type locality cave + 4 caves, Bexar Co.,TX/Tb/ Federal endangered T&E/ G1)

Cicurina (*Cicurella*) *mckenziei* Gertsch, 1992 (*type locality cave in Bandera Co.,TX/ Tb/ G1G2)

Cicurina (*Cicurella*) *medina* Gertsch, 1992 (*type locality cave in Medina Co.,TX/ Tb/G1G2)

Cicurina (*Cicurella*) *menardia* Gertsch, 1992 (*type locality cave in Menard Co.,TX/ Tb/ G1G2)

Cicurina (*Cicurella*) *minima* Chamberlin & Ivie, 1940 (AL, NC, TN/ Tp in AL)

Cicurina (*Cicurella*) *mirifica* Gertsch, 1992 (*type locality cave in Pecos Co., TX/ Tb)

Cicurina *mixmaster* Cokendolpher & Reddell, 2001 (*type locality cave in Bell Co.TX/ Tb/ G1)

Cicurina (*Cicurella*) *obscura* Gertsch, 1992 (*type locality cave in Bandera Co.,TX/ Tb/ G1G2)

Cicurina (*Cicurella*) *orellia* Gertsch, 1992 (*type locality cave in Real Co.,TX/ Tb/ G1G2)

Cicurina (*Cicurella*) *pablo* Gertsch, 1992 (*type locality cave in Uvalde Co.,TX/ Tb/ G1G2)

Cicurina (*Cicurella*) *pallida* Keyserling, 1887 (NE to MI,DC/Tp or Tx in GA, IL,VA, WV/ Tx in OH & KY; Tp in IN (S2))(Crawford, Harrison, Oragne Cos.)

Cicurina (*Cicurella*) *pastura* Gertsch, 1992 (*type locality cave in Kerr Co.,TX/ Tb/ G1G2)

Cicurina (*Cicurella*) *patei* Gertsch, 1992 (*type locality cave in Val Verde Co.,TX/ Tb/ G1G2)

Cicurina (*Cicurella*) *porteri* Gertsch, 1992 (*type locality cave in Val Verde Co.,TX/ Tb/ G1G2)

Cicurina (*Cicurella*) *puentecilla* Gertsch, 1992 (*Natural Bridge C.,Comal Co.,TX/ Tb/ G1G2)

Cicurina (*Cicurella*) *rainesi* Gertsch, 1992 (*type locality cave in Edwards Co.,TX/ Tb/ G1G2)

Cicurina (*Cicurella*) *reclusa* Gertsch, 1992 (type locality & 1 other cave in Comal Co.,TX/ Tb/ G1G2)

Cicurina (*Cicurella*) *reddelli* Gertsch, 1992 (*type locality cave in Travis Co.,TX/ Tb/ G1G2)

Cicurina (*Cicurella*) *reyesi* Gertsch 1992 (*type locality cave in Travis Co.,TX/ Tb/ G1G2)

Cicurina (*Cicurella*) *robusta* Simon, 1886 (*Coelotes longitarsus* Emerton, 1890; *C. garrina* Chamberlin, 1919) (E,SW,Nearctic/ type in Carlsbad C.,seNM/ Tp or Tx in KY, NM, OH)

Cicurina (*Cicurella*) *russelli* Gertsch, 1992 (*type locality cave in Hays Co.,TX/ Tb/ G1G2)

Cicurina (*Cicurella*) *sansaba* Gertsch, 1992 (**type locality & 1 other cave in San Saba Co.,TX/ Tb/ G1G2)

Cicurina (*Cicurella*) *selecta* Gertsch, 1992 (*type locality cave in Uvalde Co.,TX/ Tb/ G1G2)

Cicurina (*Cicurella*) *serena* Gertsch, 1992 (*type locality & 1 othe cave in Uvalde Co.,TX/ Tb/ G1G2)

Cicurina (*Cicurella*) *sheari* Gertsch, 1992 (*type locality cave in Real Co.,TX/ Tb/ G1G2)

Cicurina (*Cicurella*) undescr. sp.#1 (MO/ Tp)

Cicurina (*Cicurella*) undescr sp.#2 (AL/ Tb)

Cicurina (*Cicurella*) undescr sp.#3 (AZ/Tb or Tp)

Cicurina undet. sp.#1-4 (NM hyporheic)

Cicurina (*Cicurella*) undet. sp. or species (Eddy Co.NM/ Tx in CA & Onondaga Cave, MO; Tp in cave in Mario Co. & CA)

Cicurina (*Cicurella*) *sprousei* Gertsch, 1992 (*type locality cave in Bandera Co.,TX/ Tb/ G1G2)

Cicurina (*Cicurella*) *stowersi* Gertsch, 1992 (*type locality cave in Kerr Co.,TX/ Tb/ G1G2)

Cicurina (*Cicurella*) *suttoni* Gertsch, 1992 (*type locality cave in Sutton Co.,TX/ Tb/ G1G2)

Cicurina (*Cicurella*) *travisae* Gertsch, 1992 (type locality cave in Travis Co.,+ cave or caves in Williamson Co., TX/ Tb/ G1G2)

Cicurina (*Cicurella*) *ubicki* Gertsch, 1992 (*type locality cave in Hays Co.,TX/ Tb/ G1G2)

Cicurina (*Cicurella*) *uvalde* Gertsch, 1992 (*type locality cave in Uvalde Co.,TX/ Tb/ G1G2)

Cicurina (*Cicurusta*) *varians* Gertsch & Mulaik, 1940 (CO, NM epigean/ Tp in NM, OK, TX)

Cicurina (*Cicurella*) *venefica* Gertsch, 1992 (*type locality cave in Terrell Co.,TX/ Tb/ G1G2)

Cicurina (*Cicurella*) *venii* Gertsch, 1992 (*type locality cave in Bexar Co.,TX/ Tb/ /Federally listed as endangered T & E/ Veni's cave spider/ G1)

Cicurina (*Cicurella*) *vespera* Gertsch, 1992 (**type locality & 1 other cave in Bexar Co.,TX/ Tb/ Proposed federal endangered T&E/ G1)

Cicurina (*Cicurella*) *vibora* Gertsch, 1992 (**type locality & 1 other cave in Williamson Co., TX/ Tb/ G1G2)

Cicurina (*Cicurella*) *wartoni* Gertsch, 1992 (Wharton's cave spider/ * type locality cave in Travis Co., TX/ Federal Candidate T&E, priority 2/ Tb/ G1G2)

Cicurina (*Cicurella*) *watersi* Gertsch 1992 (*type locality cave in Uvalde Co.,TX/ Tb/ G1G2)

Cicurina (*Cicurella*) *wiltoni* Gertsch, 1992 (**type locality & 1 othe cave in Jefferson Co.,AL/ Tb/ G1G2)

Cispiolus (also put in Pholcidae) = *Dolomedes*

cobweb spider - See Theridiidae

Coelotes Blackwall, 1841 (not in America, see *Coras*) Amaurobiidae spiders

Coelotes plumarius Bishop & Crosby, 1926 = *Tegeneria domestica*

Coras Simon, 1898 - Amaurobiidae spiders (14 species in US or Canada) **Bibl.:** Muma 1946

Coras cavernorum Barrows, 1940 (Tp in US)

Coras juvenilis (*Coelotes j.* Keyserling, 1881; *C. fidelis*, *C. longitarsus*, *C. lineatus* Banks, 1892) Banks, 1916 (CT, IN, MD, MI, NY, PA, VT, VA epigean/ Tx or Tp in GA (Walker Co.), KY(Mammoth C.),OH) **Bibl.:** Chamberlin 1925

Coras lamellosus (*Coelotes l.* Keyserling, 1887) Muma, 1946 (type locality cave in Marshall Co./Tp in AL), Tp or Tx (near *Coras lamellosus*) in 2 caves in Crawford Co.,MO; Tx in, IL,OK/ S4(IN)/G4)

Coras undet. sp. or species (Tx or Ac in IN; Tp in cave in Crawford Co.,MO; NM hyporheic)

Coras taugynus Chamberlin, 1925 (= *Coelotes t.* Lehtinen, 1967) (epigean in eTN, wNC/ Tp in AL)

Corinna C.L. Koch, 1841 (*Falconina Brignoli*, 1985; *Chemmis* in part) Corinnidae spiders (once put in Agelenidae & Clubionidae) (2 species in US)

Corinna undet. sp. (Tp in Bexar, Travis, Williamson Cos., TX)

Corinna cetrata (*Creugas cetratus* Simon, 1889; *C. tahitica* Strand, 1913) Simon, 1898 (New Caledonia, Tahiti, Marquesas Islands (alien in HI (Kauia,Oahu))/ Tp or Tx)

Cryphoea Thorell, 1870 (also put in Agelenidae) (2 species in US or Canada) (mostly litter sp.) Hahniidae spiders

Cryphoea undet. sp. (Tx in NM)

Ctenium Menge, 1871 (see *Robertus*) Ctenidae spiders. Bibl.: Kaston 1946

Ctenus Walckenaer, 1805 (wandering spiders) Ctenidae spiders (5 species in US or Canada)

Ctenus captiosus Gertsch, 1935 (FL epigean/Tp? in FL (prob.))

Ctenus exlineae Peck, 1981 (Tp? in karstlike cavities in *Devils Den State Park, WA Co.,AR)

Ctenus undescr.? sp. (Tx in cave in Adair Co.,OK)

Ctenus valverdiensis Peck, 1981 (****type locality & 3 other caves in Val Verde Co.,TX/ Tp)

Cybaeopsis Strand, 1907 (*Callioplus* Bishop & Crosby, 1935) - Amaurobiidae spiders (9 species in US or Canada)

Cybaeopsis tibialis (*Amaurobius t.* Emerton, 1888; *Callioplus t.* Chamberlin & Ivie, 1947) Yaginuma, 1987 (Tx in nON)

Cybaeozyga Chamberlin & Ivie, 1937 - Cybaeidae spiders (6? Species in US)

Cybaeozyga undescr. sp.#1 (*?cave in Shasta Co.,CA/Tb)

Cybaeozyga undescr. #2 (*?cave in Shasta Co.,CA/Tb)

Cybaeozyga undescr. sp. #4? (Shasta Co.,CA)/Tb (or new *Cybaeus* sp.#2)

Cybaeozyga undescr. sp.#5? (NY/Tb)

Cybaeus L. Koch, 1868 (*Bansaia* Uyemura, 1938) Cybaeidae spiders (also put in Agelenidae) (40 species in US or Canada, genus also in Europe & Japan) (mostly litter sp.) **Bibl.:** Chamberlin & Ivie 1932; Roth 1952

Cybaeus eutypus Chamberlin & Ivie, 1932 (BC to CA epigean/ Tx or Tp in BC)

Cybaeus giganteus Banks, 1892 (= *C. patritus* Bishop & Crosby, 1926; *C. silicis* Barrows, 1919) (NY, NC epigean/ Tp in Mammoth C.,KY; Tx or Tp in cave in Blount Co.,TN)) **Bibl.:** Roth & Brown, 1986

Cybaeus morosus Simon, 1886 (= *C. signifer* Emerton, 1923) (US, n. to AK epigean/ Tx or Tp in BC)

Cybaeus reticulatus Simon, 1886 (US, n. to Canada, AK epigean/ Ac in WA; Ac, Tp or Tx in BC)

Cybaeus septatus Chamberlin & Ivie, 1942 (type locality cave in Shasta Co.,CA/ sOR & nCA epigean)

Cybaeus undet. species (Tx or Ac in nON; Ac or Tx in Calaveras & Tuolumne Cos.,CA; Tp or Tb? in cave in Skamania Co.,WA; Tx or Tp in BC & Nickajack C.,TN)

Cybaeus undescr. sp.#1 (Trinity Co.,CA/ Tb)

Cybaeus undescr. sp.#2 (cave in Shasta Co.,CA/ Tb (or new *Cybaeozygia* sp.#4))

Cybaeus undescr. sp.#2-8 (wCA/ Tb)

Cyclosa Menge, 1866 (= *Parazygia* Caporiacco, 1955) - Araneidae spiders (9 species in US or Canada) *Cyclosa argyroides* = *A. a.*

Cyclosa conica (*Aranea c.* Pallas, 1772; *C. conica canadensis* Blackwall, 1846; *A. triquetra* Sulzer, 1776; *Epeira c.* Walckenaer, 1802; *Singa c.* Hahn, 1834) Menge, 1866 (Holarctic, CA, SW, Russian Far East/ Tx or Ac in Manitoba)

Dictyna Sundevall, 1833 (= *Brigittea* Lehtinen, 1967) Dictynidae spiders (41 species in US or Canada)

Dictyna bellans Chamberlin, 1919 (= *D. longispina* Getsch & Mulaik, 1940; *D. extensa* Jones, 1947) (LA/ Ac in cave in San Saba Co., TX)

Dictyna undet. sp. (Tx or Ac in 1 IL cave)

Diguetia Simon, 1895 - Diguetidae spiders (5 species in US)

Diguetia canities (*Segestria c.* McCook, 1890) Simon, 1895 (SW, s. to Mex. epigean/ Tx in Colossal C., AZ)

Dipoena Thorell, 1869 (= *Umfila* Keyserling, 1886; *Trigonobothrys* Simon, 1889; *Stictoxena* Simon, 1895; *Paoningia* Schenkel, 1936; *Pselothorax* Chamberlin, 1948) Theridiidae spiders (16 species in US or Canada)

Dipoena *abdita* Gertsch & Mulaik, 1936 (FL to CA, NV/Tx in OK)

Dipoena undet. sp(p). (MO,OK/Tx?)

Dirksia Chamberlin & Ivie, 1942 (described as subgenus of *Ethobuella*) – Hahniidae spiders (once placed in Agelenidae) (1 species in US)

Dirksia *cinctipes* (*Apostenus* c. Banks, 1896; *Ethobuella* (*Dirksia*) c. Chamberlin & Ivie; *E. anyphaenoides* Chamberlin & Ivie, 1942; *E.c.* Chamberlin & Ivie, 1947) Lehtinen, 1967 (Tx or Tp in BC)

Dolomedes Latreille, 1804 (*Teippus* Chamberlin, 1924; *Cispiolus* Roewer, 1955) Pisauridae spiders (8 species in US or Canada). **Bibl:** Carico, 1973

Dolomedes *scriptus* Hentz, 1845 (*D. fontanus*, *D. tenebrosus* Emerton, 1885) (Eastern Nearctic, NC, OH, KY, n. to Canada epigeal/ Ttx in IL, IN (Crawford, Harrison, Orange Cos./S1?/G3), KY, MO, OH, TN, TX; Ttx or Ac in MD (one cave))

Dolomedes sexpunctatus = *D. triton*

Dolomedes undet. sp. or species (Tx in IL, MO, MS)

Dolomedes *tenebrosus* Hentz, 1843 (New England & adjacent Canada s. to FL & w. to ND & eTX/ brownish-gray fishing s./Tx in IL, MO, MS, sON)

Dolomedes *triton* (*Lycosa* t. Walckenaer, 1837; *D. expunctatus* Hentz, 1845; *D. scapularis* C.L. Koch, 1847; *Potamia* t. Simon, 1864; *D. major* Banks, 1898; *Thaumasia* t. F.O.P.-Cambridge, 1903; *D. albiclavius* Bishop, 1924) Petrunkevitch, 1910 (E of Rockies, rare in Rockies & Great Plains, Nearctic, NM, TX, s. to Cuba epigeal/ six-spotted fishing s./Tx or Tp in WV) **Bibl.:** Carico 1970; Figiel 1995; Kreiter 1997; M. Moore 1997; Wojcicki 1992

Dolomedes urinator = *D. vittatus*

Dolomedes *vittatus* Walckenaer, 1837 (= *D. urinator* Hentz, 1847) (TX/Tx in IL, IN (Harrison Co./ S1/G4), MO?, TN, WV)

Drassyllus Chamberlin, 1922 Gnaphosidae spiders (once put in Ctenidae) (56 species in US or Canada) (mostly litter sp.) **Bibl.:** Platnick & Shadab, 1981-2

Drassyllus *depressus* (*Prothesima* d. Emerton, 1890; *Melanophora* d. Bryant, 1908; *Zelotes* d. Banks, 1911; *Prothesima* d. Emerton, 1911) Chamberlin, 1922 (AZ, Canada, NM, OH, Nearctic/ Tx or Ac in WV; ground litter)

Drassyllus *dromeus* Chamberlin, 1922 (= *D. lutzi*, *D. devexus* Chamberlin, 1936; *D. orgilus* Ubick & Roth, 1973) (Ac in cave in Kimble Co., TX)

Drassyllus *fallens* Chamberlin, 1922 (*Prothesima depressa* Emerton, 1911 (in part))

(US,Canada epigean/Tx in 2 caves in Hocking Co.,OH)

Drassyllus gynosaphes Chamberlin, 1936 (Ac in cave in Bexar Co., TX)

Drassyllus prosaphes Chamberlin, 1936 (Ac in cave in Brewster Co., TX)

Drassyllus undet. sp(p). (Ac in TX; WA)

Drassyllus texamans Chamberlin, 1936 (SE to OK, TX, Mex./ Ac in TX)

Dysdera Latreille, 1804 - Dysderidae spiders (1 species in US & Canada)

Dysdera crocota C.L. Koch, 1838 (cosmopolitan, prob. introduced into US from Mediterranean/
New England s. to LA & W.to CA/alien Tp or Tx in 2 HA caves)

Ebo Keyserling, 1884 (= *Titanebo* Gertsch, 1933) Philodromidae spiders(21 species in US or
Canada)

Ebo undet. (Carlsbad C.,NM)

Eidmannella Roewer, 1935 Nesticidae spiders (once in Theridiidae) (6 species in US)

Eidmannella bullata Gertsch, 1984 (*type locality cave in Culberson Co.,wTX/ Tb/ G1G2)

Eidmannella delicata Gertsch, 1984 (*type locality cave in Verde Co.wTX/ Tb/ G1G2)

Eidmannella nasuta Gertsch, 1984 (*type locality cave in Medina Co.,TX/ Tb/ G1G2)

Eidmannella pallida (*Nesticus p.* Emerton, 1875; *N. cavicola* Banks, 1898; *Pocobletus mexicanus* Banks, 1898; *Bathyphantes ovigerus* Petrunkevitch,1926; *Theonoe striatipes*, *Centromerus o.* Petrunkevitch, 1930; *Eidmannella attae* Roewer, 1935; *N. dragani* Dumitresco, 1973; *E. suggerens* Chamberlin, 1924; *Nesticus mexicanus* Banks) Millidge & Locket, 1955 (cotypes from cave in Augusta Co.,VA +Ed in England(alien),Ontario s. in E to Panama,West Indies/ AK, CA, GA, IA, KS, KY, LA, MA, MS, NJ, NC, OK epigean/ Tp or Tx in AL (Maidson Co.), AR, AZ, FL, HI(alien), IA, IL, IN(Crawford Co.), MD, NM, NY, OH, ON, OR, PA, TN (Davidson, Wayne &Rutherford Cos.), TX (cave in Travis Co. & 2 caves in Williamson Co.); VA, WI, WV; Tp in AZ (Kartchner C.,Coshise Co), FL, GA (Dade & Decatur Cos.), MO,TN; Tx in NJ) **Bibl.:** Ives 1935; Muma 1945

Eidmannella reclusa Gertsch, 1984 (type locality & at least 5 other caves in Travis Co.,TX/ Tb/ G1G2)

Eidmannella rostrata Gertsch, 1984 (type locality cave in Kendall Co.,+ caves in & adjacent to Edwards Plateau, cTX (Bandera, Bexar, Blanco, Burnet, Comal, Hays, Kendall, Medina, Real, Terrell, Uvalde, Val Verde Cos.)/ Tb)

Eidmannella undescr.? sp. (*? cave in Hays Co., TX/ Tb)

Eidmannella tuckeri Cokendolpher & Reddell 2001 (*cave in Jeff Davis Co.,TX/ Tb)

Eidmannella undet. sp(p). (Tb? in Kartchner C.,AZ; Tp in cave in MO; Tp in TX)

Elaver Pickard-Cambridge, 1898 – Clubionidae spiders (8 species in US or Canada)

Elaver exceptus (*Clubiona pallens* Hentz, 1847 (preoccupied by Hahn, 1834); *Clubiona e.* L. Koch, 1866; *Clubionoides e.* Edwards, 1958) Brescovit, Bonaldo & Mikhailov, 1994 (US, Canada, West Indies epigean/ Ttp in GA (Dade Co.))

Enoplognatha Pavesi, 1880 (*Smopagia* Simon, 1894) - Theridiidae spiders (mostly litter sp.) (7 species in US or Canada) **Bibl.:** Levi 1957

Enoplognatha ovata (*Araneus ovatus*, *A. lineatus* Clerck, 1757; *Aranea redimita* L., 1758, *A. coronata* De Geer, 1778) Levi, 1957 (Holarctic/ Tx or Ac in sON)

Enoplognatha selma Chamberlin & Ivie, 1946 (*E. (rugatha)* s. C.& I., 1946) (Tx in Mariposa Co., CA)

Enoplognatha undet. sp. (Tx or Tp in MS)

Epeira - See *Araneus*

Eperigone Crosby & Bishop, 1928 (mostly litter sp.), Linyphiidae spiders, subfamily Erigoninae (35 species in US or Canada) **Bibl.:** Millidge, 1987

Eperigone antraea (*Parerigone a.* Crosby, 1926; *E. antraea* Millidge, 1987) Crosby & Bishop, 1928 (Carlsbad C.(NM) (type locality) / epigean in Mexico, AZ, CO, NM, TX/ Tp or Tx in AZ, IL?, TX, Mex; Tx? or Tp? in CO)

Eperigone autumnalis = *Erigone a.*

Eperigone eschatologica (*Erigone e.* Crosby, in Chamberlin, 1924) Crosby & Bishop, 1928 (epigean in AL, AZ, CA, FL, GA, OK, TX, Mexico, s. to Columbia/ Tp or Tx in IL, NM, TX)

Eperigone indicabilis Crosby & Bishop, 1928 (IL, NY, NB, ON epigean/ Tp or Tx in IL; Ac or Tx in IN (Orange Co.))

Eperigone maculata (*Tmeticus maculatus* Banks, 1892; *Oedothorax m.* Crosby, 1905; *Parerigone m.* Crosby, 1926) Crosby & Bishop, 1928 (epigean in Russia, Canada to US, incl. ME, NH, MA, CT, RI, NY, NJ, PA, DC, MD, VA, NC, SC, GA, FL, AL, TN, KY, OH, MI, WI, MN, IN, IL, MO, AR, MS, LA, TX, KS, AZ, NF, NS, PQ, ON, Mexico/ Tx in IL,OK; Tp in TX; Tx or Tp in IN (Harrison & Orange Cos./S4/G4))

Eperigone undet. spp. (Tp in 8 cos. in TX)

Eperigone tridentata (*Tmeticus t.* Emerton, 1882; *Gongylidium t.* Simon, 1884; *Erigone t.* Marx, 1890; *Grammonota venusta* Banks, 1892; *Erigone clacksvillense* Petrunkevitch, 1925; *Oreonetides p.* Petrunkevitch, 1930; *E. p.* Saaristo, 1972) Crosby & Bishop, 1928; (epigean in

Nearctic, incl. MA, VT, CT, RI, NY, NJ, DC, MD, VA, NC, GA, FL, PA, OH, IL, IN, KY, TN, AR, MO, LA, TX, WI, NE, PQ, ON, MB, TX/ **Tx** or **Tp**? in IL, IN, MD(Eb), WV, leaf litter)

Eridantes Crosby & Bishop, 1933 - Linyphiidae spiders (2 species in US or Canada)

Eridantes erigonoides (*Lophocarenum e.* Emerton, 1882; *Erigone percisa* Keyserling, 1886; *L. parvum* Banks, 1892; *L. formosum* Banks, 1892; *Diplocephalus e.* Simon, 1894; *Plaesiocraerus lobiceps* Banks, 1897; *Erigone e.* Petrunkevitch, 1911; *L. formosum* Banks, 1916; *Caseola howardi* Petrunkevitch, 1925) Crosby & Bishop, 1933 (epigean in US, incl. MA, CT, NY, NH, MD, DC, VA, TN, OH, IL, WI, MN, MO, KS, NE, NF, PQ, ON, MB/ **Tx** in AR)

Erigone Audouin, 1826 (= *Eriogone* in part) in Linyphiidae, subfamily Erigoninae (also put in Erigonidae) (41 species in US or Canada, mostly in leaf litter, genus cosmopolitan)

Erigone autumnalis Emerton, 1882 (= *Eperigone a.*) (Eastern Nearctic, AZ, CA, NM, ME, NY, CT, NH, MA, NJ, MD, DC, OH, VA, NC, TN, FL, LA, AR, KY, IL, MS, MO, KS, OK, TX, NE, AZ, CA, NS, PQ, MB Holarctic, s. to Panama, West Indies, w. to Azores, Europe epigean/ Tp or Tx in IL, IA; Tx in IN (Harrison Co./S4?/G4))

Erigone infernalis Keyserling, 1886 (*Araeoncus i.*) (type locality cave in Monroe Co. & cave in Lawrence Co., IN) & cave in Barren Co., KY/ Tp in KY) (probably *Porrhomma* & so not a valid species)

Erigone maculata (Banks, 1892) (= *Eperigone m.*) (epigean ne.Canada, s. to FL, w. to MO, AZ but not most of West/ Tp in GA (Bartow Co.))

Erigone stygius (= *E. stygia* Gertsch, 1973) (**type locality cave in HI Volcanoes Natl. Park & Kazumura Lava Tube/ Tb/ G1g2)

Eulaira Chamberlin & Ivie, 1933 - Linyphiidae spiders, Subfamily Linyphiinae (12 species in US or Canada)

Eulaira undet. sp. (Tx or Ac in NM)

Eulaira suspecta Gertsch & Mulaik, 1936 (epigean in AZ, TX, Mex./ Ac in cave in Val Verde Co., TX)

Filistata arizonica = *Kukulcania a.*

Filistatinella Gertsch & Ivie, 1936 (downgraded to subgenus of *Filistata* Lareille, 1810 by Zapfe, 1961 but accepted as valid genus by all modern workers) Filistatidae spiders (1 species in US)

Filistatinella crassipalpis (*Filistata c.* Gertsch, 1935) Gertsch & Ivie, 1936 (Lower Rio Grande Valley of NM, TX epigean/ Tp in cave in Val Verde Co., TX)

Frontinella O. P.-Cambridge, 1902 - Linyphiidae spiders, Subfamily Linyphiinae (2 species in

US or Canada) **Bibl.:** Blauvelt 1933

Frontinella pyramitela (Walckenaer, 1841) Chamberlin & Ivie, 1944) Kaston, 1948 (*Linyphia communis* Hentz, 1850 (synonymy of *communis* is difficult to evaluate, as the Abbot drawing on which the name *pyramitela* is based has not been published) (Canada to Central America epigean / bowl & dolly weaver or spider/ Ac in cave in Medina Co., TX)

funnel spider - See Agelenidae & Dictynidae

Gaucelmus Keyserling, 1884 - Nesticidae spiders (1 species in US & Canada)

Gaucelmus augustinus Keyserling, 1884 (= *Theridion a.*) (female syntypes from 2 caves in Hays Co., TX/ SE to KY, nFL, West Indies, s. to Panama/ Tp in FL, GA (Decatur & Houston & WA Cos.), LA?, TX) **Bibl.:** Brignoli 1979

Gertschanapis Platnick & Forster, 1990 - Anapidae spiders (1 species in US)

Gertschanapis shantzi (*Chasmocephalon s.* Gertsch, 1960) Platnick & Forster, 1990 (Tp in Calaveras & Tuolumne Cos., CA)

Gladicosa (Varacosa) avara = *V.a.*

Glenognatha Simon, 1887 (= *Mimognatha* Banks, 1929, *Hivaoa* Berland, 1935) Tetragnathidae spiders (4 species in US or Canada)

Glenognatha foxi (McCook, 1893) (epigean in US to Panama, MO, NM, OH, OK, TN, TX epigean/ Tx in GA)

Glenognatha undet. sp. (Tx in MO)

Gnaphosa Latreille, 1804 (*Cylphosa* Chamberlin, 1933) Gnaphosidae spiders (21 species in US or Canada) **Bibl.:** Platnick & Shadab 1976

Gnaphosa fontinalis Keyserling, 1887 (*G. americana* Banks 1896; *G. distincta* Banks, 1898; *G. texana* Chamberlin, 1922 (US, Mex./Ac in cave in Hays Co., TX)

Gnathonaroides Bishop & Crosby, 1923 - Linyphiidae spiders (1 species in US & Canada)

Gnathonaroides pedalis (*Araeoncus p.* Emerton, 1923) Bishop & Crosby, 1938 (Eastern Nearctic, AB, ON, MB, ME to WI epigean/Tx or Ac in sON)

Grammonota Emerton, 1882 - Linyphiidae spiders (25 species in US or Canada)

Grammonota undet. sp. or species (Tx in MO; on porcupine dung in one NS cave)

Habronattus F.O. P-Cambridge, 1901 (once a subgenus of *Pellenes* Simon, 1876) Salticidae spiders (67 species in US or Canada)

Habronattus elegans (*Pellenes e.* Peckham & Peckham, 1901) Pro'szyn'ski, 1976 (US, s. to Mex. epigean/ Ac in cave in Irion Co., TX)

Habronattus undet. sp. or species (Ac in cave in Williamson Co., TX; Ac or Ttx in moss in El Malpais Natl. Monument, nNM))

Hahnia Koch, 1841 (= *Hahnistea* Chamberlin & Ivie, 1942; *Unzickeria* Lehtinen, 1967; *Haniops* Roewer, 1942; *Muizenbergia* Hewitt, 1915; *Simonida* Schiapelli & Gerschman, 1958) Hahniidae spiders (6 species in US or Canada)

Hahnia flaviceps Emerton, 1913 (E/ Tx in caves in Bexar, Travis, Williamson Cos., TX)

Hahnea sanjuanensis Exline, 1938 (= *Hahnistea longipes* Chamberline & Ivie, 1941; *Hahnistea s.* Lehtinen, 1967) (US, Mex. epigean/ Tx or Tp in caves in Shasta Co.,CA)

Hahnia undet. sp. (Tx in caves in Bell, Bexar, Hays, Travis, Williamson Cos., TX)

Hahnistea Chamberlin & Ivie, 1941 - subsumed in *Hahnia*

Halorates Hull, 1911 - Linyphiidae spiders (also put in Erigonidae) (1-2? species in US or Canada)

Halorates undescr. sp. or *H. reprobus* (*Nerienne reprobata* O.P. Cambridge, 1879; *Pedanostethus r.* Simon, 1884; *Tmeticus denticulatus* Hull, 1896; *T. commodus* O.P.-Cambridge, 1905; *Centromerus c.* Hull, 1911) Hull, 1911 (Tp or Tb in *?cave in BC)

Herpyllus Hentz, 1832 (Bonna O.P. –Cambridge, 1898) Gnaphosidae spiders (12 species in US or Canada) **Bibl.:** Platnick & Shadab 1977

Herpyllus undet. sp. (Ac in cave in Edwards Co., TX)

Hogna Simon, 1885 (= *Isohogna* Roewer, 1960; *Rabidosa* Roewer, 1960; *Birabenia* Mello-Leitao, 1941; *Lycorma* Simon, 1885) Lycosidae spiders (24 species in US or Canada)

Hogna antelucana (*Lycosa a.* Montgomery, 1904; *L. apicata* Banks, 1904) Roewer, 1955 (US epigean/ Ac in Edwards, Val Verde Cos., TX)

Hogna carolinensis (*Lycosa c.*, *L. tarentula c.* Walckenaer, 1805; *L. t. georgiana*, *L. vehemens*, *L. milberti* Walckenaer, 1837; *L. pilosa* Girard, 1852; *Leimonina m.* Simon, 1864; *Geolycosa texana*, G.c. Montgomery, 1904) Roewer, 1955 (NC to GA, NE & sCanada to MO/ Carolina wolf s./Ac in TX)

Hogna frondicola (*Lycosa f.*, *L. nigroventris* Emerton, 1885; *Tarentula modesta* Thorell, 1877; *Lycosa m.* Banks, 1894; *Trochosa f.* Montgomery, 1902) Dondale & Redner, 1990 (US, Canada epigean/ Tx or Ac in Manitoba, nON)

Hogna howarthi = *Lycosa h.*

Hogna rabida = *Rabidosa r.* Walckenaer, 1837

Hololena Chamberlin & Gertsch, 1929 - Agelenidae spiders (30 species in US or Canada)

Hololena undet. sp. (NM hyporheic)

Howaia Lehtinen & Saaristo, 1980 - Nesticidae spiders

Howaia mogera = *Nesticella m.*

Hypochilus Mark, 1888 ("lamp shade" spiders) Hypochilidae spiders (9 species in US)

Hypochilus bonneti Gertsch, 1964 (type locality cave in Fremont Co. +>8 CO Rocky Mt. caves, Black Canyon of the Gunnison (scCO)/ Tp) **Bibl.:** Meacham 1983; Meachan 1991

Hypochilus coylei Platnick, 1987 (*?rock overhangs below cave in Rutherford Co., NC/TTp or TTx?) NC State Species of Concern; global G3? rank) **Bibl.:** Huff & Coyle 1992

Hypochilus gertschi Hoffman, 1963 (WV epigean/Tp? in KY,VA) **Bibl.:** Shear, 1969

Hypochilus jemez Catley, 1994 (*type locality cave in San Miguel Co.,NM/ Tb)

Hypochilus petrunkevitchi Gertsch, 1958 (San Bernadino Co. n.in Sierras to Humboldt Co./ TTp or (less likely) Tx in Siskiyou, Tulare & Fresno Cos.,CA)

Hypochilus pococki Platnick, 1987 (neGA, eTN, wVA epigean/ Tp? in wNC,TN (Blount Co.) **Bibl.:** Catley 1993

Hypochilus thorelli Marx, 1888 (neAL, nGA, seTN, wNC, wSC epigean / TTx in TN (Blount & Robertson Cos.) & GA (Dade Co.))/Lamp Shade Spider) **Bibl.:** Fergusson 1972; Foelix & Jung 1978; Gertsch, 1992

Hyptiotes Walckenaer, 1837 (= *Uptiotes*) - Uloboridae spiders (4 species in US or Canada)

Hyptiotes cavatus (*Cyllopodia c.* Hentz, 1847; *H. americanus* Wilder, 1847) McCook, 1881 (eTX to GA, n.to New England/ triangle weaver/Ac in cave in Travis Co., TX)

Hyptiotes gertschi Chamberlin & Ivie , 1935 (Nearctic, NW, eCanada s. to CA, ME, NY/ Tx or Ac in WA)

Islandiana Braendegaard, 1932 (*Aduva* Bishop & Crosby, 1936) Linyphiidae spiders (also put in Erigonidae) (= *Aduva* Bishop & Crosby, 1936) (16 species in US or Canada) (mostly litter sp.) **Bibl.:** Ivie 1965

Islandiana cavealis Ivie, 1965 (type locality & at least one other cave in Fayette Co.,KY + 2 caves in Crawford Co.,MO & one cave in Harrison Co.,IN/ Tb)

Islandiana flaveola (*Tmetiscus flaveolus* Banks, 1892; *Oedothorax f.* Crosby 1905; *Aduva f.* Bishop & Crosby, 1936; *Tapinocyba iowa* Chamberlin, 1948) Kaston, 1948 (epigean s. Canada to Mid-West, SW but not NW or CA/ Tp or Tx in IL, WV)

Islandiana muma Ivie, 1965 (= *Lepthyphantes m.*) *** (type locality cave in Rockbridge Co., VA & cave each in Colbert & Lawrence Cos., AL/Tb/T&E VA S1, global G2G3 or (less likely) G1G2) **Bibl.:** Holsinger & Culver 1988; Peck 1989

Islandiana princeps Braendegaard, 1932 (Holarctic, boreoalpine & subarctic, CO, IL, MN, Newfoundland, NH, NY, UT, VT, WY, n. to Greenland & Iceland/ Tp? in IL, NY)

Islandiana undet. sp. or species (cave in Taney Co., MO; Tp in cave each in Edwards & King Cos., TX)

Islandiana undescr. sp. #1 (VA, WV (S1G1), KY, TX/ Tb/ G1?)

Islandiana undescr. sp. #2 (*?cave in FL C.State Park, Jackson Co., FL/ Tb)

Islandiana undescr. sp.#3 (cave in Ste. Genevieve Co., IL/ Tb?)

Islandiana undescr. sp.#4 &/or #1 (*?Devil's Sinkhole, Edwards Co., TX/ Tp?)

Islandiana speophila Ivie, 1965 (type locality cave in Pendleton Co., WV & cave? each in Shannon Co. & OR Cos., MO) /Tb/WV T&E S1 rank & global G1 rank; Federal Species of Concern/Cavern Sheet-web Spider) **Bibl.:** Holsinger et al. 1976

Islandiana unicornis Ivie, 1965 (*Lepthyphantes u.*) (type locality & one other cave in Childress Co., + caves in Wheeler Co. TX + Woodward Co., OK)/gypsum Tb/ G3G4) **Bibl.:** Black, 1971

Ivesia Petrunkevitch, 1925 (= *Nesticus* by Kaston, 1945)

Ivesia tennesseensis = *N. t.*

Jalapyphantes Gertsch & Davis, 1946 - Linyphiidae spiders, Subfamily Linyphiinae (1 species in US or Canada)

Jalapyphantes puebla Gertsch & Davis, 1946 (Mex. epigean/ Ac in cave in Jeff Davis Co., TX)

jumping spiders - See Oonopidae, Salticidae

Kibramoa Chamberlin, 1924 - Plectreuridae spiders (8 species in US or Canada)

Kibramoa madrona Gertsch, 1958 (Tx in Shasta Co., CA)

Kibramoa paiuta Gertsch, 1958 (*type locality cave in Clark Co., NV/ Tp?)

Kibramoa suprenans (*Plectreurys s.* Chamberlin, 1919) Chamberlin, 1924 (Tp? in cave in Coconino Co., AZ)

Kukulcania Lehtinen, 1967 - Filistatidae spiders (6 species in US)

Kukulcania arizonica (*Filistata a.* Chamberlin & Ivie, 1935) Lehtinen, 1967 (CA,US/Ac in cave in Real Co., TX)

Kukulcania crassipalpis = *Filistatinella c.*

Lathys Simon, 1884 (*Auximus* Simon, 1892) - Dictynidae spiders (9 species in US or Canada)

Lathys undet. sp. (Cassel Farm C., VA)

Latrodectus Walckenaer, 1805 (= *Chaococa* Bradcock, 1932) (black widows) Theridiidae spiders (5 species in US or Canada)

Latrodectus hesperus Chamberlin & Ivie, 1935 (epigean in NA, Israel/ Tx in 2 caves in Culberson Co., TX)

Latrodectus mactans (*Aranea m.* Fabricius, 1775) C.L.Koch, 1837 (ON, SK, QB, all US but ME/ southern black widow/ Tx in TX; Tx or Ac in WV)

Latrodectus undet. sp. (TX in TX)

Leptoctenus L. Koch, 1878 - Ctenidae spiders (1 species in US)

Leptoctenus byrrhus Simon, 1888 (s & swTX to Mex. epigean/ Tp in Up the Creek Cave, Bexar Co., TX)

Leptoneta Simon, 1872 (= *Neoleptoneta* in part; no true *Leptoneta* in US/Canada) - Leptonetidae spiders

Leptoneta georgia = *Neoleptoneta g.*

Lepthyphantes Menge, 1866 (mostly litter sp.) Linyphiidae spiders, Subfamily Linyphiinae (22 species in US or Canada) **Bibl.:** Zorch 1937

Lepthyphantes intricatus (*Bathyphantes i.* Emerton, 1911; *Microneta complicata* Banks, 1892 (name preoccupied); *M.i.* Emerton, 1911) Ivie, 1969 (Nearctic, epigean in ME, NY, WI, OR, [AK], ON, PQ, MB, BC / Tp? in cave in Harney Co.,OR) **Bibl.:** Benedict & McEvoy 1995

Lepthyphantes leprosus (*Linyphia l.* Ohlert, 1865) (Europe,NA (CT, NH, NY, RI, MI, OH, WI, WA), Canada (NS, PQ, [SK], BC), Palaearctic, Chile epigean/ alien Tp or Tx in IL)

Lepthyphantes undescr.? sp.(IA/Tp)

Lepthyphantes undet. sp. or species (Ac in cave in Culberson Co., TX; TTx in nAZ; Tp or Tx in Orange Co.,IN; Tp in El Malpais Natl. Monument, nNM))

Lepthyphantes sabulosus (*Linyphia s.* Keyserling, 1886; *Bathyphantes s.* Petrunkevitch, 1911; *L. appalachia* Chamberlin & Ivie, 1944) Zorsch, 1937 (E to TX, epigean in CT, DC, GA, KS, MD, MO, NC, PA, MI, WI, TX, VA, PQ, MB, AB. UT / **Tp** or **Tx** in AL,IL,MD (Eb))

Leucauge White, 1841 (Opas O.P.-Cambridge, 1896; Plesiometes F.O.P.-Cambridge, 1903) (once put in Araneidae) Tetragnathidae spiders

Leucauge venusta (*Epeira v.* Walckenaer, 1841; *E. hortorum* Hentz, 1847; *Tetragnatha 5-lineata* Keyserling, 1864; *Argyropepeira h.* Emerton, 1884; *A.v.* McCook, 1894; *L. mabelaei* Archer, 1951) F.O. P.-Cambridge, 1903 (CA,AZ,NE s.to FL, w.to TX,NB/orchard orbweaver; *Venusta* orchard s./Tp? in AL, Ac in TX)

Linyphantes Chamberlin & Ivie (= *Centromeroides* Schenkel, 1950 (19 species in US or Canada) Linyphiidae spiders, Subfamily Linyphiinae

Linyphantes undet. sp. (Tx in Calaveras Co.,CA)

"***Linyphia***" Latreille, 1804 - Linyphiidae spiders (mostly litter sp.) (no authentic members of genus in NA, but 8 species in US or Canada placed in this genus have not been transferred elsewhere) Bibl.: Blauvelt 1933

"*Linyphia digna*" = *Nerienne d.*

"*Linyphia incerta*" = *Porrhomma emertoni*

"*Linyphia litigiosa*" = *N.l.*

"*Linyphia (Nerienne) marginata* Koch = *N. radiata*

"*Linyphia nigrina* references are to *Bathypantes pallidus*

"***Linyphia***" undet. sp. or species? (Tx or Ac in nON; Ac in cave in Orange Co.,IN; Tx in WV (Pendleton Co.) & TN (White Co.))

"*Linyphia (Nerienne) radiata* = *N. r.*

Linyphia rita Gertsch, 1951 (AZ, wTX epigean/ Tp or Tx in WV? (not likely as species not known otherwise from this state)

"*Linyphia subterranea* (see *Phanetta s.*)

"*Linyphia weyeri* (= *Bathypantes w.*)

Liocranoides Keyserling, 1881 (= *Titiotus*) Liocranidae spiders (once put in Clubionidae and Tengellidae)

Liocranoides archeri Platnick, 1999 (type locality cave in Madison Co. & caves in Jackson & Marshall Cos., neAL + cave in Grundy Co., scTN/ Tb)

Liocranoides coylei Platnick, 1999 (epigean swVA, far wNC, far eTN/ type locality cave in Blount Co., scTN & cave in WA Co., VA/ Tp)

Liocranoides gertschi Platnick, 1999 (type locality cave in Lawrence Co., AL/ Tp in nAL (Bibb, Blount, Calhoun, DeKalb, Jefferson, Lauderdale, Madison, Marshall Cos. & caves in Dade Co,

nwGA/ Tp)

Liocranoides probable undescr. sp. (Crystal Cave & possible new sp. in 2 other caves, Tulare Co., CA)

Liocranoides undet. sp. or species (Tp in KY (Rockcastle Co.))

Liocranoides tennesseensis Platnick 1999 (epigean in Blount & Roane Cos., TN/ Tp in Anderson, Cumberland, Putnam & Warren Cos. c,eTN)

Liocranoides unicolor Keyserling, 1881 (type locality in Mammoth C., Edmonson Co. + Pulaski Co., cKY, & ncTN (DeKalb, Smith, & Sumner Cos.)/ redescribed by Platnick 1999 as restricted to KY & TN & separated into *L. unicolor*, *L. tennesseensis*, *L. coylei*, *L. archeri* & *L. gertschi*/ G3G4)

Loxosceles Heineken & Lowie, 1835 (once put in Loxoscelidae & Scytodidae) (violin spiders) Sicariidae spiders (10 species in US or Canada)

Loxosceles blanda Gertsch & Ennik, 1983 (Tp in cave each in Terrell & Val Verde Cos., TX)

Loxosceles deserta Gertsch, 1973 (*L. uicolor* (nec Keyserling, 1887) Gertsch, 1958 (AZ, sCA, NM, nMex., NV epigean/ desert loxosceles/ Tx in San Bernardino Co.,CA; Tx or Ac in TX)

Loxosceles devia Gertsch & Mulaik, 1940 (Mex./Tp in Real, Sutton, Uvalde Cos.,TX)

Loxosceles kaiba Platnick & Shadab, 1983 (**type locality & 1 other cave in Grand Canyon Natl. Park, Coconino Co.,AZ/ Tp or Tb/ caves only)

Loxosceles russelli Gertsch & Ennik, 1983 (epigean in San Bernardino & Inyo Cos./ Tx in S.B. Co., CA)

Loxosceles reclusa Gertsch & Mulaik, 1940 (SE,C/(brown) recluse or violin s./Tp in cave each in Bexar & Williamson Cos.,TX) **Bibl.:** Hite 1966

Loxosceles undet. sp(s). (Tp in central & west TX; Ac or TTx in 2 caves in Grand Canyon, Coconino Co., AZ)

Loxosceles undescr. sp.#1 (*?Death Valley, CA/ Tp)

Loxosceles unicolor - see *L. deserta*

Lycosa Latreille, 1804 (= *Galapagosa*, *Mimohogna*, *Hoggicosa*, *Tetralycosa*, *Citilycosa*, *Ishicosa*, *Foxicosa* Roewer, 1960; *Allohogna* Roewer, 1955; (thinlegged wolf s.) Lycosidae spiders (12 species in US or Canada). **Bibl.:** Wallace, 1942

Lycosa carolinensis = *Hogna* c.

Lycosa howarthi Gertsch, 1973 (now = *Rabidosa h.* if that genus is accepted)
(*Hogna howarthi*; *Rabidosa h.*) (**type locality and 1 other cave in Volcanoes Natl. Pk, & Kazumura C., Big Island, HI/ Tb)

Lycosa punctulata = *Anahita p.* in Ctenidae
Lycosa undet. sp. (Tx in AR; Ac in TX)

Masoncus Chamberlin, 1948 - Linyphiidae spiders (4 species in US or Canada)

Masoncus conspectus (*Tapinocyba conspecta* Gertsch & Davis, 1936; *M. nogales* Chamberlin, 1948) Ivie, 1967 (US/Ac or Tx in Culberson, Val Verde Cos., TX)

Maymena Gertsch, 1960 - Mysmenidae spiders (1 species in US)

Maymena ambita (*Theridium a.* Barrows, 1940) Gertsch, 1960 (Tp in AL, FL, GA (Walker Co.), IL, KY, MO, TN/ disjunct in Mexico & Caribbean)

Maymena guttata = *Microdipoena g.*
Maymena undet. sp. (Tx or Ac? alien? in MO)

Meioneta Hull, 1920 (= *Aprolagus* Simon, 1929; *Euplis* O.P. Cambridge, 1900; *Gnathantes* Chamberlin & Ivie, 1943; *Syedrula* Simon, 1929) Linyphiidae spiders, Subfamily Linyphiinae (mostly litter sp.) (39 species in US or Canada)

Meioneta gagnei Gertsch, 1973 (**type locality + 1 other cave, Maui, HI/ cave sheetweb spider/ Tb/ G1)

Meioneta llanoensis (*Microneta l.* Gertsch & Davis, 1936) van Helsdingen, 1973 (epigean in Tx/ Tp in TX)

Meioneta undescr. sp. (2 caves in Kauai, HI/ Tp)

Meioneta undet. sp(p). (Tx or Ac in TN; Tp in 2 caves in Kiowa Co., cave in Meniffee Co., KY; Tx in Calaveras Co., CA), Tp in TX)

Meioneta unimaculata (*Bathyphantes u.* Banks, 1892) Chamberlin & Ivie, 1944 (Eastern Nearctic/Tp or Tx in IL)

Meta C.L. Koch, 1836 (= *Auchicybaeus* Gertsch, 1933) Tetragnathidae spiders (also put in Anglenidae, Argiopidae, Araneidae, Metidae) (2 species in US or Canada)

Meta curtisi - see *Metellina c.*

Meta dolloff Levi, 1980 (= *Pseudometa biologica* Graham, 1967) (**type locality & 2 other caves in Santa Cruz Co., CA/ Tb/ Dolloff Cave spider)

Meta menardi = *M. ovalis* (NA specimens only)

Meta merianae = *Metellina m.*

Meta ovalis (*Auchicybaeus o.* Gertsch, 1933; *M. americana* Marusik & Koponen, 1992; *Meta menardi* Kaston, 1948) Dondale, 1995 (TTx or TTp in AL, AR, GA (Dade & Walker Cos.), KY (Mammoth C.), IL, IN, MA, MD, MS, New Brunswick, NC, NH, NY, NS, NV, OH, OK, PA, sON, PQ, TN, VA, WV; Tp in GA, IN (all cos. with caves), MO, OH; Tx & Ttx in NJ) **Bibl.:** Eckert 1993; Johnston & Carmody 1977; Levi 1980; Rochez 1992; Tercafs 1988

Meta probable undescr. sp. (cave each in Greer, Major & Woodward Cos., OK/ Tp)

Meta undet. or undescr. (cave in Monterey Co., CA/ Tp)

Mimetus Hentz, 1832 - Mimetidae spiders (8 species in US)

Mimetus puritanus Chamberlin, 1923 (eUS to TX/Tx or Ac? in MO)

Metaphidippus F.O. Pickard-Cambridge, 1901 - Salticidae spiders (10 species in US or Canada)

Metaphidippus exiguus = *Pelegrina e.*

Metaphidippus undet. sp. (Ac in cave in Edwards Co., TX)

Metellina Chamberlin & Ivie, 1941 (metid spiders) - Tetragnathidae spiders (2 species in US or Canada)

Metellina curtisi (*Pachygnatha c.* McCook, 1894; *Epeira peckhami* Petrunkevitch, 1911) Chamberlin & Ivie, 1936 (TTp in BC, CA (Napa Co.) & WA)

Metellina mimetoides Chamberlin & Ivie, 1941 (AZ, CA, OR/TTp in WA, Tp in Calaveras & Tuolumne Co., CA; 8 cos. in TX)

Metellina merianae (*Aranea m.* Scopoli, 1763; *Meta m.* Heimer, 1892) Levi, 1980 (Europe/alien Tx or Ac in KY)

Metepeira F.O. Pickard-Cambridge, 1903 - Araneidae spiders (11 species in US or Canada)

Metepeira labyrinthea (*Epeira l.* Hentz, 1847; *E. rectangula* Nicolet, 1849; *E. crucifera* Keyserling, 1864; *E. solitudinis* Holmberg, 1881; *Araneus karkii* Tyullgren, 1901; *A. l.* Simon, 1904; *A. c.*; *A. solitudinis* Petrunkevitch, 1911; *Mangora trinagularis* Frannillo; *A. keyserlingi* Roewer, 1942) O.P. - Cambridge, 1903 (NA/labyrinth orbweaver/Tx in TX)

Micaria Westring, 1851 (= *Micariolepis* Simon, 1879) Gnaphosidae spiders (42 species in US or Canada)

Micaria imperiosa Gertsch, 1935 (Tx or Tp in Colossal C., AZ)

Microdipoena Banks, 1895 - Mysmenidae spiders (1 species in US)

Microdipoena guttata Banks, 1895 (= *Mysmena* & *Maymena* g.) (US to SA/Tx or Ac in OK)

Micrommata undata Hentz = *Pisaurina mira*

Microneta Menge, 1869 (Maro O.P.-Cambridge, 1906) Linyphiidae spiders, Subfamily Linyphiinae (mostly litter sp.) (3 species in US or Canada)

Microneta undet. sp. (Tx or Ac in VA)

Microhexura Crosby & Bishop, 1924 - Dipluridae spiders (2 species in US)

Microhexura idahoana Chamberlin & Ivie, 1945 (= *M. rainieri* Chamberlin & Ivie, 1945) (ID, OR, WA/ Tx or Tp in Ape C., WA)

Misumena Latreille, 1804 - Thomisidae spiders (2 species in US or Canada)

Misumena vatia (*Araneus vatius* Clerck, 1757; *Aranea calycina* Linnaeus, 1758; *A. 4-lineata* Linnaeus, 1761; *A. kleinii*, *A. osbekii*, *a. hasselquistii* Scopoli, 1763; *A. scorpiformis* Fabricius, 1775; *A. virginea* Muller, 1776; *A. citrea* De Geer, 1778; *A. sulphureoglobosa*, *A. sulphurea*, *A. quinquepunctata*, *A. albonigricans* Martini & Goeze, in Lister, 1778; *A. cretata* Preyssler, 1791; *Thomisus citreus*, *T. calycinus*, *T. dauci* Walckenaer, 1805; *T. pratensis* Hahn, 1833; *T. viridis*, *T. citreus georgiensis* Walckenaer, 1837; *T. phrygiatus* Walckenaer, 1837; *T. devius* C.L. Koch, 1845; *T. fartus* Hentz, 1847; *Pachyptile devia* Simon, 1864; *T. cucurbitinus* Sordelli, 1868; *M. expallidata*, *M. oblonga* O.P.-Cambridge, 1885) Thorell, 1872 (LA/ Ac in cave in Val Verde Co., TX)

Misumenops F.O. Pickard-Cambridge, 1900 (Runcinioides Mello-Leitao, 1929) Thomisidae spiders (also put in Philodromidae) (40 species in US or Canada)

Misumenops celer (*Thomisus c.* Hentz, 1847; *Misumena spinosa*, *M. georgiana* Keyserling, 1880; *M. alabamensis* Keyserling, 1884; *M. diegoi* Keyserling, 1887; *Diaea spinigera* O.P. -Cambridge, 1898) Chamberlin, 1924 (*celer* crab s./TTx in TX swallow scat; Tx in AL, VA)

Misumenops coloradensis Gertsch, 1933 (Ac in cave in Presidio Co., TX)

Misumenops dubius (*Misumena dubia* Keyserling, 1880; *M. ornata* F.O.P.-Cambridge, 1900) Chamberlin, 1924 (Ac in cave in Burnet Co., TX)

Misumenops undet. sp. (Ac in cave in Edwards Co., TX)

Modisimus Simon, 1893 (*Hedysilus* Simon, 1893) Pholcidae spiders (2 species in US or Canada)

Modisimus texanus Banks, 1905 (Tp in 8 cos. in cTX)

Modisimus undet. sp. (Tp in Bexar, Travis Cos., TX)

Mysmena incredula = *Calodipoena i.*

Neoanagraphis Gertsch & Mulaik, 1936 - Clubionidae spiders (also put in Gnaphosidae & transferred from Liocranidae) (2 species in US or Canada)

Neoanagraphis chamberlini Gertsch & Mulaik, 1936 (Ac in cave in Culberson Co., TX)

Neoleptoneta Brignoli, 1972 (= *Leptoneta* in part) Leptonetidae spiders (also put in Caponiidae) (19 species in US)

Neoleptoneta alabama (*Leptoneta a.* Gertsch, 1974) Brignoli, 1977 (****type locality cave in Marshall Co. & cave in Calhoun Co. & 2 caves in DeKalb Co., AL/ Tb/ G1?)

Neoleptoneta anopica (*Leptoneta a* Gertsch, 1974) Brignoli, 1977 (*type locality cave in Williamson Co.,TX/ Tb/ G1G2)

Neoleptoneta arkansa (*Leptoneta a.* Gertsch, 1974) Brignoli, 1977 (*Blanchard Spr. C.,Stone Co.,AR/ Tp/ G1G2)

Neoleptoneta blanda (*Leptoneta a.* Gertsch, 1974) Brignoli, 1977 (*type locality cave in Blount Co., AL/ Tp/ G1G2)

Neoleptoneta coeca (*Leptoneta c.* Chamberlin & Ivie, 1942) Brignoli, 1977 (*type locality cave in Comal Co.,TX/ Tb/ G1G2)

Neoleptoneta concinna (*L.c.* Gertsch, 1974) Brignoli, 1977 (**type locality cave & mine in Travis Co., TX/ Tb/ G1G2)

Neoleptoneta credula = *Appaleptoneta c.*

Neoleptoneta devia (*L.d.* Gertsch, 1974) Brignoli, 1977 (*type locality cave in Travis Co.,TX/ probable Tb/ G1G2)

Neoleptoneta fiskei = *Appaleptoneta c.*

Neoleptoneta georgia (*Leptoneta g.* Gertsch., 1974) Brignoli, 1977 (*type locality cave in Dade Co.,GA/Tb/ G1G2)

Neoleptoneta jonesi = *Appaleptoneta c.*

Neoleptoneta microps (*L.m.* Gertsch, 1974) Brignoli, 1977 (**type locality & 1 other cave in Bexar Co.,TX/Tb/ G. Canyon cave spider/ Federal endangered T&E/ G1)

Neoleptoneta myopica (*L.m.* Gertsch, 1974) Brignoli, 1977 (T. Cave spider/ type locality & 1 other cave in Travis Co.,TX/ Tb/ T&E federally listed as endangered, G1)

Neoleptoneta novaegalleciae Brignoli, 1979 (*New Cave,Eddy Co.,seNM/ Tb/ G1)

Neoleptoneta serena (= *Leptoneta s.* Gertsch, 1974) Brignoli, 1977 (*type locality cave in Lauderdale Co.,AL/Tb/ G1G2) **Bibl.:** Peck 1989

Neoleptoneta undescr. sp.#1 (New C. & 2 other caves, Eddy Co.(NM)/ Tb?)

Neoleptoneta undescr. sp.#2 (Blanchard Spr.,AR/ Tx?)

Neoleptoneta undescr. sp.#3 (Hays Co.,TX/ Tb)

Neoleptoneta undescr. sp.#4-6 (TX/Tb) (pers. comm. Cokendolpher 28 July, 1996)

Neoleptoneta uvaldea (*Leptoneta u.* Gertsch, 1974) Brignoli, 1977 (*type locality cave in Uvalde Co.,TX/Tb or Tp/ G1G2)

Neoleptoneta valverde (*Leptoneta v.* Gertsch, 1974) Brignoli, 1977 (*type locality cave in Val Verde Co.,wTX/ Tb or Tp/ G1G2)

Neoscona Simon, 1864 (= *Chinestela* Chamberlin, 1924; *Cubanella* Franganillo, 1926)
Araneidae spiders (7 species in US or Canada)

Neoscona arabesca (*Epeira a.* Walckenaer, 1841; *E. trivittata* Keyserling, 1964; *E. singularis* Banks, 18981; *N. minima* F.O. P. –Cambridge, 1904; *Araneus a.* , *A. m.* Petrunkevitch, 1911) F.O. P. –Cambridge, 1904 (Nearctic, NA, Central Amerkica, West Indies, most of US epigean/ arabesque orbweaver/ Tx in OK)

Neoscona crucifera (*Epeira c.* Lucas, 1939; *E. lentiginosa* Blackwell, 1862; *E. hentzii* Keyserling, 1864; *Aranea c. albimaculata* , *A.c. ochroleucella*, *A.c. pyramidella* Strand, 1908; *N. benjamina* Comstock, 1940; *N. arkansa*, *N. nebraskensis* Chamberlin & Ivie *N. sacra* Chamberlin & Ivie, 1944; *N. hentzi* Berman & Levi, 1971) Grasshoff, 1986 (NA, Madeira, Canay Islands/ Ac in TX)

Nerienne (subgenus *Nerienne* Blackwall, 1833) (see *Linyphia*) (= *Neolinyphia* Oi, 1960; *Prolinyphia* Homann, 1952; *Linyphiella* Hoffmann, 1950) Linyphiidae spiders, Subfamily Linyphiinae (8 species in US or Canada) **Bibl.:** Blauvelt 1933

Nerienne digna (= *Linyphia d.* Keyserling, 1886) (epigean in CA, OR, WA, AK, BC/ Tp in WA)

Nerienne litigiosa (= *Linyphia l.* (Keyserling, 1886) (epigean in CA, OR, WA, UT, WY, MT, BC, Mexico/ **Tx** or **Ac** in WA)

Nerienne radiata (*Linyphia r.* Walckenaer, 1841; *L. marginata* C.L. Koch) Song, 1981 (ON, MB, SK, ON, s. to FL, w.to CA, AZ, Russian Far East/ filmy dome spider/ TTp or Tx in BC, IL, sON, WA, IN, KY, MO, OK, VA, WV) **Bibl.:** D. Wise 1974

Nesticella Lehtinen & Saaristo, 1980 - Nesticidae spiders (1 species in US)

Nesticella mogera (*Nesticus m.* Yaginuma, 1972; *Howaia m.*) Kim, Yoo & Lee, 1999 (HI (alien),

Fiji, Japan/Tp)

Nesticus Thorell, 1870 (see *Ivesia*) (= *Tuganobia*, *Ivesia* in part) - Nesticidae spiders (18 described species in US, 2 in Europe, 1 in Japan). **Bibl.:** Cesaroni et al., 1981; Hedin, 1995, 1997a,b; Keefer 1994, 1996

Nesticus archeri Gertsch, 1984 (AL epigean/ Tp? In Claiborne Co.,AL)

Nesticus barri Gertsch, 1984 (type locality cave in Franklin Co. +Blount & Marion Cos.(scTN) +adjacent AL (Jackson & Marshall Cos.)/Tb/ G3G4)

Nesticus barrowsi Gertsch, 1984 (type locality cave in & at least 11 caves in Blount Co.,Great Smoky Mts. Natl. Park,TN/ Tb or Tp/ G3)

Nesticus brimleyi Gertsch, 1984 (type locality cave in near Lake Lure, R.B. Mt, + 3 caves in Rutherford Co.,NC/Tp or TTP/NC State Species of Concern/ G1G2)

Nesticus carolinensis (*Ivesia* c. Bishop, 1950) Brignoli, 1983 (***?type locality & at least 2 other caves in *McDowell Co.,NC/Linville Caverns Spider/TTP/ NC State Species of Concern) **Bibl.** Coyle 1977

Nesticus carteri Emerton, 1875 (female cotypes from type locality cave in 2 caves in Carter Co.,KY/ epigean in nNC,eTN,swVA,seWV/ Tp & wet drains in neKY(Mammoth C., Hart Co.) & sIN(Crawford, Sullivan, Clairborne, Hamilton & Harrison Cos.); VA (Rockbridge, Lee, Scott, Smyth Cos.);WV (Mercer CO.); Tp in eTN /S1/G3)

Nesticus cooperi Gertsch, 1984 (type locality & 1 other cave in Swain Co.,NC/Tp, a few epigean sites within 20mi. of caves/ State Species of Concern/Lost Nantahala Cave Spider/ / G1G2 or G3)

Nesticus crosbyi Gertsch, 1984 (NC - type locality is small crevice in Grandfather Mt., Vancey Co., NC/ epigean, Tp?/ NC State Species of Concern)

Nesticus dilutus Gertsch, 1984 (*type locality cave in Rhea Co.,TN/ Tb/ TN State T&E/ Grassy Cr. Cave Spider/ S1S2? G1G2)

Nesticus furtivus Gertsch, 1984 (*type locality & other caves in Hamilton Co., TN/ Tb/ TN State T&E/Cry. Caverns Cave Spider/ S1S2? G1G2)

Nesticus georgia Gertsch, 1984 (***?type locality & 2 other caves near Trenton, Dade Co.nwGA +TN?/ Tb/ G1G2)

Nesticus gertschi F.A. Coyle & A.C. McGarity, 1992 (TN epigean/ cave in Green Co.,IN & epigean in NC)

Nesticus holsingeri Gertsch, 1984 (type locality & other cave in Scott Co., cave in Wise Co.)+ 2

caves in Lee Co.,VA/ Tb/ T&E VA S1, global G2 or G2G3)

Nesticus jonesi Gertsch, 1984 (*type locality cave in Morgan Co.,AL/Tb/Cave Spr. spider/ G1G2)

Nesticus mexicanus = *Eidmanella p.*

Nesticus mimus Gertsch, 1974 (type locality & 1 other cave in WA Co.,VA & NC epigean/Tp) NC State Species of Concern,T&E VA S1, global G2)

Nesticus mogera = *Nesticella m.*

Nesticus nasicus F.A. Coyle & A.C.McGarity, 1992 (type locality cave + epigean in Jackson, Transylvania Cos., NC)

Nesticus pallidus = *Eidmanella p.*

Nesticus paynei Gertsch, 1984 (type locality cave in Anderson Co.) +Campbell, Carter, Hancock, Hawkins, Knox, Scott, Sullivan & Union Cos.(TN) & Scott Co.(VA)/ Tb or Ttp/ T&E VA S1, TN S2S3?, global G2 or G2G3)

Nesticus potterius (*Tuganobia potteria* Chamberlin, 1933) Gertsch, 1984 (***type locality & 2 other caves in Shasta Co.,CA/ Tb/ G1G2) **Bibl.:** Rudolph et al., 1985

Nesticus reclusus Gertsch, 1984 (epigean in TN & Swain, Graham Cos.,NC/ Tp?)

Nesticus sheari Gertsch, 1984 (*Ivesia s.*) (NC epigean/Tp?) NC State Species of Concern)

Nesticus silvanus Gertsch, 1984 (epigean in Haywood ,Jackson, Cos.(NC)/ Tp cave in Madison Co./ NC State Species of Concern)

Nesticus silvestrii Fage, 1929 (CA, OR, WA epigean/ type locality in Oregon Caves, Josephine Co, OR/ Tp in AZ, CA (Sierra Nevada); Tp? in BC, sOR, WA)

Nesticus sodanus Gertsch, 1984 (type? in cave in Plumas Co.,CA/Tp or Tx, epigean?)

Nesticus undet. or undescr. sp. (cave in Kings Canyon Natl. Park,Tulare Co.,CA/Tp?; Tb in 2 caves in Walker Co.,GA; Tp in cav in Dade Co.,GA; Tp or Tb in cave in Blount Co.,TN),

Nesticus undescr. 1-4 sp. (Appalachian fauna of *Nesticus* 'group' = *Ivesia*) (Tp in 2 caves in WA Co. & 1 cave each in Giles & Smyth Cos.,VA)

Nesticus undescr. sp. #5 (Californian fauna of *Nesticus* 'group' = *Tuganobia*)

Nesticus undescr. sp..#7 (Tp in 2 caves in Mt. St. Helens area, Skamania Co., WA)

Nesticus undescr. sp. #8 (NC/ Tb/ NC State Species of Concern)

Nesticus undescr. sp.#9 (epigean in Sevier Co.,IN/ Tp?)

Nesticus stupkai Gertsch, 1984 (type locality & at least 4 other caves in Blount Co.,Great Smoky Mts Natl. Park/ Ed in Cades & Wears Cove,Great Smoky Mts Natl. Park, TN/ sinkhole epigean)

Nesticus stygius Gertsch, 1984 (****type locality & 2 other caves in Overton Co. + 1 cave in Putnam Co., TN/ Tb/ S2G3)

Nesticus tennesseensis (*Ivesia t.* Petrunkevitch, 1925) Jackson, 1944 (TN, VA, WV epigean/ type locality cave in Jefferson Co. +Grainger, Hawkins, Roane, Sullivan Cos.),eTN, swVA (Alleghany, Craig, Giles, Highland, Russell, Smyth, Tazewell Cos.),WV (Raleigh Co.)/Tp/T&E VA S2, WV SU, global G2G4) **Bibl.:** Blastx

Nesticus tuckeri Cokendolpher & Reddell, 2001 (**type locality cave in Kendall Co. + cave in Hays Co., TX/ Tp, caves only)

Nesticus valentinei Gertsch, 1984 (*type locality cave in Marion Co.,TN/Tb/TN State T&E/ S1S2? G1G2/ Valentine's cave spider/ G1G2)

Nodocion Chamberlin, 1922 (*Liodrassus* Chamberlin, 1935) Gnaphosidae spiders (5 species in US or Canada)

Nodocion eclecticus Chamberlin, 1924 (*Herpyllus atopophys* Chamberlin, in Chamberlin & Gertsch, 1928; *Liodrassus arizonicus* Chamberlin, 1936; *L. metalleus* Chamberlin & Gertsch, 1940; *N. arizonicus* Ubick & Roth, 1973; *N atopophys* Platnick & Shadab, 1977) (Ttx in cave in Portal, AZ)

Oonopinus Simon, 1892 - Oonopidae spiders (3 species in US or Canada)

Oonopinus undet. sp. near *hunus* Suman, 1965 (HI Volcanoes Natl. Park,HI/Tb?)

Oonops Templeton, 1835 - Oonopidae spiders (4 species in US or Canada)

Oonops undescr. sp.? (*cave in Big Island, HI Island/ Tb)

Oonops? undescr. or undet. sp. or species (epigean in Midway, Oahu, HI; Tp? in Kazamura Lava Tube, Hawaii Island, HI)

Oaphantes Chamberlin & Ivie, Linyphiidae spiders, Subfamily Linyphiinae (1 species in US)

Oaphantes pallidulus Banks, 1904 (epigean in CA/ Tx in Santa Cruz Co., CA)

Oreonetides Strand, 1901 (*Aigola* Chamberlin, 1922; *Labuella* Chamberlin & Ivie, 1943; *Paramaro* Wunderlich, 1980; *Meontitextrix* Denis, 1963) - Linyphiidae spiders, Subfamily Linyphiinae (6 species in US or Canada)

Oreonetides undescr. sp. or species (Tb in VA; *?cave in WA Co., MD (Snively's cave spider – G1 /Tb or Tp)

Oreonetides (*O.*) *vaginatus* (*Erigone vaginata* Thorell, 1872; *Linyphia reticulata* O. P.-Cambridge, 1873; *E. macrochaera* Thorell, 1875; *Microneta crassimanus* Emerton, 1882; *Porrhomma adipatum* Simon, 1884; *Erigone ululabilis* Keyserling, 1886) Locket & Millidge, 1953 (Holarctic, n. to Greenland, NT, AK, s. to NY, AZ, w. to Russian Far East/ Tx or Ac in sON)

Oreonetides recurvatus = *Oreophantes r.*

Oreophantes Eskov, 1984 - Linyphiidae spiders, Subfamily Linyphiinae (1 species in US & Canada)

Oreophantes recurvatus (*Bathlyphantes r.* Emerton, 1913; *Aigola recurvata* Crosby, 1937; *Troglohyphantes kokoko* Ivie, 1966; *Oreonetides r.* Van Helsdingen, 1973) Eskov, 1984 (AB, ON, VT, ME, NY, PQ, [SK], AB, [BC] epigean/ Tx or Ac in sON)

Orthonops Chamberlin, 1924 - Caponiidae spiders (7 species in US)

Orthonops gertschi Chamberlin, 1928 (AZ/Tx or Tp in NM)

Orthonops lapanus Gertsch & Mulaik, 1940 (= *O. gertschi* Gertsch, 1935) (Ac in TX; Tp in Calaveras Co., CA & Eddy Co., NM)

Paidisca Bishop & Crosby, 1925 = *Thymoites*

Pardosa C.Koch, 1848 (*Pardosops* Roewer, 1955; *Acraniops* Simon, 18908; *Chorilycosa* Roewer, 1960) (76 species in US or Canada) mostly litter sp.)(thin-legged s.) Lycosidae spiders.
Bibl.: Vogel 1964; Wallace & Exline 1978

Pardosa giebelsi (*Lycosa g.* Pavesi, 1873; *P. ferruginea* Simon, 1876; *P. uncata* Emerton, 1894; *L. sordidata* Dahl, 1908) L. Koch, 1879 (Tx or Ac alien in 2 caves in Monroe Co., WV)

Pardosa undet. sp(p). (Tx in MO; Ac in TX; Tx? in OH, seNM)

Pelegrina Franganillo, 1930 – Salticidae spiders (25 species in US or Canada)

Pelegrina exigua (*Dendryphantes exiguous* Banks, 1892; *Metaphidippus virginis* Muma, 1944; *M. exiguus* Kaston, 1945) Maddison, 1996 (US epigean/ Tx or Ac in 1 IL cave)

Pellenes Simon, 1876 = *Habronattus*

Phanetta Keyserling, 1886 - Linyphiidae spiders (1 species in US) **Bibl.:** Millidge 1984

Phanetta subterranea (= *Linyphia s.* Emerton, 1875) Keyserling, 1886 (Wyandotte C. (Type locality - IN) +nAL (Colbert, De Kalb, Jackson, Jefferson, Lauderdale, Lawrence, Limestone,

Madison, Marshall, Morgan, St. Clair Cos.), GA (Dade, Floyd & Walker Cos.), IL (Carroll, Hardin, Jackson, Johnson, Monroe, Saline, Union), IN(all cave cos. – Clark, Crawford, Decatur, Harrison, Jefferson, Jennnigs, Lawrence, Monroe, Orange, Owen Cos.), KY (Carter, Edmonson (Mammoth C.), Elliott, Estill, Hart, Jackson, Menifee, Pike, Powell, Puloaski, Rockcastle, Wayne, Whitley Cos.), MD, MO (Perry Ste. Genevieve cos.), NJ, OK(most likely in Stone Co.), PA (Fayette & Westmoreland Cos.), e,cTN (Campbell, Claiborne, Davidson, DeKlab, Hancock, Maury, Grundy, Sullivan Cos.), VA (Alleghany, Augusta, Bath, Bland, Botetourt, Craig, Frederick, Giles, Lee, Montgomery, Page, Pulaski, Roanoke, Rockinham, Russell, Scott, Smyth, Tazewell, Warren, Washington, Wise, Wythe Cos.) & eWV (Grant, Greenbrier, Mercer, Monroe, Pendleton, Pocahontas, preston, Randolph, Tucker)/ Tb/ WV T&E S3 rank & global G3 rank)
Bibl.: Brignoli 1979; Elliott, 1953; Mill 1984; Peck & Lewis 1978; Poulson 1977, 1981

Phidippus C.L. Koch, 1846 - Salticidae spiders (47 species in US or Canada)

Phidippus purpuratus Keyserling, 1885 (= *P. albomaculatus* Keyserling, 1885; *P. galathea* Peckham & Peckham, 1888; *P. mystaceus* Emerton, 1902; *Dendryphantes p.* Petrunkevitch, 1911) (Nearctic, boreal/Tx or Ac in nON)

Phidippus undet. sp. (OK epigeal /Tx or Ac in cave in Irion Co., TX)

Phidippus texanus Banks, 1906 (*P. albomaculatus* Peckham & Peckham, 1888; *Dendryphantes t.* Petrunkevitch, 1911; *P. peritus* Gertsch, 1934) (Ac in cave in Williamson Co., TX)

Philodromus Walckenaer, 1825 (*Philodromoides* Scheffer, 1904; *Horodromoides* Gertsch, 1933) Philodromidae spiders (also put in Thomisidae) (inconspicuous crabs) (55 species in US or Canada)

Philodromus vulgaris (Thomisus v. Hentz, 1847; *P. gracilis* Banks, 1892) Keyserling, 1880 (Nearctic, LA, NM, TX/ Tx in OH)

Philodromus undet. sp. (Ac in cave in Bell Co., TX)

Philoponella Mello-Leitao, 1917 - Uloboridae spiders (3 species in US or Canada)

Philoponella arizonica (= *Uloborus a.* Gertsch, 1936) Opell, 1979 (TTx in AZ)

Pholcophora Banks, 1896 - Pholcidae spiders (3 species in US or Canada)

Pholcophora undet. sp. (Tp in El Malpais Natl. Monument, nNM)

Pholcus Walckenaer, 1805 - Pholcidae spiders (6 species in US or Canada)

Pholcus muralicola Maughan & Fitch, 1976 (Tx in MO)

Pholcus phalangioides (*Aranea p.* Fuesslin, 1775; *A. meticulosa* Forucroy, 1785; *P. nemastomoides* C.L.Koch, 1837; *P. americanus* Nicolet, 1849; *P. atlanticus* Hentz, 1850; *P. communis* Piza, 1938) Walckenaer, 1805 (introduced, widespread temperate houses, CA/ Tp or Tx in AL, IL, NM, TN, TX, VA)

Pholcus undescr. sp.#1 (cave in Jackson Co.+ 2 caves in Marshall Co.,AL; cave in Wayne

Co.,KY & cave in Warren Co.,TN/Tp or Tx)

Pholcus undet. sp. (Tx or Tp in cave in Wayne Co.,KY)

Pholcus undescr. sp. #1 (*?Tx or Tp in cave in Bartow Co., GA)

Pholcus undescr. sp. #2 (**?Tx or Tp in 2 caves in Dade CO, GA)

Pholcus undescr. sp. #3 (**?Tx or Tp in 2 caves in Walker Cos., GA)

Pholcus vittatus = *Dolomedes* v.?

Phrurotimpus Chamberlin & Ivie, 1935 - Liocranidae spiders (also put in Clubionidae and Linyphiidae) (16 species in US or Canada) **Bibl.:** Roth, 1993

Phrurotimpus undet. sp. or species (Ac in cave in Bexar Co., TX; Tx or Ac in WA)

Physocyclus Simon, 1893 - Pholcidae spiders. **Bibl.:** Brignoli 1981 (4 species in US or Canada)

Physocyclus californicus Chamberlin & Gertsch, 1929 (Tp in Calaveras, Mariposa & Tuolumne Cos., CA)

Physocyclus enaulus Crosby, 1926 (*P. neomexicanus* Chamberlin & Gertsch, 1929) (Carlsbad C.(NM)/ US,Mex./Tp or TTp in eAZ, sNM (Carlsbad C.), OK, wTX)

Physocyclus hoogstraali Gertsch & Davis, 1942 (Tb in cave near Pandale Crossing, Val Verde Co.,TX + Mex.)

Physocyclus undet. sp. (Tp in Edwards, Llano, Medina, Val Verde Cos., TX)

Physocyclus tanneri Chamberlin, 1921 (Tp? in AZ)

Pimoa Chamberlin & Ivie, 1943 (= *Louisfagea* Brignoli, 1971) Pimoidae spiders (also put in Linyphiidae and Tetragnathidae) (13 species in US or Canada)

Pimoa altiocularata (*Labulla a.* Keyserling, 1886) Chamberlin & Ivie, 1943 (epigean in nCA to AK, UT/ Tp in BC, OR, WA (perhaps the most common twilight spider in those areas))

Pimoa hespera (*Labulla h.* Gertsch & Ivie, 1936; *L. utahana* Gertsch & Ivie, 1936; *Pimoa utahana* Chamberlin & Ivie, 1943; *Acrometa a.* Wunderlich, 1979) Chamberlin & Ivie, 1943 (*type locality cave in Tulare, Co., CA/ Tx or Tp in Tulare Co.,CA)

Pimoa mephitis Hormiga, 1994 (***type locality & 2-3 other caves in Siskiyou Co.,CA/ Tp or Tb/ caves only)

Pimoa mono Hormiga, 1994 (*type locality cave in Mono Co.,CA/ Tp?)

Pimoa undescr. sp.#1 (>5 caves in Santa Cruz Co.,CA)

Pimoa undescr. sp.#2 (****Tp in 3-4 caves in Tulare Co.,CA)

Pimus Chamberlin, 1947 - Amaurobiidae spiders (10 species in US or Canada)

Pimus hesperellus Chamberlin, 1947 (*?type locality & one other cave (or new sp.) in Shasta Co.,CA/ Tp?)

Pimus nawtawaketus Leech, 1972 (*type locality cave in Shasta Co.,CA/ Tp?)

Pimus pitus Chamberlin, 1947 (*Walmus varus* Chamberlin, 1947; *P. pictus* Roewer, 1955) (Tx in Calaveras & Mariposa Cos.,CA),

Pirata Sundevall, 1833 (= *Sosilaus* Simon, 1898; *Piratula* Roewer, 1960) Lycosidae spiders (26 species in US or Canada) (mostly litter sp.) **Bibl.:** Wallace & Exline, 1978

Pirata insularis Emerton, 1885 (*Pardosa bilobata* Tullgren, 1901; *P. liber* Montgomery, 1902; *P. piccolo* Dahl, 1908; *P. sylvestris* Emerton, 1909; *Allocosa* i. Roewer, 1955) (Holarctic epigean/ Ac, Tx or Tp in GA (Grady Co.))

Pirata sedentarius Montgomery, 1904 (*P. californica* Banks, 1904; *Lycosa wacondana* Scheffer; *P. maculatus* Emerton, 1909; *P.w.* Crosby & Bishop, 1928; *Allocosa m.* Roewer, 1955; *Piratula* s. Roewer, 1955) (Nearctic, SW/ Tx in IL; Ac or Tx in TX; Tx in Harrison Co.,IN/ S4/G4)

Pirata undet. sp(p). (Tx or Tp in MO, MS; Ac in TX)

Pirata spiniger (*Sosilaus* s. Simon, 1898) Wallace & Exline, 1978 (FL, GA, LA litter & gopher burrows/Tp in MO)

Pisaurina Simon, 1898 (*Thanatidius* Simon, 1898; *Pelopatis* Bishop, 1924) Pisauridae spiders (4 species in US or Canada)

Pisaurina mira (*Dolomedes mirus*, *D. virgatus* Walckenaer, 1837; *Micrommata undata*, *M. serrata*, *M. marmorata*, *M. carolinensis* Hentz, 1845; *Dolomedes binotatus* C.L. Koch, 1847; *M. subinflata* Hentz, 1850; *Ocyale m.*, *O. virgata* Simon, 1864; *Dapanus mirus* Bryant, 1941) Simon, 1898 (New England & adjacent Canada s. to FL & w. to NB, ND, WI & eTX/ nursery web s./Tx in MO, OH)

Pityohyphantes Simon, 1929 - Linyphiidae spiders, subfamily Linyphinae (16 species in US or Canada)

Pityohyphantes costatus (*Linyphia* c. Hentz, 1850; *L. phrygiana* Emerton, 1882) Kaston, 1948 (epigean in northeastern US, OH, MI, WI, NC, NS, NF, PQ, ON, MB, [SK], [AB] / hammock spider/ epigean Tx or Ac in cave in Blount Co., TN)

Porrhomma Simon, 1884 (= *Opistoxys* Simons, 18840 (also put in Erigonidae) (mostly litter sp.) Linyphiidae spiders, subfamily Linyphinae (9 species in US or Canada) **Bibl.:** Bourne 1977

Porrhomma cavernicola (*Willibaldia* c. Keyserling, 1886; *Troglohyphantes cavernicolous*

Simon, 1894) Roewer, 1942 ((*type locality cave in Barren Co., KY/Ozark cave spider/ AL (Limestone Co.), AR, GA (Bartow Co.), KY (Barren, Carter, Pulaski & Powell Cos.), IL (Carroll & Jo Daviess Cos.), IN (Jennings, Lawrence & Orange Cos./S1/G3), IA (Jackson Co.), MD (WA & Alleghany Cos.), MO (Barry, Boone, Howell, Lawrence, Shannon Cos.), OK (Adair Co.), PA (Berks, Dauphin, Franklin, Mifflin Cos.), WV, VA (Augusta, Bath, Bland, Craig, Frederick, Giles, Lee, Page, Roanoke, Rockbridge, Rockingham, Smyth, Tazewell, Wise Cos.)/ Tb/ Appalachian Cave Spider/ MD T&E rare)

Porrhomma convexum (*Erigone c.*, *E. reticulata* Westring, 1861; *P. proserpina* Fage, 1931; *Linyphia convexa* Westring, 1861, *L. proserpina* Simon, 1872; *L. thorellii* Herman, 1879; *P. proserpina*, *P. scopiferum*, *P. diabolicum*, *P. scopiferum* Simon, 1884; *P. norvegicum* Strand, 1901; *P. pygmaeum* Dersco, 1959; *P. p. proserpina* Miller & Kratochvil, 1940) Holm, 1944 (epigean in Palearctic, WA, AK, BC?, Greenland / Ac (alien?) in WA)

Porrhomma egeria Simon, 1884 (= *P. moravicum* Silhavy', 1958; *P. e. m.* Thaler, 1968; *P. obambulatum* Kritscher, 1969; *P. moderatum* Miller, 1971) (Europe, Palaearctic in caves/ Tx or Ac alien? in sON)

Porrhomma emertoni Roewer, 1942 (= *Linyphia incerta* Emerton, 1875; *P. incerta* Packard, 1886; *Willibaldia i.* Keyserling, 1886 & *Troglohyphantes i.*) (VA, KY epigean/ Tp or Tx in IL?, KY (Mammoth C.), sON, VA)

Porrhomma undet. sp. (cave in Monroe CO., IL/ Tp)

Porrhomma terrestre (*Tmeticus t.* Emerton, 1882; *Gongylidium t.* Simon, 1884; *Erigone t.* Marx, 1890; *Oedothorax t.* Crosby, 1905; *Microneta clavata* Emerton, 1917; *Sciates t.* Bishop Crosby) Ivie, 1967 (E epigean in MA, NY, MI, WI, WY, AK, PQ, ON, MB, [SK], [AB] / Tx in IL, MD (Eb)

Pseudometa biologica = *Meta d.*

Psilochorus Simon, 1893 - Pholcidae spiders (long-legged cellar spiders) (19 species in US or Canada)

Psilochorus imitatus Gertsch & Mulaik, 1940 (Tp in cave in Val Verde Co., TX)

Psilochorus undet. sp. (Tp in cave in Grand Canyon, Coconino Co., AZ)

Psilochorus undescr. sp.#2 (*cave in Kimble Co., TX/Tp)

Psilochorus undescr. sp.#3 (*cave in Verde Co., TX/Tb)

Psilochorus undescr. sp.#4 (Tp in Calaveras, Mariposa & Tuolumne Cos., CA)

Psilochorus undescr. sp.#5 (*cave in Cochise Co., AZ/ Tb)

Rabidosa Roewer, 1960 (junior syn. of *Hogna* according to some authors) (5 species in US)

Rabidosa r. (*Lycosa r.*, *Dolomedes lineatus* Walckenaer, 1837; *Lycosa scutulata* Emerton,

1885; *L. scutata* Simon, 1898; *Hogna r.* Dondale & Redner, 1990) Brady & McKinley, 1994
1990 (OK n.to NB, e.to ME, s.to FL, KY/ Ac in TX)

Rachodrassus Chamberlin, 1922 = *Talanites*

Robertus O. Pickard-Cambridge, 1879 (= *Garritus* Chamberlin & Ivie, 1933; *Ctenium* –
considered senior synonym) Theridiidae spiders (16 species in US or Canada) (mostly litter sp.)
Bibl.: Kaston, 1946

Robertus frontatus (*Microneta f.* Banks, 1892; *Pedanostethus terrestris* Emerton, 1914; *R.t.*
Crosby & Bishoop, 1928; *Ctenium f.* Kaston, 1946) (sCanada to MD; NC, TN, OH/ Tp or Tx in
IL)

Rualena Chamberlin & Ivie, 1942 - Agelenidae spiders (9 species in US or Canada)
Rualena undet. sp. (NM hyporheic)

Rugathodes Archer, 1950 - Theridiidae spiders (2 species in US or Canada)

Rugathodes sexpunctatum (*Theridion s.* Emerton, 1882) Archer, 1950 (Russia, AK to CA; BC,
AB to AZ; w.of Rockies; MN,ON e. to NF, s. to NC, Appalachians/ Tx or Ac in BC, sON; Ac in
WA; Tx in CA/ Tx? in nMS)

Schizocosa Chamberlin, 1904 (*Avicosa* Chamberlin & Ivie, 1942) (24 species in US or Canada)
(mostly litter sp.) Lycosidae spiders. **Bibl:** Dondale & Redner 1978

Schizocosa ocreata (*Lycosa o.* Hentz, 1844; *L. charonoides* Montgomery, 1902; *S. saltatrix*
Comstock, 1940) Emerton, 1885 (NA/ Tx in IL,MO)

Schizocosa parallela = *Allocosa p.*

Schizocosa undet. sp. (MO/Tx?), (Ac in cave in Comal Co., TX)
Schizocosa rovneri Uetz & Dendale, 1979 (US/Tx? in IL)

Schizocosa saltatrix (*Lycosa s.* Hentz, 1844; *L. venustula* Hentz, 1844; *L. relucens*, *L. versimilis*
Montgomery, 1902) Comstock, 1912 (NA/Tx or Ac in sON,TX)

Sciastes Bishop & Crosby, 1938
Sciastes terrestris = *Porrhomma t.*

Scotinella Banks, 1911 (incl. US species formerly misplaced in *Phrurolithus* Koch, 1839)
Liocranidae spiders (also put in Clubionidae & Gnaphosidae) (mostly litter sp.) (16 species in
US or Canada) **Bibl.:** Dondale & Redner, 1982

Scotinella redempta (*Phrurolithus r.* Gertsch, 1941) Dondale & Redner, 1982 (US,Canada/Tx in
IL)

Scotinella undet. sp. (Ac in Bexar, Williamson Cos., TX),

Scotinotylus Simon, 1884 (*Caledonia* O.P-Cambridge, 1894; *Cervinargus* Vogelsanger, 1944; *Cheraira* Chamberlin, 1948; *Cochlembolus* Corsby 1929; *Yukon* Chamberlin & Ivie, 1947) Linyphiidae spiders (mostly litter sp.) (34 species in US or Canada) **Bibl.:** Crosby & Bishop 1935; Millidge 1981

Scotinotylus patellatus (*Araeoncus p.* Emerton, 1917) Millidge, 1981 (AK, Canada, US epigean/Ac in WA)

Scotinotylus undet. sp. (WA)

Scotophaeus Simon, 1893 - Gnaphosidae spiders (1 species in US or Canada) **Bibl.:** Platnick & Shadab, 1977

Scotophaeus blackwalli (*Drassus b.*, *D. gotlandicus* Thorell, 1871; *D. ravidus* Pavesi, 1873; *D. immundus* Kulczyn'ski in Chyzer & Kulczyn'ski, 1897; *Drassodes californica* Banks, 1904; *D. b.* Lessert, 1910; *Herpyllus pius* Chamberlin, 1919; *Scotophaeus furtadoi* Reimoser, 1919; *Herpyllus b.* Braendegaard, 1966) Kulczyn'ski, 1898 (cosmopolitan/Ac in TX)

Scylaceus Bishop & Crosby, 1938 - Linyphiidae spiders (2 species in US or Canada)

Scylaceus undet. sp. (Ac in cave in King Co., TX)

Scytodes Latreille, 1804 - Scytodidae spiders (7 species in US or Canada)

Scytodes longipes Lucas, 1844 (HI/alien Tp)

Scytodes undet. or undescr. sp. (TTx or Ac in TX)

Selenops Latreille, 1819 - Solenopidae spiders (6 species in US or Canada)

Selenops undet. sp. (Ac in wTX; TTx in cave in Grand Canyon, Coconino Co., AZ)

Sergiolus Simon, 1891 (considered a junior synonym of *Poecilochroa* by Ubick & Roth, 1973) Gnaphosidae spiders

Sergiolus angustus (*Herpyllus a.* Banks, 1904; *S. atomisticus* Chamberlin, 1924; *S. fruitanus* Chamberlin & Gertsch, 1928; *S. bebius*, *S. clarus*, *Zelotes pananus* Chamberlin, 1926; *Poecilochroa angusta*, *P. bebia*, *P. clarus*, *P. fruitana*, *P. panama*, *P. atomistica* Ubick & Roth, 1973) Platnick & Shadab, 1981 (Ttx in Carlsbad C., NM)

sheet weaver groups - See Leptonetidae

sheet web - See Linyphiidae

Sisicottus Bishop & Crosby, 1938 - Linyphiidae spiders (mostly litter sp.) (9 species in US or Canada)

Sisicottus montanus (*Tmeticus m.* Emerton, 1882; *Gongylidium montanum*, *Plaesiocraerus m.*

Simon, 1884; *Erigone collina* Marx, 1890; *Eodothorax m.* Crosby, 1905) Bishop & Crosby, 1838 (US, Canada epigean/ Tp? on porcupine dung in cave in NS)

Sisicottus nesides (*Oedothorax n.* Chamberlin, 1922; *S. montanus* Bishop & Crosby, 1938) Crawford & Edwards, 1989 ((*type locality cave in Val Verde Co., TX/ US, Canada epigean/ Tp in TX)

Sisicus Bishop & Crosby, 1938 - Linyphiidae spiders, subfamily Linyphinae (2 species in US or Canada)

Sisicus undescr. sp. (**2 caves in Jackson Co., IA/ Tb)

Smeringopus Simon, 1890 - Pholcidae spiders

Smeringopus pallidus (*Pholcus p.* Blackwall, 1858; *P. phalangioides* Doleschall; *S. elongatus* Vinson, 1863; *P. distinctus* O.P.-Cambridge, 1869; *P. tipuloides* L. Koch, 1972; *P. margarita* Workman, 1878; *S. todai* Kishida, 1913; *S. geniculatus*, *S. purpureus* Mello-Leitao, 1918; *S. kishidai* Saito, 1933; *S. katangae* Giltay, 1935; *S. pullidus* Lee, 1966) Mello-Leitao, 1918; (Oahu & Kauai/alien Tp or Tx)

Solicosa - see *Adelopocosa*

Steatoda Sundevall, 1833 (= *Asagena* Sundevall, 1833; *Lithyphantes thorell*, 1869; *Teutana* Simon, 1881; *Stephopoma* Simon, 1894; *Steassa* Simon, 1910; *Argyroelus* Hogg, 1922; *Asagenella* Schenkel, 1937) (mostly litter sp.) Theridiidae spiders (21 species in US or Canada)

Steatoda albomaculata (*Aranea alabo-maculata* DeGeer, 1778; *A. maculata* Olivier, 1789; *Theridion maculatum* Walckenaer; *T. dispar* Sundevall, 1832) Levi, 1957 (cosmopolitan, AK, WNT to CA; AB to Mex.; MAN to NB; MN, IO to NH, CT/ Tx in MO)

Steatoda undet. sp. or species (MS/Tx or Tp); Tp or Tx in Bexar, Coryell Cos., TX; Ac or Ttx in moss in El Malpais Natl. Monument, nNM))

Talanites Simon, 1893 (= ***Rachodrassus*** Chamberlin, 1922; *Drassyllochemmis* Gertsch & Davis, 1936) Gnaphosidae spiders (5 species in US or Canada)

Talanites echinus (***Rachodrassu e.***, ***R. chera*** Chamberlin, 1922) Platnick & Ovtsharenko, 1991 (SE epigean/ Tx in IN (S1/G2); Tp or Tx in cave in Jackson Co., AL / sac-web spider)

tangled-web spinners - See Theridiidae

Tapinocyba Simon, 1884 (= *Colobocyba* Simon, 1926) Linyphiidae spiders, subfamily Linyphinae (mostly litter sp.) (13 species in US or Canada) **Bibl.:** Bishop & Crosby 1933

Tapinocyba dietrichi Crosby & Bishop, 1933 (epigean in WA, AK?, CA/ Tx in Amadro & Mariposa Cos., CA)

Tapinocyba undet.? sp. (IA/Tp)

Tegenaria Latreille, 1804 (= Drassina Grube, 1861) Agelenidae spiders. Bibl.: V. Roth 1952, 1968 (6 species in US or Canada)

Tegenaria antrias = *T. pagana*

Tegenaria chiricahuae Roth, 1968 (shallow caves (cave#1 (canyon floor ne. of SW Research
Tegenaria derhami = *Aranea d.* Scopoli; *T. domestica*)

Tegenaria domestica (*Araneus domesticus* Clerck, 1757; *Aranea derhamii* Scopoli, 1763; *Aranea longipes* Fuesslin, 1775; *A. flava*, *A. tomentosa*, *A. annulata* Martini & Goeze, in Lister, 1778; *Aranea civilis* Walckenaer, 1805; *Arachne familiaris* Audouin, 1826; *Agelena civilis* Sundevall, 1831; *T. scalaris* Krynicki, 1837; *T. l.*, *T. c.* C.L. Koch, 1840; *Agelena f.* Walckenaer, 1842; *Philoica civilis* C.L. Koch, 1850; *T. fontium* Simon, 1875; *T. modesta* Keyserling, 1878; *Coelotes calcaratus* Keyserling, 1887; *C. plumarius* Bishop & Crosby, 1926; *T. ochracea* (Grube, 1861)) Simon, 1875 (global,US,sCanada/barn funnel weaver/TTp or Tx in AL, GA, HI(alien in Kauai, Oahu, Maui, HI), IN, TN; Tx or Ac in MD, WA) **Bibl.:** Holmes 1982

Tegenaria pagana C. L. Koch, 1840 (*T. antrias* Crosby, 1926; *T. obscura* Banks, 1898; *T. proxima* O.P.-Cambridge, 1873; *T. testacea*, *T. subtilis* Simon, 1870; *T. p. cavernicola* Simon, 1907; *T. variata* Thorell, 1875; *T. heteropalpa* Lebert, 1877; *T. bidentata* Keyserling, 1878; *T.p. proxima* Strand, 1909) Warburton, 1892 (Europe to Asia Minor, n. Africa to Azores, CA, AZ/ alien TTp in AL, Mex., NM (Carlsbad C.), wTX, Station & cave #2 (opp. Station), C. Cr. Canyon, Chiricahua Mts., AZ)

Tegenaria undescr. sp. (*cave in Travis Co.,TX/ Tb?)

Tegenaria undet. sp. or species (Tb or Tp? in cave in DE Co.,OK; Tp or Tx in Nickajack C.,TN)

Telema Simon, 1882 - all sp. moved to *Usofila*

Teminius Keyserling, 1887 (= *Eutyphuroides* Petrunkevitch, 1926; *Paratyle* Simon, 1896) Miturgidae spiders (2 species in US or Canada)

Teminius affinis Banks, 1897 (*Syrisca a.* Petrunkevitch, 1911) (?Tp in Bexar Co., TX)

Tennesseellum Petrunkevitch, 1925 Linyphiidae spiders, subfamily Linyphinae (also put in Erigonidae) (mostly litter sp.) (1 species in US & Canada)

Tennesseellum formicum (*Bathyphantes f.* Emerton, 1882; *Erigone f.* Keyserling, 1886; *Prosopotheca t.* Crosby, 1905; *T. minutum* Petrunkevitch, 1925; *Meioneta f.* Chamberlin & Ivie, 1944) Kaston, 1945 (AK, s.,m.Canada, New England s. to GA, w. to AZ, CA, WA/ Ac or Tx? in OK)

Tetragnatha Latreille, 1804 - Tetragnathidae spiders (also put in Araneidae) (longjawed orbweavers) (44 species in US or Canada) They have an extreme elongated abdomen, long legs and extreme large chelicera. They spin an orb web with a hole in the hub. They do not use many radii in their web.

Tetragnatha elongata Walckenaer, 1842 (*T. fulva*, *T. fimbriata*, *T. culcivora*, *T. sanctitata*, *T. violacea* Walckenaer, 1842; *T. armigera* Blackwall, 1846; *T. grallator* Hentz, 1850; *T.* (Holarctic, AZ, NA, Cuba, Jamaica/e longate long-jawed orb weaver/ Tx or Ac in sON; TTx in mine in Bell Co.,TX)

Tetragnatha laboriosa Hentz, 1850 (= *T. illinoiensis* Keyserling, 1879; *T. alba* F.O.P. -Cambridge, 1903; *T. seydi* Strand, 1908; *T. numa* Levi & Levi, 1955) (Nearctic,US & Canada to Ca, AK, LA/ silver longjawed orbweaver/ Tx or Ac in IN, OH)

Tetragnatha undet. sp. (Ac in Comal, Travis, Williamson Cos., TX)

Tetragnatha straminea Emerton, 1884 (*Eugnatha s.* Banks, 1893) (US, Canada, Cuba epigean/ Tx in WA Co.,IN/ S5/G5)

Tetragnatha versicolor Walckenaer, 1841 (*T. trapezoides*, *T. casula*. Walckenaer, 1842; *T. dentigera* F.O.P. -Cambridge, 1903; *T. convexa* Banks, 1898; *T. limnocharis* Seeley, 1928; *T. munda* Chamberlin & Gertsch, 1929; *T. marianna* Archer, 1940) Chamberlin & Ivie, 1944 (Nearctic, SE, Central Amer., Cuba, CA, TX epigean/ Ac in WA)

Teutana - see *Steatoda*

Thanatus C.L. Koch, 1837 - Philodromidae spiders (also put in Thomisidae) 81 species in US or Canada)

Thanatus undet. sp. (Ac in cave in Williamson Co., TX)

Theotima Simon, 1893 - Ochryceratidae spiders (1 species in US)

Theotima makua Gertsch, 1973 (***?type locality & 2 other caves in Kauai, HI/ Tb/ G3)

Theridion Walckenaer, 1805 (*Allotheridion* Archer; *Phaeototicus* Simon, 1894; *Billima* Simon, 1908 (mostly litter sp.) Theridiidae spiders (67 species in US or Canada) **Bibl.:** Levi 1957, 1959, 1963a-b

Theridion albomaculatum (see *Steatoda*)

Theridion ambitum (see Mysmenidae)

Theridion cochise Levi, 1963 (Tp? in AZ)

Theridion eigenmanni Banks in Uhler, 1902 = *Gaucelmus augustinus*

Theridion flavonotatum Becker, 1879 (SE, Cuba epigean/ Tx in Morgan Co.,AL)

Theridion glaucescens Becker, 1879 (US, Canada epigean/ Tx or Ac in nON (probably))

***Theridion* grallator** Simon, 1900 (happy face spider/ HA epigean/ Tp or Tx in HA) **Bibl.:** Gon 1985

***Theridion* lyricum** Walckenaer, 1842 (SE, Russian Far East / Tx in Colbert Co., AL)

***Theridion* llano** Levi, 1957 (Tx or Tp in cave in Hardeman Co., TX)

Theridion opulenta = *Theridula* o.

Theridion porteri = *Achaearanea* p.

Theridion redemptum = *A. porteri*

Theridion rupicola = *A. r.*

Theridion sisypoides = *Tidarren* s.

Theridion sexpunctatum = *Rugathodes* s.

Theridion undet. sp. or species (Tx in CA (Santa Cruz Co); KY, WV & TX (Val Verde Co.)

Theridion tepidariorum = *Achaearanea* t.

Theridion ventillans = *Theridula* v.

Theridion wallacei Levi, 1942 = *Thymoites* w.

Theridion undescr. sp. #1 (*cave in subalpine in HI Volcanoes Natl. Park)

Theridion undescr. sp. #1 sp.#2 (IL/Tp or Tx)

Theridiosoma O.P-Cambridge, 1879 - Theridiosomatidae spiders (once in Araneidae)

***Theridiosoma* gemmosum** (*Theridion* g. L. Koch, 1877; *T. argenteolum* O.P-Cambridge, 1879; *Epeira radiosa* McCook; *Microepeira* r. Emerton, 1884) Simon, 1881 (*T. radiosum* Keyserling, 1893; *Epeira* r. McCook, 1881) Keyserling, 1884 (Europe, eCanada / Tp in AL, IL, IN, sON, TN; Tx or Ac in GA (Walker Co.))

Theridiosoma radiosa & *radiosum* = *T. g.*

Theridula Emerton, 1882 - Theridiidae spiders (3 species in US or Canada)

***Theridula* opulenta** (*Theridion* o. Walckenaer, 1842; *Theridion sphaerula* Hentz, 1850; *Chrysso cordiformis* Butler, 1882; *Theridion ventillans* Keyserling, 1884; *Theridion quadripunctata* Keyserling, 1886) Petrunkevitch, 1911 (cosmopolitan/ (Tx or Tp in cave in Decatur Co., AL)

Thymoites Keyserling, 1884 (= *Sphyrotinus* Simon, 1894; *Hypobares* Simon, 1894; *Philo* Simon, 1894; *Thonastica* Simon, 1909; *Garricola* Chamberlin, 1916; *Paidisca* Bishop & Cosby, 1926; *Tholocco* Archer, 1946; *Thymoella* Bryant, 1948; *Brontosauriella* Bristowe, 1938; *Spelobion* Chamberlin & Ivie, 1938) Theridiidae spiders (15 species in US or Canada). Bibl.: Levi, 1964a

***Thymoites* camano** Levi, 1957 (UT,WA to CA/ Ttp in WA; Tx in Amador, Calaveras, Mariposa,

Shasta & Tuolumne Cos., CA)

Thymoites marxi (*Histagonia m.* Crosby, 1906; *Ulesanis serrata* Emerton, 1913; *Paidisca marxi* Kaston, 1948; *Sphyrotinus m.* Levi, 1959) Levi & Levi, 1962 (SE/Tx or Tp in Colbert Co.,AL & Randolph Co., GA)

Thymoites minero Roth, 1992 (*type locality cave in Cochise Co.,AZ/ Tb/ G1G2)

Thymoites pallidus (*Dipoena pallida* Emerton, 1913; *Theridion edinburghensis* Gertsch & Mulaik, 1936; *D. cubana* Bryant, 1940; *Theridion wallacei* Gertsch & Archer, 1942) Levi, 1964 (epigean in US to West Indies & Venezuela/ TTx? In Gator Sink,Alachua Co.,FL)

Thymoites undescr. sp.#1 (AZ/Tb) (pers. comm. Cokendolpher 28 July, 1996)

Thymoites undescr sp. 2-3. (NM/Tb) (pers. comm. Cokendolpher 28 July, 1996)

Tidarren Chamberlin & Ivie, 1934 - Theridiidae spiders (2 species in US or Canada)

Tidarren sisypoides (*Theridion s.* Walkenaer, 1842; *Theridion ansatum* Walckenaer; *Theridium fordum* Keyserling, 1894; *Dipoena proba* O.P.-Cambridge, 1902; *Steatoda forda* O.P.-Cambridge, 1902; *Theridium fordum* Petrunkevitch, 1930) (sCA, SE epigean/ Ttp in Bexar, San Saba, Travis, Williamson Cos., TX & cave in Madison Co.,AL)

Titanebo Gertsch, 1933 = *Ebo*

Titanoeca Thorell, 1869 (once in Amaurobiidae) Titanoecidae spiders (4 species in US or Canada)

Titanoeca undet. sp. (NM hyporheic)

Titiotus Simon, 1897 (= *Anachemmis* Chamberlin, 1920 but synonymy rejected by Platnick 1999) (put by some authors into *Liocranoides*) Tenggellidae spiders (originally in Ctenidae, also placed in Clubionidae)

Titiotus undescr. species (Amador, Calaveras, Mariposa, Shasta, Siskiyou Cos.,CA/Tp/ About 30 undescr., 2 described US species, mostly epigean species)

Titiotus probable undescr. sp. (**? 2 caves in Tulare Co., CA/ Tp)

Tmeticus - see *Eperigone*

Trochosa C.L. Koch, 1847 (*Trochosina* Simon, 1885; *Allotrochosina*, *Diahogna*, *Trochosomma*, *Metatrochosina* Roewer, 1960; (mostly litter sp.) Lycosidae spiders (3 species in US or Canada). Bibl.: Barry, 1974

Trochosa undet. sp. (Ac in Coryell, Edwards Cos., TX)

Trochosa terricola Thorell, 1856 (= *Lycosa agretica* Balckwall; *L.t.* Westring, 1861; *T. trabalis* Ohlert, 1867; *L. lugubris* Menge, 1879; *Trochosina t.* Simon, 1885; *L. terricola pallida* Nosek, 1904; *L. orophila* Chamberlin & Gertsch, 1929; *L. pratensis o.* Chamberlin & Ivie, 1947; *Allohogna p.* Roewer, 1955; *T.p.* Crawford, 1988) (Holarctic, s. to TX epigean / Tx or Ac in sON)

Troglohyphantes Joseph, 1882 (= *Stygohyphantes* Kratochvil, 1948) (see *Oreonetides*)
Linyphiidae spiders (1? species in US or Canada) **Bibl.:** Deeleman-Reinhold 1978

Troglohyphantes incerta (Emerton) = *Porrhomma emertoni*

Troglohyphantes undet. sp. (alien? in cave in Rockcastle Co.,KY/Tp or Tb)

Trogloneta Simon, 1922 (= *Troglonata*) Mysmenidae spiders (1 species in US)

Trogloneta paradoxa Gertsch, 1960 (*T. paradoxum* Gertsch, 1960) (UT to CA, OR/ Tp in Amador, Calaveras & Plumas Cos.,CA),

Uloborus Latreille, 1806 - Uloboridae spiders (4 species in US or Canada)

Uloborus americanus Walckenaer = *U. g.*

Uloborus arizonicus = *Philoponella a.*

Uloborus diversus Marx, 1898 (SW, Mexico epigean/ Tp in Calaveras, San Bernardino & Tuolumne Cos.,CA) **Bibl.:** Eberhard 1970

Uloborus glomosus (*Epeira g.* Walckenaer, 1842; *U. americanus* Kaston, 1948) Chamberlin & Ivie, 1944 (eUS & Canada/ featherfoot s./ TTx in MO, NM)

Uloborus undet. sp. (Tx? in Blood C.,KY)

Urozelotes Mello-Leito, 1938 - Gnaphosidae spiders (2 species in US or Canada)

Urozelotes rusticus (*Prothesima rustica* L. Koch, 1872) Heiss & Allen, 1986 (cosmopolitan/Ac in Blanco, Medina Cos., TX)

Usofila Keyserling in Marx, 1891 (considered a junior syn. of *Telema* by Gertsch 1973 & Roth 1982) Telemidae spiders (also put in Ochyroceratidae & Amaurobiidae) (4 described species in US or Canada)

Usofila gracilis Keyserling, in Marx, 1891 (*Usophila g.* Fage, 1912) (= *Telema g.*) (type locality cave in El Dorado Co. + Tp or Tb in Calaveras, Mariposa, San Bernardino & Tuolumne Cos.,CA/ G3)

Usofila pacifica (*Ochyrocera p.* Banks, 1894) Chamberlin & Ivie, 1947 (Tp or Tx in BC; Tp in cave in Skagit Co.,WA)

Usofila undet. sp. (cave near Columbia, Tuolumne Co., CA), See also Nesticidae.

Usofila undescr. sp. #1 (*?Subway C.,Shasta Co.,CA/Tb?)

Usofila undescr. sp.#2 (2 caves in Shasta Co. & cavea in Plumas Co.,CA/Tp)

Usofila undescr. sp.#3 (*?(*cave in Grand Canyon, Coconino Co., AZ/Tb)

Usofila undescr. sp.#4 (Calaveras & Tuolumne Cos.,CA/Tb or Tp)

Usofila undescr. sp.#5 (**?2 caves in Tulare Co., CA/ Tb)

Usofila undescr. sp.#5 (*?(*cave in El Dorado, CA/ Tb)

Usofila undescr. sp.#6 (Amador, Calaveras, Kern & Tuolumne Cos., CA/Tb)

Usofila undescr. sp.#7 (*?cave in Tulare Co.,CA/ Tb)

Usofila undescr. sp.#8 (Siskiyou Co.,CA/Tb)

Usofila undescr. sp.#9 (Tp in WA)

Usofila undescr. sp.#10 (2 caves in Santa Cruz Co. + 15 other cos.? ,CA/ CA T&E G1S2, Federal Species of Concern/Tb or Tp?)

Usofila undescr. sp.#11 (*cave in San Bernardino,CA/ Tb)

Varacosa Chamberlin & Ivie, 1942 – Lycosidae spiders (4 species in US or Canada)

Varacosa avara (*Trochosa a.* Keyserling, 1877; *Lycosa rufiventris* Banks, 1892; *L.a.* Montgomery, 1903; *Gladicosa (V.) a.*) Roth, 1982 (epigean US & Canada/ Tx or Ac in 1 IL cave?)

Wadotes Chamberlin, 1925 Amaurobiidae spiders (once in Agelenidae) (11 species in US or Canada) **Bibl.:** Muma 1947

Wadotes bimucronatus (*Coelotes b.* Simon, 1898; *W. carolinus* Chamberlin, 1925; *W. convolutus* Muma, 1947) Chamberlin, 1925 (AL, GA, NC, TN epigean/ Tp or Tx in cave in Colbert Co.,AL)

Wadotes calcaratus (*Coelotes c.* Keyserling, 1887; *C. longitarsus* Emerton, 1890; *C. nigriceps* Banks, 1895) Chamberlin, 1925 (New England & adjacent Canada s. to GA, w. to IN/ Tx or Ac in sON; Tx in AL, GA, TN)

Wadotes convolutus Muma, 1947 (female holotype from cave in Marshall Co.,AL) = *W. bimucronatus*

Willibaldia cavernicola - see *Porrhomma c.*

wolf spider - See Lycosidae

Xysticus C.L. Koch, 1835 (*Psammitis* Menge, 1868) Thomisidae spiders (68 species in US or Canada)

Xysticus canadensis Gertsch, 1934 (*Oxyptila cinerea* Emerton, 1892) (LB to BC, Yukon, NH/ Tx or Ac in ON mine)

Xysticus ferox (*Thomisus f.* Hentz, 1847; *X. stomachosus* Keyserling, 1880; *X. distinctus*, *transversus* Banks, 1892) Gertsch, 1939 (Russia, Canada, US epigean/ Ac in cave in Bexar Co., TX)

Xysticus (*Proxysticus*) *punctatus* Keyserling, 1880 (= *X. formosus* Banks, 1892) (NA, Nearctic, boreoalpine/ Tx or Ac in CA)

Xysticus undet. sp. (Ac in cave in Burnet Co., TX)

Yorima Chamberlin & Ivie, 1942 - Dictynidae spiders (once in Agelenidae) (5 species in US or Canada) **Bibl.:** Roth 1956

Yorima undescr. or undet. sp. (possibly *Y. angelica* Roth 1956) (Calaveras Co., CA/Tp or Tx)

Zelotes Gistel, 1848 (= *Scotophinus* Simon, 1905; *Zavattarica* Caporiacco, 1941) Gnaphosidae spiders (also put in Ctenidae) (42 species in US or Canada) (mostly litter sp.) **Bibl.:** Platnick & Shadab 1983

Zelotes undet. sp. (Tx or Ac in IL(1cave), TX)

Zorocrates Simon, 1888 - Zorocratidae spiders (put in Zoropsidae & Tengellidae) (5 species in US or Canada)

Zorocrates aemulus Gertsch, 1935 (Tx? In Uvalde, Val Verde Cos., TX)

Zygiella Pickard-Cambridge, 1902 - Araneidae spiders (4 species in US or Canada)

Zygiella undet. sp. (Tx or Ac in seAK)

spider, false & sun - See solifugids.

Spider hazards incl. black widow (*Latrodectus mactans*) & brown recluse (*L. reclusa*) both Tx in TX & Ctenus sp. (Ac in TX)

Spikemosses

There are living and extinct forms but only one third as many as the Lycopodiales. This Order possesses 1) ligules, the tapered structures at the base of leaves, and 2) two types of spores (heterosporous), microspores and megaspores, which give rise to male and female gametophytes and sperm cells with two flagella. The development of the gametophytes is described to be "endosporic", a character peculiar to the spikemosses and the quillworts.

Kingdom Plantae

Subkingdom Tracheobionta

Phylum or Division Lycopodiophyta (= Mycrophyllophyta) (lycophytes)

Class Lycopodiopsida (=Isoetopsidae, Aglossopsida) (club mosses)

Order Selaginellales (spikemosses)

Selaginellaceae (*Selaginella*)

Selaginella Palisot de Beauvois (= *Hypopterygiopsis* Sakurai) (Less clubmoss, spikemoss, selaginella) Selaginellaceae Clubmoss

Selaginella *eatonii* Hieronymus ex Small, 1918 (Eaton=s spike-moss/ likely twilight zone & in sinkholes in sFL)

Selaginella *ludoviciana* (*Lycopodium ludovicianum* A. Braun, 1858) (Gulf or Louisiana spike-moss/ likely twilight zone & in sinkholes in nFL & sAL, epigeal in MS,LA)

Selaginella *mutica* (*S. m.* Eaton ex L. Underwood, 1898)) (moss/ likely twilight zone in AZ, CO, NM, UT, TX, WY)

Selaginella *rupestris* (*Lycopodium r.* Linnaeus, 1838) (spike or dwarf spike-moss/ likely twilight zone in east, n. to eCanada, nw to AB, s. to GA)

Selaginella *underwoodi* Hieronymus in Engler & Prantl, 1901 (Underwood=s spike-moss/ likely twilight zone in AZ, CO, NM, OK, TX, UT, WY, Mex)

Selaginella *wrightii* Hieronymus, 1900 (Wright=s spike-moss/ calciphile, likely twilight zone in NM, TX, Mex.)

Sponges and Placozoans

(= Spongiaria) Of Porifera, an aquatic phylum of the Metazoa. Sponges and the phylum Placozoa (a single species, *Trichoplax adhaerens*), together known informally as parazoans, have an almost plant-like organization of loosely connected cells whereas all other metazoans have cells that functionally are tightly co-ordinated. Sponges and placozoans are the only metazoans in which the main opening to the exterior (osculum) is an exit, rather than an entrance. Sponges generally consist of a hollow cup of tissue with holes called ostia and an open top, the osculum. Sponges in freshwater caves usually are macroinvertebrate fossils with an internal skeleton usually of opaline silica, rarely calcium carbonate. Current encrusting sponges may be the most common organisms in tidally flushed sea caves. Includes encrusting & pleosponges. About 5,000 known living species.

Class Calcarea (= Calcispongea) (calcareous sponges)

Order Thalamida (*Amblysiphonella*, *Gaudalupia*)

Class Pharetronida

Superorder Calcaronea

Order Leucosoleniida

Leucosoleniidae (*Leucosolenia*)

Class Demospongiae

Order Choristida (=Anacarinida)

Ancorinidae: Stelletinae (*Stelletta*)

Order Poecilosclerida (also put in Cornacuspongida)

Myxillidae (*Hymenamphiastra*)

Order Haplosclerida (=Halichondrida?)

Halichondriidae (*Halichondria*), Haliclonidae (*Haliclona*)

Spongillidae (*Spongilla*)

Order Monaxonida (=Cornacuspongida in part)

Demospongidae

(*Eunapius*, *Haliclona* (now in Haliclonidae), *Spongilla* (now in Spongillidae))

Haliclonidae (*Haliclona*) (family also put in Order Haplosclerida)

Amblysiphonella – Sponge of Order Thalamida

Amblysiphonella undet. sp. (extinct Permian fossil in Lechuguilla C., Eddy Co., NM)

Cystaulites undet. sp. (extinct Permian fossil in Lechuguilla C., Eddy Co., NM)

Eunapius Gray, 1867 - Demospongidae sponge

Eunapius fragilis (*Spongilla* f. Leidy, 1851) (E/ Tx? in Mammoth C., KY)

Eunapius undet. sp. (CT)

Gigantospongia Rigby & Daryan, 1996

Gigantospongia discoforma Rigby & Daryan, 1996 (Permian wall fossil in Lechuguilla C., NM)

Girtycoela undet. sp. (extinct Permian fossil in Lechuguilla C., Eddy Co., NM)

Guadalupia – Sponge of Order Thalamida

Guadalupia undet. sp. (extinct Permian fossil in Lechuguilla C., Eddy Co., NM)

Halichondria Fleming, 1828 - Haliclonidae sponge

Halichondria panicea (Pallas, 1766) (Atlantic & Pacific shores/ breadcrumb sponge/ME sea c.)

Haliclona Grant, 1841 - Haliclonidae sponge

Haliclona ecbasis De Laubenfels, 1930 (= *H. cinerea*, *Reniera* c.) (ME sea c.)

Haliclona permollis Bowerbank, 1866 = *H. ecbasis*

Hymenamphiastra de Laubenfels, 1930 - Myxillidae sponge

Hymenamphiastra undet. sp. (CA marine)

Lemonia undet. sp. (extinct Permian fossil in Lechuguilla C., Eddy Co., NM)

Leucosolenia - Leucosoleniidae sponges

Leucosolenia undet. sp. (WA marine infauna)

Spongilla Lamarck, 1816 - Spongillidae sponge

Spongilla fragilis = *Eunapius* f.

Spongilla *lucustris* (Linnaeus, 1758) (Mammoth C.,? KY)

Stelletta Wright, 1870 - Stellettinidae sponge

Stelletta undet. sp. (CA marine)

springs - AR: Bryan 1924; FL: Mattson, Epler & Hein 1995; Rosenau et al. 1977; TN: Whitlatch 1943; TX: Brune, 1981; VA: W. Collins et al. 1930; Reeves 1932; WV: Price, McCue & Hoskins 1936

Springtails & Allies

Collembola (= Springtails & allies). Small Usually less than 4 mm. long) wingless hexapods with distinct head, internal mouthparts, one pair of 4 segmented antennae sometimes subdivided. No more than six abdominal segments. All species have the unique feature of a ventral tube (collophore) on the first abdominal segment. Except for the family Onychiuridae almost all troglodite species have a posterior jumping organ or furcula. They have no true compound eyes (ocelli) but the pleisiomorphic feature is 8 + 8 ommatidia on solid dark eyepatches. Pseudocelli, smooth, thin areas of cuticle usually outlined by a rim or ring of granules, are located on the head and body of Onychiuridae. They are not true ocelli but probably control the release of hemolymphs to repel predators. Springtails usually have a very simple lifestyle, with little change in their appearance from the time they hatch from eggs to the time they reach sexual maturity in the adult stage. They continue to molt after they have reached adulthood. They & mites are by far the two most important groups of micro-arthropods in the soil in terms of biomass & breakdown of organics. Collembola grazing of soil bacteria enhances nitrogen mineralization; moderate grazing of fungi stimulates fungal growth. Syn: collembola, snow fleas.

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Springtails are among the most primitive of hexapods and one of the first to invade dry land during the Silurian, about 430 million years ago. They are common in leaf litter and rotten logs. Some cave ones have elongated antennae and legs, increased body size, and the ability to jump over 20 times their own length. The greater jumping ability probably evolved in caves so springtails could escape such predators as trechine beetles or pseudoscorpions. Such an ability would be less needed in soil habitats. Elongation of appendages helps springtails walk on the surface tension film of cave pools instead of being trapped by it (Barr and Holsinger). Development of larger "claws" helps movement on slippery mud (Culver, 1982). Cave springtails often have longer legs, a flattened outermost antennal segment and a large body size than the ancestors they evolved from (Barr and Holsinger, 1985). Springtails will often play dead when approached by a potential predator.

There are more than 6 000 known species in the world and some people estimate that there may be as many as 50 000, making them very a successful group of hexapods. They live just about everywhere, in the canopy of tropical rain forests, on the beach, in tidal rock pools, on the surface of fresh water ponds and streams, in the deserts of Australia and in the frozen wastes on Antarctica, in fact they reach a more Southerly distribution than any other hexapod (84° 47' S.) and can survive temperatures less than —60 C.

Springtails are minute, wingless insects that get their name from the fact that they have an unusual locomotor organ. The main locomotor organ is a forked, tail-like structure (called a furcula) which is folded forward under the abdomen when the insect is at rest. The furcula is held in place by a clasp-like structure, called a tenaculum. When the tenaculum is released, the furcula thrusts downward and backward against the substrate, allowing the springtail to jump considerable distances. A springtail 5-6 mm in length can jump 75-100 mm and floating springtails can even jump on water. If a human had this same capability, a five foot tall individual could jump 80 feet high.

Springtails usually appear in the spring and early summer. Springtails are often known as “snow fleas” as they appear on the top of the snow during late winter and early spring. Springtails live in the soil, organic matter and anywhere it is damp, and they feed on fungus, decaying vegetable matter, or plant roots and young plant leaves. Springtails are beneficial in that they reduce decayed vegetation in the soil, and they also are among the few organisms that break down DDT in the soil.

The abdomen possess's only 6 segments, on the first is the ventral tube (an organ for the absorption of moisture, from which the order derives its name [kolla, = glue {in the mistaken belief that the ‘peg’ was used by the animal to glue itself to smooth surfaces} and embolon (= a peg), on the third is the minute retinaculum or hamula which helps to hold the furca in place when it is held under the abdomen, and on the fourth is the ‘furca’ itself, this is a forked springing organ from which the creature derives its common name of “springtail”.

Collembola reach sexual maturity after their 4th or 5th molt, but unlike most insects, though they are now adults they do not stop molting but may have as many as 15 to 20 molts before the end of their life, though they do not get any bigger. Growth rate is mainly related to temperature and food, if there is plenty of food then temperature is the controlling factor. Though it varies from species to species the higher the temperature the faster the growth rate, with molting occurring every 4 or 5 days at 15 degrees C but only every 20 to 30 days at 3 degrees C. Collembola stand around doing apparently nothing while preparing to moult and have to have an empty gut before moulting because like their close relatives the insects they shed part of the stomach lining with their external skin. Because of this females lose any sperm they have stored from mating and have to mate again after each moult.

They are generally small and some species of Neelidae are among the smallest hexapods in the world at just over 0.2 mm long while the largest Collembola are in the family Uchidanuridae which can reach 10 mm in length. Most species live for a year or less, however some live considerably longer and the record for long life in the laboratory is 67 months for a specimen of *Pseudosinella decipiens*.

Populations are often high with up to 100,000 per cubic meter of surface soil, or many millions per acre. An individual walking through the forest with a size 10 boot would tread on about

2,000 springtails with each step.

In the wild, Collembola will feed mainly on fungal mycelium, bacteria and algae. In captivity they will eat just about anything, but will thrive on dried whole/live yeast, just sprinkle in a little at a time, and a bit of algae now and then. If you have more facilities you can grow various fungi on agar plates and then let the Collembola feed on this. They will also eat their own feces quite naturally so don't worry if this happens they are actually digesting the micro-organisms that live on the half digested food in the feces. Some species will eat their own exuviae (shed skins) but if they do not you will have to remove them, and any dead bodies, from the container with a fine paint brush.

Males leave a spermatophore (a bag of sperm) where the females might find it, sometimes this is off the ground on a short stalk. This habit is feasible because many species tend to collect in groups, like small herds of miniature cattle, and thus the females are quite likely to find the spermatophores. Some can reproduce at temperatures as low as 40 degrees Fahrenheit. A female will lay about 90 to 150 eggs during her life, though this also varies with species. The eggs take about a month to hatch at 8 degrees C but are quicker at warmer temperatures, *Tomocerus plumbeus* eggs hatch in 3-4 day at about 20 degrees C most will live for about a year. Some will live for a long time with out food, the longest I know of being 18 months for a single specimen on its own, though if the food runs out you will get cannibalism, particularly of eggs in some cultures. Collembola have been around at least 400 million years. The oldest known fossil hexapod *Rhyniella praecursor* is from chert of the Lower Devonian era.

Bibl.: Bagnall 1948-c; Christiansen 1964; Bellinger 1954; Bonet 1931; Christiansen 1960b, 1963, 1965, 1971; Christiansen & Snider 1984; C. & Culver 1987; Culver 1974; Scott 1961; Thibaud 1981, 1994; Thibaud & Massoud 1973; Wray 1952; Rees 1971

Areas: **AL:** Deboutteville 1949; **CA:** Wilkey 1959; East: Christiansen 1982; **HI:** Bellinger & Christiansen 1974; **IA:** Christiansen 1970a; Hedges 1962; **ID:** Wray & Knowlton 1956; **IN:** Hart 1970, 1971, 1973, 1974; **KY:** Lesshaft 1977; **MI:** Snider 1967; **MN:** Guthrie 1903; **NA:** Waltz & McCafferty 1979; **NY:** Maynard 1951; **NM:** H. Scott 1957, 1962, 1967; **TN:** Copeland 1960; Deboutteville 1949; **US & Canada:** Christiansen 1978; Christiansen & Bellinger 1980-1; Christiansen & Bellinger 1998; H. Scott 1961; Waltz & McCafferty 1979; **UT:** Wray & Knowlton 1953; **WI:** Thomas 1976; **World:** Salmon 1964; **WV:** Lippert & Butler 1976.

Order Arthropleona

Suborder Arthropleona

Hypogastruridae (now in Poduromorpha)

Neanuridae

Odontellidae (now in Poduromorpha)

Onychiuridae)

Order Entomobryomorpha

Superfamily Entomobryoidea Womersley, 1934 sensu Szeptycki, 1979
(=Entomobryomorpha)

Cyphoderidae

Entomobryidae (*Entomobrya*, *Cyphoderus*, *Hawinella*, *Isotomiella*, *Janetschekbryas*).

Oncopodura, *Parasinella*, *Pseudosinella*, *Salina* (now in Paronellidae), *Seira*, *Sinella*,

Tomocerus (also put in own family), *Tritomurus*, *Unostrigata*, *Willowsia*)

Subfamily Lepidocyrtinae: *Lepidocyrtus*

Subfamily Orchesellinae: *Heteromurus*

Superfamily Isotomoidea Szeptycki, 1979

Isotomidae (also put in Entomobryoidea) (smooth springtails)

Subfamily Isotominae

Agrenia, *Biacanthella*, *Cryptopygus*, *Desoria*, *Dicyrtoma* (also in own family), *Folsomia*, *Folsomides*, *Folsomina*, *Isotoma*, *Isotomurus*, *Metisotoma*

Subfamily Anurophorinae (*Appendisotoma*, *Ballistura*, *Folsomia*, *Proisotoma*)

Order Metaxypleona

Poduridae (undet. genus in LA brackish beach sediment)

Order Neelipleona

Neelidae (*Neelus*)

Order Poduromorpha

Brachystomellidae (also put in Order Arthropleona) (*Brachystomella*) (also put in Hypogastruridae)

Odontellidae (also put in Order Arthropleona) (*Odontella*)

Hypogastruridae (also put in Order Arthropleona

(*Acherontiella*, *Anurida*, *Brachystomella* (put in own family), *Friesea*, *Hypogastrura*, *Microgastrura*, *Morulina*, *Neanura*, *Odontella* (put in own family), *Paranura*, *Pseudachorutes*, *Schaefferia*, *Sensillanura*, *Tricanthella*, *Willemia*, *Xenylla*, *Xenyllodes*)

Subfamily Frieseinae (*Friesia*)

Subfamily Hypogastrurinae (*Acherontiella*, *Hypogastrura*, *Mesachorutes*, *Schaefferia*, *Tricanthella*, *Willemia*, *Xynella*, *Xenyllodes*)

Subfamily Morulininae (*Morulina*)

Subfamily Neanurinae (*Sensillanura*)

Tribe Neanurini (*Neanura*)

Subfamily Pseudachorutinae (*Anurida*)

Onychiuridae (blind springtails) (also put in Order Arthropleona)

Subfamily Onychiurinae (*Kalaphorura*, *Onychiurus*)

Subfamily Tetrodontophorinae (*Lophognathella*)

Subfamily Tullberginae (*Mesophorura*, *Tullbergia*)

Subfamily Paronellidae (*Salina* (once put in Entomobryidae))

Order Symphypleona

Dicyrtomidae (*Dicyrtoma*) (also put in Isotomidae, Subfamily Isotominae)

Sminthuridae (globular springtails) (*Arrhopalites*, *Dicyrtoma*, *Ptenothrix*, *Sminthurides*, *Sminthurinus*, *Sminthurus*) **Bibl.:** W. Richards, 1968

Subfamily Dicyrtominae (*Dicyrtoma*, *Ptenothrix*)

Subfamily Katianninae (*Arrhopalites*, *Sminthurinus*)

Subfamily Sminthuridinae (*Smithurides*)

Subfamily Sminthurinae (*Neosminthurus*, *Sminthurus*)

Families incl.

Arrhopalitidae (now subsumed in Sminthuridae)

Brachystomellidae (*Brachystomella*) (also put in Hypogastruridae)

Dicyrtomidae Börner, 1906 (*Dicyrtoma*)

Entomobryidae Schott, 1891 (smooth springtails)

Subfamily Entomobryinae (*Entomobrya*, *Cyphoderus*, *Hawinella*, *Isotomiella*, *Janetschekbryas*, *Oncopodura*, *Parasinella*, *Pseudosinella*, *Salina* (now in Paronellidae),

Seira, *Sinella*, *Tomocerus* (also put in own family), *Tritomurus*, *Unostrigata*, *Willowsia*)

Subfamily Lepidocyrtinae (*Lepidocyrtus*)

Subfamily Orchesellinae (*Heteromurus*) **Bibl.:** Christiansen 1961

Hypogastruridae (elongate-bodied springtails) (*Acherontiella*, *Anurida*, *Brachystomella* (also put in own family), *Friesea*, *Hypogastrura*, *Microgastrura*, *Morulina*, *Neanura*, *Odontella* (also put in own family), *Paranura*, *Pseudachorutes*, *Schaefferia*, *Sensillanura*, *Tricanthella*, *Willemia*, *Xenylla*, *Xenyllodes*) **Bibl.:** Thibaud 1967, 1970

Subfamily Frieseinae (*Friesia*)

Subfamily Hypogastrurinae (*Acherontiella*, *Hypogastrura*, *Mesachorutes*, *Schaefferia*, *Tricanthella*, *Willemia*, *Xynella*, *Xenyllodes*)

Subfamily Morulininae (*Morulina*)

Subfamily Neanurinae (*Sensillanura*)
Tribe Neanurini (*Neanura*)

Subfamily Pseudachorutinae (*Anurida*)

Isotomidae (smooth springtails) Schaffer, 1896

Subfamily Isotominae S., 1896 (*Agrenia*, *Biacanthella*, *Cryptopygus*, *Desoria*, *Dicyrtoma*
(also in own family), *Folsomia*, *Folsomides*, *Folsomina*, *Isotoma*, *Isotomurus*,
Metisotoma,
Anurophorinae: *Appendisotoma*, *Ballistura*, *Folsomia*, *Proisotoma*)

Neanuridae (=Subfamily Neanurinae in Hypogastruridae) Massoud 1967

Neelidae Folsom, 1896 (*Neelus*)

Odontellidae (*Odontella*) (also put in Hypogastruridae)

Oncopoduridae Bonet (1943) (=Oncopodurinae in Entomobryidae) Bibl.: Deharveng 1988

Onychiuridae Börner, 1901 (blind springtails)

Subfamily Onychiurinae (*Kalaphorura*, *Onychiurus*)

Subfamily Tetrodontophorinae (*Lophognathella*)

Subfamily Tullberginae (*Mesophorura*, *Tullbergia*)

Subfamily Paronellidae (*Salina* (once put in Entomobryidae))

Poduridae (water springtails) (undet. genus in LA brackish beach sediment)

Sminthuridae Lubbock, 1862 (globular springtails) **Bibl.:** Richards, 1968

Subfamily Dicyrtominae (*Dicyrtoma*, *Ptenothrix*)

Subfamily Katianninae (*Arrhopalites*, *Sminthurinus*)

Subfamily Sminthuridinae (*Smithurides*)

Subfamily Sminthurinae (*Neosminthurus*, *Sminthurus*)

Tomoriceridae Schaffer, 1896 (tomocerids) = Subfamily Tomocerinae in Entomobryidae

Tullbergiidae Bagnall, 1935 (*Mesaphorura*, *Tullbergia* (both put in Onychiuridae)).

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Acherontiella Absolon, 1913 - Hypogastruridae springtails, subfamily Hypogastrurinae

Acherontiella (*A.*) *sabina* Bonet, 1945 (kangaroo rat nests in nNM/ Tp in cave in Sutton Co.,

TX)

Agrenia Boerner, 1906 - Isotomidae springtail, Subfamily Isotominae

Agrenia bidenticulata (*Isotoma b.* Tullberg, 1876) Folsom, 1937 (Ep in AK, Alberta, CT, ID, IN, MT, NY, WA, WY/ CO hyporheic)

Anurida Laboulbene, 1865 - Hypogastruridae springtails, Subfamily Pseudachorutinae

Anurida granaria (*Anoura g.* Nicolet, 1842) (epigeic rare, widespread N.A.) (caves in Edmonson Co., KY (Mammoth C.) & cave in Jackson Co. IA, hyporheic in CO/ HTx (local))

Aphoromma = *Anurida*

Appendisotoma = *Proisotoma* subgenus

Arrhopalites Boerner, 1906 - Sminthuridae springtails, Subfamily Katianninae

Bibl.: Christiansen 1966; C. & Bellinger, 1996

Arrhopalites altus Christiansen, 1966 ((*type locality cave Mammoth C, Edmonson Co. & cave in Hart Co. KY / Tb/Tm/G3)

Arrhopalites ater Christiansen & Bellinger, 1998 (type locality & 2 other caves in Harrison Co. & 2 caves in WA Co., IN/ Tb/ G3)

Arrhopalites benitus Mills, 1934 (*Smynthrus b.* Folsom, 1896; A. (Epigeic widespread in N.A.) (type locality cave in Jackson Co., IA & caves in IN (Harrison, Orange, Washington Cos.), MD (Alleghany Co.) , VA (Bath, Augusta, Alleghany Co.), WV (Hampshire Co.)/ Tp)

Arrhopalites bimus Christiansen, 1966 type locality cave in Lawrence Co., + cave in Orange Co.,IN, caves in Dubuque, Delaware & Winneshiek Cos. IA.; Barren Co, KY & Barry Co., MO/ Tp/ Epigeic IL; MA; NH; NJ; PA; OR/ G3G4)

Arrhopalites* cf. *bellingeri Christiansen, 1966 (Tp or Tx in BC (cf. *A.b.*)

Arrhopalites binoculatus Denis, 1933 - No valid North American records

Arrhopalites caecus Tullberg, 1871 (widespread epigeic/ caves in Jackson Co., IA ; Mystery Cave, Fillmore Co.MN, Freemont Co., CO ; Harvey Co.,OR; Eddy Co., NM ; Giles Co., VA; Black Hill's caves, Custer Co., SD; cave in WI/ Tp)

Arrhopalites caedus Christiansen & Bellinger, 1996 (**type locality cave in Botetourt Co. & cave in Bath Co., VA /Tb/ G1G2)

Arrhopalites carolynae Christiansen & Bellinger, 1996 (type locality cave in Wise Co. & caves in Augusta, Botetourt, Lee, Highland & Bath Cos., VA/ Tb)

Arrhopalites clarus Christiansen, 1966 (type locality cave in Barry Co. MO +5 other MO counties), Jackson & Clayton Co. IA; Boone, Marion Cos., AR; Pike Co., IL; Allen & Woodford

Cos., KY; Garrett Co., MD; Kendall Co., TX; Lee, Scott & Wise Cos., VA; Crawford, Pierce, Richland & Sauk Cos., WI; Klickitat Co., WA; Greenbrier & Hampshire Cos., WV/ Tp/ Epigeic Benton Co. OR; BC/ G2G4)

Arrhopalites commorus Christiansen & Bellinger, 1996 (type locality cave in Giles Co.) & caves in Scott, Wise & Lee Cos., VA/ Tb/ G1G2)

Arrhopalites diversus Mills, 1934 (AZ, CA, CT, IA, IL, OR/ Tx or Ac in 1 seAK cave)

Arrhopalites dubius Christiansen, 1966 (Epigeic MI) (type locality cave in Jackson Co. & caves in Dubuque Co., IA + MI?, MN?/ Tb or Tp/ G3G4)

Arrhopalites ferrugineus (Packard, 1888) (see *A. pygmaeus*)

Arrhopalites hirtus Christiansen, 1966 (type locality cave in Jackson Co ,IA/ **Tp** in Vancouver Isl. BC; 4 islands in seAK; Clayton & Jackson Cos. IA; Pike Co. IL; Allen Co. KY; Garrett Co. MD; sOH; Kendall & Burnet Co. TX; Lee Co. VA; Klickitat Co. WA; Crawford, Pierce, Richland & Sauk Co. WI; cave in NS/ Epigeic in AK, OR, CA, PQ)

Arrhopalites jay Christiansen & Bellinger, 1996 (**?type locality cave in Delaware Co. & cave in Cherokee Co., OK/ Tb/ G3)

Arrhopalites lacuna Christiansen & Bellinger, 1996 (*type locality cave in Alleghany Co. VA/ Tb/ G1G2)

Arrhopalites lewisi Christiansen & Bellinger, 1988 (type locality in Wyandotte C., Crawford Co., + caves in WA & Harrison Cos., IN/ Lewis= cave springtail/ Tb)

Arrhopalites mammothia (*Smynthurus .m.* Banks, 1897) = *A. pygmaeus*

Arrhopalites marshalli Christiansen & Bellinger, 1996 (type locality & at least one other cave in Scott Co. + Highland, Washington & Russell Cos., VA/ Tb/ G3)

Arrhopalites pavo Christiansen & Bellinger, 1996 (type locality & 1 other cave in Rockbridge Co. & cave in Scott Co., VA / Tb / Tm/ G1G2)

Arrhopalites pygmaeus (Wankel, 1860) (*A. ferrugineus* Packard , 1888; *Sminthurus f.* Packard, 1886) (Epigeic rare, widespread N.A. Europe) (Widespread in caves of Continental U.S.(AL, AR, CT, Europe, GA (Bartow Co.), IL, IA, IN (Crawford, Harrison, Orange, WA Cos.(S3/G4)), KY (Mammoth C.), LA, MD, MO, NM, NS, OK, PA, TN, TX, VA, WV)/ Tp or Tb)

Arrhopalites sacer Christiansen & Bellinger, 1998 (**?type locality & 1 other cave in Bath Co. & cave in Pulaski Co. VA/ Tb/ G1G2)

Arrhopalites silvus Christiansen & Bellinger, 1998 (**?type locality & 1 other cave in Highland

Co. + cave in Bath Co. VA/ Tb/ G1G2)

Arrhopalites undet. (s)sp. (GA/Tp, WV/Tp?; MO/Tp; MO/Ac; Carter, Pulaski & Rockcastle Cos. in KY), Bexar, Hays, Travis Cos., TX; 2 caves in seAK)

Arrhopalites poss. undescr. sp.#1 (*cave in Greenbrier Co., WV/Tp?)

Arrhopalites undescr. sp.#2 (*?cave in Mercer Co., WV/Tp?)

Arrhopalites undescr. sp.#3 (*Mt. St. Helens cave/Tb)

Arrhopalites undescr. sp.#4 (*OR C., OR/Tb)

Arrhopalites undescr. sp.#5 (*cave in Garrett Co., MD/Tb/ sp. #1 in MD T&E SU G?)

Arrhopalites undescr. sp. #6 (Harrison & WA Cos., IN (S2/G2/ Tb or Tp)

Arrhopalites undescr. sp. #7 (cave in Prince of Wales Island, AK)

Arrhopalites poss. undescr. sp.#8? (near *A. pygmaeus*) (cave in NS)

Arrhopalites texensis Christiansen & Bellinger, 1996 (type locality cave in Williamson Co. & caves in Bandera; Bexar; Hays; Kendall & Travis Cos., TX/ Tb, Tm/ G3)

Arrhopalites whitesidei Jacot, 1938 (epigeic rare but widespread N.A.)(Tp in AL; IL; IN; IA; MD; MO; NM; NY; WI; VA; WV)

Arrhopalites undescr. sp. (Tp or Tb in Corydon area caves, Harrison Co., IN)

Ballistura Börner, 1906 = *Proisotoma* subgenus

Biacanthella Scott, 1961 = *Hypogastrura*

Brachystomella Agren, 1903 - Hypogastruridae or Brachystomellidae springtails

Brachystomella parvula (Schaeffer, 1896) (epigeic uncommon but widespread in continental U.S./ Tx in Wagons Trail Sink, Burnet Co. TX)

Ceratophysella Börner, 1932 = *Hypogastrura* subgenus

Coecobrya Yosii, 1956 = *Sinella* subgenus.

Cryptopygus Willem, 1901 - Isotomidae springtails, Subfamily Isotominae

Cryptopygus undet. sp. (TTx or Ac in TX)

Cryptopygus thermophilus (*Isotoma t.* Axelson, 1900; *C. constrictus* Folsom, 1937) (Epigeic Widespread N.A. & HI), (Tx in cave in Travis Co.; alien? Tx? in HI)

Cyphoderus Nicolet, 1842 - Entomobryidae springtails, subfamily Entomobryinae

Cyphoderus similis Folsom, 1927 (= *C. assimilis* Börner, 1906) (Epigeic CA; HI; LA; MA; NJ; Tx in HI; Tx or Ac in TX)

Cyphoderus undet. sp. (Tx or Ac in Organ C., WV)

Degeeria - See *Sinella* & *Entomobrya*.

Desoria = *Isotoma* subgenus

Dicyrtoma - No valid Nearctic cave records

Entomobryoides Maynard, 1951 = *Entomobrya* subgenus

Entomobrya Rondani, 1861 (= *Degeeria* Nicolet, 1842, nec Meigen, 1838) - Entomobryidae springtails. **Bibl.:** Christiansen 1951

Entomobrya (E.) arnaudi Wray, 1953 (Epigeic rare, western U.S.) (at least 5 caves in Tuolumne Co. CA/ HTx (local))

Entomobrya (Entomobrya) assuta Folsom, 1924 (epigeic, uncommon but Widespread N.A.) (Tx in Linn Co., IA)

Entomobrya (Entomobrya) atrocincta Schoett, 1896 (epigeic widespread N.A. especially in SW) (cave each in Travis & Val Verde Cos.; 2 caves in Williamson Co. TX/ HTx (local))

Entomobrya (Drepanura) californica (*D. c.* Schoett, 1891; *D. rolfsi* Milles, 1935, *D. neomexicana* Scott, 1963), (Ep in CA, WA, NM/ Tp in CA (Calaveras Co.), seNM, TX, WA)

Entomobrya cavernarum - See *Sinella*

Entomobrya cavicola = *Folsomia candida*

Entomobrya (Entomobrya) confusa Christiansen, 1958 (epigeic widespread western 2/3 N.A.) (cave in Jackson Co. IA & Shasta Co. CA/ Tx)

Entomobrya (Entomobrya) decemfasciata (Packard, 1873) (epigeic uncommon widespread N.A.) (cave each in Uvalde, Williamson, Travis Cos., TX/ Tx)

Entomobrya (Entomobrya) griseoolivata (Packard, 1873) (epigeic Widespread N.A. & HI (alien)) (Tx in cave in Jackson Co. IA & Haleakala Nat. Pk. Maui, HI)

Entomobrya (Entomobryoides) guthriei Mills, 1931 (epigeic common Western continental U.S. S.W. Canada; HI in Kauai, Oahu, Molokai; Amador, Calaveras, El Dorado, Shasta & Tuolumne Cos., CA; cave in Santa Cruz Co. AZ; Simon Says Sink, Burnet Co., TX; Wind C., Custer Co., SD; Kazumura C. , Hawaii HI/ Tp)

Entomobrya (Homidia) haikea Christiansen & Bellinger, 1992 (epigeic widespread HI) (cave in Hawaii HI / Tx)

Entomobrya (Entomobrya) intermedia Brook, 1883 (Ep in CA, MA, MN, ON, OR, WA/ Tx or Ac in 1 IL cave)

Entomobrya (Homidia) laha Christiansen & Bellinger, 1992 (epigeic widespread HI) (2 caves in

Hawaii HI/ Tx)

Entomobrya* (*Entomobrya*) *multifasciata (Tullberg, 1871) (widespread N.A., world) (Tx in cave in Boone Co. MO, Travis & Williamson Cos., TX; Tx alien in 2 caves in Big Island, HI)

Entomobrya* (*D.*) *neomexicana Scott, 1963) (epigeic widespread Western U.S., particularly SW.) (2 caves in Coconino Co. & 1 cave in Santa Cruz Co., AZ; Eddy Co. (10 records), cave in Lincoln Co. & cave in Sandoval Co., NM; cave each in Travis & Hudspeth Cos., TX / Tx)

Entomobrya* (*Entomobrya*) *nivalis Linnaeus, 1758 (epigeic Holarctic/ cave in Hants Co. NS; 2 caves in Travis Co., TX; cave in Pocahontas Co., WV/ Tx)

Entomobrya* (*Entomobrya*) *nyhusae Christiansen & Bellinger, 1992 (Epigeic Hawaii HI) (Tx in cave in Hawaii HI) Tx)

Entomobrya* (*Entomobryoides*) *purpurascens (= *Deegeria p.* Packard, 1873) (epigeic widespread N.A. mostly in East, Europe) (Carlsbad Caverns Eddy Co.; WA Co., IN (S4/G4); 2 caves in Sandoval Co., 1 cave in Pulaski Co., MO; cave each in Kiowa & Greer Cos., OK; cave in Bell Co., KY; 2 caves in WA Co., VA/ Tp?)

Entomobrya* (*Homidia*) *sauteri Boerner, 1909 (epigeic KY, LA [recently introduced]; Tx alien in cave in Hawaii, HI (rare))

Entomobrya* (*Homidia*) *socia Denis, 1939 (epigeic in GA; LA; IA; IN; SC [recently introduced], widespread in HI) (Tx in cave in Johnson Co., IL; cave each in Crawford & Harrison Cos., IN (S2/G2) & cave in Hawaii HI)

***Entomobrya* undet. sp(p).** (CO hyporheic; TTp in NW & Shasta Co.,CA (or *Entomobrya unostrigata* Stach, 1930); Tp? in cave & Carlsbad C., Eddy Co.,NM; Tx? in TX; Tx or Tp in Morrison C.,MT))

Entomobrya* (*Entomobrya*) *suzannae Scott, 1942 (Epigeic Western U.S.) (cave in Cochise Co. AZ, & cave each in Calaveras, Mariposa, Tuolumne, El Dorado Cos.,CA/ HTx (local))

Entomobrya* (*Entomobrya*) *trogloodytes Christiansen, 1958 (type locality cave in Meade Co. & Jewel & Wind C. (Custer Co.), SD + cave in Freemont Co., CO/ Tb/ G3)

Entomobrya* (*Entomobrya*) *troglophila Christiansen & Bellinger, 1998 (type locality & 1 other cave in Williamson Co. & cave each in Bell & Kinney Cos., TX/ G1/ Tp?)

Entomobrya* (*Entomobrya*) *unostrigata Stach, 1930 (Epigeic worldwide tramp species [recently introduced into N.A.]) (cave in Cochise Co., AZ; Carlsbad Caverns, Eddy Co., NM; Shasta Co.,CA/ Tx).

Folsomia Willem, 1902 - Isotomidae springtails, Subfamily Isotominae. **Bibl.:** Grow & Christiansen 1977

Folsomia candida Willem, 1902 (*Entomobrya c.* Banks, 1897; *Folsomia cavicola* (Banks)) (epigeic, widespread primarily in human structures) (Found in some caves in all states and provinces with caves, incl. AK, AR, GA (Walker Co.), HI (alien in Kauai, Oahu, Lanai, Maui, HI), IN(4cos.(S2/G3)), KY (Mammoth), MO, NM, NS, OH, PQ, TX, WV/ harmed by paraquat & Atrazine/ Tp)

Folsomia candida **Bibl.:** Butcher, Kirknel, & Zabik 1969; Chiba, Cutkomp & Halberg 1973; Dwidjasatmoko 1978; Green 1964, 1964a; Grimnes 1982; Marshall & Kevan 1962; Zhang 1992

Folsomia elongata (*Isotoma e.* MacGillivray, 1896) (Epigeic widespread N.A./ Tx in cave each in Williamson Co., TX; Orange Co., IN & IL)

Folsomia ozeana Yosii, 1954 (OR,VA,WA?/ Tx or Ac in 1 AK c.)

Folsomia fimetaria (*Podura f.* Linnaeus, 1758) (Epigeic MA; NY; SC; widespread Canada/ Tx or Tp in cave each in Orange Co., IN; Bell Co., TX, Barren Co., KY; Hants Co., NS, Claiborne Co.,TN + cave or caves in sON)

Folsomia nivalis (*Isotoma n.* Packard, 1873; (Epigeic widespread N.A.) (Tx or Tp? in Jackson Co., IA; Hardin Co., IL; Perry & Stone Co., MO; Hants Co., NS; Bell & Travis Co., TX; Pierce Co., WI; Tx or Ac in HI; Tp? in AR)

Folsomia penicula Bagnall, 1939 (Epigeic in CT; ME; NH; NY; ONT; QUE; SC) (Tx? in 2 caves inMadison Co., AL)

Folsomia prima Mills, 1931 (Epigeic widespread in continental US) (Tx in cave in Clayton Co., IA; Hardin Co. IL, Orange & WA Cos., IN & Travis Co., TX)

Folsomia setula Christiansen & Tucker, 1977 (Epigeic in KY; Tx in cave in Hardin Co., IL)

Folsomia stella Christiansen & Tucker, 1977 (widespread epigeic in NA & HI) (type in cave in Clayton Co., IA/ Tp in HI; KY (Mammoth C., Edmonson, Jefferson, Knox Cos.); IA (Jackson & Winnesheik Cos.); IL; IN (Crawford, Harrison, Orange, WA Cos.(S4/G4)); MN; OH; OK; NS (Seminole Co.); VA; WI (Pierce Co.)/

)

Folsomides Stach, 1922 - Isotomidae springtails, Subfamily Isotominae

Folsomides decemoculatus Mills, 1935 (= *F. millsii* Paclt, 1945) (epigeic in CA,UT/ Ac in cave in Bell Co., TX)

Folsomides parvus Folsom, 1934 = *F. parvulus*

Folsomides parvulus Stach, 1922 (= *F. americanus* Denis, 1931) (Epigeic widespread NA & Holarctic) (local Htx in Bell, Bexar, Burnet, Coryell, Travis Cos., TX; cave in WA Co., IN)

Folsomina Denis, 1931 - Isotomidae springtails, Subfamily Isotominae

Folsomina onychiurina Denis, 1931 (global epigeic & in Hawaii, Kauai & Oahu, HI/ Tp? In Hawaii, HI)

Friesea Dalla Torre, 1895 - Hypogastruridae springtails, subfamily Frieseinae

Friesea claviseta Axelson, 1900 (widespread epigeic in NA & Europe/ Tx in cave in Jackson & Linn Cos., IA + ON)

Friesia sublimis Macnamara, 1921 (epigean NY to PQ, w. to IN,IL/Tx? alien in HA)

Hawinella Christiansen & Bellinger, 1974 - Entomobryidae springtails, subfamily Entomobryinae

Hawinella kuaola Christiansen & Bellinger, 1992 (epigeic, Tp? in Oahu,HI)

Hawinella lava Christiansen & Bellinger, 1974 (***?type locality cave in Oahu & at least 2 caves in Big Island, HI / Tb/ G3)

Heteromurus Wankel, 1860 Entomobryidae springtails, subfamily Orchesellinae

Heteromurus nitidus (*Podura n.* Templeton, 1835; *Pseudosinella marmaratus* Packard, 1873) Wankel, 1860 (epigeic in Europe, ON; ME; UT; LA) (alien? Tp in Dubuque Co., IA; Jefferson & Columbia Co., NY; Hants Co., NS; NB; PQ)

Hypogastrura Bourlet, 1839 Hypogastruridae springtails, subfamily Hypogastrurinae (112 species in US or Canada). **Bibl.:** Yosii 1960

Hypogastrura* (*H.*) *antra Christiansen & Bellinger, 1980 (type locality cave in Jackson Co., KY +Tx in Woodford Co., KY; Newton Co., AR; Shannon Co., MO; Madison Co., NC/ Epigeic PQ, AR)

Hypogastrura* (*Ceratophysella*) *brevis Christiansen & Bellinger, 1980 (Epigean rare, CA,WY,UT) (Tx in cave each in Edmonson Co., KY & Bell Co.,TX)

Hypogastrura* (*Ceratophysella*) *boletivora Packard, 1873 (Epigean widespread in NA/ Tx in Laclede & Boone Cos, MO)

***Hypogastrura* (*Ceratophysella*) *denticulata* (complex?) (*Achorutes d.* Bagnall, 1941) (HTx in AL; CA; GA; IL; IN (Crawford, Harrison, WA Cos.); KY (Mammoth C.); MO; OH; VA; YN; TX; VA)**

Hypogastrura* (*H.*) *essa Christiansen & Bellinger, 1980 (epigeic in AK; AZ; IA; MA; NE) (Tx in Morgan Co., AL; Davies Co., IL; Overton Co., TN; Williamson Co., TX / Tx)

Hypogastrura* (*Ceratophysella*) *gibbosa (*Achorutes g.* Bagnall, 1940; *H. azteca* Yosii, 1962)

Lawrence, 1962) (epigeic in CA, IA, PA/ Tx in IN)

Hypogastrura (Ceratophysella) glancei Hammer, 1953 (Epigeic in NWT/ Tx or Ac in 1 AK cave)

Hypogastrura (H.) helena Christiansen & Bellinger, 1980 (epigeic in CA, AK/ Tx in Harrison Co., IN; Scott Co. VA)

Hypogastrura (Mitchellania) horrida Yosii, 1960 (epigeic in BC,CA,OR/ Tx or Tp in WA Co.,IN)

Hypogastrura (C.) lucifuga (Achorutes l. Packard, 1888; *Lipura lucifugus*) (***?Wyandotte (Crawford Co.) & cave each in Harrison & Lawrence Cos., IN/ Tb/ S1G2)

Hypogastrura (H.) lima Christiansen & Bellinger, 1980 (epigeic in NY; PA; MD) (Tx in cave in Jennings Co. IN)

Hypogastrura (Ceratophysella) maheuxi Butler, 1966 (widespread epigeic in NA) (Tx in cave in Crawford Co., IN),

Hypogastrura (H.) manubrialis (Achorutes m. Tullberg, 1869) (Epigeic widespread epigeic in NA/ Tx in cave in Travis Co., TX)

Hypogastrura (H.) matura (Achorutes m. Folsom, 1916; *A. schoetti* of Guthrie, 1903, not of Reuter) (widespread epigeic in NA/ HTx (local) in Perry Co., MO (5 records); Hardin Co., IL; Preston Co., WV; IL)

Hypogastrura (H.) packardi (Folsom, 1902) (epigeic e. of Mississippi) (Tx in cave each in Hardin Co., IL; Harrison Co.,IN (S4/G4))

Hypogastrura (H.) pannosa (Macnamara, 1922) (widespread epigeic in NA/ Tx in cave in Woodford Co., KY),

Hypogastrura (Ceratophysella) pecki Christiansen & Bellinger, 1980 (epigeic in AK, AB/ Tp? in 2 caves in Albany Co. & 1 in Sullivan Co., NY; cave in Bennington Co.,VT)

Hypogastrura (H.) promatro Wray, 1950 (epigeic in ID & UT) (Tx in cave in Coryell Co., TX),

Hypogastrura (Ceratophysella) pseudarmata (Folsom, 1916) (Tx in New Brunswick)

Hypogastrura (Ceratophysella) undescr. sp. (Tp in cTX)

Hypogastrura undet. sp(p). (TTp in WA; Ac in MO; Tx or Ac in CA; Tp or Tx in TX)

Hypogastrura (H.) tullbergi (Schaeffer, 1900) (epigeic in AK; BC; CA; MB; NT; ON) (Tx in cave each in Morgan Co., AL; Jennings Co., IN)

Hypogastrura sparta Christiansen & Bellinger, 1980 (Pb? in SC)

Hypogastrura* (*Ceratophysella*) *succinea Gisin, 1949 (rare epigeic widespread in NA, Europe/
Tx in Harrison Co., IN (S1/G4); Barren (Mammoth C.) ;& Edmonson Cos., KY; WA Co., MD;
Culberson Co.,TX)

***Hypogastrura* (*Ceratophysella*)** undet. sp. (Tx or Tp in Vancouver Island, BC)

Hypogastrura undescr. sp.#1-2? (Tp? in IL & 2 caves in Perry Co.,MO)

***Hypogastrura* (*Michellania*)** undescr. sp.#1-2? (Tx or Tp in Vancouver Island, BC)

Hypogastrura* (*H.*) *ripperi Gisin, 1952 (epigeic in MN/ Tx in Dubuque Co.,IA)

Hypogastrura* (*Schoetella*) *ununguiculatus (*Achorutes* u. Tullberg, 1869) (epigeic in CT, IL,
MA, ME, NH, PA, WV/ Tp? in IL)

Isotobryoides Maynard, 1951 = *Entomobrya*

Isotoma Bourlet, 1839 - Isotomidae springtails, Subfamily Isotominae

Isotoma* (*I.*) *anglicana (Lubbock 1862) (WA Co.,IN (S1/G3))

Isotoma* (*Desoria*) *brucealla Wray, 1953 (UT(gopher burrow) & cave in Skamania Co. WA /
Tp?)

Isotoma* (*Desoria*) *caeruleatra Guthrie, 1903 (Ep in IA?, MN, PA?/ Tx? in cave in WA Co., IN
(S1); Tx or Ac in NS)

Isotoma* (*I.*) *carpenteri Borner, 1909 (*P. difficilis* Folsom, 1937) (widespread epigeic in Japan,
NA (PQ to NC, IN)/ Tx in cave in Travis Co., TX; Tx or Ac in 1 IL cave)

Isotoma* (*Desoria*) *christianseni Fjellberg, 1978 (Ep in IL/ Tp in 2 caves ub Harrison Co., IN
(S1/G1))

Isotoma* (*Desoria*) *gelida Folsom, 1937 (epigeic in KY & WV/ Tx in cave in Hardin Co., IL)

Isotoma* (*Desoria*) *nixoni Fjellberg, 1978 (type locality cave in Marshall Co.,AL/ Tp in cave
in WA Co.,IN & Carter Co.,KY)

Isotoma* (*Desoria*) *notabilis Schaffer, 1896 (= *I. Eunotabilis* Folsom, 1934) (Epigeic widespread
epigeic/ HTx in AR; IA; IL; IN (Crawford, Harrison,Orange Cos. (S4/G4); KY; MN ; MO;
NS; OH; PA; TN, TX; WI; VA; WV)

Isotoma* (*Desoria*) *nigrifrons Folsom, 1934 (widespread epigeic in NA/ Tx in cave in Glacier
Nat. Pk., MT; WA Co., IN)

Isotoma undet. sp(s). (Tx? In 6 AK cave)

Isotoma undescr. or European sp. (Tp? In cave in NS)

Isotoma (*Desoria*) undescr. sp. or species (Tb in cave in WA Co., IN (S4/G4); Tx, Tp or Tb in Vancouver Island, BC; Tp or Tb in caves in Blue River basin, Harrison Co., IN)

Isotoma (*Desoria*) *torildae* Fjellberg, 1978 (epigeic in IL/ Tx or Tp in cave in Washington Co., IN)

Isotoma (*Desoria*) *trispinata* MacGillivray, 1896 (widespread epigeic in NA, HI (alien)) (HTx in AR (Newton Co.); HI; IA (Dubuque Co.); IL; IN (Harrison Co. (S4/G4)); MN; MO (Jefferson Co.); OH; TX)

Isotoma (*Desoria*) *truncata* Waltz & Hart, 1995 (epigeic in Wayne Co. IN) (Tx in cave in Crawford Co. IN/ Tx)

Isotoma violacea Tullberg, 1876 (no valid Nearctic records according to Christiansen & Bellinger, 1980 & 1998)

Isotoma (*I.*) *viridis* Bourlet, 1839 (epigeic worldwide ?), ALL RECORDS DOUBTFUL. (2 caves in IL; 1 cave in Jefferson Co., IN (S4/G4); Shannon Co. MO; Putnam Co. TN; Bell, Bexar, Coryell Travis & Williamson Co. TX; OK/ Htx)

Isotomiella Bagnall, 1939 - Isotomidae springtails, Subfamily Isotominae

Isotomiella minor (*Isotoma m.* Schaeffer, 1896) (widespread epigeic in NA, Europe, HI (Kauai, Oahu, Maui, HI)/ Tx in Pima Co. AZ; Jackson Co. IA; Perry Co. MO; Bell, Coryell & Williamson Co. TX; Maui HI; Coronation Island, AK)

Isotomiella undet. sp(s). (Tx? In 6 AK cave)

Isotomodes Linnaniemi, 1907 - Isotomidae springtails, Subfamily Isotominae

Isotomodes denisi Folsom, 1932 (cave near Honokaa, HI/epigeic? In Oahu/ soil Tb?)

Isotomodes undescr.? sp. (Tb in WA)

Isotomurus Börner, 1903 [ALL IDENTIFICATIONS SUSPECT] - Isotomidae springtails, Subfamily Isotominae

Isotomurus bimus Christiansen & Bellinger, 1980 (CA, MI, MO, OR, WA/CO hyporheic?)

Isotomurus palustris (Podura p. Muller, 1776) (Ep in CA, CT, MA/ marsh springtail/ OK hyporheic; Tx? in PQ)

Isotomurus palustroides Folsom, 1937 (Epigeic widespread? in NA/ Tx in cave in TX Co., MO)

Isotomurus retardatus Folsom, 1937 (Epigeic in SW & continental US?/ Tx in cave in Shannon Co., MO)

Isotomurus undet. sp. (TTP in TX, WA)

Isotomurus tricolor (*Isotoma t.* Packard, 1873) (epigeic in FL; KS; LA; MA; NY; OH; ON; TX; VT; WV/ Tx in cave each in Bexar & Coryell Cos., TX)

Janetschekbryas Yosii, 1971 - Entomobryidae springtail, Subfamily Entomobryinae

Janetschekbryas undet. sp. (Ac in Organ C., WV)

Lepidocyrtus Bourlet, 1839 Entomobryidae springtails, subfamily Lepidocyrtinae
Bibl.: Snider 1967a

Lepidocyrtus atropurpureus Packard, 1888 (Tx in Mammoth C., KY)

Lepidocyrtus cinereus Folsom, 1924 (Epigeic widespread epigeic in NA/ HTx (local) in Shasta Co., CA; Hardin Co., IL; Laclede & Texas Cos., MO; Bell, Bexar, Coryell & Travis Cos., TX)

Lepidocyrtus curvicolis (Bourlet, 1839) Gervais in Walckenaer, 1844 (epigeic in IL; NY; OH; Europe) (Tx in cave each in Pettis Co., MO; Wyandotte Co., IN; NC; Ottawa CO., OH)

Lepidocyrtus dubius Christiansen & Bellinger, 1998 (**type locality cave in Bell Co. & cave in Coryell Co., TX/ G1/ Tp?)

Lepidocyrtus finus Christiansen & Bellinger, 1980 (epigeic in AL, LA, KS, AR, MS/ Ac in cave in Burnet Co., TX)

Lepidocyrtus helenae Snider, 1967 (epigeic in continental US, Kansas & e./ Tx in cave in Shannon Co., MO; Eddy Co., NM; Bell Co., TX)

Lepidocyrtus hirtus Christiansen & Bellinger, 1990 (Tx or Ac in El Capitan area caves, Prince Wales Island, seAK)

Lepidocyrtus immaculatus (Tullbergia i. Lie-Petersen, 1897) (global epigeic/ Tx? in HI)

Lepidocyrtus paradoxus Uzel, 1891 (epigeic in Europe, CT, DC, IN, MA, MD, ME, MI, UT, VA, WV/ Tx? in sON)

Lepidocyrtus cf. *ruber* Imms, 1912 (Holarctic epigeic/ Tx in HI anchialine pool & Koloana lowland dry cave)

Lepidocyrtus undet. sp. (Tp guanobitic in Bartow Co., GA)

Lepidocyrtus vita = *Pseudosinalla vita*

Lophognathella Borner, 1908 - Onychiuridae springtails, subfamily Tetrodontophorinae
Lophognathella choreutus Borner, 1908 (epigeic in Japan, OR, CA/ Tx or Ac in 1 cave in Coronation Island, AK)

Mesachorutes Absolon, 1900 - Hypogastruridae springtail, subfamily Hypogastrurinae
Mesachorutes thomomys Chamberlain, 1943 (epigeic in MT/ Tp in cave in Meade Co. SD)

Mesaphorura = *Tullbergia*
Metaphorura = *Tullbergia* subgenus

Metisotoma Maynard, 1951 (= *Cephalotoma* Bagnall, 1949 nec Lesne, 1911) Isotomidae springtails, Subfamily Isotominae

Metisotoma grandiceps (*Isotoma g.* Reuter, 1891; *Isotoma macnamarai* Folsom, 1918; *Metisotoma capitona* Maynard, 1951; *M. spiniseta* Maynard, 1951) [All identifications questionable, probably a number of species] (Epigeic Holarctic, Canada and northern U.S.) (Epigeic in AK, CT, ID, IA, IL, MA, MT, ON, PA., PQ, VT, WI, WV/ type locality cave in Clayton Co., IA/ Tx in AK glacial relict forest / Tx)

Metisotoma undet. sp(s). (Tx? In 1 WV cave)

Microgastrura Stach, 1922 - Hypogastruridae springtails
Microgastrura minutissima (*Achorutes m.* Mills, 1934) (Epigeic in CA, CT, IA, WV/ Tp or Tx in OR C., OR)

Morulina Borner, 1906 - Hypogastruridae springtails, subfamily Morulinae
Morulina crassa Christiansen & Bellinger, 1980 (epigeic in AR; FL; LA; NC/ Tx in cave in Menifee Co., KY)

Morulina undesr. sp. (Ac, Tx or Tp in Vancouver Island, BC)

Morulina undet. sp. (TTx or Ac in NWT)

Morulina multatuberculata (*Neanura m.* Coleman, 1941) (epigeic in BC; CA / Tx in cave in Calaveras Co., CA)

Neanura MacGillivray, 1893 - Hypogastruridae springtails, subfamily Neanurinae, Tribe Protanurini

Neanura* (*Protanura*) *aleo Christiansen & Bellinger, 1992 (type locality & 1 other cave in Molokai HI/ Tp/ epigeic in Maui)

Neanura barberi = *Sensillanura* b.

Neanura* (*Protanura*) *hawaiiensis Christiansen & Bellinger, 1974 (****type locality in

Kazamura C., 3 other caves in Big Island, HI/ Tp/ G1G2)

Neanura (N.) muscorum (Templeton, 1835) (widespread epigeic in Holarctic/ Tx in Jackson & Johnson Cos., IL; Rockcastle Co., KY; Pulaski Co., MO; Albany Co., NY; Mifflin Co., PA; Bell Co., TX; Greenbrier Co., WV; sON; New Brunswick)

Neanura (N.) persimilis Mills, 1934(Epigeic BC; NS and widespread Continental U.S.) (Tx in cave each in Hardin Co. IL; Coryell Co. TX)

Neanura (Neanura) undet. sp. or species (Ac in TX; Tx or Tp in cave in Rockcastle Co., KY)

Neelus Folsom, 1896 - Neelidae springtails

Neelus (Megalothorax) minimus (Willem, 1900) (widespread epigeic/ Tp in Dubuque & Jackson Cos., IA; Hants Co., NS; Scott & Wythe Cos., VA; Pierce Co., WI).

Neelus (Neelides) minutus (Folsom, 1901) (widespread epigeic in NA/ type locality cave in Jackson Co., IA; cave in Williamson Co., 2 in Bell Co., TX/ Tp)

Neelus (Neelus) murinus Folsom, 1896 (widespread epigeic/ Tp in Newton Co. AR; Bell & Travis Co.(5 records), GA (Dade Co.), TX; Tx? in MI cave)

Neosminthurus Mills, 1934 - Sminthridae springtails, Subfamily Sminthuridinae

Neosminthurus clavatus (Smynthurus c. Banks, 1897) (widespread US epigeic/ Htx (local) in Bell, Coryell, Travis (3 records) & Williamson (2 records) Cos., TX)

Neelus undet. sp. (Tx or Ac in 2 AK cave),

Neelus undesc. sp. (*?cave in Coronation Island, AK)

Odontella Schaeffer, 1897 - Hypogastruridae or Odontellidae springtails

Odontella (Odontella) undescr.? species (Tx in Bell, Bexar, Travis Cos., TX)

Odontella (O.) stella Christiansen & Bellinger, 1980 (type locality cave in Clayton Co.,IA/ Epigeic CA; IN; NC; PA/ Tx in cave in Johnson Co., IL)

Oncopodura Carl & Lebedinsky, 1905 - Oncopoduridae or Oncopodurinae springtails in Entomobryidae. **Bibl.:** Mills 1942; Szeptycki 1977; Mills 1934

Oncopodura cruciata Bonet, 1943 (*Lewis & Clark (=Morrison C.) Jefferson Co. MT/ Tb)

Oncopodura fenestra Christiansen & Bellinger, 1996 (type locality & 2 other caves Travis Co. & 3 caves in Williamson Co., TX/ Tb/ G3)

Oncopodura frankae Christiansen & Bellinger,1998 (**type locality & 1 other cave in Lincoln Co. & 1 cave inSierra Co., NM / Tb)

Oncopodura hoffi Christiansen & Bellinger, 1981 (**type locality & 1 other cave in Perry

Co., MO/ Tb/ G1G2)

Oncopodura hubbardi Christiansen & Bellinger, 1996 (type locality & 3 other caves in Lee Co. & 1 cave in Scott Co., VA / Tb/ G1)

Oncopodura iowae Christiansen, 1961 (CO epigeic/ Tp in type locality cave in Jackson Co. IA; caves in Monroe Co., IL (Renault karst area); Boone, Camden, Newton & Pulaski Cos., MO; Custer Co., SD/ G3G4)

Oncopodura mala Christiansen & Bellinger, 1996 (Epigeic CA; OR/ type locality cave in Harney Co. OR; caves in Calaveras, Contra Costa & Tulare Cos.,CA/ G3G4)

Oncopodura prietoi Bonet, 1943 (epigeic far western US from AK to Mex./ Tp?/ G1G2?)

Oncopodura subhoffi Christiansen & Bellinger, 1998 (***?type locality & 1 other cave in Fremont Co. & cave in Garfield Co., CO / Tb/ G1 or G3)

Oncopodura tunica Christiansen & Bellinger, 1980 (type locality cave in Tuolumne Co. & 1 cave in Ventura Co., CA / Tb/ G1G2)

Onychiurus Gervais, 1841 - Onychiuridae springtails, subfamily Onychiurinae

Onychiurus (Protaphorura) armatus Folsom, 1924 (widespread Holarctic epigeic/ Tp? in Calaveras Co., CA; Lawrence Co., IN; Shannon Co., MO; Albany & Schoarie Co., NY; Hants Co., NS; Hawkins Co., TN; CO hyporheic) **Bibl.:** Ek 1993

Onychiurus (Protaphorura) bimus Christiansen & Bellinger, 1980 (widespread continental epigeic in US east of Great Plains/ Tx in cave in Barry Co., MO)

Onychiurus (Protaphorura) casus Christiansen & Bellinger, 1980 (type locality cave in Hardin Co.,IL/ epigeic in PA/ Tp? In Hardin Co. (5 records), IL; Crawford, Harrison, Orange & Washington Cos., IN (S2/G4); Barren, Powell & Pulaski Cos., KY)

Onychiurus (Protophorura) cocklei (Aphorura c. Folsom, 1908; *Aphorura lutea* & *A. montis* Bacon, 1913; *O. irregularis* Chamberlain, 1943) (epigeic in AK, BC, CA, ID, MT, NC, OR, VA, WA/ Tp in IA, KY, PA, VA; Tp or Tx in BC)

Onychiurus (Protaphorura) decus Christiansen & Bellinger, 1980 (MT epigeic on melting snow/Tp in cave in Uinta Mts., Uintah Co., UT),

Onychiurus (Protaphorura) encarpatus Denis, 1931 (widespread US epigeic, alien in HI (Kauai, Oahu, Molokai, Lanai, HI) (Tp in Hawaii, HI; Jackson Co. IA; Johnson Co., IL; Washington Co., IN; Crawford Co., MO; Bell Co., TX)

Onychiurus (O.) eous Christiansen & Bellinger, 1980 (*type locality cave in Clayton Co. IA; /Tb guanobic)

Onychiurus (O.) flavescens Kinoshita, 1916 (epigeic in MT, CA, OR, UT, WA, WY, NWT/ Tx or Ac in BC & 1 cave in Dall Island, AK)

Onychiurus (O.) folsomi Schaeffer, 1900 (widespread epigeic in NA, Japan; alien in Kauia, Maui, HI) (Tp in Hawaii (8 records), HI; Calaveras Co., CA; Bexar Co., TX; Scott Co., VA)

Onychiurus (Archaphorura) gelus Christiansen & Bellinger, 1980 (type locality & 2 other caves in Winneshiek Co., IA.; Richland Co., WI; Skamania Co. (3 caves), WA /Tb glacial relict/ G3G4)

Onychiurus (O.) janus Christiansen & Bellinger, 1980 (type locality & one other cave? in Calhoun Co., AL; cave in Warren Co., VA & cave in Greenbrier; Co., WV/ Tb/ G3G4)

Onychiurus (O.) millsii Salmon, 1959 (epigeic in OR/ Tx or Ac in cave in Prince of Wales Island, AK)

Onychiurus (Protaphorura) obesus Mills, 1934 (*O. acuticornis*) (type locality cave in Clayton Co.+ caves in DE, Dubuque & Jackson Cos., IA; Perry Co.. MO; Filmore Co.. MN; Pierce & Sauk Cos., WI /Tb/ G3G4)

Onychiurus (O.) opus Christiansen & Bellinger, 1981 (epigeic in CA/ type locality cave in Dubuque Co. IA/ Tp?)

Onychiurus (O.) oregonensis Bonet, 1931 (type locality cave in Oregon Caves, Josephine Co., OR & cave in Trinity Co. CA / Tp/ epigeic in OR & MT / G3 or (less likely) G1G2)

Onychiurus (O.) paro Christiansen & Bellinger, 1981 (type locality cave in Marshall Co., AL; & one cave in Scott Co. VA / Tb/ G1G2)

Onychiurus (Protaphorura) parvicornis Mills, 1934 (Epigeic widespread epigeic in continental US east of Great Plains/ Tx in unnamed cave in relict forest, Clayton Co., IA)

Onychiurus (Cerastophysella) pseudarmatus (Folsom, 1917) (epigeic in BC, CA, CT, GA, WA/ Tx or Ac in 1 cave, Prince of Wales Island, AK; Tp or guanophile in NS)

Onychiurus (O.) pseudofimetarius Folsom, 1917 (Epigeic widespread epigeic in continental US/ Tp? in IA; OH; WA Co., AR; Calaveras Co., CA (Tx?); Barry , Franklin, Phelps & St. Louis Cos., MO; Tx in CA)

Onychiurus (O.) ramosus Folsom, 1917 (widespread epigeic in NA/ Tp in Prince of Wales & Dall Islands, AK; Christian, Franklin & Phelps Cos., MO; Flathead & Beaverhead Cos., MT; Duchesne Co., UT; Lee , Russel & Wise Cos., VA; Tp or Tx in Sauk Co., WI)

Onychiurus (O.) reluctus Christiansen, 1961 (epigeic in CA; MO; ND; SD/ [numbers of records beside each State] Tp in IA (7, Jackson, Fayette, Clayton & Dubuque Cos.); IL (3, Jackson,

Pike & Union Cos.); IN (8, Crawford, Harrison, Orange Wa Cos. (S2 /G3)); KY(5, Breckenridge, Carter, Warren Cos.); MO (33, Barry, Camden, Cedar, Jefferson Cos.); MN (1); OH(4); PA (2, Miffling Co.); TN(?); WI(5, Crawford & Pierce Cos.))

Onychiurus (Protaphorura) reus Christiansen & Bellinger, 1980 (Tp or Tx? in PA; Randolph Co., AR; Calhoun & Union Cos., IL; Rockcastle Co., KY: Isle Wise & Tazewell Cos., VA)

Onychiurus (Protaphorura) sibiricus (Tullberg, 1876) (Northern Holarctic epigeic/ Tx? in Dall Isl., AK; Rockcastle Co., KY & Warren Co., VA)

Onychiurus (Protaphorura) sibiricus group sp. 1 (not known in NA) (Ac or Tx in 1 cave in Dall Island, AK)

Onychiurus (Protaphorura) sibiricus group sp. 2 (not known in NA) (Ac or Tx in 1 c in Dall Island, AK)

Onychiurus (Protaphorura) similis Folsom, 1917 (widespread epigeic in NA/ Tx in Collingsworth Co., TX; & cave in Duchesne Co. UT)

Onychiurus undescr. sp.#1 (near *O. paro*, poss. new sp./OR & Shannon Cos., MO/Tb?)

Onychiurus undescr. sp.#2 (near *Onychiurus pseudofimetarius*, poss. new sp./?* Cave om OR Co., MO)

Onychiurus undescr. sp.#3 (Blue River basin, Harrison & Crawford cos./Tb)

Onychiurus undescr. sp.#4 (cave in Hardin Co., IL +6 KY C./Tp) & sp. #5 (Tx or Ac in Dall Island cave, AK)

Onychiurus (O.) undescr. sp.? (Ac? in Burnet Co., TX)

Onychiurus (Protaphorura) undescr. sp. (?Ac in cave in Travis Co., TX)

Onychiurus undet. sp.1-? (Tb in AL; Tp in IL, Peachtree C., DE Co., OK; cave each in Crawford & Taney Cos., MO; Carter & Wayne Cos., KY Tp &/or TTP in WA; Ac in TX; Tx? (*Protaphorura* subgenus) in PQ; Tp or Tx in 11 AK cave; Tx or Tp in Vancouver Island, BC & Morrison C., MT))

Onychiurus (Protaphorura) subtenuis Folsom, 1917 (widespread NA epigeic/ Tp or Htx in Johnson Co., IL; Orange (3 records) & Crawford Cos., IN; Texas Co., MO; 1 cave in Prince of Wales Island, AK)

Onychiurus (Protaphorura) uenoi Yosii, 1954 (epigeic in OK, CA) (Tp or Tx in 1 cave in Shasta Co. CA).

Orchesella Templeton, 1835 - Entomobryidae springtails, subfamily Orchesellinae

Orchesella texensis Snider 1997 (Tp? in Burnet, Travis, Williamson Cos., TX)

Orchesella celsa Christiansen & Tucker, 1977 (epigeic in AR, IL, IA, LA, MO, NC, PA, SC, TN/

Ac in Travis, Williamson Cos., TX)

Paranura Axelson, 1902 - Hypogastruridae springtails

Paranura cf. *anops* Christiansen & Bellinger, 1980 (epigeic in CA/ CO hyporheic),

Paranura colorata (*P. sexpunctata colorata* Mills, 1934) Christiansen & Bellinger, 1980
(Epigeic in CA, IN, MD, NC ,SC, UT Tx or Ac in 3 AK caves)

Parasinella - See *Sinella cavernarum*

Parisotoma notabilis = *Desoria*

Pogognathellus = subgenus of *Tomocerus*

Proisotoma Börner, 1901 (in part) Isotomidae springtail, Subfamily Isotominae

Proisotoma (*Ballistura*) *antigua* (*Guthriella a.* Folsom, 1937) (epigeic in LA; MO; WV/ Tx in cave in Marion Co., AR)

Proisotoma perparva Jackson, 1927 (Caribbean, HI epigeic/TTx alien? in HI)

Proisotoma undet. sp(p). (TTp in TX, WA; hyporheic in CO)

Proisotoma undescr. sp. (Tx or Tp in <5 AK cave in El Capitan area, Prince Wales Island, AK)

Proisotoma (*Appendisotoma*) *veca* (Wray, 1952) (epigeic in IA; IL; NJ/ Tx in cave in Clayton Co., IA)

Proisotoma (*Appendisotoma*) *dubia* Christiansen & Bellinger, 1980 (Ep in CA, ND/ Ac in cave? in Burnet Co., TX)

Proisotoma (*Appendisotoma*) *vesiculata* (*Proisotoma* (*A.*) v. Folsom, 1937) Skidmore, 1995
(epigeic in CT; IN; ON/ Tx in cave in Clayton Co., IA)

Proisotoma (*P.*) *minuta* Tullberg, 1871 (= *P. clavipila* (Axelson, 1903)) (Epigeic widespread epigeic/ Tp in Hardin Co., IL; Fillmore Co., MN; Franklin Co., TN; Bexar, Travis & Williamson Cos., TX; UT, WA)

Protanura Börner, 1906 = subgenus of *Neanura*

Protanura hawaiiensis = *Neanura* (*P.*) *h.*

Protaphorura Absolon, 1901 = subgenus of *Onychiurus*

Pseudachorutes Tullberg, 1871 - Hypogastruridae springtails, Subfamily Pseudachorutinae

Pseudachorutes aureofasciatus (*Gnathocephalus a.* Harvey, 1898; *P. millsii* Maynard, 1951)
(widespread epigeic in NA/ Tx in cave in Clayton Co. IA)

Pseudachorutes (*P.*) *saxatilis* Macnamara, 1920 (Tx or Ac in 1 IL cave)

Pseudachorutes (P.) simplex Maynard, 1951 (widespread continental epigeic in US e. of Mississippi + PQ) (Tx in Unamed (Hardin CO.) & Devils Backbone (Jackson Co.), IL; KY; WV)

Pseudosinella Schaffer, 1897 – Entomobryidae springtails. **Bibl.:** Christiansen 1960, 1961, 1988; Christiansen, da Gama, & Belling 1983; de Gama 1973

Pseudosinella aera Christiansen & Bellinger, 1981 (Epigeic in AL; AR; CA; LA; MA; SC/ Tp in St. Clair Co., AL; Gallatin, Johnson & Dade Cos., IL; Shannon Co., MO; Henry, Dade?, Newton Cos., KY; OH; Coffee, Decatur, Franklin, Montgomery, Roberts & Wilson Cos., TN; Williamson Co., TX; Shenandoah Co., VA; WV)

Pseudosinella alba (Packard, 1873) (Epigeic widespread epigeic in mid continental US & sCanada/ Tx in 1 cave each in Filmore Co., MN & Hants Co., NS & ON)

Pseudosinella argentea Folsom, 1902 (Epigeic widespread epigeic in continental US e. of great plains/ wdespread Tp in AR; IN; MO; PA; TN; WV & VA; Jefferson & Jackson Co. AL; Jackson Co., FL; Hardin & Monroe Co. IL; Edmonson (Mammoth C.) & Henry Co. KY)

Pseudosinella bona Christiansen & Bellinger, 1996 ** (type locality cave in Roanoke Co. & 1 cave in Washington Co. VA/ Tb)

Pseudosinella boneti Christiansen, 1960, nec Bagnall, 1941 = *P. christianseni*

Pseudosinella certa Christiansen and Bellinger, 1980 (**? type locality cave in Randolph Co., WV/ Gandy Cr. cave springtail/ S1G1)

Pseudosinella christianseni Salmon, 1964 (artificial taxon comprised of series of species all of which are highly troglomorphic) (type locality cave in White Co., TN / Tb in GA (Walker, Dade Cos.), KY (Pulaski, Wayne, White Cos.), WV (Randolph Co.), TN (White, Grundy Cos.), FL (Jackson Co.), & AL (DeKalb, Jackson, Morgan Cos.) / G4G5)

Pseudosinella collina Wray, 1952 (widespread epigeic in NA east of Great Plains) (Tp in Blount & Calhoun Cos., AL; Carter, Wayne, Pulaski & Christians Cos., KY; WA Co., IN (S1/G2); Wayne Co., MS; Caldwell & Polk Cos., NC; Blount, Carter, Grundy, Montgomery & Sullivan Cos., TN; Bath & Wythe Cos., VA; New Brunswick)

Pseudosinella dubia Christiansen, 1960 (type locality & at least 3 other caves in WA Co., AR; cave each in Dent Co., MO & White Co., TN/ Tb/ G1G2)

Pseudosinella extra Christiansen & Bellinger, 1996 *** (type locality & 2 othe caves in Scott Co. VA/ Tb/ Tm)

Pseudosinella erehwon Christiansen & Bellinger, 1996 (**type locality cave in Scott Co. & cave in WA Co., VA /Tb/ G1)

Pseudosinella espanita Christiansen & Bellinger, 1996 (*Mammoth C. KY /Tb/ G1G2)

Pseudosinella espana Christiansen, 1961 (type locality cave in Stone Co. + caves in Christian, Newton & Oregon (3 records) Cos., MO; Mammoth C., KY; Montgomery Co., TN /Tb /Tm, Tb/ G1G2)

Pseudosinella flatua Christiansen & Bellinger, 1996 **?(type locality cave in Swain Co., NC & cave in WA Co., VA / Tb/ G1 or G1G2)

Pseudosinella folsomi Mills, 1931 (Epigeic AR; IL; LA; MS; TX) (Tp in cave each in Barry, Camden & Phelps Cos., MO; cave in Bexar Co., TX; cave or caves in GA)

Pseudosinella fonsa Christiansen & Bellinger, 1996 (type locality & 2 other caves in Clark Co., 2 caves in Harrison Co., cave each in Jennings, Monroe, WA Cos. + cave or caves in Clark & Crawford Cos., IN (S2/G2); one cave in Adams Co., OH/ Tb/ G3G4)

Pseudosinella georgia Christiansen & Bellinger, 1998 (**type locality & 2 other caves in Walker Co., GA / Tb)

Pseudosinella gisini virginia Christiansen & Bellinger, 1996 (**type locality cave in Lee Co. & cave in Russell Co., VA/ Tb)

Pseudosinella gisini g. (Christiansen, 1961) (type locality cave in Greenbrier Co. + Pocahontas & Monroe Cos., WV/ abundant Tb).

Pseudosinella gisini carolina Christiansen & Bellinger, 1996 *** (type locality & 2 other caves in Rutherford Co. NC / Tb)

Pseudosinella granda Christiansen & Bellinger, 1996 (**?type locality cave in Augusta Co. & cave in Scott Co., VA/ Tb/ G3)

Pseudosinella hirsuta (*Troglosinella h.* Delamare Deboutteville, 1949) Christiansen, 1961 (1 epigeic record in TN/ (type locality cave in Hamilton Co.(TN) + caves in nAL (Blount, Calhoun, Colbert, De Kalb, Etowah, Jackson, Lauderdale, Limestone, Madison, Marshall, Morgan Cos.), nwGA (Dade, Pike, Polk, Stephens Cos.), c&eKY (Adair, Barren, Edmonson (Mammoth C.), Gallatin, Grayson, Green, Hardin, Larue, Metcalfe, Monroe, Pulaski, Taylor, Warren, Wayne, Woodford Cos.(, TN (Bedford, Campbell, Clay, Coffee, Davidson, Fentress, Franklin, Giles, Johnson, Maury, McNairy, Pickett, Smith, Sumner, Wilson Cos., S3), eVA (Lee Co.), WV; nwFL/ Tb/ G3 or / G2G4)

Pseudosinella nata Christiansen & Bellinger, 1981 (*type locality cave in Jefferson Co., AL /Tb/ G1 or/ G1G2)

Pseudosinella octopunctata Börner, 1901 (epigeic in MO & west in NA; Hawaii , Molokai & Maui HI) (Tx? in cave each in Stone Co. MO & Travis Co., TX)

Pseudosinella ops Christiansen & Bellinger, 1998 (type locality cave in Scott Co. & cave each in

Montgomery & Russell Cos., VA / Tb)

Pseudosinella orba Christiansen, 1961 (type locality cave in Sullivan Co. TN; McDowell Co., NC; VA (Bath, Bland, Craig, Giles, Pulaski, Russell, Scott, Smyth, Sussex, Tazewell, Wise, Mecer, Mineral Cos.); Mercer & Mineral Cos., WV (S1); NM?, KY/ Tb/ G3G4 or G4G5)

Pseudosinella pecki Christiansen & Bellinger, 1981 (type locality cave in Jackson Co.(FL); Jackson Co. AL; Decatur, Randolph, Stephens & Stewart Cos., GA; cave ni Swain Co., NC; TX/ Tb/ G3G4)

Pseudosinella petterseni Bonet, 1934 (all Nearctic records are *P. violenta*)

Pseudosinella rolfsi Mills, 1932 (widespread epigeic in continental US) (Tx? in cave each in Metcalfe Co., KY & Pulaski Co., VA)

Pseudosinella sexoculata Schoett, 1902 (*Entomobrya (S.) aglis* Harvey, 1900, *Lepidocyrtus s.*) (type in Carlsbad C.(NM), epigeic in Europe; widespread in Continental U.S.) (Tx in caves in CA, IA, NM, TN, VA, WV; Tp or Tx in CA, KY),

Pseudosinella prob. undescr. sp.#1 (*cave near Honolulu, Oahu/Tp or Tx)

Pseudosinella prob. sp.#2 (*cave in Jackson Co.,AL/Tb)

Pseudosinella prob. sp.#3 (***? 3 caves in Walker Cos.,GA/ Tp or Tb) **Bibl.:** Buhlmann, 1996

Pseudosinella undet. sp. (Tx or Tp in Jefferson Co., MT)

Pseudosinella undescr. sp.#1 (WV/Tb/ S1G1)

Pseudosinella undescr. sp.#2 (2 cos. in IN/ Tb)

Pseudosinella undescr. sp.#3 (*cave in Hawkins Co.,TN/Tb)

Pseudosinella undescr. sp.#4 (*cave in WA Co.,VA/Tb)

Pseudosinella undescr. sp.#5 (*cave in Johnson Co.IL/Tb?)

Pseudosinella undescr. sp.#6 (*cave in Newton Co.,AR)

Pseudosinella undescr. sp.#7 (near *P. collina*) (cave in Harrison Co.,IN/ S1G1)/ Tp)

Pseudosinella undescr. sp.#8 (3 caves in Pigeon Mt. caves and Pricks Cave, Walker Co., GA)

Pseudosinella spinosa (T.s. Delamare Deboutteville, 1949) (type locality cave in Madison Co. + caves in Jackson. Marshall, Morgan & Shelby Cos. AL; Pulaski Co.,KY; Dade Co. GA; TN (DeKalb, Franklin, Grundy, Lincoln, Putnam, Sumner, Warren, Washington, White Cos.)/ Tb/ G3G4) **Bibl.:** Christiansen 1960; Christiansen & Bellinger 1980

Pseudosinella testa Christiansen & Bellinger, 1981 (**type locality cave in Mercer Co., WV & cave in Scott Co., VA/ Tb/ G1G2)

Pseudosinella vespera Christiansen & Bellinger, 1996 *(type locality cave in Rutherford Co. &

cave in Swain Co., NC /Tb/ G1G2)

Pseudosinella violenta Folsom, 1924 (Epigeic widespread epigeic in NA/ Tp throughout continental U.S. but dominant in TX, NM, lesser in AL, AZ, AR, CA, IA, KY, n.Mexico, MI, MO, NY, OK, ON, SD, TN, UT, VA, WI, WV) **Bibl.:** Christiansen & Culver 1969; Davis & Harris 1936

Pseudosinella vita Christiansen & Bellinger, 1981 (*type locality cave in Lincoln Co. NM/ G1 or G1G2/ Tb)

Ptenothrix Linnaeus, 1758- Sminthuridae springtails, Subfamily Dicyrtominae

Ptenothrix* (*Ptenothrix*) *atra Linnaeus, 1758 (NA epigeic east of Great Plains (1 record for BC & 1? for UT) (Tx in cave each in Johnson Co., IL; Clark & Jennings Cos., IN; Carter & Madison Co., MO)

Ptenothrix* (*P.*) *californica Christiansen & Bellinger, 1980 (epigeic in AZ, CA) (Tx in cave in Amador Co., CA)

Ptenothrix* (*P.*) *maculosa (Schoett, 1891) (epigeic in BC; CA; ON; OR/ Tx in Calaveras (3 records), Mariposa, Santa Cruz, Shasta & Tuolumne Cos., CA; Lincoln Co. OR)

Ptenothrix* (*P.*) *marmorata (Packard, 1873) (*Ptenothrix m. & oswegatchiensis*, *Papirius testudineatus*) (widespread epigeic in NA/ HTx in AL (Marshall Co.); KY (Wayne Co.); Netwon Co. AR; Calaveras Co., CA; Jefferson & Harrison Cos., IN; Boyle Co., KY; Crawford, Howell & Texas Cos., MO; Rutherford Co., NC; Coryell, Hays & Travis Cos., TX; WV (Monroe Co.); cave in NS; New Brunswick)

Ptenothrix* (*Bothriovulsus*) *pineolae (*P. pineolae* Wray, 1946) (epigeic in MI,NC/ Tx in Jackson Co., IL)

Ptenothrix undet. sp. (Tx or Tp in BC)

Salina MacGillivray, 1894 - Entomobryidae springtails

Salina maculata Folsom, 1932 (Ac in HI)

Schaefferia Absolon, 1900 - Hypogastruridae springtails, subfamily Hypogastrurinae

Schaefferia* (*Typhlogastrura*) *alabamensis Thibaud, 1975 (***?type locality & 1 other cave in Jackson Co. & cave in Blount Co., AL/ G1/ Tb/ G3)

Schaefferia* (*Typhlogastrura*) *christianseni Thibaud, 1975 (*type locality cave in Morgan Co. AL/ Tb/ G1G2)

Schaefferia* (*Schaefferia*) *hubbardi Thibaud, 1995 **?(type locality cave in Highland Co. & cave in Scott Co., VA / G3 or (less likely) G1/ Tb)

Schaefferia (*Typhlogastrura*) tentatively undescr. sp.#1 (*?cave in Johnson Co.,IL/Tp? or Tb)

Schaefferia (*Schaefferia*) tentatively undescr. (s.Str.) sp. #2 (TX/ Tb)

Schaefferia (*T.*) *valentini* Thibaud, 1996 (type locality cave in Scott Co. + caves in Pulaski. Russell (1 record), Scott (7 more records) & Wythe (1 record) Cos. VA/ Tb/ G3 or (less likely) G1)

Seira Lubbock, 1869 - Entomobryidae springtails, subfamily Entomobryinae

Seira bipunctata (*Lepidocyrtus b.* Packard, 1873) (epigeic in BC; CA; FL; LA; NE; SC) (Tx in Carlsbad Caverns, Eddy Co., NM)

Seira distincta Mari-Mutt, 1986 (epigeic in MA; Mexico, PR) (Tx in cave in Bexar Co., TX)

Seira dubia Christiansen & Bellinger, 1981 (type locality & 1 other cave in Culbertson Co. TX/ epigeic in AZ; NM, TX/ Tx)

Seira knowltoni (*Drepanocyrtus k.* Wray, 1953) (epigeic in AZ; CA; CO; NM; UT; WY/ Tx in Carlsbad Caverns, Eddy Co., NM)

Seira lelo Christiansen & Bellinger, 1981 (Steaming Bluff Tr., HI Volcanoes Natl. Park, HI/volcanic vent)

Seira reinhardi (D. r. Mills, 1931) (epigeic in TX/ Htx in cave each in Clark Co. IN, Eddy Co., NM; Bexar & Travis Cos., TX)

Seira undescr.? sp. (Tx or Tp in Pima Co.,AZ)

Sensillanura Deharveng, 1981 - Hypogastruridae springtails, subfamily Neanurinae

Sensillanura (*Americanura*) *bara* Christiansen & Bellinger, 1980 (epigeic in IL; LA; TN; NC; PA; WV; QU/ Tx in Edmonson (Mammoth C.) & Barren Cos., KY)

Sensillanura (*s.s.*) *barberi* (*Achorutes b.* Handschin, 1928; *A. quadrioculata* Folsom, 1916; *S.q.* Guthrie, 1903; *S. pseudoquadrioculata* Stach, 1951; *Neanura p.*) (epigeic in DC; IL; IN; MN; NY; PA; WV) (Tx in Unnamed, Hardin Co., IL; cave each in Harrison & Orange Cos., IN (S1/G2); cave in Barren Co., KY; cave in Augusta Co., VA; WV cave)

Sensillanura (*s.s.*) *caeca* Folsom, 1916 (epigeic in CA; IA; IL; IN; NC; PQ; NC; TN) (Tx in cave each in Winnesheik CO., IA; Hardin Co., IL; Harrison Co.,IN)

Sensillanura (*s.s.*) *millsi* Christiansen & Bellinger, 1980 (epigeic in CO; IL; IN; PA; OR; WI/ Tx in cave each in Jackson Co., IL & Orange Co., IN)

Sinella Brook, 1883 - Entomobryidae springtails, subfamily Entomobryinae

Sinella (Sinella) aera Christiansen & Bellinger, 1980 (epigeic in AL; GA; KY; LA; OR) (Tp in St. Claire Co. AL; Marion Co., AR; Gallatin & Johnson Co., IL; Henry, Johnson, Pulaski & Wolfe Cos., KY; Crawford, Dade, Newton, Phelps & Texas Cos., MO; Coffee, Decatur, Franklin, Montgomery, Robertson, Warren & Wilson Cos., TN; Williamson Co., TX; Shenandoah & Warren Co., VA; Ritchie & Hampshire Cos., WV)

Sinella (S.) agna Christiansen & Bellinger, 1980 (type locality cave in Tucker Co. + Berkeley, Mineral, Pocahontas, Preston, Randolph, & Tyler Cos., WV, & Livingston & Rockcastle Cos., KY /Tb/ G2G3)

Sinella (S.) alata Christiansen, 1960 (type locality cave in Monroe Co., & caves in Clark, Greene, Harrison, Jefferson, Jennings, Kosciusko, Lawrence, Orange, Washington Cos., IN, mostly in Blue River area, IN / wingless winged cave springtail/ Tb/ state T&E S2, G3)

Sinella (S.) avita Christiansen, 1960 (type locality cave in Johnson Co., IL; caves in Crittenden, Grant, Harrison, Livingston Cos., KY; Clark, Crawford & Harrison Cos., IN (S1); Franklin, Jefferson & WA Cos., MO / Tb/ G4G5 or (less likely) G3)

Sinella (S.) baca Christiansen & Bellinger, 1981 (type locality cave in Santa Cruz Co. +Amador, Baca, Calaveras (4 records), Mariposa, Napa, Santa Cruz (6 records), Shasta, & Tuolumne Cos., CA; Kendall Co., TX; Vancouver Island, BC/ Tb/ G3G4)

Sinella (S.) barri Christiansen, 1960 (type locality cave in Perry Co. + Harrison Co.,IN (Epigeic) (Widespread in caves of AL (Marshall & De Kalb Cos.), AR (Izard, Lawrence, Randolph & Stone Cos.), Carroll & Hardin Cos. IL (rare, 3 records); Edmonson (Mammoth C.), Barren, Henry, Grayson & Ohio Cos., cKY; Jefferson,Perry & WA Cos. MO, VA(Alleghany, Giles, Scott, Smythe, WA Cos.), cTN(11 cos., Blount, Campbell, Cannon, Cumberland, DeKalb, McMinn, McNairy, Maury, Monroe, Perry, Robertson, Sumner, Union, Warren, Wayne Cos.)/ rare (Ac?) epigeic/ G5 or (less likely) G4G5), & WI (1 record each) / Tb)

Sinella (S.) basidens (S.b. var. cavernarum Bonet, 1934) Bonet, 1935 (type locality cave in Fayette Co. +8 other cos.(KY) +neHighland Rim, TN(Clay Co.) & Monroe Co.,IN/ Tb, Tm/ G3G4)

Sinella (S.) binocularata (Schott, 1896) (epigeic in CA & OR; 1 questionable record in SC) (Tx? in cave in Calaveras CO., CA)

Sinella (Coecobrya) borerare Christiansen & Bellinger, 1992 (epigeic on Hawaii, Lanai, Maui & Oahu, HI/ Tx? in cave in Maui, HI)

Sinella (Coecobrya) caeca Schoett, 1896 - see *S. tenebricosa*

Sinella (Sinella) cavernarum (Degeeria c. Packard, 1888; *Sinella lucifuga* Folsom, 1902) (Epigeic in CT; DC; IL; IN; KY (Mammoth C.); PA/ Tp in Wyandotte C. (type), Crawford

Co.,IN; widespread in caves of IN (Clark, Crawford, Greene, Harrison, Jennings, Washington Cos.); KY (Barren, Breckenridge, Carter, Christian, Crittenden, Edmonson, Hardin, Hart, Henry, Jackson, Jessamine, Livingston, Woodford); OH (Adams Co.); IL (Hardin, Lee, Saline & Union Cos); MD (Alleghany & Garrett Cos.); MO (Franklin, Jefferson & Washington Cos.); OH (Adams, Highland, Ottawa, Ross, Wyandotte Cos.); PA (Center, Huntington & Mifflin Cos.); ncTN (Dickson, Hardin & Montgomery Cos.); TX; VA (Alleghany, Washington & Warren Cos.) & WV (Pendleton Co.)/ IN S2G3, G4G5)

Sinella* (*S.*) *curviseta Brook, 1882 (global epigeic, tramp species) (Tx in Edmonson & Fayette Cos.. KY; Oregon Co., MO; Williamson Co., TX; Montgomery Co., VA; Wind Cave, Custer Co., SD)

Sinella* (*S.*) *hoffmani Wray, 1952 (type locality cave in Alleghany Co. & caves in Bath, Botetourt, Highland, Lee, Roanoke, Rockbidge, Tazewell Cos., VA + caves in WV (Berkeley, Grant, Greenbrier, Hampshire, Mercer, Mineral, Monroe, Morgan, Pendleton, Pleasants, Pocahontas, Peston, Putnam, Randolph, Ritchie Cos.), MD (Garrett & Allegany Cos.) & Somerset Co.(PA)/Tp or Tb, rare WV & NC Ep/VA S2S3 T&E rank, G4G5), Widespread in Appalachian caves from Mercer Co. WV to Somerset Co. PA / Tb/ Tm/ G4G5)

Sinella* (*S.*) *kekelereri Christiansen, 1960 (type locality cave in Jackson Co., + caves in Carter, Estill, Jackson (4 records), Larue, Lee, Powell (3 records) & Rockcastle (10 records) Cos., KY; Tyler, Randolph & Tucker Cos., WV; ec TN(Clay Co.) & neAL? / Tb, Tm/ G3G4)

Sinella* (*Coecobrya*) *kukae Christiansen & Bellinger, 1992 (*type locality cave in Maui, HI /Tb/ G1)

Sinella* (*Coecobrya*) *lua Christiansen & Bellinger, 1992 (*type locality cave in Oahu, HI /Tb/ G1)

Sinella lucifuga = *S. cavernarum*

Sinella* (*Coecobrya*) *nupa Christiansen & Bellinger, 1992 (*type locality cave in Maui, HI /Tb/ G1)

Sinella* (*S.*) *quadrioculata Mills, 1935 (epigeic in CA & WA/ Tp? in unnamed CAVE, Calaveras Co., CA)

Sinella* (*S.*) *sexoculata (*Entomobrya* s. Schoett, 1896) (epigeic in CA; OR./Tp in Amador, Calaveras (13 records) Mariposa, Santa Cruz & Tuolumne (3 records) Cos., CA; cave in Harney Co., OR / Tp)

Sinella undescr. sp. #1 (CA/Tb)

Sinella undescr. sp. #2 (*cave in Crawford Co.,IN/ Tb)

Sinella undescr. sp.#3 (Jennings Co.,IN/ Tb)

Sinella undescr. sp. #4 (WV/Tb)

Sinella undescr. sp.#5 (TX/ Tb)

Sinella undet. sp. (Tx or Tp in Vancouver Island, BC?)

Sinella* (*S.*) *tecta Christiansen & Bellinger, 1981 (type locality & at least four other caves in *Calaveras Cos., CA /Tb/ G1G2)

Sinella* (*Coecobrya*) *tenebricosa Folsom, 1902 [species generally called *S. caeca*] (epigeic, probably global, tramp species) (Tp? in AL; AR; AZ; CA; FL; IA; KS; KY; MN; MO; OH; OK; PA; TX; VA; WI; alien? Tp in HI (feeding on root sap)

Sinella* (*S.*) *yosii Christiansen & Bellinger, 1974 (type locality in Kazumura C., near Kaumana; widespread in caves of HI & Maui, HI/Tb, one epigeic record near Lanai, HI/ G3)

Sminthurides Börner, 1900 - Sminthuridae springtails, Subfamily Sminthurinae

Bibl: Folsom & Mills 1938

Sminthurides aquaticus* (*Smynturus a. Bourlet, 1843) (NA,much of world/Tx? in OK)

Sminthurides* (*Polykatianna*) *intermedius Snider, 1978 (CT,I L ,IN, MD/ Tp? in IA)

Sminthurides* (*S.*) *hypogramme Pedigo, 1966 (Ep in IN, IA/ Tx or Tp in cave in Harrison Co.,IN (S1))

Sminthurides* (*S.*) *malmgreni* (*Sminthurus m. Tullberg, 1876) (Epigeic worldwide?, widespread NA) (Tx in Hardin, Jackson & Johnson Co. IL; Crawford & Harrison (2 records) Co. IN (T&E S2/ Malmgren's springtail)

Sminthurides* (*S.*) *occultus Mills, 1934 (Ep in CA?,IL, IN, IA, MB, MI, NC, ON, TN/ Tx in WA Co.,IN),

Sminthurides* (*S.*) *weichseli Christiansen & Bellinger, 1980 (epigeic in IL & IN/ Tx in cave each in Hardin Co., IL & Harrison Co.,IN/ T&E S2)

Sminthurinus Börner, 1901 - Sminthuridae springtails, Subfamily Katianninae

Sminthurinus* (*Sminthurinus*) *elegans* (*Smynturus e. Fitch, 1863) (Epigeic global widespread/ Tx in cave in Travis Co., TX)

Sminthurinus* (*S.*) *henshawi* (*Smynturus h. Folsom, 1896) (widespread epigeic in NA/ Tx in cave in Travis Co., TX)

Sminthurinus* (*Katiannina*) *macgillivrayi* (*Smynturus m. Banks, 1897; *S. altamontus* Wray, 1848; *S. batrachos* Wray, 1848; *M. batchi* Snider, 1969) (widespread Ep in E/ Tx in WA Co.,IN (S4/G4))

Sminthurinus* (*S.*) *quadrimaculatus* (*Smynturus q. Ryder, 1879) (widespread epigeic in NA, Mexico, Hawaii) (Tx in 2 caves in Travis Co., TX)

Sminthurus Latreille, 1802 - Sminthridae springtails, Subfamily Sminthurinae

Sminthurus undet. sp. (Tx? in 3 AK caves; Tx? in Vancouver Island, BC)

Tomocerus Nicolet, 1842 - Entomobryidae springtails, subfamily Entomobryinae. **Bibl.** Christiansen, 1964

Tomocerus (Pogonognathellus) bidentatus Folsom, 1913 (epigeic in AL; CT; DC; IL; Manitoba; MD; NC; NY; ON; TN; WA; WV) (type locality cave in Montgomery Co., VA +AL; CA; GA (Walker Co.); IL; IN; KY (Mammoth C.); MD; NC; OH; TN; VA; WV/ Tp/ IN T&E S3)

Tomocerus (Plutomurus) brevimucronatus Denis, 1928 (epigeic in CA; OR; WA/ Tp in Mariposa, Mendocino, Santa Clara, Santa Cruz, Siskiyou & Trinity Co. CA; Josephine Co. OR (3 records, OR C.); NM?; BC)

Tomocerus (Plutomurus) californicus (Tritomurus c. Folsom, 1913) (type locality cave in Santa Clara Co. + caves in Mendocino, Santa Cruz (5 records) & Shasta (10 records) Cos., CA; OR (OR C., Josephine Co.) /epigeic in CA & OR/ Tp & Tm/ G3)

Tomocerus (Pogonognathellus) celsus Christiansen, 1964 (type locality cave in Calaveras Co. +Amador (4 records), Calaveras (39 records), El Dorado, Mariposa (4 records), Siskiyou, & Tuolumne (6 records) Cos., CA / epigeic in AZ; OR/ Tb or Tp)

Tomocerus (Tomocerina) curtus Christiansen, 1964 (epigeic in CO & NM/ Tp? in cave in Siskiyou Co., CA; cave each in Jones Co., IA; Santa Fe Co., NM; Josephine Co., OR; caves in 3 cos. in nMex.)

Tomocerus (Pogonognathellus) dubius Christiansen, 1964 (epigeic in AK; AR; BC; CA; FL; GA; KY; MS; NC; TN; WV) (type locality cave in Johnson Co.,TN & caves in DeKalb & Jackson Cos., AL; CA; Alachua Co., FL; Bartow Co, GA; Barren, Edmonson, Johnson & Rockcastle Cos., KY; Pulaski Co., MO; Highland Co., OH; Sullivan & Johnson Cos., TN; Coryell Co., TX/ Tp)

Tomocerus (Pogonognathellus) elongatus Maynard, 1951 (epigeic in AK; AR; IL; IA; KY; ME; MO; NH; NY; NC; OH; PA; VA; WV; WY) (Tx in AR; caves in Harrison. Jennings, Clark, Crawford, Orange & WA Cos., IN (S3/G4); cave in Pulaski Co., MO)

Tomocerus (Pogonognathellus) flavescens (Macrotoma f. Tullberg, 1871) (*T. alba, americanus, arcticus, pallidus* Giovannoli, 1933, *T. separatus & plumbea* var. *p.* Packard, 1888; *T. plumbeus* var. *pallida*. Packard, 1886) (type locality cave in Carter Co., KY/ Epigeic widespread N.A. & Europe; Found in virtually every cave region in N.A./Tp in AK, AL, AR, CA, GA, ID, IL, IA, IN(6 cos./S3/G4),KY (Mammoth C., Rockcastle, Edmonson,.Hart Cos.), MD, MO, NWT, OH, OK, ON, PA, SC, TN, TX, UT, VA, WI, WV) **Bibl.:** Christiansen 1964; Christiansen & Bellinger 1980

Tomocerus* (*Plutomurus*) *grahami Christiansen, 1980 **?(type locality cave in Santa Fe., CO., & cave in Coconino Co. AZ /Tb, Tm/ G1G2)

Tomocerus* (*Tomocerina*) *lamelliferus Mills, 1934 (Epigeic widespread in NA/ Tx in Madison Co., AL; Marion Co., AR; El Dorado Co., CA; Jackson Co., IA; Harrison Co., IN (S1/G4); Lee Co., KY; Christian, Franklin, Oregon & Texas Cos., MO; Eddy Co. NM)

Tomocerus* (*Tomocerus*) *minor (Lubbock, 1862) (epigeic in BC; HI (alien in all islands); MA; ME; OR; WA; CA/ Tx in cave each in Big Island, Maui & Molokai, HI; cave in Bell Co., TX; PQ)

Tomocerus* (*Lethemurus*) *missus Mills, 1932 (type locality cave in Jersey Co. & cave in Monroe Co., IL; Harrison Co., IN (S1); Boone, Jefferson, Perry, Ripley, Ste. Genevieve Cos, MO; Garfield & Rio Blanco Cos., NY; KY/ Tb /Tm/ G4G5)

Tomocerus plumbeus - see *T. flavescens*

Tomocerus undescr. sp. #1-2 (*cave in Prince Wales Island, seAK)

Tomocerus undescr. sp.? (near *T. californicus* Folsom, 1913 - troglomorphic near Tb in Crystal C., Tulare Co., CA)

Tomocerus* (*Tomocerus*) *vulgaris (*Macrotoma v.* Tullberg, 1871) (epigeic in Holarctic) (Tx in Plumas & Tuolumne Cos., CA; WA Co., IN; Centre Co., PA; OR; WA; Pierce & Richland Cos., WI)

Tomocerus* (*Plutomurus*) *wilkeyi Christiansen, 1965 (type locality cave in Plumas Co., CA/Primarily Ep in AZ, CA, CO, ID, OR, WA; Tp in Cochise & Coconino (3 records) Co. AZ; Calaveras (7 records), Mariposa (3 records), Plumas, Santa Cruz (6 records), Siskiyou & Tuolumne Cos., CA; OR C., Josephine Co., OR; Cache & Utah Cos., UT; Klickitat & Skamania Cos., WA)

Tricanthella Schaffer, 1897 - Hypogastruridae springtails, subfamily Hypogastrurinae

Tricanthella* *copelandi (*Clingmantha c.* Wray, 1963) (Epigeic in Sevier Co., TN/ Tx in White Co., TN)

Tritomurus - see *Tomocerus bidentatus*, *californicus*, *missus*

Troglosinella = *Pseudosinella* (see *P. spinosa*)

Tullbergia Lubbock, 1876 - Onychiuridae springtails, subfamily Tullberginae

Tullbergia* (*Tullbergia*.) *clavata Mills, 1934 (Epigeic widespread N.A. east of mid Rocky Mts..) (Tp? in IA; Hardin Co., IL)

Tullbergia granulata = *T. silvicola*.

Tullbergia* (*T.*) *hades Christiansen & Bellinger, 1981 (Epigeic in ND) (Tp type locality cave in in

Jackson Co., IA; cave in Wabasha Co., MN/ G3G4)

Tullbergia (*Neonaphorura*) *howdeni* Wray, 1958 (epigeic in Anderson Co. TN/ Tx in cave in Rutherford Co., NC)

Tullbergia (*T.*) *iowensis* Mills, 1932 (US Epigeic CA; IA; IL; MA; ME; NS/ Tp in cave each in WA Co., AR; Jackson Co., IA; Hants Co., NS & Dade Co., GA)

Tullbergia (*T.*) *macrochaeta* (*Mesaphorura m.* Rusek, 1976) (epigeic from sCanada to KY & in Hawaii, Maui & Oahu, HI/ Tp in cave each in Jackson Co. IA & Adair Co. KY; hyporheic in CO)

Tullbergia (*T.*) *mala* Christiansen & Bellinger, 1980 (Epigeic in AB; CO; CT; IA; IL; ND/ Tx? in cave in Coryell Co., TX)

Tullbergia (*T.*) *pacifica* (Rusek, 1976) (epigeic in BC; CA; IN; MI; ND; OR/ Tp? in cave in Jackson Co., IA)

Tullbergia *ruseki* Christiansen and Bellinger, 1980 (guanophile? in NS)

Tullbergia (*T.*) *silvicola* Folsom, 1932 (epigeic in CT; HI; IA; MA; NH; ND/ Tp? in cave in Jackson Co., IA) Bibl.: Dwidjasatmoko 1978

Tullbergia undet. sp. (Tx or Ac in 1 AK cave)

Typhlogastrura = subgenus of *Schaefferia*

Willemia Börner, 1901 - Hypogastruridae springtails, subfamily Hypogastrurinae

Willemia *scandinavica* Stach, 1949 (epigeic in AK/ Tx? in NS on porcupine dung and plant debris)

Willemia undet. sp. cf. *dubia* Christiansen & Bellinger, 1980 (Ac or Tx in cave in Collingsworth Co., TX)

Willowsia Shoebottom, 1917 - Entomobryidae springtails, subfamily Entomobryinae

Willowsia *buski* Lubbock, 1870 (epigeic in ME, WA/ Tx or Ac in 1 AK cave)

Willowsia *nigromaculata* Lubbock, 1873 (epigeic in NA, Europe, seAsia, Mex.) (All US cave records suspect/ Tx in IA (Clayton & Jackson Cos.); MA (Middlesex Co.); MO (Pulaski & Shannon Cos.); TX (Val Verde Co.)

Willowsia *platani* (*Degeeria p.* Nicolet, 1842) (alien epigeic in NA/ alien Ac in cave in Travis Co., TX)

Xenylla Tullberg, 1869 - Hypogastruridae springtails

Xenylla acauda Gisin, 1947 (epigeic in ID/ Tx in cave in Shasta Co., CA)

Xenylla christianseni Gama, 1974 (epigeic in AZ & CA/ Tx in 2 caves in Travis Co., TX)

Xenylla grisea Axelson, 1900 (widespread epigeic in Americas, HI (alien in Oahu, HI), Australia)
(Tx in cave each in Harrison Co., IN & Travis Co., TX)

Xenylla undet. sp.? 1-2 (TTP in TX, WA)

Xenyllodes Axelson, 1903 - Hypogastruridae springtails

Xenyllodes undet. sp. (Tp in NW)

Squamata (lizards, snakes and allies) – An order of terrestrial and aquatic reptiles that shed their skin at intervals and have jointed jaws and skulls that enhance flexibility and strength. Oldest fossils from mid-Jurassic, modern groups date from late Jurassic. Includes six infraorders, the snakes, amphisbaenids (legless burrowers) and four infraorders commonly called lizards.

squirrel - See mammal, rodent

stagnant air zone - See carbon dioxide

stenobiontic - A taxon that needs a stable, uniform habitat.

stenophagic - Taxon with a highly specialized diet.

stenothermal - Having little variation in temperature.

stenotopic - 1. Taxon found only in one or a few habitats. 2. A taxon with little adaptability to environmental change. Adj.: stenoecious.

Stoneflies

Insect Order Plecoptera (= Perlaria), Subclass Pterygota, Division Neoptera. About 1,700 species.

Bibl.: Alba-Tercedor & Sanchez-Ortega 1991; Baumann et al. 1977; Botosaneanu 1986b; Hynes 1976; Stewart & Stark 1993; **Areas:** **AR:** Poulton & Stewart 1991; **CA:** Usinger 1956; Jewett 1960; **CT:** S. Hitchcock 1974; **East:** Fiance 1977; **IL:** Frison 1935; **NA:** Leiser & Boyle 1982; Merritt & Cummins 1978; Needham & Claassen 1925; **OK:** Poulton & Stewart 1991; **Rockies:** Baumann et al. 1977; **World:** Claassen 1939; Illies 1966; Wick 1973

Undet. genus rarely found in hyporheic of SC coastal blackwater stream

Order Aciculata (see below)

Suborder Arctoperlaria

Group Euholognatha (Also put in Order Arctoperlaria, Suborder Filopalpia)

Superfamily Nemouroidea

Capniidae (snowflies or slender winter stoneflies)
 Subfamily Capniinae (*Allocapnia*, *Bolshecapnia*, *Capnia*, *Paracapnia*,
Utacapnia)

Nemouridae (spring stoneflies; needleflies or nemourid broadbacks)
 Subfamily Amphinemurinae (*Amphinemura*)
 Subfamily Nemourinae: *Amphinemura*, *Nemoura*, *Prostoia*, *Visoka*, *Zapada*)

Leuctridae (rolled-winged winter stoneflies; needleflies or rolledwinged stoneflies)
 Subfamily Leuctrinae
 (*Leuctra* (once put in Nemouridae), *Despaxia*, *Paraleuctra*, *Sweltza*,
Zealeuctra)

Peltoperlidae (also put in Subulipalpia) (roachlike stoneflies
 Subfamily Peltoperlinae (*Peltoperla*, *Tallaperla*)

Superfamily Perloidea (also put in Subulipalpia)
 Chloroperlidae
 Perlidae (common stoneflies)
 (*Calineuria*, *Isoperla* (now in Perlodidae), *Hastaperla* (now in Chloroperlidae)

Subfamily Acroneuriinae
 Tribe Acroneuriini (*Acroneuria*, *Hesperoperla* (once in Perlodidae))

Subfamily Perlinae
 Tribe Neoperlini (*Neoperla*)
 Tribe Perlini (*Claassenia*, *Paragnetina*, *Taeniopteryx* (now in own family))

Perlodidae (predatory stoneflies; springflies & stripetails; perlodid stoneflies)
 Subfamily Isoperlinae (*Clioperla*, *Isoperla* (once in Perlidae))
 Subfamily Perlodinae (*Skwala*)

Tribe Arcynopterygini (*Arcynopteryx*)

Tribe Diploperlinae (*Cultus*, *Rickera*)
 Tribe Perlodini (*Yugus*)

Suborder Setipalpia
 Superfamily Subulipalpia (also subsumed into Perloidea)

Chloroperlidae (green stoneflies) (*Plumiperla*)
 Subfamily Chloroperlinae
 (*Alloperla*, *Hastaperla*, *Nemouria*, *Perlomyia*, *Suwallia*, *Sweltsa*)

Subfamily Paraperlinae (*Kathroperla*, *Paraperla*)

Perlidae (also put in Perloidea)

Perlodidae (also in Perloidea)

Taeniopterygidae (also subsumed in Nemouroidae)
(winter stoneflies; willowflies or taeniopterygidae broadbacks)
(*Prostoia* (now in Nemouridae))

Subfamily Brachypterinae (*Strophopteryx*, *Taenionema*)

Subfamily Taeniopteryginae (*Taeniopteryx*)

STONEFLY families incl.

Capniidae (snowflies or slender winter stoneflies)

Subfamily Capniinae (*Allocapnia*, *Bolshecapnia*, *Capnia*, *Paracapnia*, *Utacapnia*)

Chloroperlidae (green stoneflies)

Subfamily Chloroperlinae

(*Alloperla*, *Hastaperla*, *Nemouria*, *Perlomyia*, *Plumiperla*, *Suwallia*, *Sweltsa*)

Subfamily Paraperlinae (*Kathroperla*, *Paraperla*)

Leuctridae (rolled-winged winter stoneflies; needleflies or rolledwinged stoneflies)

Subfamily Leuctrinae

(*Leuctra* (once put in Nemouridae), *Despaxia*, *Paraleuctra*, *Sweltza*, *Zealeuctra*)

Nemouridae (spring stoneflies; needleflies or nemourid broadbacks)

(*Leuctra* (now in Leuctridae)) **Bibl.:** Bauman 1975

Subfamily Amphinemurinae (*Amphinemura*)

Subfamily Nemourinae: *Amphinemura*, *Nemoura*, *Prostoia*, *Visoka*, *Zapada*)

Peltoperlidae (roachlike stoneflies) **Bibl.:** Stark & Stewart 1981

Subfamily Peltoperlinae (*Peltoperla*, *Tallaperla*)

Perlidae (common stoneflies) (*Calineuria*, *Isoperla* (now in Perlodidae), *Hastaperla* (now in Chloroperlidae)) **Bibl.:** Stark & Gaufin 1976

Subfamily Acroneuriinae

Tribe Acroneuriini (*Acroneuria*, *Hesperoperla* (once in Perlodidae))

Subfamily Perlinae

Tribe Neoperlini (*Neoperla*)

Tribe Perlini (*Claassenia*, *Paragnetina*, *Taeniopteryx* (now in own family))

Perlodidae (predatory stoneflies; springflies & stripetails; perlodid stoneflies)

Subfamily Isoperlinae (*Clioperla*, *Isoperla* (once in Perlidae))

Subfamily Perlodinae (*Skwala*)

Tribe Arcynopterygini (*Arcynopteryx*)

Tribe Diploperlini (*Cultus*, *Rickera*)

Tribe Perlodini (*Yugus*)

Taeniopterygidae (winter stoneflies; willowflies or taeniopterygidae broadbacks)
(*Prostoia* (now in Nemouridae))

Subfamily Brachypterinae (*Strophopteryx*, *Taenionema*)

Subfamily Taeniopteryginae (*Taeniopteryx*)

STONEFLY species incl.

Acroneuria Pictet, 1841 (Nosatura Navas, 1918) Perlidae stoneflies, Subfamily Acroneuriinae,
Tribe Acroneuriini (12 species in US or Canada)

Acroneuria *abnormis* (*Perla* a. Neuman, 1838; *A. depressa* Needham & Claassen, 1922; *A. eidmanni* Samal, 1933) (E, w. to UT, NM, AB, s. to SC/ Ac or Tx in sON)

Acroneuria undet. sp. (AB hyporheic)

Allocapnia Claassen, 1828 (= *Capnella* Claassen, 1924 (Homo.); *Capnellula* Strand, 1935)
Capniidae Plecoptera (stoneflies), Subfamily Capniinae (38 species in US or Canada)

Allocapnia undet. sp. or species (Tx in MO; VA, MD brackish benthic)

Allocapnia *pygmaea* Burmeister, 1839 (epigean in CT, DC, IN, KY, MD, ME, MI, MN, MO (disjunct) NB, NS, NY, OH, ON, PA, PQ, RI, TN, VA, VT, WI, WV/ hyporheic larvae down to 30 cm. in ON & MO) **Bibl:** Pugsley & Hynes 1986

Alloperla Banks, 1906 - Chloroperlidae Plecoptera (stoneflies), Subfamily Chloroperlinae (17 species in US or Canada)

Alloperla undet. sp. or species (AB, BC, CO hyporheic; Ac in 1 seAK caves)

Amphinemura Ris, 1902 - Nemoridae Plecoptera (stoneflies), Subfamily Amphinemurinae (13 species in US or Canada)

Amphinemura undet. sp. or species (nCA, WV hyporheic)

Arcynopteryx Klapa'lek, 1904 - Perlodidae Plecoptera (stoneflies) (1 species in US or Canada), Subfamily Perlodinae, Tribe Arcynopterygini

Arcynopteryx compacta (*Dictyopteryx c.* MacLachlan, 1872) (epigean in AB, AK, BC, CO, ME, MT, NH, NT, SK, WY/ AB hyporheic larvae; Ac or Tx in WA)

Bolshecapnia Ricker, 1965 - Capniidae Plecoptera (stoneflies), Subfamily Capniinae (6 species in US or Canada)

Bolshecapnia gregsoni (*Capnia g.* Ricker, 1965) (epigean in BC; Ac in seAK cave)

Calineuria Ricker, 1954 - Perlidae Plecoptera (stoneflies) (1 species in US or Canada)

Calineuria californica (*Perla c.* Banks, 1905) (epigean in AB, BC, CA, ID, MT, OR, WN; nCA? hyporheic)

Capnia Pictet, 1841 (= *Arsapnia* Banks, 189; *Capinia* Needham & Claassen, 1925 (missp.; *Capnura(s)*) Capniidae Plecoptera (stoneflies), Subfamily Capniinae (50 species in US or Canada)

Capnia undet. sp. (Tx in TN; CO hyporheic)

Capnia melia Frison, 1942 (epigean in AK, BC, CA, OR; Ac in 2 seAK caves)

Capnia or ***Utacpnia*** undet. species (CO hyporheic)

Cultus Ricker, 1952 - Perlodidae Plecoptera (stoneflies), Subfamily Diploperlini (4 species in US or Canada)

Cultus undet. sp. (CO hyporheic)

Claassenia Wu, 1934 (= *Adelungia* Klapalek, 1914 (Homo.) Perlodidae Plecoptera (stoneflies), Subfamily Perlini (1 species in US or Canada)

Claassenia sabulosa (*Perla s.* Banks, 1900; *Adelungia arctica* K.1916; *P. languida* Needham & Claassen, 1925) (epigean in AB, AZ, BC, CA,CO, ID, MB, MT, NM, NT, ON, OR, PQ, SD, SK, UT, WN, WY/ CO hyporheic)

Clioperla Needham & Claassen, 1925 - Perlodidae Plecoptera (stoneflies), Subfamily Isoperlinae (1 species in US or Canada)

Clioperla clio (*Isogenus c.* Newman, 1939) (E, w. to AR, MO epigean/ seVA hyporheic)

Despaxia Ricker, 1943 - Leuctridae Plecoptera (stoneflies), Subfamily Leuctrinae (1 species in US or Canada)

Despaxia augusta (*Leuctra a.* Banks, 1907; *L. glabra* Claassen, 1937) (AK to CA, e. to WN, MT/ Tx or Ac in CA; Tx in 11 seAK caves & Vancouver Island, BC)

Haploperla Navas, 1934 (*Hastaperla* Ricker, 1935) Chloroperlidae Plecoptera (stoneflies) (3 species in US or Canada)

Haploperla undet. sp. or species (Tx or Ac in nMS, 4 seAK caves, Vancouver Island, BC)

Hastaperla = *Haploperla*

Hesperoperla Banks, 1938 - Perlidae Plecoptera (stoneflies), Subfamily Acroneuriinae, Tribe Acroneuriini (also put in Perlodidae) (2 species in US or Canada)

Hesperoperla pacifica (*Acroneuria* Bansk, 1900 (= *A. nigrutta* Banks, 1904; *A. pumila* B., 1906; *A. ruficeps* Klapalek, 1917; *A. okanagan* Ricker, 1935; *A. delta* Claassen, 1937; *H. obscura* Banks, 1938) (epigeal in AB, AK, BC, CA, CO, ID, MT, NM, NV, OR, SD, SK, UT, WN, WY/ Tx in AZ; Tx or Ac in 2 seAK caves)

Isoperla Banks, 1906 (= *Megahelus* Klapalek, 1923, *Nanoperla*, *Occiperla*, *Perliola*, *Perliphanes*, *Walshiola* Banks, 1947; Okamoto, 1912) Perlodidae Plecoptera (stoneflies), Subfamily Isoperlinae (60 species in US or Canada). **Bibl.:** Szczytko 1978; Szczytko & Stewart 1979

Isoperla fulva Claassen, 1937 (= *I. chrysannula* & *cascadensis* Hoppe, 1938) (epigeal in AB, AZ, BC, CA, CO, ID, MT, NM, NV, OR, UT, WN, WY/ CO hyporheic)

Isoperla undet. sp. (AB hyporheic; Tx or Ac in AR)

Isoperla signata (*Perlinella* s. Banks, 1902; *Pictetia bimaculata* B., 1948) (E, w. to AR, WI/ Light Brown Stonefly/ Tx in MN)

Kathroperla Banks, 1920 - Chloroperlidae Plecoptera (stoneflies), Subfamily Paraperlinae (2 species in US or Canada)

Kathroperla perdita Banks, 1920 (epigeal in AB, AK, BC, CA, ID, MT, NV, OR, WN; AB hyporheic)

Kathroperla undet. sp. or species (Ac or Tx in Vancouver Island, BC)

Leuctra Stephens, 1833 - Leuctridae Plecoptera (stoneflies), Subfamily Leuctrinae (21 species in US or Canada)

Leuctra glabra = *Despaxia* a.,

Leuctra undet. sp. or species (Tx in WV; PA spr.; WV hyporheic)

Megahelus & *Nanoperla* = *Isoperla*

Nemoura Latreille, 1796 (= *Nemura* Kempny, 1898 (missp.) Nemouridae Plecoptera (stoneflies), Subfamily Nemourinae (4 species in US or Canada)

Nemoura columbiana = *Zapada c.*; *Nemoura oregonesis* = *Zapada o.*

Nemoura trispinosa Claassen, 1923 (NB to OH, w. to WI, IL/ Tx or Ac in sON)

Nemoura undet. sp. (Ac in WA)

Neoperla Needham, 1905 (= *Oseudoperla* Banks, 1892 (Homo.); *Ochthopetina* Enderlein, 1909; *Javanita* Klapalek, 1909; *Tropidogynoplax* Enderlein, 1910; *Formosina* (Homo.) K.1913; *Formosita* K., 1914; *Oodeia* K., 1921; *Simpliperal* Wu, 1962) - Perlodidae Plecoptera (stoneflies), Subfamily Neoperlini (2 species in US or Canada)

Neoperla clymene (*Chloroperla c.* Newman, 1839) (VA to FL, w. to TX/ TX hyporheic) **Bibl.:** Vaught & Stewart 1974

Neoperla undet. sp. (sandy hyporheic in TX)

Nephelopteryx = *Taeniopteryx*

Occiperla, *Pergiphanes* & *Perliola* (= *Isoperla*)

Paracapnia Hanson, 1946 - Capniidae Plecoptera (stoneflies), Subfamily Capniinae (3 species in US or Canada)

Paracapnia angulata Hanson, 1961 (PQ to NC, w. to SK, WY, CO epigeal / hyporheic in WV)

Paracapnia undet. species (Ac in seAK cave; Ac or Tx in Vancouver Island, BC (2 species))

Paragnetina Klapalek, 1907 (= *Tylopyge* K.1913; *Banksiella* K., 1921; *Banksiana* Claassen, 1936; *Caucasoperla* Zhiltzova, 1967) Perlidae Plecoptera (stoneflies), Subfamily Perlinae, Tribe Perlina Perlodidae (5 species in US or Canada)

Paragnetina media (*Perla m.* Walker, 1852) (PQ, w. to SK, s. to AR, VA epigeal/ Ac or Tx in AR, sON)

Paraleuctra Hansen, 1941 - Leuctridae Plecoptera (stoneflies), Subfamily Leuctrinae (7 species in US or Canada)

Paraleuctra undet. sp. or species (AB, CO hyporheic; Tx or Ac in 4 seAK caves)

Paraperla Banks, 1906 – Chloroperlidae Plecoptera (stoneflies), Subfamily Paraperlinae

Paraperla frontalis Banks, 1906 (hyporheic larvae in AB, ID, MT, UT, WY / hyporheic sallfly)

Peltoperla Needham, 1905 - Peltoperlidae Plecoptera (stoneflies), Subfamily Peltoperlinae (1 species in US or Canada)

Peltoperla arcuata N.1905 (epigeal in KY, NY, OH, PA, PQ, TN, VA, WV/ hyporheic in WV)

Perlomyia Banks, 1906 - Chloroperlidae Plecoptera (stoneflies), Subfamily Chloroperlinae (2 species in US or Canada)

Perlomyia undet. sp. or species (nCA hyporheic; Ac or Tx in Vancouver Island, BC)

Plumiperla Surdick, 1985 - Chloroperlidae Plecoptera (stoneflies), Subfamily Chloroperlinae (2 species in US or Canada)

Plumiperla diversa (Frison, 1935) (eigean in AB, AK, BC, CA, CO, ID, MT, NM, OR, WN, WY, YK/ Tx or Ac in 4 AK cave)

Plumiperla undet. sp. (Tx or Ac in 2 AK caves)

Prostoia Ricker, 1952 - Nemouridae Plecoptera (stoneflies), Subfamily Nemourinae (3 species in US or Canada)

Prostoia undet. sp. (Tx? in MN)

Rickera Jewett, 1954 - Perlodidae stoneflies, Subfamily Isoperlinae, Tribe Diploperlinae (1 species in US & Canada)

Rickera sorpta (*Perla* s. Needham & Claasen, 1925; *R. venusta* Jewett, 1954) (epigean in CA, NV, OR, WA, WN/ Tx or Ac in Paradise Ice C., WA)

Skwala Ricker, 1943 - Perlodidae stonefly, Subfamily Perlodinae (2 species in US or Canada)
Skwala undet. sp. or species (Tx or Ac in 2 AK caves; BC detrital hyporheic)

Strophopteryx Frison, 1929 - Family Taeniopterygidae, Subfamily Brachypterinae

Strophopteryx cucullata Frison, 1934 (= *S. ostra* Ricker & Ross, 1975) (epigean in AR, MO, OK, TX/ hyporheic? in AR, MO)

Sweltsa Ricker, 1943 - Chloroperlidae Plecoptera (stoneflies), Subfamily Chloroperlinae (23 species in US or Canada)

Sweltsa borealis (*Chloroperla* b. Banks, 1895) (epigean in AK, BC, CA, CO, ID, MT, NM, NV, OR, SD, UT, WN, WY, YK/ Tx in Vancouver Island, BC)

Sweltsa coloradensis (*Chloroperla* c. Banks, 1898) (epigean in AB, AZ, BC, CO, ID, MT, NM, NV, OR, SD, UT, WN, WY, YK/ Little Olive Stonefly/ WV?, CO hyporheic)

Sweltsa revelstoka Jewett, 1955 (Tx in 26 seAK caves)

Sweltsa undet. sp. or species (Tx in cave in NS, 26 seAK caves & Vancouver Island, BC; CA (seasonal resident), NC, WV hyporheic)

Suwallia Ricker, 1943 - Chloroperlidae Plecoptera (stoneflies), Subfamily Chloroperlinae (4 species in US or Canada)

Suwallia undet. sp. or species (CO hyporheic; Ac or Tx in Vancouver Island, BC))

Taenionema Banks, 1905 - Taeniopterygidae Plecoptera (stoneflies), Subfamily Brachypterinae (8 species in US or Canada)

Taenionema undet. sp. (CO hyporheic)

Taeniopteryx Pictet, 1841 (= *Nephopteryx* Klapalek, 1902; *Nephelopteryx* Needham & Claassen, 1925 or Klapalek, 1903) - Taeniopterygidae Plecoptera (stoneflies), Subfamily Taeniopteryginae (8 species in US or Canada)

Taeniopteryx nivalis Fitch, 1847 (AB to CA, e. to PQ, s. to PA epigean/ Tx in MN)

Taeniopteryx parvula Banks, 1918 (AB to PQ, s. to AR, MO, MS, GA, WY/ Tx in MN?)

Taeniopteryx undet. sp. (Tx? In Organ C., WV)

Taeniopteryx starki Stewart & Szczytko, 1974 (Edwards Plateau, TX/ Pb?)

Tallaperla Stark & Stewart, 1981 - Peltoperlidae Plecoptera (stoneflies), Subfamily Peltoperlinae (6 species in US or Canada)

Tallaperla undet. sp. or species (NC hyporheic?, meiofauna & benthic)

Utacapnia Gaufin, 1970 - Capniidae Plecoptera (stoneflies), Subfamily Capniinae (10 species in US or Canada)

Utacapnia or *Capnia* undet. species (CO hyporheic)

Visoka Ricker, 1952 - Nemouridae Plecoptera (stoneflies), Subfamily Nemourinae (1 species in US or Canada)

Visoka cataractae (*Nemoura c.* Neave, 1933) (epigean in AB, AK, BC, CA, ID, MT, OR, WN/ Ac in 1 seAK caves)

Walshiola = *Isoperla*

Yugus Ricker, 1952 - Perlodidae Plecoptera (stoneflies), Subfamily Perlodinae, Tribe Perlodini (3 species in US or Canada)

Yugus bulbosus Frison, 1942 (PA to GA, w. to TN/ hyporheic in WV)

Zapada Ricker, 1952 - Nemouridae Plecoptera (stoneflies), Subfamily Nemourinae (8 species in US or Canada)

Zapada cinctipes Banks, 1897 (epigean in AB, AK, CA, CO, ID, MB, MT, NM, NV, SD, SK, UT, WY/ BC detrital hyporheic)

Zapada columbiana Classen, 1923 (epigean in AB, AK, BC, CA, ID, MT, OR, UT, WN, WY/

Tx in 16 seAK caves; AB hyporheic)

Zapada cordillera (*Nemoura c.* Bauman & Gauvin, 1971) (CA to OR, e. to WN/ Tx or Ac in CA)

Zapada oregonensis (*Nemoura o.* Claassen, 1923) (AK to CA, e. to MT,NV/ AB, CO hyporheic; & Vancouver Island, BC)

Zapada undet. sp. (Tx in 16 seAK caves)

Zealeuctra Ricker, 1952 - Leuctridae Plecoptera (stoneflies), Subfamily Leuctrinae (8 species in US or Canada)

Zealeuctra arnoldi Ricker & Moss, 1969 (Edwards Plateau,TX/Pb?),

Zealeuctra hitei Ricker & Moss, 1969 Edwards Plateau,TX/Pb?) Snellen 1978

stress - Howarth, 1983; Rusterholtz, Karl. 1989

stygicole (Chapman,1986) - Syns: Tb+Tp & cavernicole. Entomology: "dark dweller."

stygobiont - Abbrev. as St. Def. #1. Groundwater, wells, springs, caves, and/or deep oligotrophic lakes sp., the phreatic equivalent of cavernicole. Syn.: groundwater fauna. Def. #2. An obligate groundwater species (often interstitial) & which show some degree of troglomorphy (e.g., loss of eyes & pigment). Syn.: Phreatobite (Pb). Both often found in caves or small subterranean cracks. Unlike phreatobites, stygobionts can be larger than meiofauna. Incl. limnostygobiont.

stygobite - Syn: stygobiont.

stygophilic - 1. species that can live either in surface waters or groundwater. 2. Species rarely found far from caves.

stygoxene (Chapman,1986) -1. Syn: Tx. 2. A surface water species that can be a troglaxene.

sub-fossil - A dead organic tissue, such as a tooth, bone or shell, or the entire body of a dead organism preserved over a long period in its original form, rather than as a fossil. **Bibl.:** Anderson, E. 1974; Baichtal 1994; Barnosky et al. 1988; Graham & G. 1989; Grayson 1977; Hadly 1990; Jans 1993; Manganaro 1994; Martin, L. & Alex 1987; Mead, et al. 1981-7; Morlan 1989; Warren, R. 1983; Whistler 1991; Ziegler 1963

substrate - Where species live. Incl. bedrock, dark, epizoic, floor, nest, organic, pool, sink, stream, & twilight

successional speciation - The gradual change of one species into another.

succession - One-way change in a habitat caused by biologic interactions. Poulson & Kane 1981.

sulfur bacteria or microbe - Anaerobic bacteria that get their oxygen for metabolism by

reducing sulfate ions to hydrogen sulfide or elemental sulfur. Accumulations of sulfur formed in this way are bacteriogenic ores.

sun spider - See solifugids.

superficial underground compartment - See interstitial

superspecies - Syn: species groups.

surface - see epigeal

sweepstake dispersal route - Where partial geographic barriers allows some species virtually at random to migrate while others do not.

symbiont - One member in a symbiotic relationship.

symbiosis - An ecology type of relationship between two different species that live in close association, with at least one being helped & without either being harmed. Incl. facultative, homosymbiosis.

sympatric speciation - New taxa from ancestral taxon within the same geographic range. Interbreeding geographically can occur but for some reason does not.

sympatry - The occurrence of related taxon, especially species, in the same area. See biogeography

Symphylids

Myriapod crustacean of (Sub)class Symphyla. 7-12 (nearly always 11-12) pairs of legs, long, unbranched beaded antennae; body with 15-22 segments. Anal segment has a pair of large spinnerets and a pair of long sensory hairs. Most species 4-5 mm. long. Most feed on living plant roots & so don't occur in deep caves. About 130 species in 3 families. Up to 3000 per square meter of woodland soils. Syn: symphylans; pseudocentipedes. **Bibl.:** Juberthie-Jupeau 1994; Scheller 1986.

Scutigerellidae Bagnall (*Scutigerella*, *Hanseniella*)

Scolopendrellidae Bagnall (*Symphyla*, *Symphylella*)

Hanseniella Bagnall, 1913 - Scutigerellidae symphilids

Hanseniella vandykei M.1942 (AL(prob.), FL, GA, NC, VA, WV/ Tx or Tp in CA)

Scolopendrella americana Packard, 1881 = *Scutigerella immaculata*

Scolopendrella immaculata Newport = *Scutigerella i.*

Scutigerella Ryder, 1882 - Scutigerellidae symphylan

Scutigerella causeyae Michelbacher, 1942 (NA, Europe/epigeal & Tp in CA)

Scutigerella immaculata (*Scolopendrella i.* Newport, 1845) (= *Scolopendrella americana*

Packard, 1881) (garden centipede or symphylan/ Tp in Mammoth C.,KY)

Scutigerella inculta Michelbacher, 1942 (epigeal in Marin, Alameda & Napa Cos., CA/ Tp in CA)

Scutigerella palmonii Michelbacher, 1942 (epigeal in E,Europe,Japan?/ Tp in CA,TX)

Scutigerella silvestrii Michelbacher, 1942 (epigeal in Italy,Mex./ Tp in TX)

Scutigerella undescr. sp.#1 (Medina Co., TX/ Tb)

Scutigerella undescr. sp.#2 (Williamson Co, TX/ Tb)

Scutigerella undescr. sp.#3 (*?cave near Mammoth,KY)

Scutigerella undet. sp. or species (Ed/ Ac or Tx in seAK (once cave), BC, GA (Dade Co.))

Symphyla Silvestri, 1912 - Scolopendrellidae symphilids

Symphyla undet. sp. (WA/Tp?).

Symphylella Silvestri, 1902 - Scolopendrellidae symphilids

Symphylella undet. sp. (Tp? in NS)

Syncarids, Mysids, Bathynellids, Tanaids & Cumaceans

Syncarida, superorder, order or class of eyeless shrimp-like crustaceans. **Isopods & amphipods** are listed separately. **Bibl.:** Schminke 1981, 1986

Subclass Eumalacostraca

Superorder Syncarida

Order Cumacea (hooded shrimp; cumaceans)

(or combined with Cumacea & Spelaeogriphacea in Order Hemicaridea)

Family Bodotriidae

Subfamily Bodotriinae (*Cyclaspis*)

Subfamily Mancocumatinae (*Mancocuma*, *Spilocuma*)

Subfamily Vaunthompsoniinae (*Glyphocuma*, *Leptocuma*, *Vaunthompsonia*)

Family Campylaspidae (*Campylaspis*) (also put in Nannastacidae)

Family Diastylidae

(*Anchicolurus*, *Brachydiastylis*, *Colurostylis*, *Diastylis*, *Diastylopsis*, *Leptostylis*,

Oxyurostylis)

Family Lampropidae (*Hemilamprops*, *Lamprops*, *Mesolamprops*)

Family Leuconidae (*Eudorella*, *Eudorellopsis*, *Hemileucon*, *Leucon*, *Nippoleucon*)

Family Nannastacidae (*Almyracuma*, *Camella*, *Campylaspis*, *Procampylaspis*)

Order Mysidacea (mysids)

Suborder Mysida

Family Mysidae (*Acanthomysis*, *Alienacanthomysis*, *Amathimysis*, *Americamysis*,
Archaeomysis, *Bowmaniella*, *Cubanthomysis*, *Eleomysis*, *Heteromysis*,
Holmesiella,
Homesimysis, *Inusitatomysis*, *Metamysidopsis*, *Meterythrope*, *Mysidella*,
Mysidopsis,
Neomysis, *Pacificanthomysis*, *Proneomysis*, *Pseudomma*, *Siriella*,
Taphromysis,
Xenacanthomysis)

Subfamily Gastrosaccinae, Tribe Mysini (*Mysis*, *Neomysis*)

Order Tanaidacea (= Tanaida) (syncarids)

(or combined with Cumacea & Spelaeogriphacea in Order Hemicaridea)

Suborder Dikonophora

Family Leptognathiidae (*Leptognathia*)

Family Pseudozeuxidae (*Leptochelia*, *Pseudoleptochelia*)

Suborder Monokonophora

Family Apseudidae (*Apseudes*, *Halmyrapseudes* (put in Parapseudidae))

Family Kalliapseudidae (*Kalliapseudes*)

Family Parapseudidae (*Halmyrapseudes*) (also put in Apseudidae)

Suborder Tanaidomorpha

Superfamily Paratanoidea

Family Anthuridae (*Araphura*, *Chauliopleona*, *Haliophasma*, *Scoloura*,
Silophasma, *Siphonolabrum*, *Tanaella*, *Tanaopsis*)

Family Leptocheliidae (*Hargeria*, *Leptochelia* (once in Pseudozeuxidae))

Family Paratanaidae (*Paratanais*, *Tanaissus* (once in Tanaidae))

Family Pseudotanaidae (*Pseudotanais*)

Family Typhlotanaidae (*Typhlotanais*)

Superfamily Tanaidoidea

Family Tanaidae

(*Sinelobus*, *Synaptotanais*, *Tanais*, *Tanaissus* (now in Paratanaidae))

Zeuxo)

Order Bathynellacea (bathynellids)

Parabathynellidae, Tribe Iberobathynellini, Subtribe Iberobathynellina
(*Californibathynella*)

Undet. family in Blue River gravel bar at Rothrocks Mill, Crawford Co., IN/ Pb/ S1G1

Order Podophallocarida (bathynellids)

Superfamily Bathynellacea (also treated as order)

Family Bathynellidae (*Bathynella* (also put in Parabathynellidae)

Family Parabathynellidae

(*Bathynella*, *Iberobathynella*, *Pacificabaythynella*, *Parabathynella*; parafluvial
undet. AZ genus) Bibl.: Camacho, Serban & Guil 2000

Acanthomysis Czerniavsky, 1882 – Mysidae syncarids

Acanthomysis columbiae (WA marine infauna)

Acanthomysis macropsis Tattersall, 1932 (WA marine infauna)

Almyracuma – Nannastacidae syncarids

Almyracuma proximoculi Jones & Burbank, 1959 (Carolinian, MD, MA, VA rare marine
infauna)

Almyracuma undet. sp. (FL marine infauna)

Americamysis W.W. Price, R.W. Heard & Stuck, 1994 – Mysidae mysids

Americamysis almyra (Bowman, 1964) (Virginian, wFL Gulf of Mex. marine infauna)

Americamysis bahia (Molenock, 1969) (e,wFL, MD, LA, VA marine infauna)

Americamysis bigelowi complex (Carolinian, MD, VA marine infauna)

Americamysis stucki W.W. Price, R.W. Heard & L. Stuck, 1994 (wFL Gulf of Mex. marine
infauna)

Anchicolurus Hale, 1945 - Diastylidae syncarids

Anchicolurus occidentalis (*Colurostylus o.* Calman, 1812) (CA. OR marine infauna)

Apseudes Leach, 1813 – Apseudidae syncarids

Apseudes undet. sp. or species (Carolinian, wFL Gulf of Mex. marine infauna)

Araphura Bird & Holdich, 1984 - Gnathiidae syncarids (also put in isopods Gnathiidea
suborder)

Araphura breviaria Dojiri & Sig, 1997 (CA, WA marine infauna)

Araphura cuspirostris Dojiri & Sig, 1997 (CA marine benthic)

Araphura 2 undescr. species (sCA marine infauna)

Archaeomysis Czerniavsky, 1882 – Mysidae syncarids

Archaeomysis grebnitzkii (WA marine infauna)

Bathynella Vejdovsky, 1882 - Bathynellidae syncarids. **Bibl.:** Serban 1972.

Bathynella riparia Pennak & Ward, 1985 (CO hyporheic) (uncertain generic status)

Bathynella undet. sp(p). Pennak & Ward, 1985 (CO,MT/nonkarst stygobite)

Bowmaniella – Mysidae syncarids

Bowmaniella dissimilis (wFL marine infauna)

Bowmaniella floridana (Virginian (rare), e,wFL, LA, NC marine infauna)

Brachydiastylis Stebbing, 1912 - Diastylidae syncarids

Brachydiastylis undet. sp. (Baffin Island (neCanada) marine infauna)

Californibathynella Camacho & Serban, 1998 - Parabathynellidae syncarids, Tribe Iberobathynellini, Subtribe Iberobathynellina

@*Californibathynella* Camacho & Serban, 1998 (CA groundwater interstitial stygobiont)

Campylaspis G.O. Sars, 1865 – Nannastacidae syncarids (also put in Campylaspididae)

Campylaspis affinis (Carolinian marine infauna)

Campylaspis biplicata Watling & McCann, 1995 (CA, WA marine infauna)

Campylaspis blakei Watling & McCann, 1995 (CA marine infauna)

Campylaspis canaliculata Zimmer, 1936 (CA, WA marine infauna)

Campylaspis costata (WA marine infauna)

Campylaspis crispa (WA marine infauna)

Campylaspis hartae Lie, 1969 (CA, WA marine infauna)

Campylaspis maculinodulosa Watling & McCann, 1995 (CA marine infauna)

Campylaspis cf *nodulosa* (WA marine infauna)

Campylaspis papillata Lomakina, 1952 (AK marine infauna)

Campylaspis rubicunda (Lilljeborg, 1885) (NC, OR, WA marine infauna)

Campylaspis rubromaculata Lie, 1971 (sCA, WA marine infauna)

Campylaspis rufa Hart, 1930 (CA, WA marine infauna)

Campylaspis undescr. sp. (sCA marine infauna)

Campylaspis undet. sp. (AK, VA, (Baffin Island (neCanada) marine infauna)

Chauliopleona M. Dojiri & J. Sieg – Anthuridae syncarids

Chauliopleona dentata Dojiri & Sieg, 1997 (CA marine benthic)

Colurostylis Calman, 1911 - Diastylidae syncarids
Colurostylis occidentalis = *Anchicolurus o.*

Cumella Sars, 1865 - Nannastacidae syncarids
Cumella californica Watling & McCann, 1974 (CA, WA marine infauna)

Cumella cf. *garrityi* Bacescu & Muradian, 1977 (wFL Gulf of Mex. marine infauna)

Cumella undet. sp. (Carolinian marine infauna)
Cumella vulgaris Hart, 1930 (WA marine infauna)

Cyclaspis (err. Pro *Cycapis* Sars, 1865) Hansen [1830] Bodotriidae syncarids, Subfamily Bodotriinae

Cyclaspis bacescui P.E. Omholt & R.W. Heard, 1982 (FL marine infauna)
Cyclaspis nubila Zimmer, 1936 (sCA marine infauna)

Cyclaspis pustulata Zimmer, 1943 (e,wFL, LA marine infauna)
Cyclaspis undet. sp. or species (TX, VA marine infauna)
Cyclaspis varians Calman, 1912 (FL, LA, MD, NC, TX, VA estuary marine infauna)

Diastylis Say, 1818 - Diastylidae cumacean (hooded shrimp)
Diastylis alaskensis Calman, 1912 (AK, BC, WA marine infauna)

Diastylis bidentata Calman (AK, OR, WA marine infauna)
Diastylis californica Zimmer, 1936 (AK, OR marine infauna)

Diastylis crenellata Watling & McCann, 1997 (CA marine infauna)
Diastylis dalli Calman, 1912 (OR marine infauna)
Diastylis hirsuta Petrescu & Bacescu, 1991 (WA marine infauna)

Diastylis loricata Lomakina, 1955 (AK marine infauna)
Diastylis cf. *nucella* (WA marine infauna)

Diastylis paraspinulosa Zimmer, 1928 (AK, OR, WA marine infauna)
Diastylis pellucida Hart, 1930 (sCA, OR, WA marine infauna)

Diastylis polita (MA marine infauna)
Diastylis undet. sp. or species (Baffin Island (neCanada) & sCA marine infauna)

Diastylis rathkei sarsi (Norman, 1902) (NB, PQ Gulf of St. Lawrence sandy marine interstitial)
Diastylis rathkei typica Zimmer, 1926 (NB, PQ Gulf of St. Lawrence sandy marine interstitial)
Diastylis santamariensis Watling & McCann, 1997 (CA, WA marine infauna)

Diastylis sculpta G.O. Sars, 1871 (NB, PQ Gulf of St. Lawrence sandy marine interstitial)

Diastylis sentosa Watling & McCann, 1997 (CA marine infauna)

Diastylopsis Smith, 1880 - Diastylidae syncarids

Diastylopsis tenuis Smith, 1880 (sCA, WA marine infauna)

Eudorella Norman, 1867 - Leuconidae syncarids

Eudorella emarginata (Kroyer, 1846) (AK, BC marine infauna)

Eudorella monodon Calman, 1912 (TX estuary marine infauna)

Eudorella (Tridentata) pacifica Hart, 1930 (*E. tridentata* Hart, 1930) (AK, BC, sCA, OR, WA marine infauna)

Eudorellopsis Sars, 1882 - Leuconidae syncarids

Eudorellopsis biplicata Calman, 1912 (AK marine infauna)

Eudorellopsis integra (Smith, 1879) (AK, WA marine infauna)

Eudorellopsis longirostris Given, 1961 (sCA, WA marine infauna)

Glyphocuma Hale, 1944 – Bodotriidae hooded shrimps (cumaceans), Subfamily Vaunthompsoniinae

Glyphocuma undescr. sp.(sCA marine infauna)

Haliophasma Hawell, 1881 – Anathuridae syncarids

Haliophasma geminata Menzies & Barnard, 1959 (WA marine infauna)

Halmyrapseudes Bacescu & Gutu, 1974 - Parapseudidae syncarids (also put in Apseudidae)

Halmyrapseudes bahamensis Bacescu & Gutu, 1974 (FL, LA marine benthic)

Halmyrapseudes cubanensis Bacescu & Gutu, 1974 (FL marine benthic)

Hargeria Lang., 1973 - Leptocheliidae syncarids

Hargeria rapax Lang, 1973 (Carolinian, e,wFL, LA, MD, TX, VA marine infauna)

Hemilamprops Sars, 1883 - Lampropidae cumacean

Hemilamprops californica Zimmer, 1936 (sCA, WA marine infauna)

Hemilamprops undet. sp. (AK marine infauna)

Hemileucon Calman, 1907 - Leuconidae syncarids

Hemileucon undet. sp.(OR, WA marine infauna)

Heteromysis Smith, 1873 – Mysidae syncarids

Heteromysis odontops (WA marine infauna)

Holmesiella – Mysidae syncarids

Holmesiella anomala (WA marine infauna)

Iberobathynella Schminke, 1973 (considered confined to Spain by Camacho, Serba & Guil 2000 who returned North American species to *Texanobathynella* in Tribe Iberobathynellini, Subtribe Hexaiberobathynellia) - Parabathynellidae syncarids, Tribe Iberobathynellini, Subtribe Iberobathynellina

Iberobathynella bowmani (*Texanobathynella b.* Delamare Deboutteville, Coineau, & Serban, 1975) (type locality cave in San Saba Co. & cave in Dickens Co., TX/Pb G3)

Iberobathynella undescr. sp. (Phreatic & parafluvial in Sycamore Cr. 32 km ne of Phoenix (Maricopa Co.), Big Sandy River, Santa Maria River and Bridle Cr., AZ)

Inusitatomysis – Mysidae syncarids

Inusitatomysis insolita (WA marine infauna)

Kalliapseudes Stebbing, 1910 - Kalliapseudidae syncarids

Kalliapseudes 2 undescr. sp. (e,wFL marine infauna)

Lamprops Sars, 1863 - Lampropidae cumacean

Lamprops carinatus Hart, 1930 (*L. carinata* Hart, 1930)(sCA, WA marine infauna)

Lamprops quadriplicatus Smith, 1879 (*L. quadriplicata* Smith, 1879) (sCA, WA marine infauna; NB, PQ Gulf of St. Lawrence sandy marine interstitial)

Lamprops undet. sp. (AK marine infauna)

Leptochelia Dana, 1849 (= *Tanaiomeras*) Leptocheliidae syncarids (also put in Pseudozeuxidae)

Leptochelia dubia (Kroyer, 1842) (= *L. affinis*; *L. algicola*; *L. corsica*; *L. durbanensis*; *L. edwardsii*; *L. incerta*; *L. lifuensis*; *L. neopolitana*; *L. savignyi*; *Paratanais algicola*; *P. edwardsii*; *Pl. Kroyerii*; *P. savignyi*; *Tanaiomera columbina*; *Tanais dubius*; *Tanais durbanensis*; *T. edwardsi*; *T. filum*) (sCA, MA, WA marine sandy interstitial)

Leptochelia filum = *Pseudoleptochelia* f.

Leptochelia savignyi (*Leptognathia* s. Kroyer, 1842; *Leptochelia edwardsii*, *incerta*, *lifuensis*, *neapolitana*; *Paratanais algicola*, *edwardsii*) (AK, CA, NJ, WA marine infauna)

Leptocuma Sars, 1873 – Bodotridae cumaceans, Subfamily Vaunthompsoniinae

Leptocuma forsmanni Zimmer, 1943 (CA marine infauna?)

Leptognathia Sars, 1882 - Leptognathiidae tanaids

Leptognathia brevimanus (Lilljeborg, 1864) (WA marine infauna)

Leptognathia gracilis (Kroyer, 1842) WA marine infauna)

Leptognathia longiremus (Lilljeborg, 1864) (WA marine infauna)

Leptognathia savignyi (WA marine infauna)

Leptostylis Sars, 1869 - Diastylidae hooded shrimp (cumaceans)

Leptostylis undet. sp. (AK marine infauna)

Leptostylis abditus Watling & McCann, 1997 (CA marine benthic)

Leptostylis villosa (WA marine infauna)

Leucon Kroyer, 1846 - Leuconidae syncarids

Leucon (*Leucon*) *americanus* Zimmer, 1943 (MD, MA, VA common marine infauna)

Leucon (*Diaphonoleucon*) *declivis* L. Watling & L.D. McCann (WA marine infauna)

Leucon boshopi Bacescu, 1988 (CA marine benthic)

Leucon falcicosta Myers & Benedict, 1974 (CA marine benthic)

Leucon (*Epileucon*) *longirostris* Sars, 1871 (OR marine infauna)

Leucon (*Leucon*) *nasica* Kroyer, 1846 (AK, WA marine infauna)

Leucon undet. sp. (TX estuary benthic)

Leucon subnasica Given, 1961 (sCA, WA marine infauna)

Mancocuma Zimmer, 1943 – Bodotriidae hooded shrimp(cumaceans), Subfamily Mancocumatinae

Mancocuma stellifera Zimmer, 1943 (Virginian (rare), MA marine infauna)

Mesolamprops Given, 1964 - Lampropidae cumacean

Mesolamprops bispinosus Given, 1964 (*M. bispinosa* Given, 1964) (CA marine benthic)

Meterythrops – Mysidae syncarids

Meterythrops robusta Smith (WA marine infauna)

Mysidella – Mysidae syncarids

Mysidella americana (WA marine infauna)

Mysidopsis Sars, 1864 - Mysidae syncarids

Mysidopsis almyra Bowman, 1963 (Virginian (rare), FL, LA marine infauna)

Mysidopsis bahia Molenock, 1969 (FL, LA, TX estuary marine infauna)

Mysidopsis bigelowi Tattersall, 1926 (FL, NC marine infauna)

Mysidopsis furca (NC marine infauna)

Mysidopsis undet. sp. or species (TX, FL Gulf of Mex. marine infauna)

Mysis Latreille, 1803 - Mysidae syncarids, Subfamily Gastrosaccinae, Tribe Mysini

Mysis gaspensis O. Tattersall, 1954 (NB, PQ Gulf of St. Lawrence sandy marine interstitial)

Mysis stenolepis S.I. Smith, 1873 (Gulf of St. Lawrence (NB, PQ), NC sandy marine interstitial)

Neomysis Zimmer, 1909 or Czernaivsky, 1882 - Mysidae syncarids, Subfamily Gastrosaccinae, Tribe Mysini

Neomysis americana (S.I. Smith, 1873) (NB, PQ Gulf of St. Lawrence & Carolinian, MD, NC,m VA marine interstitial)

Neomysis kadiakensis (AK, BC, WA marine infauna)

Neomysis mercedis (OR, WA marine infauna)

Nippoleucon L. Watling, 1991 – Leuconiidae syncarids

Nippoleucon hinumensis (Gamo, 1967) (WA (alien) marine infauna)

Oxyurostylis Calman, 1912 - Diastylidae syncarids

Oxyurostylis lecroyae D. Roccatagliata & R.W. Heard, 1995 (Carolinian marine infauna)

Oxyurostylis pacifica Zimmer, 1936 (sCA, wA marine infauna)

Oxyurostylis salinoi (TX estuary marine infauna)

Oxyurostylis smithi Calman, 1912. (CA, e,wFL, GA, MD, NJ, TX, VA estuary infauna)

Pacificabathynella Schminke & Noodt, 1988 - Parabathynellidae syncarids

Pacificabathynella sequoiae Schminke & Noodt, 1988 (hyporheic in nCA)

Pacificabathynella undescr. sp. (Pb in Vancouver Island caves, BC)

Pacificanthomysis C. Holmquist, 1981 – Mysidae syncarids

Pacificanthomysis nephrophthalma (*Acanthomysis n.* Banner, 1948) (WA marine infauna)

Parabathynella Chappuis, 1926 - Parabathynellidae syncarids. **Bibl.:** L Delamare Douboutteville & Chappuis 1954

near *Parabathynella* undet. sp. (Phreatic & parafluvial in Sycamore Cr. 32 km ne of Phoenix (Maricopa Co.)

Paratanais Dana, 1852 – Paratanaidae syncarids

Paratanais intermedius Dojiri & Sige, 1997 (CA marine benthic)

Procampylaspis Bonnier, 1896 - Nannastacidae syncarids

Procampylaspis caenosa Watling & McCann, 1997 (CA marine benthic)

Pseudoleptochelia Lang, 1973 - Pseudozeuxidae syncarid

Pseudoleptochelia filum (*Leptochelia f.* Stimpson, 1853) (MA marine sandy infauna)

Pseudomma Sars, 1870 – Mysidae syncarids

Pseudomma berkeleyi (WA marine infauna)

Pseudomma truncatum Smith, 1879 (WA marine infauna)

Pseudotanaïs G.O. Sars, 1882 – Pseudotanaidae syncarids
Pseudotanaïs makrothrix Dojiri & Sieg, 1997 (CA marine benthic)

Scoloura J. Sieg & M. Dojiri, 1991 – Anathuridae syncarids
Scoloura phillipsi Dojiri & Sieg, 1991 (CA, WA marine infauna)

Silophasma – Anathuridae syncarids
Silophasma geminata (WA marine infauna)

Sinelobus Seig, 1980 – Tanaidae syncarids
Sinelobus stanfordi (*Tanais s.* Richardson, 1901; *Tanais vanis* Miller, 1940) (CA, WA marine infauna)

Siphonolabrum Lang, 1971 – Anathruridae syncarids
Siphonolabrum californiensis Dojiri & Sieg, 1997 (CA marine benthic)

Spilocuma - Bodotriidae cumaceans, Subfamily Mancocumatinae
Spilocuma salomani Watling, 1977 (FL marine infauna)

Synaptotanaïs Sieg, 1980 – Tanaidae syncarids
Synaptotanaïs notabilis Sieg & Winn, 1981 (CA marine benthic)

Tanaella Norman & Stebbing, 1886 – Anathuridae syncarids
Tanaella propinquus Dojiri & Sieg, 1997 (CA marine benthic)

Tanais Latreille, 1831 – Tanaidae syncarids
Tanais stanfordi Richardson, 1901 = ***Sinelobus stanfordii***

Tanaissus Norman & Scott, 1906 – Paratanaidae (once in Tanaidae) syncarids
Tanaissus psammophilus (Wallace, 1919) (Virginian (rare), Carolinian marine infauna)

Tanaopsis G.O. Sars, 1896 – Anathruridae syncarids
Tanaopsis cadieni Dojiri & Sieg, 1997 (CA marine benthic)

Taphromysis Bacescu, 1961 - Mysidae syncarids
Taphromysis bowmani Bacescu, 1961 (e,wFL marine infauna)

Texanobathynella Delamare, Deboutteville, Coineau & Serban, 1975 = ***Iberobathynella***

Typhlotanaïs G.O. Sars, 1882 – Typhlotanaidae syncarids
Typhlotanaïs crassus Dojiri & Sieg, 1997 (CA marine benthic)
Typhlotanaïs williamsi Dojiri & Sieg, 1997 (CA marine benthic)

Vaunthompsonia Zimmer, 1943 – Bodotriidae hooded shrimp (cumaceans)
Vaunthompsonia pacifica Zimmer, 1943 (CA marine infauna?)

Xenacanthomysis C. Holmquist, 1980 – Mysidae syncarids
Xenacanthomysis pseudomacropsis (Tattersall, 1933) (WA marine infauna)

Zeuxo Templeton, 1840 – Tanaidae syncarids
Zeuxo normani (*Tanais* n. Richardson, 1905) (CA, WA marine infauna)

Synedra - see diatom

syntype - Any specimens used for description when no holotype is designated.

systematics - The study of taxon & their relationships. Bibl. - See taxonomy

T&E - Threatened, endangered & related types of categories. Incl. endangered, federal, rare, sensitive, & state. A candidate taxa is one in which there is sufficient information on biological vulnerability & threats) to support proposals to list them as threatened or endangered.

Tanaidaceans (= Tanaeid crustaceans)

Class Malacostraca

Subclass Eumalacostraca

Superorder Syncarida

Order Tanaidacea

Suborder Apseudomorpha (=Dikonophora?)

Superfamily Paratanaoidiea

Paratanaidace) Family Leptocheliidae (*Hargeria*, *Heterotanais*) (both once in

Leptocheliidae) Family Paratanaidae (*Hargeria*, *Heterotanais*) (now both in

Suborder Monokonophora

Family Parapseudidae (*Halmyrapseudes*)

Halmyrapseudes Bacescu & Gutu, 1974 - Parapseudidae tanaids

Halmyrapseudes undet. sp. (FL marine benthic)

Hargeria Lang, 1973 - Leptocheliidae tanaids (once in Paratanaidae)

Hargeria rapax (Harger, 1879) (FL, LA marine infauna)

Heterotanais Sars, 1882 - Leptocheliidae tanaids (once in Paratanaidae)

Heterotanais undet. sp. (VA marine benthic)

tapeworm - See Worm, Cestoda

taphonomy - The study of processes acting on a taxon after its death. D. Lawrence, 1968.

tapir - See **Mammal**, perrisodactyl

Tardigrades

Tardigrada - Protostomia phylum of micrometazoans (.2-1.2mm) most closely allied with either the aschelminth complex or the Arthropoda. Body short & barrel-shaped, ventrally flattened. No neck. Two pointed, chitinous stylets protrude from mouth. Move by 4 pairs of non-jointed, stumpy, retractable limbs. Simple eye spots. All both male & female. Mostly on water films in soil and on moss & lichens. Suck out plant juices. Can form decades-long resting stage if drying occurs. About 440 known species. Syn: water bears. **Bibl.:** Bertolani 1987; Strayer et al. 1988. **Areas:** VA: Riggin 1962; NY: Strayer et al. 1988.

Kingdom Animalia

Clade Pararthropod

Phylum Tardigrada

Class Eutardigrada

Order Eutardigrada (now in Mesotardigrada)

Order Macrobiotidea (see below)

Order Parachela (now in Eutardigrada)

Hypsibiidae

(*Diphascon*, *Isohypsibius* (also in Arctiscidae & Macrobiotidae),

Steringophorus)

Macrobiotidae (or in Macrobiotidea) (*Dactylobiotus*, *Macrobiotus*)

Class Heterotardigrada (once an order under Eutardigrada)

Order Arthrotardigrada (once a suborder)

Batillipedidae (*Batillipes*; undet. genus in brackish beach at Lake Pontchartrain, LA)

Halechiniscidae, (*Raiarctus*)

Subfamily Halechiniscinae (*Halechiniscus*, *Orzeliscus*)

Subfamily Tanarctinae (*Tanarctus*)

Dipodarctinae (*Dipoarctus*)

Renaudarctidae (*Renaudarctus*)

Stygarctidae (*Stygarctus*, *Parastygarctus*)

Order Macrobiotida (or subsumed in order Parachela)

Macrobiotidae (*Dactylobiotus*)

Class Mesotardigrada (once an order)
Order Parachela (now in Eutardigrada)

Batillipes Richters, 1909 - Batillipedidae tardigrade

Batillipes bullacaudatus (McGinty & Higgins, 1968) (FL, MA, VA, NC marine beach interstitial)

Batillipes dicrocercus Pollock, 1970 (MA, Mediterranean marine beach interstitial)

Batillipes friaufi Riggin, 1962 (FL, MS marine beach interstitial)

Batillipes gilmartini McGinty, 1969 (CA marine beach interstitial)

Batillipes limnoriae Cantacuzene, 1951 (US Atlantic shores, Bahamas marine beach interstitial)

Batillipes mirus Richters, 1909 (MS marine interstitial)

Batillipes pennaki Marcus, 1946 (US Atlantic, West Indies, Brasil, Indian Ocean marine beach interstitial)

Dactylobiotus Schuster et al, 1980 - Macrobiotidae tardigrades

Dactylobiotus undescr. sp. (Tx? in MN?)

Diphascon Plate, 1889 - Hypsibiidae tardigrades

Diphascon alpinum Murray, 1906 (cosmopolitan?/ occasional river hyporheic)

Dipodarctus Pollock, 1995 - Dipodarctinae tardigrades

Dipodarctus anaholiensis Pollock, 1995 (HI beach interstitial)

Dipodarctus borrori Pollock, 1995 (HI beach interstitial)

Halechiniscus Richters, 1908 - Halechiniscidae tardigrades Subfamily Halechiniscinae

Halechiniscus remanei Schulz, 1955 (FL, cosmopolitan in marine sublittoral interstitial)

Hypsibius Ehrenberg, 1848 - Hypsibiidae tardigrades

Hypsibius convergens (Urbanowicz, 1925) (cosmopolitan/ occasional river hyporheic)

Hypsibius dujardini (DoyEre, 1840) (cosmopolitan/ occasional river hyporheic; AB lake benthic)

Hypsibius undet. sp. (MN hyporheic)

Isohypsibius Thulin, 1928 (= Hyposibius) Hypsibiidae tardigrades

Isohypsibius augusti (Murray, 1907 (cosmopolitan/ occasional river hyporheic)

Isohypsibius granulifer (Thulin, 1928 (cosmopolitan/ occasional river hyporheic)

Isohypsibius saltursus Schuster, Toftner & Grigarick, 1977 (OH hyporheic & interstitial in Lake Tahoe, CA)

Isohypsibius tetradactyloides (Richter, 1907) (cosmopolitan/ occasional river hyporheic)

Macrobiotus Schultze, 1833 - Macrobiotidae tardigrades

Macrobiotus dispar Murray, 1907 (cosmopolitan/ occasional river hyporheic)

Macrobiotus furcatus (Ehrenberg, 1858) (NY freshwater sandy beach interstitial)

Macrobiotus grandipes Schuster, Toftner & Grigarick, 1977 (interstitial in Lake Tahoe, CA)

Macrobiotus (Macrobiotus) hufelandi Schultze, 1834 (cosmopolitan/ occasional river hyporheic)

Macrobiotus macronyx Dujardin, 1851 (cosmopolitan/ occasional river hyporheic)

Macrobiotus undet. sp. or species (CO, MN, TX hyporheic; MI interstitial)

Orzeliscus Bois-Reymond-Marcus, 1952 - Halechiniscidae tardigrades Subfamily

Halechiniscinae

Orzeliscus belopus Bois-Reymond-Marcus, 1952 (cosmopolitan in marine sublittoral interstitial)

Parastygartus Renaud-Mornant, 1965 - Stygarctidae tardigrades

Parastygartus sterreri Renaud-Mornant, 1970 (FL marine beach interstitial)

Raiarctus Renaud-Mornant, 1981 - Halechiniscidae tardigrades

Raiarctus colurus Renaud-Mornant, 1981 (FL marine beach interstitial)

Renaudarctus Kristensen & Higgins, 1984 - Renaudarctidae tardigrades

Renaudarctus psammocryptus Kristensen & Higgins, 1984 (FL marine beach interstitial)

Steringophorus Digenean, 1979 (both marine and freshwater) Hypsibiidae tardigrades

Steringophorus bertolani (*Thulinia b.* R.Bertolani, 1981) (stygobiont & hyporheic in NY)

Steringophorus ruffoi (*Thulinia ruffoi* R.Bertolani, 1981) (stygobiont & hyporheic in NY)

Stygartus Schulz, 1951 - Stygarctidae tardigrades

Stygartus bradypus Schulz, 1951 (Indian Ocean, Europe, Malaysia, US Atlantic marine beach vadose interstitial)

Stygartus goubaultae Renaud-Mornant, 1981 (FL marine beach interstitial)

Stygartus granulatus Pollock, 1970 (NC, MA marine beach vadose interstitial)

Tanarctus Renaud-Mornant, 1959 - Halechiniscidae tardigrades Subfamily Tanarctinae

Tanarctus arbospinosus Lindgren, 1971 (NC marine beach interstitial)

Tanarctus tauricus Renaud-Debyser, 1959 (FL marine beach interstitial)

Thulinia R. Bertolani, 1981 (junior homo. of *Steringophorus*)

taxa - Plural of taxon.

taxis - The movement of an organisms in response to a stimulus. Incl. rheotaxis, telotaxis.

taxon - A named group of organisms of any rank, such as a particular species, family, or class,

also the name applied to that unit.

taxonomy - The theory & practice of classifying lifeforms according to their natural affinities, especially their evolutionary ones. Syn.: systematics

Taxonomy Bibl.: (in title; see citations in taxon groups) Ball, G. 1966a, 1985; Barnhart 1975; Barr 1979a; E. Berry 1943; Chandler 1985; Chippindale 1995; G. Davis 1989; Ferguson 1974; L. Fleming 1969; Fryer 1985; A. Gurney 1961; A. Hamilton 1973; Herman 1970; C. Hoff 1942 1964 1981; R. Hoffman 1958; Holsinger 1967e; Hyman 1928 1937; Keeton 1960; Kelson 1952; Lippert & Butler 1976; R. Martin 1969; Millidge 1980; Mockford 1984; O. Park 1951 1953b; Rhoades 1944a; G. Robinson 1980; Rosen 1962; C. L. Smith 1980; Stock 1977 1981; Valentine 1943; Vogel 1964.

teaching - Anon. 1975; Ashley 1996; Benedict 1967g, 1980a; Canaday & Vitello 1996; Eddleman et al 1977

telotaxis - Movement of a motile species in response to a single stimulus.

temperature (T0C) - Cave-adapted species are often sensitive to slight T. changes, which increases in caves with large entrances, small caves, caves with at greatly different elevated entrances, & caves near the surface. Public tour groups can raise T. 1/2o when they pass by. Lights left on overnight can raise T. a degree C.. Roughly a 10o C increase doubles metabolic rate of cold-blooded species (most macroinvertebrates, reptiles & amphibians. Concentrations of dissolved CO2 & O2 are inversely proportional to T. Incl. average, high & low/day & year.

temporal (circadian, circaseptan, seasonality) rhythms & changes - Campbell 1976, 1976a; Chiba, Cutkomp & Halberg 1973; Jegla 1966; Jegla & Poulson 1968, 1970; Keith 1975a; Lamprecht & Weber 1985; Palmer 1990; Poulson 1973; Poulson & Jegla 1966; Reichle, Palmer & Park 1965; Simon 1973; Studier, Lavoie, Nevin & McMillin 1988

terminology - Barr 1963a, 1969; Benedict 1977; Brandon 1962; Christiansen 1962; Erdos 1973; Gnaspini 1992 Hamilton-Smith 1971

Thallophyta - Plants not separated into roots, stems and leaves. The vegetative bodies are called thallus and are common in commercialized caves. (Syn.: thallophytes).

Theria - Subclass of Class Mammalia. Incl. Pantotheria (extinct ancestors of present-day mammals), Metatheria (marsupials - opossum only representative in US) and Eutheria (placental mammals - all other present-day cave associated species in US and Canada).

thermal conductance - A measure of the insulative properties of the skin and/or pelage.

thermoneutrality - The ambient temperature at which the basal metabolic rate of a hemeotherm is minimal.

thermophile - Type of species, such as in hot springs, that prefer high or warm T. Syn: thermophilic.

thermoregulation: McManus 1976; Pagels 1975; Herreid 1961, 1963; Hock 1951; Licht & Leitner 1967; Menaker 1960, 1962; O'Farrell & Bradley 1977; Perkins 1976-7; Reeder 1949; Reite & Davis 1966; Remillard 1958; Twente & Twente 1964

Thermobaenaceans

Thermobaenacea is a small crustacean order of Class or Subclass Malacostraca & superorder Pancarida. About 10 sp. In 4 genera. Carapace reduced in size, esp. in males. Body stout, first thracic segment fused to cephalon (cephalothorax). Eyes usually absent. About 4 mm. long. Differ from Peracarida in having a dorsal brook pouchy. First pair of thoracopods modified as maxillipeds while thoracopods 2-8 are biramous and lack epipodites. **Bibl.:** Barker 1958, 1959; Maguire 1964, 1965, J. Stock 1986b; Stock & Longley 1981; Wagner 1988.

Monodellidae (also subsumed in Thermosbaenidae) (*Monodella*)

Kingdom Animalia

Phylum Arthropoda

Subphylum Crustacea

Class Malacostraca

Superorder Pancarida

Order Thermosbaenacea

Monodellidae (*Monodella*) (also put in Thermosbaenidae)

Monodella Barker, 1959 - Monodellidae thermobaenid (also put in Thermosbaenidae)

Bibl.:Wagner 1988, 1990

Monodella texana Maguire, 1965 (type locality cave in Hays Co., artesian wells in Hays, Bexar & Uvalde Cos.,TX/Pb G3) (likely derived from marine ancestors) **Bibl:** Stock & Longley 1981.

thermotaxis - Directional motion of motile species or organelles due to a temperature difference.

thigmotaxis - Active response to touch.

threatened - A T&E defined in ESA as any species which is likely to become an endangered species within the foreseeable future throughout a significant portion of its range.

threatened - See endangered species

threshold troglloxens & trogllophiles - See terminology

threshold - 1. Syn: twilight. 2. An area of reduced light around a cave entrance, generally before the drip line is reached & where area type (threshold troglloxenes & trogllophiles) live. Syn. for threshold species is pro-epigean. 3. Twilight zone where microclimate rapidly becomes cavelike. 4. Steep part of (half-)blind valley above a stream sink.

Thrips

Insect of Order Thysanoptera (= Physopoda). Of Subclass Pterygota, Division Neoptera, Subdivision Acercaria, Section Condylgnatha. Name from greek thysanos, “fringe” or “tassel,” referring to long hairs fringing both pairs of strap-like wings (sometimes wingless). Body black, dark brown or yellow, < 1/8 inch long. Soft-bodied; adults more chitinized than nymphs. Antennae short, sometimes as long as head and thorax but usually shorter. Right mandible vestigial, but other mouthparts elongate into stylets for piercing plant tissue or sucking blood. They are paurometabolous, with terrestrial eggs, nymphs (larvae) and adults. Modified to resemble holometabolism. Nymphs resemble adults except for lack of wings. Found in flower heads, under bark, on leaves and fruit, in leaf litter, moss. Some feed on algae, fungi, insect eggs and larvae, mites and even nematodes. About 4,500 species with over 600 in US. Earliest fossils are Permian. Rare in caves. Bibl.: Jacot-Guillarmod 1970-78; Stannard 1968

Suborder Terebrantia (boring thrips) (two tarsomeres; terminal abdominal segment not tubular)

Superfamily Thripodea

Heterothripidae (tree thrips)

Tribe Heterothripini (*Heterothrips*)

Thripidae (thrips)

Subfamily Thripinae:

Tribe Thripini (*Frankliniella*)

Suborder Tubulifera (banded thrips) (front tarsi with 1 tarsomere and middle and hind tarsi with 2 tarsomeres; terminal abdominal segment tubular)

Superfamily Phlaeothripodea

Phlaeothripidae (tube-tailed thrips)

Subfamily Phlaeothripinae (*Andraneothrips*)

Andraneothrips Uzel, 1895 (= *Notothrips* Hood, 1933) Phlaeothripidae thrips, Subfamily Phlaeothripinae (18 species in US or Canada)

Andraneothrips undet. sp. (Ac in Travis Co., TX)

Frankliniella Karny, 1910 - Thripidae thrips, Subfamily Thripinae, Tribe Thripini (40 species in US or Canada)

Frankliniella undet. sp. (Ac in Isopit, Bexar Co., TX)

Heterothrips Hood, 1908 (= *Phyllothrips* Buffa, 1908; *Phyllothripsiolus* Strand, 1912; *Protomnothrips* Hood, 1937) Heterothripidae thrips, Tribe Heterothripini (4 species in US or Canada)

Heterothrips undet. sp. (Ac in TX)

thysanurans - See silverfish and bristletails

tick - See mite, families Argasidae & Ixodidae.

Tick-bite Paralysis - Usually disappears when tick is removed.

tiger - Cat carnivora. - See **Mammal, cat.**

time activity budget - The amount of time allocated to various activities (e.g. day roosting, night roosting, flight, rest, grooming), expressed in absolute timeunits or by percent of total activity.

Toads

Amphibian of Subclass Apsidospondyli

Superorder Salientia

Order Anura. Areas: OH: C. Walker 1946

Suborder Neobatrachia,

Superfamily Bufonoidea

Bufonidae (true toads, bufonids)(*Bufo*)

Pelobatidae (pelobatids, spadefoot and horned toads) (*Scaphiops*, *Spea*)

***Bufo* Laurenti**, 1768 (toads) Bufonidae toads (18 species in US or Canada)

***Bufo americanus* a.** Holbrook, 1836 (se.Canada to E/ American toad/ Tx or Ac in MD, MS, WV; Ac in OH)

Bufo boreas Baird & Girard, 1852 (sAK to wCanada, s. toCO, UT, NV, n.Baja CA/ TTx or Ac in CA, WA/ western toad/ late Wisconsinan extralimital in Smith Cr. C., NV)

Bufo compactilis Wiegmann, 1833 (Sonora toad/ central highlands of Mexico/ Tx in TX)

Bufo debilis Girard, 1854 (se AZ to sw KS, s. to Mex./green toad / TTx in wTX/ KS T&E S2, global G5 rank)

Bufo punctatus Baird & Girard, 1852 (canyon toad/ se CA, UT, wKS, s. to Mex./ Tx in TX; Late Pleist. in Gypsum C., NV/ KS T&E S2, global G5 rank)

Bufo terrestris (*Rana t.* Bonnaterre, 1789) (southern toad/ seVA & LA to n.FL/ southern toad/ Tx in FL; rare Ac or Ttx in NJ/ cf. s.extralimital Pleist. in Cheek Bend C.,TN)

Bufo valliceps Wiegmann, 1833 (Gulf Coast toad/ SE to Costa Rica/Tx in TX; extralimital sw. in Fowlkes C., TX)

Bufo woodhousei Girard, 1854 (extralimital in Late Pleist. in Devils Den Sinkhole (Levy Co.),FL/ sON to US (except Great Basin, Pacific Coast) to Mex./ Woodhouse's toad/ Tx in KY;

Ac in OK /late Wisconsinan extralimital in Smith Cr. C.,NV)

Bufo *woodhousei bexarensis* Mecham, 1958b (extinct in Wisconsinan Friesenhahn C., TX)

Bufo *woodhousei fowleri* Hinckley (= *B.f.*, junior syn. of *B.w.*; unjustified use as ssp. /in *Bufo americanus* group) (Lake MI e to PA, seNY, sNE, s.to Gulf (excl. coastal SC, GA, sFL)/ Ac in OH; extralimital in Rancholabrean Reddick I (Marion Co.) & Haile (Alacua Co.) Sites, & late Wisconsinan in Devil's Den, FL)

Scaphiopus Holbrook, 1836 - Pelobatidae toads, subfamily Pelobatinae (6 species in US or Canada)

Scaphiopus bombifrons = *Spea bombifrons*

Scaphiopus *couchi* Baird, 1854 (Couch's spadefoot) (seCA, sAZ & NM, swOK s.to nMex./ Tx in TX)

Scaphiopus *hammondi h.* Baird, 1859 (western or Hammond's spadefoot, Hammonds' spea) (sCO to NM, eAZ, nwTX & nwMex./ Tx in TX)

Scaphiopus intermontanus = *Spea intermontana*

Spea Cope, 1866 (Western spadefoots) Pelobatidae toads, subfamily Pelobatinae (2 species in US or Canada)

Spea cf. *bombifrons* (*Scaphiopus b.* Cope, 1861) (now in n Mex, n. to sSK,sAB,MB, eMT, wSD, wND,eWY, NB, wOK, eCO, NM, nwTX, disjunct in sTX/ western or Plains spadefoot/ Pleist. Bechan C. (UT, 11,670 to 12,900 yrs. BP) west extralimital)

Spea *intermontana* (*Scaphiopus intermontanus* Cope, 1883) (sBC s. to eCA, e. to CO, nwNM/ Mexican or Great Basin spadefoot/ Pleist. Bechan C. (UT, 11,670 to 12,900 yrs. BP))

Stylopsids (= stylopoids) Insects of Order Strepsiptera, Insect Order of Subclass Pterygota, Division Neoptera, Subdivision Endopterygota (=Holometabola), Section Panorpida, Subsection Anthophora. Not known from US or Canadian caves or aquatic interstitial habitats

TOC - Total organic content in milligrams per liter.

topotype - Specimen taken from same locality as holotype.

torpidity - The state or quality of being dormant or inactive; a temporary loss of all or part of sensation or movement.

torpor (a state in which an animal's body temperature is depressed below homeothermic levels and that results in a lowered metabolic rate and an inability to perform normal locomotor functions)

(e.g. flight). Bibl.: Krutzsch & Hughes 1959; W. Davis 1965; ; Krutsch & Hughes 1959;

tortoise - See turtle

Tp - Abbrev. for troglophile.

trace organic - Evidence of life. Incl. coprolite, petroleum, asphalt, etc.

trace fossil (incl. casts, coprolite, molds, tracks, burrows, organics). See also coprolites. Eifet 1995; Turner & Szukalski 1985

track - Prints of an animal. Syn.: trail, spoor. See jaguar, human

transition zone - See twilight

trap, natural - Usually vertical shafts into which animals fall. Sometimes a bone cave.

trap door - see Ctzenizidae

tree (cast), lava - An igneous half-cylindrical projection above the surrounding surface, caused by the flow of lava against the upflow side of a tree which then burns. Unusual & mostly found on recent flows. Fossils - Turner & Szukalski 1985

tree-mold - A cylindrical hollow in an igneous flow formed by the envelopment of a tree by the flow, solidification of lava in contact with the tree & removal of the charcoal & ash from the burned tree.

Trematoda – See worms.

Trichoptera (= Phryganoidea) - Phylum or Order (caddisflies & water moths). Of Superorder Amphiesmenoptera, Section Mecopterida, Subdivision Endopterygota See **caddisfly**.

Trilobite – Extinct order of arthropod.

Anisopyge perannulata (wallrock in Carlsbad Caverns Natl. Park, NM)

troglobiont or troglobite (in title) - Anonymous 1977; Barr 1968; Barr & Holsinger, 1971; Barr & Peck, 1965; Benedict, E., & Malcolm 1973a; Besharse & Brandon 1973, 1974-a, 1976; Besharse & Holsinger, 1977; Bowman, T. 1964, 1975, 1981; B. & Beckett 1978; B. & Hobbs III 1983; B. & Lewis 1984; B. & Longley 1976; B. & Sket 1985; Brandon 1967-8, 1971; Briggs 1973, 1983, 1986, 1992; Brindle 1980; Caine 1974-a; Causey 1960b-c; Christiansen 1971; Collins & Holsinger 1981; Conde' 1953; Cooper, J. & C. 1974, 1978; Cram & Anderson 1976; Crawford 1974a-c; Deelman-Reinhold 1981; Dickson 1975-9; D. & Holsinger 1981; Eberly 1965; Elliott 1972; Estes 1978; Estes & Holsinger 1976; Fleming, L. 1972; F. & Steeves, 1972; Franz 1978; Franz & Hobbs 1983; Franz & Lee 1982; Franz et al. 1977; Gertsch 1992; Gunter, Gordon & Eleutherius 1971; Hart & Hart 1966; Hart & Hobbs 1961; Hobbs, Jr. 1971; Hobbs, Horton, Jr. & Barr 1960, 1972; Hobbs, Jr. & Bedinger 1964; Hobbs, Jr. & Cooper 1972; Hobbs,

Horton, Jr. Hobbs & Daniel; Hobbs, Jr., Krantz & Lee 1976; Hobbs, Jr., K. & Means, 1972; Hobbs, III 1973b, 1980-1, 1993, 1996; Hobbs, III & Barr 1960, 1972; Hobbs, III, Barr, & Daniel 1977; Hobbs, III & Brown 1987; Hobbs, III & Franz 1991-2; Holsinger 1963-a, 1967, 1981, 1988; H., & Bowman 1973; H. & Dickson 1977; H. & Estes 1978; Howarth 1981a, 1986-7; Hurst 1976; Kane 1991; Kane & Culver. 1991; Kane, Norton & Poulson 1975; Kane & Richardson 1991; Karnei 1979; Kawakatsu & Mitchell 1981; Keith, J. 1979, 1984; Lee, G. et al. 1977; Lewis, J. 1982a, 1983b-4; Lewis & Lewis 1983; Liebherr & Samuelson 1992; McNulty 1978; Manicasteri & Argano 1989; Marquart 1979; Marshall & Peck 1985; Mitchell, R. 1965, 1968a, 1971-a-b; M. & Reddell 1965; Muchmore 1970b, 1979-a, 1983; Nicholas 1960-a-b, 1969; Nickol & Whittaker 1978; Norton, Kane et al. 1975; Poulson 1985a; P. & White 1971; Relyea & Bankowski 1976; Relyea & Sutton; Roth, V. 1992; Russell, W. 1976; Schram 1982; Smith, D.G. 1984; Steeves 1963, 1963a, 1964a, 1965a, 1966, 1968a, 1969; S. & Holsinger 1968; S. & Seidenberg 1971; Stone 1991; Streever 1996; Sweet 1974, 1982; Thompson, D. & Jones 1996; Wilkens 1980; Zacharda & Pugsley 1988.

troglobiont - A troglodyte, especially one living in the lightless waters of caves.

troglobite - A type animal restricted to living its entire life cycle in cave darkness & only accidentally leaving it. Abbrev. as Tb. Many biologists use the term in a more restrictive sense for species also "modified to the cave environment" (Hamilton-Smith, 1971), especially in the attenuation of bodies and/or appendages.

troglodyte - A human cave dweller.

troglophobic - Adj. for morphologic cave adaptations, such as body & limb attenuation.

troglophile - Abbrev. as Tp. Current type of animal habitually entering the dark zone of a cave but necessarily spending part of its time outside such as some bats. Incl. habitual, facultative, threshold. Bibl. (t. in title) - Bruce Conn & Demoss, 1984; Choate & Rogers 1976; Conn, D., 1984; Crowell, 1981; Gournbault 1975; Hobbs, III 1995a; Holsinger 1967a; Jenio 1980; McCormick & Sarbu; McNulty 1978-a; Weise 1953

troglophobe - Animal unable physically or psychologically to enter the dark zone or other underground area.

trogloxene - animal entering cave but not living there permanently. Most bats are non-obligates as they can use other habitats. Incl. hibernating, obligate (syn: habitual), & threshold. Abbrev. as Tx.

trophic substances - Fingerman & Mobberly 1969

trophic levels - Feeding levels in a food chain, such as producers, herbivores, & so on. Most food chains form no more than 4-5 trophic levels. Low energy cave may have only 2-3.

trophic - the nutrient status of a water body.

trophic relationships/levels - Culver 1985

tropism - Automatic orientation of a taxon, as in a plant growing towards light. Cf. taxis, rheotaxis, thermotaxis, tropotaxis

tropotaxis - Movement toward or away from a stimulus received by bilateral sense organs.

tubificid worm -. See worm, earthworm.

Tunicates

Phylum Cordata, Subphylum Olfrochordata: Class Ascidiacea

Order Enterogona (or Suborder Aplousobranchia)

Suborder Aplousobranchia (or order)

Family Clavelinidae (*Clavelina*, *Pycnoclavella*)

Family Didemnidae (*Trididemnum*)

Family Polyclinidae (=Synoicidae) (*Ritterella*)

Family Polycitoridae (*Archidistoma*, *Pycnoclavella* (now in Clavelinidae))

Order Phlebobranchia (= Diktyobranchia)

Family Agnesiidae (*Agnesia*)

Family Ascidiidae (*Ascidia*)

Family Cionidae (*Ciona*)

Family Corellidae (*Chelyosoma*, *Corella*)

Order Stolidobranchia

Family Mogulidae (*Bostrichobranchus*, *Eugyra*, *Molgula*)

Family Pyuridae (*Boltenia*, *Halocynthia*, *Pyura*)

Family Styelidae (*Styela*)

Agnesia Michaelsen, 1898 - Agnesiidae tunicates

Agnesia septentrionalis Huntsman, 1912 (WA marine infauna)

Archidistoma Garstang, 1891 - Polycitoridae tunicates

Archidistoma ritteri (*Eudistoma ritteri* Van Name, 1945) (CA sea caves)

Ascidia Linnaeus, 1767 - Ascidiidae tunicates

Ascidia ceratodes (*Phallusia c.* Huntsman, 1912) (WA marine infauna)

Ascidia paratropa (*Ascidiopsis p.* Huntsman, 1912) (WA marine infauna)

Boltenia Savigny, 1816 - Pyuridae tunicates

Boltenia echinata (Linne=, 1767) (NB, PQ Gulf of St. Lawrence sandy marine interstitial)
Boltenia villosa (WA marine infauna)

Bostrichobranchnus Traustedt, 1883 - Molgulidae tunicate
Bostrichobranchnus pilularis Verrill, 1871) (GA brackish marine infauna)

Ciona Fleming, 1922 - Cionidae tunicates
Ciona intestinalis (*Ascidia i.* Linnaeus, 1767 (WA marine infauna)

Chelyosoma Broderip & Sowerby, 1830 - Corellidae tunicates
Chelyosoma columbianum Huntsman, 1912 (WA marine infauna)
Chelyosoma productum Stimpson, 1864 (WA marine infauna)

Clavelina Savigny, 1816 - Clavelinidae tunicates
Clavelina huntsmani Van Name, 1941 (bulb tunicate/ CA sea caves)

Corella Alder & Hancock, 1870 - Corellidae tunicates
Corella columbianum (WA marine infauna)

Eugyra Alder & Hancock, 1870 – Molgulidae tunicates
Eugyra arenosa (Alder & Hancock, 1848) (WA marine infauna)

Halocynthia Verrill, 1879 - Pyuridae tunicates
Halocynthia hilgendorfi (*Cynthia h.* Traustedt, 1885) ssp. *igaboja* Oka, 1906 (WA marine infauna)

Molgula Fores & Hanley, 1848 - Molgulidae tunicate
Molgula manhattensis (Dekay, 1843) (Carolinian, Virginian marine infauna)
Molgula occidentalis (Traustedt, 1883) (Carolinian marine infauna)

Pycnoclavella Garstang, 1891 - Clavelinidae tunicate (once in Polycitoridae)
Pycnoclavella stanleyi berrill & Abbott, 1949 (Ttx? in sand of CA sea caves)

Pyura Molina, 1782 – Pyuridae tunicates
Pyura haustor (*Cynthia haustor* Stimpson, 1864) (WA marine infauna)
Pyura mirabilis (*Cynthia m.* Von Drasche, 1884) (WA marine infauna)

Ritterella Harant, 1931 (= *Sigillinaria*) Polyclinidae tunicates
Ritterella pulchra (*Sigillinaria pulchra* Ritter, 1901) (Ttx in CA sea caves)
Ritterella rubra Abbott & Trason, 1968 (Ttx in CA sea caves)

Styela Fleming, 1822 – Styelidae tunicates
Styela gibbsii (*Cynthia g.* Stimpson, 1864) (WA marine infauna)

Trididemnum Della Valle, 1881 - Didemnidae tunicates

Trididemnum opacum (Ritter, 1907) (Ttx? in sand of CA sea caves)

Turbellaria – See worms.

turnover time - Duration in which a species' entire standing biomass is replaced

Turtles, terrapins & tortoises

Reptile (Class Reptilia) of Order Testudines (testudines; turtles, terrapins & tortoises). 244 known species. **Bibl.:** Ernst et al., 1994; Parris & Daeschler, 1995

Infraorder Cryptodira

Superfamily Trionychoidea

(Kinosternidae (mud & musk turtles) (*Kinosternon*))

Superfamily Testudinoidea

Chelydridae (*Chelydra*)

Emydidae (emydid, freshwater, pond & river turtles, terrapins)

(*Chrysemys*, *Clemmys*, *Emydoidea*, *Terrapene*, *Trachemys*)

Testudinidae (tortoises) (*Emydoidea*, *Geochelone*, *Gopherus*)

Chelydra Schweigger, 1812 (common snapping turtles; snapping turtles)- Chelydridae turtles (1 species in US or Canada)

Chelydra serpentina (Linnaeus, 1758) (snapping turtle) (sAB to NS, s. To Gulf/ Tx in San Antonio Springs, Bexar Co., TX)

Chrysemys Gray, 1844 (painted turtles) Emydidae turtles (1 species in US or Canada)

Chrysemys picta (Schneider, 1783) (BC to NS, s. to GA, w. to LA, n. to OK, nw to OR, disjunct in SW/ painted turtle/ Ttx or Ac in 2 NJ caves)

Clemmys Ritgen, 1828 (pond turtles; marsh turtles)- Emydidae turtles (4 species in US or Canada)

Clemmys insculpta (Le Conte, 1830) (NE to eWI, Great Lakes, nVA/ Wood Turtle/ Late Irvingtonian (Port Kennedy C.,PA) & late Pleist. (mTN)/ Ac in NJ)

Clemmys marmorata m. (Baird & Girard, 1852) (Northern Pacific or Northwestern Pond Turtle/ w.BC to w.Baja CA/ TTx or Ac in CA)

Emydoidea Gray, 1870 (Blanding's turtles) Testudinidae turtles (1 species in US or Canada)

Emydoidea blandingii (Holbrook, 1838) (now in IA, nIN, nIL, MI, NB, seON, nOH, s eSD, sWI/ Blanding's Turtle/ late Irvingtonian fossil south extralimital in Port Kennedy (PA) & Brynjulfson (MO) C. & Enon Sink (MO, Wisconsinian), early Sangamonian in Nye Sink, OK)

Geochelone Fitzinger, 1835 (geochelone tortoises; typical tortoises) - Testudinidae turtles (1 extant species in US or Canada)

Geochelone mlynarskii Auffenberg, 1988 (Irvingtonian extinct in Coleman IIA (Sumpter Co.), FL)

***Geochelone* (*Hesperotestudo*) *percrassa* (*Clemmys p.* Cope, 1899)** Parris & Daeschler, 1995 (extinct, type locality in late Irvingtonian Port Kennedy C., PA)

Geochelone* cf. *crassicutata (Leidy, 1889) (extinct in Moore Pit (Dallas Co., TX), early Wisconsinian in Haile XIVA near Haile, Alachua Co., FL & late Wisconsinian in Devil's Den., FL))

Geochelone incisa (Hay) (extinct/ Late Pleist. in Devils Den Sinkhole (Levy Co., FL), early Wisconsinian in Haile XIVA near Haile, Alachua Co., FL & Rancholabrean Arredondo Site (Alachua Co.), FL)

cf. ***Geochelone*** undet. sp. (Late Pleist. extinct in Tom Moore C., MO)

Geochelone wilsoni Milstead, 1956 (extinct tortoise in Wisconsinian Friesenhahn (Bexar Co., TX) & Dry Cave, Eddy Co., NM & Rancholabrean in Edwards Co., TX) **Bibl.:** Parmley 1986

Gopherus Rafinesque, 1832 (gopher tortoises)- Testudinidae turtles (3 extant species in US or Canada)

Gopherus agassizii (Cooper, 1863) (now in seCA & sNV, se to EAZ, Mex./ desert tortoise/ Wisconsinian extralimital in e. in Dry (Eddy Co.) & Shelter & Robledo (probably, Pleist.), NM; Holocene or Pleist. extralimital at Lehman C., sNV)

Gopherus undescr. sp. (extinct/ Rancholabrean in Nye Sink, Beaver Co., OK)

Kinosternon Spix, 1824 (American mud and musk turtles; mud turtles) Kinosternidae turtles (5 species in US or Canada)

Kinosternon flavescens (Agassiz, 1857) (nNB to TX, NM, seAZ, disjunct in nwIL, adjacent IA/ yellow mud turtle/ Ac in TX)

Kinosternon sonoriense (LeConte, 1854) (sAZ, swNM, nMex. epigean/ Sonora Mud Turtle/ TTx in AZ)

Pseudemys scripta = *Trachemys s.*

Trachemys Agassiz, 1857 (slider turtles; sliders) Emydidae turtles (2 species in US or Canada)
Trachemys scripta petrolei (extinct Pleist. In Reddick I Site, (Marion Co.) & Arrendondo Site (Alacua Co.), FL)

Trachemys scripta (*Pseudemys s.* Schoepff, 1792; *Chrysemys s.*) (nFL to VA, sMW, seNM/
Common or Pond Slider/ TTx in AZ)

Terrapene Merrem, 1820 (box turtles) Emydidae turtles (2 species in US or Canada)

Terrapene carolina (Linnaeus, 1758) (FL to sMA, MI, sNY, w.to sIL,eKS, eOK,e TX/ Eastern Box Turtle/ extralimital to west in Kendall Co.,TX; Yarmouthian Pleist. extralimital in Port Kennedy C.,PA/ Ac in NJ, MD; Tx or Ac in nAL, nMS, TN; Ttx in WV) **Bibl.:** Poly & Noggle 1996

Terrapene ornata (Agassiz, 1857) (western box turtle) (sSD,IA,eIL, s.to LA,TX, w.to swAZ/ Ac in TX)

twilight zone - The area of a cave between the drip line (if present) and where sunlight penetrates. Peck & Richardson, 1976; Culver & Poulson, 1970; Hellman, 1989; Lavoie, Cyr, et al., 1991; Lavoie, Poulson, Helf 1996; Olson, R. 1973; Peck, 1976; Richard, C.M. et al., 1993-4, 1995; Nicholas 1971; Poulson & Culver 1981

twin species - Very similar species in form and which live in the same region.

tychoc(o)enic - Refers to species with a fairly strict dependence on a specific mix of ecologic factors found in several similar habitats. Syn.: Preferential

type specimen or taxon - Syn: holotype.

type of species - Incl. area (benthic, meiofauna (endogean & phreatobia (phreatobite)), lotic, threshold, & wall), chemotroph, chemoorganotroph, cryophilic, heterotroph, inquilism, locality, parasite, stygobiont (St), troglobite (Tb), troglophile (Tp) (threshold), troglophobe, troglonexene (obligate (Tx) & threshold), & T&E (endangered, federal, rare, sensitive, & state).

ungulate - Order of hoofed mammals, including the Perissodactyla, Artiodactyla and the extinct and ancestral Condylarthra. See bison, deer, goat, horse, pronghorn, sheep & tapir in **Mammals**

Uniramia - Subphylum of arthropods, incl. insects & myriapods.

Urodela - See salamander.

valley fever - Disease caused by *Coccidioides immitis* fungi in SW, known from Inyokern C..
Bibl.: W. Lewis 1992a.

variety - A taxon division below that of subspecies, abbrev. as var.

vertebrate - Animal with backbone. Incl. amphibian, bird, fish, mammal & reptile.

vicariance biogeography - Where distribution of taxon is due to dispersal rather than sweepstakes routes. New barriers & extirpations result in disjunct ranges.

Virginian – Area that includes nSC, n. to NJ.

viviparous - Reproduction in which eggless young are internally maintained and nourished by the mother before birth.

vole - See **mammal**, vole

voltine - Refers to the number of generations during the year or during the reproductive season. Incl. univoltine, bivoltine, polyvoltine.

voltinism - Refers to the frequency with which the life cycle is completed within a year

Walkingsticks

(phasmids; stick & leaf insects). Once in Orthoptera, now in Class Insecta, Order Phasmatodea (= Phasmodea, Cheleutoptera, Gressoria), Subclass Pterygota, Division Neoptera. Body elongate, cylindrical and sticklike (stick insects) or flattened and leaflike (leaf insects). 5-35 cm. Long. Two pairs of wings may be more or less reduced; a few species are wingless. Strong, biting mandibulate mouthparts. Antennae filiform or moniliform with 8->100 segments. Compound eyes but only a few with ocelli. Prothorax short, the meso- and metathorax long. Legs similar, with small, widely separate coxae. Tarsi usually with 5 segments. Paurometabolous. >2,500 species, mostly tropical. May be most closely related to Caelifera in Orthoptera or with Dermaptera and Grylloblattodea **Bibl.:** Bedford 1978; Bradley & Galil 1977; J. Helfer 1963

Phasmatidae (walkingsticks)

undet genus (4,340 to 2,260 years old in scNM *Neotoma* woodrat nest)

wall association - A specific group area type of invertebrates frequently found on the walls & ceilings of the deep threshold & transition zones of caves.

walrus - Odobenidae family of Pinnipeds - See walrus in **Mammal**

water - Ballinger & Ryan 1990; Barr 1976; Bechler 1983; Branstetter 1974; Chess & White 1989; Glasco 1992; Greer 1985; Jones 1983; Mathews et al 1977; Pearson 1996; Poulson 1988, 1992; Pride et al. 1989, 1991; Lewis 1996; Rusterholtz 1989; Rusterholtz & Mallory 1990.

water striders - See **Bugs**

water "flea" - Amphipod or an aquatic branchiopod crustacean of Order Cladocera.

weaning - Time when a juvenile begins to take food other than its mother's milk.

weasel - See **Mammal**, weasel

weather (see climate, habitat) - Nixon 1975a; Poulson, Lavoie & Helf 1995

webspinners – Insects of Order Embioptera, not known from US or Canadian caves or aquatic interstitial. **Bibl.:** E. Ross 1940, 1944, 1984

webworm - See Mycetophilidae in **Flies**

weevils – See Beetles

Whipscorpions & Schizomids

Class Arachnida, Order Uropygi (=Thelyphonida), Suborder Schizomida (schizomids & whipscorpions). Or order Pedipalpi, suborder Uropygi (schizomids & whipscorpions). whipscorpions, whipless or tailless whipscorpions are of Order Amblypygi (=Amblypygida)

20-70 mm. long arachnids. Scorpion-like with long, slender tails. Gas defense from rear end smells like acetic acid, hence the common name of vinegarone. Having no venom, they kill nocturnal prey (roaches, grasshoppers, worms, slugs) by crushing them. Use front legs like antennae. Four pairs of weak, simple eyes. Abdomen with 12 segments, the last three form small plate (pygidium). Dig holes under rock. Young sucker to back of fasting mother. When they leave upon molting, the mother dies. Maturity reached after three molts in three years. About 75 whipscorpions & >50 schizomid species

Whipscorpion Bibl.: Anon. 1984a; Georgoseu 1994; Bennett 1985; Briggs 1986a; Elliott 1984, 1984a; Reddell & Cokendolpher 1995; Rowland 1975, 1975a; Rowland & Reddell 1976-7, 1979, 1981; Weygoldt

Kingdom Animalia

Clade Metazoa

Clade Eumetazoa

Clade Bilateria

Clade Protostomia

Clade Ecydsozoa

Phylum Arthropoda

Subphylum Chelicerata

Class Arachnida

Subclass Micrura

Order Amblypygi (tail-less whip scorpions)

Order Thelyphonida (= Uropygi) (whip scorpions)

Order Schizomida (schizomids)

HUBBARDIIDAE (incl. *Hubbardia*)

PROTOSCHIZOMIDAE Brach, 1975

undet. genus (cave in Val Verde Co. ,TX/ Tb) **Bibl.:** Cokendolpher & Reddell 1992; Gertsch 1992

SCHIZOMIDAE (incl. *Schizomus*)

Hubbardia Cook, 1889 - Hubbardiidae whipscorpions. **Bibl.:** Reddell & Cokendolpher 1991, 1995

Hubbardia shoshonensis (*Trithyreus* s. Briggs & Hom, 1972; *Schizomus* s.) (*type locality cave in Inyo Co.,CA/ CA T&E G1S1, Federal Species of Concern/ Tb) **Bibl.:** US Bureau of Land Management 1982

Schizomus Cook, 1899 - Schizomidae whipscorpion

Schizomus siamensis Hansen, 1905 (HI caves)

Schizomus shoshonensis = *Hubbardia* s.

Phrynus Lamarck, 1801 (tailless whipscorpion) Phrynidae tailless whipscorpion (Amblypygi)

Bibl.: Quintero 1981

Phrynus undescr. sp. (*cave in Val Verde Co., wEdwards Plateau, TX/ Tp)

Trithyreus Kraepelin, 1899 *shoshonensis* = *Hubbardia* s.

Triura - See *Machilis*

Paraphrynus Moreno, 1940 - Phrynidae tailless whipscorpion

Paraphrynus raptator (Pocock, 1902) (Tp in FL)

Tarantula Fabricius, 1793 (side-spotted tailless whipscorpion)

Tarantula undet. sp. (Tp in cave in Edwards Co.,TX)

wind scorpion - See solifugids.

wing-loading - The ratio of body mass divided by the wing area. Expressed as grams of body mass/ wing area (centimeters squared)

Wisconsinian - Last of four glaciations, from 80,000 to 10,000 years ago.

wolf, wolverine & woodrat - See **mammal**

Worms

Phylum Annelida

Coelomate, segmented animals that are almost all wormlike & elongate. About 17,000 described species. Usually segmented in their trunks, with each segment carrying bristles (setae or chetae)

Subphylum Clitellata

Class Aphanoneura

Class Branchiobdellida (also grouped with leeches) (branchiobdellids)

Class Hirudinea (=Hirudinoidea) (leeches) (see below)

Subclass Branchiobdellidea

Order Branchiobdellida

Class Oligochaeta (earthworms, leeches)

Subclass Hirudinea (or placed in class above)

Subphylum or Class Polychaeta (polychaete, lug, rag and sand worms)

Subclass Canalipalpata (see below)

Subclass Palpata

Order Canalipalpata (or as subclass)

Phylum Chaetognatha (arrow worms)

Phylum Gastrotricha (gastrotrichs)

Phylum Hemichordata (= Branchiotremata) (acorn worms)

Phylum Nematomorpha

Class Gordioida (hairworms)

Phylum Nemertina (ribbon worms)

earthworm (see oligochaete below), flatworm (see **Turbellaria**) fluke, jaw worms (Gnathostomulida), horsehair (see hairworms), onychophoran, roundworm (see **Nematode**) tapeworm (see below) and thorny headed.

Acorn Worms

Of Phylum Hemichordata of the Deuterostomia. Hemichordates are marine, wormlike animals, which are solitary (Class Enteropneusta, acorn worms) or live in communities or colonies (Class Pterobranchia) Undet. genus (sCA marine infauna)

Class Enteropneusta (acorn worms; enteropneusts)

Harrimaniidae (*Balanoglossus*, *Saccoglossus*)

Class Sagittoidea

Order Aphragmophora

Suborder Ctinodontina

Family Pterosagittidae *Pterosagitta*

Belanoglossus - Ptychoderidae acorn worms

Belanoglossus undet. sp. or species (FL, GA marine infauna)

Balanoglossus aurantiacus (Carolinian marine infauna)

Saccoglossus Shimkewitsch, 1892 (= *Belanoglossus*, *Dolichoglossus*)] Harrimaniidae acorn worms

Saccoglossus kowalewskyi (CT, ME, Virginian & Carolinian marine benthic)

Arrow Worms

Phylum Chaetognatha

Class Sagittoidea

Order Aphragmophora

Krohnittellidae (*Krohnitta*)

Pterosagittidae (*Pterosagitta*)

Sagittidae (*Sagitta*)

Krohnitta Ritte-Zahony, 1910 – Krohnittellidae arrow worms

Krohnitta subtilis (Grassi, 1881) (FL marine infauna)

Pterosagitta Costa, 1969 draco - Pterosagittidae arrow worms

Pterosagitta draco (Krohn, 1853) (FL marine infauna)

Pterosagitta undet. sp. (HA marine infauna)

Sagitta Quoy & Giamard, 1827 - Sagittidae arrow worms

Sagitta elegans Verrill, 1873 (ME marine infauna)

Sagitta enflata Grassi, 1881 (FL, HA marine infauna)

Sagitta hispida Conant, 1895 (FL marine infauna)

Sagitta regularis Aida, 1897 (HA marine infauna)

Sagitta tenuis Conant, 1896 (FL marine infauna)

Gastrotrichs

Gastrotricha, a marine phylum or class of Pseudocoelomates (=Aschelminthes) worms.

Order Chaetonotida

Suborder Multitubulatina

Family Neodasyidae (*Neodasy*)

Suborder Paucitubulina

Family Chaetonotidae (also put in Order Macrodasyida)

(*Aspidiophorus*, *Chaetonotus*, *Heterolepidoderma*, *Ichthydium*, *Lepidodermella*,
Musellifer, *Polymerurus*)

Family Dasydytidae (*Dasydytes*)

Family Xenotrichulidae (*Draculiciteria*, *Heteroxenotrichula*, *Xenotrichula*)

Order Macrodasyida

Family Dactylopodolidae (*Dactylopodola*)

Family Lepidodasyidae (*Cephalodasys*, *Dolichodasys*, *Lepidodasys*, *Mesodasys*)

Family Macrodasyidae (*Macrodasys*)

Family Thaumastodermatidae

Subfamily Diplodasyine (*Acanthodasys*, *Diplodasys*)

Subfamily Thaumastodermatinae (*Platydasys*, *Pseudostomella*, *Tetranchyroderma*)

Family Turbanellidae (*Paraturbanella*, *Turbanella*)

Acanthodasys Remane, 1927 - Thaumastodermatidae gastrotrich worms, Subfamily
Diplodasyine

Acanthodasys aculeatus Remane, 1927 (Gulf of Mexico (AL, FL &/or TX) interstitial)

Acanthodasys undescr. sp. (Gulf of Mexico (AL, FL &/or TX) interstitial)

Aspidiophorus Voigt, 1904 - Chaetonotidae gastrotrich worms

Aspidiophorus marinus Remane, 1925 (MA marine interstitial)

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Aspidiophorus mediterraneus Remane, 1927 (Mediterranean, Gulf of Mexico (AL, FL &/or TX)
interstitial)

Aspidiophorus multitubulatus Hummon, 1974 (NC marine beach interstitial)

Aspidiophorus paramediterraneus Hummon, 1974 (NC & Gulf of Mexico (AL, FL &/or TX)
marine beach interstitial)

Aspidiophorus undet. 2 species (interstitial in NH lakes)

Aspidiophorus tentaculatus Wilke, 1954 (NC, Mediterranean marine beach interstitial)

Cephalodasys Remane, 1926 - Lepidodasyidae gastrotrich worms

Cephalodasys undet. sp. (MA marine benthic infauna)

Cephalodasys turbanelloides (Boaden, 1963) (Europe & Gulf of Mexico (AL, FL &/or TX)
interstitial)

Chaetonotus Ehrenberg, 1830 - Chaetonotidae gastrotrich worms

Chaetonotus acareus Hummon, 1974 (US Atlantic marine beach interstitial)

Chaetonotus aculifer Gerlach, 1953 (MA marine infauna)

Chaetonotus apolemmus Hummon, Balsamo & Todaro, 1992 (Europe & Gulf of Mexico (AL, FL &/or TX) interstitial)

Chaetonotus atrox Wilke, 1954 (Gulf of Mexico (AL, FL &/or TX) interstitial)

Chaetonotus dispar Wilke, 1954 (Gulf of Mexico (AL, FL &/or TX) interstitial)

Chaetonotus foliatus (Renaud-Mornant, 1967) (MA marine infauna)

Chaetonotus maximus Ehrenberg, 1838 (MA marine infauna)

Chaetonotus sagittarius Evans, 1992 (Gulf of Mexico (AL, FL &/or TX) & East Coast interstitial)

Chaetonotus schoepferi Thane-Fenchel, 1970 (US Atlantic beach & sublittoral interstitial)

Chaetonotus schoepferi sagittarius = *C. sagittarius*

Chaetonotus undet. sp. or species (MA, NY freshwater sandy beach interstitial)

Chaetonotus testiculophorus Hummon, 1966 (WA marine infauna)

Chaetonotus triacanthus Todaro, Fleeger & Hummon, 1995 (Gulf of Mexico (AL, FL &/or TX) interstitial)

Chaetonotus undet. sp. or species (interstitial in NH lakes; MN hyporheic))

Chaetonotus undescr. sp. (Gulf of Mexico (AL, FL &/or TX) interstitial)

Chaetonotus woodi Thane-Fenchel, 1970 (US Atlantic marine sublittoral interstitial)

Dactylopodola Strand, 1929 - Dactylopodolidae gastrotrich worms

Dactylopodola typhle (Remane, 1929) (= *Dactylopodalia typhle*; *Dactylopodella typhle*;

Dactylopodalia weilli) (Europe & Gulf of Mexico (AL, FL &/or TX) interstitial)

Dasydytes Gosse, 1851 - Dasydytidae gastrotrich worms

Dasydytes ooeides Brunson, 1950 (MI lake interstitial)

Diplodasys Remane, 1927 - Thaumastodermatidae gastrotrich worms, Subfamily Diplodasyine

Diplodasys ankeli Wilke, 1954 (MA marine infauna)

Dolichodasys Gagne, 1977 - Lepidodasyidae gastrotrich worms

Dolichodasys elongatus Gagne, 1977 (Gulf of Mexico (AL, FL &/or TX) interstitial)

Dolichodasys undescr. sp. (Gulf of Mexico (AL, FL &/or TX) interstitial)

Draculiciteria Hummon, 1974 - Xenotrichulidae gastrotrich worms

Draculiciteria tessellata (*Polymerurus tessellatus* Renaud-mornant, 1968) (Gulf of Mexico (AL, FL &/or TX) interstitial)

Halichetonotus Chaetonotidae gastrotrich worms

Halichetonotus margaretae (Europe & Gulf of Mexico (AL, FL &/or TX) interstitial) *aculifer*,

decipiens, *paradoxus*, *spinosus* (Gulf of Mexico (AL, FL &/or TX) interstitial)

Heterolepidoderma Remane, 1927 - Chaetonotidae gastrotrich worms

Heterolepidoderma loricatum Schrom, 1972 (Europe & Gulf of Mexico (AL, FL &/or TX) interstitial)

Heterolepidoderma undescr. sp. (Gulf of Mexico (AL, FL &/or TX) interstitial)

Heterolepidoderma texana Todaro, Fleege & Hummon, 1995 (Gulf of Mexico (AL, FL &/or TX) interstitial)

Heteroxenotrichula Wilke, 1954 - Xenotrichulidae gastrotrich worms

Heteroxenotrichula pygmaea Remane, 1934 (Gulf of Mexico (AL, FL &/or TX) interstitial)

Heteroxenotrichula squamosa Wilke, 1954 (MA, Gulf of Mexico (AL, FL &/or TX) interstitial)

Heteroxenotrichula texana M.A. Todaro, 1994 (Gulf of Mexico (AL, FL &/or TX) interstitial)

Ichthyidium Ruppert, 1977 - Chaetonotidae gastrotrich worms

Ichthyidium hummoni Ruppert, 1977 (NC marine beach vadose interstitial)

Ichthyidium undet. sp. or species (interstitial in NH lakes; NY freshwater sandy beach interstitial))

Lepidodasys Remane, 1926 - Lepidodasyidae gastrotrich worms

Lepidodasys elongatus Remane, 1926 (Gulf of Mexico (AL, FL &/or TX) interstitial)

Lepidodasys undescr. sp. (Gulf of Mexico (AL, FL &/or TX) interstitial)

Lepidodasys undet. sp. (MA marine benthic infauna)

Lepidodermella Blake, 1933 - Chaetonotidae gastrotrich worms

Lepidodermella undet. sp. (NY freshwater sandy beach interstitial)

Lepidodermella squammata Blake, 1933 (rare interstitial in NH lakes)

Lepidodermella trilobum (*Lepidoderma t.* Brunson, 1950) (interstitial in NH lakes)

Macrodasys Remane, 1924 - Macrodasyidae gastrotrich worms

Macrodasys caudatus Remane, 1927 (MA marine benthic infauna)

Macrodasys cunctatus (WA marine infauna)

Mesodasys Remane, 1951 - Lepidodasyidae gastrotrich worms

Mesodasys elongatus Remane, 1951 (Gulf of Mexico (AL, FL &/or TX) interstitial)

Mesodasys laticaudatus Remane, 1951 (MA marine benthic infauna)

Mesodasys undescr. sp. (Gulf of Mexico (AL, FL &/or TX) interstitial)

Musellifer Hummon, 1969 - Chaetonotidae gastrotrich worms

Musellifer sublittoralis Hummon, 1969 (WA, US Pacific Ocean marine sublittoral interstitial)

Neodasys Remane, 1927 - Neodasiidae gastrotrich worms Suborder Multitubulatina

Neodasys chaetonotoideus Remane, 1927 (MA marine infauna)

Neodasys ciritus W.A. Evans, 1993 (Gulf of Mexico (AL, FL &/or TX) interstitial)

Paraturbanella Remane, 1927 - Turbanellidae gastrotrich worms

Paraturbanella aggregotubulata W.A. Evans, 1993 (East coast & Gulf of Mexico (AL, FL &/or TX) interstitial)

Paraturbanella intermedia Wieser, 1957 (WA marine infauna)

Paraturbanella solitaria Todaro, 1995 (CA marine interstitial)

Paraturbanella teissieri Swedmark, 1954 (Gulf of Mexico (AL, FL &/or TX) interstitial)

Paraturbanella undescr. sp. (Gulf of Mexico (AL, FL &/or TX) interstitial)

Platydasys Remane, 1927 (= *Pseudostomella*) Thaumastodermatidae gastrotrich worms
Subfamily Thaumastodermatinae

Platydasys ocellatus Clausen, 1965 (= *Pseudostomella plumosa*) (East coast & Gulf of Mexico (AL, FL &/or TX) interstitial)

Platydasys plumosa (*Pseudostomella p.* Ruppert, 1970) (Gulf of Mexico (AL, FL &/or TX) interstitial)

Platydasys roscovita (*Pseudostomella r.* Swedmark, 1956) (Gulf of Mexico (AL, FL &/or TX) interstitial)

Platydasys undet. sp. (MA marine benthic infauna)

Polymerurus Remane, 1927 - Chaetonotidae gastrotrich worms

Polymerurus cf. *callosus* Brunson, 1950 (AB lake benthic; rare interstitial in NH lakes)

Polymerurus nodicaudus (Voight, 1901) (rare interstitial in NH lakes)

Polymerurus undet. sp. (NY freshwater sandy beach interstitial)

Pseudostomella Remane, 1927 - Thaumastodermatidae gastrotrich worms Subfamily
Thaumastodermatinae

Pseudostomella plumosa = *Platydasys ocellatus* Clausen, 1965

Pseudostomella Swedmark, 1956 = *Platydasys*

Tetranchyroderma Remane, 1926 - Thaumastodermatidae gastrotrich worms, Subfamily
Thaumastodermatinae

Tetranchyroderma bunti (Thane-fenchel, 1970) (East coast & Gulf of Mexico (AL, FL &/or TX) interstitial)

Tetranchyroderma papii Gerlach, 1953 (MA marine benthic infauna)

Tetranchyroderma 3 undet. species (MA marine benthic infauna)

Tetranchyroderma paradoxa Thane-Fenchel, 1970 (East coast & Gulf of Mexico (AL, FL &/or TX) interstitial)

Tetranchyroderma pugetensis Wieser, 1957 (WA marine infauna)

Tetranchyroderma sardum (Europe & Gulf of Mexico (AL, FL &/or TX) interstitial)

Tetranchyroderma swedmarki Chandras, Rao, Ganapati, 1968 (Gulf of Mexico (AL, FL &/or TX) interstitial)

Turbanella Schultze, 1853 - Turbanellidae gastrotrich worms

Turbanella ambronensis Remane, 1943 (Gulf of Mexico (AL, FL &/or TX) interstitial)

Turbanella bocqueti Kaplan, 1958 (Europe & Gulf of Mexico (AL, FL &/or TX) interstitial)

Turbanella cirrata Papi, 1957 (MA marine benthic infauna)

Turbanella cornuta Remane, 1925 (MA, Puget Sound (WA) & Europe marine interstitial)

Turbanella mustela Wieser, 1957 (FL, WA marine interstitial)

Xenotrichula Remane, 1927 - Xenotrichulidae gastrotrich worms

Xenotrichula beauchampi Levi, 1950 (MA marine infauna)

Xenotrichula intermedia Remane, 1934 (Gulf of Mexico (AL, FL &/or TX) interstitial)

Xenotrichula lineata Schrom, 1972 (Gulf of Mexico (AL, FL &/or TX) interstitial)

Xenotrichula punctata Wilke, 1954 (MA marine infauna)

Xenotrichula pygmaea Remane, 1934 (MA marine infauna)

Gnathostomulids

Phylum Gnathostomulida (freeliving microscopic marine worms within Pseudocoelomates (=acoelomate Bilateria))

Order Filospermoidea

Haplognathiidae (*Haplognathia*, *Labidognathia*, *Tenuignathia*)

Gnathostomariidae

(*Austrognathia*, *Gnathostomula*, *Nanognathia*, *Onychognathia*, *Semaeognathia*)

Austrognathia Sterrer, 1965 - Gnathostomariidae gnathostomulid worms

Austrognathia christiana Farris, 1977 (US Atlantic marine beaches interstitial in sand)

Austrognathia kirsteueri Riedl, 1971 (US Atlantic marine beaches & sublittoral interstitial in sand)

Gnathostomula Ax, 1956 - Gnathostomariidae gnathostomulid worms

Gnathostomula armata Riedl, 1971 (US Atlantic marine beach & sublittoral interstitial in sand)

Gnathostomula brunidens Riedl, 1971 (US Atlantic marine beach & sublittoral interstitial in sand)

Gnathostomula jenneri Riedl, 1971 (US Atlantic marine beache & sublittoral interstitial in sand)
Gnathostomula mediocrista Riedl, 1971 (US Atlantic marine beache & sublittoral interstitial in sand)

Gnathostomula microstyla Riedl, 1971 (US Atlantic marine beache & sublittoral interstitial in sand)

Gnathostomula nigrostoma Riedl, 1971 (US Atlantic marine beache & sublittoral interstitial in sand)

Haplognathia Sterrer, 1970 - Haplognathiidae gnathostomulid worms

Haplognathia ctenifera Sterrer, 1970 (US Atlantic marine beaches interstitial in sand)

Haplognathia lyra Sterrer, 1970 (US Atlantic marine beaches interstitial in sand)

Labidognathia Riedl, 1970 - Haplognathiidae gnathostomulid worms

Labidognathia longicollis Riedl, 1970 (US Atlantic marine beaches interstitial in sand)

Nanognathia, Ax, 1956 - Gnathostomariidae gnathostomulid worms

Nanognathia exigua Sterrer, 1972 (US Atlantic marine beaches & sublittoral interstitial in sand)

Onychognathia Riedl, 1971 - Haplognathiidae gnathostomulid worms

Onychognathia filifera Riedl, 1971 (US Atlantic marine beaches & sublittoral interstitial in sand)

Pterognathia Sterrer, 1966

Pterognathia ctenifera (US Atlantic marine beaches & sublittoral interstitial in sand)

Pterognathia rosacea Riedl, 1971 (US Atlantic marine beaches & sublittoral interstitial in sand)

Pterognathia tyra, (US Atlantic marine beaches & sublittoral interstitial in sand)

Semaegnathia Riedl, 1970 - Haplognathiidae gnathostomulid worms

Semaegnathia sterreri Sterrer, 1970 (US Atlantic marine beaches interstitial in sand)

Tenuignathia Sterrer, 1976 - Haplognathiidae gnathostomulid worms

Tenuignathia rikeri Sterrer, 1976 (US Atlantic marine beaches & sublittoral interstitial in sand)

Hairworms

Unsegmented worms of Class Gordioidea, Phylum Nematomorpha. = or > 1' long, about 1/24" diameter common. Once thought to arise spontaneously from horse hairs, hence the name.

Immature worms are obligate parasites. In cave crickets in AR, KY, NM, TX, rarely in *Neaphaenops* & *Pseudanophthalmus* beetles & in leeches, caddisflies & dragonflies. Marine ones parasitize crabs. Food absorbed through body as intestines vestigial.. Usually encyst on

aquatic plants which are then eaten by host. Larvae grows into adult in several weeks to months. Bore out of body if insect becomes too wet. The phylum Nematomorpha (from the Greek nema, "thread," and morphe, "shape"), consists of a group of invertebrates, commonly called horsehair or gordian worms, that has no close relationships with any other living organisms. The name horsehair is derived from the worm's hair or threadlike appearance in its adult stage. The first known fossil record of this group dates from the Eocene (40 - 70 million years ago), but experts suggest it may have its roots in the lower Paleozoic Era (over 500 million years old).

As larvae, horsehair worms are parasites of insects and other aquatic and terrestrial invertebrates, most notably grasshoppers, crickets, locusts, katydids, and beetles. Other hosts include caddisflies, dragonflies, spiders, millipedes, centipedes, crustaceans, and leeches. Host specificity has not yet been well documented. Other hosts include representatives of vertebrate groups.

Most horsehair worms are observed in their adult, free-living stage among the vegetation near edges of ponds and streams, although a few semiterrestrial species occur in damp soil. A small group of marine species, parasitic on crustaceans, have been collected from coastal environments.

Nematomorphs measure up to 1 meter in length and from less than 1 to 3 millimeters in diameter; diameter is uniform from one end to the other. Color usually ranges between light tan to dark brown, although yellowish and black individuals have been observed. Size and coloration vary considerably, even within the same species. Males are smaller than females, and the two sexes may be found in equal and unequal numbers in the same population. Locomotion of adult horsehair worms is at most a very slow whipping action; males seem to be much more active than females.

Horsehair worms reproduce sexually, in spring, early summer, or autumn. Eggs, often numbering in the millions, are laid in long gelatinous strings. For aquatic forms, the incubation period may range between 15 and 80 days, depending upon water temperature.

The mode of development of nematomorphs after hatching has been the subject of much debate. Some experts suggest that the larvae encyst on vegetation or other substrates along the water's edge soon after hatching. Eventually, some of these cysts are ingested by hosts feeding on these substrates. The cyst rapidly degenerates in the digestive tract of the new host. The larva then burrows its way through the intestinal wall into the host's body cavity, continuing its development. When ingested by inappropriate hosts, the cyst may degenerate and then reencyst in the tissues of the host. If this inappropriate host is then ingested by one of its predators (an appropriate host for the nematomorph). The cyst may again disintegrate and continue its life cycle in this new host. Other researchers have suggested that after the nematomorph larva emerges from the egg, it will penetrate the body wall of just about any animal it happens to encounter, although again, normal development will occur only in hosts. This mode of development may occur in the semiterrestrial species of horsehair worms.

After entering the body cavity of an appropriate host, the larva grows to a juvenile stage, then emerges from the host to mature. During the larval stage of development, the horsehair worm digests and absorbs surrounding tissue. This period of metamorphosis occurs over a period of several weeks to several months; eventually the larval form develops into a tightly coiled mass in the host. One to several horsehair worms may occur in a single host. The parasite uses the important nutrients of the host, probably impairing its reproductive system. It has been suggested

that hosts seek water when the horsehair worm is ready to emerge, perhaps even being driven to water by some physiological cue. Once the host enters the water, the horsehair worm breaks through the body wall of the host. Newly released horsehair worms soon die if they do not have access to water.

Phylum Nematomorpha (horsehair worms (=gordian worms) and hairworms) (incl. Aschelminthes in part)

Class Gordioida

Order Chordodea

Superfamily Gordioidea

Chordodidae (*Chordodes*)

Gordiidae (*Gordius*)

Paragordiidae (*Paragordius*)

Bibl.: <http://ctr.uvm.edu/ctr/el/el222.htm>; Poulson, Lavoie & Chandler 1990; Studier et al. 1991

Chordodes Creplin, 1847 - Chordodidae hairworms

Chordodes morgani (KY/parasite in crickets) Studer, Lavoie, Chandler (1988),

Gordius Linnaeus, 1758 - Gordiidae hairworms

Gordius aquaticus Duj (Tx parasitic on arthropods in ON)

Gordius undet. sp. (MO/Tx parasitic on arthropods in MO, ON)

Leeches & Branchiobdellids

Segmented, closely allied to or part of Oligochaeta. Of Phylum Annelida, Class Oligochaeta or Hirudinoidea (=Clitellata?), Order, Class or Subclass Hirudinea (leeches) & Branchiobdellida (branchiobdellids).

Branchiobdellids are from 2-5 mm long and usually are commensals on crayfish & some isopods. Probably diverged early from oligochaete-leeches. Very small (14-5 segments) with head sucker-like with a circle of finger-like projections. Setae are absent. The buccal cavity has two teeth. Rear segments also modified into a sucker.

Leech Areas: Canada: Davies 1971; Madill 1985; **CO:** Hermann 1970; **HI:** J. Moore 1946; **MI:** Klemm 1972a; **NA:** Beauchamp 1931-2; Klemm 1972, 1985; Sawyer 1972; **NC:** Shelley 1975; **World:** Soos 1969.

Branchiobdellid Bibl.: Gelder & Brinkhurst 1990; Gelder 1996; Holt 1953, 1963, 1965b, 1968, 1969; C. Goodnight 1940; Holt & Opell 1993; Leidy 1851; Moore 1894; Young 1966. **Areas:** Canada: Chengalath 1987; **FL:** Holt 1973; **MI:** Ellis 1918

Class Hirudinea

Subclass Branchiobdellidea

Order Branchiobdellida

Branchiobdellidae (undet. symbiotic genus on crayfish in GA caves; *Ankyrodrilus*)'

Subclass Euhirudinea

Order Arhynchobdellida

Suborder Erpobdelliiformes

Family Erpobdellidae (*Dina*, *Erpobdella*, *Mooreobdella* (now in Glossiphoniidae))

Suborder Hiridiniiformes

Family Hirudinidae

Subfamily Haemopinae (*Haemopsis*)

Order Branchiobdellida

Family Bdellodrilidae

(*Bdellodrilus*, *Branchiobdella*, *Cronodrilus*, *Xironodrilus* (now in Xironnodrilidae))

Family Branchiobdellidae (*Ankyrodrilus*, *Xironogiton* (also put in Cambarincolidae)

Family Cambarincolidae

(*Cambarinocola*, *Ellisodrilus*, *Oedipodrilus*, *Pterodrilus*, *Sathodrilus*, *Tettodrilus*, *Xironodrilus* (now in Xironnodrilidae), *Xironogiton* (now in Branchiobdellidae)

Family Xironnodrilidae (*Xironodrilus*)

Order Arynchobdellida

Suborder Erpobdelliiformes

Family Eropodbellidae (also put in Order Pharyngobdellia)

Order Rhynchobdellia

Family Glossiphoniidae

Subfamily Glossiphoniinae

(*Desserobdella*, *Dina*, *Mooreobdella* (both once in Eropodbellidae), *Glossiphonia*, *Placobdella*)

Family Piscicolidae

Subfamily Piscicolinae (*Piscicola*)

Subfamily Platybdelliae (*Piscicolaria*)

Families incl.

Branchiobdellidae (*Ankyrodrilus*)

Bdellodrilidae (*Bdellodrilus*, *Branchiobdella*, *Cronodrilus*, *Xironodrilus* (now in

Xironnodrilidae))

Cambarincolidae (*Cambarinocola*, *Ellisodrilus*, *Oedipodrilus*, *Pterodrilus*, *Sathodrilus*, *Tettodrilus*, *Xironodrilus* (now in Xironnodrilidae) *Xironogiton*).

Erpobdellidae (*Dina*, *Erpobdella*, *Mooreobdella* (now in Glossiphoniidae))

Glossiphoniidae

Subfamily Glossiphoniinae (*Dina*, *Mooreobdella* (both once in Erpobdellidae), *Glossiphonia*, *Placobdella*)

Hirudinidae

Subfamily Haemopinae (*Haemopsis*)

Piscicolidae

Subfamily Piscicolinae (*Piscicola*)

Subfamily Platybdelliae (*Piscicolaria*)

Xironodrilidae (*Xironodrilus*) (once in Cambarincolidae & Branchiobdellidae)

Ankyrodrilus Holt 1965 - Branchiobdellidae branchiobdellid worms

Ankyrodrilus koronaeus Holt 1965 (wVA, eTN epigeal/ commensal on Tp crayfish *Cambarus bartoni* b.)

Ankyrodrilus legaeus Holt 1965 (swVA, neTN epigeal/ Tp commensal on TN Tp *Cambarus bartonii* crayfish/VA T&E S1 rank & global G1 rank)

Bdellodrilus Moore 1895a - Branchiobdellidae branchiobdellid worms

Bdellodrilus illuminatus (East) Moore (1895a) (epigeal in East, n. To PA, s. To NC, Mex., w. To IL/ Tp? commensal on Tb *C.b.* crayfish in TN, WV) P. Moore 1894

Branchiobdella Odier, 1823 - Branchiobdellidae branchiobdellid

Branchiobdella undet. sp. (Tp or Tx commensal on Tp *Cambarus tenebrosus* crayfish in SC (Orangeburg Co.) cave stream)

Cambarincola Ellis 1912 - Cambarincolidae branchiobdellid worms. **Bibl.:** R. Hoffman 1963a

Cambarincola aliena Holt 1963 (= *C. alienus*) (type locality cave in Franklin Co., TN & Smokies TN + Warren & Todd Co., KY/ Tb commensal on *Caecidotea alabamensis* & egg eater? on *Caecidotea bicrenata* isopods/ S1S2 G1G2)

Cambarincola branchiophila (Holt 1954) (type locality cave in Giles Co., swVA/ commensal on *Cambarus bartonii* b. & *C. sciotoensis* Rhoades),

Cambarincola chirocephala Ellis 1919 (*C. chirocephalus* Holt 1973) (FL n.to IN, TN & w.to

OK,KS,AR/on Tp? *Orconectes virilis* & Tb crayfish in Ozarks)

Cambarincola demissus Hoffman 1963 (*C. demissus* Holt 1973) (epigean/Tp or Tb commensal on Tb crayfish in swVA,WV (*Cambarus nertius*) & *Orconectes erichsonianus* & *rusticus* crayfish),

Cambarincola dubius Holt 1973 (type locality & 1-2 other caves in Monroe Co.,IN/on Tb *Cambarus laevis* crayfish)

Cambarincola fallax Hoffman 1963 (epigean in NY, sON, wPA, wNC to GA, TN/ Tx commensal on Tb or Tp *C.b.* crayfish in se VA, eTN, WV/ VA T&E S1)

Cambarincola heterognathus Hoffman 1963 (*C. heterognatha* H. 1963) (SE,F L (Leon, Calhoun Cos.,disjunct), eKY, wNC, eTN,/ Tx or Ac commensal on wVA & sWV *Cambarus b. bartoni* crayfish)

Cambarincola holostoma Hoffman 1963 (*C. holostomus* Holt 1973) (headwaters of Potomac & James Rivers/may occur as commensal on wVA Tx or Tp *Cambarus bartoni* crayfish)

Cambarincola holti Hoffman 1963 (*stream in s. part of Somerset, Pulaski Co.(KY), commensal on Tx? *Cambarus*)

Cambarincola ingens Hoffman 1963 (type locality cave in Giles Co.,VA commensal on *Cambarus sciotensis* crayfish in TN,wVA,WV; epigean in NC, TN, VA, WV)

Cambarincola leoni Holt 1973 (type locality cave in Marion Co., FL/ commensal on Pb *Procambarus orcinus* & *Troglocambarus maclanei* crayfish in Leon, Marion & Alachua Cos.,FL/Pb G3)

Cambarincola leptadenus Holt 1973 (*type locality cave in Perry Co.,TN/ commensal on Tp *Cambarus tenebrosus* crayfish/ G1)

Cambarincola manni Holt 1973 (epigean in peninsular FL / Tx or Ac commensal in Polk & Levy Cos. on *Cambarus* St & *Procambarus fallax* & *paeninsulanus*)

Cambarincola marthae Holt 1973 (*type locality cave in Jackson Co.,scTN/ Tb or Tp commensal on *Caecidotea alabamensis* isopod)

Cambarincola mesochoreus Hoffman 1963 (epigean in CA,MA/ poss. commensal on Tx *Orconectes* in IN),

Cambarincola meyeri Goodnight 1942 (poss. commensal on Tx *Cambarus bartoni b.*, Fayette Co,KY),

Cambarincola philadelphicus (*Astacobdella p.* Leidy 1851) (NE to WI, s. to FL/ Tx or Ac commensal on Tb/ Tp on St crayfish in FL, TN, WV,V A; on VA *Cambarus bartoni*) **Bibl.:** Holt

1949

Cambarincola *sheltensis* Holt 1973 (*type locality cave in Madison Co.,AL/ Tb commensal on Tb *Cambarus hamulatus* & *jonesi*, *Procambarus pecki* & *Cambarus australis* a. crayfish)

Cambarincola undescr.? sp.#1 (*?cave in Sullivan Co.,TN commensal on *Cambarus bartonii cavatus* crayfish)

Cambarincola undescr.? sp.#2 (*?cave in Meade Co.,KY commensal on *Cambarus tenebrosus* crayfish)

Cambarincola *steevesi* Holt 1973 (type locality cave in Todd Co. + Barren & Trigg Cos.,cKY & scTN/ Tb or Tp commensal on TN *Caecidotea alabamensis* isopods / G3)

Cambarincola *vitreus* (*C. vitrea* Ellis 1919) Holt 1973 (ON to FL, w. to ND, TX/on FL Pb *Ortmannicus acherontis* crayfish; on TX Tp crayfish *Procambarus simulans*)

Cronodrilus Holt 1968a - Cambarincolidae branchiodellid worms

Cronodrilus *ogygius* Holt 1968a (commensal in caves in Haralson Co.,GA)

Cronodrilus *durbini* Ellis 1918 (commensal in IN, MI caves)

Ellisodrilus Holt 1960 - Cambarincolidae branchiodellid worms.

Ellisodrilus *carronamus* Holt 1988 (epigean in 2 caves in Overton Co.,TN/ may occur in Tx *Orconectes* crayfish)

Desserobdella Barta & Sawyer, 1990- Glossiphoniidae leech, Subfamily Glossiphoniinae

Desserobdella *phalera* (*Batracobdella* p. Graf, 1899) wFL Gulf of Mexico infauna)

Dina Leidy 1870 - Glossiphoniidae leech, Subfamily Glossiphoniinae

Dina *anoculata* Moore, 1898 (WA freshwater infauna)

Dina *dubia* (Moore & Meyer 1912) (Canada, W, ME, MidW/Tx in Manitoba,ON) &

Dina *microstoma* (= *Mooreobdella* m. Moore 1901) (MidW, NE, S,W/Tp? in MO),

Erpobdella de Blainville 1918 - Eropodbellidae leech

Erpobdella *montezuma* R. Davies et al. 1985 (Montezuma's Well, AZ/ Tp in cenote caves) Bibl.: Runck 1993

Erpobdella *punctata* (Leidy 1870) (AZ, CO hyporheic) **Bibl:** Sawyer 1970

Haemopsis Savigny 1820 - Hirudinidae leech, Subfamily Haemopinae

Haemopsis *oenops* (= *Aulastoma* o. Grube 1871; *Percymoorensis* l. Richardson 1969; *Haemopsis* l. Sawyer 1972; *Semiscollex terrestris* Forbes 1890; not *Hirudo lateralis* Say 1824; *Haemopsis* t.)

(E/Tx? in s.ON)

Mooreobdella Pawlowski, 1955 (see *Dina*) - Glossiphoniidae leech (once put in Erpobdellidae, Subfamily Erpobdellinae)

Mooreobdella *fervida* (Verrill, 1872) (WA freshwater infauna)

Mooreobdella undescr. sp. ** (cave & artesian well at or near San Marcos, Hays Co., TX/Tb)

Oedipodrilus Holt 1967a - Cambarincolidae branchiodellid worms

Oedipodrilus *anisognathus* Holt 1988 (epigeal in Dickson & Overton Cos., TN/ maybe commensal on Tx *Orconectes* crayfish)

Oedipodrilus *macbaini* Holt 1955 (KY, ncTN/ commensal on Tp? *Cambarus bartonii cavatus* crayfish in TN)

Oedipodrilus *oedipus* Holt 1967 (Duck R., cTN commensal on *Orconectes compressus* crayfish)

Percymoorensis lateralis = *Haemopsis oenops*

Piscicola Lamarck 1818 - Piscicolidae leech

Piscicola *punctata* (Verrill 1871) (Canada, MidW, SE, W epigeal/ Tx in MO)

Piscicolaria M.C. Meyer, 1940 - Piscicolidae leech

Piscicolaria *reducta* M.C. Meyer, 1940 (commensal on tail of Centrarchidae sunfish in cave in Orangeburg Co., SC)

Placobdella Blanchard 1893 - Glossiphoniidae leech, Subfamily Glossiphoniine

Placobdella *ornata* (Verrill 1872) (NA/St? or Tx in MO)

Placobdella *papillifera* (Verrill, 1872) (Virginian marine infauna)

Placobdella *parasitica* (Say 1824) (AZ, CO, E, MidW, NV, Canada/ St? or Tx parasite on crayfish? in MO)

Placobdella *punctata* (Verrill) (AR, MO, North/St?) **Bibl.:** R.W.Davies et al. 1977

Placobdella undescr.? sp.#1 (2 caves in OR Co., MO/ St?)

Pterodrilus Moore 1895 - Cambarincolidae branchiodellid worms. **Bibl.:** Holt 1968b

Pterodrilus *cedrus* Holt 1968 (epigeal in eastern Highland Rm & Nashville Basin, TN/ may occur as commensal on Tp *Cambarus tenebrosus* crayfish)

Sathodrillus Holt 1968a - Cambarincolidae branchiodellid worms.

Sathodrillus *hortoni* Holt 1973 (epigeal in Okaloosa Co./poss. on Tp *Cambarus* crayfish)

Sathodrillus *megadenus* Holt 1968a (epigeal/poss. commensal on Tp or Tx *Cambarus latimanus* crayfish)

Tettdrilus Holt 1968 - Cambarincolidae branchiodellid worms.

Tettdrilus *friaufi* Holt 1968 (cTN/ commensal on Tp *Cambarus tenebrosus* crayfish)

Xironodrilus Ellis 1918 – Xironodrilidae branchiodellid worms (also put in Cambarincolidae & Branchiobdellidae)

Xironodrilus *appalachius* Goodnight 1943 (wNC, eTN, swVA caves)

Xironodrilus *formosus* Ellis 1918 (IN, KY, MI, OH, TN, VA/ commensal on Tb *C.b.* crayfish in TN)

Xironodrilus *instabilis* (s.Appalachia) = *Xironogiton instabilis*?

Xironodrilus *pulcherrimus* (Moore 1894) (NC, VA caves)

Xironogiton Ellis 1919 - Branchiobdellidae branchiodellid worms (also put in Cambarincolidae)

Xironogiton *instabilis* (Moore 1894) (E, TN, , NC, OR epigeal/Tx or Ac commensal on Tb *C.b.* crayfish in VA, WV caves)

Earthworms

Phylum Annelida

Subphylum Aclitellata

Class or Subclass Clitellata

Class or Subclass Oligochaeta. Bibl.: Reynolds & Cook 1976; Reynolds 1977

Division Megadrile (earthworms) undet. Tx or Tp in seAK

Order Aeolosomatida (put in Aphoneura, **head crawling worms**)

Superorder Haplotaxidea

Order Haplotaxida (= Opisthopora)

Suborder Haplotaxina

Haplotaxidae (*Haplotaxis*)

Suborder Lumbricina:

Superfamily Lumbricoidea

Aeolosomatidae (put in Order Aeolosomatida)

Komarekionidae (*Komarekiiona*) (also put in Ailoscolecidae)

Lumbriculidae (now in Order Lumbriculida)

Superfamily Megascolecoidae

Acanthodrilidae

(*Argilophilus*, *Diplocardia*, *Microscolex* (last two also put in Megascolecidae))

Megascolecidae (*Amyntas*, *Diplocardia* (now in Acanthodrilidae),

Microscolex, *Nephrallaxis*, *Phallodrilus* (now in Tubificidae),

Pheretima)

Superfamily Ocnerodrilioidea
Ocnerodrilidae (*Eukerria*)

Suborder Tubificina (once put in Order Tubificida (= Pleisopora) or

Enchytraeina

Superfamily Enchytraeioidea

(Enchytraeidae) (pot worms)

(*Achaeta*, *Barbidrilus*, *Enchytraeus*, *Grania*, *Lumbricillus* (also put in Lumbriculidae), *Marionina*, *Mesenchytraeus*, *Randidrilus*)

Superfamily Tubificoidea

Naididae (*Allonais*, *Amphichaeta*, *Arcteonais*, *Bratislavia*,

Chaetogaster, *Dero*,

Nais, *Ophidonais*, *Paranais*, *Piguetiella*, *Pristina*, *Pristinella*,

Slavina,

Specaria, *Vejdovskyella*)

Tubificidae (*Aulodrilus*, *Bathydrilus*, *Caralliodrilus*, *Clitellio*, *Haber*, *Heterodrilus*, *Ilyodrilus*, *Inanidrilus*, *Limnodriloides*, *Limnodrilus*, *Monopylephorus*, *Olavius*, *Peloscolex*, *Potamothrix*, *Rhyacodrilus*, *Psammoryctides*, *Smithsonidrilus*, *Spirosperma*, *Tectidrilus*,

Telmatodrilus,

Teneridrilus, *Varichaetadrilus*)

Superorder Microdrili

Order Lumbriculida (=Prosopora)

Lumbriculidae (once put in suborder Lumbricina) **Bibl.:** Gates 1972; Pop

1968

(*Allolobophora*, *Aporrectodea*, *Bythonomus*, *Bimastos*, *Dendrodrilus*,

Dendrobaena

Eisenia, *Eiseniella* (put in Lumbriculidae (*Lumbricillus* (now in

Enchytraeidae),

Lumbriculus, *Lumbricus*, *Octolasion*, *Rhynchelmis*, *Spelaedrilus*,

Stylodrilus,

Tenagodrilus, *Trichodrilus*)

Order Opisthopora
Suborder Lumbricia
Superfamily Lumbricoidea
Lumbricidae (*Eiseniella*) (also put in Lumbriculidae)

Areas: **NA:** Brinkhurst 1986; Gates 1959, 1978; Klemm 1985; Reynolds & Cook 1976; Stimpson 1982; Tynen 1975; **NB:** McAlpine & Reynolds 1977; **NC & SC:** Brigham et al. 1981; **East:** Cook 1975; Klemm 1985; NY: Strayer & Bannon-O'Connell 1988; **ON:** Reynolds 1977; **WA:** Altman 1936; **World:** Brinkhurst & Wetzel 1971, 1984; Juget & Dumnicka 1986.

Acanthodrilidae (*Argilophilus*, *Diplocardia*, *Microscolex* (last two also put in Megascolecidae))
Aeolosomatidae (*Aeolosoma*) (once in Scolicida polychaetes, now put in Aphanoneura head crawling worms)

Ailoscolecidae (*Komarekiona*) (also put in Komarekionidae)

Enchytraeidae (potworms) (*Achaeta*, *Barbidrilus*, *Enchytraeus*, *Grania*, *Lumbricillus* (also put in Lumbriculidae), *Marionina*, *Mesenchytraeus*, *Randidrilus*) Eyeless; undet. Tp in IA; Tx in NWT; hyporheic in FL, MI, NH, NY, MI, OH, PA, KY, TN, VA)

Bibl.: Bauer 1996; Coates 1990; Tynen 1971, 1975

Haplotaxidae (*Haplotaxis*)

Komarekionidae (*Komarekiiona*) (also put in Ailoscolecidae)

Lumbriculidae (*Allolobophora*, *Aporrectodea*, *Bythonomus*, *Bimastos*, *Dendrodrilus*, *Dendrobaena*, *Eisenia*, *Eiseniella*, *Lumbricillus* (now in Enchytraeidae), *Lumbriculus*, *Lumbricus*, *Octolasion*, *Rhynchelmis*, *Spelaedrilus*, *Stylodrilus*, *Tenagodrilus*, *Trichodrilus*; undescr. Tb genera in 2 caves in Lee Co., Va; (undet. hyporheic genus or genera in AL, TN) **Bibl.:** Gates 1972; Pop 1968

Megascolecidae (*Amyntas*, *Diplocardia* (now in Acanthodrilidae), *Microscolex*, *Nephrellaxis*, *Phallodrilus* (now in Tubificidae), *Pheretima*)

Naididae (*Allonais*, *Amphichaeta*, *Arcteonais*, *Bratislavia*, *Chaetogaster*, *Dero*, *Nais*, *Ophidonais*, *Paranais*, *Pristina*, *Pristinella*, *Slavina*, *Specaria*, *Vejdovskyella* & Tx? undet. genera in MN) **Bibl.:** Brinkhurst 1964; Hiltunen & Klemm 1980

Ocnerodrilidae (*Eukerria*, Undet. genus - Tp or Tx in Montezuma Well, AZ)

Randiellidae (*Randiella*)

Tubificidae (*Aulodrilus*, *Bathydrielus*, *Clitellio*, *Haber*, *Ilyodrilus*, *Inanidrilus*, *Limnodriloides*, *Limnodrilus*, *Monopylephorus*, *Peloscolex*, *Potamothrrix*, *Rhyacodrilus*, *Psammoryctides*, *Smithsonidrilus*, *Spirosperma*, *Tectidrilus*, *Telmatodrilus*, *Teneridrilus*, *Thalassodrilides*)

Varichaetadrilus; Tx? undet. genera in MN) **Bibl.:** Brinkhurst 1965; Klemm 1985.

Subfamily Phallodrilinae (*Aktedrilus*, *Phallodrilus* (once in Megascolecidae)

Achaeta Vedjovsky 1877 - Enchytraeidae worms

Achaeta or *Marionina* undet. sp. (Tx in KY, TN)

Aktedrilus Knollner, 1935 - Tubificidae worms, Subfamily Phallodrilinae

Aktedrilus monospermathecus Knollner, 1935 (US & South American Atlantic supralittoral, eulittoral, brackish, marine interstitial or burrower)

Allolobophora Eisen 1873 - Lumbriculidae oligochaete worms

Allolobophora chlorotica (*Enterion c.* Savigny 1826) (epigeal in nUS, Canada, Europe/Tx or Ac in CA, NY, VA, WV)

Allolobophora trapezoides (*Lumbricus t.* Duges 1828) (E/alien Ed, Tx or Ac in AR, GA, IL, KY (Mammoth C.), MO, OK, TN, WV; Tp in TX)

Allolobophora tuberculata = *Aporrectodea turgida*

Allolobophora turgida Eisen 1874 (= *Lumbricus t.*; *Helodrilus t.*) (E/Tx or Ac in VA, WV; Pb? in MD)

Allonais Sperber, 1948 - Naididae oligochaete worms

Allonais paraguayensis (*Nais p.* Michaelson 1905) (rare NA/Pb? in IL karstic sprs.)

Amphichaeta Tauber 1879 - Naididae oligochaete worms

Amphichaeta leydigi Tauber, 1879 (Holarctic?/ AL, GA, NY, PA, TN, VA hyporheic)

Amyntas Kinberg 1867 - Megascolidae oligochaete worms

Amyntas minimus (*Perichaeta minima* Horst, 1893; *Pheretima m.*) (Tx or Tp in GA (Dade Co.))

Amyntas hawayanus = *Pheretima h.*

Amyntas undet. sp. (Tx or Tp in SC (Orangeburg Co.))

Arcteonais Piguet, 1928 – Naididae worms

Arcteonais lomondi (Martin, 1907) (Tp in cave in Bartow Co., GA; rare Virginian marine infauna)

Argilophilus Eisen, 1893 - Acanthodrilidae oligochaete worms

Argilophilus undet. sp. (Ttx or Ttp in Pype cave in Trinity Co., CA)

Barbidrilus M.S. Loden & S.M. Locy, 1980 - Enchytraeidae oligochaete worms

Barbidrilus paucisetus M.S. Loden & S.M. Locy, 1980 (FL, GA hyporheic) **Bibl.:** Stites 1986

Bythonomus Grube 1879 (= *Bathynomus* Grube, 1879) - Subgenus of *Stylodrilus*

Aporrectodea Orley 1885 - Lumbriculidae oligochaete worms

Aporrectodea rosea (*Enterion roseum* Savigny, 1826; *Lumbricus* r.; *Allolobophora* r.; *Helodrilus* r.; *Eisenia* r.) (Tp or Tx in IL, KY, NB, VA) **Bibl.:** Gates 1978

Aporrectodea undet. sp. (GA caves)

Aporrectodea trapezoides (*Lumbircus* t. Duges, 1928; *Allolobophora* t., *Helodrilus* t.) (Alien Tp in GA (Walker & Dade Co.)

Aporrectodea tuberculata (*Allolobophora* t. Eisen 1874) (alien epigeal in much of US/ alien Tp in New Brunswick, IA, MN)

Aporrectodea turgida (*Allolobophora* t. Eisen 1873; *Lumbricus* t., *Helodrilus* t.; *A. caliginosa*) (Tx or Tp in CA)

Aulodrilus Bretscher 1899 - Tubificidae oligochaete worms

Aulodrilus americana Brinkhurst & Cook 1986 (WA freshwater infauna/ Tx in KY, TN)

Aulodrilus limnobius Bretscher 1899 (cosmopolitan/ CO, VA hyporheic; rare Virginian marine infauna / Tx in KY, TN)

Aulodrilus pigueti Kowalewski, 1914 (= *Aulodrilus stephensoni*) (KY hyporheic; Carolinian & Virginian marine infauna)

Aulodrilus pluriseta (*Naidium* p. Piguet, 1907) (NY hyporheic; WA freshwater infauna; rare Virginian marine infauna)

Aulodrilus undet. sp. (NY freshwater sandy beach interstitial)

Bathydrilus Cook, 1970 - Tubificidae oligochaete worms

Bathydrilus litoreus Baker, 1983 (CA marine benthic)

Bathydrilus parkeri Erseus, 1991 (CA marine benthic)

Bathydrilus sp. undet. sp. (wFL Gulf of Mexico marine infauna)

Bimastos Moore 1893 - Lumbriculidae oligochaete worms

Bimastos heimbürgeri Smith 1928 (epigeal in 14 states in East/ Ed & Tp in IL)

Bimastos longicinctus (*Helodrilus* l. F. Smith & Gittens 1915) (14 states in East/ Ed & Tp in IL),

Bimastos parvus (Eisen, 1874) (epigeal in 20 states in the south/ Tp in Kappelman Salamander Cave, Comal Co., TX)

Bimastos undet. sp. (Tp in cave each in Bexar, Burnet, Uvalde & Williamson Cos.,TX)

Bimastos tumidus (*Allolobophora tumida* Eisen 1874) (epigeal in 19 states in East and South, west to MO, TN/ Tx in AL, CA, MO, TN, VA; Tp in GA (Dade Co.))

Bimastos zeteki (*Helodrilus* F. Smith & Gittins, 1915) (Tx or Tp in GA (Dade Co.))

Branchiura Beddard, 1892 - Tubificidae oligochaete worms

Branchiura sowerbyi Bedd., 1892 (hyporheic in IL, OH rivers; alien rare Virginian marine infauna)

Bratislavia Kosel, 1976 - Naididae oligochaete worms

Bratislavia bilongata (*Naidium b.* Chen, 1944) (CA benthic)

Bratislavia unidentata (*Pristina u.* Harman 1973) (rare NA/Pb? in IL karstic sprs.; rare Virginian marine infauna)

Chaetogaster Von Baer 1827 - Naididae oligochaete worms

Chaetogaster diaphanus (*Nais d.* Gruithuisen, 1821) (Tx or Tp in SC (Orangeburgh CO.); CA benthic; AZ sinkhole interstitial)

Chaetogaster diastrophus (*Nais d.* Gruithuisen 1828) (Holarctic/ AL, FL, GA, KY, MI, NH, NY, PA, TN, VA hyporheic)

Chaetogaster krasnopolskiae Lastockin, 1937 (species inquirenda) (Holoarctic/NY hyporheic)

Chaetogaster limnaei Von Baer, 1827 (CA benthic)

Chaetogaster pellucidus Walton, 1906 (MN lake benthic)

Chaetogaster undet. species (MI interstitial; CO hyporheic, sandy hyporheic in TX; Tp in cave in Hart Co., KY; Tx or Tp in Edmonson Co., TN & Smith, Dekalb & Franklin Cos., TN)

Clitellio Savigny, 1820 - Tubificidae oligochaete worms

Clitellio arenarius (*Lumbricus a.* Mueller, 1776) (US (ME) & Europe Atlantic supralittoral, brackish, marine interstitial)

Coralliodrilus Erseus, 1979 – Tubificidae oligochaete worms

Coralliodrilus undet. sp. wFL Gulf of Mexico marine infauna)

Dendrobaena Eisen 1873 - Lumbriculidae oligochaete worms

Dendrobaena octaedra (*Enterion octaedrum* Savigny, 1826; *Lumbricus o.*, *Helodrilus o.*, *Allolobophora o.*) (Tx or Tp in GA (Dade Co.))

Dendrobaena rubida = *Dendrodrilus r.*

Dendrodrilus Omodeo 1956 - Lumbriculidae oligochaete worms

Dendrodrilus rubidus (*r.*) (*Enterion r.* Savigny 1826; *Dendrobaena r.*) (NUS, Canada Ed/Tp or (Tx) in AL, GA, IL, IA, KY (Mammoth C.), MD, MO, NB, ON, PA, PQ, SC, TN, TX, VA, WV; Tp in GA (Bartow Co.))

Dero Okem 1815 - Naididae oligochaete worms

Dero digitata (*Nais d.* Mueller, 1773) (CA, Carolinian marine infauna)

Dero nivea Aiyer, 1930 (CA marine infauna)

Dero (*D.*) *obtusa* D'udekem 1855 (= *D. latissima*) (NY hyporheic; rare Virginian marine infauna)

Dero undet. sp. (MN lake benthic)

Dero trifida Loden, 1979 (CA freshwater benthic)

Diplocardia Garman 1888. - Acanthrodriidae oligochaete worms (also put in Megascolecidae))

Bibl.: Gates 1977

Diplocardia fusca Gates, 1943 (Tp in TX)

Diplocardia singularis (*Geodrilus s.* Ude 1893) (Ed & Tp in IL, MO)

Diplocardia undet. sp. or species (Tp in IL, MO, TX/Ed; Tp in Travis & Uvalde Cos., TX; Ac in WA)

Diplocardia verrucosa Uddekem, 1895 (= *Peloscolex oeneden*) (Ed & Tp in IL, MO)

Eisenia Malm 1877 - Lumbriculidae oligochaete worms

Eisenia foetida (= *Helodrilus* or *Enterion f.* Savigny 1826; *E. foetida Eiseniella f.*) Duges 1837 (Epigeal in US and Canada/ Ac, Tp or Tx in Mammoth C., KY) **Bibl.:** Gates 1978

Eisenia rosea = *Aporrectodea rosea*

Eiseniella Michaelsen, 1900 - - Lumbriculidae oligochaete worms

Eiseniella foetida = *Eisenia fetida*

Eiseniella tetraedra (*Enterion tetraedrum* Savigny 1826 in part) (epigeal in US, sCanada/ Tp, Tx or Ac in IA, NY, VA, WV; CO hyporheic)

Eisenoides Gates 1969 - Lumbriculidae oligochaete worms

Eisenoides carolinensis (*Microscolex c.* Michaelsen, 1910 in part) (epigeal in 13 states in Southeast n. to IL/Ed)

Enchytraeus Henle, 1837 - Enchytraeidae worms

Enchytraeus albidus Henle, 1837 (US (ME) Atlantic & Pacific marine interstitial or burrower)

Eukerria Michaelsen, 1835 - Ocnerodrilidae oligochaete worms

Eukerria saltensis (Beddard, 1892) (NC aquatic infauna)

Glossiphonia Johnson, 1816 - Glossiphoniidae oligochaete worms

Glossiphonia complanata (Linnaeus, 1758) = *G.c.c.*

Grania Southern, 1913 - Enchytraeidae worms

Grania americana Kennedy, 1966 (FL marine interstitial sand)

Grania atlantica Coates & Erseus, 1985 (Eastern marine interstitial sand)

Grania laevis Coates & Erseus, 1985 (MA, NJ marine interstitial sand)

Grania longiducta (*G. postclitellochaeta* l. Erseus & Lasserre, 1976) Coates & Erseus, 1985 (MA to MD marine interstitial sand)

Grania maricola Southern, 1913 (DE, MD, NJ marine interstitial sand)

Grania monospermatheca. Erseus & Lasserre, 1976 (MA to FL marine interstitial sand)

Haber Homlquist, 1978 – Tubificidae oligochaete worms

Haber cf. *speciosus* (Hrabe, 1931) (Virginian marine infauna)

Haplotaxis Hoffmeister 1843 - Haplotaxidae oligochaete worms

Haplotaxis gordioides (*Lumbricus* g. Hartmann, 1821) (cosmopolitan/ CO, NY hyporheic; Tx in KY, TN, WV; cf. *H. g.* - AZ sinkhole interstitial)

Haplotaxis brinkhursti Cook 1975 (*type locality cave in Pocahontas Co., WV/ Tb/ G1)

Helodrilus Hoffmeister 1845 - Lumbriculidae oligochaete worms - see *Eiseniella*

Heterodrilus Pierantoni, 1902 Lumbriculidae oligochaete worms

Heterodrilus pentcheffi C. Erseus, 1981 (LA marine infauna)

Heterodrilus undesr. sp. (wFL Gulf of Mex. marine infauna)

Heterodrilus undet. sp. (Carolinian freshwater interstitial)

Ilyodrilus Eisen 1879 - Tubificidae oligochaete worms

Ilyodrilus templetoni (*Tubifex* t. Southern 1909) (Europe, Asia, NA/ Tx in KY, TN; MB lake benthic; Virginian marine infauna)

Inanidrilus Erseus, 1979 - Tubificidae oligochaete worms

Inanidrilus bulbosus Erseus, 1979 (FL marine interstitial sand)

Inanidrilus 2 undesr. species (wFL Gulf of Mex. marine infauna)

Isochaetides Hrabe 1965 (= *Peloscolex*) Tubificidae oligochaete worms

Isochaetides freyi Brinkhurst, 1965 (= *Peloscolex* f.) (Tx in KY, TN; Virginian marine infauna)

Komarekiona Gates, 1974 - Ailoscolecidae oligochaete worms (also put in Komarekionidae)

Komarekiona eatoni Gates, 1974 (Ed & Tp in IL, MO)

Limnodriloides Pierantoni, 1903 - Tubificidae oligochaete worms

Limnodriloides appendiculatus Pierantoni, 1904 (FL marine benthic)

Limnodriloides baculatus Pierantoni, 1903 (FL, LA marine benthic)

Limnodriloides barnardi Cook, 1974 (FL, CA marine benthic)

Limnodriloides monotheucus Cook, 1974 (US Atlantic & Pacific (CA) (alien) marine interstitial or burrower)

Limnodriloides rubicundis (Carolinian marine infauna)

Limnodriloides victoriensis R.O. Brinkhurst & H.R. Baker, 1979 (WA marine infauna)

Limnodrilus Claparede 1862 - Tubificidae oligochaete worms

Limnodrilus cervix Brinkhurst, 1963 (hyporheic in OH river; rare Virginian marine infauna)

Limnodrilus claparedeanus (PQ hyporheic)

Limnodrilus hoffmeisteri Claparede, 1862 (= *Clitellio* & *Tubifex* h.) (NA, cosmopolitan/ hyporheic in CO, OH, ON, PQ; AB lake benthic; Tx in KY, TN; Tp or Tx in Montezuma Well, AZ; NY freshwater sandy beach interstitial; common Virginian marine infauna) **Bibl.:** Keilty 1987

Limnodrilus profundicola (*Tubifex* p. Verrill, 1871) (interstitial in Montezuma Well, AZ; Carolinian freshwater? infauna)

Limnodrilus udekemianus Claparede, 1862 (hyporheic in OH river; AZ sinkhole interstitial; rare Virginian marine infauna)

Lumbricillus Orsted, 1844 - Enchytraeidae oligochaete worms (once in Lumbriculidae)

Lumbricillus undet. sp. (CO, MT/ nonkarst stygophile)

Lumbriculus Grubbe 1844 - Lumbriculidae oligochaete worms

Lumbricillus lineatus (*Lumbricus* l. Mueller, 1774) (US & Europe Atlantic supralittoral, eulittoral, brackish, marine interstitial)

Lumbricillus pagenstecheri (*Enchytraeus* p. Ratzel, 1869) (US? & Europe Atlantic supralittoral, eulittoral, brackish, marine interstitial)

Lumbriculus Grube, 1884 - Lumbriculidae oligochaete worms

Lumbriculus *variegatus* (*Lumbricus* v. Mueller 1774) (NY hyporheic)

Lumbricus Linnaeus 1758 - Lumbriculidae oligochaete worms

Lumbricus *rubellus* Hoffmeister 1843 (Ed in most of East/ Tp in GA (Dade Co.), IA, IL) **Bibl.:** Gates 1978

Lumbricus undet. sp(s). (Tx in PQ; Tx? in CA?; Tx? in Mammoth C., KY)

Lumbricus *terrestris* Linnaeus 1758 (IL, NB/Tp) **Bibl.:** Gates 1978

Marionina Pfeffer, 1890 - Enchytraeidae oligochaete worms

Marionina *diazi* Coates & Erse=us, 1985 (MA, NJ marine sand interstitial)

Marionina or *Achaeta* undet. sp. (Tx in KY, TN)

Marionina undet sp. (CA marine beach interstitial)

Marionina *southerni* (*Pachydriulus* s. Cernosvitov, 1937) (US & Europe Atlantic supralittoral, eulittoral, brackish, marine interstitial)

Marionina *spicula* (*Enchytraeus* s. Leuckart, 1847) (US & Europe Atlantic supralittoral, eulittoral, brackish, marine interstitial)

Marionina undet. sp. (PQ Gulf of St. Lawrence sandy marine interstitial)

Marionina *subterranea* (*Michaelsena* s. Knollner, 1935) (US & Europe Atlantic supralittoral, eulittoral, brackish, marine interstitial)

Marionina *welchi* Lasserre, 1971 (MA, NJ, MD, DE marine sand interstitial)

Mesenchytraeus Eisen, 1878 - Enchytraeidae worms

Mesenchytraeus *solifugus* (*Melanenchytreus* s. Emery, 1898) (ice worm) (AK, WA glacier cave; TTP in WA)

Microscolex Rosa, 1887 - Acanthrodriilidae oligochaete worms (also put in Megascolecidae))

Microscolex *dubius* (*Eudrilus* d. Fletcher, 1888) (TP in cave in Uvalde Co., TX)

Monopylephorus Levinsen, 1884 - Tubificidae oligochaete worms

Monopylephorus *irroratus* (*Clitellio irrorata* Verrill, 1873) (cosmopolitan brackish interstitial or burrower)

Monopylephorus *parvus* Ditlevsen, 1904 (cosmopolitan brackish interstitial or burrower)

Monopylephorus *rubroniveus* Levinsen, 1884 (SC, Virginian (rare) cosmopolitan brackish interstitial or burrower)

Nais Mueller 1773 - Naididae oligochaete worm

Nais *barbata* (Mueller, 1773) (cosmopolitan/CO hyporheic)

Nais *behningi* Michaelsen, 1923 (PQ hyporheic)

Nais *bretschleri* (*Nais* b. Michaelsen, 1923) (cosmopolitan/NY, PQ (*N. b.-pardalis* complex) hyporheic)

Nais *communis* (*Nais* c. Piguet, 1907) (cosmopolitan/ CO, FL, GA, NY hyporheic; interstitial in top few cm. of lake sediments; CA benthic)

Nais *elinguis* Muller, 1774 (cosmopolitan/CO, NY hyporheic; CA benthic; PQ Gulf of St. Lawrence sandy marine interstitial; AZ sinkhole interstitial)

Nais *pardalis* Piquet, 1906 (AB lake benthic; CA benthic)

Nais *pseudobutusa* Piquet, 1906 (CA benthic)

Nais undet. sp. or species (AL, KY, MI, PA, TN hyporheic; NY freshwater sandy beach)

interstitial)

Nais simplex Piguet, 1909 (NY hyporheic; CA benthic)

Nais variabilis Piguet, 1907 (Tx? in WV; CO, NY hyporheic; Virginian marine infauna)

Nephrallaxis Fender & McKey-Fender 1990 - Megascolecidae oligochaete worms

Nephrallaxis undescr. sp. (Epigeal in Oregon Caves Natl. Monument, Josephine Co./ Tx or Tp in OR Caves)

Octolasion Michaelson 1900 - Lumbriculidae oligochaete worms

Octolasion *lacteum* (*Octolasion l.* Oberley, 1885) (E/Tx in VA, WV; Tp? in TN)

Octolasion *tyrtaeum* (*Enterion t.* Savigny 1826; *O. gracile* O'Reily, 1885) (epigeal in US, eCanada/ Eb & Tx in AL, GA, IL, MD)

Olavius Erseus, 1984 – Tubificidae oligochaete worms

Olavius undet. sp. wFL Gulf of Mex. marine infauna)

Ophidonais Gevais, 1838 - Naididae oligochaete worm

Ophidonais *serpentina* (*Nais s.* Mueller 1774) (CO hyporheic; CA benthic)

Paranais Czerniavsky 1880 - Naididae oligochaete worms

Paranais *frici* Hrabě, 1941 (CA (alien) marine benthic)

Paranais *litoralis* Muller, 1784 (Atlantic, Pacific marine interstitial or burrower)

Paranais undet. sp. or species (Tx, Tp or hyporheic in VA; rare Virginian marine infauna)

Parvidrilus Erseus, 1999 - Parvidrilidae oligochaete worms

Parvidrilus *strayeri* Erseus, 1999 (AL hyporheic)

Peloscolex Leidy, 1851 *freyi* = *Isochaetides f.*

Peloscolex apectinatus Brinkhurst, 1965 (= *Tubificoides a.*; *Peloscolex gariellae apectinata*) (US Atlantic & Pacific marine interstitial or burrower; alien US marine infauna)

Peloscolex benedeni (*Tubifex b.* Udekem, 1855) (Europe, Atlantic marine interstitial or burrower)

Peloscolex gariellae Marcus, 1950 (CT marine infauna)

Peloscolex pigueti = *Aulodrilus p.*?

Phallodrilus Pierantoni, 1902 - Tubificidae oligochaete worms (also put in Megascolecidae)

Phallodrilus aquaedulcis Hrabě, 1960 (alien hyporheic in Niagara River, NY) **Bibl.:** Farara and Erseus 1991

*Phallodrilus coeloprostatu*s Cook, 1969 (MA, NJ interstitial marine sands)

Phallodrilus *extremis* Erseus, 1979 (FL interstitial marine)

Phallodrilus *hallae* Cook & Hitunen, 1975 (Lake Superior (MN, WI, ON) interstitial?)

Phallodrilus *inconspicuus* Erseus, 1979 (PEI, Madagascar interstitial marine)

Phallodrilus *marionensis* Erseus, 1979 (PEI interstitial marine)

Phallodrilus *obscurus* Cook, 1969 (MA, NJ interstitial marine sands)

Phallodrilus *profundus* Erseus, 1979 (MA interstitial marine)

Phallodrilus *remus* Erseus, 1979 (MA interstitial marine)

Phallodrilus *sabulosus* Erseus, 1979 (FL interstitial marine sands)

Phallodrilus *simplidentatus* Erseus, 1979 (High Arctic interstitial marine)

Phallodrilus undet. sp. (hyporheic in OH?)

Pheretima Kinberg 1867 - Megascolecidae oligochaete worms

Pheretima *hawayana* (*Perichaeta* h. Rosa, 1891; *Amyntas* h. Kinberg, 1867) Kinberg, 1867 (Tp in cave on Hays Co.,TX) Easton 1979

Piguetiella Sperber, 1939 – Naididae oligochaete worms

Piguetiella michiganensis Hiltunen, 1967 (rare Virginian marine infauna)

Potamothrrix Vejdovsky & Mrazek, 1902 - Tubificidae oligochaete worms

Potamothrrix bavaricus (*Tubifex* b. Oschman, 1913) (alien US aquatic infauna)

Pristina Ehrenberg 1828 - Naididae oligochaete worms

Pristina *aequiseta* Bourne 1891 (cosmopolitan/ AL, CO, FL, GA, KY, MI, NY, TN, VA hyporheic)

Pristina *breviseta* Bourne 1891 (CA benthic)

Pristina *leidy* Smith 1896 (= *P. longiseta* forma *leidy*) (AL, FL, NY hyporheic; Tp or Tx in SC (Orangeburg Co.) cave stream; CA benthic)

Pristina *osborni* (*Naidium* o. Walton 1906) (CO hyporheic)

Pristina sima = *Pristinella* s.

Pristina undet. sp(p). (ON, TX hyporheic/ Tx in TN, KY)

Pristina unidentata = *Bratislavia* u.

Pristinella Brinkhurst 1985 - Naididae oligochaete worms

Pristinella *jenkiniae* (*Naidium* j. Stephenson 1931) (AL, CO, NY, OH, TN, VA hyporheic; AZ sinkhole interstitial; Virginian marine infauna)

Pristinella *osborni* (Walton, 1906) (IL freshwater infauna; rare Virginian marine infauna)

Pristinella *sima* (*Pristina* s. Marcus 1944) (AL, CO, FL, GA, KY, NY, OH, PA, TN, VA)

hyporheic)

Pristinella undet. sp. (Tx or Ac in AK),

Psammoryctides Vejdovsky 1875 (= *Spencerius*) Tubificidae oligochaete worms

Psammoryctides *californianus* Brinkhurst 1965 (CO hyporheic),

Quistadrilus R.O. Brinkhurst, 1981 Tubificidae oligochaete worms

Quistadrilus *multisetosus* (*Embolorephalus m.* F. Smith, 1900; *Tuibifex m.*; *Peloscolex*) Tp or Tx in Montezuma Well, AZ; Virginian marine infauna)

Randiella Erse=us & Strehlow, 1986 - Randiellidae oligochaete worms

Randiella *littoralis* Erse=us & Strehlow, 1986 (OR marine interstitial)

Randiella *multithecata* Erse=us & Strehlow, 1986 (East US marine continental shelf interstitial)

Randidrilus Coates & Erse=us, 1985 - Enchytraeidae oligochaete worms

Randidrilus *codensis* (*Lumbricillus c.* Lasserre, 1971) (MA, NJ marine interstitial sand)

Randidrilus *quadrithecatus* Coates & Erse=us, 1985 (NJ, MD marine interstitial sand)

Rhyacodrilus Bretscher 1901 - Tubificidae oligochaete worms

Rhyacodrilus *coccineus* (*Tubifex c.* Vejdovsky, 1875) (WA epigeal, freshwater infauna/ NY hyporheic)

Rhyacodrilus *montanus* (*Edmondsonia montana* Brinkhurst, 1965) (AB lake benthic)

Rhyacodrilus *sodalis* (*Pheretima s.* Eisen, 1879) (Canada, SE/Tx? in WV)

Rhyacodrilus *subterraneus* Hrabe, 1963 (AL, KY, MI, NY, OH, TN, VA hyporheic)

Rhynchelmis Hoffmeister, 1843 - Lumbriculidae oligochaete worm

Rhynchelmis *brooksi* Holmquist, 1976 (Tx or Tp in seAK)

Rhynchelmis undet. sp. (Tx or Tp in seAK)

Specaria Sperber, 1939 - Naididae oligochaete worm

Specaria *josinae* Vejdovsky 1883 (= *Nais s.* Bohm) (Holarctic/ FL, NY hyporheic; interstitial burrower below top cm. of NH lake sediment)

Slavina Vejdovsky 1883 - Naididae oligochaete worms

Slavina *appendiculata* d'Udekem 1885 (cosmopolitan/NY hyporheic)

Smithsonidrilus Brinkhurst, 1966 - Tubificidae oligochaete worms

Smithsonidrilus *marinus* Brinkhurst, 1966 (FL, LA marine infauna)

Smithsonidrilus undescr. sp. (wFL Gulf of Mex. marine infauna)

Spelaedrilus Claparede 1875 - Lumbriculidae oligochaete worms

Spelaedrilus *multioporus* Cook 1975 (*type locality cave in Russell Co., VA/Tb/VA T&E S1 rank

& global G1 rank)

Spirosperma Eisen, 1879 – Tubificidae oligochaete worms

Spirosperm nikolskyi (*Peloscolex n.* Lastockin & Sokolskaya, 1953) (WA freshwater infauna)

Stylaria Lamarck 1816 - Naididae oligochaete worms

Stylaria lacustris (*Nereis l.* Linneaus, 1767) Lamarck, 1816 (GA hyporheic; MN lake benthic)

Stylaria undet. sp. (sandy hyporheic in Chowan River, NC)

Stylodrilus Claparede, 1862 - Lumbriculidae oligochaete worms

Stylodrilus (*Bythonomus*) *beattiei* Cook 1975 (*****?type locality in Tazewell Co., VA + 2 caves in Greenbrier Co. & one cave in Pocahontas Co., WV/ Tb/ VA & WV T&E S1 rank & global G1G2 rank)

Stylodrilus heringianus Claparede, 1862 (Holoarctic epigeal, incl. NF, NB, PQ & Great Lakes/ NH, NY hyporheic) Bibl.: Keilty 1987

Stylodrilus sovaliki Claparede, 1862 (AK epigeal/ Tx or or Ac in 2 seAK caves)

Stylodrilus wahkeenensis P. Rodriguez & K.A Coates, 1996 (AL, OR, TN hyporheic)

Tectidrilus Erseus, 1982 - Tubificidae oligochaete worms

Tectidrilus bori (Righi & Kanner, 1979) (LA marine benthic)

Tectidrilus diversus Cook, 1974 (CA, WA marine infauna)

Tectidrilus profusus Erseus, 1991 (CA marine benthic)

Tectidrilus squalidus Erseus, 1982 (FL, LA marine benthic)

Telmatodrilus Eisen, 1879 – Tubificidae oligochaete worms

Telmatodrilus vej dovskyi Eisen, 1879 (WA freshwater infauna)

Tenagodrilus Eckroth & Brinkhurst, 1996 - Lumbriculidae oligochaete worms

Tenagodrilus musculus Eckroth & Brinkhurst, 1996 (AL temporary freshwater pond interstitial and hyporheic)

Teneridrilus Holmquist, 1985 - Tubificidae oligochaete worms

Teneridrilus mastix (Brinkhurst) alien WA aquatic infauna

Thalassodrilides Brinkhurst & Baker, 1970 – Tubificidae oligochaete worms

Thalassodrilides belli Cook, 1974 (LA marine benthic)

Trichodrilus Claparede 1862 - Lumbriculidae oligochaete worm

Trichodrilus *allegheniensis* Cook 1971 (*type locality cave in Franklin Co., TN/Tb)

Trichodrilus *culveri* Cook 1975 (*type locality cave in Pocahontas Co., WV/Tb/WV T&E S1 rank & global G1G2 rank),

Tubifex Lamarck, 1816 - Tubificidae oligochaete worms

Tubifex templetoni = *Ilyodrilus t.*

Tubifex tubifex (*Lumbricus t.* Muller, 1774) (hyporheic in OH river; MB lake benthic; AZ sinkhole interstitial)

Tubifex pseudogaster = *Tubificoides p.* (Dahl, 1960) (*Isochaetides p.*; *Limnodrilus p.*; *Tubifex alpinus*) (Atlantic marine interstitial or burrower)

Tubificoides apectinatus = *Pelosclex apectinatus* Brinkhurst, 1965

Tubificoides bakeri Brinkhurst, 1985 (CA, WA marine infauna)

Tubificoides brownae Brinkhurst & Baker, 1979 (FL, LA, SC, WA alien marine infauna)

Tubificoides gabriellae (*Pelosclex g.* Marcus, 1950) (US (FL, LA, MA) & South American Atlantic supralittoral, brackish, marine interstitial or burrower)

Tubificoides heterochaetus (*Pelosclex h.* Michaelsen, 1926) (rare Virginian supralittoral, brackish, marine infauna (interstitial or burrower))

Tubificoides nerthoides (*Pelosclex n.* Brinkhurst, 1965) (US Atlantic & Pacific marine interstitial or burrower)

Tubificoides pseudogaster (*Tubifex p.* Dahl, 1960; *Isochaetides p.*; *Limnodrilus p.*; *Tubifex alpinus*) (Atlantic marine interstitial or burrower)

Tubificoides wasselli (alien Virginian, LA marine infauna)

Varichaetadrilus Brinkhurst & Kathman 1983 - Lumbriculidae oligochaete worms

Varichaetadrilus angustipenis (*Limnodrilus a.* Brinkhurst & Cook 1966) (rare NA/Pb? in IL karstic sprs; alien US aquatic infauna; AZ sinkhole interstitial)

Vejdovskiyella Michaelsen 1903 - - Naididae oligochaete worms

Vejdovskiyella comata (= *Bohemilla c.* Vejdovsky 1883) (NY hyporheic)

Vejdovskiyella intermedia (Bretscher 1896) (NA/Europe/CO hyporheic; Tx? in MN)

Head crawling Worms or suction-feeding worms

Class Aphanoneura

Order Aeolosomatida

Family Aeolosomatidae (suction-feeding worms)

(*Aeolosoma*, *Potamodrilus*, Undet. Tx genus in FL)

Aeolosoma Ehrenberg 1828 - Aeolosomatidae Aphanoneura worm (also put in Scolicida)

polychaetes)

Aeolosoma hemprichi Ehrneberg 1828 (cosmopolitan/Tx in KY(Mammoth C.),VA; MN lake benthic)

Aeolosoma undet. sp. or species (hyporheic in AL, CO, NC, NH, NY, FL, GA, MI, MN, OH, PA, KY, TN, VA; Tp or Tx in SC (Orangeburg Co.) cave stream))

Potamodrilus Lastockin, 1935 - Aeolosomatidae Aphanoneura worm

Potamodrilus undesr. sp. (hyporheic in VA)

Nematodes

Of Phylum Nemata (=Nematoda

Parasitic worms with unsegmented, white or brown, cylindrical body, without tentacles.

Unsegmented, white or brown, cylindrical, no tentacles. Partly incl. Aschelminthes. Both aquatic & terrestrial species. Parasites in crickets, bats, woodrats & salamanders. Up to 30 million per square m. of woodland soil where they feed on bacteria, fungi, protozoa and plant roots. Preyed upon by bacteria & fungi.

Bibl.: Eber 1994; Altherr & Delamare 1972; Goodey 1963; Nicholas 1984; Anderson 1992.

Partly incl. Aschelminthes. Both aquatic & terrestrial species. Parasites on cave crickets. Areas.

East: Ferris, Ferris & Tepkema 1973; FL: Esser et al 1985; NA: Cobb 1914; Tarjan et al. 1977;

NY: Strayer & Bannon-O'Connell 1992; Cain 1966. TN: Chandler 1985; US: Altherr Delamare 1972; Esser & Buckingham 1987; Poinar 1991; World: Eber 1986; Goodey 1963.

Skrjabin 1923-1987; Yamaguti, 1961; Class Gordioidea Chandler 1985

Kingdom Animalia

Clade Bilateria

Clade Protostomia

Clade Ecdysozoa

Phylum Nematoda (= Nemata)

Class Chromadorea (=Adenophorea)

Subclass Chromodoria

Order Desmodorida

Family Ceramonematidae

(*Ceramonema*, *Dasynemella*, *Dasynemoides*,

Pselionema)

Family Choniolaimidae

(*Choniolaimus*, *Gammanema*, *Halichoanolaimus*

(now in Selachinematidae), *Latronema*, *Pseudonchus*)

Family Desmodoridae
(*Acanthopharynx*, *Chromaspirina*, *Desmodora*,
Desmodorella,
Eubostrichus, *Leptonemella*, *Metachromadora*, *Onyx*,
Polysigma,
Sigmophoranema, *Spirinia*)

Family Microlaimidae (now in Chromadorida)
Family Monoposthiidae (*Monoposthia*, *Nudora*)
Family Richtersiidae (*Dracograllus*?, *Richtersia*)

Family Selachinematidae (Halichoanolaimus)
(also put in Choniolaimidae)

Suborder Chromadoria
Superfamily Chromadoroidea

Family Comesomatidae
(*Comesoma*, *Dorylaimopsis*, *Laimella*,
Mesonchium,
Metacomesoma, *Paracomesoma*, *Sabatieria*)

Superfamily Draconematoidea
Family Draconematidae (*Draconema*)
Family Epsilonematidae (*Epsilonema*)

Subclass Enoplia
Order Enoplida
Suborder Enoplina

Family Anoplostomatidae (*Anoplostoma*)

Family Leptochinidae (undet. genera or genus in LA brackish beach)
Family Oxystominidae (*Halalaimus*, *Litinium*, *Oxystomina*, *Porocoma*)

Family Rhabdodemaniidae (*Rhabdodemia*)
Family Symplocostomatidae (= Enchelidiidae) (*Catytronema*, *Thoonchus*)
Family Trefusiidae (*Cytolaimium*)

Superfamily Alaimoidea (also subsumed in Tripyloidea)
Family Alaimidae
Subfamily Alaiminae: *Alaimus*; *Apholaimus*

Superfamily Enoploidea
Family Anticomidae (*Anticoma*)

Family Enoplidae
(*Chaetonema*, *Eleutherolaimus*, *Enoploides*, *Enoplus*, *Epacanthion*,
Filipjevia,
Mesacanthion, *Mesancanthoides*, *Metenoploides*, *Paramesacanthion*,
Trileptium)

Family Lauratonematidae
(*Lauratonema*, *Lauratonemoides*; undet. genera or genus in LA brackish
beach)

Family Phanodermatidae (*Klugea*, *Phanopharynx*, *Phanoderma*,
Phanodermopsis)

Superfamily Oncholaimoidea
Family Enchelidiidae (*Illium*)

Family Eurystominidae
Subfamily Eurystomininae
(*Eurystomina*, *Pareurystomina*; undet. genera or genus in LA brackish
beach)

Suborder Oncholaimina
Superfamily Oncholaimoidea

Family Oncholaimidae (undet. genus in LA brackish beach, *Filoncholaimus*,
Metaparoncholaimus, *Metoncholaimus*, *Meyersia*, *Oncholaimellus*,
, *Paroncholaimus*, *Pontonema*, *Prooncholaimus*, *Viscosia*)

Subfamily Oncholaiminae: *Oncholaimus*, *Oncholaimoides*, *Oncholaimellus*

Suborder Tripylina (also subsumed in Enoplina)
Superfamily Tripyloidea

Family Alaimidae (also put in own superfamily)
(undet. genera or genus in LA brackish beach)

Family Ironidae (put in own superfamily)

Family Tripylidae (undet. genus in LA brackish beach sediment)
Subfamily Tripylinae: *Trichistoma*, *Tobrilus*, *Trilobus*;

Superfamily Ironoidea (also subsumed in Tripyloidea)
Family Ironidae (undet. genus in LA brackish beach ; *Ironella*, *Parironus*,
Thalassironus, *Trissonchulus*)

Subfamily Ironinae: *Ironus*; *Cephalonema*; *Nanonema*;

Subfamily Cryptonchinae: *Cryptonchus*; *Ditlevsenia*;

Order Monochida

Family Monochidae (also put in Order Enoplida)
(undet. genera or genus in LA brackish beach)

Order Monochinda

Suborder Mononchina

Superfamily Mononchoidea

Family Anatonchidae (*Anatonchus*) (put in Mononchidae)

Family Mononchidae

Subfamily Mononchinae

Mononchus, *Anatonchus* (also in Anatonchidae), *Granonchus*,
Mylonchulus,
Prionchulus

Order Dorylaimida

Suborder Dorylaimina

Superfamily Dorylaimoidea

Family Dorylaimidae

(*Laimydorus*; undet. genus in LA brackish beach, *Nygolaimus*)

Subfamily Dorylaiminae:

Dorylaimus; *Aporcelaimus*; *Aporcelaimellus* (now in Aporcelaimidae);
Chrysonema, *Discolaimus*, *Depranodorylaimus*, *Eudorylaimus* (now
in Qudsianematidae); *Cabronema*; *Caimydorus*; *Labronema*,
Mesodorylaimus;
Prodorylaimus, *Pungentus* (now in Nordidae); *Thornia*; *Thornenema*;
Witoldinema

Subfamily Actinolaiminae

Actinolaimus; *Paractinolai* (now in Actinolaimidae)

Subfamily Meromyariaminae: *Adoncholaimus*; *Dorylaimoides*;

Subfamily Tylencholaiminae: *Enchodelusus*;

Family Aporcelaimidae *Aporcelaimellus* (once in Dorylaimidae)

Family Actinolaimidae: *Paractinolaimus* (once in Dorylaimidae)

Family Longidoridae (*Xiphinema*))

Family Nordiidae: *Pungentus* (once in Dorylaimidae)

Family Nygolaimidae (see below)

Family Qudsianematidae: *Eudorylaimus* (once in Dorylaimidae)

Superfamily Belondiroidea

Family Belondiridae

Subfamily Belondirinae: *Axonchium*; *Oxydirus*

Suborder Nygolaimina (also subsumed in Dorylaimina)

Superfamily Nygolaimoidea (also subsumed in Dorylaimoidea)

Family Campydoridae

Subfamily Campydorinae: *Aulolaimoides*

Family Nygolaimidae: *Laevides*

Order Trichocephalida

Suborder Trichocephalina

Superfamily Trichocephaloidea

Family Trichocephalidae

Subfamily Trichurinae: *Trichurus*;

Subfamily Capillariinae: *Capillaria*; *Trichosoma*;

Family Trichosomoididae

Subfamily Trichosomoidinae: *Trichuroides*;

Subfamily Trichuridinae: *Trichusomoides*;

Order Mermithida

Suborder Mermithina

Superfamily Mermithoidea

Family Mermithidae (undet. genus in GA Tb *Pseudotremia eburnean*
millipede)

(*Hydromermis*)

Subfamily Mermithinae: *Mermis*

Order Muspiceida

Superfamily Muspiceoidea

Family Muspiceidae (*Maseria*)

Subclass Chromadoria

Order Araeolaimida

Suborder Araeolaimina

Superfamily Leptolaimoidea

Family Leptolaimidae

(*Antomicron*, *Camacolaimus*, *Ixonema*, *Leptolaimus*, *Procamacolaimus*)

Family Rhabdolaimidae (also put in Chromadorida) (*Rhabdolaimus*)
(also put in Leptolaimidae)

Family Teratocephalidae (*Teratocephalus*) (once put in Plectidae)

Family Tripyloididae (*Bathylaimus*, *Tripyloides*)

Superfamily Axonolaimoidea

Family Axonolaimidae

(*Odontophora*, *Apondontium*, *Pascolaimus*, *Paradontophora*, *Pseudolella*)

Subfamily Axonolaiminae (*Axonolaimus*, *Diplopeltis*)

Subfamily Belondirinae (*Axonchium*)

Subfamily Cyndrolaiminae (*Cyndrolaimus*)

Superfamily Camacolaimoidea

Family Camacolaimidae

Subfamily Halaphanolaiminae

Aphanolaimus; *Paraphanolaimus*;

Superfamily Plectoidea

Family Plectidae (*Teratocephalus*) (now in Teratocephalidae)

Subfamily Plectinae

Plectus; *Plectoides*; *Anaplectus*; *Chronogaster*, *Plectoidea*, *Pyncolaimus*;

Walcherenia

Family Teratocephalidae

(also put under Leptolaimoidea or in Order Rhabdita, Suborder Teratocephalina)

(*Teratocephalus*) (once put in Plectidae)

Order Chromadorida (also as subclass)

Suborder Chromadorina

Superfamily Chromadoroidea

Family Chromadoridae

(*Actinonema*, *Atrochromadora*, *Austranema*, *Chromadorita*, *Graphonema*,
Hypodontolaimus, *Neochromadora*, *Prochromadora*,

Prochromadorella,

Spilophorella, undet. genus in LA brackish beach)

Subfamily Chromadorinae:

Chromadorina; *Chromatodora*; *Chromadorella*,
Dichromadora, *Euchromadora*, *Spilophora*

Family Selachinematidae (also put in Enoplina)

(*Cheironchus*, *Richtersia* (now in Richtersiidae), *Synonchiella*)

Suborder Cyatholaimina

Superfamily Cyatholaimoidea

Family Cyatholaimidae

(*Acanthonchus*, *Gomphonema*, *Longicyatholaimus*, *Marylynnia*, *Metacyatholaimus*, *Nannolaimoides*, *Nannolaimus*, *Neotonchus*, *Paracanthonchus*, *Paracyatholaimus*, *Pomponema*, *Propomponema*)

Subfamily Cyatholaimrinae

Cyatholaimus; *Achromadora*; *Ethmolaimus*; *Prodesmodora*

Family Microlaimidae (also put in Dorylaimida)

(*Microlaimus*, *Microdorylaimus*, *Paramicrolaimus*)

Order Desmoscolecida

Family Desmoscolecidae (*Desmoscolex*, *Tricoma*)

Order Monhysterida

Family Linhomoeidae

(*Anticyathus*, *Anticyclus*, *Desmolaimus*, *Didelta*, *Disconema*, *Eleutherolaimus*, *Linhomoeus*, *Metalinhomoeus*, *Paralinhomoeus*, *Terschellingia*)

Family Scaptrellidae (*Scaptrella*)

Family Sphaerolaimidae (*Sphaerolaimus*)

Family Siphonolaimidae

(*Cyartonema*, *Dermatolaimus*, *Paraterschellingia*, *Siphonolaimus*)

Family Xyalidae

(*Daptonema*, *Rhynconema* (also put in Monhysteridae), *Theristus* (also put in Monhysteridae))

Suborder Monhysterina

Superfamily Monhysteroidea

Family Monhysteridae

(undet. genus in LA brackish beach, TTx? undet. genus & sp. in Wind C.,SD;

Cobbia,

Eumonhystera, *Gonionchus*, *Amphimonhystera*, *Paramonhystera*, *Rhynchonema*, *Steineria*, *Xenolaimus*, *Xyala*

Subfamily Monhysterinae

Monhystera; *Hofmaenneria*; *Mesotheristus*, *Paramonhystera*, *Prismatolaimus*; *Theristus* (also in Xyalidae)

Class Secernentea

Subclass Rhabditia

Order Rhabditida (= Phasmidea, Secernentea)

Suborder Rhabditina

Superfamily Rhabditoidea

Family Cephalobidae (now in Cephaloboidea)

Family Neodiplogastridae:

Mononchoides; *Fictor* (also put in Aphelenchidae)

Family Rhabditidae (undet. genus in GA Tb *Cambala hubrichti*

millipedes)

Subfamily Rhabditinae (*Rhabditis*; *Cuticularia*; *Curviditis*)

Family Rhabdochonidae

Subfamily Rhabdochoninae: *Rhabdochona*;

Family Rhabdiasidae

Subfamily Rhabdiasinae: *Rhabdias*;

Family Strongyloididae

Subfamily Strongyloidinae: *Strongyloides*;

Suborder Cephalobina

Superfamily Cephaloboidea

Family Cephalobidae (also put in Rhabditoidea)

Subfamily Cephalobinae: *Cephalobus*;

Subfamily Acrobelinae: *Acrobeles*; *Acrobeloides*;

Superfamily Panagrolaimoidea

Family Panagrolaimidae

Subfamily Panagrolaiminae: *Panagrolaimus*;

Order Strongylida

Suborder Strongylina

Superfamily Strongyloidea

Family Strongylidae

Subfamily Strongylinae: *Strongylus*;

Superfamily Trichostrongyloidea

Family Trichostrongylidae (*Nematospiroides*)

Subfamily Trichostrongylinae

Trichoston: *Trichostrongilus*; *Parallintoshius*;

Subfamily Strongilacanthinae

Allintochus; *Anoplostrongilus*;

Molinastrongilus; *Molinostrongilus*; *Tricholeiperia*

Subfamily Boehmiellinae: *Boehmiellina*;

Subfamily Nematoderinae: *Nematodirus*;

Subfamily Vianniinae: *Nippostrongilus*; *Longistriata*;

Subfamily Heligmosominae

Heligmonella; *Nematospiroides*, *Nippostrongilus*;

Subfamily Oswaldocruziinae: *Oswaldocruzia*;

Order Ascaridida

Suborder Ascaridina

Superfamily Ascaridoidea

(endoparasite in OH *Gyrinophilus porphyriticus* p. salamander)

Family Ascarididae

Subfamily Megalobatrachonemaninae

Megalobatrachonema; *Chabaudgolvania*

Superfamily Oxyuroidea

Family Kathlaniidae (now in Cosmocercoidea),

Family Oxyuridae (*Mastophorus*)

Subfamily Oxyurinae: *Oxyuris*; *Thelandros*;

Subfamily Aspicularinae: *Aspicularis*;

Subfamily Syphaciinae: *Syphacia*;

Superfamily Cosmocercoidea

Family Cosmoceridae

Subfamily Cosmocerinae: *Cosmocercoidea*;

Family Kathlaniidae

Subfamily Kathlaniinae: *Falcaustra*, *Kathlania*;

Subfamily Spironurinae: *Spironoura*, *Falcaustra*;

Superfamily Seuratoidea

Family Quimperiidae

Subfamily Quimperiinae: *Desmognathinema*

Family Seuratidae
 Subfamily Seuratinae: *Seuratum*;
 Subclass Spiruria
 Order Spirurida
 Suborder Spirurina
 Superfamily Spiruroidea
 Family Spiruridae (*pirurata*)
 Undet. endoparasite genus in NY *Lasiurus borealis* bats)
 Subfamily Ascaropsinae: *Ascarops*; *Physocephalus*;
 Subfamily Spiroxynae: *Spiroxys*;
 Subfamily Ardenninae: *Ardenna*;
 Subfamily Gongylonematinae: *Gongylonema*;
 Family Acuariidae
 Subfamily Acuariinae: *Spiroptera*;
 Family Hedruridae
 Subfamily Hedrurinae: *Hedruris*;
 Family Thelaziidae
 Subfamily Omeiinae: *Omeia* (or in Quimperiidae)
 Superfamily Physalopteroidea
 Family Physalopteridae
 Subfamily Physalopterinae: *Abbreviata*; *Physaloptera*
 Family Rictulariidae
 Subfamily Rictulariinae: *Rictularia*; *Pterygodermatites*;
 Superfamily Filarioidea
 Family Filariidae
 Subfamily Filariinae: *Agamofilaria*;
 Family Dipetalonematidae
 Subfamily Dipetalonematinae: *Litomosa*;
 Family Onchocercidae (*Dunnifilaria*)
 Subclass Diplogasteria
 Order Diplogasterida
 Suborder Diplogasterina
 Superfamily Diplogasteroidea
 Family Diplogasteridae

Subfamily Diplogasterinae: *Diplogaster*;
 Superfamily Cylandrocorporoidea
 Family Cylandrocorporidae
 Subfamily Cylandrocorporinae: Longibucca];
 Order Aphelenchida
 Suborder Aphelenchina
 Superfamily Aphelenchoidea
 Family Aphelenchidae
 Subfamily Aphelenchinae
 Aphelenchus; *Fictor* (also put in Neodiplogastridae); *Isonchus*;
 Order Tylenchida
 Suborder Tylenchina
 Superfamily Tylenchoidea
 Family Tylenchidae
 Subfamily Tylenchinae: *Tylenchus*; *Filenchus*;
 Superfamily Hoplolaimoidea (also subsumed in Tylenchoidea)
 Family Hoplolaimidae
 Subfamily Dolichodorinae: *Dolichodorus*;
 Subfamily Hoplolaiminae: *Helicotylenchus*; *Neotobrilus*; *Rotylenchus*;
 Suborder Ciconematina (also subsumed in Tylenchina)
 Superfamily Ciconematoidea
 Family Ciconematidae
 Subfamily Ciconematinae: *Hemicycliophora*;

Abbreviata Travassos, 1919 - Physalopteridae nematode, Subfamily Physalopterinae
Abbreviata undet. sp. (In TX *Tadarida brasiliensis* bats)

Acanthonchus Cobb, 1920 - Cyatholaimidae nematodes
Acanthonchus cobbi Chitwood, 1951 (FL marine infauna)

Acanthopharynx Marion, 1870 (= *Xanthodora*) Desmodoridae nematodes
Acanthopharynx undet sp. (NC deep-sea infauna)

Achromadora Cobb, 1913 (Soil, algy, grass & plant associated) Cyatholaimidae nematodes,
 Subfamily Cyatholaimrina

Achromadora pseudomicoletzkyi Van der Linde, 1938 (in NY hyporheic)
Achromadora ruricola (de Man, 1880) Micoletzky, 1925 (in NY hyporheic)

Achromadora undet. sp. (NY freshwater sandy beach interstitial)

Achromadora terricola (deMan, 1880) Micoletzky, 1925 (in MA,WA hyporheic)

Acrobeles Linstow, 1877 (Soil- algy, grass & plant associated) Cephalobidae nematode,
Subfamily Acrobelinae. Bibl.: P. Thomas 1964

Acrobeles ciliatus Linstow, 1877 (in MA, TX, WA hyporheic).

Acrobeles undet. sp. (Wind C.,SD/TTx).

Acrobeloides (Cobb, 1924) Thorne, 1925 (Soil- algy, grass & plant associated) Cephalobidae
nematodes, Subfamily Acrobelinae

Acrobeloides undet. sp. (Wind C.,SD/TTx?)

Actinolaimus Cobb, 1913 (Soil- algy, grass & plant associated) Dorylaimidae nematodes,
Subfamily Actinolaiminae

Actinolaimus macrolaimus (Man, 1884) Steiner, 1916 (in NY hyporheic).

Actinolaimus micoletzkyi ((Schneider, 1935) (in NY hyporheic).

Actinonema Cobb, 1920 - Chromadoridae nematodes

Actinonema celtica Cobb, 1920 (AK marine meiofauna)

Actinonema pachydermatum Cobb, 1920 (MA marine meiofauna)

Adoncholaimus de Man, 1886 (Soil- algy, grass & plant associated) Dorylaimidae nematodes,
Subfamily Meromyariaminae

Adoncholaimus lepidus (Thorne & Swanger, 1936) (in AZ, CA hyporheic)

Adoncholaimus undet sp. (GA salt marsh benthic)

Agamofilaria Schmidt, Duszynski & Martin 1992 - Filariidae nematodes, Subfamily Filariinae
(parasites found in 10 500 years radiocarbon dated ground sloth dung balls)

Agamofilaria oxyura Schmidt, Duszynski & Martin 1992 (*type locality cave in Mohave Co.,
AZ/ extinct in *Nothrotheriopsis shastensis* ground sloth dung)

Alaimus de Man, 1880 (Soil- algy, grass & plant associated) Alaimidae nematode, Subfamily
Alaiminae

Alaimus minor Cobb, 1893 (*A. simplex* Cobb, 1914; *Apholaimus tenuis* Daday, 1899; *A.*
primitivus de Man, 1880) (MA?,NY hyporheic)

Allintoshius Chitwood, 1937 (Intestinal parasites of Chiroptera) Trichostrongylidae nematodes,
Subfamily Nematoderinae

Allintoshius nycticeius Chitwood, 1937 (endoparasite in DC, IA *Nycticeius humeralis* & KS *Myotis velifer* bats) **Bibl.:** Nickel & Hansen, 1967

Allintoshius undet. sp. (endoparasite in WI (infrequent Tx) *Eptesicus fuscus* bats)

Allintoshius travassosi Chandler, 1938 (endoparasite in KS *Myotis grisescens*; IA, IN, KS *Eptesicus fuscus* f., KS, TX *Myotis velifer* & IA, IN, TX *Nycticeius humeralis* bats) **Bibl.:** Nickel & Hansen, 1967

Amphiera Allgen, 1920 - Monhysteridae nematodes

Amphimonhystera anechma (Southern, 1914) (NY marine infauna)

Anaplectus de Coninck & Schuurmans Stekhoven, 1933 (Soil- algy, grass & plant associated) Plectidae nematodes, Subfamily Plectinae

Anaplectus granulatus (Bastian, 1865) Fuchs, 1930 (in NY hyporheic).

Anatonchus (Cobb, 1916) de Coninck, 1939 (Soil- algy, grass & plant associated) Mononchidae nematodes, Subfamily Mononchinae (also put in Anatonchidae)

Anatonchus dolichurus (Ditlevsen, 1911) Andrassy, 1958 (NY, MA, WA hyporheic).

Anatonchus tridentatus (de Man, 1876) Andrassy, 1958 (NY hyporheic)

Anoplostoma Butschli, 1874 - Anoplostomatidae nematodes

Anoplostoma undet. sp. (PQ Gulf of St. Lawrence sandy marine interstitial)

Anoplostrongylus Boulenger, 1926 (Intestinal parasites of Chiroptera) Trichostrongylidae nematodes, Subfamily Strongilacanthinae

Anoplostrongylus bari Boulenger, 1926 (endoparasite in non-cave TX *Eumops perotis* bats)

Anoplostrongylus delicatus (Schwartz, 1927) Boulenger, 1926 (endoparasite in LA (non-cave), NM, OK & TX *Tadarida brasiliensis mexicana*; TFL *Tadarida brasiliensis cynocephala* & TX *Myotis velifer* & *Eptesicus fuscus* bats)

Anticoma Bastian, 1865 - Anticomidae nematodes

Anticoma acuminata (Eberth, 1863) (CT, WA marine interstitial up to 5 cm deep)

Anticoma campbelli Allgen, 1932 (CT marine interstitial up to 5 cm deep)

Anticoma columba Wieser, 1953 (CT marine interstitial up to 5 cm deep)

Anticoma ecotronis (AK marine infauna)

Anticoma litoris Chitwood, 1936 (CT, MA, NY marine interstitial up to 5 cm deep)

Anticoma undet. sp. (FL marine infauna)

Anticyathus Cobb, 1920 - Linhomoeidae nematodes

Anticyathus undet. sp. (FL marine infauna)

Anticyclus Cobb, 1920 - Desmodoridae nematodes

Anticyclus iniquus (*Linhomoeus i.* Wieser, 1956) (MA, NJ marine meiofauna)

Antomicron Cobb, 1920 - Leptolaimidae nematodes

Antomicron undet. sp. (FL marine infauna)

Aphanolaimus de Man, 1880 (Soil- algy, grass & plant associated) Camacolaimidae nematodes, Subfamily Halaphanolaiminae

Aphanolaimus aquaticus Daday, 1894 or 1898 (groundwater in Sweden/ in CO,NY hyporheic).

Aphanolaimus communis Cobb in M.V. 1915 (lakes/ NY hyporheic)

Aphelenchus Bastian, 1865 (Soil- algy, grass & plant associated) Aphelenchidae nematodes, Subfamily Aphelenchinae

Aphelenchus avenae Bastian, 1865 (in MA hyporheic) Bibl.: Dowsett 1977

Aphelenchus undet. sp. (Wind C.,SD/TTx).

Apodontium Cobb, 1920 - Axonolaimidae nematodes

Apodontium undet sp. (FL marine psammon)

Apholaimus de Man, 1880 (Soil- algy, grass & plant associated) Alaimidae nematode, Subfamily Alaiminae

Apholaimus tenuis Daday, 1899 (in MA, NY hyporheic).

Apholaimus. primitivus de Man, 1880) (in MA, NY hyporheic).

Aporcelaimellus Heyns, 1965 (Soil- algy, grass & plant associated) Aporcelaimidae nematodes (once in Dorylaimidae, Subfamily Dorylaiminae. **Bibl.:** Tjepkema 1971

Aporcelaimellus obscuroides Altherr, 1968 (in CO hyporheic).

Aporcelaimellus obscurus (Thorne & Swanger, 1936) Heyns, 1935 (predacious in streams/ CO hyporheic).

Aporcelaimellus obtusicaudatus (in NY,WA hyporheic).

Aporcelaimellus punctatus Altherr & Deboutteville, 1973 (in MA hyporheic).

Aporcelaimellus regis (de Man, 1876) Thorne & Swanger, 1936 (in NY,WA hyporheic).

Ardenna Railliet & Henry, 1911 (Intestinal parasites of mammals, including bats).Spiruridae nematodes, Subfamily Ardenninae

Ardenna strongylina (Rudolphi, 1819) Railliet & Henry, 1911 (parasites in Tx *Myotis velifer* & *Lasiurus borealis* bats).

Ascarops Beneden, 1873 (Intestinal parasites of mammals, including woodrats and bats).

Spiruridae nematodes, Subfamily Ascaropsinae

Ascarops strongylina (Rudolphi, 1819) Alicata & McIntosh, 1933 (parasites in Tx *Myotis velifer incautus* & *Lasiurus borealis* bats; on OH bats).

Ascarops undet. sp. (endoparasite in AZ *Neotoma albigula* woodrats)

Ascolaimus Ditlevsen, 1919 - Axonolaimidae nematodes

Ascolaimus elongatus (Butschli, 1874) (FL marine psammon)

Aspiculuris Schulz, 1924 (Intestinal parasites of rodents, including woodrats)

Oxyuridae nematodes, Subfamily Aspicularinae (once in Heteroxynematidae)

Aspiculuris ackertii Kruidenier & Mehra, 1959 (in AZ *Neotoma cinerea acraia* & *N. albigula* & on AZ, WY *Neotoma cinerea rupicola* woodrats).

Aspiculuris tetraptera (Nitzsch, 1821) Schultz, 1924 (in non-cave CO *Neotoma cinerea rupicola* woodrat).

Aspiculuris undet. sp. (ectoparasite in FL *Neotoma floridanus* f. woodrats)

Atrochromadora Wieser, 1959 - Chromadoridae nematodes

Atrochromadora denticulata Wieser & Hopper, 1967 (FL marine infauna)

Aulolaimoides Micoletzky, 1915 (Soil- algy, grass & plant associated) Campydoridae nematodes, Subfamily (1) Campydorinae

Aulolaimoides elegans Micoletzky, 1915 (creeks & lakes/ NY hyporheic)

Austranema Inglis, 1969 - Chromadoridae nematodes

Austranema pectinatum (*Euchromadora pectinata* Wieser & Hopper, 1957) (NY marine sandy meiofauna, interstitial?)

Axonchium Cobb, 1920 (Soil- algy, grass & plant associated) Axonolaimidae nematodes, Subfamily Belondirinae

Axonchium amplicolle Cobb, 1920 (NY hyporheic).

Axonolaimus DeMan, 1889 - Axonolaimidae nematodes, Subfamily Axonolaiminae

Axonolaimus helgolandicus (AK marine meiofauna)

Axonolaimus interrogativus Wieser, 1959 (NY marine meiofauna interstitial)

Axonolaimus undet sp. or species (CT marine meiofauna down to 5cm deep; PQ Gulf of St. Lawrence sandy marine interstitial)

Axonolaimus spinosus (Butschli, 1874) (GA, MA, CT, NY marine meiofauna)

Bathylaimus Cobb, 1894 (= *Bathylaimoides*, *Parabathylaimus*) - Tripyloididae nematodes
Bathylaimus tenuicaudatus (Allgren, 1933) MA marine meiofauna)

Belbolla Andrassy, 1973 - Enoplida – Oncholaimina nematodes
Belbolla sundaensis Micoletzky and Kreis (CT marine meiofauna down to 5cm deep)
Belbolla tenuidens (PQ Gulf of St. Lawrence, NC sandy marine interstitial; GA salt marsh benthic)

Boehmiella Gebauer, 1932 (endoparasites of Carnivora & rodents)
Boehmiella wilsoni wilsoni Lucker, 1943 (in KS, OK *Neotoma floridana* woodrats).
Trichostrongylidae nematodes, Boehmiellinae

Camacolaimus De Man, 1889 - Leptolaimidae nematodes (also put in Camacolaimidae)
Camacolaimus undet. sp. (NY marine meiofauna interstitial)

Capillaria Zeder, 1800 (Parasites in digestive tract or urinary bladder of vertebrates, including woodrat) Trichocephalidae nematodes, Subfamily Capillariinae

Capillaria americana Reid, 1949 (endoparasite in MD *Neotoma magister* woodrats)

Capillaria inaequalis Walton, 1935 (endoparasite in MO *Typhlotriton spelaeus*, KY (Trigg Co.) *Eurycea lucifuga* & non-cave OH *Gyrinophilus porphyriticus duryi* salamanders)

Capillaria martinezi Caballero, 1942 (endoparasite in TX *Myotis velifer* bats)
Capillaria michiganensis Read, 1949 (endoparasite in CT *Myotis lucifugus* bats)

Capillaria palmata Chandler, 1938 (endoparasite in IA, TX *Nycticeius humeralis*; LA *Myotis austroriparius*; IA, IN, MD, WI (infrequent Tx) *Myotis lucifugus*; IA *Lasionycteris noctivagans*; IA, IN, WI, TX *Eptesicus fuscus*; KS *Myotis grisescens*, IN *Corynorhinus rafinesquii* bats)

Capillaria undet. sp. or species (endoparasite in MO *Typhlotriton spelaeus* salamanders & FL *Tadarida brasiliensis cynocephala*; IN *Myotis lucifugus* & TX *Myotis velifer* bats)

Capillaria undescr. sp. (endoparasite in KY *Myotis grisescens* bats)

Capillaria trasvassosi Ehrlich, 1947 (endoparasite in IN *Myotis lucifugus* bats)

Catytronema Wieser, 1953 - Symplocostomatidae nematodes
Catytronema undet. sp. (FL marine infauna)

Cephalobus Bastian, 1865 (Soil- algy, grass & plant associated) Cephalobidae nematodes, Subfamily Cephalobinae

@~***Cephalobus*** Schneider, 1866 (in NY hyporheic) - nematode
Cephalobus ciliatus (Linstow, 1877) de Man, 1884 (in MA, TX, WA hyporheic).

Cephalobus infestans Cobb, 1893 (in NY hyporheic).
Cephalobus oxyuris Butschli, 1873 (in NY hyporheic).

Cephalonema Cobb, 1893 (Soil- algy, grass & plant associated) Ironidae nematodes, Subfamily Ironinae

Cephalonema longicaudata (de Man, 1884) Cobb, 1893 (in NY, OR hyporheic)

Ceramonema Cobb, 1920 - Ceramonematidae nematodes
Ceramonema reticulatum Chitwood, 1936 (NC deep-see marine infauna)
Ceramonema sculpturatum Chitwood, 1936 (NC deep-see marine infauna)
Cerconema mediocris Wieser (MA, NJ marine meiofauna)

Chabaudgolvania Freitas, 1958 (Parasites in amphibians, including in salamanders).
Ascarididae nematodes, Subfamily Megalobatrachonemaninae

Chabaudgolvania waldeni (Richardson & Adamsom, 1988) (endoparasite in non-cave BC
Ambystoma gracile salamanders)

Chaetonema Filipjev, 1927 - Enoplidae nematodes
Chaetonema undet. sp. (NY marine infauna)

Cheironchus Cobb, 1917 - Selachinematidae nematodes
Cheironchus undet. sp. (FL marine infauna)

Choniolaimus Ditlevsen, 1918 (= *Bulbopharyngiella*) - Choniolaimidae nematodes
Choniolaimus undet. sp. or species (NC deep-sea infauna; (NY marine infauna)
Choniolaimus tautraensis Allgren (CT marine meiofauna down to 5cm deep)

Chromadora Bastian, 1865 (Soil- algy, grass & plant associated) Chromadoridae nematodes,
Subfamily Chromadorinae

Chromadora axi Gerlach, 1951 (CT, MA, NJ marine meiofauna down to 5cm deep)
Chromadora leuckarti (de Man, 1876) Mikoletzki, 1922 (in MA hyporheic).
Chromadora macrolaimoides Steiner, 1915 (FL marine infauna)

Chromadora musae Cobb, 1893 (in TX hyporheic).
Chromadora nudicapitata Bastian, 1865 (= *C. quadrilinea* Filipjev; *C. quadrilineoides*; *C. undecimpapillata*) (CT marine meiofauna down to 5cm deep)

Chromadora quadrilinea Filipjev = *C. nudicapitata*

Chromadorella Filipjev, 1918 - Chromadoridae nematodes
Chromadorella filiformis (Bastian, 1865) (NY marine meiofauna interstitial)
Chromadorella filiformoides Chitwood (CT marine meiofauna down to 5cm deep)

Chromadorella undet. sp. (FL marine infauna)

Chromadorella vanmeterae Wieser & Hopper, 1967 (NY marine meiofauna interstitial)

Chromadorida - Plectidae nematodes

Chromadorina Filipjev, 1918 (Soil- algy, grass & plant associated) Chromadoridae nematodes, Subfamily Chromadorinae

Chromadorina epidemos Hopper & Meyers, 1967 (AK, FL marine psammon)

Chromadorina germanica (Butschli, 1874) (MA, NY marine mud meiofauna)

Chromadorina undet. sp. (PQ Gulf of St. Lawrence sandy marine interstitial)

Chromadorina viridis (Linstow, 1876) Wieser, 1954 (in MA hyporheic).

Chromadorita Filipjev, 1922 (Soil- algy, grass & plant associated; may be derived from marine ancestors) Chromadoridae nematodes, Subfamily Chromadorinae

Chromadorita leuckharti (de Man, 1876) Filipjev, 1922 (in MA, WA hyporheic).

Chromadorita undet sp. (FL marine psammon)

Chromadorita tentabunda (de Man, 1890) (CT marine meiofauna down to 5cm deep)

Chromaspirina Filipjev, 1918 - Desmodoridae nematodes

Chromaspirina arietina Wieser (MA marine meiofauna)

Chromaspirina ciliata Wieser (MA, NJ marine meiofauna)

Chromaspirina pellucida (Cobb, 1920) (NY marine infauna)

Chromaspirina renaudae (AK marine infauna)

Chromaspirina undet. sp. or species (FL marine psammon; CT marine meiofauna down to 5cm deep; FL, NY marine infauna)

Chronogaster Cobb, 1913 (Soil- algal grass & plant associated) Plectidae nematodes, subfamily Plectinae

Chronogaster typicus (*Walcherenia t.* deMan, 1921) de Coninck, 1935 (algal herbivore in lakes/ MA hyporheic).

Chrysonema Thorne, 1929 (Soil- algy, grass & plant associated) Dorylaimidae nematodes, Subfamily Dorylaiminae

Chrysonema aurum Thorne, 1929 (in MA hyporheic).

Cobbia De Man, 1907 - Monhysteridae nematodes

Cobbia crenata Wieser (MA marine meiofauna)

Cobbia undet sp. or sp. (NC, NY marine infauna)

Comesoma Bastian, 1865 - Comesomatidae nematodes

Comesoma pararenae Wieser (MA, NJ marine meiofauna)

Comesoma undet sp. or species (CT, NC marine meiofauna down to 5cm deep; FL marine

infauna)

Comesoma stenocephalum Filipjev, 1918 (NY marine infauna)

Cosmocercoides Wilkie, 1930 (endoparasites in digestive tract of amphibians, including salamanders). Cosmoceridae nematodes, Subfamily Cosmocerinae

Cosmocercoides dukae (Holl, 1928) (endoparasite in non-cave IL *Gyrinophilus porphyriticus duryi* & non- cave CA *Ambystoma tigrinum* salamanders).

Cosmocercoides variabilis (Harwood, 1930) (in non-cave VA *Plethodon cinereus* salamanders).
Cosmocercoides undet. sp. (endoparasite in AR *Eurycea multiplicata* salamanders)

Crenopharynx Filipjev, 1934 - Phanodermatidae nematodes

Crenopharynx undet. sp. (CT marine meiofauna down to 5cm deep)

Crenopharynx marioni (Southern, 1914) (NY marine infauna)

Cryptonchus Cobb, 1913 (Soil- algy, grass & plant associated) Ironinae nematodes, Subfamily Cryptonchinae

Cryptonchus exilis (Cobb, 1893) Andrassy, 1959 (in NY hyporheic)

Cryptonchus undet. sp. (NY freshwater sandy beach interstitial)

Cryptonchus tristus (Ditlevson, 1911) (in ponds/ MA, NY hyporheic).

Cuticularia Van der Linde, 1938 (Soil- algy, grass & plant associated) Rhabditidae nematodes, Subfamily Rhabditinae

Cuticularia curvinitis Dougherty, 1953 (NY hyporheic)

Cuticularia mthesoni van der Linde, 1938 (NY hyporheic)

Cuticularia oxycerca (*Rhabditis o.* deMan, 1895; *R. demani* Hntewytsch, 1929; *R. oerlei* Volk, 1950; *R. variabilis* Fuchs, 1931; *C. mthesoni* van der Linde, 1938; *R. nudicapitata* Stefanski, 1922; *R. parapapillosa* Schuurmans Stekhoven, 1951; *R. stalbergi* Allgen, 1950) (NY hyporheic)

Cyartonema Cobb, 1920 - Siphonolaimidae nematodes

Cyartonema undet. sp. (PQ Gulf of St. Lawrence sandy marine interstitial)

Cyatholaimus Micoletzky, 1925 - Cyatholaimidae nematodes, Subfamily Cyatholaimrina

Cyatholaimus gracilis (Eberth, 1863) (NY marine infauna)

Cyatholaimus ornatus Steiner, 1916 (in NY hyporheic).

Cyatholaimus ruricola de Man, 1880 (in NY hyporheic).

Cylindrolaimus de Man, 1880 (Soil- algy, grass & plant associated)

Cylindrocorporidae, Subfamily Cylindrocorporinae

Cylindrolaimus communis de Man, 1880 (in NY hyporheic).

Cylindrolaimus undet sp. (NC deep-sea infauna)

Cylindrolaimus tristus (Ditlevson, 1911) (in ponds/ MA, NY hyporheic).

Cylindrotheristus - Monhysteridae nematodes

Cylindrotheristus divertens (AK marine meiofauna)

Cylindrotheristus fistulatus (*Theristus* f. Wieser & Hopper, 1967) (Fl, MA meiofauna benthic)

Cylindrotheristus undet. sp. (NY marine meiofauna interstitial)

Cylindrotheristus xyaliformis (*Theristus* x. Wieser & Hopper, 1967) (FL marine infauna)

Cytolaimium Cobb, 1920 - Trefusiidae nematodes

Cytolaimium undet. sp. (PQ Gulf of St. Lawrence sandy marine interstitial)

Daptonema Cobb, 1920 - Xyalidae nematodes, Subfamily Xyalinae

Daptonema tenuispiculum (Ditlevsen, 1919) (PQ Gulf of St. Lawrence sandy marine interstitial)

Dasynemella Cobb, 1933 - Ceremonematidae nematodes

Dasynemella phalangida Chitwood, 1936 (NY marine infauna)

Dasynemella undet sp. (FL marine psammon)

Dasynemoides Chitwood, 1936 - Ceramonematidae nematodes

Dasynemoides setosus Chitwood, 1936 (NY marine infauna)

Dasynemoides undesr. sp. (NC marine infauna)

Depranodorylaimus Andrassy, 1959 (Soil- algy, grass & plant associated)

Dorylaimidae nematodes, Subfamily Dorylaiminae

Depranodorylaimus renwicki (Van der Linde, 1938) (in NY,TX hyporheic).

Dermatolaimus Steiner, 1920 - Siphonolaimidae nematodes

Dermatolaimus elegans Stekhoven & De Coninck (MA meiofauna benthic)

Desmodora De Man, 1889 - Desmoderidae nematodes

Desmodora devestita Wieser (MA marine meiofauna)

Desmodora punctata Jensen, 1985 (interstitial? in TX marine sands)

Desmodora polychaeta (NY marine meiofauna interstitial)

Desmodora pontica (Filipjev, 1922) (AK marine infauna)

Desmodora scaldensis De Man, 1889 (NY marine meiofauna interstitial)

Desmodora undet. sp. (CT marine meiofauna down to 5cm deep)

Desmodora tenuispiculum Allgen, 1928 (= *Desmodorella t.*) (AK, NY marine infauna)

Desmodora varioannulata Kreis (NY marine infauna)

Desmodorella Cobb, 1933 - Desmoderidae nematodes

Desmodorella cephalata Cobb, 1933 (NC deep-see marine infauna)

Desmognathinema Baker, Goater & Esch, 1987- Quimperiidae nematodes, Subfamily Quimperiinae (Intestinal parasites of vertebrates)

Desmognathinema nantahalaensis Baker, Goater & Esch, 1987 (epigeal in AR/ Tx in WA & Independence Cos., AR, in *Eurycea multiplicata griseogaster* & non-cave AR *E.m.g.*, *E. lucifuga* & *Desmognathus brimleyorum* salamanders).

Desmolaimus De Man, 1880 - Linhomoeidae nematodes

Desmolaimus elongatus Allgen (CT marine meiofauna down to 5cm deep)

Desmolaimus fennicus De Man, 1880 (MA meiofauna benthic)

Desmolaimus undet sp. or species (CT, FL marine infauna)

Desmolaimus thiobioticus (interstitial? in TX marine sulphide-rich brine interstitial)

Desmoscolex Claporede, 1863 - Desmoscolecidae nematodes

Desmoscolex americanus Chitwood, 1936 (NC deep-sea infauna)

Desmoscolex scanicus (Allgen, 1935) (NC deep-sea infauna)

Dichromadora Kreis, 1929 - Chromadoridae nematodes, Subfamily Chromadorinae

Dichromadora cephalata (*Chromadora cephalata* Steiner; *Hypodontolaimus geophila*) (MA marine meiofauna)

Dichromadora cucullata (AK marine infauna)

Dichromadora hyalocheile DeConick & Stekhoven, 1933 (CT marine meiofauna down to 5cm deep)

Didelta Cobb, 1920 - Linhomoeidae nematodes

Didelta maculata Conn (FL marine infauna)

Didontolaimus sabulosus Southern (FL marine infauna)

Diplogaster Schultze in Carus, 1857 (Soil- algy, grass & plant associated)

Diplogasteridae, Subfamily Diplogasterinae

Diplogaster rivalis (Leidy, 1854) Schultze in Carus, 1857 (in NY hyporheic).

Diplopeltis Cobb in Stiles & Hassal, 1904 (= *Discophora*) Subfamily Axonolaiminae

Diplopeltis undet sp. (CT marine meiofauna down to 5cm deep)

Diplopeltis incisus (Southern, 1914) (NC deep-sea infauna)

Discolaimus Micoletzky, 1922 (Soil- algy, grass & plant associated)

Dorylaimidae nematodes, Subfamily Dorylaiminae

Discolaimus ruttner Schnider, 1937 (in NY, WA hyporheic).

Disconema Filipjev, 1918 - Linhomoeidae nematodes

Disconema minuta Vitiello (NC deep sea meiofauna)

Disconema succium Allgen (CT, NC marine meiofauna down to 5cm deep)

Ditlensennia Mikoletzky, 1925 (Soil- algy, grass & plant associated)

Ironinae nematodes, Subfamily Cryptonchinae

Ditlensennia tristus (Ditlevson, 1911) Mikoletzky, 1925 (in ponds/ MA,NY hyporheic)

Dolichodorus Cobb, 1914 (Soil- algy, grass & plant associated) Hoplolaimidae nematodes,
Subfamily Dolichodorinae

Dolichodorus heterocephalus Cobb, 1914 (in MA hyporheic)

Dorylaimoides Thorne & Swanger, 1936 (Soil- algy, grass & plant associated) Dorylaimidae
nematodes, Subfamily Meromyariaminae

Dorylaimoides lepidus Thorne & Swanger, 1936 (in AZ, CA hyporheic)

Dorylaimoides parvus Thorne & Swanger, 1936 (in NY hyporheic)

Dorylaimopsis Ditlevsen, 1918 - Comesomatidae nematodes

Dorylaimopsis metatypicus Chitwood (CT, MA marine meiofauna down to 5cm deep)

Dorylaimus Dujardin, 1845 (Soil- algy, grass & plant associated)

Dorylaimidae nematodes, Subfamily Dorylaiminae

Dorylaimus carteri Bastian, 1865 (predator in lakes/ CO,NY,WA hyporheic).

Dorylaimus centrocerus de Man, 1880 (in MA hyporheic).

Dorylaimus consobrinus (de Man, 1918) Andrassy, 1959 (in WA,CO hyporheic).

Dorylaimus exilis Cobb, 1893 (in NY hyporheic).

Dorylaimus macrolaimus (Man, 1884) (in NY hyporheic).

Dorylaimus montanus Stefanski, 1923 (in NY hyporheic),

Dorylaimus obtusicaudatus Bast.1865 (in NY, WA hyporheic).

Dorylaimus proximus (Thorne & Swanger, 1936) (in NY hyporheic).

Dorylaimus ornatus Fuchs, 1930) (in NY, WA hyporheic).

Dorylaimus oxycephaloides (de Man, 1885) (in NY hyporheic).

Dorylaimus renwicki Van der Linde, 1938 (in TX hyporheic).

Dorylaimus stagnalis Dujardin, 1845 (in NY, WA hyporheic) Bibl.: Fennel 1959

Dorylaimus undet species (MN lake benthic; CA marine benthic)

Dorylaimus uniformis (Thorne, 1939) Andrassy, 1959 (WA hyporheic)

Dracograllus - Richtersiidae nematodes

Dracograllus kreisi (= *Richtersia kreisi*?) (AK marine infauna)

Draconema Cobb, 1913 - Draconematidae nematodes

Draconema annulatum (= *Manunema a.* Ditlevsen, 1915) (NY marine infauna)

Eleutherolaimus Filipjev, 1922 - Linhomoeidae nematodes

Eleutherolaimus stenosoma (*Monhystera s.* De Man, 1907) (MA, NJ, NY marine infauna)

Enchodelus Thorne, 1939 (Soil- algy, grass & plant associated) Dorylaimidae nematodes,
Subfamily Tylencholaiminae

Enchodelus knuppenburgensis Altherr & Deboutteville, 1973 (in WA hyporheic).

Enoploides - Saweljev, 1912 - Enoplidae nematodes

Enoploides delamarei (Noury-Srairi, 1994) (AK marine meiofauna)

Enoploides harpax Wieser, 1959 (WA marine sandy interstitial)

Enoploides polysetosus Jensen P., 1886 (interstitial? in TX marine sands)

Enoplolaimus De Man, 1893 - Enoplidae nematodes

Enoplolaimus conicollis De Man, 1893 (NY marine infauna)

Enoplolaimus undet sp. (CT marine meiofauna down to 5cm deep)

Enoplolaimus vulgaris De Man, 1893 (NY marine infauna)

Enoplus Dujardin, 1845 - Enoplidae nematodes

Enoplus behringicus Filipjev (MA, NJ marine meiofauna)

Enoplus communis Bastian, 1865 (CT, MA marine meiofauna)

Enoplus undet sp. (CT, MA marine meiofauna down to 5cm deep)

Epacanthion Wieser, 1953 (= *Hyalacanthion*) - Enoplidae nematodes

Epacanthion oweni Keppner, 1986 (FL marine infauna)

Epacanthion undet. sp. (FL marine infauna)

Epsilonema Steiner, 1927 - Epsilonematidae nematodes

Epsilonema undet. sp. (Ca beach interstitial)

Ethmolaimus de Man, 1880 (Soil- algy, grass & plant associated) Cyatholaimidae nematodes,
Subfamily Cyatholaimrina. **Bibl.:** Tjepkema 1971

Ethmolaimus pratensis de Man, 1880 (in lakes, eats bacteria/ NY hyporheic).

Ethmolaimus undet sp. (NC deep-sea infauna)

Eubostrichus Greeff, 1969 (= *Catanema*) Desmodoridae nematodes

Eubostrichus parasitiferous Chitwood (CT, NY marine meiofauna down to 10cm deep)

Eubostrichus undet. sp. (FL marine infauna)

Euchromadora De Man, 1886 - Chromadoridae nematodes, Subfamily Chromadorinae

Euchromadora pectinata = *Austranema pectinatum* ?

Euchromadora striata (interstitial? in TX marine sands)

Euchromadora meadi Wieser & Hopper, 1967 (FL marine infauna)

Eudorylaimus Andrassy, 1959 (Soil- algy, grass & plant associated) Qudisianematidae nematodes, Subfamily? (Once in Dorylaimidae, Subfamily Dorylaiminae)

Eudorylaimus carteri (Bastian, 1865) Andrassy, 1959 (predator in lakes/ CO, NY, WA hyporheic)

Eudorylaimus consobrinus (de Man, 1918) Andrassy, 1959 (in WA, CO hyporheic).

Eudorylaimus obtusicaudatus Andrassy, 1959 (in NY, WA hyporheic).

Eudorylaimus proximus (Thorne, 1939) Andrassy, 1959 (NY hyporheic).

Eudorylaimus undet sp. or species (AB lake benthic; VA hyporheic)

Eudorylaimus uniformis (Thorne, 1939) Andrassy, 1959 (WA hyporheic).

Eumonhystera Andrassy, 1981 (Soil- algy, grass & plant associated) Monhysteridae nematodes, Subfamily Monhysterinae

Eumonhystera dispar (Bastian, 1865) Andrassy, 1981 (NY hyporheic).

Eumonhystera filiformis (Bastian, 1865) Andrassy, 1981 (NY hyporheic).

Eurystomina Filipjev, 1921 - Eurystominidae nematodes

Eurystomina undet sp. (FL marine psammon)

Falcaustra Lane, 1915 - Kathlaniidae nematodes, subfamily Kathlaniinae (Intestinal parasites of reptilians, amphibians and fishes, including salamanders).

Falcaustra catesbeianae Walton, 1929 (endoparasite in MO Tb *Typhlotriton spelaeus* salamander).

Fictor Paramonov, 1952 (Soil- algy, grass & plant associated) Aphelenchidae nematodes Subfamily Aphelenchinae (also put in Neodiplogastridae)

Fictor fictor (Bastian, 1865) Paramonov, 1952 (in NY hyporheic).

Filenchus Andrassy, 1954 (Soil- algy, grass & plant associated) Tylenchidae nematodes, Subfamily Tylenchinae

Filenchus filiformis (Butschli, 1873) Andrassy, 1954 (in NY hyporheic).

Filipjevia Kreis, 1928 (= *Enoploneuma*) Enoplidae nematodes

Filipjevia meridionalis Kreis (NC deep-sea infauna)

Filipjevinema potor Wieser (MA, NJ marine meiofauna)

Filoncholaimus Filipjev, 1927 - Oncholaimidae nematodes

Filoncholaimus prolatus Hopper, 1967 (FL marine infauna)

Gammanema Cobb, 1920 - Choniolaimidae nematodes

Gammanema rapax (*Halichoanolaimus* r. Ssaweljev, 1912; *G. ferox*) (NY marine infauna)

Gomphionema Wieser & Hopper, 1966 - Cyatholaimidae nematodes

Gomphionema typica Wieser & Hopper, 1966 (FL marine infauna)

Gongylonema Molin, 1857 (Parasites in oesophagus and stomach walls of mammals and birds, including woodrats) Spiruridae nematodes, Subfamily Gongylonematinae

Gongylonema musculi (Rud, 1819) (endoparasite in FL *Neotoma floridanus* f. woodrat).

Gonionchus Cobb, 1920 - Monhysteridae nematodes

Gonionchus intermedius (TX marine sulphide-rich brine interstitial?)

Granonchulus Andrassy, 1958 (Soil- algy, grass & plant associated) Mononchidae nematodes, Subfamily Mononchinae

Granonchulus auberti Altherr & Deboutteville, 1973 (in MA hyporheic).

Graphonema Cobb, 1898 - - Chromadoridae nematodes

Graphonema undet. sp. (FL marine infauna)

Halalaimus De Man, 1888 (= *Acoma*, *Halalaimoides*) Oxystominidae nematodes

Halalaimus anulatus Wieser (MA, NJ marine meiofauna)

Halalaimus filum Gerlach, 1962 (NC deep-sea infauna)

Halalaimus longisetosus Hopper, 1963 (NC deep-see marine infauna & MA saltmarsh benthic)

Halalaimus pachydermatus (Cobb, 1920) (MA meiofauna benthic)

Halalaimus meyersi Wieser & Hopper, 1967 (NC deep-see marine infauna)

Halalaimus simiferus Wieser (MA marine meiofauna)

Halalaimus longisetosus Hopper, 1963 (FL marine infauna)

Halalaimus undet. sp. (PQ Gulf of St. Lawrence sandy marine interstitial)

Halichoanolaimus De Man, 1886 (= *Smalsundia*) Selachinematidae nematodes (also put in Choniolaimidae & Choanolaimidae)

Halichoanolaimus duodecimpapillatus Timm, 1952 (VA marine infauna)

Halichoanolaimus longicauda Ditevsen, 1918 (GA salt marsh benthic)

Halichoanolaimus quattuordecimpapillata Chitwood, 1951 (NC deep-sea infauna)

Halichoanolaimus raritanensis Hasbrouch or Hasbrouck, 1866 (CT, NY marine meiofauna)

down to 5cm deep)

Halichoanolaimus robustus (Bastian, 1865) (MA, NJ marine meiofauna)

Halichoanolaimus quattuordecimpapillata Chigwood, 1951 (NC deep-sea infauna)

Halichoanolaimus undet sp. (NC deep-sea infauna)

Hedruris Nitzsch, 1821 (Parasites in intestine, stomach and mouth cavity of amphichelomans and fishes). Hedruridae nematodes, Subfamily Hedrurinae

Hedruris brevis Walton, 1930 (in non-cave GA *Desmognathus fuscus* salamander).

Hedruris pendula (Leidy, 1851) (in non-cave AR *Desmognathus bimleyorum* salamander).

Helicotylenchus Steiner, 1945 (Soil- algy, grass & plant associated) Hoplolaimidae nematodes, Subfamily Hoplolaiminae. Bibl.: Golden 1956

Helicotylenchus multicinctus (Cobb, 1893) (NY hyporheic).

Heligmonella Moennig, 1927 (Soil- algy, grass & plant associated) Trichostrongylidae nematodes, Subfamily Heligmosominae

Heligmonella intermedia Baylis, 1929 (MA hyporheic).

Heligosomoides Durette-Desset, 1968 - Trichostrongylidae nematodes, Subfamily Heligmosominae

Heligosomoides polygyrus (*Strongylus polygyrus* Dujardin, 1845; *Heligmosmum polygyrum* Railliet & Henry, 1909; *Viannia polygyra* & *Heligosomoides linstowi* Hall, 1916) Durette-Desset, 1968 (endoparasite in NM *Neotoma albigula* woodrats)

Hemicycliophora de Man, 1921 (Soil- algy, grass & plant associated) Criconematidae nematodes, Subfamily Criconematinae (also put in Hemicycliophoridae)

Hemicycliophora thornei Goodey, 1963 (NY hyporheic)

Hemicycliophora undet. sp. or species (hyporheic, phreatobia (non-hyporheic groundwater) in OH, ON)

Heteromyoxuris Read & Millemann, 1952- Trypanosomatidae nematodes

Heteromyoxuris deserti Read & Millemann, 1952 (endoparasite in NM *Neotoma albigula* woodrats)

Hofmaenneria Gerlach & Meyl, 1957 (Soil- algal, grass & plant associated) Monhysteridae nematodes, Subfamily Monhysterinae

Hofmaenneria undet. sp. (WA hyporheic).

Hydromermis Corti, 1902 – Mermithidae nematodes

Hydromermis contorta (Kohn) (parasite in chironomid flies in MN lake infauna)

Hydromermis pseudocontorta A.A.Johnson & M.G. Kleve, 1999 (parasite in chironomid flies in MN lake infauna)

Hydromermis undet. sp. (ON hyporheic)

Hypodontolaimus de Man, 1886 - Chromadoridae nematodes (Soil- algal, grass & plant associated)

Hypodontolaimus balticus (G. Schneider, 1906) (MA, CT marine meiofauna down to 5cm deep; PQ Gulf of St. Lawrence sandy marine interstitial)

Hypodontolaimus cephalata Steiner? (CT marine meiofauna down to 5cm deep; GA salt marsh benthic)

Hypodontolaimus geophila or *geophilus* DeMan = *H. cephalata*

Hypodontolaimus patagiatus Wieser (MA, NJ marine meiofauna)

Hypodontolaimus ponticus (Filipjev, 1922) (CT, AK marine meiofauna down to 5cm deep)

Hypodontolaimus schurmans-stekhoveni Gerlach (CT marine meiofauna down to 5cm deep)

Hypodontolaimus setosus (Butschli, 1874) (CT marine meiofauna down to 5cm deep; NY marine sandy meiofauna, interstitial?; NC deep-sea infauna))

Hypodontolaimus undet. sp. or species (WA? hyporheic; FL marine infauna)

Illium Cobb, 1920 – Enchelidiidae nematodes

Illium undet. sp. (FL marine infauna)

Ixonema Lorenzen, 1971 - Leptolaimidae nematodes

Ixonema cobbi (Steiner, 1916) (NY marine infauna)

Ixonema sordidum Lorenzen, 1971 (AK marine infauna)

Ironella Cobb, 1920 - Ironidae nematodes

Ironella undet. sp. (FL? marine infauna)

Ironus Bastian, 1865 (Soil- algy, grass & plant associated) Ironidae nematodes, Subfamily Ironinae

Ironus filiformis Altherr, 1963 (in WA,CA hyporheic).

Ironus ignavus Bastian, 1865 (predaceous in filter systems/ NY hyporheic).

Ironus longicaudatus de Man, 1884 (predaceous in filter systems/ NY hyporheic)

Ironus undet. sp. or species (hyporheic in seVA; AB lake benthic))

Isonchus Cobb, 1913 (Soil- algy, grass & plant associated) Aphelenchidae nematodes Subfamily Aphelenchinae

Isonchus radicolus Cobb, 1913 (Wind C.,SD/TTx).

Isonchus undet. sp. (Wind C.,SD/TTx).

Klugea Filipjev, 1927 - Phanodermatidae nematodes

Klugea undet sp. (FL marine psammon)

Labronema Thorne, 1939 ZR 134 - Dorylaimidae nematodes, Subfamily Dorylaiminae (Soil- algy, grass & plant associated)

Labronema goodeyi Altherr & Deboutteville, 1973 (in MA hyporheic).

Labronema undet. sp. (hyporheic in seVA)

Laevides Heyns, 1968 - Nygolaimidae nematodes

Laevides rapus (Thorne & Wanger, 1936) (NY hyporheic)

Laimella Cobb, 1920 - Comesomatidae nematodes

Laimella longicauda Cobb, 1920(FL marine infauna)

Laimella quadrisetosa Chitwood (MA marine meiofauna)

Laimydorus Siddiqi, 1969 - Dorylaimidae nematodes (Soil- algy, grass & plant associated)

Laimydorus proximus (Thorne & Swanger, 1936) Siddiqi, 1969 (NY hyporheic).

Laimydorus undet. sp. (hyporheic in seVA)

Latronema Wieser, 1954 - Choniolaimidae nematodes

Latronema macromphida Wieser, 1954 (MA marine meiofauna)

Latronema undet. sp. (NY marine infauna)

Lauratonema Gerlach, 1953 - Lauratonematidae nematodes

Lauratonema originale = *Lauratonemoides i*,

Lauratonemoides De Coninck, 1965 - Lauratonematidae nematodes

Lauratonemoides originale (*Lauratonema o.* Gerlach, 1965) (AK, NJ, MA marine meiofauna)

Paramonohystera Steiner, 1916 - Monhysteridae nematodes

Paramonohystera (Leptogastrella) paranormandica (*L. p.* Micoletzky, 1922) (NY marine infauna)

Leptolaimus De Man, 1876 - Leptolaimidae nematodes

Leptolaimus elegans (Stekhoven & DeConinck, 1933) (PQ Gulf of St. Lawrence sandy marine interstitial)

Leptolaimus undet. sp. (NC deep-sea marine infauna)

Leptolaimus tripapillatus (AK marine infauna)

Leptolaimus undet. sp. (FL marine infauna)

Leptonemella Cobb, 1920 - Desmoderidae nematodes

Leptonemella aphanothecae Gerlach (MA sandy marine meiofauna)

Leptonemella cincta Cobb, 1920 (MA marine meiofauna)

Leptonemella pellita Wieser (MA marine meiofauna)

Linhomoeus Bastian, 1865 - Linhomoeidae nematodes

Linhomoeus buculentus (Wieser, 1956) (MA, NJ marine meiofauna)

Linhomoeus elongatus Bastian, 1865 (MA marine meiofauna)

Linhomoeus gittingsi Jensen P., 1986 (interstitial? in TX marine sulphide-rich brine interstitial)

Linhomoeus hirsutus Bastian, 1865 (NY marine infauna)

Linhomoeus undet. sp. or species (CT, FL, NY marine meiofauna down to 5cm deep)

Linhomoeus iniquus Wieser = *Anticyclus iniquus*

Litinium Cobb, 1920 - Oxystominidae nematodes

Litinium bananum Gerlach, 1957 (NC deep-sea infauna)

Litomosa Yorke & Mapelstone, 1926 (Parasites in abdominal cavity of bats).

Dipetalonematidae nematodes, Subfamily Dipetalonematinae

Litomosa chiropteororum Ortlepp, 1932 (endoparasite in WI (Sauk Co.) *Lasiurus cinereus* bats).

Litomosa americana McIntosh, 1932 (endoparasite in MA, DC *Nycticeus humeralis* bats).

Litomosa filaria (Beneden, 1873) (endoparasite in CA *Myotis lucifugus* bats)

Longibucca Chitwood, 1933 (Parasites in stomach wall of snakes and bats)

Cylindrocorporidae nematodes, Subfamily Cylindrocorporinae

Longibucca "eptesica" Elsea, 1953 (endoparasite in bats)

Longibucca lasiura McIntosh & Chitwood, 1934 (endoparasite in *Eptesicus fuscus*,

Corynorhinus townsendii, MD *Lasiurus cinereus*, WV *C. rafinesquii* & *Myotis lucifugus*, DC

Lasiurus borealis & *Lasionycteris noctivagans* & WA *Myotis yumanensis saturatus* bats).

Longicyatholaimus Micoletzky, 1924 - Cyatholaimidae nematodes

Longicyatholaimus fannae (Wieser & Hopper, 1967) (NC deep-sea infauna)

Longicyatholaimus filicaudatus Stekhoven (NC deep-sea infauna)

Longicyatholaimus undet. sp. or species (FL, NY marine infauna)

Longistriata Schulz, 1926 (Parasites in mammals, usually in rodents, including woodrats).

Trichostrongylidae nematodes, Subfamily Vianniinae

Longistriata carolinensis Travassos, 1937 (endoparasite in GA *Neotoma floridanus* f. woodrats)

Longistriata intermedia (Bayliss, 1929) Dikmans, 1935 (endoparasite in FL *Neotoma floridanus* f. woodrat).

Longistriata musculi (Rud, 1819) Dikmans, 1935 (endoparasite in FL *Neotoma floridanus* f. woodrat).

Longistriata neotoma (Hall, 1916) Murphy, 1952 (endoparasite in OK *Neotoma floridanus* f. woodrats).

Manunema annulatum = *Draconema a.* (NY marine infauna)

Marylynnia Hopper, 1977 (= *Marylynia*) Cyatholaimidae nematodes

Marylynnia hopperi Sharma & Vincx (BC marine infauna)

Marylynnia preclara Hopper, 1977 (interstitial? in TX marine sands)

Maseria Rausch & Rausch, 1983 - Muspiceidae nematode

Maseria vespertilionis Rausch & Rausch, 1983 (ectoparasite on OR *Myotis volans* & *Eptesicus fuscus* & OR, AK *Myotis lucifugus* bats)

Mastophorus Diesing, 1853 (pinworm) Oxyuridae nematodes

Mastophorus dipodomis Read & Millemann, 1953 (endoparasite in NM *Neotoma albigula* & *N. micropus* woodrats)

Megalobatrachonema Yamaguti, 1941 (Parasites in amphibians, mainly in Urodela, incl. salamanders) Ascarididae nematodes, Subfamily Megalobatrachonemaninae

Megalobatrachonema waldeni Richardson & Adamsom, 1988 (endoparasite in non-cave BC *Ambystoma gracile* salamander).

Mermis Dujardin, 1842 (Soil- algy, grass & plant associated) Mermithidae nematodes, Subfamily Mermithinae

Mermis undet. sp. (in NY,ON hyporheic).

Mesacanthion Filipjev, 1927- Enoplidae nematodes

Mesacanthion undet sp. (MA marine meiofauna)

Mesacanthion unguatus Wieser (CT marine meiofauna down to 5cm deep)

Mesacanthoides Wieser, 1953 - Enoplidae nematodes

Mesacanthoides fibulatus Wieser & Hopper, 1967 (interstitial? in TX marine sulphide-rich brine interstitial)

Mesacanthoides sinuosus Wieser, 1959 (WA marine interstitial?)

Mesodorylaimus Andrassy, 1959 (Soil- algy, grass & plant associated) Dorylaimidae nematodes, Subfamily Dorylaiminae

Mesodorylaimus margaritus Basson & Heyns, 1974 (in NY hyporheic).

Mesodorylaimus renwicki Andrassy, 1959 (in TX hyporheic)

Mesodorylaimus undet. sp. (NY freshwater sandy beach interstitial)

Mesodorylaimus subtilis (Thorne & Swanger, 1936) (in NY hyporheic).

Mesodorylaimus undet. sp. (sandy hyporheic in TX; CO hyporheic).

Mesonchium Cobb, 1922 - Comesomatidae nematodes

Mesonchium undet. sp. (FL marine infauna)

Mesotheristus Wieser, 1956 Monhysteridae nematodes, Subfamily Monhysterinae

Mesotheristus erectus (*Theristus e.* Wieser & Hopper, 1867) (MA marine meiofauna?)

Mesotheristus hirsutus (AK marine meiofauna)

Metachromadora Filipjev, 1918 (= *Ichthyodesmodora*, *Neonyx*) - Desmodoridae nematodes

Metachromadora additus Wieser (MA marine meiofauna).

Metachromadora undet 2 sp. (FL marine psammon)

Metachromadora (*Metachromadoroides*) undet sp. (PQ Gulf of St. Lawrence sandy marine interstitial)

Metachromadora obesa Chitwood, 1936 (NY, CT marine meiofauna down to 10cm deep)

Metachromadora onyxoides Chitwood, 1936 (CT marine meiofauna down to 5cm deep)

Metachromadora vivipara (NY marine infauna)

Metacomesoma Wieser, 1954 - Comesomatidae nematodes

Metacomesoma undet. sp. (PQ Gulf of St. Lawrence sandy marine interstitial)

Metacyatholaimus Stekhove, 1942 - Cyatholaimidae nematodes

Metacyatholaimus spatiosus Wieser, 1954 (NC deep see meiofauna)

Metalinhomoeus De Man, 1907 - Linhomoeidae nematodes

Metalinhomoeus additus Weiser (NJ marine meiofauna)

Metalinhomoeus dimorphus Weiser (MA, NJ marine meiofauna)

Metalinhomoeus effilatus Stekhoven (NC deep-sea infauna)

Metalinhomoeus retrosetosus Weiser (NC deep-sea infauna; CT marine meiofauna down to 5cm deep))

Metalinhomoeus setosus Chitwood, 1951 (MA, NJ, WA marine meiofauna)

Metalinhomoeus undet sp. CT marine meiofauna down to 5cm deep))

Metalinhomoeus tenuicaudatus Allgen CT marine meiofauna down to 5cm deep))

Metalinhomoeus typicus DeMan, 1907 (MA saltmarsh benthic; NY marine infauna)

Metaparoncholaimus De Coninck & Stekhoven, 1933 - Oncholaimidae nematodes

Metaparoncholaimus undet sp. (CT marine meiofauna down to 5cm deep)

Metenoploides Wieser, 1953 - Enoplidae nematodes

Metenoploides undet. sp. (interstitial? in TX marine sands)

Metoncholaimus Filipjev, 1918 - Oncholaimidae nematodes
Metoncholaimus parasimplex Keppner, 1987 (FL marine infauna)
Metoncholaimus pelor Hopper, 1967 (FL marine infauna)

Metoncholaimus pristiurus (Zur Strassen, 1894) (MA marine meiofauna; GA salt marsh benthic)

Metoncholaimus scissus Wieser & Hopper, 1967 (FL marine infauna)

@*Metonyx horridus* Chitwood (CT marine meiofauna down to 5cm deep)

Microdorylaimus Andrassy, 1986 - Microlaimidae nematodes
Microdorylaimus longicollis (*Microlaimus l.* Brzesky, 1964) (AK marine meiofauna)

Microlaimus De Man, 1880 (= *Microlaimoides*, *Paracothonolaimus*) - Microlaimidae nematodes

Microlaimus cochleatus Wieser, 1959 (NC, NY marine infauna)
Microlaimus conspicuus Lorenzen, 1973 (AK marine infauna)

Microlaimus dimorphus Chitwood, 1937 (NC, NY marine infauna)
Microlaimus gerlachi Wieser, 1954 (CT marine meiofauna down to 5cm deep)

Microlaimus honestus De Man, 1922 (NY marine infauna)
Microlaimus kaurii Wieser, 1954 (NC, NY marine infauna)

Microlaimus undet. sp. (FL marine infauna)
Microlaimus problematicus Allgren, 1932 (NC, NY marine infauna)
Microlaimus undet. sp. (NC, NY marine infauna),

Molinostrongylus Skarbilovitch, 1934 (Intestinal parasites of chiroptera) Trichostrongylidae nematodes, Subfamily Strongilacanthinae

Molinostrongylus delicatus (Schwartz, 1927) Travassos, 1937 (in LA (non-cave), NM, OK & TX (Tx) *Tadarida brasiliensis mexicana*, FL *Tadarida brasiliensis cynocephala* & TX *Myotis* v. bats).

Monhystera Bastian, 1865 - Monhysteridae nematodes
(Soil- algy, grass & plant associated) Monhysteridae nematodes, Subfamily Monhysterinae

Monhystera agilis de Man, 1880 (WA hyporheic)
Monhystera anoxybiotica (interstitial? in TX marine sulphide-rich brine interstitial)

Monhystera disjuncta Bastian, 1865 (NY marine infauna)
Monhystera dubicola Hopper & Meyers, 1967 (NY marine infauna)
Monhystera,parelegantula de Coninck, 1943 (FL, NY marine infauna)

Monhystera filicaudata Allgen, 1929 (RI marine estuary interstitial; CT marine meiofauna down to 5cm deep)

Monhystera microphthalma DeMan, 1880 (CT marine meiofauna down to 5cm deep; NC deep-sea infauna)

Monhystera paludicola de Man, 1881 (NY hyporheic).

Monhystera parva (Bastian, 1865) (*Monhystera heteroparva*; *M. pavameridiana*; *Tachyhodites parvus*) (CT, MA, NJ marine meiofauna down to 5cm deep)

Monhystera parlegantula de Coninck, 1943 (NY marine infauna)

Monhystera pusilla Boucher & Helleouets, 1977 (AK marine meiofauna)

Monhystera undet. sp. or species (MA, NY, ON, WA hyporheic/phreatobia interface; AB lake benthic; NC deep-sea infauna; NY freshwater sandy beach interstitial; NY marine infauna)

Monhystera vulgaris de Man, 1880 (CO hyporheic).

Mononchoides Rham, 1928 (Soil- algy, grass & plant associated). Neodiplogastridae, Subfamily

Mononchoides changi Goodrich et al., 1968 (NY hyporheic)

Mononchus Bastian, 1865 (Soil- algy, grass & plant associated). Mononchidae nematodes, Subfamily Mononchinae

Mononchus bellus Andrassy, 1985 (in NY hyporheic)

Mononchus dolichurus Cobb, 1916 (in MA, WA hyporheic)

Mononchus lacustris (Cobb in Cobb., 1915) (in NY hyporheic)

Mononchus brachyuris var. *macrodenticulatus* Cobb in Cobb, 1915 (in NY hyporheic).

Mononchus obtusicaudatus (Daday, 1899) (in NY hyporheic).

Mononchus truncatus Bastian, 1865 (predator in streams/ CO, MA, WA hyporheic)

Mononchus tunbridgensis Bastian, 1865 (in NY hyporheic).

Mononchus undet. sp. (ON phreatobia (groundwater); AB lake benthic).

Monopostia De Man, 1889 - Monoposthiidae nematodes

Monopostia duodecimalata Chitwood, 1936 (NY marine infauna)

Monopostia costata (Bastian, 1865) (CT, MA, NY marine meiofauna down to 5cm deep; GA salt marsh benthic)

Monoposthia hexalata Chitwood, 1936 (NC marine infauna)

Monoposthia mirabilis Schulz, 1932 (AK, FL marine infauna)

Meyersia Hopper, 1967 - Oncholaimidae nematodes

Meyersia minor Hopper, 1967 (FL marine infauna)

Mylonchulus (Cobb, 1916) Pennak, 1953 (Soil- algy, grass & plant associated) Mononchidae nematodes, Subfamily Mononchinae

Mylonchulus boveyi Altherr & Deboutteville, 1973 (in WA, MA? hyporheic).

Mylonchulus brachyuris (Butschli, 1874) Altherr, 1954 (predator in IN streams/ NY hyporheic).

Mylonchulus lacustris (Cobb in Cobb., 1915) (in NY hyporheic).

Mylonchulus sigmaturus (Cobb, 1917) Schuurman Stekhoven, 1943 (in NY hyporheic).

Mylonchulus vulvapapillatus Altherr & Deboutteville, 1973 (in MA hyporheic).

Nannolaimoides Ott, 1972 - Cyatholaimidae nematodes

Nannolaimoides effilatus (Boucher, 1976) (PQ Gulf of St. Lawrence sandy marine interstitial)

Nannolaimus Cobb, 1920 Cyatholaimidae nematodes,

Nannolaimus fusus Gerlach, 1956 (CT marine meiofauna down to 5cm deep)

Nanonema Cobb in Stiles & Hassall, 1905 (Soil- algy, grass & plant associated)

Ironidae nematodes, Subfamily Ironinae

Nanonema longicaudatus (de Man, 1884) Cobb in Stiles & Hassall, 1905 (predaceous in filter systems/ NY hyporheic).

Nematodirus Ransom, 1907 (Parasites in ruminants, occasionally in rats)

Trichostrongylidae nematodes, Subfamily Nematoderinae

Nematodirus neotoma Hall, 1916 (= *N. tortuosus* Tucker, 1941 or 1942) (endoparasite in NM *Neotoma albigula*, CO, WY *Neotoma cinerea rupicola*, *N. desertorum*, *N. mexicana fallax* & *N. floridana baileyi*, CA *N. fuscipes macrotis*, OK *Neotoma floridana*, PA (probably) *Neotoma magister*; CO *Neotoma stephensi relicta* & *Neotoma mexicana inopinata* & CA, UT *Neotoma lepida* woodrats).

Nematospiroides Baylis, 1926 - Trichostrongylidae nematodes, Subfamily Heligmosominae (Parasites of rodents, including woodrats).

Nematospiroides dubia Baylis, 1926 (endoparasite in NH *Neotoma fuscipes* woodrats)

Nematospiroides microti Kuntz & Raush, 1950 (endoparasite in OR *Neotoma fuscipes* woodrats)

Nematospiroides undet. sp. (endoparasite in NH *Neotoma fuscipes* woodrats).

Neochromadora Micoletzky, 1924 - Chromadoridae nematodes

Neochromadora attenuata (Gerlach, 1952) = *Prochromadorella a.*

Neochromadora paramunita Boucher, 1976 (AK marine meiofauna)

Neochromadora pistillata Wieser (MA sandy marine meiofauna)

Neochromadora poecilosoma (DeMan, 1893) (CT, MA marine meiofauna down to 5cm deep;
NY marine sandy meiofauna)

Neochromadora undet. sp. (FL marine infauna)

Neochromadora tecta Gerlach, 1951 (CT, NY marine meiofauna down to 5cm deep)

Neotobrilus Tsalolichin, 1981 (Soil- algy, grass & plant associated)
Hoplolaimidae nematodes, Subfamily Hoplolaiminae

Neotobrilus longus (Leidy, 1851) Tsalolichin, 1981 (in NY hyporheic)

Neotonchus Cobb, 1933 - Cyatholaimidae nematodes

Neotonchus corcunda Gerlach (NC deep-sea infauna)

Neotonchus punctatus Cobb, 1933 (NY marine infauna)

Neotonchus undet. sp. (FL marine infauna)

Nippostrongylus Lane, 1923 - Trichostrongylidae nematodes, Subfamily Heligmosominae
(Intestinal parasites of rodents, including woodrats). Trichostrongylidae nematodes, Subfamily
Heligmosominae

Nippostrongylus muris Yokogawa, 1920 (endoparasite in FL *Neotoma floridanus* f. woodrat).

Nudora Cobb, 1920 - Monoposthiidae nematodes

Nudora armillata Wieser, 1959 (WA marine sandy interstitial)

Nudora lineata Cobb, 1920 (CT, MA, NJ, NY marine meiofauna down to 5cm deep; GA salt
marsh benthic)

Nygolaimus – Nygolaimidae nematodes

Nygolaimus undet. sp. (hyporheic in seVA)

Odontophora Butschli, 1974 (*Conolaimus*, *Trigonolaimus*) Axonolaimidae nematodes

Odontophora armata (Ditlevsen, 1918) (CT, NY marine interstitial up to 5 cm deep)

Odontophora calcarea Wieser (MA marine meiofauna)

Odontophora loffleri Wieser (MA marine meiofauna)

Odontophora peritricha Wieser, 1956 (WA marine sandy interstitial)

Odontophora papusi Wieser, 1956 (MA marine meiofauna; GA salt marsh benthic)

Odontophora pugilator Wieser, 1956 (MA marine meiofauna)

Odontophora setosa (Allgen, 1919) (NY marine infauna)

Odontophora setosoides Timm, 1952 (CT marine interstitial up to 5 cm deep; GA salt marsh
benthic)

Omeia Hsu, 1932 (Abdominal and intestinal parasites of amphibians) Thelaziidae nematodes,
Subfamily Omeiinae

Omeia chickasawi Walton, 1940 (endoparasite in non-cave TN *Eurycea bislineata* salamander).
Omeia papillocauda Rankin, 1937 (endoparasite in non-cave OH *Gyrinophilus porphyriticus*, non-cave NC *Desmognathus ochrophaeus* & *quadramaculatus*, AR *Eurycea multiplicata* m. & non-cave TN *Eurycea bislineata* salamanders)

Oncholaimellus De Man, 1890 - Oncholaimidae nematodes
Oncholaimellus patkellyi Keppner, 1987 (FL, NC marine infauna)

Oncholaimoides Chitwood, 1937 - Oncholaimidae nematodes
Oncholaimoides rugosus Chitwood, 1937 (CT, NC, NY marine meiofauna)

Oncholaimoides undet. sp. or species (FL, CT marine meiofauna down to 5cm deep)
Oncholaimoides striatus Chitwood, 1937 (NC marine infauna)

Oncholaimus Dujardin, 1845 (Soil- algy, grass & plant associated)
Oncholaimidae nematodes, Subfamily Oncholaiminae

Oncholaimus brachycercus DeMan, 1889 (CT marine meiofauna down to 5cm deep)
Oncholaimus campylocercoides De Coninck & Stekhove, 1933 (MA marine benthic)

Oncholaimus dujardinii DeMan, 1876 (CT marine meiofauna down to 5cm deep; (FL marine infauna))

Oncholaimus paralangrunensis (Allgen, 1947) (NY marine infauna)
Oncholaimus undet. species (in WA hyporheic; MA, NY marine meiofauna).
Oncholaimus vesicarium (= *Oncholaimium* v.) (WA meiofauna benthic)

Oncholaimium = *Oncholaimus* Dujardin, 1845

Onyx Cobb, 1891 (= *Oistolaimus*) (Onyx-nematode) Desmodoridae nematodes
Onyx rugata (Gray, 1821) (WA marine sandy interstitial)

Oswaldocruzia Travassos, 1917 - Trichostrongylidae nematodes, subfamily Oswaldocruziinae (also put in Molineidae, subfamily Molineinae) (Intestinal parasites of amphibians, including salamanders).

Oswaldocruzia euryceae (in non-cave? GA *Eurycea guttolineata* salamanders).
Oswaldocruzia leidy Travassos, 1914 (in non-cave TN *Desmognathus fuscus* salamanders).

Oswaldocruzia pipiens Walton, 1929 (endoparasite in KY (Trigg Co.) *Eurycea lucifuga* salamander, non-cave CA *Aneides aeneus* & *Plethodon cinereus albagula* salamanders).

Oswaldocruzia undet. sp. (in MO *Typhlotriton spelaeus* salamander).

Oxydirus Thorne, 1939 (Soil- algy, grass & plant associated)
Axonolaimidae nematodes, Subfamily Belondirinae

Oxydirus oxycephaloides (de Man, 1885) Thorne, 1939 (in NY hyporheic).

Oxyonchus Filipjev, 1927 - Enoplidae nematodes

Oxyonchus lynnae E.J. Keppner, 1987 (FL marine infauna)

Oxyonchus striatus E.J. Keppner, 1988 (FL marine infauna)

Oxystomina Filipjev, 1921 (= *Nemanemella*, *Oxystomella*, *Schistodera*) Oxystominidae nematodes

Oxystomina beta Weiser (MA, NJ marine meiofauna).

Oxystomina elongata (Buetschli, 1874) (MA marine meiofauna).

Oxystomina undet. sp. (FL marine infauna)

Oxyuris - Rankin, 1937 - Oxyuridae nematodes, Subfamily Oxyurinae (Intestinal parasites of mammals, especially of ungulates, occasionally in salamanders and woodrats).

Oxyuris magnavulvaris (Rankin, 1937) Thorne, 1939 (endoparasite in non-cave GA, TN *Desmognathus fuscus*, AR *Desmognathus brimleyorum* & *Eurycea bislineata* salamanders).

Oxyuris papillocauda Walton, 1940 (endoparasite in non-cave TN *Desmognathus fuscus* salamander),

Oxyuris tetraptera (Nitzsch, 1821) (endoparasite in non-cave CO *Neotoma desertorum*, *Neotoma cinerea rupicola*, *N. mexicana fallax* & *N. cinerea orolestes* woodrats)

Panagrolaimus Fuchs, 1930 (Soil- algy, grass & plant associated) Panagrolaimidae nematodes, Subfamily Panagrolaiminae

Panagrolaimus rigidus (Schneider, 1866) (NY hyporheic)

Paracanthonchus Micoletzky, 1924- Cyatholaimidae nematodes (*Harveyjohnstonia*; *Paraseuratiella*)

Paracanthonchus caecus Micoletzky, 1924 (CT marine meiofauna down to 5cm deep; GA salt marsh benthic)

Paracanthonchus platypus Wieser & Hopper, 1967 (FL marine psammon)

Paracanthonchus undet sp. (FL marine psammon)

Paracanthonchus spectabilis Allgren (CT, MA, NY marine meiofauna down to 5cm deep)

Paracomesoma Hope & Murphy, 1972 - Comesomatidae nematodes

Paracomesoma hexasetosa Hope & Murphy, 1972 (NY marine sandy meiofauna, interstitial?)

Paracomesoma undet sp. (FL marine psammon)

Paractinolaimus Meyl, 1957 (Soil- algy, grass & plant associated) Actinolaimidae nematodes (once in Dorylaimidae, Subfamily Actinolaiminae)

Paractinolaimus intermedius (de Man, 1880) (in WA hyporheic).
Paractinolaimus macrolaimus (Man, 1884) (in NY hyporheic)
Paractinolaimus undet. sp. (NY freshwater sandy beach interstitial)

@*Paraecuchromadora* (spelling?) undet sp. (FL marine psammon)

Paracyatholaimus Micoletzky, 1922 - Cyatholaimidae nematodes
Paracyatholaimus occultus Gerlach (AK marine meiofauna)
Paracyatholaimus pesavis Wieser & Hopper, 1967 (NC marine meiofauna)

Paracyatholaimus pugettensis Weiser & Hopper, 1967 (AK marine meiofauna)
Paracyatholaimus undet sp. (NY marine infauna)
Paracyatholaimus vancouverensis Sharma & Vincx (BC marine infauna)

Paraontophora Timm, 1963 - Axonolaimidae nematodes
Paradontophora brevamphida (*Pseudolella b.* Timm, 1952) (FL marine psammon)

Paralinhomoeus De Man, 1907 (Crystallonema; Paradesmolaimus) Linhomoeidae nematodes
Paralinhomoeus ostrearum Filipjev, (CT marine meiofauna down to 5cm deep)

Paralinhomoeus undet. sp. (NJ marine meiofauna)
Paralinhomoeus strigosus Wieser, 1956 (CT marine meiofauna down to 5cm deep)
Paralinhomoeus tenuicaudatus (Butschli, 1874) (CT, NY marine meiofauna down to 5cm deep)

Paralinhomoeus undet species (MA, NY marine meiofauna; 2 species - NC deep-sea infauna))

Parallintoshius Araujo, 1940 (Intestinal parasites of chiroptera) Trichostrongylidae nematodes, Subfamily Trichostrongylinae

Parallintoshius parallintoshius Araujo, 1940 (endoparasite in TX *Myotis velifer incautus* & *M. volans* bats.

Paramesacanthion Wieser, 1953 - Enoplidae nematodes
Paramesacanthion undet sp. (CT marine meiofauna down to 5cm deep)

Paramicrolaimus Wieser, 1954 - Microlaimidae nematodes
Paramicrolaimus undet sp. (CT marine meiofauna down to 5cm deep)

Paramonhystera Wieser, 1956 (= *Paramonohystera*) - Monhysteridae nematodes, Subfamily Monhysterinae

Paramonhystera biforma Wieser, 1956 (NJ marine meiofauna)
Paramonhystera canicula Wieser & Hopper (FL marine infauna)

Paramonhystera mystacoderma Wieser, 1956 (MA, NJ marine meiofauna)
Paramonhystera (*Paramonhystera*) *proteus* Wieser ZR 115 (CT marine meiofauna down to 5cm deep)

Paramonhystera undet. sp. or species (FL, NY marine infauna)

Paraphanolaimus Micoletzky, 1923 (Soil- algy, grass & plant associated)
Camacolaimidae nematodes, Subfamily Halaphanolaiminae

Paraphanolaimus communis (Cobb, 1915) Micoletzky, 1923 (in NY hyporheic).

Paraterschellingia Kreis in Stekhoven, 1924 - Siphonolaimidae nematodes
Paraterschellingia undet sp. (CT marine meiofauna down to 5cm deep)

Pareurystomina Micoletzky & Kreis, 1930 - Eurystominidae nematodes
Pareurystomina ac(c)uminata (NY marine infauna)
Pareurystomina agubernacula Keppner, 1986 (FL marine infauna)

Pareurystomina flagellicaudata Stekhoven, 1946 (MA, NJ marine meiofauna)
Pareurystomina floridensis Keppner, 1986 (FL marine infauna)
Pareurystomina pugetensis (WA marine interstitial?)

Pareurystomina undet. sp. (FL marine infauna)
Pareurystomina typicum Micoletzky (MA marine meiofauna)

Parironus Micoletzky, 1930 - Ironidae nematodes
Parironus sandersi Wieser (NJ, MA marine benthic meiofauna)

Paroncholaimus Filipjev, 1916 - Oncholaimidae nematodes
Paroncholaimus camphylocercoides (GA salt marsh benthic)
Paroncholaimus paralangrunensis (GA salt marsh benthic)

Phanoderma Bastian, 1865 - Phanodermatidae nematodes
Phanoderma undet sp. (FL marine infauna)

Phanodermopsis Ditlevsen, 1926 - Phanodermatidae nematodes
Phanodermops undet. sp. (FL marine infauna)

Physaloptera Rudolphi, 1819 (Parasites in digestive tract of mammals, birds, amphibians & reptiles) Physalopteridae nematodes, Subfamily Physalopterinae

Physaloptera abjecta Leidy, 1856 (endoparasite in AR *Desmognathus fuscus* salamanders).
Physaloptera brevivcaginata Seurat, 1917 (endoparasite in TX, NM *Myotis septentrionalis* bats).

Physaloptera leidy Walton, 1927 (endoparasite in TX *Myotis lucifugus* bats)
Physaloptera massino Shulz, 1928 (= *P. spinicauda* McLeod, 1933) (endoparasite in NM *Neotoma albigula* woodrats)

Physaloptera undet. sp. or species (endoparasite in TX (Tx), LA *Tadarida brasiliensis mexicana* & FL *Tadarida brasiliensis cynocephala* bats)

Physocephalus Diesing, 1861 (Parasites in stomach and intestinal tract of mammals, including bats). Spiruridae nematodes, Subfamily Ascaropsinae

Physocephalus *sexalatus* (Molin, 1860) (endoparasite in *Eptesicus fuscus* f. ; MD *Lasiurus cinereus*, TX *Myotis velifer*; WV (Tx) *Myotis lucifugus* l. & OH bats).

Physocephalus undet. sp. (in CO hyporheic; ectoparasite on *Lasiurus cinereus* bats).

Plectoidea Oerley, 1880 - Plectidae nematodes

Plectoidea undet sp. (FL marine psammon)

Plectoides de Man, 1904 = *Plectus*

Plectus Bastian, 1865 (= *Plectoides*, *Proteroplectus*) (Soil- algy, grass & plant associated) Plectidae nematodes, Subfamily Plectinae. Bibl.: Maggenti

Plectus *aquatilis* Andrassy, 1985 (ON hyporheic)

Plectus *granulosus* Bastian, 1865 (= *Plectoides* g.) (in CO,MA hyporheic)

Plectus *inquirendus* (ON hyporheic)

Plectus *parietinus* Bastian, 1865 (in NY hyporheic).

Plectus *rhizophilus* de Man, 1880 (in CO,WA hyporheic).

Plectus *granulosus* Bastian, 1865 (in NY hyporheic).

Plectus *tubier* Cobb, 1914 (in NY hyporheic).

Plectus undet. sp. or species (Ttx? in Wind C.,SD; NY freshwater sandy beach interstitial)

Polysigma Cobb, 1920 - Desmodoridae nematodes

Polysigma *uniforme* Cobb, 1920 (CT, NY marine meiofauna down to 10cm deep)

Pomponema Cobb, 1917 (= *Anaxonchium*, *Cobbiacanthonchus*, *Endolaimus*, *Haustrifera*, *Nummocephalus*) Cyatholaimidae nematodes

Pomponema *mirabilis* Cobb, 1917 (MA, NC marine infauna)

Pomponema *multipapillatum* (AK marine infauna)

Pomponema *segregata* Wieser (NC deep-sea infauna)

Pomponema *tautraense* (Allgen, 1933) (*Choniolaimus tautraense*; *Cyatholaimus tautraense*; *Nummocephalus tautraense*) (NY marine sandy meiofauna, interstitial?)

Pontonema Leidy, 1855 - Oncholaimidae nematodes

Pontonema *problematicum* Chitwood, 1960 (FL marine infauna)

Porocoma Cobb, 1920 - Oxystominidae nematodes

Porocoma undet. sp. (NC deep sea meiofauna)

Prionchulus Cobb, 1916 (Soil- algy, grass & plant associated)
Mononchidae nematodes, Subfamily Mononchinae

Prionchulus muscorum (Dujardin, 1845) Wu & Hoepplie, 1929 (NM hyporheic)
Prionchulus undet. sp. (sandy hyporheic in TX)

Prismatolaimus de Man, 1880 (Soil- algy, grass & plant associated)
Monhysteridae nematodes, Subfamily Monhysterinae

Prismatolaimus dolichurus de Man, 1880 (in CO, NY hyporheic)
Prismatolaimus undet. sp. or species (sandy hyporheic in VA, TX; ON hyporheic & groundwater ecotone; AB lake benthic)

Procamacolaimus Gerlach, 1954 - Leptolaimidae nematodes
Procamacolaimus 2 undet species (CT marine meiofauna down to 5cm deep)

Prochromadora Filipjev, 1922 - Chromadoridae nematodes
Prochromadora undet. sp. (NY marine meiofauna interstitial)

Prochromadorella Micoletzky, 1924 (= *Trichromadora*) Chromadoridae nematodes
Prochromadorella attenuata (*Neochromadora attenuata* Gerlach, 1952) (AK, MA, NJ marine meiofauna)

Prochromadorella ditlevseni (AK marine meiofauna)

Prochromadorella neapolitana ZR 121 (MA, NY marine sandy meiofauna, interstitial?)
Prochromadorella paramucrodonta (*Chromadora p.* Allgen, 1929) (CT marine meiofauna down to 5cm deep; NY marine sandy meiofauna, interstitial?)

Prochromadorella undet. sp. or species (MA marine meiofauna; FL marine psammon)
Prochromadorella papillata Jensen P., 1885 (interstitial? in TX marine sands)

Prodesmodora Micoletzky, 1923 (Soil- algy, grass & plant associated)
Cyatholaimidae nematodes, Subfamily Cyatholaiminae

Prodesmodora fluviatilis (Cobb, 1914) Micoletzky, 1923 (in CO hyporheic)
Prodesmodora undet. sp. (AB lake benthic)
Prodesmodora undescr. sp. (in NY hyporheic)

Prodorylaimus Andrassy, 1959 – Dorylaimidae, Subfamily Dorylaiminae
Prodorylaimus undet. sp. (ON hyporheic groundwater/hyporheic ecotone)

Prooncholaimus Micoletzky, 1924 - Oncholaimidae nematodes
Prooncholaimus hastatus Wieser & Hopper, 1967 (FL marine infauna)

Propomponema Ott, 1972 - Cyatholaimidae nematodes
Propomponema websteri Sharma & Vincx (BC marine infauna)

Pselionema Cobb, 1933 - Ceramonematidae nematodes

Pselionema annulatum (*Steineria annualta* Filipjev, 1922) (NC deep-sea marine infauna)

Pseudolella Cobb, 1920 - Axonolaimidae nematodes

Pseudolella undet. sp. (FL marine infauna)

Pseudonchus Cobb, 1920 - Choniolaimidae nematodes

Pseudonchus kosswigi Murphy, 1964 (NY marine meiofauna interstitial)

Pseudosteineria Wieser, 1956 - Monhysteridae nematodes, Subfamily Monhysterinae

Pseudosteineria horrida (*Theristus horridus* Steiner, 1916)

Pterygodermatites Wedl, 1861 (Intestinal parasites of insectivora, rodents, bats and lizards).
Rictulariidae nematodes, Subfamily Rictulariinae

Pterygodermatites bovieri Blanchard, 1886 (= *Riticularia b.*) (endoparasite in IN, CA *Myotis lucifugus* bats).

Pterygodermatites coloradensis Holl, 1916 (Tx in KY, OH/ parasite on crickets)

Pterygodermatites dipodomis (*Riticularia d.* Tiner, 1948) Quentin, 1969 (endoparasite in NM *Neotoma albigula* woodrats)

Pterygodermatites parkeri Neovan, 1922 (endoparasite in MD *Neotoma pennsylvanica* woodrat).

Pungentus Thorne & Swanger, 1936 (Soil- algy, grass & plant associated) Nordidae nematodes
(once in Dorylaimidae, Subfamily Dorylaiminae)

Pungentus pungens Thorne & Swanger, 1936 (in NY hyporheic).

Pycnolaimus Cobb, 1920 (Soil- algy, grass & plant associated) Plectidae nematodes, Subfamily Plectinae

Pycnolaimus granulosus (Bastian, 1865) Cobb, 1920 (in NY hyporheic).

Rhabdias Stiles & Hassall, 1905 (Abdominal and intestinal parasites of amphibians, including salamanders). Rhabdiasidae nematodes, Subfamily (1) Rhabdiasinae:

Rhabdias entomelas (Leidy, 1851) Stiles & Hassall, 1905 (in non-cave TN *Desmognathus fuscus* salamander).

Rhabditis Dujardin, 1845 (Soil- algy, grass & plant associated) Rhabditidae nematodes,
Subfamily Rhabditinae

Rhabditis aquatica (Micoletzky, 1913) (in NY hyporheic).

Rhabditis demani Hntewytsch, 1929 (in NY hyporheic).

Rhabditis oerlei Volk, 1950 (in NY hyporheic).

Rhabditis nudicapitata Stefanski, 1922 (in NY hyporheic).

Rhabditis oxycerca (deMan, 1895 (in NY hyporheic).

Rhabditis parapapillosa Schuurmans Stekhoven, 1951 (in NY hyporheic).

Rhabditis stalbergi Allgen, 1950 (in NY hyporheic).

Rhabditis variabilis Fuchs, 1931 (in NY hyporheic).

Rhabditis undet. sp. (TTx? in SD).

Rhabdochona Railliet, 1916 (Intestinal parasites of fishes) Rhabdochonidae nematodes,
Subfamily (1) Rhabdochoninae

Rhabdochona longleyi Moravec & Huffman, 1988 (endoparasite in TX *Trogloglanis pattersoni*
& *Satan eurystomus* cavefish).

Rhabdodemia Baylis & Daubney, 1926 (= *Pendulumia*) Rhabdodemaniidae nematodes

Rhabdodemia minima Chitwood, 1936 (MA, NJ marine meiofauna).

Rhabdolaimus deMan, 1880 - Rhabdolaimidae nematodes (also put in Leptolaimidae)

Rhabdolaimus undet. sp. (East coast marine meiofauna)

Richtersia Steiner, 1916 - Richtersiidae nematodes (also put in Selachinematidae)

Richtersia kreisi = *Dracograllus k.*?

Richtersia undet. sp. (FL marine infauna)

Rhynchonema - Xyalidae nematodes (also put in Monhysteridae)

Rhynchonema megamphidum Boucher (AK marine infauna)

Rictularia Froelich, 1802 (Intestinal parasites of insectivora, rodents, bats and lizards).
Rictulariidae nematodes, Subfamily Rictulariinae

Rictularia bovieri (Blanchard, 1886) (endoparasite in CA *Myotis lucifugus* & Brazilian *Eumops perotis* bats).

Rictularia dipodomis = *Pterygodermatites d.*

Rictularia lucifugus Douvres, 1956 (endoparasite in NJ, NM, WI (infrequent Tx); IN *Myotis keeni* & *Myotis sodalis*; IA, IN, NM, WV (Tx) *Myotis lucifugus* & WI *Eptesicus* bats)

Rictularia undet. sp. (endoparasite in MD *Neotoma pennsylvanica* woodrats & IN *Myotis lucifugus* & TX (Tx) *Tadarida brasiliensis* bats).

Rotylenchus Filipjev, 1936 (Soil- algy, grass & plant associated) Bibl.: Golden 1956
Hoplolaimidae nematodes, Subfamily Hoplolaiminae

Rotylenchus robustus (de Man, 1876) Filipjev, 1936 (NY hyporheic)

Sabatieria de Roueville, 1903 (*Parasabatieria*) Comesomatidae nematodes

Sabatieria americana Timm (NC deep-sea marine benthic)

@***Sabatieria ancudiana*** (NY marine sandy meiofauna, interstitial?)

Sabatieria armata Gerlach, 1952 (CT marine interstitial up to 5 cm deep)

Sabatieria celtica Southern, 1914 (= *Sabatieria cupida*) (AK, CT, NC, NY marine sandy interstitial up to 5 cm deep))

Sabatieria chitwoodi Wieser, 1954 (NC, CT, NY marine interstitial up to 5 cm deep)

Sabatieria effilata Stockhaven (CT marine interstitial up to 5 cm deep)

Sabatieria falcifera Wieser (CT marine interstitial up to 5 cm deep)

Sabatieria granifer Wieser, 1954 (CT marine interstitial up to 5 cm deep)

Sabatieria hilarula DeMan, 1922 (CT, MA, NY marine interstitial up to 5 cm deep)

Sabatieria longicaudata Filipjev, 1922 (MA marine interstitial up to 5 cm deep)

Sabatieria ornata (Ditlevsen, 1918) (MA, NJ marine interstitial up to 5 cm deep)

Sabatieria parabyssalis Wieser (CT marine interstitial)

Sabatieria pulchra (G. Schneider, 1906) (NY marine sandy interstitial)

Sabatieria undet. sp. (FL marine infauna)

Sabatieria tenuicaudata (Bastian, 1965) (MA, NJ marine meiofauna).

Sabatieria triplex Wieser (NC deep-sea marine infauna)

Sabatieria vulgaris (G. Schneider, 1906) (MA, NJ marine interstitial up to 5 cm deep)

Scaptrella Cobb, 1917 - Scaptrellidae nematodes

Scaptrella cincta Cobb, 1917 (CT marine meiofauna down to 5cm deep)

Scaptrella undet. sp. (PQ Gulf of St. Lawrence sandy marine interstitial)

Seuratium Hall, 1916 (Internal parasites of rodents and chiroptera) Seuratidae nematodes,
Subfamily (1) Seuratinae

Seuratium cancellatum Chitwood, 1938 (endoparasite in wTX *Antrozous pallidus*, *Eptesicus fuscus*, *Eumops perotis*, *Myotis californicus*, *M. yumanensis*, *Pipistrellus hesperus*, *Corynorhinus townsendii* & *Tadarida brasiliensis* bats)

Seuratium chiropteorum (Ortlepp, 1932) (endoparasite in non-cave WI (Sauk Co.) *Lasiurus cinereus* bats)

Sigmophoranema Hope and Murphy, 1972 - Desmodoridae nematodes

Sigmophoranema rufum (Cobb, 1933) (NY marine meiofauna interstitial)

Siphonolaimus De Mann, 1893 - Siphonolaimidae nematodes

Siphonolaimus conicus Chitwood, 1936 (NY marine infauna)

Siphonolaimus undet. sp. (FL marine infauna)

Sphaerolaimus Bastian, 1865 - Sphaerolaimidae nematodes

Sphaerolaimus balticus G. Schneider, 1906 (CT marine meiofauna down to 5cm deep)

Sphaerolaimus dispar Filipjev, 1918 (MA, NJ marine meiofauna)

Sphaerolaimus margaritatus Wieser (MA, NJ marine meiofauna)

Sphaerolaimus nefastus Wieser (MA, NJ marine meiofauna)

Sphaerolaimus undet. species (NC deep-sea infauna; GA salt marsh benthic; FL marine infauna; PQ Gulf of St. Lawrence sandy marine interstitial))

Spilophora de Man, 1876 (Soil- algy, grass & plant associated) Chromadoridae nematodes, Subfamily Chromadorinae

Spilophora impatiens (Cobb, 1888) Filipj., 1930 (MA, WA hyporheic).

Spilophorella Filipjev, 1917 - Cyatholaimidae nematodes

Spilophorella paradoxa DeMan, 1888 (AK, CT, FL, MA, NY marine meiofauna down to 5cm deep)

Spilophorella undet sp. (FL marine psammon)

Spirinia Gerlach, 1963 - Desmodoridae nematodes

Spirinia hamata Gerlach, 1963 (GA salt marsh benthic)

Spirinia parasitifera (Bastian, 1865) (= *Spira p.*; *Spirina p.*) Wieser & Hopper (CT, MA, NY marine meiofauna down to 5cm deep; GA salt marsh benthic; FL benthic infauna)

Spironoura Leidy, 1856 - Kathlaniidae nematodes, subfamily Spironurinae (Intestinal parasites of reptiles, amphibians and fishes, including salamanders).

Spironoura waltoni (Ingles, 1936) Freitas & Lent, 1941 (endoparasite in non-cave CO *Ambystoma tigrinum* salamander).

Spironoura papillocauda Rankin, 1937 (in non-cave OH *Gyrinophilus porphyriticus*, non-cave NC *Desmognathus ochrophaeus* & *quadramaculatus*, AR *Eurycea multiplicata m.* & non-cave TN *Eurycea bislineata* salamanders).

Spiroptera Rudolphi, 1819 (endoparasite in oesophagus, crop or gizzard of birds, exceptionally of reptiles and mammals). Acuariidae nematodes, Subfamily Acuariinae

Spiroptera sexalatus (Molin, 1860) (endoparasite in Tx *Myotis* v. bats).

Spiroxys Schneider, 1866 (Abdominal parasites of tortoises and intestinal of amphibians). Spiruridae nematodes, Subfamily Spiroxynae

Spiroxys constricta (Leidy, 1856) Schneider, 1866 (endoparasite in AZ *Desmognathus fuscus*

salamander)

Spiroxys utahensis (endoparasite in non-cave OK, UT *Ambystoma tigrinum* salamanders)

Steineria Micoletzky, 1922 - Monhysteridae nematodes

Steineria phimifera Wieser, 1959 (WA marine interstitial?)

Steineria undet. sp. (PQ Gulf of St. Lawrence sandy marine interstitial)

Strongyloides Grassi 1879 (Intestinal parasites of vertebrates)

Trichostrongylidae nematodes, Subfamily Strongylinae

Strongyloides robustus Chandler, 1942 (endoparasite in CA *Triturus viridescens* salamander)

Strongyloides shastensis Schmidt, Duszynski & Martin 1992 (*type locality cave in Mohave Co., AZ/ extinct endoparasite in *Nothotheriopsis shastensis* ground sloth dung).

Strongylus Mueller, 1780 (Parasites of mammals, including in bats). Strongylidae nematodes, Subfamily Strongylinae

Strongylus delicatus Schwartz, 1927 (endoparasite in LA (non-cave), NM, OK & TX *Tadarida brasiliensis mexicana*, FL *Tadarida brasiliensis cynocephala* & TX *Myotis* v. bats).

Synonchiella Cobb, 1933 - Selachinematidae nematodes

Synonchiella bifaria Wieser (MA marine meiofauna)

Syphacia Seurat, 1916 (Abdominal and intestinal parasites of rodents and man, including woodrats) Oxyuridae nematodes, Subfamily Syphaciinae

Syphacia eutamii Tiner, 1948 (endoparasite in NM *Neotoma albigula* woodrats)

Syphacia woodheadi Seurat, 1916 (endoparasite in AZ *Neotoma albigula* a. woodrats).

Teratocephalus de Man, 1876 - Teratocephalidae nematodes (once put in Plectidae)

Teratocephalus undet. sp. or species (CA, FL marine benthic)

Terschellingia De Man, 1888 - Linhomoeidae nematodes

Terschellingia longicauda DeMan, (MA, FL, CT, NY marine meiofauna down to 5cm deep)

Terschellingia pa xi W. Schneider, 1939 (MA, CT, NY marine meiofauna down to 5cm deep)

Thelandros Wedl, 1862 (Endoparasites of reptiles and amphibians). Oxyuridae nematodes, /Subfamily Oxyurinae

Thelandros magnavulvaris (Rankin, 1937) Schad., 1960 (endoparasite in KY cave (Trigg Co.)

Eurycea lucifuga, non-cave IL *Desmognathus fuscus*, non-cave MI *Plethodon cinereus* c. & non-cave CA *Aneides aeneus* salamanders).

Thalassironus De Man, 1889 - Ironidae nematodes

Thalassironus americanus Keppner, 1986 (FL marine infauna)

Theristus Bastian, 1865 (Soil- algy, grass & plant associated)
Monhysteridae nematodes, Subfamily Monhysterinae

Theristus (*Theristus*) *acer* Bastian, 1865 (NY marine infauna)

Theristus anticipans (Wieser, 1956) (WA marine sandy interstitial)

Theristus bastiani Wieser (AK marine meiofauna)

Theristus curvatus (NY marine infauna)

Theristus elegans Kries, 1929 (NY marine infauna)

Theristus horridus Steiner = *Pseudosteineria horrida*

Theristus duboisi (Bultschli, 1873) Micoletzky, 1925 (in MA hyporheic)

Theristus erectus = *Mesotheristus e.*

Theristus fistulatus = *Cylindrotheristus f.*

Theristus (*Penzancia*) *flavensis* Schuurmans-Sterkhoven, 1935 (NY marine infauna)

Theristus frictor (MA meiofauna benthic)

Theristus floridens Wieser & Hopper, 1967 (FL marine infauna)

Theristus longicaudatus Filipjev (NC deep-sea infauna)

Theristus longisetosus Keppner, 1988 (FL marine infauna)

Theristus multisetosus Wiser (MA marine meiofauna)

Theristus ostentator Wieser & Hopper, 1967 (FL marine infauna)

Theristus problematicus (Allgen, 1928) (NC (deep-sea), NY infauna)

Theristus rezaki (interstitial? in TX marine sands)

Theristus (*Mesotheristus*) *setosus* (Bultschli, 1874) (CT, MA marine meiofauna down to 5cm deep, NY marine infauna)

Theristus undet. species (NY hyporheic; NC deep-sea infauna, (MA marine meiofauna))

Theristus trecuspidatus (Wieser, 1959) (WA marine sandy burrower)

Theristus wimmeri Wieser, 1959 (WA marine sandy interstitial)

Theristus xyaliformis = *Cylindrotheristus x.*

Thoonchus Cobb, 1920 - Symplocostomatidae nematodes

Thoonchus longisetosus Keppner, 1988 (FL marine infauna)

Thoonchus undet sp. (NY, CT marine meiofauna down to 5cm deep)

Thornenema Andrassy, 1959 (Soil- algy, grass & plant associated) Dorylaimidae nematodes,
Subfamily Dorylaiminae

Thornenema curvicaudatus Andrassy, 1959 (in CO hyporheic).

Thornia Meyl, 1954 (Soil- algy, grass & plant associated) Dorylaimidae nematodes, Subfamily

Dorylaiminae

Thornia steatopyga (Thorne & Swanger, 1936) Meyl, 1954 (in NY hyporheic).

Tobrilus Andrassy, 1959 (*Trilobus*, *Paratrilobus*) (Soil- algy, grass & plant associated)
Tripylidae nematodes, Subfamily Tripylinae

Tobrilus altherri (*Trilobus a.* Altherr, 1953) (in WA,MA hyporheic).

Tobrilus allophysis (Steiner, 1919) (in CO,WA hyporheic).

Tobrilus delamarei Altherr, 1963 (in CO hyporheic).

Tobrilus graciliformis Altherr & Deboutville, 1973 (in WA hyporheic).

Tobrilus gracilis (Bastian, 1865) Andrassy, 1959 (in MA, NY hyporheic).

Tobrilus graciformis (Goffart, 1935) (in WA hyporheic).

Tobrilus longicaudatus (Schneider, 1923) (in NY hyporheic).

Tobrilus longus (Bastian, 1865) Andarssy, 1959 (in WA hyporheic).

Tobrilus undet. sp. or species (AB lake benthic; ON groundwater & hyporheic ecotone; NY freshwater sandy beach interstitial)

Trefusia De Man, 1893 - Trefusiidae nematodes

Trefusia honessi Keppner, 1986 (FL marine infauna)

Trefusia longicorpa Keppner, 1986 (FL marine infauna)

Trefusia undet. sp. (AK marine meiofauna)

Trileptium Cobb, 1933 (= *Trilepta*)

Trileptium iacobinum Wieser, 1959 (WA marine interstitial?)

Trileptium undescr. sp. (NC marine infauna)

Trischistoma Cobb, 1913 (= *Tripylina*) (Soil- algy, grass & plant associated) Tripylidae nematodes, Subfamily Tripylinae

Trischistoma monohystera (*Tripylina m.* Vinciguerra & La Fauci, 1978 (NY hyporheic)

Tricholeiperia Skarbilovitch, 1934 (endoparasite in alimentary tract of bats) Trichostrongylidae nematodes, Subfamily Strongilacanthinae

Tricholeiperia undet. sp. (endoparasite in OK (Tx),TX (Tx) *Tadarida brasiliensis mexicana* bats).

Trichosoma Rudolphi, 1819 (endoparasite in digestive tract or urinary bladder of vertebrates) Trichocephalidae nematodes, Subfamily Capillariinae

Trichosoma hirundinis (Skrjabin et al., 1957) (endoparasite in TX, NM *Hirundo fulva* & *urbica* swallows).

Trichostrongylus Looss, 1905 (Parasites of birds and mammals, including man)
Trichostrongylidae nematodes, Subfamily Trichostrongylinae

Trichostrongylus capricola Ransom, 1907 (in MA *Myotis lucifugus* bats).

Trichuris Roederer, 1761 (endoparasite intestinal of mammals) Trichocephalidae nematodes,
Subfamily Capillariinae

Trichuris elatoris Pfaffenberger & Best, 1989 (endoparasite in NM *Neotoma albigula* woodrats)

Trichuris muris (Schrank, 1788) (endoparasite in OK *Neotoma floridanus* woodrat).

Trichuris nodosus (Rudolphi, 1809) (endoparasite in AZ *Neotoma floridanus* woodrat).

Trichuroides Ricci, 1949 (endoparasite in urinary bladder of chiroptera)
Trichosomoididae nematodes, Subfamily Trichosomoidinae

Trichuroides chiropteri Ricci, 1949 (endoparasite in KS *Myotis septentrionalis* bats).

Trichuroides myoti Ubelaker & Dailey, 1971 (endoparasite in *Myotis velifer incautus*; in KS *Myotis grisescens* & *M. velifer grandis* bats)

Tricoma Cobb, 1894 - Desmoscolecidae nematodes

Tricoma (*Tricoma0 similis* Cobb, 1912 (interstitial?, benthic in TX marine sands)

Trilobus Andrassy, 1959 (Soil- algy, grass & plant associated)
Tripylidae nematodes, Subfamily Tripylinae

Trilobus pellucidus (Cobb, 1913) Andrassy, 1959 (in NY hyporheic).

Trilobus undet sp. (MN lake infauna)

Tripyla Bastian, 1865 - (Soil- algy, grass & plant associated) Tripylidae nematodes, Subfamily Tripylinae

Tripyla affinis deMan, 1880 (in CO,MA hyporheic).

Tripyla cornuta Skwarra, 1921 (in NY hyporheic).

Tripyla filicaudata de Man, 1880 (in NY hyporheic).

Tripyla filipjevi (Filipjev, 1930) (in MA hyporheic).

Tripyla gracilis (Bastian, 1865) Ohorato-di-Cillis, 1928 (in NY hyporheic).

Tripyla macroseta Vinciguerra & La Fauci, 1978 (in NY hyporheic).

Tripyla magna Altherr & Deboutteville, 1973 (in WA hyporheic).

Tripyla papillata Buetschli, 1873 (in NY hyporheic).

Tripyla pellucidus (Cobb, 1913) Micoletzky, 1925 (in NY hyporheic).

Tripyla setifera Buetsch, 1873 (in MA hyporheic)

Tripyla undet. sp. (in seVA hyporheic)

Tripylina = *Trischistoma*

Tripyloides De Man, 1886 (= *Nannonchus*) Tripyloididae nematodes

Tripyloides gracilis (Ditlevsen, 1918) (FL, GA, MA, CT, NJ, NY marine meiofauna down to 5cm deep)

Trissonchulus Cobb, 1920 – Ironidae nematodes

Trissonchulus undescr. sp. (NC marine infauna)

Tylencholaimus de Man, 1876 (Soil- algy, grass & plant associated) Dorylaimidae nematodes, Subfamily Tylencholaiminae

Tylencholaimus teres Thorne, 1939 (in WA hyporheic).

Tylenchus Bastian, 1865 (Soil- algy, grass & plant associated) Tylenchidae nematodes, Subfamily Tylenchinae

Tylenchus davainei Bastian, 1865 (in NY hyporheic).

Tylenchus erythrinae Ziemermann, 1904 (in NY hyporheic).

Tylenchus filiformis (Butschli, 1873) (in NY hyporheic).

Tylenchus multicinctus (Cobb, 1893) (in WA hyporheic).

Tylenchus olaae (Cobb, 1906) (in NY hyporheic).

Tylenchus pseudorobustus Steiner, 1914 (in NY hyporheic).

Tylenchus.siralis Cassidy, 1930 (in NY hyporheic).

Viscosia de Man, 1890 - Oncholaimidae nematodes

Viscosia bayensis Keppner, 1987 (FL marine infauna)

Viscosia brachylaimoides Chitwood, 1937 (NC marine infauna)

Viscosia carnleyensis (Ditlevsen, 1921)(CT, NY marine meiofauna down to 5cm deep)

Viscosia floridana Keppner, 1987 (FL marine infauna)

Viscosia franzii Boucher, 1977 (AK marine meiofauna)

Viscosia glabra (Bastian, 1865) (MA marine meiofauna)

Viscosia macrobursata Keppner, 1987 (FL marine infauna)

Viscosia macramphida Chitwood, 1951 (interstitial? in TX marine sands; FL marine psammon)

Viscosia paralinstowi Chitwood, 1937 (FL marine infauna)

Viscosia undet sp. or species (MA, CT marine meiofauna down to 5cm deep)

Walcherenia deMan, 1921 - Leptolaimidae nematodes, subfamily Plectinae (Soil- algy, grass & plant associated)

Walcherenia typicus = *Chronogaster t.*

Witoldinema Brzeski, 1960 (Soil, grass & plant associated) Dorylaimidae nematodes,
Subfamily Dorylaiminae

Witoldinema stefanskii Brzeski, 1960 (in WA hyporheic).

Xenolaimus Cobb, 1920- Monhysteridae nematodes
Xenolaimus undet sp. (FL marine psammon)

Xiphinema Cobb, 1913 (Soil, algy, grass & plant associated) Longidoridae nematodes (once put
in Dorylaimidae, Subfamily Tylencholaiminae) **Bibl.:** Cho 1989

Xiphinema americanum Cobb, 1913 (in NY hyporheic; parasite on apple, corn, strawberry,
spruce, bermudagrass) **Bibl.:** Addoh 1964

Xyala Cobb, 1920 - Monhysteridae nematodes
Xyala oxybiotica P. Jensen, 1986 (interstitial? in TX marine sands)
Xyala striata Cobb, 1920 (AK, NC, NY marine meiofauna)

Onychophora Worms

A Protostomian animal phylum of about 90 species living under leaf litter, stones, etc. usually
near to water. Not known from caves or aquatic interstitial habitats in NA but expected.

Polychaete Worms

Class Polychaeta (polychaetes; bristle worms; lug, rag and sand worms)
Mostly marine annelids with distinct metameric segmentation. Bristles on parapodia of each
body segment. Somewhat flattened body from few mm. to 3 m. with up to 700 segments. First
2-3 segments united to form the head, which carries an anterior lobe extending over the mouth,
several pairs of antennae and sometimes a crown of long feathery tentacles. About 13,000 species.

Subclass Canalipalpata (or as Order, see below) (=Errantia?)
Clades Sabellida, Spionida & Terebellida

Order Canalipalpata (or as Subclass) (=Order Archiannelida (bristle-footed annelids)
(mostly primitive & highly degenerate forms))

<i>Polygordius</i>	Polygordiidae (also put in Order Polygordiida) (<i>Chaetogordius</i> ,
<i>Protodrilus</i>	Protodrilidae (also put in Order Protodrilida) (<i>Protodriloides</i> ,
	Saccocirridae (also put in Order Protodrilida) (<i>Saccocirrus</i>)

Suborder or Order Terebellida

Acrocirridae (also put in Order Flabelligerida)

(like cirratulids with frontal palps) (*Acrocirrus*, *Flabelligera*
(now in own family), *Macrochaeta*)

Ampharetidae

(*Isolda*, *Melinna*, *Melinnexis*, *Mooresamytha*, *Paramage*, *Sabellides*,
Samythella, *Sosane*)

Subfamily Ampharetinae (*Amage*, *Ampharete*, *Amphisamytha*,

Anobothrus,

Asabellides, *Eclysippe*, *Glyphanostomum*, *Hobsonia*, *Lysippe*,

Mexamage,

Mooresamytha, *Mugga*, *Paralysippe*, *Pseudampharete*, *Samytha*,
Schistocomus, *Sosanopsis*

Cirratulidae (put in Suborder Cirratuliformia or Order Cirratulida)

Fauveliopsidae (also put in Order Flabelligerida) (*Fauveliopsis*)

Flabelligeridae (put in Order Flabelligerida)

Pectinariidae (= Amphictenidae) (*Cistena*, *Cistenides*, *Pectinaria*)

Sternaspidae (put in Sternaspida) (*Sternaspis*)

Terebellidae

(*Enoplobranchus*, *Paralepidonotus*, *Ramex*,)

Subfamily Amphitritinae

Amphitrite, *Amphitritides*, *Betapista*, *Eupolymnia*, *Lanassa*,

Laphania,

Loimia, *Neoamphitrite*, *Neoleprea*, *Nicolea*, *Pista*, *Proclea*,

Scionella,

Spinosphaera, *Terebella*

Subfamily Artacaminae (*Artacama*, *Artacamella*)

Subfamily Arctonoinae (*Hololepidella*)

Subfamily Iphioninae (*Iphione*)

Subfamily Polycirrinae

(*Amaeana*, *Enoplobranchus*, *Hauchiella*, *Lysilla*, *Polycirrus*)

Subfamily Thelepodinae

(*Euthelepus*, *Rhinothelepus*, *Streblosoma*, *Telothelepus*,

Thelepus)

Trichobranchidae (*Novobranchus*, *Terebellides*, *Trichobranchus*)

Order Spionida (or as suborder)

Suborder Chaetopteriformia

Chaetopteridae (also put in Order Chaetopterida)

(*Spiochaetopterus*, *Mesochaetopterus*, *Chaetopterus*,

Phyllochaetopterus)

Suborder Cirratuliformia

Cirratulidae (also put in Suborder Terebellida)

(*Aphelochaeta*, *Caulleriella*, *Chaetozone*, *Cirriformia*, *Cirratulus*,

Dodecaceria,

Monticellina, *Protocirrineris*, *Thraxyx*, *Timarete*)

Suborder Spioniformia

Apistobranchidae (also put in Order Spionida) (*Apistobranchus*)

Longosomatidae (also put in Order Spionida) (*Heterospio*)

Magelonidae (also put in Order Megelonida) (*Magelona*)

Poecilochaetidae (also put in Order Spionida) (*Poecilochaetus*)

Spionidae (also put in Order Spionida)

(*Aonides*, *Apoprionospio*, *Boccardia*, *Boccardiella*, *Carazziella*,

Dipolydora,

Dispio, *Laonice*, *Malacoceros*, *Microspio*, *Paraprionospio*,

Polydora,

Prionospio, *Pseudomalacoceros*, *Pseudatherospio*, *Pseudopolydora*,

Pygospio,

Rhynchospio, *Scolecopides*, *Scolelepis*, *Spionphanes*, *Streblospio*,

Tripolydora)

Trochochaetidae (also put in Order Spionida) (*Trochochaeta*)

Order Capitellida

Capitellidae (also put in Order Scolecida)

(*Anotomastus*, *Barantola*, *Capitella*, *Capitellides*, *Capitomastus*,

Dasybranchus,

Decamastus, *Leiochrides*, *Heteromastus*, *Leiocapitella*, *Mastobranchus*,

Mediomastus, *Neomediomastus*, *Notomastus*, *Parheteromastus*,

Peresiella,

Pulliella, *Scyphoproctus*)

Order Cossurida

Cossuridae (also put in Order Scolecida & Cossurida) (*Cossura*,

Cossurella)

Order Ctenodrilida

Cirratulidae) Ctenodrilidae (also put in Order Cirratulida) (*Raricirrus*) (also put in
 Subfamily Ctenodrilinae (*Ctenodrilus*)
 Subfamily Raphidrilinae (*Raphidrilus*)

Order Flabelligerida
 Flabelligeridae (also put in Order Terebellida)
 (*Brada*, *Diplocirrus*, *Flabelliderma*, *Flabelligera* (also put in
 Acrocirridae)
Pherusa, *Piromis*, *Therochaeta*)

Order Oweniida
 Oweniidae (*Galathowenia*, *Myriochele*, *Myriowenia*, *Owenia*)

Order (or Suborder) Sabellida
 Oweniidae (put in Oweniida)
 (*Galathowenia*, *Myriochele*, *Myriowenia*, *Owenia*)

Sabellariidae
 (*Lygdamis*, *Monorchos*, *Mariansaellaria*, *Neosabellaria*,
Phragmatopoma)

Sabellidae (*Amphiglena*, *Augeneriella*, *Bispira*, *Brachioma*, *Chone*,
Dialychone,
Euchone Fabricinuda, *Fabrisabella*, , *Hypsicomus*, *Idanthysus*,
Manayunkia, *Myxicola*, *Novafabricia*, *Neosabellaria*,
Phalacrostemma,
Phragmatopoma (both put in Sabellariidae) *Potamethus*, *Potamilla*,
Pseudobranchiomma, *Pseudofabricola*, *Pseudopotamilla*, *Sabella*)

Subfamily Fabriciinae *Fabricia*, *Fabriciola*, *Manayunkia*
 Subfamily Sabellinae (*Chone*, *Demonax*, *Euchone*, *Jasmineira*)

Sabellariidae (*Sabellaria*)

Serpulidae
 (*Hyalopomatus*, *Hydroides*, *Josephella*, *Megalomma*,
Neodexiospira,
Pomatoceros, *Pomatoleios*, *Pseudovermilia*, *Rhodopsis*,
Semivermilia,
Simplicaria, *Spirobranchus*, *Vermilia*, *Vermiliopsis*)

Subfamily Protulinae (*Apamatopsis*, *Apomatus*, *Protula*)
 Subfamily Filograninae (*Salmacina*)

Subfamily Hyalopomatinae (*Pseudochitinopoma*)

Subfamily Januinae (*Janua*)

Subfamily Serpulinae

(*Chitinopoma*, *Crucigera*, *Ficopomatus*, *Filogranula*, *Serpula*)

Spirorbidae (*Eulaeospira*, *Janu*, *Leodora*, *Neodexiospira*, *Nidificaria*,
Protolaeospira, *Simplicaria*, *Spirorbis*) (also put in Serpulidae),

Vinearia)

Subfamily Circeinae (*Circeis*, *Paradexiospira*)

Subfamily Pileolariinae (*Bushiella*, *Jugaria*, *Pileolaria*,

Protleodora)

Subfamily Romanchellinae (*Protolaeospira*)

Order Sternaspida

Sternaspidae (also put in Terebellida) (*Sternaspis*)

Subclass Palpata (or see above)

Order Aciculata

Suborder or Order Eunicida

Amphinomidae (now in Order Amphinomida)

(*Amphinome*, *Chloeia*, *Eurythoe*, *Hipponoe*, *Linopherus*, *Notopygos*,
Paramphinome, *Pareurythoe*, *Pherecardia*, *Pseudeurythoe*)

Arabellidae

(*Amastigos* (also put in Oenonidae and Capitellidae), *Arabella Labrorostratus*,
Driloneries, *Lysarete*, *Notocirrus*, *Oenone* (all now in Oenonidae))

Dinophilidae (now absorbed into Dorvilleidae) (*Dinophilus*, *Trilobodrilus*)

Diurodrilidae (*Diurodrilus*)

Dorvilleidae (*Apophryotrocha*, *Dinophilus* (also put in Dinophilidae),

Dorvillea,

Meiodorvillea, *Ophryotrocha* (now in Iphitimidae), *Parophryotrocha*,
Parougia, *Pettiboneia*, *Protodorvillea*, *Schistomeringos*, *Staurocephalus*,
Trilobodrilus (also put in Dinophilidae)

Euphrosinidae (*Euphrosine*)

Hartmaniellidae (*Hartmaniella*)

Histriobdellidae (*Histriobdella*)

Iphitimidae (*Ophryotrocha*, *Palpithitima*)

Oenonidae

(*Amastigos* (put in Capitellidae), *Arabella Drilonereis*, *Labrorostratus*,

Lysarete,

Notocirrus, Oenone (all once in Arabellidae))

Superfamily Eunicoidea

Eunicidae

(*Eunice, Euniphysa, Leodice, Lysidice, Marphysa, Nematonereis, Palola, Paramarphysa*)

Lumbrineridae

(*Augeneria, Eranno, Lumbrineris, Lumbrinerides, Lumbrinerineropsis,*

Ninoe,

Paraninoe, Scoletoma)

Onuphidae (*Epidiopatra, Paranothria, Sarsonyphia*)

Subfamily Hyalinoeciinae (*Nothria*)

Subfamily Onuphinae

(*Americonuphis, Diopatra, Mooreonuphis, Onuphis, Paradiopatra*
(also put in Phyllodocidae), *Hyalinoecia, Kinbergonuphis,*
Rhamphobrachium)

Order Aciculata (=Phyllodocemorpha?)

Suborder Aphroditiformia

Superfamily Aphroditoidea

Acoetidae (= Polyodontidae) Dorsal scales & spinning glands, many in
thick-walled tubes (also put in Order Phyllodocida)
(*Acotes, Panthalis, Polyodontes*)

Aphroditidae (also put in Order Phyllodocida)

(*Aphrodita, Aphrogenia, Laetmonice, Palaeonotus* (put in Palmyridae),
Pontogenia)

Nephtyidae (also put in Superfamily Nephtyidacea)

(*Aglaophamus, Inermonephtys, Micronephtys, Nephtys*)

Polynoidae (also put in Order Phyllodocida)

(*Admetella, Antinoe, Antinoella, Drieschia, Enipo, Eucranta,*

Gorgoniapolynoe,

Grubiopolynoe, Halosydna, Hololepidella, Iphione, Kermadecella,

Lagisca,

Lepidactylus, Lepidasthenia, Paralepidonotus, Perolepis, Subadyte,

Ysideria)

Subfamily Arctonoinae (*Arctonoe*)

Subfamily Harmothoinae

(*Arcteobia, Bylgides, Eunoe, Gattyana, Gaudichaudius, Harmothe,*

Hermadion,

Hesperonoe, Malmgreniella, Tenonia)

Subfamily Polynoinae (*Polyeunoa, Polynoe*)

Subfamily Lepidonotinae (*Halosydnia, Lepidonotus*)

Superfamily Chrysopetaloidea

Chrysopetalidae (also put in Order Phyllodocida)

(*Bhawania*, (also put in Palmyridae), *Chrysopetalum, Dysponetus*,

Paleanotus

(put in Phyllodocidae))

Superfamily Pisionoidea

Pisionidae (*Pisione, Pisionidens*)

Suborder Glyceriformia

Superfamily Glycerea

Glyceridae (*Glycera, Hemipodus*)

Goniadidae (*Glycinde, Goniada, Goniadides, Goniadiella, Ophioglycera*)

Lacydoniidae (*Lacydonia, Paralacydonia*)

Suborder Phyllodociformia

Superfamily Phyllodocidacea

Phyllodocidae (*Anaitides, Diopatra* (now in Onuphidae), *Eulalia*,

Genetyllis, Lugia, Paleanotus (also put in Chrysopetalidae), *Protomystides*,
Prophyllodoce, Pterocirrus, Sige, Steggoa)

Subfamily Eteoninae

(*Eteone, Eulalia, Eumida, Hypereteone, Hesionura, Mysta, Mystides*,

Pterocirrus)

Subfamily Notophyllinae (*Bergstroemia, Notophyllum*)

Subfamily Phyllodocinae (*Nereiphylla, Paranaitis, Phyllodoce*)

Tomopteridae (*Tomopteris*)

Order Amphinomida

Amphinomidae (also put in Order Aciculata)

(*Amphinome, Chloeia, Eurythoe, Hipponoe, Linopherus, Notopygos*,
Paramphinome, Pareurythoe, Pherecardia, Pseudeurythoe)

Order or Suborder Phyllodocida (or in Aciculata (+Phyllodocidae & Eunicida)

Alciopidae (*Alciopa, Naiades, Vanadis*)

Eulepethidae (*Mexieulepis*)

Palmyridae (also subsumed in Aphroditidae) (*Palaeonotus*)
Pholoidae (also put in Order Phyllodocida) (*Pholoe*, *Pholoides*)

Pilargidae (proposed to be absorbed into Hesionidae)
(*Ancistrostylis*, *Litocorsa*, *Loandalia*, *Parandalia*, *Sigambra*, *Synelmis*)

Spintheridae (also put in Order Spintheridae) (*Spinthera*)

Sigalionidae
(*Euthalenessa*, *Ehlersileanira*, *Fimbriosthenelais*, *Leanira*, *Pottsipelogenia*,
Psammolyce, *Sigalion*, *Sthenelais*, *Sthenelanella*, *Thalenessa*)

Superfamily Glycera

Sphaerodoridae

(*Clavodorum*, *Ephesiella*, *Sphaerephesia*, *Sphaerodoridium*, *Sphaerodorum*,
Sphaerodoropsis)

Suborder Nereidiformia

Superfamily Nereididae

Hesionidae (*Amphiduros*, *Gyptis*, *Hesione*, *Hesionella*, *Hesionides*, *Hesiospina*,
Heteropodarke, *Kefersteinia*, *Leocrates*, *Microphthalmus*, *Micropodarke*,

Nerimyra,

Ophiodromus, *Podarkeopsis*, *Syllida*)

Nereididae (= Nereidae) (*Ceratocephale*, *Gymnonereis*, *Hediste*, *Laeonereis*,
Leonnates,

Lycastopsis, *Namalycastis*, *Paraheione*, *Pseudonereis*, *Rullierinereis*,
Stenominereis,
Syllidia, *Websterinereis*)

Subfamily Nereidinae

(*Ceratonereis*, *Cheilonereis*, *Eunereis*, *Neanthes*, *Nereis*, *Nicon*, *Parinereis*,
Platynereis)

Subfamily Notophycinae (*Micronereis*)

Pilargidae (*Ancistrostylis*, *Cabira*, *Litocorsa*, *Loandalia*, *Parandalia*, *Pilargis*,
Subfamily Sigambrinae (*Otopsis*, *Sigambra*)

Syllidae (*Amblyosyllis*, *Branchiosyllis*, *Brania*, *Dentatisyllis*, *Exogone*, *Exogonella*,
Grubeosyllis, *Haplosyllis*, *Heterosyllis*, *Langerhansia*, *Myrianida*, *Opisthosyllis*,
Parasphaerosyllis, *Parapionosyllis*, *Petitia*, *Plakosyllis*, *Sphaerosyllis*,
Streptospinigera,
Trypanosyllis, *Typosyllis*, *Xenosyllis*)

Subfamily Autolytinae (*Autolytus*, *Proceraea*)
Subfamily Eusyllinae
(*Ehlersia*, *Eusyllis*, *Odontosyllis*, *Opisthodonta*, *Pionosyllis*, *Streptosyllis*)

Subfamily Exogoninae (*Exogone*, *Sphaerosyllis*)
Subfamily Sigambrinae (*Sigambra*)
Subfamily Syllinae (*Eurysyllis*, *Geminosyllis*, *Syllis*, *Syllides*, *Trypanosyllis*,

Typosyllis

Order Scolecida (or as Subclass) or Nerilida

Aeolosomatidae (*Aeolosoma*)
Arenicolidae (*Abarenicola*, *Arenicola*, *Branchiomaldane*)

Bogueidae (also subsumed in Maldanidae) (*Boguea*)
Capitellidae (put in Order Capitellida or Spionida)

Cossuridae (now in Order Cossurida)

Maldanidae (bamboo worms) (also put in Order Spionida)
(*Asychis*, *Euchlymene*, *Maldanopsis*, *Branchioasychis*,
Clymenella, *Microclymene*, *Petaloclymene*, *Sabaco*)

Subfamily Lumbriclymeninae (*Notoproctus*)
Subfamily Clymenurinae (*Clymenura*)

Subfamily Euclymeninae
(*Axiothella*, *Clymenella*, *Isocirrus*, *Macroclymene*, *Maldanella*,
Praxillella, *Praxillura*)

Subfamily Maldininae (*Maldane*, *Chirimia*, *Metasychis*)
Subfamily Nicomachinae (*Micromaldane*, *Nicomache*, *Petaloproctus*)
Subfamily Rhodininae (*Rhodine*)

Nerillidae (or uncertain placement in Aciculata or in Order Nerillida)
(*Mesonerilla*, *Nerilla*, *Troglocanthus*, *Troglochaetus*)

Opheliidae (also put in Order Ophelida) (*Polyophthalmus*)
Subfamily Ophelininae (*Armandia*)

Subfamily Travisinae (*Travisia*)
Subfamily Opheliinae (*Euzonus*, *Ophelia*)

Orbiniidae (also put in Order Orbiniida) (*Haploscoloplos*)
Subfamily Orbiniinae (*Leitoscoloplos*, *Naineris*, *Phylo*, *Scolopella*, *Scoloplos*)
Subfamily Protoariciinae (*Orbiniella*)

Paraonidae (also put in Order Orbiniida) (*Cirrophorus*, *Levinsenia*, *Paraonella*,

Paraonis)

Parergodrilidae (*Stygocapitella*)

Paraonidae (*Aricidea*, *Paradoneis*)

Questidae (also put in Order Cirratulida) (*Novaquesta*, *Questa*)

Scalibregmatidae (also put in Order Ophelida)

(*Asclerocheilus*, *Hyboscolex*, *Scalibregma*, *Sclerobregma*, *Sclerocheilus*)

Abarenicola Wells, 1959 - Arenicolidae polychaete worms

Abarenicola claparedi oceanica Healy & Wells, 1959 (BC marine benthic)

Abarenicola claparedi vagabunda Healy & Wells, 1959 (BC marine benthic)

Abarenicola pacifica Healy & Wells, 1959 (BC, OR marine infauna)

Acoetes Audouin & Milne-Edwards, 1832 - Acoetidae polychaete worms

Acoetes mortenseni (*Polyodontes m.* Monroe, 1928) (CA marine infauna)

Acoetes pacifica (*Panthalis p.* Treadwell, 1914) (CA marine infauna)

Acoetes pleei Audouin & Milne-Edwards, 1832 (FL marine infauna)

Acrocirrus Grube, 1872 - Acrocirridae polychaete worms

Acrocirrus columbianus Banse, 1969 (BC marine benthic)

Acrocirrus frontifilis (*Heterocirrus f.* Grube, 1860) (CA, Gulf of Mex. marine benthic)

Acrocirrus heterochaetus Annenkova, 1934 (FL marine benthic)

Acrocirrus occipitalis Banse, 1969 (BC marine benthic)

Admetella - Polynoidae polychaete worms

Admetella longipedata = *Shinkai l.*?

Aglaophamus Kinberg, 1866 - Nephtyidae polychaete worms

Aglaophamus circinata (Verrill, 1874) (Gulf of Mexico, New England marine infauna)

Aglaophamus erectans Hartman, 1950 (CA marine infauna)

Aglaophamus eugeniae Fauchald, 1972 (CA marine infauna)

Aglaophamus paucilamellata Fauchald, 1972 (CA marine infauna)

Aglaophamus rubella anops Hartman, 1950 (AK, BC marine infauna)

Aglaophamus verrilli (*Nephtys v.* McIntosh, 1885) (CA, LA, SC, VA, New England marine benthic)

Alciopa Audouin & Milne-Edwards, 1833 – Alciopidae polychaete worms

Alciopa pacifica Kinberg, 1866 (HI marine infauna)

Alciopa reynaudii Audouin & Milne-Edwards, 1833 (HI marine infauna)

Allia Strelzov, 1973 = subgenus of *Aricidea*

Amadeana Hartman, 1959 - Terebellidae polychaete worms, Subfamily Polycirrinae

Amadeana occidentalis (*Amaea o.* Hartman, 1944) (FL, WA marine infauna)

Amadeana trilobata (Sars, 1863) (eFL, Gulf of Mex. marine benthic)

Amage Malmgren, 1866 - Ampharetidae polychaete worms, Subfamily Ampharetinae

Amage anops (*Sabellides a.* Johnson, 1901) (AK, BC, CA, WA marine benthic)

Amastigos Pilz, 1976 - Capitellidae polychaete worms (also put in Arabellidae & Oeononidae)

Amastigos caperatus R.M. Ewing & D.M. Dauer, 1981 (SC, VA marine infauna)

Amblyosyllis Grube, 1857- Syllidae polychaete worms

Amblyosyllis circinnata (Verrill, 1874) (New England marine benthic)

Amblyosyllis undet sp. (HI marine benthic)

Americonuphis Fauchald, 1973 - Onuphidae polychaete worms, Subfamily Onuphinae

Americonuphis magna (*Onuphis magna*) (New England marine infauna)

Ammotrypane Rathke, 1843 = *Ophelina*

Ampharete Malmgren, 1866 - Ampharetidae polychaete worms, Subfamily Ampharetinae

Ampharete acutifrons (*Amphicteis a.* Grube, 1860) (BC, C|A, NY, OR?, WA marine benthic)

Ampharete arctica Malmgren, 1866 (CA, WA marine benthic)

Ampharete brazhnikovi = *A. goezsi brazhnikovi*

Ampharete crassiseta Annenkova, 1929 (WA (nr., cf. *A.c.*) (WA marine infauna)

Ampharete finmarchica (M. Sars, 1866) (BC, CA, wA marine benthic)

Ampharete goezsi Malmgren, 1866 (BC marine benthic)

Ampharete goezsi brazhnikovi (*A.b.* Annenkova, 1929) (BC, WA marine benthic)

Ampharete labrops Hartman, 1961 (AK, BC, CA marine benthic)

Ampharete parvidentata Day, 1973 (Gulf of Mex. marine benthic)

Ampharete 2 undescr. species (Gulf of Mex. marine benthic)

Ampharete undet. sp. (AK marine infauna)

Amphicteis Grube, 1850 - Ampharetidae polychaete worms, Subfamily Ampharetinae

Amphicteis glabra Moore, 1905 (CA, WA marine benthic)

Amphicteis gunneri (Sars, 1835 (Gulf of Mex. marine benthic)

Amphicteis gunneri floridus Hartman, 1951 (= *Hypaniola florida*, *H. grayi*) (e,wFL, ME marine benthic)

Amphicteis mucronata Moore, 1923 (BC, CA, WA marine benthic)

Amphicteis scaphobranchiata Moore, 1906 (CA, BC, WA, Gulf of Mex. marine benthic)

Amphicteis undet. sp. (AK marine infauna)

Amphictene Savigny, 1818 - Amphictenidae polychaete worms

Amphictene moorei Annenkova, 1929 (BC marine benthic)

Amphiduros Hartman, 1958 – Hesionidae polychaete worms

Amphiduros 2 undescr. sp. (Gulf of Mex. marine infauna)

Amphinome Bruguieres, 1789 – Amphinomidae polychaete worms

Amphinome rostrata (Pallas, 1766) (HI, New England marine infauna)

Amphisamytha Hessle, 1917 - Ampharetidae polychaete worms, Subfamily Ampharetinae

Amphisamytha bioculata (Moore, 1906) (CA marine infauna)

Amphitrite O.F. Mueller, 1771 - Terebellidae polychaete worms, Subfamily Artacaminae

Amphitrite cirrata O.F. Mueller, 1771 in 1776 (NY, NJ, WA marine infauna)

Amphitrite edwardsi = ***Amphitritides gracilis***

Amphitrite johnstoni Malmgren (NJ, NY marine infauna)

Amphitrite ornata (Leidy) (MA, ME, NJ marine intertidal benthic)

Amphitrite robusta (*Neoamphitrite r.* Johnson, 1901) (CA, WA marine infauna)

Amphitrite undet. sp. (HI marine infauna)

Amphitritides Augener, 1922 - Terebellidae polychaete worms, Subfamily Amphitritinae

Amphitritides gracilis (*Amphitrite g.* Grube, 1860; *Amphitrite edwardsi*; *Terebella g.*) WA marine infauna)

Amphiglena Claparede, 1864 - Sabellidae polychaete worms

Amphiglena undet. sp. (HI marine infauna)

Anaitides Czerniavsky, 1882 - Phyllodocidae polychaete worms

Anaitides groenlandica Oersted, 1843 (AK, Gulf of Mex., New England marine infauna)

Anaitides maculata (New England marine benthic)

Anaitides longipes Kinberg, 1966 (LA, wFL Gulf of Mex. marine infauna)

Anaitides madeirensis Langerhans, 1880 (Gulf of Mex. marine infauna)

Anaitides mucosa (*Phylloce mucosa* Oersted, 1843) (ME, SC, VA marine benthic; PQ Gulf of St. Lawrence sandy, Gulf of Mex. marine interstitial)

Ancistrosyllis McIntosh, 1879 - Pilargidae polychaete worms

Ancistrosyllis carolinensis Gardiner, 1976 (Gulf of Mex. Carolinian, LA marine infauna)

Ancistrosyllis commensalis (Carolinian marine infauna)

Ancistrosyllis groenlandica (New England marine benthic)

Ancistrosyllis hartmanae Pettibone, 1966 (e,wFL, LA, VA marine benthic)

Ancistrosyllis jonesi Peitibone, 1966 (Virginian (rare), w,eFL, LA marine infauna)

Ancistrosyllis papillosa (Jones, 1961) (Gulf of Mex. marine infauna)

Ancistrosyllis undet. sp. (sCA marine infauna)

Anobothrus Levinsen, 1884 - Ampharetidae polychaete worms, Subfamily Ampharetinae

Anobothrus gracilis (*Ampharete* g. Malmgren, 1866) (AK, BC, sCA, WA marine infauna)

Anotomastus Hartman, 1947 - Capitellidae polychaete worms

Anotomastus gordiodes (*Eunotomastus* g. Moore, 1909) (sCA marine infauna)

Antinoe Kinberg, 1855 – Polynoidae polychaete worms

Antinoe angusta Verrell, 1874 (New England marine benthic)

Antinoe sarsi Kinberg in Malmgren, 1865 (New England marine benthic)

Antinoella Augener, 1928 - Polynoidae polychaete worms

Antinoella angusta (Verrill, 1874)(New England marine benthic)

Antinoella macrolepia (AK marine infauna)

Antinoella sarsi (Kinbeg, 1865) (Carolinian, New England marine infauna)

Aonides Claparede, 1864 - Spionidae polychaete worms

Aonides glandulosa J.A. Blake, 1996 (CA marine infauna)

Aonides mayaguezensis Foster, 1969 (AL, e,wFL marine infauna)

Aonides oxycephala (Sars, 1862) (HI marine infauna)

Aonides paucibranchiata Southern, 1914 (wFL marine infauna)

Aphelochaeta Blake, 1991 – Cirratulidae polychaete worms

Aphelochaeta marioni (Saint-Joseph, 1894) (Carolinian polychaete worms)

Aphelochaeta monilaris (Hartman, 1960) (CA marine infauna)

Aphelochaeta Blake, 1991 - Cirratulidae polychaete worms

Aphelochaeta elongata J.A. Blake, 1996 (CA marine benthic)

Aphelochaeta glandaria J.A. Blake, 1996 (CA marine benthic)

Aphelochaeta monilaris (*Tharyx m.* Hartman, 1960) (BC, CA, WA marine infauna)

Aphelochaeta multifilis (Moore, 1909) (BC, CA, WA marine infauna)

Aphelochaeta parva (E. Berkeley, 1929) (BC, WA marine infauna)

Aphelochaeta pertersenae J. A. Blake, 1996 (CA marine benthic)

Aphelochaeta phillipsi J. A. Blake, 1996 (CA marine benthic)

Aphelochaeta or *Monticellina* undet. sp. (sCA marine infauna)

Aphelochaeta secunda = *Monticellina* s.

Aphelochaeta serratiseta = *Monticellina* s.

Aphelochaeta tigrina J.A. Blake, 1996 (CA marine benthic)
Aphelochaeta williamsae J.A. Blake, 1996 (= *Caulleriella altata* (Souther, 1914))(CA marine benthic)

Aphrodita Linnaeus, 1758 - Aphroditidae polychaete worms
Aphrodita aculeata Linnaeus, 1761 (WA, New England marine infauna)

Aphrodita armifera Moore, 1910 (CA marine infauna)
Aphrodita brevitentaculata Essenberg, 1917 (CA marine infauna)

Aphrodita castanea Moore, 1910 (CA marine infauna)
Aphrodita hastata Moore, 1905 (*A. aculeata*) (ME, VA, New England marine infauna)
Aphrodita japonica Marenzeller, 1879 (BC, CA, WA marine infauna)

Aphrodita negligens Moore, 1905 (BC, CA, WA marine infauna)
Aphrodita parva Moore, 1905 (BC, CA, OR, WA marine infauna)

Aphrodita refulgida Moore, 1910 (CA marine infauna)
Aphrodita undet. sp. or species (sCA, HI marine infauna)

Aphrogenia Kinberg, 1855 - Aphroditidae polychaete worms
Aphrogenia (LA, wFL Gulf of Mex. marine infauna)

Apistobranchnus Levinsen, 1883 - Apistobranchnidae polychaete worms
Apistobranchnus ornatus Hartman, 1965 (BC, sCA, WA marine infauna)

Apistobranchnus undet. or undescr. sp. (nGulf of Mexico marine infauna)
Apistobranchnus tullbergi (*Aricia t.* The'el, 1879) (Atlantic marine infauna)

Apomatopsis Saint-Joseph, 1894 - Serpulidae polychaete worms, Subfamily Protulinae
Apomatopsis geniculata (Moore & Bush, 1904 (= *Apomatus* g.)) (BC marine benthic)

Apomatus Philippi, 1884 - Serpulidae polychaete worms, Subfamily Protulinae
Apomatus undet. or undescr. sp. (Gulf of Mex. marine benthic)
Apomatus timmsii Pixell, 1912 (BC marine benthic)

Apophryotrocha Jumars, 1974 - Dorvilleidae polychaete worms
Apophryotrocha undet. sp. (HI marine infauna)

Apoprionospio Foster, 1969 - Spionidae polychaete worms
Apoprionospio dayi (Carolinian marine infauna)
Apoprionospio pygmaea = *Prionospio* (*A.*) *p.*

Arabella Grube, 1850 - Oeononidae polychaete worms (once in own family)

Arabella (*Arabella*) *iricolor* (= *A. opalina*) (*Nereis i.* Montagu, 1804) (BC, CA, HI, ME, NC, SC, VA, Gulf of Mex. marine infauna)

Arabella iridescens Treadwell, 1906 (HI marine infauna)

Arabella (Cenothrix) *multidentata* (Ehlers, 1887) (eFL, Gulf of Mex. marine infauna)

Arabella mutans (Chamberlin, 1919) (Carolinian, e,wFL, LA marine infauna)

Arabella (*Arabella*) *pectinata* Fauchald, 1970 (BC, CA, SC, VA marine infauna)

Arabella (*Arabella*) *protomutans* Orensanz, 1990 (BC, CA, SC, VA marine infauna)

Arabella semimaculata (Moore, 1911) (BC?, CA marine infauna)

Arabella undet. sp. (sCA, HI marine infauna)

Arcteobia Annenkova, 1937 - Polynoidae polychaete worms, Subfamily Harmothoinae

Arcteobia anticostiensis (McIntosh, 1874) (BC, CA (cf.), WA, New England marine infauna)

Arcteobia spinilytris Annenkova, 1937 (BC marine infauna)

Arctonoe Chamberlin, 1920 - Polynoidae polychaete worms, Subfamily Arctonoinae

Arctonoe fragilis Chamberlin, 1920 (BC, CA marine infauna)

Arctonoe pulchra (*Polynoe p.* Johnson, 1897) (BC, CA, WA marine infauna)

Arctonoe tuberculata (Treadwell, 1906) (HI marine infauna)

Arctonoe vittata (Grube, 1855) (BC, CA marine infauna)

Arenicola Lamarck, 1801 - Arenicolidae polychaete worms

Arenicola brasiliensis (Nonato, 1958) (HI marine benthic)

Arenicola cristata Stimpson, 1856 (CA, e,wFL marine infauna)

Arenicola marina (Linne=, 1758) (BC, NC marine benthic; PQ Gulf of St. Lawrence, ME sandy marine interstitial)

Aricidea Webster, 1879 - Paraonidae polychaete worms

Aricidea (*Allia*) *alisdairi* Hasan, 1960 (LA, Gulf of Mex. marine benthic)

Aricidea (*Allia*) *antennata* Annenkova, 1934 (CA, WA marine infauna)

Aricidea (*Acmira*) *assimilis* Tebble, 1959 (BC marine benthic)

Aricidea (*Acmira*) *catherinae* Laubier, 1967 (CA, e,wFL, LA, MA, Virginian, WA marine infauna & NY surface deposit feeder, burrower)

Aricidea (*Acmira*) *cerrutii* Laubier, 1966 (Virginian (rare), CA, wFL Gulf of Mex. marine infauna)

Aricidea fauveli (FL marine intertidal benthic)

Aricidea cf. *finitima* Strelzow, 1973 (Gulf of Mex. marine infauna)

Aricidea fragilis Webster, 1879 (e,wFL, LA, SC, Gulf of Mex. marine intertidal benthic)

Aricidea (*Allia*) *hartleyi* Blake (CA marine infauna)

Aricidea (*Acmira*) *horikoshi* Imagima, 1973 (CA marine infauna)

Aricidea jeffreysi (McIntosh) (VA, TX marine benthic)

Aricidea (*Acmira*) *lopezi* l. Berkeley & Berkeley, 1956 (AK, BC, CA, LA, WA marine infauna)

Aricidea (*Aricidea*) *minuta* Southward, 1956 (BC, WA marine benthic)

Aricidea (*Allia*) *monicae* Laubier, 1967 (CA marine infauna)

Aricidea neosuecica Hartman, 1965 (AK, WA marine infauna)

Aricidea (*Allia*) *nolani* Webster & Benedict, 1887 (WA marine infauna)

Aricidea (*Aedicira*) *pacifica* Hartman, 1944 (CA marine infauna)

Aricidea (*Acmira*) *philibinae* Brown, 1976 (FL, LA marine infauna)

Aricidea (*A.*) *pseudarticulata* Hobson, 1972 (CA, Gulf of Mex. marine infauna)

Aricidea (*Allia*) *quadrilobata* Webster & Benedict, 1887 (BC, CA, WA, Gulf of Mex. marine benthic)

Aricidea (*Allia*) *ramosa* Annenkova, 1934 (CA, BC, WA marine benthic)

Aricidea (*Acmira*) *rubra* Hartman, 1963 (CA marine infauna)

Aricidea (*Acmira*) *simplex* Day, 1963 (CA, Gulf of Mex. marine infauna)

Aricidea (*Allia*) *suecica* (A.s. Eliason, 19200 (Carolinian, e,wFL, AK, LA, NC, WA, Gulf of Mex. marine infauna)

Aricidea (*Acmira*) *taylori* Pettibone, 1965 (LA, wFL Gulf of Mex. marine infauna)

Aricidea (*Acmira*) *trilobata* Imajima, 1973 (CA, LA, Gulf of Mex. marine infauna)

Aricidea (*A.*) *wassi* Pettibone, 1965 (CA, VA, WA, Gulf of Mex. marine infauna)

Armandia Filippi, 1861 - Opheliidae polychaete worms, Subfamily Ophelininae

Armandia agilis (Andrews, 1891)(wFL, LA, Brazil, SC marine infauna)

Armandia brevis (*Ammotrypane b.* Moore, 1906; *A. bioculata* Hartman, 1838) (AK, BC, sCA, OR, NY, WA marine infauna)

Armandia intermedia Fauvel, 1902 (HI marine infauna)

Armandia maculata (FL, SC, Gulf of Mex. marine infauna)

Armandia undet. sp. (HI marine infauna)

Artacama Malmgren, 1866 - Terebellidae polychaete worms, Subfamily Artacaminae

Artacama conifera Moore, 1905 (AK, BC, WA, CA marine infauna)

Artacamella Hartman, 1955 - Terebellidae polychaete worms, Subfamily Artacaminae

Artacamella hancocki Hartman, 1955 (sCA, WA marine infauna)

Asabellides Annenkova, 1929 - Ampharetidae polychaete worms, Subfamily Ampharetinae

Asabellides lineata (*Pseudosabellides l.* Berkeley & Berkeley, 1943) (BC, sCA, WA marine infauna)

Asabellides oculata (Webster) (NJ, VA marine benthic)

Asabellides sibirica (Wiren, 1883) (AK, BC, WA marine infauna)

Asclerocheilus Ashworth, 1901- Scalibregmatidae polychaete worms

Asclerocheilus beringianus Ushakov, 1955 (BC, AK, Gulf of Mex., WA marine benthic)

Asclerocheilus californicus Hartman, 1963 (CA marine benthic)

Asychis Kingberg, 1867- Maldanidae polychaete worms

Asychis amphiglypta (Ehlers) (CA (alien) marine benthic)

Asychis biceps (Sars, 1861) (Atlantic & Pacific north boreal infauna)

Asychis carolinae Day, 1973 (FL marine benthic)

Asychis disparidentata (Moore, 1904)(AK marine infauna)

Asychis elongatus (Verrill, 1873) Light, 1974 (CA (alien), AL, e,wFL, LA, MS, TX marine benthic)

Asychis undet. sp. or species (TX, VA estuary marine benthic)

Augeneria Kinberg, 1865 - Lumbrineridae polychaete worms

Augeneria bidens (Ehlers, 1887) (sCA, WA marine infauna)

Augeneriella Banse, 1957 - Sabellidae polychaete worms

Augeneriella dubia Hartmann-Schroder, 1965 (HI marine benthic)

Australospio Blake & Kudenov, 1978 - Spionidae polychaete worms

Australospio mokapu Ward, 1981 (HI marine benthic)

Autolytus Grube, 1850 - Syllidae polychaete worms, Subfamily Autolytinae

Autolytus alexandri Malmgren, 1867 (BC, New England marine benthic)

Autolytus cornutus (A. Agassiz, 1863) (ME, NJ marine infauna)

Autolytus fasciatus (*Proceraea fasciata*) (New England marine benthic)

Autolytus dentalius Imajima (FL marine benthic)

Autolytus magnus Berkeley, 1923 (BC marine benthic)

Autolytus pictus (New England marine benthic)

Autolytus undet. sp. or species (AK, sCA, HI, SC, wA marine infauna; PQ Gulf of St. Lawrence, Virginian sandy marine interstitial)

Autolytus undescribed sp. (Gulf of Mex. marine infauna)

Autolytus prolifer (Muller) (FL, New England marine benthic)

Autolytus verrilli Marenzeller, 1892 (BC, New England marine benthic)

Axiiothella Verrill, 1900 - Maldanidae polychaete worms, Subfamily Euclymeninae

Axiiothella mucosa (Andrews) (e,wFL, LA, SC marine infauna)

Axiiothella rubrocincta (*Clymenella* r. Johnson, 1901) (BC, CA, WA marine infauna)

Axiiothella undescr. sp. (AL, FL marine benthic)

Barantolla Southern, 1921 - Capitellidae polychaete worms

Barantolla americana Hartman, 1969 (BC, CA, OR, WA marine benthic)

Barantolla undescr. sp. (FL marine benthic)

Bergstroemia Banse, 1973 - Phyllodocidae polychaete worms, Subfamily Notophyllinae

Bergstroemia nigrimaculata (Moore, 1909) (BC marine infauna)

Betapista Banse, 1980 - Terebellidae polychaete worms, Subfamily Artacaminae

Betapista dekkeri Banse, 1980 (BC, WA marine infauna)

Bhawania Schmarda, 1861 - Palmyridae polychaete worms (also put in Chrysopetalidae)

Bhawania goodei Webster, 1884 (SC marine infauna)

Bhawania heteroseta (Hartman, 1945) (Carolinian, Virginian, e,wFL, LA marine infauna)

Bispira Kroeyer, 1856 – Sabellidae polychaete worms

Bispira undet. sp. (CA marine benthic)

Boccardia Carazzi, 1895 - Spionidae polychaete worms

Boccardia basilaria Hartman, 1961 (sCA marine infauna)

Boccardia columbiana (E. Berkeley, 1927) (BC marine infauna)

Boccardia polybranchia (Hawell, 1885) (BC marine infauna)

Boccardia proboscidea Hartman, 1940 (CA, OR marine benthic burrows)

Boccardia pugettensis Blake, 1979 (= *B. natrix* of Berkeley & Berkeley, 1936, not Soderstrom, 1920) (AK, BC, WA marine infauna)

Boccardia undet. sp. or species (East Coast interstitial marine sands; HI marine infauna)

Boccardia undescr. sp.? (wFL marine infauna)

Boccardiella Blake & Kudenov, 1978 - Spionidae polychaete worms

Boccardiella hamata (*Polydora* h. Webster, 1879; *B. uncata* E. Berkeley, 1927) (BC, sCA, Virginian marine infauna)

Boccardiella ligerica (Ferroiniere, 1898)(Virginian, Gulf of Mexico, MA marine infauna)

Boccardiella undescr. sp. (FL, LA marine infauna)

Boguea Hartman, 1945 – Bogueidae (also subsumed in Maldanidae) polychaete worms

Boguea enigmatica Hartman, 1945 (e,wFL marine infauna)

***Boguea* 2** undescr. sp. (FL marine infauna)

Boguella Hartman & Fauchald, 1971 – Bogueidae (also subsumed in Maldanidae) polychaete worms

Boguella undescr. sp. (FL marine infauna)

Brada Stimpson, 1854 - Flabelligeridae polychaete worms

Brada granosa (ME marine infauna)

Brada pluribranchiata (*Stylaroides* p. Moore, 1923)(sCA marine infauna)

Brada sachalina Annenkova, 1922 (BC, WA marine infauna)

Brada villosa (*Siphonostoma* v. Rathke, 1843) (Atlantic, BC, sCA, WA marine infauna)

Branchioasychis Monro, 1939- Maldanidae polychaete worms

Branchioasychis americana (FL marine infauna)

Branchioma - Sabellidae polychaete worms

Brachioma undet. sp. (SC marine infauna)

Branchiomaldane Langerhans, 1881 - Arenicolidae polychaete worms

Branchiomaldane simplex Berkeley & Berkeley, 1932 (BC marine benthic)

Branchiomaldane vincenti Langerhans, 1881 (HI marine benthic)

Branchiomma Koelliker, 1858 - Sabellidae polychaete worms

Branchiomma nigromaculata (Baird, 1865) (FL, HI marine benthic)

Branchiosyllis Ehlers, 1887 (= *Brachiosyllis*) - Syllidae polychaete worms

Branchiosyllis exilis (Gravier, 1900) (HI, Gulf of Mex. marine infauna)

Branchiosyllis oculata Ehlers, 1887 (Gulf of Mex. marine infauna)

Branchiosyllis uncinigera Hartmann-Schroder, 1959 (HI marine infauna)

Brania Quatrefages, 1866 - Syllidae polychaete worms

Brania brevipharyngea Banse, 1972 (BC, CA, WA marine infauna)

Brania californiensis Kudenov & Harris, 1995 (CA marine benthic)

Brania clavata (Claparede, 1863) (e,wFL, LA, SC, VA, New England marine infauna)

Brania gallagheri T.H. Perkins, 1981 (FL marine infauna)

Brania pusilla (New England marine infauna)

Brania rhopalophora (Ehlers, 1897) (HI marine infauna)

Brania undescr. sp. (Gulf of Mex. marine infauna)

Brania swedmarki Gidholm, 1962 (Virginian (rare), e,wFL marine infauna)

Brania wellfleetensis Pettibone, 1956 (VA, wFL Gulf of Mex., New England marine infauna)

Bhawania Schmarda, 1861 - Chrysopetalidae polychaete worms

Bhawania heteroseta Schmarda, 1861 (FL marine benthic)

Bushiella Knight-Jones, 1973 - Spirorbidae polychaete worms, Subfamily Pileolariinae

Bushiella abnormis (Bush, 1904) (BC marine benthic)

Bushiella verruca (Fabricius, 1780) (*Spirorbis (Leodora) validus*) Bush, 1904) (BC marine benthic)

Bylgides Chamberlin, 1919 - Polynoidae polychaete worms, Subfamily Harmothoinae

Bylgides macrolepidus (Moore, 1905) (BC, CA, WA marine infauna)

Cabira Webster, 1879 - Pilargidae polychaete worms

Cabira incerta Webster, 1879 (Virginian (rare), e,wFL, LA marine benthic)

Califia Hartman, 1957 - Orbiniidae polychaete worms

Califia calida Hartman, 1957 (CA, Gulf of Mex., New England marine infauna)

Califia schmitti (Pettibone, 1957) (New England marine infauna)

Capitella Blainville, 1828 - Capitellidae polychaete worms

Capitella capitata (*Lumbricus capitatus* Fabricius, 1780) (Arctic, FL, HI, LA, ME, NJ, NY, sCA, TX, VA, WA marine infauna, tube dwelling)

Capitella dizonata Johnson, 1901 (BC marine benthic)

Capitella jonesi (Carolinian marine infauna)

Capitella ovincola Hartman, 1947 (CA marine benthic)

Capitella undet. sp. (HI marine infauna)

Capitellides Mesnil, 1897 - Capitellidae polychaete worms

Capitellides jonesi Mesnil, 1897 (FL, TX marine benthic)

Capitita ok - Capitellidae polychaete worms

Capitita ambiseta = *Mediomastus a.*

Capitita undet. sp. (HI marine infauna)

Capitomastus Eisig, 1887- Capitellidae polychaete worms

Capitomastus aciculatus Hartman, 1959 (VA marine infauna)

Carazziella J. A. Blake & Kudenov, 1978 - Spionidae polychaete worms

Carazziella calafia Blake, 1979 (CA marine infauna)

Carazziella hobsonae J.A. Blake, 1979 (LA, wFL Gulf of Mex., Virginian marine infauna)

Carazziella reishi (Woodwick, 1964 (HI marine infauna)

Carazziella undet. sp. (sCA marine infauna)

Caulleriella Chamberliln, 1919 - Cirratulidae polychaete worms

Caulleriella alata (Southern, 1914) (*Heterocirrus a*) (BC, sCA, FL(cf *C. a.*), WA marine infauna)

Caulleriella apicula J.A. Blake, 1996 (sCA marine infauna)

Caulleriella cristata J.A. Blake, 1996 (sCA marine infauna)

Caulleriella gracilis Hartman & Barnard, 1948 (sCA marine infauna)

Caulleriella hamata (*Tharux hamatus* Hartman, 1948) (BC, sCA, WA marine infauna)

Caulleriella killariensis (SC marine benthic)

Caulleriella lajolla J.A. Blake, 1996 (sCA marine infauna)

Caulleriella pacifica E. Berkeley, 1929 (sCA, WA marine infauna)

Caulleriella undet. sp. or species (AK, FL, NC marine benthic)

Caulleriella 3 undescr. species (FL marine infauna)

Caulleriella undescr. species (CA marine infauna)

Caulleriella cf. *zetlandica* (Chaetozone z. McIntosh, 1911) (FL marine infauna)

Ceratocephale Malmgren, 1867 - Nereididae polychaete worms, Subfamily Nereidinae

Ceratocephale loveni Malmgren (New England marine infauna)

Ceratocephale oculata Banse, 1977 (TX, FL, NC intertidal marine infauna)

Ceratonereis Kingberg, 1866 - Nereididae polychaete worms, Subfamily Nereidinae

Ceratonereis irritabilis (Webster, 1879) (e,wFL, Virginian marine infauna)

Ceratonereis longicirrata Perkins, 1980 (FL, Gulf of Mex. marine benthic)

Ceratonereis mirabilis Kinberg, 1866 (CA, Gulf of Mex. marine benthic)

Ceratonereis paucidentata (Moore, 1903) (BC marine benthic)

Ceratonereis pietschmanni Holly, 1935 (HI marine benthic)

Ceratonereis undet. sp. (HI marine benthic)

Ceratonereis tentaculata Kinberg, 1866 (HI marine benthic)

Ceratonereis versipedata (Ehlers, 1887) (Gulf of Mex. marine benthic)

Ceratonereis vulgata Kinberg, 1866 (HI marine benthic)

Chaetogordius - Polygordiidae polychaete worms

Chaetogordius undet. sp. (HI marine infauna)

Chaetopterus Cuvier, 1827 - Chaetopteridae polychaete worms (also put in Lutjanidae)

Chaetopterus undet. sp. (HI marine infauna)

Chaetopterus variopedatus (*Tricoelia* v. Renier, 1804; *C. pergamentaceus*) (BC, sCA, NC,

e,wFL, HI, Virginian, WA marine infauna)

Chaetozone Malmgren, 1867 - Cirratulidae polychaete worms

Chaetozone acuta Banse & Hobson, 1968 (CA, BC, WA marine infauna)

Chaetozone armata Hartman, 1963 (sCA marine infauna)

Chaetozone berkeleyorum Banse & Hobson, 1968 (BC marine infauna)

Chaetozone bansei J.A. Blake, 1996 (sCA marine infauna)

Chaetozone columbiana J.A. Blake, 1996 (sCA marine infauna)

Chaetozone commonalis J.A. Blake, 1996 (sCA, WA marine infauna)

Chaetozone corona Berkeley & Berkeley, 1941 (= *C. spinosa* c.) (sCA marine infauna)

Chaetozone gracilis (Moore, 1923) (AK, sCA, WA marine infauna)

Chaetozone hartmanae J.A. Blake, 1996 (sCA marine infauna)

Chaetozone hedgpethi J.A. Blake, 1996 (sCA marine infauna)

Chaetozone lunula J.A. Blake, 1996 (sCA marine infauna)

Chaetozone senticosa J.A. Blake, 1996 (sCA marine infauna)

Chaetozone setosa Malmgren, 1867 (AK, BC, CA, FL, NY marine infauna)

Chaetozone spinosa Moore, 1903 (BC, CA, WA marine infauna)

Chaetozone undescr. species (CA marine infauna)

Chaetozone 4 undet.or undescr. species (AL, FL, LA, TX marine infauna)

Cheilonereis Benham, 1916 - Nereididae polychaete worms, Subfamily Nereidinae

Cheilonereis cyclurus (Harrington, 1897) (BC, CA, WA marine benthic)

Chirimia Light, 1991 - Maldanidae polychaete worms, Subfamily Maldininae

Chirimia biceps (Sars, 1861) (BC, WA marine infauna)

Chirimia similis (Moore, 1906) (BC, WA marine infauna)

Chitinopoma Levinsen, 1884 – Serpulidae polychaete worms, Subfamily Serpulinae

Chitinopoma groenlandica (*Hydroides norvegica* g. Morch, 1863) (CA marine benthic)

Chloeia Savigny, 1818 - Amphinomidae polychaete worms

Chloeia entypa Chamberlin, 1919 (BC marine infauna)

Chloeia flava (Pallas, 1766) (BC marine infauna)

Chloeia pinnata Moore, 1911 (sCA marine infauna)

Chloeia viridis Schmarda, 1861 (Gulf of Mex. marine infauna)

Chone Kroeyer, 1856 - Sabellidae polychaete worms, Subfamily Sabellinae (traditionally put in Fabriciinae)

Chone cf. *americana* (*C. americanus* J.H. Day, 1973) (wFL Gulf of Mex., eFL marine infauna)

Chone aurantiaca (Johnson, 1901) (BC marine infauna)

Chone duneri Malgren, 1867 (BC, LA, WA marine infauna)

Chone ecaudata (Moore, 1923) (BC, CA, WA marine infauna)

Chone infundibiliformis Kroyer, 1856 (BC marine infauna)

Chone magna (Moore, 1923) (AK, BC, WA marine infauna)

Chone minuta Hartman, 1944 (sCA, WA marine infauna)

Chone mollis (*Metachone m.* Bush, 1904) (sCA, WA marine infauna)

Chone undescr. sp. (Gulf of Mex. marine infauna)

Chone velorinis Banse, 1972 (sCA marine infauna)

Chrysopetalum Ehlers, 1864 - Chrysopetalidae polychaete worms

Chrysopetalum occidentale Johnson, 1897 (Gulf of Mex. marine infauna)

Circeis Saint-Joseph, 1894 - Spirorbidae polychaete worms, Subfamily Circeinae

Circeis armoricana Saint-Joseph, 1894 (BC, WA marine infauna)

Circeis spirillum (Linnaeus, 1758) (BC, WA marine infauna)

Cirratulus Lamarck, 1801 - Cirratulidae polychaete worms

Cirratulus capensis (Schmarda, 1861) (HI marine benthic)

Cirratulus cingulatus Johnson, 1901 (CA marine benthic)

Cirratulus cirratus (*Lumbricus c.* O.F. Muller, 1776) (BC, CA, ME, WA marine infauna, PQ Gulf of St. Lawrence sandy marine interstitial))

Cirratulus dillonensis J.A. Blake, 1996 (CA marine benthic)

Cirratulus grandis Verrill, 1873 (ME, NJ marine benthic)

Cirratulus multioculatus (Hartman, 1961 (CA marine benthic)

Cirratulus robustus Johnson, 1901 (CA, WA marine infauna)

Cirratulus undet. sp. or species (sCA, HI marine infauna)

Cirratulus spectabilis (Kinberg, 1866) (BC, CA, WA marine infauna)

Cirratulus zeбуensis McIntosh, 1885 (HI marine benthic)

Cirriformia Hartman, 1936 (= *Audouinia*) Cirratulidae polychaete worms

Cirriformia capensis (Schmarda, 1861) (HI marine infauna)

Cirriformia crassicolis (Kinberg, 1866) (HI marine infauna)

Cirriformia grandis (Verrill) (FL marine infauna)

Cirriformia hawaiiensis Hartman, 1956 (HI marine infauna)

Cirriformia luxuriosa (Moore, 1904) (sCA marine infauna)

Cirriformia moorei J. Blake, 1996 (sCA marine infauna)

Cirriformia punctata (Grube, 1856) (HI marine infauna)

Cirriformia undescr. sp. (FL, TX marine benthic)

Cirriformia undescr. sp. (FL marine benthic)

Cirriformia undescr. sp. (TX marine benthic)

Cirriformia socialis J.A. Blake, 1996 (sCA marine infauna)

Cirriformia semicincta (Ehlers, 1905) (HI marine infauna)

Cirriformia spirabrancha (*Cirratulus* s. Moore, 1904) (sCA, WA marine infauna)

Cirriformia tentaculata (*Terebella* t. Montagu, 1808) (sCA marine infauna)

Cirrophorus Ehlers, 1908 - Paraonidae polychaete worms

Cirrophorus americanus V.E. Strel'tsov, 1973 (LA marine infauna)

Cirrophorus branchiatus Ehlers, 1908 (*Paradoneis* b.) (BC, sCA, Carolinian, Gulf of Mex. WA marine infauna)

*Cirrophorus forticirratu*s V.E. Strel'tsov, 1973 (LA marine infauna)

Cirrophorus furcatus (*Arcidea* (C.) f. Hartman, 1957) (sCA marine infauna)

Cirrophorus ilvana (Virginian marine infauna)

Cirrophorus lyriformis (SC marine infauna)

Cirrophorus undet. sp. or species (sCA, FL marine infauna)

Cirrophorus undescr. sp. (Carolinian marine infauna)

Cistena Leach, 1816 Pectinariidae polychaete worms

Cistena gouldi = *Cistenides* g.

Cistenides Malmgren, 1866 (= *Pectinaria*) - Pectinariidae polychaete worms (also put in Amphictenidae)

Cistenides gouldii (Verrill) (= *Cistena* g.) (MA to FL and West Indies marine sandy infauna)

Cistenides granulata (Linnaeus, 1767) (AK, BC, WA marine infauna)

Clavodorum Hartman & Fauchald, 1971 - Sphaerodoridae polychaete worms

Clavodorum undesr. sp. (Gulf of Mex. marine benthic)

Clymenella Verrill, 1873 - Maldanidae polychaete worms, Subfamily Euclymeninae

Clymenella complanata Hartman, 1969 (sCA, WA marine infauna)

Clymenella mucosa (TX, VA estuary marine infauna)

Clymenella torquata (*Clymene torquatus* Leidy, 1855) (AL, e,wFL, LA, MA, ME, MS, NC, NJ, NY, SC, TX, VA, WA marine intertidal benthic & subsurface deposit feeder, tubiculous)

Clymenella zonalis (Verrill, 1874) (VA, NJ marine benthic)

Clymenura Verrill, 1900 - Maldanidae polychaete worms, Subfamily Clymenurinae

Clymenura (Cephalata) columbiana (Berkeley, 1929) (BC, WA marine infauna)

Clymenura (Cephalata) gracilis Hartman, 1969 (sCA, WA marine infauna)

Cossura Webster & Benedict, 1887 - Cossuridae polychaete worms

Cossura bansei J.A.Blake, 1996 (sCA, WA marine infauna)

Cossura brunnea Fauchald, 1972 (sCA, WA marine infauna)

Cossura candida Hartman, 1955 (sCA marine infauna)

Cossura coasta Kitamori, 1960 (HI marine infauna)

Cossura delta (LA, TX estuary marine infauna)

Cossura longocirrata Webster & Benedict, 1887 (BC, MA, Carolinian, Virginian, WA marine infauna)

Cossura modica Fauchald & Hancock, 1981 (BC, BC, WA marine infauna)

Cossura undet. sp. (sCA marine infauna)

Cossura pygodactylata Jones, 1956 (= *C. lepida*)(BC, CA, WA marine infauna)

Cossura rostrata Fauchald, 1972 = *C. candida*

Cossura soyeri Laubier, 1963 (Mediterranean, LA, NC marine infauna)

Crucigera Benedict, 1887 - Serpulidae polychaete worms, Subfamily Serpulinae

Crucigera irregularis Bush, 1905 (AK, BC marine infauna)

Crucigera websteri Benedict, 1887 (Gulf of Mex. marine infauna)

Crucigera zygophora (Johnson, 1901) (AK, BC, WA marine infauna)

Ctenodrilus - Ctenodrilidae polychaete worms, Subfamily Ctenodrilinae

Ctenodrilus serratus (Schmidt, 1857) (BC marine benthic)

Dasybranchus Grube, 1850 - Capitellidae polychaete worms

Dasybranchus glabrus Moore, 1909 (FL marine infauna)

Dasybranchus lumbricoides Grube, 1878 (FL, HI, TX marine infauna)

Dasybranchus lunulatus Ehlers, 1887 (CA marine infauna)

Dasybranchus undet. sp. or species (HI, LA marine infauna)

Decamastus Hartman, 1963 - Capitellidae polychaete worms

Decamastus gracilis Hartman, 1963 (AK, BC, FL, sCA, WA marine infauna)

Decamastus? undet. sp. (HI marine infauna)

Decamastus? undesr. sp. (FL marine infauna)

Demonax Kinberg, 1867- Sabellidae polychaete worms, Subfamily Sabellinae

Demonax lacunosus T.H. Perkins, 1984 (FL marine infauna)

Demonax leucaspis Kinberg, 1867 (HI marine infauna)

Demonax medius (Bush, 1905) (BC, WA marine infauna)

Demonax microphthalma (*Sabella m.* Verrill, 1873) (FL, NJ, VA, Gulf of Mex. marine benthic)

Demonax pacifica = *Distylia volutacornis pacifica*

Demonax japonicus (Moore) (FL marine infauna)

Demonax pallidus (Moore) (FL marine infauna)

Demonax rugosus (Moore, 1904) (FL, BC, WA marine infauna)

Demonax undet. sp. (CA marine infauna)

Dentatisyllis Perkins, 1981 - Syllidae polychaete worms

Dentatisyllis carolinae (Day, 1973) (e,wFL marine infauna)

Dentatisyllis undescr. sp. (wFL marine infauna)

Dexiospira Caullery & Mesnil, 1897- Serpulidae polychaete worms

Dexiospira spirillum (*Spirorbis spirillum* Linneaus) (FL, ME marine benthic)

Dialychone Claparede, 1870 - Sabellidae polychaete worms

Dialychone undescr. sp. (Gulf of Mex. marine infauna)

Dinophilus O. Schmidt, 1848 – Dorvilleidae polychaete worms (once put in Dinophilidae)

Dinophilus nipponicus Uchida & Okuda, 1943 (BC marine benthic)

Diplocirrus Haase, 1915 - Flabelligeridae polychaete worms

Diplocirrus capensis Day, 1961 (Gulf of Mex. marine infauna)

Diplocirrus undescr. sp. (Gulf of Mex. marine infauna)

Diopatra Audouin & Milne-Edwards, 1833 - Onuphidae polychaete worms, Subfamily Onuphinae (once in Phyllodocidae)

Diopatra amboinensis Audouin & Milne Edwards, 1833 (New England marine infauna in tube structures)

Diopatra cuprea (Bosc, 1802) (FL, LA, SC, TX, VA, New England marine infauna in tube structures)

Diopatra leuckarti Kinberg, 1865 (HI marine infauna)

Diopatra neotridens Hartman, 1944 (Gulf of Mex. marine infauna)

Diopatra ornata Moore, 1911 (AK, BC, sCA, WA, New England marine infauna)

Diopatra cf. *papillata* Fauchald, 1968 (Gulf of Mex. marine infauna)

Diopatra undescr. sp. (HI marine infauna)

Diopatra splendidissima Kinberg, 1865 (sCA marine infauna)
Diopatra tridentata Hartman, 1944 (sCA, Gulf of Mex. marine infauna)

Dioplosyllis Gidholm, 1962 - Syllidae polychaete worms, Subfamily Eusyllinae
Dioplosyllis lagunae (Hartman, 1961) (CA marine infauna)

Dioplosyllis octodentata T.H. Perkins, 1981 (FL marine infauna)
Dioplosyllis undet. sp. (WA marine infauna)
Dioplosyllis tridentata Kudenov & Harris, 1995 (CA marine infauna)

Dipolydora Bosc, 1802 - Spionidae polychaete worms
Dipolydora akaina J.A. Blake, 1996 (CA marine infauna)
Dipolydora armata (*Polydora a.* Langerhans, 1880; *P. convexa* Blake & Woodward, 1971) (CA marine infauna)

Dipolydora barbilla (Blake, 1981) (Carolinian marine infauna)
Dipolydora bidentata (*Polydora b.* Zachs, 1933) (CA marine infauna)

Dipolydora bifurcata (*Polydora b.* Andrews, 1891; *P. monilaris* Ehlers, 1905) (BC, CA marine infauna)

Dipolydora cardalia (Berkeley, 1927) (AK, WA marine infauna)
Dipolydora caulleryi (*Polydora c.* Mesnil, 1897; *P. brachycephala* Hartman, 1936) (CA, BC, TX, WA marine infauna)

Dipolydora commensalis (*Polydora c.* Andrews, 1891) (CA, WA, Virginian marine infauna)
Dipolydora elegantissima (Blake & Woodward, 1972) (BC, CA marine infauna)

Dipolydora giardi (*Polydora g.* Mesnil, 1896; *P. anoculata* Moore, 1907) (BC, CA marine infauna)

Dipolydora quadrilobata (*Polydora q.* Jacobi, 1883) (BC, CA, MA, WA marine infauna)

Dipolydora socialis (*Polydora s.* Schmarda, 1861; *P. caeca* of Berkeley & Berkeley, 1936, not Orsted, 1843; *P. carunculata* Radashevsky, 1993; *P. magna* of Berkeley & Berkeley, 1936; *P. neocardalia* Hartman, 1961) (common AL, AK, BC, CA, e,wFL, LA, MA, NC, TX, WA marine infauna)

Disomides multisetosum = *Trochochaeta m.*

Dispio Hartman, 1951 - Spionidae polychaete worms
Dispio uncinata Hartman, 1951 (AL, CA, FL, HI, LA, Virginian marine infauna)

Distylia volutacornis pacifica Berkeley & Berkeley, 1954 (= *Demonax p.*; *Bispira v.*?) (BC, WA marine infauna)

Diurodrilus Remane, 1925 - Diurodrilidae polychaete worms (once put in Dinophilidae)

Diurodrilus ankeli Ax, 1967 (BC marine benthic)

Dodecaceria Oersted, 1843 - Cirratulidae polychaete worms

Dodecaceria coralii (Leidy) (ME marine benthic)

Dodecaceria concharum Oersted, 1843 (BC, CA marine benthic)

Dodecaceria fewkesi Berkeley & Berkeley, 1954 (BC, CA marine benthic)

Dodecaceria laddi Hartman, 1954 (HI marine benthic)

Dodecaceria oraria McCammon & Stull, 1978 (CA marine benthic)

Dodecaceria undescr. sp. (FL marine benthic)

Dorvillea Parfitt, 1866 - Dorvilleidae polychaete worms

Dorvillea angolana (Augener, 1918) (HI? marine infauna)

Dorvillea* (*Schistomeringos*) *annulata (*Stauronereis a.* Moore, 1906) (CA, WA, New England marine infauna)

Dorvillea* (*Schistomeringos*) *japonica (Annenkova, 1937) (BC, WA marine infauna)

Dorvillea* (*Schistomeringos*) *longicornis (*Stauronereis l.* Ehlers, 1901; *S. articulatus* Hartman, 1938) (BC, sCA marine infauna)

Dorvillea* (*Dorvillea*) *moniloceras (Moore, 1909) (BC, HI marine infauna)

Dorvillea* (*Dorvillea*) *pseudorubrovittata E.Berkeley, 1927 (BC, WA marine infauna)

Dorvillea* (*Schistomeringos*) *rudolphi (*Stauronereis r.* Delle Chiaje, 1828) (CA, Carolinian, Virginian, e,wFL, LA, WA, New England marine infauna)

Dorvillea sociabilis (Webster, 1879) (SC, Gulf of Mex. marine infauna)

Dorvillea undescr. sp. (Gulf of Mex. marine infauna)

Dorvillea undet. sp. (HI marine infauna)

Drieschia Michaelsen, 1892 – Polynoidae polychaete worms

Drieschia atlantica Treadwell, 1936 (New England marine benthic)

Drieschia pelagica Michaelsen, 1892 (New England marine benthic)

Drilonereis Claparede, 1870 - Oeonidae polychaete worms (also put in Arabellidae)

Driloneris caulleryi (New England marine infauna)

Drilonereis* cf. *debilis (Ehlers, 1887) (Gulf of Mex. marine infauna)

Driloneris falcata Moore, 1911 (CA, WA, New England marine infauna)

Driloneris falcata minor Hartman, 1965 (AK, WA marine infauna)

Drilonereis filum (*Limbriconereis f.* Claparede, 1868) (CA, VA, New England marine benthic)

Drilonereis longa Webster, 1979 (BC, e,wFL, SC, WA, Gulf of Mex., Virginian, New England marine infauna)

Drilonereis magna Webster & Benedict (SC, TX, VA, New England estuary marine benthic)

Driloneries mexicana Fauchald, 1970 (CA marine infauna)

Driloneries nuda Moore, 1909 (CA, WA marine infauna)

Drilonereis undet. sp. (sCA marine infauna)

Drilonereis spatula (Treadwell, 1911) (Gulf of Mex. marine infauna)

Driloneries spectabilis Hilbig, 1995 (CA marine infauna)

Drilonereis 4 undescribed species (Gulf of Mex. marine infauna)

Dysponetus Levinsen, 1879 - Chrysopetalidae polychaete worms

Dysponetus pygmaeus Levinsen, 1879 (BC, NJ, New England marine infauna)

Eclysippe Eliason, 1955- Ampharetidae polychaete worms, Subfamily Ampharetinae

Eclysippe trilobata (*Anobrothrus t.* Hartman, 1969) (sCA marine infauna)

Ehlersia Quatrefages, 1865 - Syllidae polychaete worms, Subfamily Eusyllinae (also treated as subgenus of *Syllis*)

Ehlersia cornuta = *Syllis c.*

Ehlersia ferrugina (Langerhans, 1881) (= *Syllis f.*) (Carolinian, Gulf of Mex. marine infauna)

Ehlersia heterochaeta (Moore, 1909) = *Typosyllis h.* (CA, WA marine infauna)

Ehlersia hyperioni (Dorsey & Phillips, 1987) = *Typosyllis h.*

Ehlersia undet. sp. (HI marine infauna)

Enipo Malmgren, 1865 - Polynoidae polychaete worms

Enipo canadensis (Ehlers, 1887) = *Polynoe c.*

Enipo gracilis – *Polynoe g.*

Enipo kinbergi Malmgren, 1865 (New England marine benthic)

Enipo torelli (New England marine benthic)

Enoplobranchus Webster, 1879 – Terebellidae polychaete worms

Enoplobranchus sanguineus (Verrill) (New England marine benthic)

Erlersileanira Pettibone, 1970 - Sigalionidae polychaete worms

Erlersileanira incisa (Grube, 1877) (Gulf of Mex. marine benthic)

Enoplobranchus Webster, 1879 (= *Chaetobranchus*) Terebellidae polychaete worms

Enoplobranchus sanguineus (Verrill) (ME, Carolinian marine infauna)

Ephesiella Chamberlin, 1919 - Sphaerodoridae polychaete worms

Ephesiella brecicapitis (*Sphaerodorum b.* Moore, 1909) (sCA marine infauna)

Ephesiella minuta (Ephesia m.)(New England marine benthic)

Epidiopatra Augener, 1918 – Onuphidae polychaete worms

Epidiopatra hupferiana (WA marine infauna)

Eranno Kinberg, 1865 - Lumbrineridae polychaete worms

Eranno bicirrata (*Lumbrineris bicirrata* Treadwell, 1929) (AK, sCA, WA marine infauna)

Eranno lagunae (*Lumbrineris l.* Fauchald, 1970) (sCA marine infauna)

Eteone Savigny, 1818 - Phyllodocidae polychaete worms, Subfamily Eteoninae

Eteone alba Webster, 1879 (New England marine benthic)

Eteone balboensis (WA marine infauna)

Eteone barbata = *Mysta b.*

Eteone californica Hartman, 1936 (BC, WA marine infauna)

Eteone columbiensis Kravitz & Jones, 1979 (BC marine benthic)

Eteone dilatae (WA marine infauna)

Eteone fauchaldi Kravitz & Jones, 1979 (CA, WA marine infauna)

Eteone flava (Fabricius) (Baffin Island (neCanada), New England marine infauna)

Eteone foliosa Quatrefages, 1865 (rare Virginian marine infauna)

Eteone heteropoda Hartmann, 1951 (FL, LA, MA, NC, NJ, SC, TX, VA, New England marine infauna)

Eteone lactea Claparede (= *E. alba*) (FL, Gulf of Mex., ME, NJ, VA marine benthic)

Eteone leptotes Blake, 1992 (CA, WA marine infauna)

Eteone lighti Hartman, 1936 (OR marine benthic)

Eteone longa (Fabricius) (*E. robusta*) (AK, BC, CA, Baffin Island (neCanada), FL, WA, New England marine infauna)

Eteone pacifica Hartman, 1936 (AK, BC, CA, OR, WA marine infauna)

Eteone pigmentata Blake, 1992 (CA, WA marine infauna)

Eteone pusilla Orsted, 1834 (New England marine benthic)

Eteone undet. sp. or species (sCA, TX, MA marine infauna; East Coast interstitial marine sands)

Eteone setosa (New England marine benthic)

Eteone spetsbergensis Malmgren, 1865 (BC, WA marine infauna)

Eteone spilotus Kravitz & Jones, 1979 (BC, WA marine infauna)

Eteone trilineata (New England marine benthic)

Eteone tuberculata Treadwell, 1922 (BC marine infauna)

Euchone Malmgren, 1866 - Sabellidae polychaete worms, Subfamily Sabellinae
Euchone analis (Kroyer, 1856 (AK, BC marine infauna)
Euchone arenae Hartman, 1965 (*E. barnardi* & *trisegmentata* Reish, 1965) (CA marine infauna)

Euchone hancocki Banse, 1970 (CA, WA marine infauna)
Euchone incolor Hartman, 1965 (*E. barnardi* & *trisegmentata* Reish, 1965) (AK, CA, WA, Gulf of Mex. (cf. *E.i.*) marine infauna)

Euchone limnicola Reish, 1960 (CA, WA marine infauna)

Euchone rubrocincta (ME marine benthic)
Euchone* cf. *southerni Banse, 1970 (Gulf of Mex. marine benthic)

Euchone undescr. sp. (Gulf of Mex. marine infauna)
Euchone undet. sp. (sCA marine infauna)
Euchone velifera Banse, 1972 (CA marine benthic)

Euclymene Verrill, 1900 - Maldanidae polychaete worms, Subfamily Euclymeninae
Euclymene companula Hartman, 1969 (CA marine infauna)

Euclymene delineata Moore, 1923 (CA marine infauna)
Euclymene reticulata (WA marine infauna)

Euclymene zonalis (Verrill, 1874) (BC (cf. *E.z.*), MA, VA, WA marine infauna)
Euclymene 2 undescr. species (AL, FL marine infauna)
Euclymene undet. sp. or species; (AK, CA marine infauna)

Eucranta Malmgren, 1865 - Polynoidae polychaete worms
Eucranta anoculata (Moore, 1910) (BC, WA marine benthic)
Eucranta villosa Malmgren, 1865 (New England marine benthic)

Eudistylia Bush, 1905- Sabellidae polychaete worms, Subfamily Sabellinae
Eudistylia catharinae Banse, 1979 (BC, WA marine infauna)

Eudistylia polymorpha (Johnson, 1901) (BC, CA marine benthic)
Eudistylia vancouveri (*Sabella* v. Kinberg, 1867; *E. abbreviata*, *tenella* & *plumosa* Bush, 1904) (CA, BC, WA marine benthic)

Eulaeospira Pillai, 1970 - Spirorbidae polychaete worms
Eulaeospira orientalis (Pillai, 1960) (HI marine infauna)

Eulalia Savigny, 1818 (= *Abarenicola*) Phyllodocidae polychaete worms, Subfamily Eteoninae
Eulalia anoculata Fauchald, 1972 (New England marine infauna)
Eulalia* (*Eulalia*) *aviculiseta (WA marine infauna)

Eulalia* (*Eulalia*) *bilineata (Johnston, 1840) (BC?, FL, Gulf of Mex., WA, New England marine infauna)

Eulalia californiensis (*Steggoa californiensis* Hartman, 1936) (CA, WA marine infauna)

Eulalia havaica Kinberg, 1866 (HI marine infauna)

Eulalia* (*Eulalia*) *levicornuta Moore, 1909 (BC, CA, WA marine infauna)

Eulalia* (*Eulalia*) *macroceros Grube, 1860 = *Pterocirrus m.*

Eulalia macrocirrus (FL marine infauna)

Eulalia parvoseta Banse & Hobson, 1968 (BC marine infauna)

Eulalia* (*Eulalia*) *quadrioculata Moore, 1906 (BC, CA, New England marine infauna)

Eulalia sanguinea Oersted, 1843 (FL, HI, SC, New England marine infauna)

Eulalia undet sp. or species (sCA, HI marine infauna)

Eulalia* (*Eulalia*) *viridis (Linnaeus, 1767) (AK, BC, ME, WA, New England marine infauna)

Eumida Malmgren, 1865 - Phyllodocidae polychaete worms, Subfamily Eteoninae

Eumida caspersi Hartmann-Schroder, 1965 (FL marine infauna)

Eumida* (*Pirakia*) *hutchinsonensis T.H. Perkins, 1984 (FL marine infauna)

Eumida longicornuta (*Eulalia l.* Moore, 1906) (AK, BC, sCA marine infauna)

Eumida parvicirrus T.H. Perkins, 1984 (FL marine infauna)

Eumida sanguinea (*Eulalia s.* Oersted, 1843) (= *E. maculosa*) (e,wFL, Gulf of Mex., HI, NJ, VA, New England marine benthic)

Eumida undet. sp. (HI marine benthic)

Eumida tubiformis Moore, 1909 (WA, New England marine infauna)

Eunereis Malmgren, 1865 - Nereididae polychaete worms, Subfamily Nereidinae

Eunereis longipes Berkeley & Berkeley, 1954 (CA marine benthic)

Eunereis wailesi Berkeley & Berkeley, 1954 (BC, WA marine infauna)

Eunice Cuvier, 1817 - Eunicidae polychaete worms

Eunice afra Peters, 1854 (HI marine infauna)

Eunice afra* var. *paupera (= *A.p.*) (HI marine benthic)

Eunice americana Hartman, 1944 (sCA marine infauna)

Eunice aphroditois (Pallas, 1788) (BC, New England marine infauna)

Eunice antennata (Savigny, 1820) (HI, Gulf of Mex. marine infauna)

Eunice australis Quatrefages, 1865 (HI marine benthic)

Eunice bilobata Treadwell, 1908 (HI marine benthic)

Eunice cariboea Grube, 1865 (HI marine benthic)

Eunice filamentosa Grube, 1865 (HI, Gulf of Mex. marine benthic)

Eunice hawaiiensis Treadwell, 1906 (HI marine benthic)

Eunice multicylindri Shisko, 1981 (sCA marine infauna)

Eunice multipectinata Moore, 1911 (sCA marine infauna)

Eunice nicidioformis Treadwell, 1906 (HI marine benthic)

Eunice paupera = *E. afra* var. *p.*

Eunice tenuis (Treadwell, 1921) (Gulf of Mex. marine infauna)

Eunice valens (Chamberlin, 1919) (AK, BC marine infauna)

Eunice vittata Deelle Chiaje, 1828 (HI, Gulf of Mex. marine benthic)

Eunice vittatopsis Fauchald, 1970 (sCA marine infauna)

Eunice websteri Fauchald, 1969 (Gulf of Mex. marine infauna)

Euniphysa Wesenberg-Lund, 1949 - Eunicidae polychaete worms

Euniphysa undet. sp. (Gulf of Mex. marine infauna)

Eunoe Malgrn, 1865 - Polynoidae polychaete worms, Subfamily Harmothoinae

Eunoe depressa Moore, 1905 (BC, WA marine infauna)

Eunoe nodosa (Sars, 1861) (BC, New England marine infauna)

Eunoe oerstedii Malgren, 1865 (BC marine infauna)

Eunoe spinulosa Verrill, 1879 (New England marine infauna)

Eunoe senta (Moore, 1902) (BC marine infauna)

Eunoe uniseriata Banse & Hobson, 1968 (BC, WA marine infauna)

Euphrosine Lamarck, 1818 - Euphrosinidae polychaete worms

Euphrosine armadilloides Ehlers, 1900 (*Euphrosyne armadillo*)(Gulf of Mex., New England marine infauna)

Euphrosine arctia Johnson, 1897 (BC, CA marine infauna)

Euphrosine bicirrata Moore, 1905 (BC, CA marine infauna)

Euphrosine borealis (New England marine infauna)

Euphrosine cirrata (New England marine infauna)

Euphrosine heterobranchia Johnson, 1901 (BC, WA, CA marine infauna)

Euphrosine hortensis Moore, 1905 (BC marine infauna)

Euphrosine myrtosa (New England marine infauna)

Euphrosine undescr. sp. (Gulf of Mex. marine infauna)

Eupolymnia Verrill, 1900 - Terebellidae polychaete worms, Subfamily Artacaminae

Eupolymnia heterobranchia (BC, sCA, WA marine infauna)

Eupolymnia nebulosa (Montagu, 1818) (Gulf of Mex. marine infauna)

Eupolymnia undescr. sp. (Gulf of Mex. marine infauna)

Eupolymnia undet. sp. (Carolinian marine infauna)

Eupolynoe Bidekap, 1894 = *Eucranta*

Eupolynoe anticostiensis = *Arcteobia anticostiensis*

Eurythoe Kinberg, 1857 - Amphinomidae polychaete worms

Eurythoe complanata (Pallas, 1776) (HI marine infauna)

Eurythoe 2 undescr. sp. (Gulf of Mex. marine infauna)

Eurysyllis Ehlers, 1864 Syllidae polychaete worms

Eurysyllis spicum Kudenov & Harris, 1995 (CA marine infauna)

Eurysyllis tuberculata Ehlers, 1864 (Gulf of Mex. marine infauna)

Eusyllis Malmgren, 1867 - Syllidae polychaete worms, Subfamily Eusyllinae

Eusyllis assimilis Marenzeller, 1875 (BC, WA marine infauna)

Eusyllis blomstrandii Malmgren, 1867 (BC, CA, WA, New England marine infauna)

Eusyllis fragilis (Webster, 1879) (ME marine infauna)

Eusyllis habei Imagima, 1966 (CA, WA marine infauna)

Eusyllis japonica Imajima & Hartman (BC, WA marine infauna)

Eusyllis lamelligera Marion & Bobertzky, 1875 (Gulf of Mex.?, New England marine infauna)

Eusyllis longicirrata Imagima, 1966 (BC, CA marine infauna)

Eusyllis magnifica (Moore, 1906) (BC marine infauna)

Eusyllis transecta Hartman, 1966 (sCA marine infauna)

Euthalenessa Darboux - Sigalionidae polychaete worms

Euthalenessa chacei Pettibone, 1970 (HI marine benthic)

Euthalepus McIntosh, 1885 - Terebellidae polychaete worms, Subfamily Thelepodinae

Euthalepus undescr. sp. (Gulf of Mex. marine benthic)

Euzonus Grube, 1866 - Opheliidae polychaete worms (tube dwelling), Subfamily Opheliinae

Euzonus mucronata (Treadwell, 1914) (BC marine benthic)

Euzonus williamsi (Hartman, 1938) (BC marine benthic)

Exogone Oersted, 1845 - Syllidae polychaete worms, Subfamily Exogoninae

Exogone atlantica T.H. Perkins, 1981 (LA marine infauna)

Exogone arenosa T.H. Perkins, 1981 (e,wFL marine infauna)

Exogone* (*Exogone*) *breviantennata (Carolinian marine infauna)

Exogone* (*Parexogone*) *brevisetata J.D. Kudenov & L.H. Harris, 1995 (sCA marine infauna)

Exogone dispar (Webster, 1879) = *E. lourei*

Exogenes* *hebes (NY surface deposit feeder & burrower)

Exogone* (*Exogone*) *dwisula J.D. Kudenov & L.H. Harris, 1995 (sCA, WA marine infauna)

Exogone* (*Exogone*) *loureii Berkeley & Berkeley, 1938 (AK, BC, sCA, FL, LA, WA marine infauna)

Exogone* (*Paraexogone*) *molesta Banse, 1972 (AK, BC, CA, WA marine infauna)

Exogone occidentalis Westheide, 1974 (HI marine infauna)

Exogone pseudolourei G. San Martin, 1991 (LA marine infauna)

Exogone rolani G. San Martin, 1991 (Carolinian marine infauna)

Exogone uniformis Hartman, 1961 (CA marine infauna)

Exogone* (*Exogone*) *verugera (Claparede, 1869) (AK, HI, WA marine infauna)

Exogonella Hartman, 1961 - Syllidae polychaete worms

Exogonella brunnea Hartman, 1961 (CA marine infauna)

Fabricia Blainville, 1828 (= *Amphicora*)- Sabellidae polychaete worms, Subfamily Fabriciinae

Fabricia limnicola Hartman, 1951 (sCA marine infauna burrower)

Fabricia oregonica Banse, 1979 (BC, WA, OR marine infauna burrower)

Fabricia sabella (Ehrenberg, 1837) (BC, ME marine infauna burrower)

Fabricia undet. sp. (LA marine infauna)

Fabricia stellaris stellaris (O.F.Muller, 1774) (PQ Gulf of St. Lawrence sandy marine interstitial)

Fabriciola Friedrich, 1939 - Sabellidae polychaete worms, Subfamily Fabriciinae

Fabriciola berkeleyi Banse, 1956 (BC, CA, WA marine benthic)

Fabriciola trilobata Fitzhugh, 1983 (e,wFL, LA marine benthic)

Fabricinuda K. Fithugh, 1990 – Sabellidae

Fabricinuda limnicola (*Fabricia l.* Hartman, 1951) (CA marine benthic)

Fabricinuda trilobata (Fitzhugh, 1983) (Carolinian marine infauna)

Fabrisabella Hartman, 1969 – Sabellidae polychaete worms

Fabrisabella undet. sp. (CA marine benthic)

Fauveliopsis McIntosh, 1922 - Fauveliopsidae amphipods

Fauveliopsis armata Fauchald & Hancock, 1981 (CA marine infauna)

Fauveliopsis glabra (Brada g. Hartman, 1960) (CA marine infauna)
Fauveliopsis magna Fauchald & Hancock, 1981 (CA marine infauna)
Fauveliopsis undescr. sp. (Gulf of Mex. marine infauna)

Ficopomatus Southern, 1921 - Serpulidae polychaete worms, Subfamily Serpulinae
Ficopomatus enigmaticus (= *Mercierella enigmatica* Fauvel, 1923) (HI (alien) marine infauna)

Filogranula Langerhans, 1888 - Serpulidae polychaete worms, Subfamily Serpulinae
Filogranula undescr. sp. (Gulf of Mex. marine benthic)

Fimbriosthenelais Pettibone, 1971 - Sigalionidae polychaete worms
Fimbriosthenelais hobbsi (Grube, 1877) (Gulf of Mex. marine benthic)
Fimbriosthenelais minor (Pruvot & Racovitza, 1895) (Gulf of Mex. marine benthic)

Flabelliderma Hartman, 1969 - Flabelligeridae polychaete worms
Flabelliderma undet. sp. (BC marine benthic)

Flabelligera Sars, 1829 - Flabelligeridae polychaete worms
Flabelligera affinis Sars, 1829 (CA, ME marine infauna)
Flabelligera infundibularis Johnson, 1901 (CA marine infauna)

Galathowenia Kirkegaard, 1959 - Oweniidae polychaete worms
Galathowenia oculata (Zachs, 1922) (BC, FL, WA marine infauna)
Galathowenia undet. sp. (HI marine benthic)

Gattyana McIntosh, 1900 - Polynoidae polychaete worms, Subfamily Harmothoinae
Gattyana ciliata Moore, 1902 (AK, WA marine infauna)

Gattyana cirrosa (Malmgren, 1865) (AK, WA, Baffin Island (neCanada), ME marine infauna;
PQ Gulf of St. Lawrence sandy marine interstitial)

Gattyana treadwelli Pettibone, 1949 (BC, WA marine infauna)

Gaudichaudius Pettibone, 1986 - Polynoidae polychaete worms, Subfamily Harmothoinae
Gaudichaudius iphionelloides (= *Gattyana i.* in B.&H.) (BC, CA marine infauna)

Geminosyllis Imagima, 1966 - Syllidae polychaete worms, Subfamily Eusyllinae
Geminosyllis ohma (Imagima & Hartman, 1964) (CA marine infauna)
Geminosyllis undescr. sp. (Gulf of Mex. marine infauna)

Genetyllis Malmgren, 1865 - Phyllodocidae polychaete worms
Genetyllis castanea (= *Phyllodoce c.*) (e,wFL, Gulf of Mex. marine infauna)

Glycera Savigny, 1818 - Glyceridae polychaete worms
Glycera abranchiata Treadwell, 1901 (Carolinian, Gulf of Mex. marine infauna)

Glycera americana Leidy, 1855 (*G. corrugata* Baird, 1863; *G. edentata* Hansen, 1852; *G. jucunda* & *laevis* Kinberg, 1866; *G. peruviana* Quatrefages, 1866; *G. rugosa* Johnson, 1901; *Rhynchobolus a.* Verrill & Smith, 1874) (bloodworm/ AK, BC, sCA, FL, LA, NC, NJ, SC, VA marine infauna)

Glycera capitata Hartman, 1950 (AK, CA, NJ, NY, SC marine infauna)

Glycera convoluta Keferstein, 1862 (BC, sCA, OR, WA marine infauna)

Glycera dibranchiata Ehlers, 1868 (GA, MA, ME, NJ, NY, SC, VA, Gulf of Mex. marine intertidal infauna)

Glycera gigantea Quatrefages, 1865 (BC marine infauna)

Glycera nana Johnson, 1901 (AK, BC, sCA, WA marine infauna)

Glycera oxycephala Ehlers, 1887 (CA, SC, WA marine infauna)

Glycera papillosa Grube, 1857 (Gulf of Mex. marine infauna)

Glycera robusta Ehlers, 1868 (CA, BC, OR, VA, WA, Gulf of Mex. marine infauna)

Glycera sphyrabrancha Schmarda, 1861 (Gulf of Mex. marine infauna)

Glycera siphonostoma (delle Chiaje, 1825) (BC, WA marine infauna)

Glycera spongicola (Grube, 1855) (HI marine infauna)

Glycera tenuis Hartman, 1944 (CA marine infauna)

Glycera tessellata Grube, 1863 (BC, CA, HI marine infauna)

Glycinde Mueller, 1858 - Goniadidae polychaete worms

Glycinde armigera Moore, 1911 (AK, BC, sCA, OR, WA marine infauna)

Glycinde nordmanni (Malmgren, 1866) (SC marine infauna)

Glycinde picta Berkeley, 1927 (BC, WA marine infauna)

Glycinde polygnatha Hartman, 1950 (AK, BC, CA, OR, WA marine infauna)

Glycinde solitaria (Webster) (FL, LA, SC, TX, VA estuary marine infauna)

Glycinde undet. sp. (AK marine infauna)

Glyphanostomum Levisenb, 1884 - Ampharetidae polychaete worms, Subfamily Ampharetinae

Glyphanostomum pallescens (The=el, 1879) (CA marine infauna)

Goniada Audouin & Milne-Edwards, 1833 - Goniadidae polychaete worms

Goniada acicula Hartman, 1940 (CA marine infauna)

Goniada annulata Moore, 1905 (AK, BC, CA, WA marine infauna)

Goniada brunnea Treadwell, 1906 (AK, BC, sCA, HI, WA marine infauna)

Goniada littorea Hartman, 1950 (sCA, Carolinian, wFL Gulf of Mex. marine infauna)

Goniada maculata Oersted, 1843 (AK, BC, sCA, NJ, WA, Gulf of Mex. marine infauna)

Goniada multidentopsis T.H. Perkins, 1980 (FL marine infauna)

Goniada teres Treadwell, 1931 (Gulf of Mex. marine infauna)

Goniadella Hartman, 19450 - Goniadidae polychaete worms

Goniadella undet. sp. (NC marine infauna)

Goniadides Hartmann-Schroeder, 1960 - Goniadidae polychaete worms

Goniadides carolinae J.H. Day, 1973 (e,wFL marine infauna)

Gonianides undet. sp. (NC marine infauna)

Gorgoniapolynoe - Polynoidae polychaete worms

Gorgoniapolynoe caeciliae (Fauvel, 1913) (FL marine infauna)

Grubiopolynoe Pettibone, 1969 - Polynoidae polychaete worms

Grubiopolynoe tuta (Grube, 1855) (WA marine infauna)

Grubeosyllis Verrill, 1900 – Syllidae polychaete worms, Subfamily Exogoninae

Grubeosyllis augeneri Pettibone, 1969 (Gulf of Mex. marine infauna)

Grubeosyllis clavata (Virginian (rare), Carolinian marine infauna)

Grubeosyllis cf. *ecuadorensis* Pettibone, 1969 (Gulf of Mex. marine infauna)

Grubeosyllis mexicana (Berkeley & Berkeley, 1939) (Gulf of Mex. marine infauna)

Gymnonereis Horst, 1919 - Nereididae polychaete worms

Gymnonereis crosslandi (*Chaunorhynchus c. Monroe*, 1933; *Ceratocephale c.* Hartman, 1952) (sCA, Gulf of Mex. marine infauna)

Gyptis Marikno & Bobretyzky, 1875 Hesionidae polychaete worms

Gyptis crypta F. Pleijel, 1993 (Virginian (rare), Carolinian, wFL Gulf of Mex. marine infauna)

Gyptis brevipalpa = *Podarkeopsis b.*

Gyptis vittata Webster & Benedict, 1887 (FL, LA, NJ, TX, VA estuary marine infauna)

Halosydna Kinberg, 1855 - Polynoidae polychaete worms, Subfamily Lepidonotinae

Halosydna brevisetosa Kinberg, 1855 (BC, sCA marine infauna)

Halosydna johnsoni (*Lepidonotus j.* Darboux, 1899) (CA marine infauna)

Halosydna latior Chamberlin, 1919 (CA marine infauna)

Haploscoloplos Monro, 1933 - Orbiniidae polychaete worms

Haploscoloplos elongatus = *Leitoscoloplos e.*

Haploscoloplos foliosus Hartman, 1951 (FL, LA, TX estuary marine benthic)

Haploscoloplos fragilis (Verrill) (LA, SC marine infauna)

Haploscoloplos pugettensis = *Scoloplos p.*

Haploscoloplos robustus (Verrill) (FL, SC marine infauna)

Haplosyllis Langerhans, 1879 - Syllidae polychaete worms

Haplosyllis spongicola (*Syllis s.* Grube, 1855) (BC, CA, FL, HI, Gulf of Mex., New England marine infauna)

Harmothoe Kinberg, 1855 (= *Laenilla*, *Parmensis*, *Triscosmochaeta*) Polynoidae polychaete worms, Subfamily Harmothoinae

Harmothoe aculeata Andrews, 1891 (Carolinian marine infauna)

Harmothoe extenuata (Grube, 1840) (BC, VA (rare), WA marine infauna)

Harmothoe fragilis Moore, 1911 (BC, CA, OR, WA marine infauna)

Harmothoe haliaeti McIntosh, 1876 (HI marine infauna)

Harmothoe hirsuta Johnson, 1897 (CA marine infauna)

Harmothoe imbricata (*Aphrodita i.* Linnaeus, 1767) (AK, BC, CA, ME, NJ, WA Baffin Island (neCanada) marine infauna; PQ Gulf of St. Lawrence, Virginian (rare) sandy marine interstitial))

Harmothoe lavis Hartman, 1961 (BC, CA marine benthic)

Harmothoe multisetosa (*Lagisca m.* Moore, 1902) (BC, CA, OR, WA marine infauna)

Harmothoe oerstedii (Malmgren) (NJ marine benthic)

Harmothoe undet. sp. (Baffin Island (neCanada) marine infauna)

Hartmaniella Imagima, 1977 - Hartmaniellidae polychaete worms

Hartmaniella undet. or undescr. sp. (Gulf of Mex. marine infauna)

Hauchiella Levinsen, 1893 – Terebellidae polychaete worms, Subfamily Polycirrinae

Hauchiella undescr. sp. (Gulf of Mex. benthic)

Hediste Malmgren, 1867 - Nereididae polychaete worms

Hediste diversicolor (O.F. Muller, 1776) (PQ Gulf of St. Lawrence sandy marine interstitial)

Hemipodus Quatrefages, 1865 - Glyceridae polychaete worms

Hemipodus borealis Hartman, 1950 (= *H. roseus* Quatrefages, 1865) (AK, BC, CA, FL, WA marine infauna)

Hemipodus roseus Quatrefages, 1865 (wFL Gulf of Mex. marine infauna)

Hermadion Kinberg, 1855 - Polynoidae polychaete worms, Subfamily Harmothoinae

Hermadion truncata (Moore, 1902) (BC marine benthic)

Hesione Savigny 1818 – Hesionidae polychaete worms

Hesione splendida Savigny 1818 (HI marine benthic)

Hesionella Hartman, 1939 – Hesionidae polychaete worms

Hesionella mccullochae Hartman, 1939 (CA marine benthic)

Hesioneura Hartmann-Schroder, 1958 - Phyllodocidae polychaete worms

Hesioneura undet. sp. (CA marine beach interstitial)

Hesionides Friedrich 1937 - Hesionidae polychaete worm

Hesionides arenaria Friedrich, 1937 (CA marine beach interstitial)

Hesionides gohari Hartmann-Schroder, 1960 (FL marine interstitial)

Hesionides riegerorum W. Westheide, 1979 (sandy hyporheic in Chowan River, NC) Bibl.: Schmidt & Westheide 1999

Hesionura Hartmann-Schroder 1958 - Phyllodocidae polychaete worms, Subfamily Eteoninae

Hesionura coineau *difficilis* (*Eteonides c. d.* Banse 1963) (aquatic interstitial in BC, WA, CA, WA)

Hesionura elongata (Southern) (Carolinian marine infauna)

@*Hesionura lauberi* (FL marine infauna)

Hesiospina Imagina & Hartman, 1964 – Hesionidae polychaete worms

Hesiospina 2 undescr. sp. (Gulf of Mex. marine infauna)

Hesperonoe Chamberlin, 1919 Polynoidae polychaete worms, Subfamily Harmothoinae

Hesperonoe adventor (Skogsberg, 1928) (AK, BC, WA marine infauna)

Hesperonoe complanata (*Harmothoe c.* Johnson, 1901) (AK, BC, CA, OR, WA marine infauna)

Hesperonoe laevis Hartman, 1961 (CA, WA marine infauna)

Hesperonoe undet. sp. (AK marine infauna)

Heteromastus Eisig, 1887 - Capitellidae polychaete worms

Heteromastus filiformis (*Capitella f.* Claparede, 1864) (AK, BC, CA, e,wFL, GA (brackish & marine), LA, MA, ME, NC, OR, SC, VA, WA common marine infauna)

Heteromastus filobranchus Berkeley & Berkeley, 1932 (AK, BC, sCA, WA marine infauna)

Heteropodarke Quatrefages, 1865 - Hesionidae polychaete worms

Heteropodarke formalis T.H. Perkins, 1984 (FL marine benthic)

Heteropodarke heteromorpha Hartmann-Schroder, 1962 (FL, Gulf of Mex., WA marine infauna)

Heteropodarke lyonsi T.H. Perkins, 1984 (FL marine benthic)

Heteropodarke undet. sp. (BC marine benthic)

Heterospio Ehlers, 1874 – Longosomatidae (= Heterospionidae) polychaete worms

Heterospio catalinensis (*Longosoma c.* Hartman, 1944) (CA marine benthic)

Heterospio* cf *longissima Ehlers, 1874 (FL, TX marine benthic)

Heterospio undescr. sp. (AL, FL marine infauna)

Heterosyllis Kinberg, 1866 - Syllidae polychaete worms

Heterosyllis havaica Kinberg, 1866 (HI marine benthic)

Hipponoe – Amphinomidae polychaete worms

Hipponoe gaudichaudi Audouin & Milne-Edwards, 1830) (HI marine infauna)

Histriobdella van Beneden, 1858 – Histriobdellidae polychaete worms

Histriobdella homari (ME marine benthic)

Hobsonia Banse, 1979 - Ampharetidae polychaete worms, Subfamily Ampharetinae

Hobsonia florida (Hartman, 1951) (BC, FL, LA, MA, NC, OR, SC, TX, WA estuary marine infauna)

Hobsonia gunneri (*Amphicteis g. floridus* Hartman, 1951)(TX marine infauna)

Hololepida Moore, 1905 - Polynoidae polychaete worms, unnamed subfamily

Hololepida magna Moore, 1905 (BC, CA, OR, WA marine infauna)

Hololepidella Willey, 1905 - Terebellidae polychaete worms, Subfamily Arctonoinae

Hololepidella nigropunctata (Horst, 1915) (HI marine infauna)

Hyalopomatus Marenzeller, 1878 – Serpulidae polychaete worms

Hyalopomatus biformis (*Vermilopsis b.* Hartman, 1960) (CA, WA marine infauna)

Hyalinoecia Malmgren, 1867 - Onuphidae polychaete worms

Hyalinoecia juvenalis Moore, 1911 (sCA marine infauna)

Hyboscolex Schmarda, 1861 - Scalibregmatidae polychaete worms

Hyboscolex pacificus (Moore, 1909) (BC marine benthic)

Hyboscolex longiseta Schmarda, 1861 (HI marine benthic)

Hyboscolex undet sp. (Gulf of Mex. marine benthic)

Hydroides Gunnerus 1768 - Serpulidae polychaete worms

Hydroides *bannerorum* Bailey-Brock 1991 (deep marine interstitial muds off Oahu, HI)

Hydroides *bispinosa* Bush, 1910 (Gulf of Mex. marine infauna)

Hydroides *crucigera* (Morch, 1863) (HI (alien) marine infauna)

Hydroides *brachyacantha* Rioja, 1941 (HI (alien) marine infauna)

Hydroides *dianthus* (= *H. uncinata*) (Verrill, 1873) (LA, ME, NJ, VA, Gulf of Mex. marine infauna)

Hydroides *dirampha* (Morch, 1863) (HI (alien) marine infauna)

Hydroides *elegans* Haswell, 1883 (HI (alien) marine infauna)

Hydroides *gracilis* (CA marine infauna)

Hydroides *hexagonus* Bose (NC marine infauna)

Hydroides *imbricata* (rare Virginian marine infauna)

Hydroides *lunulifera* (Claparede, 1868) (HI marine infauna)

Hydroides *microtis* Morch, 1863 (Carolinian, Gulf of Mex. marine infauna)

Hydroides undet. species (CA marine caves; HI marine infauna)

Hydroides *pacificus* Hartman, 1969 (CA marine infauna)

Hydroides *protulicola* Benedict, 1887 (Virginian, Gulf of Mex. marine infauna)

Hydroides *sanctaecrucis* (Morch, 1863) (HI (alien) marine infauna)

Hydroides *uncinata* Phillipe, 1844 (HI (alien) marine infauna)

Hypaniola Anenkova, 1927 - Ampharetidae polychaete worms

Hypaniola *florida* = *Amphicteis floridus*

Hypaniola *florida* (FL, MA marine infauna)

Hypereteone - Phyllodocidae polychaete worms

Hypereteone *fauchaldi* (Kravitz & Jones, 1979) (BC marine benthic)

Hypereteone *heteropoda* (Carolinian marine benthic)

Hypereteone *lactea* (Carolinian, wFL Gulf of Mex. marine infauna)

Hypsicomus Grube, 1870 Sabellidae polychaete worms

Hypsicomus *phaeotaenia* (Schmarda, 1861) (HI, Gulf of Mex. marine infauna)

Idanthysus Kinberg, 1867 - Sabellariidae polychaete worms

Idanthysus *ornamentatus* Chamberlin, 1919 (AK marine infauna)

Idanthysus *saxicavus* (Baird, 1963) (BC, WA marine infauna)

Inermonephtys Fauchald, 1968- Nephtyidae polychaete worms

Inermonephtys *inermis* (Ehlers, 1887) (Gulf of Mexico marine infauna)

Iphione Kinberg, 1855 - Terebellidae polychaete worms, Subfamily Iphioninae

Iphione *muricata* (Savigny, 1818) (HI marine infauna)

Isolda Mueller, 1858 - Ampharetidae polychaete worms

Isolda *pulchella* Mueller, 1858 (e,wFL marine infauna)

Isocirrus Arwidsson, 1907 - Maldanidae polychaete worms, Subfamily Euclymeninae

Isocirrus *longiceps* (*Pseudoclymene l.* Moore, 1923) (BC, WA marine infauna)

Janua Saint-Joseph, 1894 - Spirorbidae polychaete worms, Subfamily Januinae

Janua pagenstecheri (Quatrefages, 1865) (BC marine infauna)

Jasmineira Langerhans, 1880 - Sabellidae polychaete worms, Subfamily Sabellinae

Jasmineira pacifica Annenkova, 1937 (BC, Gulf of Mex. marine benthic)

Jasmineira undet. sp. (CA marine benthic)

Josephella Caullery & Mesnil, 1896 - Serpulidae polychaete worms

Josephella marenzelleri Caullery & Mesnil, 1896 (marine reef sandy interstitial off HI)

Jugaria Knight-Jones, 1973 - Spirorbidae polychaete worms, Subfamily Pileolariinae

Jugaria quadrangularis (Stimpson, 1854) (= *Spirorbis (Pileolaria) granulatus*) (BC marine benthic)

Jugaria similis (Bush, 1904) (BC marine benthic)

Kefersteinia Quatrefages, 1865 - Hesionidae polychaete worms

Kefersteinia cirrata (Deferstein, 1862) (BC, WA, Gulf of Mex. marine infauna)

Kefersteinia haploseta T.H. Perkins, 1984 (FL marine benthic)

Kermadecella Darboux, 1899 - Polynoidae polychaete worms

Kermadecella magnipalpa (McIntosh, 1885) (HI marine benthic)

Kinbergonuphis Fauchald, 1982 - Onuphidae polychaete worms

Kinbergonuphis fragilis (Kinberg, 1865) (Carolinian marine infauna)

Kinbergonuphis simoni (Santos, Day & Rice, 1981) (e,wFL marine infauna)

Kinbergonuphis 3 undescr. species (Gulf of Mex. marine infauna)

Kinbergonuphis vexillaria (Moore, 1911) (CA marine benthic)

Labrorostratus Saint-Joseph, 1888 - Oeononidae polychaete worms (once in Oeononidae)

Labrorostratus luteus Uebelacker, 1978 (Gulf of Mex. marine infauna)

Lacydonia Marion & Bobretzky, 1875 - Lacydoniidae polychaete worms

Lacydoni undescr. sp. (Gulf of Mex. marine benthic)

Lacydoni undet. sp. (CA marine benthic)

Laeonereis Hartman, 1945 - Nereididae polychaete worms

Laeonereis culveri (*Nereis c.* Webster, 1879) (FL, LA, NC, TX, VA marine infauna)

Laeonereis undet. sp. (HI marine benthic)

Laetmonice Kinberg, 1855 - Aphroditidae polychaete worms

Laetmonice filicornis Kinberg, 1955 (ME marine benthic)

Laetmonice pellucida Moore, 1903 (BC marine infauna)

Lagisca Malmgren, 1865 - Polynoidae polychaete worms

Lagisca extenuata (*Polynoe e.* Grube, 1840) (CA, PQ, New England, NB (Gulf of St. Lawrence) sandy marine interstitial)

Lagisca impatiens Webster, 1879 (New England marine benthic)

Lagisca propinqua Malmgren, 1867 (New England marine benthic)

Lagisca rarisipina (Sars, 1861) (New England marine benthic)

Lanassa Malmgren, 1866 - Terebellidae polychaete worms

Lanassa gracilis.(*Leaena g.* Moore, 1923) (sCA, WA marine infauna)

Lanassa nordenskioeldi Malmgren, 1866 (WA marine infauna)

Lanassa undesr. sp. (Gulf of Mex. marine infauna)

Lanassa venusta (Malm, 1874) (AK, WA marine infauna)

Langerhansia Czerniavsky, 1881- Syllidae polychaete worms

Langerhansia cornuta (Rathke, 1843) (HI marine infauna)

Lanice Malmgren, 1886 – Terebellidae polychaete worms

Lanice conchilega (*Nereis c.* Pallas, 1776) (CA, HI, WA, Gulf of Mex. marine infauna)

Lanice expansa Treadwell, 1906 (HI marine benthic)

Lanice flabellum (Baird, 1865) (HI marine benthic)

Laonice Malmgren, 1867 - Spionidae polychaete worms

Laonice appelloefi (CA marine infauna)

Laonice muchala Blake, 1996 = *L. nuchala*

Laonice cirrata (*Nerine c.* Sars, 1850) (AK, BC, FL, LA, sCA, TX, WA marine infauna)

Laonice nuchala Blake, 1996 (= *L. appelloefi* of authors NEP not Soderstrom, 1920)(CA marine infauna)

Laonice papillibranchiae Ward, 1981 (HI marine infauna)

Laonice pugettensis Banse & Hobson, 1968 (BC, WA marine infauna)

Laonome Malmgren, 1866- Sabellidae polychaete worms, Subfamily Sabellinae

Laonome kroyeri Malmgren, 1866 (BC, WA marine infauna)

Laonome undet. sp. (Carolinian marine infauna)

Laphania Malmgren, 1866 - Terebellidae polychaete worms, Subfamily Artacaminae

Laphania boeckii Malmgren, 1866 (BC, WA marine infauna)

Laphania undet. sp. (C|A marine benthic)

Leanira Kinberg, 1855 - Sigalionidae polychaete worms

Leanira hystricis Ehlers, 1874 (New England marine benthic)

Leanira quatrefagesi (New England marine benthic)

Leanira robusta (New England marine benthic)

Leanira tetragona (*Sthenolepis tetragonum*) (New England marine benthic)

Leiocapitella Hartman, 1947 - Capitellidae polychaete worms

Leiocapitella glabra Hartman, 1947 (TX marine infauna)

Leiocapitella undescr. sp. (AL, FL marine infauna)

Leiocapitella undescr. sp. (FL marine infauna)

Leiochrides Augener, 1914 - Capitellidae polychaete worms

Leiochrides africans? (HI? marine infauna)

Leiochrides hemipodus Hartman, 1960 (CA marine infauna)

Leitoscoloplos Day, 1977 - Orbiniidae polychaete worms, Subfamily Orbiniinae

Leitoscoloplos acutus (Carolinian marine infauna)

Leitoscoloplos elongatus (*Haploscoloplos e.*) (AK, CA marine infauna)

Leitoscoloplos foliosus (Hartman) (FL marine benthic)

Leitoscoloplos fragilis (Carolinian, wFL Gulf of Mex. marine infauna)

Leitoscoloplos panamensis (*Haploscoloplos p.* Monroe, 1933) (BC, CA, WA marine benthic)

Leitoscoloplos pugettensis (*Scoloplos (S.) p.* Pettibone, 1957) (AK, sCA, BC, WA marine infauna)

Leitoscoloplos robustus (Verrill) (Carolinian, LA, MA marine infauna)

Leocrates Kinberg, 1866 – Hesionidae polychaete worms

Leocrates chinensis Kinberg, 1866 (HI marine benthic)

Leocrates giardi Gravier, 1900 (HI marine benthic)

Leodice - Eunicidae polychaete worms

Leodice dubia Verrill, 1885 (New England marine benthic)

Leodice dubia (HI marine benthic)

Leodice polybranchia Verrill, 1880 (New England marine benthic)

Leodora Saint-Joseph, 1894 - Spirorbidae polychaete worms

Leodora knightjonesi (De Silva, 1965) (HI marine infauna)

Leonnates Wesenberg-Lund, 1949 - Nereididae

Leonnates undet. sp. (HI marine benthic)

Lepidasthenia Malmgren, 1867 (= *Lepidametria*, *Nectochaeta*) Polynoidae polychaete worms, Subfamily Lepidastheniinae

Lepidasthenia alba (Treadwell, 1906) (HI marine infauna)

Lepidasthenia berkeleyae Pettibone, 1948 (BC, sCA, WA marine infauna)

Lepidasthenia commensalis (*Lepidametria c.* Webster, 1879) (Virginian marine infauna)

Lepidasthenia interrupta Marenzeller, 1902 (CA marine infauna)

Lepidasthenia longicirrata Berkeley, 1923 (BC, CA, WA marine infauna)

Lepidasthenia lucida (Treadwell, 1906) (HI marine infauna)

Lepidasthenia undesr. sp. (Gulf of Mex. marine infauna)

Lepidonotus Leach, 1816 - Polynoidae polychaete worms

Lepidonotus havaicus Kinberg, 1855 (HI marine infauna)

Lepidonotus squamatus (NY, WA marine infauna)

Lepidonotus spiculus (*Polynoe s.* Treadwell, 1906) (CA marine infauna)

Lepidonotus squamatus (Linnaeus, 1767) (ME, NJ marine infauna)

Lepidonotus undet. sp. (HI marine infauna)

Lepidonotus sublevis Verrill, 1873 (VA (rare), SC, Gulf of Mex., New England marine infauna)

Lepidonotus variabilis Webster, 1879 (New England marine infauna)

Levinsenia Mesnil, 1897 (= *Levinsenia*, *Tauberia*) - Paraonidae polychaete worms

Levinsenia gracilis (*Aonides g.* Tauber, 1879) (AK, CA, BC, CA, WA, Gulf of Mex. marine infauna)

Levinsenia multibranchiata (*Paraonis m.* Hartman, 1957) (CA marine infauna)

Levinsenia oculata (*Paraonis gracilis o.* Hartman, 1957) (CA, WA marine infauna)

Levinsenia undet. sp. (sCA marine infauna)

Levinsenia reducta Hartman, 1965 marine infauna)

Linopherus Quatrefages, 1865 (= *Pseudeurythoe*) - Amphinomidae polychaete worms

Linopherus ambigua (Monro, 1933) (*Pseudeurythoe a.*) (Virginian (rare) Carolinian marine infauna)

Linopherus canariensis (*Pseudeurythoe c.* Monro, 1933 (FL marine benthic)

Linopherus canariensis (FL marine benthic)

Linopherus paucibranchiata (*Pseudeurythoe p.* Fauvel) (LA, VA rare marine infauna)

Litocorsa Pearson, 1970 – Pilargidae polychaete worms

Litocorsa undesr. sp. (wFL Gulf of Mex. marine infauna)

Loandalia Monro, 1936 – Pilargidae polychaete worms

Loandalia americana (wFL marine infauna)

Loimia Malmgren, 1866 1771 - Terebellidae polychaete worms, Subfamily Amphitritinae

Loimia crassifilis (Grube, 1878)(HI marine infauna)

Loimia medusa (Savigny, 1818) (Virginian, MA marine infauna)

Loimia viridis Moore, 1903 (wFL Gulf of Mex. marine infauna)

Loimia medusa (*Terebella m.* Savigny, 1818) (e,wFL, HI, VA marine infauna)

Loimia viridis Moore (wFL Gulf of Mex., Carolinian marine infauna)

Lugia Quatrefages, 1865 - Phyllodocidae polychaete worms

Lugia uschakovi Blake, 1992 (CA marine benthic)

Lumbrinerides Oresanz, 1974 - Lumbrineridae polychaete worms

Lumbrinerides ?acuta (Verrill, 1875) (Gulf of Mex. marine infauna)

Lumbrinerides ?jonesi T.H. Perkins, 1979 (Gulf of Mex. marine infauna)

Lumbrinerides jonesi T.H. Perkins, 1979 (FL marine infauna)

Lumbrinerides platypygos (*Lumbrineris p.* Fauchald, 1970) (sCA marine infauna)

Lumbrinerides verrilli = *Lumbrineris v.*

Lumbrineriopsis Orensanz, 1974 - Lumbrineridae polychaete worms

Lumbrineriopsis paradoxa (Saint Joseph, 1888)(Gulf of Mex. marine infauna)

Lumbrineris de Blainville, 1828 (= *Lumbrinereis*) - Lumbrineridae polychaete worms

Lumbrineris acicularum Webster & Benedict, 1887(ME, MA marine infauna)

Lumbrineris acuta Verrill (ME, MA marine infauna)

Lumbrineris bicirrata Treadwell, 1929 (AK,WA marine infauna)

Lumbrineris brevipes (McIntosh, 1903) (Gulf of Mex. marine infauna)

Lumbrineris californiensis Hartman, 1944 (AK, BC, CA, WA marine infauna)

Lumbrineris candida (Treadwell, 1921) (Gulf of Mex.marine infauna)

Lumbrineris coccinea (Renier, 1804) (SC, wFL Gulf of Mex., New England marine infauna)

Lumbrineris cruzensis Hartman, 1944 (BC, CA, WA marine infauna)

Lumbrineris dentata Hartman-Schroder, 1965 (HI marine infauna)

Lumbrineris ernesti Perkins, 1979 (Gulf of Mex.marine infauna)

Lumbrineris fragilis (Muller, 1776) (Baffin Island (neCanada), ME marine infauna)

Lumbrineris heteropoda (Marenzeller, 1879) (HI marine infauna)

Lumbrineris index (*L. japonica i.* Moore, 1911) (sCA marine infauna)

Lumbrineris inflata Moore, 1911 (sCA, HI, WA, Gulf of Mex., New England marine infauna)

Lumbrineris impatiens (Claparede, 1868) (SC marine infauna)

Lumbrineris japonica (*Lumbriconereis j.* Marenzeller, 1879) (BC, CA marine infauna)

Lumbrineris januarii (Bruge, 1878) (wFL Gulf of Mex. marine infauna)

Lumbrineris lagunae (WA marine infauna)

Lumbrineris latreilli Audouin & Milne Edwards, 1834 (BC, CA, FL, HI, WA, Gulf of Mex. , New England marine infauna)

Lumbrineris limicola Hartman, 1944 (BC?, CA, WA marine infauna)

ALumbrineris@ luti Berkeley & Berkeley, 1945 (BC, WA marine infauna)

Lumbrineris medusa (Verrill, 1873) (= *L. bassi*) (VA marine benthic)

Lumbrineris minuscula (Moore, 1911) (HI marine infauna)

Lumbrineris pallida Hartman, 1944 (BC, WA marine infauna)

Lumbrineris sarsi (Kinberg, 1865) (HI marine infauna)

ALumbrineris@ similabris Treadwell, 1926 (BC marine infauna)

Lumbrineris sphaerocephala (Schmarda, 1861) (HI marine infauna)

Lumbrineris undet. sp. or species (sCA, HI marine infauna)

Lumbrineris 5 undescr. species (Gulf of Mex. marine infauna)

Lumbrineris tenuis (Verrill, 1873) (LA, SC, Gulf of Mex., New England marine sandy infauna)

Lumbrineris tetraura (Schmarda, 1861) (CA, FL marine benthic)

Lumbrineris verrilli T.H. Perkins, 1979 (= *Lumbrinerides v.*) (e,wFL marine infauna)

ALumbrineris@ zonata (Johnson, 1901) (BC, AK, CA, WA marine infauna)

Lycastis = *Namalycastis*

Lycastopsis Augener, 1922 - Nereididae polychaete worms

Lycastopsis augeneri (New England marine infauna)

Lycastopsis beaumeri (New England marine benthic)

Lycastopsis pontica (Bobretzky) (MS, New England marine benthic)

Lycastopsis tecolutlensis Rioja, 1946 (New England marine infauna)

Lygdamis Kinberg, 1867 - Sabellariidae polychaete worms

Lygdamis indicus Kinberg, 1867 (Gulf of Mex. marine infauna)

Lygdamis nesiotes (Chamberlain, 1919) (HI marine infauna)

Lysarete Kinberg, 1865 - Oeononidae polychaete worms (once put in Lysaretidae)

Lysarete brasiliensis Kinberg, 1865 (Gulf of Mex. marine infauna)

Lysidice Savigny, 1818 - Eunicidae polychaete worms

Lysidice ninetta Audouin & Milne-Edwards, 1833 (HI, Gulf of Mex. marine benthic)

Lysidice ninetta n. (e,wFL marine infauna)

Lysilla Malmgren, 1866 - Terebellidae polychaete worms, Subfamily Polycirrinae

Lysilla alba Webster (New England marine benthic)

Lysilla loveni Malmgren, 1866 (BC marine benthic)

Lysilla 2 undescr. species (Gulf of Mex. marine infauna)

Lysilla undet. sp. (Carolinian marine infauna)

Lysilla ubianensis Caullery, 1944 (BC marine benthic)

Lysippe Malmgren, 1866 - Ampharetidae polychaete worms

Lysippe cf. *annectens* Moore, 1923 (Gulf of Mex. marine infauna)

Lysippe labiata Malmgren, 1866 (AK, BC, W marine infauna)

Lysippe undet. sp. (sCA marine infauna)

Macrochaeta Grube, 1850 - Acrocirridae polychaete worms

Macrochaeta cf. *clavicornis* (Nais c. Sars, 1835) (e,wFL marine infauna)

Macrochaeta pege Banse, 1969 (BC marine benthic)

Macroclymene Verrill, 1900 - Maldanidae polychaete worms, Subfamily Euclymeninae

Microclymene Arwidsoon, 1907 - Maldanidae polychaete worms

Microclymene caudata M. Imajima & Y. Shiraki, 1982 (WA marine infauna)

Macroclymene undescr.? sp. (FL marine infauna)

Macroclymene zonalis (Verrill) (Carolinian, Virginian marine infauna)

Magelona Mueller, 1858 - Magelonidae polychaete worms

@*Magelona annulata* (Carolinian marine infauna)

Magelona berkeleyi Jones, 1971 (BC, CA, AK marine infauna)

Magelona cincta (LA marine infauna)

Magelona hartmanae Jones, 1978 (BC, CA marine infauna)

Magelona hobsonae Jones, 1978 (BC, CA marine infauna)

Magelona longicornis Johnson, 1901 (AK, BC, WA marine infauna)

Magelona obockensis (FL marine infauna)

Magelona papillicornis Muller (SC marine infauna)

Magelona pettiboneae Jones, 1963 (e,wFL, LA marine infauna)

Magelona phyllisae (SC marine infauna)

Magelona pitelkai Hartman, 1944(sCA marine infauna)

Magelona polydentata (FL marine infauna)

Magelona riojai Jones, 1963 (FL, CA marine infauna)

Magelona rosea (MD, NC, NJ, SC, VA marine infauna)
Magelona sacculata Hartman, 1961 (sCA, OR, WA marine infauna)
Magelona undet. sp. (HI marine infauna)

Magelona undescr. sp. A (FL, MS marine infauna)
Magelona undescr. sp. B (AL, FL, MS, TX marine infauna)
Magelona undescr. sp. C (AL, FL marine infauna)

Magelona undescr. sp. D (AL, FL, TX marine infauna)
Magelona undescr. sp. E (FL marine infauna)
Magelona undescr. sp. F (AL, FL marine infauna)

Magelona undescr. sp. F (AL, FL marine infauna)
Magelona undescr. sp. H (LA, MS, TX marine infauna)
Magelona undescr. sp. I (AL, FL, LA, MS, TX marine infauna)

Magelona undescr. sp. J (FL, TX marine infauna)
Magelona undescr. sp. K (FL marine infauna)
Magelona undescr. sp. L (FL, LA, TX marine infauna)

Malacoceros Quatrefages, 1843 - Spionidae polychaete worms
Malacoceros (M.) fuliginosus (Claparede, 1870) (BC, OR, WA marine infauna)
Malacoceros (Rhynchospio) glutaeus (Ehlers, 1897) (BC, WA marine infauna)

Malacoceros indicus (Fauvel, 1928) (CA marine infauna)
Malacoceros punctata (*Spio p.* Hartman, 1961) (CA marine infauna)

Malacoceros undet. sp. (HI marine infauna)
Malacoceros vanderhorsti (*Scolecoplepis v.* Augener, 1927) (AL, FL, LA, NC, SC, TX marine infauna)

Maldane Grube, 1860 - Maldanidae polychaete worms, Subfamily Maldininae
Maldane glebifex Grube, 1860 (BC marine infauna)

Maldane sarsi Malgren, 1865 (AK, BC, sCA, NJ, WA marine infauna)
Maldane undet. sp. (FL marine benthic)
Maldane undescr. sp. (FL marine benthic)

Maldanella McIntosh, 1885 - Maldanidae polychaete worms, Subfamily Euclymeninae
Maldanella harai (Izuka, 1902) (BC marine benthic)
Maldanella robusta (Moore, 1906) (BC, WA marine infauna)

Maldanopsis (= *Maldane*) - Maldanidae polychaete worms
Maldanopsis elongata (Verrill, 1873) (ME, NY, VA marine infauna)

Malmgreniella Hartman, 1967 - Polynoidae polychaete worms, Subfamily Harmothoinae

Malmgreniella baschi M.H. Pettibone, 1993 (sCA marine infauna)

Malmgreniella bansei Pettibone, 1993 (BC, CA, OR, WA marine infauna)

Malmgreniella berkeleyorum Pettibone, 1993 (= *Harmothoe lanulata*) (CA, OR, BC, WA marine infauna)

Malmgreniella galetaensis M.H. Pettibone, 1993 (FL marine infauna)

Malmgreniella liei M.H. Pettibone, 1993 (BC, CA, OR, WA marine infauna)

Malmgreniella maccrarya M.H. Pettibone, 1993 (Carolinian, wFL Gulf of Mex. marine infauna)

Malmgreniella macginitiei Pettibone, 1993 (CA, WA marine infauna)

Malmgreniella nigralba (*Malmgenia* n. E. Berkeley, 1923) (BC, CA, WA marine infauna)

Malmgreniella scriptoria (*Harmothoe* s. Moore, 1910) (BC, sCA, WA marine infauna)

Malmgreniella undescr. sp. (FL marine benthic)

Malmgreniella taylori M.H. Pettibone, 1993 (Carolinian, Virginian marine infauna)

Manayunkia Leidy, 1859 (= *Manukia*) (feather duster worm) - Sabellidae polychaete worms, Subfamily Fabriciinae

Manayunkia aestuarina (Bourne, 1887 or 1883) (hyporheic in NA streams; benthic in SC salt marsh & BC, OR, WA, Virginian marine infauna)

Manayunkia undet. sp. (VA tidal freshwater marsh interstitial)

Manayunkia speciosa Leidy, 1859 (alien E marine benthic)

Marenzellaria - Spionidae polychaete worms

Marenzellaria viridis (alien US (southern New England, NC, Virginian, & Carolinian) marine infauna)

Mariansabellaria D.W. Kirtley, 1994 – Sabellariidae polychaete worms

Mariansaellaria harrisae Kirtley, 1994 (CA marine benthic)

Marphysa Quatrefages, 1865 - Eunicidae polychaete worms

Marphysa conferta Moore, 1911 (CA, FL, NY, SC, VA, Gulf of Mex. (cf. *M.c.*) marine benthic)

Marphysa corallina Kinberg, 1865 (HI marine benthic)

Marphysa disjuncta Hartman, 1961 (CA marine benthic)

Marphysa fallax Marion & Bobretzky, 1875 (HI marine benthic)

Marphysa macintoshi Crossland, 1903 (HI marine benthic)

Marphysa mortenseni Monro, 1928 (alien FL, HI, NY, SC, VA, Gulf of Mex. marine benthic)

Marphysa sanguinea (Montagu, 1815) (alien FL, HI, NY, SC, VA, Gulf of Mex. marine benthic)

Marphysa undet. sp. or species (sCA, HI marine infauna)

Mastobranchus Eisig, 1887 - Capitellidae polychaete worms

Mastobranchus undescr. sp. (FL marine benthic)

Mastobranchus variabilis R.M. Ewing, 1984 (FL marine benthic)

Mediomastus Harmann, 1944 - Capitellidae polychaete worms

Mediomastus acutus Hartman, 1969 (CA marine infauna)

Mediomastus ambiseta (*Capitita a.* Hartman, 1947) (AL, BC, CA, FL, HI, LA, MA, NC, NY, SC, TX, WA marine infauna & burrowing deposit feeder; PQ Gulf of St. Lawrence sandy marine interstitial)

Mediomastus californiensis Hartmann, 1944 (AK, BC, CA, e,wFL, LA, NC, TX, WA marine infauna burrowing deposit feeder)

Mediomastus undet. sp. or species (FL, HI, RI, sCA marine infauna)

Megalomma Johansson, 1926 (= *Branchiomma* Kolliker, 1858) Sabellidae polychaete worms, Subfamily Sabellinae

Megalomma bioculatum Ehlers, 1887 (Gulf of Mex. marine infauna)

Megalomma heterops T.H. Perkins, 1984 (FL marine infauna)

Megalomma intermedium (Montagu, 1815) (HI marine infauna)

Megalomma pigmentum Reish, 1963 (e,wFL, sCA, WA marine infauna)

Megalomma splendida (*Pseudopotamilla s.* Moore, 1905; *Branchiomma burrardum* E. Berkeley, 1930) (FL, sCA, WA marine infauna)

Meiodorvillea Jumars, 1974 – Dorvilleidae polychaete worms

Meiodorvillea 2 undescr. species (Gulf of Mex. marine benthic)

Meiodorvillea undet. sp. (CA marine benthic)

Melinna Malmgren, 1866 - Ampharetidae polychaete worms, Subfamily Melinninae

Melinna cristata (Sars, 1851) (AK, BC, ME, NY, SC, WA, Gulf of Mex. marine infauna)

Melinna elisabethae McIntosh, 1885 (AK, BC, WA marine infauna)

Melinna heterodonta Moore, 1923 (sCA marine infauna)

Melinna maculata Webster (e,wFL, LA, VA marine benthic)

Melinna oculata Hartman, 1969 (AK, sCA, WA marine infauna)

Melinnexis Annenkova, 1931 – Ampharetidae polychaete worms

Melinnexis tentaculata (Treadwell, 1906) (HI marine infauna)

Mercierella enigmatica Fauvel, 1923 = *Ficopomatus e.*

Mesochaetopterus Potts, 1914 - Chaetopteridae polychaete worms

Mesochaetopterus capensis (*Ranzania* (?) c. McIntosh, 1885) (AL, w,eFL marine infauna)

Mesochaetopterus minutus Potts, 1914 (HI marine infauna)

Mesochaetopterus sagittarius (Claparede, 1870) (HI marine infauna)

Mesochaetopterus taylori Potts, 1914 (AK, CA, FL, BC, SC, TX, WA marine infauna)

Mesochaetopterus undet. sp. (sCA marine infauna)

Mesonerilla Remane, 1949 - Nerillidae polychaete worms

Mesonerilla fagei Swedmark, 1959 (HI marine infauna)

Metasychis W.J.H. Light, 1991 - Maldanidae polychaete worms, Subfamily Maldininae

Metasychis disparidentatus (*Asychis d.* Moore, 1904) (BC, sCA, WA marine infauna)

Mexamage Fauchald, 1972 - Ampharetidae polychaete worms, Subfamily Ampharetinae

Mexamage corrugata Fauchald, 1972 (CA marine infauna)

Mexamage longibranchiata (*Amage l.* Hartman, 1969) (CA marine infauna)

Mexieulepis Rioja, 1961 - Eulepethidae polychaete worms

Mexieulepis weberi (Horst, 1922) (Gulf of Mex. marine benthic)

Micromaldane Mesnil, 1897 - Maldanidae polychaete worms, Subfamily Nicomachinae

Micromaldane caudata or *Microclymene c.* (WA marine infauna)

Micromaldane ornithochaeta Mesnil, 1897 (BC marine benthic)

Micronephthys Friedrich, 1937 - Nephtyidae polychaete worms

Micronephthys minuta (The'el, 1879) (Gulf of Mexico marine infauna)

Micronereis Claparede, 1863 - Nereididae polychaete worms, Subfamily Notophycinae

Micronereis arenaceodonta Moore, 1903. (HI marine benthic)

Micronereis nanaimoensis Berkeley & Berkeley, 1953 (BC marine infauna)

Microphthalmus Mecznirow (=Metschinokow), 1865 - Hesionidae polychaete worms

Microphthalmus aberrans (Webster & Benedict 1885) (New England, WA marine interstitial)

Microphthalmus coustalini Fournier, 1991 (BC marine infauna)

Microphthalmus hamosus Westheide, 1982 (Gulf of Mex. marine infauna)

Microphthalmus hartmanae (FL marine infauna)

Microphthalmus hystrix Fournier, 1991 (BC, sCA, OR, WA marine infauna)

Microphthalmus listensis Westheide 1967 (NC marine infauna)

Microphthalmus undet. sp. or species (CA, WA marine beach interstitial)

Microphthalmus undescr. sp. or species (Gulf of Mex. marine beach interstitial)

Microphthalmus szcelkowi Mescznikov, 1865 (MA marine caves; FL, WA, Virginian marine infauna)

Micropodarke Okuda, 1938 - Hesionidae polychaete worms

Micropodarke dubia (*Kefersteinia d.* Hessle, 1925) (AK, BC, sCA, OR, WA marine infauna)

Microspio Mesnil, 1896 - Spionidae polychaete worms

Microspio granulata J.A. Blake & J.D. Kudenov, 1978 (HI marine infauna)

Microspio microcera (Dorsey, 1977) (sCA marine infauna)

Microspio pigmentata (*Spiophanes p.* Reish, 1959; *Nerinides p.* of Hartman, 1961) (AL, FL, LA, sCA, TX, WA marine infauna)

Microspio undet.sp. or species (BC, HI marine infauna)

Microspio spinosa J.A. Blake, 1996 (sCA marine infauna)

Monorchos Treadwell, 1926 - Sabellariidae polychaete worms

Monorchos varians Hartman & Fauchald, 1971 (HI marine infauna)

Monticellina Laubier, 1961 - Cirratulidae polychaete worms

Monticellina baptistae J.A. Blake, 1991 (MA marine infauna)

Monticellina cryptica J.A. Blake, 1996 (CA marine benthic)

Monticellina dorsobranchialis (Kirkegaard, 1959) (WA, Virginian marine infauna)

Monticellina luticastella (Jumars, 1975) (CA marine benthic)

Monticellina secunda (*Aphelochaeta s.* Banse & Hobson, 1968) (BC, CA marine benthic)

Monticellina serratseta (*Tharyx s.* Banse & Hobson, 1968) (BC, CA marine benthic)

Monticellina siblina J.A. Blake, 1996 (CA marine benthic)

Monticellina or *Aphelochaeta* undet. sp. (sCA marine infauna)

Monticellina tessellata (*Tharyx t.* Hartman, 1960) (BC, CA, WA marine infauna)

Mooreonuphis Fauchald, 1982 - Onuphidae polychaete worms, Subfamily Onuphinae

Mooreonuphis exigua (*Nothria e.* Shisko, 1981) (CA marine infauna)

Mooreonuphis litoralis (*Onuphis l.* Moore, 1911) (CA marine infauna)

Mooreonuphis nebulosa (*Onuphis n.* Moore, 1911) (CA marine infauna)

Mooreonuphis cf. *nebulosa* (*Onuphis n.* Moore, 1911) (wFL Gulf of Mex. marine infauna)

Mooreonuphis pallidula (Hartman, 1965) (Carolinian, Gulf of Mex. marine infauna)

Mooreonuphis segmentispadix (Shisko, 1981) (CA marine infauna)

Mooreonuphis stigmatis (*Onuphis s.* Treadwell, 1922) (BC, CA, OR?, WA marine infauna)

Mooresamytha S.J. Williams, 1987- Ampharetidae polychaete worms, Subfamily Ampharetinae

Mooresamytha bioculata (*Amphisamytha b.* Moore, 1906) (sCA, WA marine infauna)

Mugga Eliason, 1955 - Ampharetidae polychaete worms, Subfamily Ampharetinae
Mugga wahrbergi Eliason, 1955 (CA marine infauna)

Myrianida H. Milne Edwards, 1845 - Syllidae polychaete worms
Myrianida crassicirrata Hartmann-Schroeder, 1965 (HI marine infauna)
Myrianida undescr. sp. (Gulf of Mex. marine infauna)

Myriochele Malmgren, 1867 - Oweniidae polychaete worms
Myriochele gracilis Hartman, 1955 (CA marine infauna)
Myriochele pygidialis Hartman, 1960 (AK,BC marine infauna)

Myriochele gracilis Hartman, 1955 (CA, WA marine infauna)
Myriochele heeri Malmgren, 1867 (WA marine infauna)
Myriochele hiruensis Gibbs, 1971 (HI marine infauna)

Myriochele oculata Zachs, 1922 (wFL, LA, WA marine infauna)
Myriochele undet. sp. (sCA marine infauna)

Myriowenia Hartman, 1960 - Oweniidae polychaete worms
Myriowenia californiensis Hartman, 1960 (sCA marine infauna)

Myriowenia oculata Zaks, 1923 (Gulf of Mex. marine infauna)
Myriowenia undescr. sp. (Gulf of Mex. marine infauna)

Mysta Malmgren, 1865 - Phyllodocidae polychaete worms, Subfamily Eteoninae
Mysta barbata Malmgren, 1865 (*Eteone b.*) (BC, New England marine benthic)

Mystides Theel, 1879 - Phyllodocidae polychaete worms, Subfamily Eteoninae
Mystides borealis (The'el, 1879) (BC, Gulf of Mex. marine infauna)
Mystides undet. sp. (CA marine infauna)

Myxicola Koch in Renier, 1847 - Sabellidae polychaete worms
Myxicola aesthetica (Claparede, 1870) (BC marine infauna)

Myxicola infundibulum (*Terebella i.* Renier, 1804) (BC, sCA, ME, WA marine infauna)
Myxicola undet sp. (CA marine benthic)

Naiades delle Chiaje, 1830 – Alciopidae polychaete worms
Naiades cantrainii delle Chiaje, 1836 (HI marine benthic)

Naineris Blainville, 1828 - Orbiniidae polychaete worms, Subfamily Orbiniinae
Naineris bicornis Hartmann, 1951 (Gulf of Mex. marine infauna)

Naineris bicornis minuta Hartmann-Schroder, 1965 (HI marine infauna)
Naineris dendritica (*Anthostoma d.* Kinberg, 1867) (CA, BC, Gulf of Mex. marine infauna)

Naineris cf. *grubei* (Gravier, 1908) (CA, Gulf of Mex. marine benthic)

Naineris laevigata (Grube, 1855) (HI, Gulf of Mex. marine infauna)

Naineris quadricuspida (O. Fabricius, 1780) (BC, ME, WA marine infauna & NB, PQ Gulf of St. Lawrence sandy marine interstitial)

Naineris uncinata Hartman, 1957 (BC marine benthic)

Namalycastis Hartman, 1959 – Nereididae polychaete worms,

Namalycastis abiuma (Muller in Grube, 1871) (wFL marine infauna)

Neanthes Kinberg, 1866 - Nereidae polychaete worms, Subfamily Nereidinae

Neanthes acuminata Ehlers, 1868 (CA, FL, Gulf of Mex. marine infauna)

Neanthes arenaceodentata Moore, 1903 (Carolinian, Virginian marine infauna)

Neanthes brandti (Malgren, 1866) (BC marine benthic)

Neanthes limnicola Johnson, 1903 (BC, OR, WA marine benthic)

Neanthes micromma (Carolinian, wFL Gulf of Mex. marine infauna)

Neanthes pelagica Linnaeus (NJ marine benthic)

Neanthes succinea (*Nereis* s. Frey & Leuckart, 1847) (e,wFL, GA, HI (alien), LA, ME, MA, NJ, NC, SC, TX, VA, WA (alien?) marine infauna; Salton Sea benthic, CA)

Neanthes virens (*Nereis* v. Sars, 1835) (BC, CT, ME, NJ, WA marine benthic; NB, PQ Gulf of St. Lawrence sandy marine interstitial))

Nematonereis Schmarda, 1861 - Eunicidae polychaete worms

Nematonereis hebes Verrill, 1900 (wFL Gulf of Mex. marine infauna)

Nematonereis unicornis Schmarda, 1861 (HI marine benthic)

Neoamphitrite Hesse, 1917 - Terebellidae polychaete worms, Subfamily Artacaminae

Neoamphitrite edwardsi (Quatrefages, 1865) (BC, Gulf of Mex. marine benthic)

Neoamphitrite undet. sp. or species (Gulf of Mex. marine benthic)

Neoamphitrite undet. sp. or species (HI, WA marine benthic)

Neodexiospira Pillai, 1970 - Serpulidae polychaete worms

Neodexiospira foraminosa (Moore & Bush, 1904) (HI marine infauna)

Neodexiospira nipponica Okuda, 1934 (HI marine infauna)

Neodexiospira preacuta Vine, 1972 (HI marine infauna)

Neodexiospira pseudocorrugata (Bush, 1904) (HI marine infauna)

Neoheteromastus Hartman, 1960 - Capitellidae polychaete worms

Neoheteromastus lineus Hartman, 1960 (CA marine infauna)

Neomediomastus Hartman, 1969 - Capitellidae polychaete worms

Neomediomastus glabrus (Hartman, 1960) (CA marine infauna)

Neoleprea Hessle, 1917 - Terebellidae polychaete worms, Subfamily Artacaminae

Neoleprea japonica Hessle, 1917 (BC, CA, WA marine benthic)

Neoleprea 2 undescr. species (Gulf of Mex. marine benthic)

Neoleprea spiralis (Amphitrite Johnson, 1901) (BC, CA, WA marine benthic)

Neosabellaria D.W.Kirtley, 1994 - Sabellariidae Polychaete worms

Neosabellaria cementarium (*Sabellaria c.* Moore, 1906) (BC, sCA, WA marine infauna)

Nephtys Cuvier, 1817 - Nephtyidae polychaete worms

Nephtys assignis Hartman, 1950 (BC, CA, WA marine benthic)

Nephtys brachycephala Moore, 1903 (BC, WA marine benthic)

Nephtys bucera Ehlers, 1868 (MA, ME, Virginian (rare) & Carolinian marine infauna)

Nephtys caeca (Fabricius, 1780) (AK, BC, MA, ME, OR, WA marine infauna; Baffin Island (neCanada) marine infauna; (NB, PQ Gulf of St. Lawrence sandy marine interstitial)

Nephtys caecoides Hartman, 1938 (BC, OR, sCA, WA marine benthic)

Nephtys californiensis Hartman, 1938 (BC, OR, WA, CA marine benthic)_

Nephtys ciliata (Muller, 1776) (BC, ME, Baffin Island (neCanada), WA marine infauna)

Nephtys cornuta c. Berkeley & Berkeley, 1945 (AK, BC, sCA, WA marine infauna)

Nephtys cornuta franciscana Berkeley & Berkeley, 1945 (BC, sCA marine infauna)

Nephtys cryptomma D. Harper, 1986 (FL, VA marine infauna)

Nephtys discors (WA marine infauna)

Nephtys ferruginea Hartman, 1940 (AK, BC, sCA, WA marine infauna)

Nephtys glabra Hartman, 1950 (WA marine infauna)

Nephtys incisa Malmgren, 1865 (MA, NJ, NY, RI, SC, VA, Gulf of Mex. common marine infauna)

Nephtys cf. hombergii Savigny, 1818 (wFL Gulf of Mex. marine infauna)

Nephtys longosetosa Oersted, 1843 (BC, WA marine benthic)

Nephtys magellanica Augener, 1912) (VA marine infauna)

Nephtys picta (Ehlers) (GA, LA, NJ, SC, VA, Gulf of Mex. marine infauna)

Nephtys punctata Hartman, 1938 (AK, CA, WA marine infauna)

Nephtys rickettsi Hartman, 1938 (BC marine benthic)

Nephtys signifera Hilbig, 1992 (WA marine infauna)

Nephtys simoni Perkins, 1980 (BC, Gulf of Mex. marine benthic)

Nephtys squamosa Ehlers, 1887 (Gulf of Mex. marine benthic)

Nereimyra Blaiville, 1828 – Hesionidae polychaete worms

Nereimyra undescr. sp. (Gulf of Mex. marine infauna)

Nereiphylla Pleijel, 1991 - Phyllodocidae polychaete worms, Subfamily Notophyllinae

Nereiphylla castanea (*Carobia* c. Marenzeller, 1879; *Phyllodoce* (*Genetyllis*) c. Berkeley & Berkeley, 1948; *G.c.* Bergstrom, 1914) (BC, sCA, Carolinian, WA marine infauna)

Nereiphylla fragilis (Carolinian, Virginian, Gulf of Mex. marine infauna)

Nereis Linnaeus, 1758 - Nereididae polychaete worms, Subfamily Nereidinae

Nereis abbreviata Holly, 1935 (HI (alien) marine infauna)

Nereis arenaceodonta Moore (= *N. caudata*) (NJ, VA marine benthic)

Nereis (*Neanthes*) *brandti* (Malmgren, 1866) (OR marine benthic)

Nereis caudata (MA marine sandy infauna)

Nereis corallina Kinberg, 1866 (HI (alien) marine infauna)

Nereis cordata (MA marine intertidal benthic)

Nereis diversicolor (Muller, 1766) (ME marine infauna)

Nereis eakini Hartman, 1936 (BC marine infauna)

Nereis falsa Quatrefages, 1865 (e,wFL, LA, NC marine infauna)

Nereis grayi Pettibone, 1956 (Gulf of Mex. marine infauna)

Nereis grubei (Kinberg, 1866) (CA, BC marine infauna)

Nereis hawaiiensis Holly, 1935 (HI marine infauna)

Nereis jacksoni Kinberg, 1866 (HI marine infauna)

Nereis lamellosa Ehlers, 1868 (FL, Gulf of Mex. marine infauna)

Nereis latescens Chamberlin, 1919 (sCA marine infauna)

Nereis (*Neanthes*) *limnicola* Johnson, 1903 (WA marine infauna)

Nereis mariae Holly, 1935 (HI marine infauna)

Nereis myersi Holly, 1935 (HI marine infauna)

Nereis neoneanthes Hartman, 1948 (BC marine infauna)

Nereis pelagica Linne=, 1761 (AK, BC, MA, ME marine sandy infauna; NB, PQ Gulf of St. Lawrence, Gulf of Mex. sandy marine interstitial)

Nereis procera Ehlers, 1868 (AK, BC, sCA, WA marine infauna)

Nereis riisei (Virginian (rare), Carolinian, Gulf of Mex. marine infauna)

Nereis succinea = *Neanthes* s.

Nereis unica Holly, 1935 (HI marine infauna)

Nereis vexillosa Grube, 1851 (BC, CA, WA marine infauna)

Nereis zonata (AK marine infauna)

Nereis virens = *Neanthes s.*

Nereis waikikiensis Holly, 1935 (HI marine infauna)

Nereis zonata Malmgren (AK, Baffin Island (neCanada), CA, WA marine infauna)

Nereis virens = *Neanthes v.*

Nerilla O. Schmidt, 1848 - Nerillidae polychaete worms

Nerilla antennata O. Schmidt, 1848 (interstitial marine in Europe & Atlantic and Pacific NA (BC, HI, CA, WA))

Nerilla digitata Wiser, 1957 (BC marine infauna)

Nerilla inopinata Gray, 1968 (BC marine infauna)

Nerinides = *Pseudomalacoceros*

Nicolea Malmgren, 1866 - Terebellidae polychaete worms, Subfamily Artacaminae

Nicolea venustula (Montagu, 1818) (PQ Gulf of St. Lawrence sandy marine interstitial; ME marine infauna)

Nicolea zostericola (Oersted, 1844 in Grube, 1860) (BC, WA marine infauna)

Nicomache Malmgren, 1865 - Maldanidae polychaete worms, Subfamily Nicomachinae

Nicomache lumbricalis (*Sabella l.* O. Fabricius, 1780 (BC, ME, WA marine infauna; PQ Gulf of St. Lawrence sandy marine interstitial))

Nicomache personata Johnson, 1901 (BC, CA, WA marine infauna)

Nicon Kinberg, 1866 - Nereididae polychaete worms, Subfamily Nereidinae

Nicon moniloceras (*Leptoneris glauca m.* Hartman, 1940) (BC?, CA, Gulf of Mex. marine benthic)

Nidificaria - Serpulidae polychaete worms

Nidificaria dalestraughanae (Vine, 1972) (HI marine infauna)

Ninoe Kinberg, 1865 - Lumbrineridae polychaete worms

Ninoe gemmea Moore, 1911 (AK, CA, WA marine infauna)

Ninoe nigripes (MA, NY marine infauna)

Ninoe palmata Moore, 1903 (sCA, WA marine infauna)

Ninoe tridentata B. Hilbig, 1995 (sCA marine infauna)

Nothria Malmgren, 1866 - Onuphidae polychaete worms, Subfamily Hyalinoeciinae

Nothria britannica (McIntosh, 1903) (BC? marine infauna)

Nothria elegans and iridescens = *Onuphis e., i.*

Nothria hawaiiensis Pettibone 1970) (HI marine infauna)

Nothria hawaiiensis Pettibone 1970) (HI marine infauna)

Nothria macrobranchiata McIntosh, 1885 (HI marine infauna)

Nothria occidentalis Fauchald, 1968 (WA marine infauna)

Notocirrus Schmarda, 1861 - Oeononidae polychaete worms

Notocirrus californiensis Hartman, 1944 (BC, sCA, WA marine infauna)

Notocirrus spiniferus (Moore) (SC, VA marine infauna)

Notocirrus undescr. sp. (Gulf of Mex. marine infauna)

Notomastus Sars, 1850 - Capitellidae polychaete worms (tube dwelling)

Notomastus americanus J.H. Day, 1973 (sCA, e,wFL, TX estuary marine benthic)

Notomastus (Clistomastus) anoculatus Hartman-Schroder, 1965 (HI marine benthic)

Notomastus daueri Ewing, 1982 (FL, LA, TX marine benthic)

Notomastus giganteus Moore, 1906 (BC, WA marine infauna)

Notomastus (Clistomastus) hemipodus Hartman, 1947 (e,wFL, TX marine infauna)

Notomastus latericeus M. Sars, 1850 (AK, CA, e,wFL, NJ, NY, SC, TX, VA, WA marine benthic)

Notomastus lineatus Claparede 1870 (sCA, FL, WA marine infauna)

Notomastus lobatus Hartman, 1947 (LA, TX marine infauna)

Notomastus magnus Hartman, 1947 (sCA marine infauna)

Notomastus tenuis Moore, 1909 (AK, BC, CA, e,wFL (cf. *N.t.*), TX?, WA marine benthic)

Notomastus variegatus Berkeley & Berkeley, 1950 (BC, WA marine infauna)

Notophyllum Oersted, 1843 - Phyllodocidae polychaete worms, Subfamily Notophyllinae

Notophyllum imbricatum Moore, 1905 (BC marine infauna)

Notophyllum tectum (WA marine infauna)

Notoproctus Arwidsson, 1907 - Maldanidae polychaete worms, Subfamily Lumbriclymeninae

Notoproctus pacificus (Lumbriclymene (N.) p. Moore, 1906) (AK, BC, sCA, WA marine infauna)

Notopygos Grube, 1855 – Amphinomidae polychaete worms

Notopygos albiseta Holly, 1939 (HI marine infauna)

Notopygos gergoryi Holly, 1939 (HI marine infauna)

Notopygos labiatus McIntosh, 1885 (HI marine infauna)

Notopygos megalops McIntosh, 1885 (HI marine infauna)

Novafabricia – Sabellidae polychaete worms

Novafabrici undet. sp. (CA marine benthic)

Novaquesta - Hobson, 1970 - Questidae polychaete worms

Novaquesta trifurcata Hobson, 1970 (Gulf of Mex. marine benthic)

Novobranchus Berkeley & Berkeley, 1954 - Trichobranchidae polychaete worms

Novobranchus pacificus Berkeley & Berkeley, 1954 (BC marine benthic)

Odontosyllis Claparede, 1863 - Syllidae polychaete worms, Subfamily Eusyllinae

Odontosyllis ctenostoma Claparede, 1866 (HI marine benthic)

Odontosyllis enopla Verrill, 1900 (Carolinian, FL Gulf of Mex. marine infauna)

Odontosyllis fragilis J.D. Kudenov & L.H. Harris, 1995 (CA estuary marine benthic)

Odontosyllis fulgurans Claparede, 1863 (FL, ME, VA estuary marine benthic)

Odontosyllis fulgurans japonica Imajima (BC marine benthic)

Odontosyllis gibba (New England marine benthic)

Odontosyllis longigulata T.H. Perkins, 1981 (FL estuary marine benthic)

Odontosyllis parva Berkeley, 1923 (BC marine infauna)

Odontosyllis octodentata Treadwell, 1917 (Gulf of Mex. marine infauna)

Odontosyllis phosphorea Moore, 1909 (BC, WA, OR, sCA marine infauna)

Oenone Savigny, 1818 - Oeononidae polychaete worms (once put in Lysaretidae)

Oenone fulgida (Savigny, 1818) (HI marine infauna)

Onuphis Audouin & Milne-Edwards, 1833 - Onuphidae polychaete worms, Subfamily Onuphinae

Onuphis affinis Hilbig, 1995 (SC marine infauna)

Onuphis conchylega M. Sars, 1835 (Baffin Island (neCanada), New England marine infauna)

Onuphis elegans (AK marine infauna)

Onuphis eremita Audouin & Milne-Edwards, 1883 (LA, SC marine infauna)

Onuphis eremita oculata Hartman, 1951 (Gulf of Mex. marine infauna)

Onuphis eremita parva Berkeley & Berkeley, 1941 (CA marine infauna)

Onuphis elegans (*Northria e.* Johnson, 1901) (BC, CA, WA marine infauna)

Onuphis geophiliformis (*Northria e.* Moore, 1903) (BC, CA, WA marine infauna)

Onuphis holobranchiatta Marenzeller, 1879 (HI marine infauna)

Onuphis iridescent (*Northria i.* Johnson, 1901) (AK, BC, sCA, WA marine infauna)

Onuphis jenneri Gardiner, 1976 (SC marine infauna)

Onuphis magna = *Americonuphis magna*

Onuphis microcephala Hartman, 1944 (FL, GA, SC marine infauna)

Onuphis multiannulata Shisko, 1981 (CA marine infauna)

Onuphis opalina (New England marine infauna)

Onuphis pallida (*Nothria p.* More, 1911) (CA marine infauna)

Onuphis quadricuspis (New England marine infauna)

Onuphis simoni Santos, Day & Rice (FL marine infauna)

Onuphis undet. sp. (NY marine infauna)

Ophelia Savigny, 1818 - Ophelidae polychaete worms (tube dwelling), Subfamily Opheliinae

Ophelia cf. *acuminata* Oersted, 1843 (Gulf of Mex. marine benthic)

Ophelia assimilis (Treadwell, 1914) (OR marine benthic)

Ophelia bicornis Savigny, 1818 (ME marine benthic)

Ophelia cylindricaudata (Hanese, 1874) (Gulf of Mex. marine benthic)

Ophelia denticulata Verrill (ME, NC, Gulf of Mex. marine infauna burrower)

Ophelia limacina (Rathke, 1843) (BC, WA marine infauna)

Ophelia pulchella Tebble, 1953 (sCA marine infauna)

Ophelina Oersted, 1843 - Ophelidae polychaete worms (tube dwelling), Subfamily Ophelininae

Ophelina acuminata Oersted, 1843 (*Ammotrypane aulogaster* Rathke, 1843) (AK, BC, sCA, WA marine infauna)

Ophelina aulogaster Rathke, 1843 (AK, ME marine infauna)

Ophelina breviata (Ehlers, 1913) (AK, WA marine infauna)

Ophelina undet. sp. (HI marine infauna)

Ophiodromus Sars, 1861 - Hesionidae polychaete worms

Ophiodromus pugettensis (*Podarke p.* Johnson, 1901) (AK, BC, sCA, HI, OR, WA marine infauna)

Ophiodromus undescr. sp. (Gulf of Mex. marine infauna)

Ophioglycera Verrill, 1885 - Goniadidae polychaete worms

Ophioglycera gigantea Verrill, 1885 (NJ, New England marine benthic)

Ophioglycera undescr. sp. (wFl Gulf of Mex. marine infauna)

Ophryotrocha Claparede & Mecznirow, 1869 Iphitimidae polychaete worms (once in Dorvilleidae)

Ophryotrocha puerilis Claparede & Mecznirow, 1869 (FL marine benthic)

Ophryotrocha undescr. sp. (Gulf of Mex. marine infauna)

Ophryotrocha undet. sp. or species (sCA, HI, WA marine infauna)

Ophryotrocha undescr. sp. (wFL Gulf of Mex. infauna)

Ophryotrocha vivipara Banse, 1990 (BC marine infauna)

Opisthodonta Langerhans, 1879 - Syllidae polychaete worms, Subfamily Eusyllinae

Opisthodonta mitchelli J.D. Kudenov & L.H. Harris, 1995 (CA estuary marine benthic)

Opisthosyllis Langerhans, 1879 - Syllidae polychaete worms

Opisthosyllis brunnea Langerhans, 1879 (HI marine benthic)

Opisthosyllis corallicola Hartmann-Schroder, 1965 (HI marine benthic)

Opisthosyllis papillosa Hartmann-Schroder, 1960 (HI marine benthic)

Orbinia Quatrefages, 1865 - Orbiniidae polychaete worms

Orbinia americana Day, 1973 (Gulf of Mex. marine infauna)

Orbinia felix (AK marine infauna)

Orbinia johnsoni (*Aricia* j. Moore, 1909) (CA marine benthic)

Orbinia michaelsoni (New England marine benthic)

Orbinia norvegica (Sars) (NJ, New England marine benthic)

Orbinia (*Aricia*) ***ornata*** (ME, NC marine benthic)

Orbinia riseri (Pettibone, 1957) (wFL Gulf of Mex. marine infauna)

Orbinia sertulata (Savigny, 1820) (New England marine benthic)

Orbinia undet sp. (WA marine infauna)

Orbiniella Day, 1954 - Orbiniidae polychaete worms, Subfamily Protoariciinae

Orbiniella nuda Hobson (BC marine infauna)

Oriopsis Caullery & Mesnil, 1896 - Sabellidae polychaete worms, Subfamily Sabellinae

Oriopsis gracilis Hartman, 1969 (BC marine benthic)

Oriopsis minuta (Berkeley & Berkeley, 1932) (BC marine benthic)

Otopsis Ditlevsen, 1917 - Pilargidae polychaete worms, Subfamily Sigambrinae

Otopsis longipes Ditlevsen, 1917 (BC marine benthic)

Owenia delle Chiaje, 1841 - Oweniidae polychaete worms

Owenia collaris Hartman, 1955 = *O. fusiformis*

Owenia fusiformis Delle Chiaje, 1841 (*O. collaris* Hartman, 1969; *O. fusiformis collaris* Hartman, 1955) (AK, BC, CA, LA, NY, SC, Virginian, WA marine infauna)

Paleanotus Schmarda, 1861 - Phyllodocidae polychaete worms (also put in Palmyridae & Chrysopetalidae)

Paleanotus bellis (*Heteropale b.* Johnson, 1897) (AK, BC, sCA, WA marine infauna)

Paleanotus heteroseta Hartman, 1945 (SC, VA, Gulf of Mex. marine benthic)
Paleanotus undet. sp. (HI marine infauna)

Palola Gray, 1847 - Eunicidae polychaete worms
Palola siciliensis (Grube, 1840) (HI marine benthic)

Palpithitima Orensanz, 1990- Iphitimidae polychaete worms
Palpithitima undet. sp. (BC marine benthic)

Panthalis Kinberg, 1855 – Acoetidae (=Polyodontidae) polychaete worms
Panthalis mutilata (Treadwell, 1940) (HI marine infauna)

Paradexiospira Caullery & Mesnil, 1897 - Spirorbidae polychaete worms, Subfamily Circeinae
Paradexiospira violacea (*Spirorbis* (*P.*) v. Levinsen, 1883) (BC marine infauna)
Paradexiospira vitrea (*Spirorbis* (*Spirorbides*) v. Fabricius, 1780) (BC marine infauna)

Paradiopatra Ehlers, 1887 - Onuphidae polychaete worms
Paradiopatra parva (*Onuphis* p. Moore, 1911) (sCA marine infauna)

Paradoneis Hartman, 1965 - Paraonidae polychaete worms
Paradoneis eliasoni Mackie, 1991 (sCA marine infauna)

Paradoneis lyra (*Paranois l.* Southern, 1914) (BC, CA, WA marine infauna)
Paradoneis spinifera (*Paraonella s.* Hobson, 1972) (BC, sCA, WA marine infauna)

Paraehesione Pettibone, 1956 - Hesionidae polychaete worms
Paraehesione luteola (Webster) (Virginian (rare), e,wFL, SC, New England marine infauna)

Paralacydonia Fauvel, 1913 - Lacydoniidae polychaete worms
Paralacydonia paradoxa Fauvel, 1913 (New England marine benthic)
Paralacydonia undescr. sp. (Gulf of Mex. marine benthic)

Paralepidonotus Jorst, 1915 - Terebellidae polychaete worms
Paralepidonotus ampulliferus (Grube, 1878) (HI marine infauna)

Paralysippe S.J. Williams, 1987 - Ampharetidae polychaete worms, Subfamily Ampharetinae
Paralysippe scutata (Moore, 1923) (CA marine infauna)

Paramage Caullery, 1944 - Ampharetidae polychaete worms
Paramage scutata (*Amage s.* Moore, 1923) (sCA marine infauna)

Paramarphysa Ehlers, 1887 - Eunicidae polychaete worms
Paramarphysa undet. sp. (HI marine benthic)

Paramphinome Sars, 1869 - Amphinomidae polychaete worms
Paramphinome pulchella (Sars) (FL, New England marine benthic)

Paramphinode undescr. species (FL, Gulf of Mex. (2 species) marine benthic)

Paranaitis Southern, 1914 - Phyllodocidae polychaete worms, Subfamily Phyllodocinae

Paranaitis gardineri T.H. Perkins, 1984 (FL marine infauna)

Paranaitis kosteriensis (Malmgren) (New England marine infauna)

Paranaitis polynoides (*Anaitis p.* Moore, 1909) (sCA, wFL Gulf of Mexico, WA marine infauna)

Paranaitis speciosa (Webster, 1880) (FL, Gulf of Mex., NJ, VA, New England marine benthic)

Paranaitis wahlbergi (WA marine infauna)

Parandalia Emerson & Fauchald, 1971- Pilargidae polychaete worms

Parandalia americana (LA marine infauna)

Parandalia fauveli (*Loandalia f.* Berkeley & Berkeley, 1941) (AK, LA, WA marine infauna)

Parandalia ocularis Emerson & Fauchald, 1971 (CA, TX marine infauna)

Parandalia undescr. sp. (Gulf of Mex. marine infauna)

Parandalia undet. sp. (sCA marine infauna)

Paraninoe Levenstein, 1977 - Lumbrineridae polychaete worms

Paraninoe fusca (*Ninoe f.* Moore, 1911) (CA marine benthic)

Paranothria Kinberg, 1855 – Onuphidae polychaete worms

Paranothria macrobranchiata (HI marine infauna)

Paraonella Strelzov, 1973 - Paraonidae polychaete worms

Paraonella platybranchia (Hartman, 1961) (BC, CA, OR, WA marine infauna)

Paraonella spinifera = *Paradoneis s.*

Paraonis Cerruti, 1909 - Paraonidae polychaete worms

Paraonis fulgens (Levensen, 1884) (e,wFL, LA, SC, Virginian, New England marine infauna)

Paraonis gracilis (Tauber, 1879) (CA, New England marine infauna)

Paraonis lyra Southern (New England marine infauna)

Paraonis pygoenigmatica Jones, 1968 (Gulf of Mex. marine infauna)

Paraonis undet. sp. (NY marine infauna)

Parasphaerosyllis Monro, 1937 - Syllidae polychaete worms

Parasphaerosyllis indica Monro, 1937 (HI marine benthic)

Parapionosyllis Fauvel, 1923 – Syllidae polychaete worms

Parapionosyllis gestans (ew England marine infauna)

Parapionosyllis longicirrata (Webster & Benedict, 1884) (Carolinian, Virginian, wFL Gulf of Mex., New England marine infauna)

Parapionosyllis minuta (new England marine infauna)

Parapionosyllis undescr. sp. (Gulf of Mex. marine infauna)

Paraprionospio Caullery, 1914 - Spionidae polychaete worms

Paraprionospio pinnata (*Prionospio p.* Ehlers, 1901; *Paraprionospio tribranchiata* E. Berkeley, 1927; *Prionospio alata* Moore, 1923) (AL, BC, sCA, FL, LA, MS, SC, TX, VA, WA marine infauna)

Paraprionospio pygmaea (Hartman, 1961) (CA, Virginian marine infauna)

Paraprionospio undescr. sp. (FL Gulf of Mex. marine infauna)

Pareurythoe Gustafson, 1930 - Amphinomidae polychaete worms

Pareurythoe americana Hartman, 1951 (FL marine benthic)

Pareurythoe californica (*Eurythoe californica* Johnson, 1897)(CA marine benthic)

Parheteromastus Monro, 1937 - Capitellidae polychaete worms

Parheteromastus undet. sp. (HI marine infauna)

Parinereis Kinberg, 1866 - Nereididae polychaete worms, Subfamily Nereidinae

Parinereis cultifera floridana Iwajima, 1972 (HI marine infauna)

Parinereis curvata Holly, 1935 (HI marine infauna)

Parinereis helleri Grube, 1878 (HI marine infauna)

Parinereis monterea (Chamberlin, 1918) (BC marine benthic)

Parinereis nigropunctata (Horst, 1889) (HI marine benthic)

Parinereis undet. sp. (HI marine benthic)

Parophryotrocha Hartmann-Schroder, 1971 - Dorvilleidae polychaete worms

Parophryotrocha brevicapititis Hilbig, 1995 (CA marine infauna)

Parougia Wolf, 1986 - Dorvilleidae polychaete worms

Parougia batia (Jumars, 1974) (= *Dorvillea c.*) (sCA marine infauna)

Parougia brevipalpa Hilbig & Ruff, 1990 (sCA marine infauna)

Parougia caeca (Webster & Benedict, 1884) (= *Dorvillea c.*) (Virginian (rare), BC, sCA, WA marine infauna)

Pectinaria Malmgren, 1866 (= *Cystenides*) Pectinariidae polychaete worms (also put in Amphictenidae)

Pectinaria californiensis Hartman, 1941 (CA, BC, WA marine infauna)

Pectinaria gouldii (Verrill, 1873) (e,wFL, MA, ME, NJ, NY, RI, TX, VA marine benthic)

Pectinaria granulata (AK, WA marine infauna)

Pectinaria regalis (Verrill, 1901)(WA marine infauna)

Peisidice = *Pholoides*

Peresiella Harmelin, 1968 - - Capitellidae polychaete worms

Peresiella undescr. sp. (FL marine infauna)

Perolepis – Polynoidae polychaete worms

Perolepis undet. sp. (Gulf of Mex. marine infauna)

Petaloclymene K.D. Green, 1997 – Maldanidae polychaete worms

Petaloclymene pacifica Green, 1997 (CA marine infauna)

Petaloproctus Quatrefages, 1865 - Maldanidae polychaete worms, Subfamily Nicomachinae

Petaloproctus borealis = *P. tenuis* b.

Petaloproctus neoborealis Hartman, 1969 (CA marine benthic)

Petaloproctus socialis Anderws, 1891 (NC marine benthic)

Petaloproctus undescr.? sp. (e,wFL marine infauna)

Petaloproctus undet sp. or species (sCA, wFL Gulf of Mex. marine infauna)

Petaloproctus tenuis (*Maldane t.* Theel, 1879) (BC, WA marine infauna)

Petaloproctus tenuis borealis (*P.b.* Arwidsson, 1907) (BC, CA, WA marine infauna)

Petitita Siewing, 1955 - Syllidae polychaete worms

Petitita amphophthalama Siewing, 1955(CA marine beach interstitial)

Pettiboneia Orensanz, 1973 - Dorvilleidae polychaete worms

Pettiboneia duofurca P.S. Wolf, 1987 (Carolinian, wFL Gulf of Mex. marine infauna)

Pettiboneia pugettensis (Armstrong & Jumars, 1978) (BC, WA marine infauna)

Pettiboneia 3 undesr. species (Gulf of Mex. marine benthic)

Pettiboneia undet. sp. (CA marine benthic)

Phalacrostemma Marenzeller, 1895 - Sabellidae polychaete worms

Phalacrostemma setosa (Treadwell, 1906) (HI marine infauna)

Pherecardia Horst, 1886 - Amphinomidae polychaete worms

Pherecardia striata (Kinberg, 1857) (HI marine benthic)

Pherusa Oken, 1807 (= *Trophonia*) Flabelligeridae polychaete worms

Pherusa affinis (= *Trophonia a.*) (ME, NY, Virginian marine infauna)

Pherusa capulata (*Trophonia c.* Moore, 1909) (sCA marine infauna)

Pherusa havaica (Kinberg, 1867) (HI marine infauna)

Pherusa inflata (*Trophonia i.* Treadwell, 1914) (sCA marine infauna)

Pherusa negligens (Berkeley & Berkeley, 1950) (BC marine infauna)

Pherusa papillata (Johnson, 1901) (sCA marine infauna)

Pherusa neopapillata Hartman, 1961 (sCA marine infauna)

Pherusa plumosa (*Stylarioides p.* O.F. Muller, 1776) (AK, BC, NJ, WA marine infauna)

Pholoe Johnston, 1839 - Pholoidae polychaete worms

Pholoe asperus (*Peisidice aspera* Johnson, 1897; *Paraeupholoe fimbriata* Hartmann-Schroder, 1962; *Paraeupholoe tuberculata* Hartmann-Schroder, 1965) (sCA marine infauna)

Pholoe glabra Hartman, 1961 (sCA, SC marine infauna)

Pholoe inflata (SC marine infauna)

Pholoe minuta (Fabricius, 1780) (AK, Baffin Island (neCanada), CA, NY, New England, Gulf of St. Lawrence (NB, PQ), WA marine infauna)

Pholoides Pruvot, 1895 - Pholoidae polychaete worms

Pholoides bermudensis (Hartman & Fauchald, 1971) (Gulf of Mex. marine benthic)

Pholoides asperus (*Peisidice aspera* Johnson, 1897) (BC, sCA, AK, WA marine infauna)

Phragmatopoma Moerch, 1863 - Sabellariidae polychaete worms

Phragmatopoma californica (*Sabellaria c.* Fewkes, 1889) (CA marine infauna)

Phragmatopoma moerchi Kinberg, 1867 (HI marine infauna)

Phylo Kinberg, 1866 – Orbiniidae polychaete worms

Phylo felix Kinberg, 1866 (WA, Gulf of Mex. marine infauna)

Phyllochaetopterus Grube, 1863 - Chaetopteridae polychaete worms

Phyllochaetopterus claparedii McIntosh, 1885 (BC, WA marine infauna)

Phyllochaetopterus undet. sp. (HI marine infauna)

Phyllochaetopterus limicolus Hartman, 1960 (sCA marine infauna)

Phyllochaetopterus prolifica Potts, 1914 (BC, sCA, WA marine infauna)

Phyllochaetopterus socialis (Claparede, 1870) (HI marine benthic)

Phyllochaetopterus verrilli Treadwell, 1943 (HI marine benthic)

Phyllodoce Savigny, 1818 - Phyllodocidae polychaete worms, Subfamily Phyllodocinae

Phyllodoce arenae (Webster, 1879) (FL, LA, MA, NJ, SC, Gulf of Mex., VA marine benthic; PQ Gulf of St. Lawrence, New England sandy marine interstitial)

Phyllodoce castanea (Marenzeller) (FL marine benthic)

Phyllodoce cuspidata (*P. (Anaitides) c.* McCammon & Montagne, 1979) (sCA, WA marine infauna)

Phyllodoce badia Malmgren, 1867 (New England marine benthic)

Phyllodoce citrina Malmgren, 1865 (BC marine infauna)

Phyllodoce fragilis Webster (FL marine benthic)

Phyllodoce (Anaitides) groelandica Oersted, 1842 (BC, Baffin Island (neCanada), CA, MA, ME, SC, WA marine infauna)

Phyllodoce (Aponaitides) hartmanae Blake & Walton, 1977 (AK, BC, CA, WA marine infauna)

Phyllodoce (P.) hiatti Hartman, 1966) (HI marine infauna)

Phyllodoce kosteriensis = *Paranaitis kosteriensis*

Phyllodoce laminosa Lamarck or Savigny, 1818 (New England marine benthic)

Phyllodoce (Anaitides) longipes (Anaitides l. Kinberg, 1866) (BC, CA, FL, WA marine infauna)

Phyllodoce (Anaitides) maculata (Linnaeus, 1767) (BC, NJ, WA, New England, Gulf of St. Lawrence (PQ) marine infauna)

Phyllodoce (Anaitides) madeirensis (Langerhans, 1880) (HI marine infauna)

Phyllodoce (Anaitides) medipapillata Moore, 1909 (BC, CA, OR?, WA marine infauna)

Phyllodoce (Anaitides) mucosa Oersted, 1843 (Carolinian, WA, New England marine infauna)

Phyllodoce multiseriata Rioja, 1941 (BC, CA, WA marine infauna)

Phyllodoce mucosa Oersted = *Anaitides m.*

Phyllodoce (Anaitides) madeirensis (Langerhans, 1880) (HI marine infauna)

Phyllodoce panamensis (SC marine infauna)

Phyllodoce (Anaitides) papillosa (WA marine infauna)

Phyllodoce pettiboneae J. A. Blake, 1988 (WA marine infauna)

Phyllodoce parva (Hartman-Schroder, 1965) (HI marine infauna)

Phyllodoce (P.) tenerai Grube, 1878 (HI marine infauna)

Phyllodoce undet. species (HI marine benthic)

Phyllodoce williamsii (Hartman, 1936) (AK, CA, BC, WA marine infauna)

Phylo Kinberg, 1866 - Orbiniidae polychaete worms, Subfamily Orbiniinae

Phylo felix Kinberg, 1866 (BC, WA, CA, New England marine benthic)

Phylo nudus (New England marine benthic)

Phylo ornatus (New England marine benthic)

Pilargis Saint-Joseph, 1899 - Pilargidae polychaete worms

Pilargis berkeleyae Monro, 1933 (= *P. berkeleyi* Monro, 1933) (BC, sCA, Gulf of Mex. marine infauna)

Pilargis maculata (AK, WA marine infauna)

Pileolaria Claparede, 1868 - Spirorbidae polychaete worms, Subfamily Pileolariinae (also put in Serpulidae)

Pileolaria (*P.*) *berkeleyana* (Rioja, 1942) (BC marine infauna)

Pileolaria *dalestraughanae* Vine, 1972 (= *Spirorbis* (*P.*) *langerhansi*) (BC marine infauna)

Pileolaria (*Simplicaria*) *potswaldi* Knight-Jones, 1978 (BC marine infauna)

Pileolaria *militaris* (Claparede, 1868) (HI marine infauna)

Pileolaria *pseudoclavus* Vine, 1972 (HI marine infauna)

Pileolaria *semimilitaris* Vine, 1972 (HI marine infauna)

Pionosyllis Malmgren, 1867 - Syllidae polychaete worms, Subfamily Eusyllinae

Pionosyllis *articulata* Kudenov & Harris, 1995 (CA marine infauna)

Pionosyllis *gesae* T.H. Perkins, 1981 (FL, Gulf of Mex. marine benthic)

Pionosyllis *gigantea* Moore, 1908. (BC, WA marine infauna)

Pionosyllis *magnifica* Moore, 1906. (CA marine infauna)

Pionosyllis undet. sp. or species (HI, sCA marine infauna)

Pionosyllis *uraga* Imagina, 1908 (BC, CA, OR?, WA marine infauna)

Pionosyllis *weismanni* Longerhans, 1879 (Gulf of Mex.marine infauna)

Piromis Kinberg, 1867 - Flabelligeridae polychaete worms

Piromis *eruca* (Claparede, 1869) (BC, SC marine benthic)

Piromis *hospitis* (Fauchald, 1972) (BC, SC marine benthic)

Piromis *roberti* Kinberg, 1867 (e,wFL, LA, Virginian marine infauna)

Pisione Grube, 1857 - Pisionidae polychaete worms

Pisione *africana* Day, 1963 (HI marine infauna)

Pisione *remota* (*Praegeria* r. Southern, 1914) (CA, FL, Gulf of Mex. WA marine beach interstitial, psammonbiotic)

Pisionidens Aiyar & Alikunhi, 1943 - Pisionidae polychaete worms

Pisionidens *indica* (Aiyar & Alikunhi, 1940) (HI marine infauna)

Pista Malmgren, 1866 - Terebellidae polychaete worms, Subfamily Artacaminae

Pista *alata* Hartman, 1969 (sCA marine infauna)

Pista *bansei* Saphronova, 1988 (AK, BC, WA marine infauna)

Pista *brevibranchiata* Moore, 1923 (BC, WA marine infauna)

Pista *cristata* (O.F. Muller, 1776) (AK, BC, FL, NJ, Gulf of Mex. marine benthic)

Pista *dibranchis* Gibbs, 1971 (HI marine infauna)

Pista disjuncta Hartman, 1969 (*P. fasciata* of authors SCB not (Grube, 1870) (sCA, WA, Gulf of Mex. marine infauna)

Pista elongata Moore, 1909 (*P. maculata* Marenzeller, 1884; *P. marenzelleri* Hessle, 1917) (BC, CA, WA marine infauna)

@*Pista eschrichti* (AK marine infauna)

Pista estevanica (Berkeley & Berkeley, 1942) (BC, WA marine infauna)

Pista expansa (Treadwell, 1906) (HI marine infauna)

Pista fasciata Hartman, 1969 = *P. disjuncta*

Pista moorei Berkeley & Berkeley, 1942 (BC, sCA, WA marine infauna)

Pista pacifica (Berkeley & Berkeley, 1942) (BC, WA marine infauna)

Pista palmata (Verrill, 1873) (FL, NJ, NY, SC, Gulf of Mex. marine benthic)

@*Pista paracrista* (WA marine infauna)

Pista quadrilobata Augenir, 1918 (Carolinian, LA, e,wFL marine infauna)

Pista wui Saphronova, 1988 (AK, CA, BC, WA marine infauna)

Placostegus Philippi, 1844 – Serpulidae polychaete worms

Placostegus californicus Hartman, 1969 (CA marine infauna)

Plakosyllis Hartmann-Schroeder, 1956 - Syllidae polychaete worms

Plakosyllis quadrioculata T.H. Perkins, 1981 (e,wFL marine infauna)

Platynereis Kinberg, 1866 - Nereidae polychaete worms, Subfamily Nereidinae

Platynereis australis (New England marine infauna)

Platynereis abnormis Horst, 1924 (HI marine infauna)

Platynereis bicanaliculata (*Nereis b.* Baird, 1863) (AK, BC, sCA, HI, WA marine infauna)

Platynereis dumerilii (*Nereis d.* Audouin & Milne-Edwards, 1833) (CA, e,wFL, HI, NJ, New England marine benthic)

Platynereis massillensis (New England marine infauna)

@*Platynereis pestai* (HI marine benthic)

Platynereis pulchella Gravier, 1901 (HI marine benthic)

Platynereis tongabuensis McIntosh, 1885 (HI marine benthic)

Podarke Ehlers, 1864 - Hesionidae polychaete worms

Podarke agilis (New England marine benthic)

Podarke caecas (New England marine benthic)

Podarke pugettensis = *Ophiodromus p.*

Podarke obscura Verrill (e,wFL, Gulf of Mex., NJ, NY, SC, VA, New England marine benthic)

Podarkeopsis Laubier, 1961- Hesionidae polychaete worms

Podarkeopsis brevipalpa (*Gyptis b.* Banse & Hobson, 1968) (AK, BC, FL, LA, Gulf of Mex., Virginian, SC marine infauna)

Podarkeopsis glabrus (*Oxydromus arenicolus glabrus* Hartman, 1961) (= *Gyptis brevipalpa*) (AK, BC, sCA, OR, WA marine infauna)

Podarkeopsis levifuscina Perkis, 1984 (eFL & wFL Gulf of Mex., Mid-Atlantic (somewhere sNJ to nSC) marine infauna)

Poecilochaetus - Claparede, 1875 - Poecilochaetidae polychaete worms

Poecilochaetus johnstoni Hartman, 1939 (AL, e,wFL, LA, MS, sCA, TX marine infauna)

Poecilochaetus undescr. sp. (e,wFL marine infauna)

Polycirrus Grube, 1850 - Terebellidae polychaete worms, Subfamily Polycirrinae

Polycirrus albicans (Malmgren, 1865) (Gulf of Mex. marine benthic)

Polycirrus californicus Moore, 1909 (AK, CA, BC, WA marine infauna)

Polycirrus carolinensis J.H. Day, 1973 (Carolinian, wFL Gulf of Mex. marine infauna)

Polycirrus cf. *denticulatus* Saint Joseph, 1894) (Gulf of Mex. marine benthic)

Polycirrus eximius (Leidy, 1855) (MA, ME, NJ, SC, VA, marine infauna & NY surface deposit feeder)

Polycirrus eximius dubius Day, 1973 (Gulf of Mex. marine infauna)

Polycirrus haematodes (Claparede, 1864) (Gulf of Mex. marine benthic)

Polycirrus medusa Grube, 1950 (NJ marine benthic)

Polycirrus plumosus (Wollebaek, 1912) (Gulf of Mex. marine benthic)

Polycirrus undet. sp. or species (sCA, NY, HI, Virginian marine infauna)

Polycirrus 2 undescr. species (wFL Gulf of Mex. marine infauna)

Polydora Bosc, 1802 - Spionidae polychaete worms

Polydora aggregata Blake, 1969 (TX (cf), WA marine infauna)

Polydora anoculata (Moore, 1907) (FL marine infauna)

Polydora armata Langerhans, 1980 (HI, WA marine infauna)

Polydora bioccpitalis Blake & Woodwick, 1972 (CA marine infauna)

Polydora brachycephala Hartman, 1936 (BC, WA marine infauna)

Polydora brevipalpa Zachs, 1933 (CA marine infauna)

Polydora cardalia E.Berkeley, 1927 (BC, WA marine infauna)

Polydora caulleryi Mesnil, 1897 (AL, CA, FL, TX marine infauna)

Polydora cirrosa Rioja, 1943 (CA marine infauna)

Polydora colonia Moore (Virginian marine infauna)

Polydora commensalis = *Dipolydora c.*

Polydora* (*Polydora*) *cornuta Bosc, 1802 (*P. amaricola* Hartman, 1936; *P. ciliatum* of A. Agassiz, 1867, not Johnston, 1838; *C. ligni* Webster, 1879; *P. littorea* Verrill, 1881)(CA, BC, FL, LA, NJ, MA, SC, TX, VA, WA marine infauna; PQ Gulf of St. Lawrence sandy marine interstitial)

Polydora giardi Mesnil, 1896 = *Dipolydora g.*

Polydora cirrosa Rioja, 1939 (CA marine infauna)

Polydora cornuta Bose, 1802 (= *Polydora ligni*) (alien US (AL, LA, OR, TX, WA, Virginian) marine infauna)

Polydora hartmanae Blake, 1971 (Carolinian marine infauna)

Polydora heterochaeta Rioja, 1939 (CA marine infauna)

Polydora kaneohe Ward, 1981 (HI marine infauna)

Polydora ligni = *P. (P.) cornuta*

Polydora limicola Annenkova, 1934 (AK, CA, WA marine infauna)

Polydora muchalis Woodward, 1953 (alien CA marine infauna)

Polydora narica Light, 1969 (CA marine infauna)

Polydora pilikia Ward, 1981 (HI marine infauna)

Polydora pygidialis Blake & Woodward, 1972 (CA, BC, WA marine infauna)

Polydora quadrilobata = *Dipolydora q.*

Polydora rickettsi Woodward, 1961 (CA marine infauna)

Polydora socialis = *Dipolydora s.*

Polydora spongicola Berkeley & Berkeley, 1950 (BC, CA, WA marine infauna)

Polydora undet. or undescr. sp. or species (AK, sCA, ME, TX marine infauna)

Polydora websteri Hartmann, 1943 (CA, HI (alien), e,wFL, Virginian, WA marine infauna, PQ Gulf of St. Lawrence sandy marine interstitial)

Polyeunoa McIntosh, 1885 - Polynoidae polychaete worms, Subfamily Polynoinae

Polyeunoa tuta (Grube, 1855) (AK, BC marine infauna)

Polygordius Schneider, 1868 - Polygordiidae polychaete worms

Polygordius undet sp. or species (CA, ME, Virginian (rare), Carolinian, WA marine infauna)

Polynoe Savigny, 1818 - Polynoidae polychaete worms Subfamily Polynoinae

Polynoe acanellae (BC, New England marine benthic)

Polynoe canadensis (McIntosh, 1874) (BC, New England marine infauna)

Polynoe gracilis (Verrill, 1874) (BC, New England marine infauna)

Polynoe tarasovi Annenkova, 1937 (New England marine benthic)

Polyodontes Renier, 1832 – Acoetidae polychaete worms (also put in Polyodontidae)

Polyodontes lupinus (Stimpson, 1856) (Gulf of Mex. marine benthic)

Polyodontes panamensis (*Panthalis p.* Chamberlin, 1919) (CA marine benthic)

Polyophthalmus Quatrefages, 1850 – Opheliidae polychaete worms

Polyophthalmus pictus (*Nais p.* Dujardin, 1839) (CA, HI marine infauna)

Pomatoleios Pixell, 1913 - Serpulidae polychaete worms

Pomatoleios kraussii (Baird, 1865 (HI (alien) marine infauna)

Pontogenia Claparede, 1868 - Aphroditidae polychaete worms

@*Pontogenia bartschi* (wFL Gulf of Mex. marine infauna)

Pomatoceros Philippi, 1844 – Serpulidae polychaete worms

Pomatoceros americanus J.H. Day, 1973 (wFL Gulf of Mex. marine infauna)

Potamethus Chamberlin, 1919 - Sabellidae polychaete worms

Potamethus elongates (Treadwell, 1906) (HI marine infauna)

Potamethus undescr. sp. (Gulf of Mex. marine infauna)

Potamethus undet. sp. (WA marine infauna)

Potamilla Malmgren, 1866 - Sabellidae polychaete worms, Subfamily Sabellinae

Potamilla neglecta (Sars, 1851) (BC, WA marine infauna)

Potamilla intermedia (Moore, 1905) (BC, WA marine infauna)

Potamilla myriops Marenzeller, 1884 (BC, WA marine infauna)

Potamilla ocellata Moore, 1905 (AK, BC, WA marine infauna)

Potamilla reniformis (Muller, 1771) (Virginian (rare), ME, Gulf of Mex. (cf. *P.r.*) marine infauna)

Potamilla undet. sp. (HI (alien?) marine infauna)

Potamethus Chamberlin, 1919 - Sabellidae polychaete worms

Potamethus undet. sp. (sCA marine infauna)

Pottsipelogenia M.H. Pettibone, 1997 – Sigalionidae polychaete worms

Pottsipelogenia treadwelli M.H. Pettibone, 1997 (HI marine infauna)

Praxillella Verrill, 1881 - Maldanidae polychaete worms, Subfamily Euclymeninae

Praxillella affinis (Sars, 1861) (AK, BC, WA marine infauna)

Praxillella gracilis (*Clymene g.* M. Sars, 1861) (AK, CA, WA, New England marine infauna)

Praxillella pacifica E. Berkeley, 1929 (BC, WA marine infauna)
Praxillella praeterrissa (Malmgren, 1866) (BC, WA marine infauna)
Praxillella undet. sp. (HI marine infauna)

Praxillura Verrill, 1880 - Maldanidae Polychaete worms
Praxillura maculata Moore, 1923 (BC, sCA, WA marine infauna)

Prionospio Malmgren, 1867 - Spionidae polychaete worms
Prionospio (*Minuspio*) *cirrifer* Wire'n, 1883 (= *M.c.*) (AL, FL, HI, LA, MA, MS, SC, TX marine infauna)

Prionospio (*Minuspio*) *cirrobranchiata* Day, 1961 (FL, SC, TX marine infauna)
Prionospio (*Prionospio*) *cristata* Foster, 1971 (FL, LA marine benthic)

Prionospio dubia Day, 1961 (= *P. malmgreni* var. *d.* Day, 1961)(CA marine infauna)
Prionospio (*Apoprionospio*) *dayi* (A. d. Foster, 1969) (FL, Gulf of Mex. marine infauna)

Prionospio (*Prionospio*) *ehlersi* Fauvel, 1928 (sCA marine infauna)
Prionospio (*Prionospio*) *fallax* Soderstrom, 1920 (AL, FL, Gulf of Mex., HI marine infauna)
Prionospio (*Prionospio*) *heterobranchia* Moore, 1907 (CA, FL, LA, SC, VA marine intertidal infauna)

Prionospio (*Prionospio*) *jubata* Blake, 1996 (CA, WA marine infauna)
Prionospio (*Minuspio*) *lighti* Maciolek, 1985 (= *P. (Minuspio) cirrifer* of Light, 1977, not Wiren, 1883)(AK, BC, sCA, VA, WA marine infauna)

Prionospio malmgreni Claparede, 1870 (VA marine infauna)

Prionospio (*Prionospio*) *marsupialia* Blake, 1996 (CA marine infauna)
Prionospio (*Minuspio*) *multibranchiata* Berkeley, 1927 (AK, BC, CA, OR, WA marine infauna)
Prionospio perkinsi N.J. Maciolek, 1985 (FL, Virginian marine infauna)

Prionospio (*Minuspio*) *perkinsi* N.J. Maciolek, 1985 (Carolinian, Virginian, FL Gulf of Mex. marine infauna)

Prionospio pinnata Ehlers, 1901 (CA marine infauna)
Prionospio (*Apoprionospio*) *pygmaea* (A. p. Foster, 1969) (sCA, e,wFL, LA, TX, WA, Virginian marine infauna)

Prionospio (*Minuspio*) undescr. sp. (FL marine infauna)
Prionospio undet. sp. (HI marine infauna)

Prionospio (*Prionospio*) *steenstrupi* (*P. s.* Malmgren, 1867) (AL, AK, BC, CA, e,wFL, LA, MA, NY, TX, WA marine infauna & surface deposit feeder)

Proceraea Ehlers, 1864 - Syllidae polychaete worms, Subfamily Autolytinae

Proceraea cornuta (Agassiz, 1862) (BC, CA, Carolinian, Virginian, WA, Gulf of Mex. marine infauna)

Proceraea fasciata = *Autolytus fasciatus*

Proceraea prismatica (Fabricius, 1776) (BC marine infauna)

Proceraea trilineata (Berkeley & Berkeley, 1945) (BC marine infauna)

Proceraea undet. sp. or species (sCA marine infauna)

Proclea Saint-Joseph, 1894 - Terebellidae polychaete worms, Subfamily Artacaminae

Proclea graffi (Langerhans, 1884) (BC, WA marine infauna)

Proclea undet. sp. (sCA marine infauna)

Prophyllodoce Hartman, 1966 - Phyllodocidae polychaete worms

Prophyllodoce hawaii Hartman, 1966 (HI marine infauna)

Protleodora Pillai, 1970 1868 - Spirorbidae polychaete worms, Subfamily Pileolariinae

Protleodora asperata (Bush, 1904) (*Spirorbis (Romanchella) medius*) (BC marine infauna)

Protocirrineris - Cirratulidae polychaete worms

Protocirrineris socialis J. Blake, 1996 (CA marine infauna)

Protodorvillea Pettibone, 1961 - Dorvilleidae polychaete worms

Protodorvillea bifida Perkins, 1979 (wFL Gulf of Mex. infauna)

Protodorvillea gaspeensis Pettibone, 1961 (PQ Gulf of St. Lawrence sandy marine interstitial)

Protodorvillea gracilis (Hartman, 1938) (AK, BC, sCA, WA marine infauna)

Protodorvillea kefersteini (Carolinian, Gulf of Mex. marine infauna)

Protodriloides Jouin, 1966 - Protodrilidae polychaete worms

Protodriloides chaetifer (Remane, 1926) (BC, CA, Europe & Atlantic marine beach interstitial)

Protodrilus Hatschek, 1880 - Protodrilidae polychaete worms

Protodrilus chaetifer Remane, 1926 = *Protodriloides c.*

Protodrilus flabelliger Wieser, 1957 (BC, WA marine infauna, interstitial)

Protodrilus gelderi Riser, 1997 (MA marine interstitial)

Protolaeospira Pixell, 1912 - Spirorbidae polychaete worms, Subfamily Romanchellinae

Protolaeospira capensis Day, 1961 (BC, HI marine infauna)

Protolaeospira eximia (Bush, 1904) (*Spirorbis (P.) Ambilateralis*; *S. (P.) racemosa*) (BC, CA marine infauna)

Protomystides Czerniavsky, 1882 - Phyllodocidae polychaete worms

Protomystides bidentata Langerhans, 1879 (Gulf of Mex. marine benthic)

Protomystides undet. sp. (CA marine benthic)

Protula Saint-Joseph, 1894 - Serpulidae polychaete worms, Subfamily Protulinae

Protula atypha Bush, 1904 (HI marine infauna)

Protula pacifica Pixell, 1912 (BC marine benthic)

Protula undescr. or undet. sp. (Gulf of Mex. marine benthic)

Protula superba Moore, 1909 (*P. tubularia* Berkeley & Berkeley, 1941) (CA marine benthic)

Psammoilyce Kinberg, 1855 - Sigalionidae polychaete worms

Psammoilyce ctenidophora Day, 1973 (Gulf of Mex. marine benthic)

Pseudampharete - Polynoidae polychaete worms

Pseudampharete mexicana (*Subadyte m.* Fauchald, 1972) (sCA marine infauna)

Pseudatherospio Lavell, 1994 - Spionidae polychaete worms

Pseudatherospio fauchaldi Lovell, 1994 (CA marine infauna)

Pseudeurythoe Fauvel, 1932 = *Linopherus*

Pseudobranchiomma Jones, 1962 - Sabellidae polychaete worms

Pseudobranchiomma undet. sp. (Carolinian marine infauna)

Pseudochitinopoma Zibrowius, 1969 - Serpulidae polychaete worms, Subfamily Hyalopomatinae

Pseudochitinopoma occidentalis (Bush, 1904) (BC, WA marine infauna)

Pseudofabriciola Fitzhugh, 1990 – Sabellidae polychaete worms

Pseudofabriciola undet. sp. (CA marine benthic)

Pseudomalacoceros Czerniavsky, 1881 - Spionidae polychaete worms

Pseudomalacoceros agilis (MA marine intertidal benthic)

Pseudonereis Kinberg, 1866 - Nereidae polychaete worms

Pseudonereis anomala Gravier, 1901 (HI marine benthic)

Pseudonereis gallapagensis Kinberg, 1866 (HI marine benthic)

Pseudopolydora Czerniavsky, 1881 - Spionidae polychaete worms

Pseudopolydora antennata (Claparede, 1870) (HI marine infauna)

Pseudopolydora corallicola Woodwick, 1964 (HI marine infauna)

Pseudopolydora kemp (alien OR, WA marine infauna)

Pseudopolydora kemp japonica Imagima & Hartman, 1964 (CA, WA marine infauna)

Pseudopolydora paucibranchiata (*Polydora p.* Okuda, 1937) CA, WA marine infauna tube builder; alien US marine infauna))

Pseudopolydora undet. 3 species (Carolinian marine infauna)

Pseudopotamilla Bush, 1905 - Sabellidae polychaete worms

Pseudopotamilla socialis Hartman, 1944 (CA marine infauna)

@*Pseudopotamilla tortuosa* (Carolinian marine infauna)

Pseudovermilia Bush, 1907 – Serpulidae polychaete worms

Pseudovermilia occidentalis (McIntosh, 1885) (HI, Gulf of Mex. marine infauna)

Pterocirrus Claparede, 1868 - Phyllodocidae polychaete worms, Subfamily Eteoninae

Pterocirrus californiensis (*Sige californiensis* Chamberlin, 1919) (CA marine infauna)

Pterocirrus macroceros (Grube, 1860) (AK, BC, Gulf of Mex., WA marine infauna)

Pterocirrus montereyensis (*Sige m.* Hartman, 1936) (CA marine infauna)

Pulliella Fauvel, 1929 - Capitellidae polychaete worms

Pulliella undet. sp. (HI? marine infauna)

Pygospio Claparede, 1863 - Spionidae polychaete worms

Pygospio californicus Ward, 1981 (HI, OR, WA marine infauna)

Pygospio elegans Claparede, 1863 (= *Spio rathbuni*) (BC, MA, ME, OR, WA (alien) marine benthic; NB, PQ Gulf of St. Lawrence sandy marine interstitial)

Pygospio muscularis Ward, 1981 (HI marine infauna)

Pygospioopsis Blake, 1983 - Spionidae polychaete worms

Pygospioopsis occipitalis Blake, 1983 (CA marine benthic)

Questa Hartman, 1966 - Questidae polychaete worms

Questa caudicirra Hartman, 1966 (BC, Gulf of Mex. marine benthic)

Questa undescr. (wFL Gulf of Mex. marine infauna)

Ramex Hartman, 1963 - Terebellidae polychaete worms

Ramex californiensis (Hartman, 1944)(CA marine infauna)

Ramphobrachium Ehlers, 1887 (= *Rhamphobranchium*) Onuphidae polychaete worms

Ramphobrachium atlanticum Day, 1973 (Gulf of Mex. marine benthic)

Ramphobrachium diversosetosum Moore, 1937 (Gulf of Mex. marine benthic)

Rhamphobrachium longisetosum Berkeley & Berkeley, 1938 (sCA marine infauna)

Ramphobrachium undescr. sp. (Gulf of Mex. marine benthic)

Raphidrilus Monticelli, 1910 - Ctenodrilidae polychaete worms, Subfamily Raphidrilinae

Raphidrilus undet. sp. (BC marine benthic)

Raricirrus Hartman, 1961 – Ctenodrilidae polychaete worms (also put in Cirratulidae)

Raricirrus maculatus Hartman, 1961 (CA, WA marine infauna)

Raricirrus undescr. sp. (CA marine infauna)

Rhinothelepus Hutchings, 1974 – Terebellidae polychaete worms, Subfamily Thelepodinae
Rhinothelepus undescr. sp. (Gulf of Mex. marine benthic)

Rhodine Malmgren, 1865 - Maldanidae polychaete worms, Subfamily Rhodininae
Rhodine bitorquata Moore, 1923 (AK, BC, sCA, WA marine infauna)
Rhodine gracilior Tauber, 1879 (PQ Gulf of St. Lawrence sandy marine interstitial)

Rhodopsis Bush, 1905 - Serpulidae polychaete worms
Rhodopsis pusilla Bush, 1905 (marine cave interstitial off HI)

Rhynchospio Hartman, 1936 - Spionidae polychaete worms
Rhynchospio arenicola = *R. glutaea*

Rhynchospio glutaea (*Scolecopsis* g. Ehlers, 1897; *R. arenicola* Hartman, 1936; *Scolecopsis cornifera* Ehlers, 1913) (CA, East Coast marine infauna)

Rhynchospio undet. sp. (HI marine infauna)

Rullierinereis Pettibone, 1971 - Nereididae polychaete worms
Rullierinereis mexicana (Treadwell, 1942) (NC marine infauna)
Rullierinereis undescr. sp. (Gulf of Mex. marine infauna)

Sabaco Kinberg, 1867 - ***Maldanidae polychaete worms***
Sabaco elongatus (bamboo worm/ alien E. marine infauna)

Sabella Linnaeus, 1767 - Sabellidae polychaete worms
Sabella crassicornis Sars (AK, NY marine infauna)

Sabella melanostigma Schmarda, 1861 (Gulf of Mex. marine infauna)
Sabella microphthalma = *Demonax m.*

Sabella pavonina Savigny, 1822 (PQ Gulf of St. Lawrence sandy marine interstitial)
Sabella undescr. sp. (Gulf of Mex. marine infauna)
Sabella undet. sp. (HI marine infauna)

Sabellaria Savigny, 1818 - Sabellariidae polychaete worms
Sabellaria cementarium Hartman, 1944 (AK marine infauna)
Sabellaria floridensis Hartman, 1944 (Carolinian, LA, FL marine infauna)

Sabellaria undescr. sp. (Gulf of Mex. marine infauna)
Sabellaria vulgaris Verrill (NC, VA marine infauna)

Sabellastarte Kroyer, 1856 - Sabellidae polychaete worms, Subfamily Sabellinae
Sabellastarte indica (Savigny, 1818) (HI marine infauna)

Sabellastarte sanctijosephi Gravier, 1906 (HI marine infauna)

Sabellastarte undet. sp. or species (BC, WA marine benthic)

Sabellides H. Milne Edwards in Malmgren, 1966 - Ampharetidae polychaete worms

Sabellides manriquei S.I.Salazar Vellejo, 1996 (sCA marine infauna)

Sabellides octocirrata (Sars, 1835)(Gulf of Mex. marine infauna)

Sabellides undescr. sp. (Gulf of Mex. marine infauna)

Saccocirrus Bobretzky, 1872n - Saccocirridae polychaete worms

Saccocirrus eroticus Gray, 1969 (BC, WA marine infauna)

@*Saccocirrus glabriellae* (BC marine infauna)

Saccocirrus undet. or undescr. sp. (Gulf of Mex. marine infauna)

Saccocirrus undet. sp. (CA marine infauna)

Salmacina Claparede, 1870 - Serpulidae polychaete worms, Subfamily Filograninae

Salmacina dysteri (Huxley, 1855) (HI (alien) marine infauna)

Salmacina undescr. Sp. (Gulf of Mex. marine infauna)

Salmacina tribranchiata (Moore, 1923) (BC, CA marine benthic)

Samytha Malmgren, 1866 - Ampharetidae polychaete worms, Subfamily Ampharetinae

Samytha californiensis Hartman, 1969 (sCA, WA marine infauna)

Samytha undet. sp. (AK marine infauna)

Samythella Verrill, 1873 - Ampharetidae polychaete worms

Samythella eliasoni J.H. Day, 1973 (NC marine infauna)

Sarsonuphia Fauchald, 1982 – Onuphidae polychaete worms

Sarsonuphia hartmanae (Kirkegaard, 1980) (Gulf of Mex. marine benthic)

Scalibregma Rathke, 1843 - Scalibregmatidae polychaete worms

Scalibregma inflatum Rathke, 1843 (AK, BC, sCA, NY, WA marine infauna)

Schistocomus Chamberlin, 1919 - Ampharetidae polychaete worms, Subfamily Ampharetinae

Schistocomus hiltoni Chamberlin, 1919 (BC, CA, WA marine infauna)

Schistomeringos Jumars, 1974 - Dorvilleidae polychaete worms

Schistomeringos pectinata T.H. Perkins, 1979 (LA, Gulf of Mex. marine benthic)

Schistomeringos rudolphi (*Dorvillea* r. Dell Chiaje, 1828; *Stauronereis* r., *S. angolana*) (FL, Gulf of Mex. (cf. *S.r.*), New England marine benthic)

Schistomeringos undet sp. or species (HI, TX marine benthic)

Schistomeringos undescr. species (Gulf of Mex. marine benthic)

Scionella Moore, 1903 - Terebellidae polychaete worms, Subfamily Artacaminae

Scionella japonica Moore, 1903 (BC, CA, WA marine benthic)

Sclerobregma Hartman, 1965 - Scalibregmatidae polychaete worms

Sclerobregma inflatum Rathke, 1843 (Gulf of Mex. marine benthic)

Sclerobregma stenocera Hartman, 1965 (FL marine benthic)

Sclerobregma stenocerum Bertelsen & Weston, 1980 (Gulf of Mex. marine benthic)

Sclerocheilus Grube, 1863 - Scalibregmatidae polychaete worms

Sclerocheilus undescr. sp. (FL marine benthic)

Scolecoplepides Ehlers, 1907 - Spionidae polychaete worms

Scolecoplepides viridis (Verrill) (GA (brackish), Virginian (rare), CT, MA marine intertidal infauna)

Scolelepis Blainville, 1828 - Spionidae polychaete worms

Scolelepis (Nerinides) bousfieldi Pettibone, 1963 (VA marine infauna)

Scolelepis (S.) foliosa (Audouin & Milne-Edwards, 1833 (BC, WA marine infauna)

Scolelepis (Scolelepis) occidentalis (Nerine foliosa o. Hartman, 1961) (sCA marine infauna)

Scolelepis (Scolelepis) squamata (Lumbricus s. Mueller, 1806; *L. cirratulus* delle Chiaje, 1828; *Nerinides acuta* of Hartman, 1960; *Spio a.* readwell, 1914) (BC, FL marine infauna; PQ Gulf of St. Lawrence sandy marine interstitial)

Scolelepis squamata (Muller, 1806) (HI, NC, WA marine infauna)

Scolelepis (Scolelepis or Parascrolelepis) texana Foster, 1971 (Carolinian, AL, CA, FL, LA, Virginian marine infauna)

Scolelepis tridentata (Nerinides t. Southern, 1914) (sCA marine infauna)

Scoletoma Blainville, 1828 - Lumbrineridae polychaete worms

Scoletoma fragilis (Muller, 1776) (WA marine infauna)

Scoletoma luti ("Lumbrineris" luti Berkeley & Berkeley, 1945) (AK, CA marine infauna)

Scoletoma tenuis (Verrill, 1873) (Virginian, Carolinian marine infauna)

Scoletoma tetraura (Schmarda, 1861) (CA marine infauna)

Scoletoma verrilli (Carolinian marine infauna)

Scoloplella Day, 1963 - Orbiniidae polychaete worms, Subfamily Orbiniinae

Scoloplella undet. sp. (SC marine infauna)

Scoloplos Blainville, 1828 - Orbiniidae polychaete worms (tube dwelling), Subfamily Orbiniinae

Scoloplos (S.) acmeceps Chamberlin, 1919 (CA, BC, LA, WA, Gulf of Mex. marine infauna)

Scoloplos acmeiceps profundus (WA marine infauna)

Scoloplos acutus (ME marine infauna)

Scoloplos* (*S.*) *armigera (O.F. Muller, 1776) (AK, BC, sCA, MA, WA marine infauna)

Scoloplos capensis (Day, 1961) (Gulf of Mex. marine infauna)

Scoloplos fragilis Verrill (LA, ME, NJ marine infauna)

Scoloplos kerguelensis (New England marine infauna)

Scoloplos pugettensis = *Leiotoscoloplos p.*

Scoloplos robustus Verrill (LA, NJ, VA marine infauna)

Scoloplos* (*Leodamas*) *rubra (Webster, 1879) (w,eFL, LA, SC, Virginian marine infauna)

Scoloplos* (*Scoloplos*) *riseri Pettibone, 1957 (New England marine infauna)

Scoloplos* (*Scoloplos*) *schmitti Pettibone, 1957 (New England marine infauna)

Scoloplos undet. sp. (NC & PQ Gulf of St. Lawrence sandy marine interstitial)

Scoloplos texana Maciolek & Holland, 1978 (TX marine infauna)

Scoloplos treadwelli Eisig. (TX marine infauna)

Scyphoproctus Gravier, 1904 - Capitellidae polychaete worms

Scyphoproctus djiboutiensis Gravier, 1906 (HI marine infauna)

Scyphoproctus oculatus Reish, 1959 (CA marine infauna)

Scyphoproctus platyproctus Jones, 1961 or undescr. sp. (FL, AL marine infauna)

Scyphoproctus undet. sp. or species (HI? & wFL Gulf of Mex. marine infauna)

Semivermilia Imagima, 1978 - Serpulidae polychaete worms

Semivermilia pomatostegoides (Zibrowius, 1969) (HI marine infauna)

Serpula Linnaeus, 1766 - Serpulidae polychaete worms, Subfamily Serpulinae

Serpula columbiana Johnson, 1901 (BC marine benthic)

Serpula undet. or undescr. sp. (Gulf of Mex. marine benthic)

Serpula vermicularis Linnaeus, 1767 (CA, HI, WA marine infauna)

Shinkai Miura & Laubier, 1990 - Polynoidae polychaete worms

Admetella longipedata = *Shinkai l. longipedata* T. Miura & AS. Ohta, 1991 (=?*Admetella l.*) (HI marine infauna)

Sigalion Audouin & Milne-Edwards, 1832 - Sigalionidae polychaete worms

Sigalion arenicola Verill, 1879 (Virginian (rare), New England marine infauna)

Sigalion mathildae Audouin & Milne-Edwards in Cuvier, Fournier & Levings, 1830 (sCA, WA, New England marine infauna)

Sigalion spinosus (*Eusigalion s.* Hartman, 1939; *Thalanessa s.* Hartman, 1969) (sCA marine infauna)

Sigambra O.F. Mueller, 1858 - Pilargidae polychaete worms, Subfamily Sigambrinae
Sigambra bassi (Hartman, 1945 or 1947) (Virginian (rare), e,w,FL, LA, SC, WA marine infauna)

Sigambra parva (Day, 1963) (HI marine infauna)

Sigambra tentaculata (*Ancistrosyllis t.* Treadwell, 1941) (BC, e,wFL, sCA, LA, NY, SC marine infauna)

Sige Malmgren, 1865 - Phyllodocidae polychaete worms, Subfamily Eteoninae
Sige bifoliata Moore, 1909 (BC, WA marine infauna)

Sige macrocirrus orientalis = *Eulalia macrocirrus*
Sige undet. sp. (sCA marine infauna)

Simplicaria Knight-Jones, 1973 - Serpulidae polychaete worms (also treated as subgenus of *Pileolaria*)

Simplicaria pseudomilitaris (Thiriot-Quievreux, 1965) (HI marine infauna)

Sosane Malmgren, 1866 - Ampharetidae polychaete worms
Sosane occidentalis (Hartman, 1969) (sCA marine infauna)
Sosane sulcata Malmgren, 1865 (Gulf of Mex. marine infauna)

Sosanopsis Hessle, 1917- Ampharetidae polychaete worms, Subfamily Ampharetinae
Sosanopsis hesslei Banse, 1979 (BC marine benthic)
Sosanopsis wireni Hessle, 1917 (CA marine benthic)

Sphaerephesia Fauchald, 1972 - Sphaerodoridae polychaete worms
Sphaerephesia undet. sp. (CA marine benthic)
Sphaerephesia undesr. sp. (Gulf of Mex. marine benthic)

Sphaerodoridium Luetzen, 1961 - Sphaerodoridae polychaete worms
Sphaerodoridium undesr. sp. (Gulf of Mex. marine benthic)

Sphaerodoropsis Hartman & Fauchald, 1971 - Sphaerodoridae polychaete worms
Sphaerodoropsis minuta (*Ephesia m.* Webster & Benedict, 1887) (BC, CA, WA, OR?, WA marine benthic & PQ Gulf of St. Lawrence sandy marine interstitial)

Sphaerodoropsis sphaerulifer (Moore, 1909) (AK, BC, CA, WA, OR marine benthic)
Sphaerodoropsis undesr. sp. (Gulf of Mex. marine benthic)

Sphaerodorum Oersted, 1843 - Sphaerodoridae polychaete worms

Sphaerodorum flavum (New England marine infauna)

Sphaerodorum gracilis (New England marine infauna)

Sphaerodorum papillifer Moore, 1909 (BC, WA marine infauna)

Sphaerosyllis Claparede, 1863 - Syllidae polychaete worms, Subfamily Exogoninae

Sphaerosyllis aciculata T.H. Perkins, 1981 (e,wFL marine infauna)

Sphaerosyllis bilineata Kudenov & Harris, 1995 (Northeast Pacific marine benthic)

***Sphaerosyllis* (S.) bilobata** Perkins, 1981 (Carolinian, FL Gulf of Mex. marine infauna)

Sphaerosyllis brandhorsti Hartmann-Schroder, 1965 (WA marine infauna)

Sphaerosyllis brevidentata T.H. Perkins, 1981 (FL marine benthic)

Sphaerosyllis californiensis Hartman, 1966 (BC, CA, WA marine infauna)

Sphaerosyllis capensis Hartman-Schroder, 1960 (HI marine benthic)

Sphaerosyllis centroamericana Hartman-Schroder, 1959 (HI marine benthic)

Sphaerosyllis erinaceus Claparede, 1863 (TX estuary marine interstitial)

***Sphaerosyllis* (Prosphaerosyllis) glandulata** T.H. Perkins, 1981 (e,wFL, LA marine infauna)

Sphaerosyllis hystrix Claparede, 1863 (BC marine benthic)

Sphaerosyllis labyrinthophila S.L. Gardiner & W.H. Wilson, Jr., 1979 (Carolinian, wFL Gulf of Mex., LA marine infauna)

Sphaerosyllis longicauda Webster & Benedict, 1887 (e,wFL, LA marine infauna)

Sphaerosyllis perkinsi Webster & Benedict, 1887 (Carolinian marine infauna)

***Sphaerosyllis* (Sphaerosyllis) piriferopsis** T.H. Perkins, 1981 (e,wFL marine infauna)

Sphaerosyllis ranunculus Kudenov & Harris, 1995 (CA, WA, Northeast Pacific marine benthic)

***Sphaerosyllis riseri* (Prosphaerosyllis)** T.H. Perkins, 1981 (FL marine benthic)

***Sphaerosyllis* undet. sp.** (sCA marine infauna)

Sphaerosyllis sublaevis Ehlers, 1913 (HI marine infauna)

Sphaerosyllis taylori T.H. Perkins, 1981 (e,wFL marine interstitial?; LA marine benthic; Virginian marine infauna)

Spinosphaera Hessle, 1917 – Terebellidae polychaete worms, Subfamily Amphitritinae

Spinosphaera oculata Hartman, 1944 (CA marine benthic)

Spinther Johnston, 1845- Spintheridae polychaete worms

Spinther citrinus (Stimpson, 1854) (ME marine infauna)

Spinther japonicus Imajima & Hartman, 1964 (HI marine infauna)

Spinther oniscoides Johnston, 1845 (New England marine infauna)

Spio Fabricius, 1785 - Spionidae polychaete worms

Spio butleri Berkeley & Berkeley, 1954 (BC, WA marine infauna)

Spio cirrifer Banse & Hobson, 1968 (BC, WA marine infauna)

Spio filicornis (*Nereis f.* O.F.Muller, 1766) (BC, CA, HI, WA marine infauna)

Spio limicola Verrill, 1879 (MA marine infauna)

Spio maciolekae J.A. Blake, 1996 (sCA marine infauna)

Spio maculata (*Nerinides m.* Hartman, 1961) (sCA marine infauna)

Spio* (*Spio*) *pettiboneae Foster, 1971 (S.p. Day, 1973) (AL, FL, HI, Virginian (rare), TX marine infauna)

Spio undet. sp. or species (sCA, HI marine infauna)

Spio setosa (Verrill, 1873) (DE, MA, MD, ME, NC, NJ, VA marine infauna)

Spiochaetopterus Sars, 1853 - Chaetopteridae polychaete worms

Spiochaetopterus costarum (Claparede, 1868) (AK, AL, BC, sCA, FL, LA, SC, TX, WA common marine infauna)

Spiophanes Grube, 1869 - Spionidae polychaete worms

Spiophanes anoculata Hartman, 1960 (sCA marine infauna)

Spiophanes berkeleyorum Pettibone, 1962 (AK, BC, CA, HI, WA marine infauna)

Spiophanes bombyx (*Spio b.* Claparede, 1870) (AL, CA, BC, sCA, DE, FL, GA, HI, LA, MS, LA, NC, SC, TX, VA, WA marine intertidal infauna)

Spiophanes duplex (Chamberlin, 1919) (*S. missionensis* Hartman, 1941) (AL, sCA, FL, LA, MS, TX, WA marine infauna)

Spiophanes fimbriata Grube, 1860 (sCA marine infauna)

Spiophanes kroyeri Grube, 1860 (AL, CA, BC, FL, LA, TX marine infauna)

Spiophanes missionensis = *S. duplex*

Spiophanes undescr. sp. (TX marine infauna)

Spiophanes wigleyi Pettibone, 1962 (AL, sCA, FL, HI, LA, SC, TX marine infauna)

Spirobranchus Blainville 1817 - Serpulidae polychaete worms

Spirobranchus giganteus (Pallas, 1766) (HI marine infauna/ Christmas tree worms)

Spirobranchus giganteus corniculatus Grube, 1862 (HI marine infauna)

Spirobranchus latiscapus Marenzeller, 1885 (HI marine infauna)

Spirobranchus undet. sp. (CA marine caves/feather duster worm)

Spirorbis Daudin, 1800 - Spirorbidae polychaete worms, Subfamily Spirorbinae (also put in Serpulidae)

Spirorbis bifurcatus Knight-Jones, 1978 (BC marine infauna)

Spirorbis borealis Daudin, 1800 (ME marine infauna)

Spirorbis marioni (Caullery & Mesnil, 1897) (HI marine infauna)

Spirorbis undet. sp. or species (CA marine cave; AK marine infauna)

Spirorbis spirillum = *Dexiospira* s.

Spirorbis spirorbis (Linne=, 1758) (PQ Gulf of St. Lawrence sandy marine interstitial)

Staurocephalus Grube, 1855 - Dorvilleidae polychaete worms

Staurocephalus rudolfi (New England marine benthic)

Stauronereis = *Schistomeringos*

Steggoa Bergstroem, 1914 – Phyllodocidae polychaete worms

Steggoa undet. sp. (WA marine infauna)

Sthenolepis Pettibone, 1971 - Sigalionidae polychaete worms

Sthenolepis cf. *grubei* (Treadwell, 1901) (Gulf of Mex. marine benthic)

Stenominereis Wesenberg-Lund, 1958 - Nereididae polychaete worms

Stenominereis martini Wesenberg-Lund, 1958 (NC marine infauna)

Sternaspis Otto, 1821 - Sternaspidae polychaete worms

Sternaspis fossor Stimpson, 1854 (*S. affinis* Stimpson, 1864) (sCA marine infauna)

Sternaspis scutata (Renier, 1807 (AK, BC, CA, ME, WA marine infauna)

Sternaspis undet. sp. (HI marine benthic)

Sthenelais Kinberg, 1855 - Sigalionidae polychaete worms

Sthenelais articulata (New England marine infauna)

Sthenelais berkeleyi Pettibone, 1971 (BC, CA, WA marine infauna)

Sthenelais boa (Johnston, 1883) (= *S. picta*) (NJ, SC, Virginian, New England marine benthic)

Sthenelais fusca Johnson, 1897 (sCA marine infauna)

Sthenelais limicola Ehlers (SC, New England marine benthic)

Sthenelais tertiaglabra Moore, 1910 (*S. hancocki* Hartman, 1939) (AK, BC, CA, OR, WA marine infauna)

Sthenelais verruculosa Johnson, 1897 (sCA, WA marine infauna)

Sthenelanella Moore, 1919 - Sigalionidae polychaete worms

Sthenelanella undesr. sp. (Gulf of Mex. marine infauna)

Sthenelanella uniformis Moore, 1910 (CA, WA marine infauna)

Streblosoma Sars, 1872 - Terebellidae polychaete worms, Subfamily Thelepodinae

Streblosoma bairdi (Malmgren, 1866) (FL marine benthic)

Streblosoma crassibranchia Treadwell, 1914 (sCA, WA marine infauna)

Streblosoma hartmanae Kritzler, 1971 (e,wFL marine infauna)

Streblosoma verillii Teradwell, 1911 (Gulf of Mex. marine infauna)

Streblospio Webster, 1879 - Spionidae polychaete worms

Streblospio benedicti Webster, 1879 (BC, CA (alien), HI (alien), LA, SC, TX, MA, ME, NC, NY, SC, TX, VA, WA (alien) common marine infauna)

Streptospinigera Kudenov, 1983 - Syllidae polychaete worms

Streptospinigera heteroseta Kudenov, 1983 (Gulf of Mex. marine infauna)

Streptosyllis Webster & Benedict 1884 - Syllidae polychaete worms, Subfamily Eusyllinae

Streptosyllis arenae Webster & Benedict 1884 (Virginian (rare), New England marine infauna)

Streptosyllis floridanus Webster & Benedict 1884 (FL marine caves))

Streptosyllis latipalpa Webster & Benedict 1884 (BC marine benthic, WA marine caves)

Streptosyllis pettiboneae T.H. Perkins, 1981 (WA marine caves; Carolinian, Gulf of Mex. marine infauna)

Streptosyllis verrilli (Moore, 1907) (Carolinian marine infauna)

Stygocapitella Knoellner, 1934 - Parergodrilidae polychaete worms

Stygocapitella subterranea Knollner, 1934 (BC, CA marine beach interstitial)

Subadyte Pettibone, 1969 - Polynoidae polychaete worms

Subadyte mexicana = *Pseudampharete m.*

Syllides Oersted, 1845 - Syllidae polychaete worms, Subfamily Eusyllinae

Syllides bansei T.H. Perkins, 1981 (FL, Gulf of Mex. marine infauna)

Syllides convoluta (New England marine infauna)

Syllides floridanus T.H. Perkins, 1981 (e,wFL marine infauna)

Syllides fulvus (Marion & Bobretsky, 1875) (Gulf of Mex. marine infauna)

Syllides japonica Imagima, 1966 (CA, FL, MA marine infauna)

Syllides longocirrata Oersted, 1845 (CA, FL, MA, WA, New England marine infauna)

Syllides mikeli Kudenov & Harris, 1995 (CA marine infauna)

Syllides minutus Blake & Walton, 1977 (CA marine infauna)

Syllides reishi Dorsey, 1978 (CA marine infauna)

Syllides setosa Pettibone, 1963 (New England marine infauna)

Syllides verrilli Moore, 1908 (FL, MA marine infauna)

Syllidia Quatrefages, 1866 - Nereididae polychaete worms

Syllidia armata Quatrefages, 1865 (HI marine infauna)

Syllis Savigny in Lamarck, 1818 - Syllidae polychaete worms, Subfamily Eusyllinae (all species with subgenus *Typosyllis* also placed in generic *Typosyllis*)

Syllis* (*Typosyllis*) *alternata Moore, 1908 (BC, Carolinian, Gulf of Mex. marine infauna)

Syllis* (*Typosyllis*) *amica Quatrefages, 1865 (Gulf of Mex. marine infauna)

Syllis* (*Typosyllis*) *armillaris (O. F. Muller, 1771) (BC, WA, Gulf of Mex. marine infauna)

Syllis* (*Typosyllis*) *corallicoloides Augener, 1922 (Gulf of Mex. marine infauna)

Syllis (*Ehlersia*) *cornuta* Rathke (*Ehlersia* c.) = *Typosyllis* c.

Syllis (*Syllis*) *elongata* Johnson, 1901 = *Typosyllis* e.

Syllis *farallonensis* Blake & Walton, 1977 = *Typosyllis* f.

Syllis *ferrugina* (Langerhans, 1881) = *Ehlersia* f.

Syllis* (*Typosyllis*) *gerlachi (Hartmann-Schroder, 1960) (Gulf of Mex. marine infauna)

Syllis* (*Syllis*) *gracilis Grube, 1863 (CA, HI, ME, FL Gulf of Mex. marine infauna)

Syllis (*Typosyllis*) *harti* Berkeley & Berkeley, 1938 = *Typosyllis* *cornuta*

Syllis* (*Typosyllis*) *hyalina Grube, 1863 (BC marine benthic)

Syllis (*Ehlersia*) *hyperioni* Harris, 1995 = *Typosyllis* h.

Syllis* (*Typosyllis*) cf. *lutea (Hartmann-Schroeder, 1960) (FL Gulf of Mex. marine infauna)

Syllis* *pallida Verrill, 1875 (New England marine infauna)

Syllis* (*Typosyllis*) *prolifera Kohn, 1852 (Gulf of Mex. marine infauna)

Syllis* (*Typosyllis*) *pulchra Berkeley & Berkeley, 1942 (BC marine benthic)

Syllis (*Syllis*) *spongiphila* Verrill, 1885 = *Haplosyllis* s.

Syllis (*Typosyllis*) *stewarti* Berkeley & Berkeley, 1942 = *Typosyllis* *adamanteus*

Syllis* (*Typosyllis*) *variegata (WA marine benthic)

Synelmis Chamberlin, 1919 - Pilargidae polychaete worms

Synelmis* cf. *albini (Langerhans, 1881) (FL marine benthic)

Synelmis* *klatti (Freidrich, 1951) (Gulf of Mex. marine benthic)

***Synelmis* 3 undescr. sp.** (Gulf of Mex. marine benthic)

***Synelmis* undet. sp.** (NC marine infauna)

Tauberia V.E. Strel=tsvo, 1973 = *Levinsenia*

Telothelep Day, 1955 – Terebellidae polychaete worms, Subfamily Thelepodinae

Telothelep* cf. *capensis Day, 1955 (Gulf of Mex. marine benthic)

Tenonia Nichols, 1969 - Polynoidae polychaete worms, Subfamily Harmothoinae
Tenonia priops (*Harmothoe p.* Hartman, 1961) (AK, BC, sCA, WA marine infauna)

Terebella Linnaeus, 1967 - Terebellidae polychaete worms, Subfamily Amphitritinae or Artacaminae

Terebella (*Schmardanella*) *californica* Moore, 1904 (CA marine benthic)
Terebella ehrenbergi Grube, 1870 (BC marine benthic)

Terebella lapidaria Linnaeus, 1767 (HI marine benthic)
Terebella parvabbranchiata Treadwell, 1906 (HI marine benthic)
Terebella rubra (Verrill, 1873) (wFL Gulf of Mex. marine infauna)

Terebellides Sars, 1835 - Trichobranchidae polychaete worms (once in Terebellidae) (tube dwelling)

Terebellides californica Williams, 1984 (AK, CA, BC, WA marine infauna)
Terebellides horikoshii (BC (nr. *T.h.*), WA marine benthic)

Terebellides japonica Moore, 1903 (= *T. stroemi* var. *j.*) (WA marine infauna)
Terebellides kobei Hessle, 1917 (WA marine infauna)
Terebellides nr. *lineata* (BC, WA marine infauna)

Terebellides reishi Williams, 1984 (BC, WA marine infauna)
Terebellides undet. sp. (sCA marine infauna)
Terebellides stroemi M. Sars, 1835 (BC, CA, e,wFL, ME, Carolinian, WA marine infauna)

Terebellides stroemi Sars, 1835 (AK, NJ marine infauna; NB, PQ Gulf of St. Lawrence sandy marine interstitial))

Thalenessa Baird, 1868 - Sigalionidae polychaete worms
Thalenessa digitata (HI marine infauna)

Thalenessa piercei (FL marine infauna)
Thalenessa spinosa (WA, Gulf of Mex. (cf. *T.s.*) marine infauna)
Thalenessa undescr. sp. (wFL Gulf of Mex. marine infauna)

Webster & Benedict, 1887 - Cirratulidae polychaete worms
Tharyx acutus Webster & Benedict, 1887 (MA, NJ, Carolinian, Virginian marine infauna)
Tharyx cf. *annulosus* Hartman, 1965 (FL, LA, TX marine infauna)

Tharyx dorsobranchialis Kirkegaard, 1959 (e,wFL, LA, NY, VA marine surface deposit feeder)
Tharyx killariensis (Carolinian marine infauna)
Tharyx kirkegaardi Blake, 1991 (sCA, NJ, NY marine infauna)

Tharyx marioni (Saint-Joseph, 1894) (SC marine infauna)

Tharyx parvus E. Berkeley, 1921 (sCA, WA (*T. nr. p.*) marine infauna)

Tharyx secundus (AK marine infauna)

Tharyx setigera Hartman, 1945 (TX, MA VA marine benthic infauna)

Tharyx undet. sp. or species (HI, LA marine infauna)

Thelepus Leuckart, 1849 - Terebellidae polychaete worms, Subfamily Thelepodinae

Thelepus branchiatus Treadwell, 1906 (HI marine infauna)

Thelepus crispus (CA, WA, New England marine infauna)

Thelepus cincinnatus (Fabricius, 1780) (BC marine infauna)

Thelepus hamatus Moore, 1905 (BC, CA, WA marine infauna)

Thelepus japonicus Marenzeller, 1884 (BC?, WA marine infauna)

Thelepus setosus (*Phenacia s.* Quatrefages, 1865; *Streptosoma verrilli* Treadwell, 1911) (BC, sCA, HI, Carolinian, WA, New England marine infauna)

Therochaeta Chamberlin, 1919 - Flabelligeridae polychaete worms

Therochaeta undescr. sp. (Gulf of Mex. marine infauna)

Thormora Baird, 1865 - Polynoidae polychaete worms

Thormora atrata (Treadwell, 1940) (HI marine infauna)

Timarete Kinberg, 1866 - Cirratulidae polychaete worms

Timarete luxuriosa (*Cirratulus l.* Moore, 1904) (CA marine infauna)

Timarete perebranchiata (Chamberlin, 1910) (CA marine infauna)

Tomopteris Eschscholtz, 1835 – Tomopteridae polychaete worms

Tomopteris helgolandica (ME marine benthic)

Tomopteris undet. sp. (HI marine benthic)

Travisia Johnston, 1840 - Opheliidae polychaete worms, Subfamily Traviinae

Travisia brevis Moore, 1923 (BC, sCA, WA marine infauna)

Travisia carnea Verrill, 1873 (PQ Gulf of St. Lawrence sandy marine interstitial; ME marine benthic)

Travisia forbesii Johnson, 1840 (BC, AK & PQ Gulf of St. Lawrence sandy marine interstitial)

Travisia gigas Hartman, 1938 (CA marine benthic)

Travisia hobsonae (eFL & wFL Gulf of Mex. marine infauna)

Travisia japonica Fujiwara, 1933 (BC marine infauna)

Travisia parva J.H. Day, 1973 (SC, Virginian(rare) marine infauna)

Travisia pupa Moore, 1906 (*T. foetida* Hartman, 1969) (BC, CA, WA marine infauna)

Trichobranchus Malmgren, 1866 - Trichobranchidae polychaete worms

Trichobranchus glacialis Malmgren, 1866 (AK, BC, WA, Gulf of Mex. marine infauna)

Trichobranchus undet. sp. (HI marine infauna)

Trilobodrillus Remane, 1925 - Dorvilleidae polychaete worms (also put in Dinophilidae)

Trilobodrillus nipponicus Uchida & Okuda, 1942 (Japan, BC & Puget Sound (WA) marine interstitial)

Tripolydora Woodwick, 1964 - Spionidae polychaete worms

Tripolydora spinosa Woodwick, 1964 (HI marine infauna)

Trochochaeta Levinsen, 1883 - Trochochaetidae polychaete worms

Trochochaeta multisetosa (*Disoma m.* Oersted, 1844; *T. franciscanum* of Hartman, 1969; *Disomides m.*) (BC, CA, WA, New England marine infauna)

Trochochaeta undescr. sp. (FL, TX marine infauna)

Trochochaeta watsoni (*Disoma m.*) (New England marine infauna)

Troglochaetus Delachaux, 1921 - Nerillidae polychaete worms

Troglochaetus beranecki Delachaux, 1921 (common St in CO; St in Italy)

Troglochaetus undet. sp. or species (hyporheic in CO, NH, OH, PA)

Trypanosyllis Claparede, 1864 (= *Trypanedenta*) Syllidae polychaete worms, Subfamily Eusyllinae

Trypanosyllis (*Trypanedenta*) *coelicaca* Claparede, 1868 (Gulf of Mex. marine infauna)

Trypanosyllis (*Trypanedenta*) *coelicaca nipponica* Imagima & Hartman, 1964 (CA marine benthic)

Trypanosyllis (*Trypanedenta*) *gemmaipara* Johnson, 1901 (BC, CA marine benthic)

Trypanosyllis hawaiiensis Hartman-Schroder, 1978 (HI marine benthic)

Trypanosyllis (*Trypanedenta*) *ingens* Jonnson, 1902 (BC marine benthic)

Trypanosyllis parvidentata T.H. Perkins, 1981 (wFL Gulf of Mex. marine infauna)

Trypanosyllis savagei T.H. Perkins, 1981 (FL marine infauna)

Trypanosyllis vittigera Ehlers, 1887 (Gulf of Mex. marine infauna)

Trypanosyllis zebra Grube, 1869 (HI marine infauna)

Typosyllis Langerhans, 1879 - Syllidae polychaete worms, Subfamily Syllinae

Typosyllis aciculata (CA marine infauna)

Typosyllis adamanteus (BC, WA marine infauna)

Typosyllis alternata Moore, 1908 (AK, CA marine infauna)

Typosyllis bella Chamberlin, 1919 (AK, CA marine infauna)

Typosyllis corallicola (= *Syllis corallicoloides*; *S. corallicoides*) (LA marine infauna)

Typosyllis cornuta Rathke (*Ehlersia* c.; *Syllis* (E.) c.; *Syllis heterochaeta*) (BC, e,wFL, LA, WA, New Engalnd marine infauna)

Typosyllis crassicirrata Treadwell, 1925 (HI marine infauna)

Typosyllis elongata (Johnson, 1901) (*Syllis* e.) (AK, BC, CA, OR?, WA marine benthic)

Typosyllis farallonensis (*Syllis* f. Blake & Walton, 1977) (CA marine infauna)

Typosyllis hawaiiensis Hartmann-Schroder, 1965 (HI marine infauna)

Typosyllis heterochaeta (Moore, 1909) (= *Ehlersia* h.) (CA marine infauna)

Typosyllis hyalina (Grube, 1863) (CA, HI marine infauna)

Typosyllis hyperioni (*Ehlersia* h. Harris, 1995) (AK, BC, sCA, WA marine infauna)

Typosyllis* cf. *lutea Langerhans, 1879 (FL, LA marine benthic)

Typosyllis magnapalpa Hartmann-Schroder, 1965 = *T. crassicirrata*

Typosyllis microoculata Hartmann-Schroder, 1965 (HI marine infauna)

@*Typosyllis nigrescens* (HI marine infauna)

Typosyllis ornata Hartmann-Schroder, 1965 = *T. nigrescens*

Typosyllis pigmentata (CA marine infauna)

Typosyllis prolifera Krohn, 1852 (HI, wFl Gulf of Mex. marine infauna)

Typosyllis pulchra (Berkeley & Berkeley, 1938 = *T. pigmentata*

***Typosyllis* undet. sp.** (HI marine benthic)

Typosyllis variegata (Grube, 1860) (CA, HI marine infauna)

Vanadis Claparede, 1870 – Alciopidae polychaete worms

Vanadis formosa (New England marine benthic)

Vanadis longissima (HI, New England marine benthic)

Vanadis minuta Treadwell, 1906 (HI marine benthic)

Vermilia - Serpulidae polychaete worms

***Vermilia* undet. sp.** (HI marine infauna)

Vermiliopsis Saint-Joseph, 1894 - Serpulidae polychaete worms

Vermiliopsis annulata (Schmarda, 1861)(Gulf of Mex. marine infauna)

Vermiliopsis hawaiiensis (HI marine infauna)

Vermiliopsis infundibulum (*Vermilla* i. Philippi, 1944)(CA, HI marine infauna)

Vermiliopsis torquata Treadwell, 1943 (HI marine infauna)

Vinearia – Spirorbidae polychaete worms

Vinearia koehleri Caullery & Mesnil, 1897) (HI marine infauna)

Websterinereis Pettibone, 1971 – Nereididae polychaete worms

Websterinereis undescr. sp. (Gulf of Mex. marine infauna)

Xenosyllis Marion & Bobretzky, 1875 – Syllidae polychaete worms

Xenosyllis cf. *scabra* (Ehlers, 1864) (Gulf of Mex. marine infauna)

Ysideria Ruff, 1995 - Polynoidae polychaete worms

Ysideria hastata Ruff, 1995 (CA marine infauna)

Priapulid Worms

Priapulida, a small phylum of benthic marine worms.

Priapul Lamarck, 1816 - Priapulidae priapulid worm

Priapul *caudatus* Lamarck, 1816 (AK, WA marine interstitial)

Spiny-headed Worms

Phylum Acanthocephala (spiny-headed worms; thorny-headed worms) Bilaterally symmetric, pseudoelomate, lacking a gut, formerly a class of aschelminths (body wall ultrastructure, muscles, sperm similar) but different in embryology. From 2 mm to almost a meter. About 500 species, all endoparasites in invertebrates as larvae and in vertebrates as adults.

Kingdom Animalia

Clade Bilateria

Clade Protostomia

Clade Lophotrochozoa

Phylum Acanthocephal

Class Palaeacanthocephala

Order Echinorhynchida

Family Echinorhynchidae

Subfamily Echinorhynchinae

(*Acanthocephalus* (once in Protocephalidae), *Fissisentis*?)

Order Polymorphida

Family Polymorphidae (*Southwellina*)

Southwellina Wittenberg, 1932 – Polymorphidae spiny-headed worms

Southwellina dimorpha Schmidt, 1973 (endoparasite in non-cave LA *Procambarus clarki* crayfish)

Tapeworms

Class Cestoda (sometimes as order) (cestodes) of flatworms (Platyhelminthes). Adults almost always endoparasites. 2-3 larval stages. Eucestoda with rounded or egg-shaped “head” (scolex or holdfast). flattened, ribbon-like “body” (strobila) from few mm. to >10 meters; 3- several thousand segments. About 3,600 known species.

Subclass Cestodaria (not included with Cestoda according to some authors)

Subclass Eucestoda

Order Cyclophyllidea

Anoplocephalidae (*Oochoristica*) (once in Linstowiidae)

Cyclophyllidae (*Canaania*)

Dilepididae

Paruterinae (*Andrya*, *Paruterina*) (once in Paruterinidae)

Davaineidae (*Raillietina*)

Hymenolepididae (*Hymenolepis*)

Mesocestoidae (*Mesocestoides*)

Taeniidae (*Catenotaenia*, *Cylindrotaenia*, *Echinococcus*, *Hydatigera*, *Ophiotaenia*, *Taenia*, *Vampirolepis*)

Order Proteocephalidea Mola 1928

Proteocephalidae

Subfamily Proteocephalinae (*Neiochinorhynchus*, *Proteocephalus*)

Order Pseudophyllidea

Bothriocephalidae (*Bothriocephalus*)

Gymnorhynchidae (*Acanthocephalus*, *Gymnorhynchus*)

Acanthocephalus Cobbold 1879 - Gymnorhynchidae tapeworm (cestode)

Acanthocephalus *dirus* = *Gymnorhynchus rudolphi*

Andrya Railliet 1893 - Dilepididae tapeworms (cestodes), Subfamily Paruterinae

Andrya *neotomae* Voge, 1945 (endoparasite in CA *Neotoma fuscipes* woodrat),

Bothriocephalus Rudolphi 1808 -- Bothriocephalidae cestodes (once in Pseudophyllidae)

Bothriocephalus *euryciensis* Schaefer & Self 1978 (in OK (Adair Co.) *Eurycea longicauda* salamander).

Bothriocephalus *rarus* Thomas, 1937 (in non-cave NH *Eurycea bislineata* salamander),

Echinococcus Rudolphi 1801 - Taeniidae cestodes

Echinococcus *multilocularis* (Leuckart 1863) (endoparasite in WY *Neotoma cinerea rupicola* woodrat),

Catenotaenia Janicki 1904 - Dilepididae tapeworms (cestodes)

Catenotaenia *neotomae* Barbero & Cattán 1983 (endoparasite in NV *Neotoma cinerea rupicola* woodrat),

Gymnorhynchus Rudolphi, 1819 - Gymnorhynchidae tapeworms (cestodes)

Gymnorhynchus *rufolphi* (*Acanthocephalus dirus* VanCleave, 1931) (IL, MS, TN endoparasite on *Asellus intermedius* isopod)

Hydatigera Lamarck, 1816 - Taeniidae tapeworms (cestodes)

Hydatigera (*Hydatigera*) *taeniaeformis* Batsch, 1786 (endoparasite in OK *Neotoma floridanus* f. woodrats).

Hymenolepis Wienland 1858 - Hymenolepidae tapeworms (cestodes)

Hymenolepis *christensoni* (Macy, 1931) (endoparasite in CA, OR *Myotis yumanensis*; KS *Myotis grisescens*; MN *Myotis keeni*, OR *Myotis californicus* & *M. evotis*; IN, WI (Tx) *Eptesicus fuscus* & AK, IN, MN, OR, WI (rare Tx) *Myotis lucifugus* bats)

Hymenolepis *decipiens* (Diesing, 1850) (endoparasite in Paraguay, Brazil & CT *Myotis lucifugus* & Brazil *Eumops perotis* bats)

Hymenolepis *gertschi* Macy, 1947 (endoparasite in OR *Eptesicus fuscus*, *Myotis californicus* & *C. townsendii* & LA, TX (Tx) *Tadarida brasiliensis* bats)

Hymenolepis *lasionycteridis* Rausch, 1975 (endoparasite in IN (Tx) *Myotis keeni* & *M. sodalis*, HI *Lasiurus cinereus semotus*; OR, IN *Eptesicus fuscus*; OR *Lasionycteris noctivagans*, *Myotis californicus*, *M. yumanensis*, *M. evotis*, *M. volans* & IN, OH, OR *Myotis lucifugus* bats)

Hymenolepis *roudabushi* Macy & Rausch 1946 (Tx? in IA, OH/ endoparasite in OH, IA, IN, KS (Tx) *Eptesicus fuscus*, IA, IN *Myotis lucifugus*; KS *Myotis keeni*; IA, OH *Nycticeius humeralis* & OH *Lasionycteris noctivagans* bats)

Hymenolepis undet. sp(s). (endoparasites in HI *Lasiurus cinereus semotus*, AB *Eptesicus fuscus*, TX *Tadarida b.* & *Myotis v.* bats)

Neochinorhynchus Nickol & Whittaker 1978 - Protocephalide tapeworms (cestodes)

Neochinorhynchus *cylindratus* (in KY *Amblyopsis spelaea*) Nickol & Whittaker 1978

Cycloskrjabinia *taborensis* = *Oochoristica t.*

Cylindrotaenia Jewell 1916 - Taeniidae tapeworms (cestodes)

Cylindrotaenia *americana* Jewell 1916 (endoparasite in non-cave AR *Desmognathus bimleyorum* & non-cave AR *Plethodon cinereus albagula* salamanders)

Oochoristica Luhe 1898 - Anoplocephalidae cestode (once in Linstowiidae)

Oochoristica *antrozoi* Voge, 1954 (endoparasite in CA *Antrozous pallidus* bats)

Oochoristica *taborensis* Loewen, 1934 (= *Cycloskrjabinia t.*) (endoparasite in DC, IA, IN, MA,

KS, TN? *Lasiurus borealis* & MD *Lasiurus cinereus* bats)

Paruterina Fuhrmann, 1906 - Dilepididae tapeworms (cestodes), Subfamily Paruterininae

Paruterina *candelabraria* (endoparasite in WY *Neotoma cinerea rupicola* & UT *Neotoma lepida* woodrats),

Proteocephalus Weinland 1858 - Proteocephalidae cestodes, Subfamily Proteocephalinae

Proteocephalus *chologasteri* Whittaker 1968 (endoparasite in KY *Chologaster agassizi* cave fish)

Proteocephalus *poulsoni* Whittaker & Zober 1978 (*?type locality cave in Breckenridge Co., KY/ endoparasite in *Amblyopsis spelaea* cave fish)

Raillietina Fuhrmann, 1920 - Davaineidae cestodes

Raillietina *bakeri* Chandler, 1942 (endoparasite in NM *Neotoma albigula* woodrats)

Raillietina *loeweni* Bartel & Hansen, 1964 (endoparasite in NM *Neotoma albigula* woodrats)

Raillietina *retractilis* Stilesr, 1896 (endoparasite in NM *Neotoma albigula*, CO *N. cinerea*, CA *N. fuscipes* & UT *N. lepida* woodrats)

Raillietina *selfi* Buscher, 1975 (endoparasite in NM *Neotoma albigula* woodrats)

Raillietina undet. sp. (endoparasite in FL *Neotoma floridana* woodrats)

Taenia Linnaeus 1758 - Taeniidae tapeworms (cestodes)

Taenia *crassiceps* (Zeder, 1800) (endoparasite in AZ *Neotoma* woodrat)

Taenia *obtusata* Rud. 1819 (endoparasite in TN *Lasiurus borealis* bats)

Taenia *pisiformis* (Bloch, 1780) (endoparasite in NH *Neotoma magister* & OR *Neotoma cinereus* woodrats)

Taenia *rileyi* Loewen 1929 (endoparasite in OR *Neotoma cinerea* woodrats),

Vampirolepis Spasskii 1954 - Hymenolepididae tapeworms (cestodes)

Vampirolepis *christiansoni* (Macy, 1931) (endoparasite in MN *Eptesicus fuscus* & KS *Myotis grisescens* bats)

Vampirolepis *decipiens* (Diesing 1850) (endoparasite in FL (Alachua Co.) *Tadarida b. cynocephala* bats)

Vampirolepis *gertschi* (Macy, 1947) (endoparasite in Tx *Myotis* v. bats)

Vampirolepis *roundabushi* (Macy & Rausch, 1946) (endoparasite in IA, OH *Nycticeius humeralis*, *Eptesicus fuscus*, *Lasionycteris noctivagans*, IA *Myotis lucifugus* & KS *Myotis keenii* bats)

Ribbon worms - Phylum Nemertini (=Nemertea, Nemertina, Rhynchocoela)

Resemble thread-like flatworms but have a vascular system and alimentary canal with mouth at one end and anus at the other. Few mm. to over 30 m. long. Body epithelium is ciliated. About 800 known living species.

Order or Class Anopla

Order Heteronemertea

Family Baseodiscidae (*Baseodiscus*) (now in Valenciniidae)

Family Lineidae

(*Cerebratulus*, *Euborlasia*, *Lineus*, *Micrura*, *Parapolia*, *Zygeupolia*; undet. interstitial genus in Puget Sound, WA)

Family Valenciniidae (*Baseodiscus*) (see above)

Superfamily or Order Palaeonemertea

Family Carinomidae (*Carinoma*, *Carinomertes*)

Family Cephalothricidae (*Cephalothrix*, *Procephalotrix*)

Family Ototyphlonemertidae (*Ototyphlomertes*)

Family Tubulanidae (*Carinomella*, *Tubulanus*)

Superfamily Hoplonemertinea (now put in Suborder Monostylifera)

Class Enopla

Order Bdeionemertea

Malacobdellidae (*Malacobdella*)

Order Hoplonemertina (=Hoplonemertea) (once as Superfamily

Hoplonemertinea) (*Annulonemertes*) (uncertain family placement)

Undescribed genus (Interstitial in New England marine)

Carcinonemertidae (*Carcinonemertes*)

Suborder Monostylifera

Family Amphiporidae (*Amphiporus*, *Zygonemertes*)

Family Emplectonematidae (also put in Rhynchocoela: Hoplonemertea)

(*Cryptonemertes*, *Dichonemertes*, *Emplectonema*, *Nemertopsis*, *Paranemertes*)

Family Prosorhochmidae (*Pantinonemertes*, *Prosorhochmus*)

Suborder Monostilifera

Family Tetrastemmatidae

(*Amphinemertes*, *Prostomatella*, *Prostoma*, *Stichostemma*, *Tetrastemma*)

Suborder Polystylifera

Drepanophoridae (*Drepanophorus*)

Amphinemertes caeca (*Tetrastemma caecum* Coe, 1901) (CA marine infauna)

Amphiporus Ehrenberg, 1831 - Amphiporidae nemertean worms

Amphiporus angulatus (O.F. Muller, 1774) (AK, BC, CA, ME marine infauna & NB, PQ Gulf of St. Lawrence sandy marine interstitial)

Amphiporus bimaculatus Coe, 1901 (AK, BC, CA marine benthic)

Amphiporus bioculatus McIntosh, 1873 (VA marine infauna)

Amphiporus californicus Coe, 1905 (CA marine benthic)

Amphiporus cruentatus (Hubrecht, 1879) (*Amphiporus leptacanthus* Coe, 1905) (CA, MA marine infauna)

Amphiporus flavescens Coe, 1905 (CA marine benthic)

Amphiporus fulvus Coe, 1905 (CA marine benthic)

Amphiporus formidabilis (= *A. leuciodus* Coe) (CA, BC, WA marine infauna)

Amphiporus gelatinosus Coe, 1905 (AK marine benthic)

Amphiporus griseus (Stimpson, 1857) (MA marine infauna)

Amphiporus imparispinosus Griffin, 1898 (= *A. leuciodus* Coe) (AK, BC, CA marine benthic)

Amphiporus nebulosus Coe (AK marine benthic)

Amphiporus ochraceus (Verrill, 1873) (FL, MA marine infauna)

Amphiporus pacificus Coe, 1905 (CA marine benthic)

Amphiporus punctatulus Coe, 1905 (CA marine benthic)

Amphiporus rubellus Coe, 1905 (CA marine benthic)

Amphiporus undet. sp. or species (MA, WA marine sandy infauna)

@*Amphiporus tigrinus* Coe (AK marine benthic)

Annulonemertes G. Berg, 1985 (uncertain family placement)

Annulonemertes undescribed sp. (Puget Sound interstitial marine)

Argonemertes J. Moore & R. Gibson, 1981 - Prosorhochmidae ribbon worms

Argonemertes dendyi (Dakin, 1915) (Australia, HI/ Tp in HI). Bibl. Howarth & Moore 1983

Baseodiscus Coe, 1934 – Valenciniidae ribbon worms (also put in Baseodiscidae)

Baseodiscus delineatus (Delle Chiaje, 1825)(FL marine infauna)

Baseodiscus undet. sp. (CA marine benthic)

Carinoma Oudemans, 1885 - Carinomidae ribbon worms

Carinoma lactea Coe, 1905 (Eastern Pacific marine benthic)

Carinoma mutabilis Griffin, 1898 (= *C. griffini* Coe, 1901) (BC, CA, OR, WA Eastern Pacific

marine infauna)

Carinoma tremophoros Thompson, 1900 (uncommon FL, MA, MD, NJ, Virginian marine infauna in sand, clay, mud or under stones)

Carinomella Coe, 1905 - Tubulanidae ribbon worms

Carinomella lactea Coe, 1905 (CA, VA marine infauna)

Carcinonemertes Coe, 1902, Kolliker, 1845 - Carcinonemertidae ribbon worms

Carcinonemertes epialti Coe (CA marine benthic (parasite on *Epialtus*))

Carcinonemertes carcinophila (Kolliker, 1845) (MA marine infauna)

Cephalothrix Oersted, 1844- Cephalothricidae ribbon worms

Cephalothrix linearis (Rathke, 1799) Oersted (AK, north of MA, nEurope, Mediterranean marine infauna)

Cephalothrix pacifica Gerner, 1969 (San Juan Islands (WA) marine beaches interstitial)

Cerebratulus Renier, 1804 (flat worms; milky ribbon worms) Lineidae ribbon worms

Cerebratulus alaskensis Coe, 1901 (AK, CA marine benthic)

Cerebratulus albifrons Coe, 1901 (AK, BC, CA marine benthic)

Cerebratulus californiensis Coe, 1905 (CA marine benthic)

Cerebratulus herculeus Coe (AK marine benthic)

Cerebratulus lacteus (Leidy, 1851) (MA, ME, NJ, VA marine infauna)

Cerebratulus lineolatus Coe, 1905 (CA marine benthic)

Cerebratulus longiceps Coe (AK, BC marine benthic)

Cerebratulus marginatus Renier, 1804 (AK, BC, CA marine benthic)

Cerebratulus montgomeryi Coe, 1901 (AK, BC, CA marine benthic)

Cerebratulus occidentalis Coe (AK marine benthic)

Cerebratulus undet. sp. or species (WA, Baffin Island (neCanada) marine infauna)

Cryptonemertes Gibson, 1986 – Emplectonematidae ribbon worms

Cryptonemertes actinophila (*Nemertopsis a.* Burger, 1904; *Nemertopsella a.* of Friedrich, 1958) (CA marine infauna)

Dichonemertes Coe, 1938 – Emplectonematidae ribbon worms

Dichonemertes hartmanae Coe, 1938 (CA marine infauna)

Drepanophorus Egerton, 1872 - Drepanophoridae ribbon worms

Drepanophorus ritteri Coe, 1905 (sCA marine benthic)

Emplectonema Stimpson, 1857 - Emplectonematidae ribbon worms

Emplectonema buergeri Coe, 1901 (AK marine infauna)

Emplectonema gracile (Johnston, 1837) (green ribbon worm/ AK, BC, CA marine infauna)

Emplectonema purpuratum Coe, 1905 (AK marine infauna)

Euborlasia Friedrich, 1958 - Lineidae ribbon worms

Euborlasia nigrocincta Coe, 1901 (CA marine benthic)

Lineus Sowerby, 1806 - Lineidae ribbon worms

Lineus arenicolus Senz, 1993 (ME marine infauna)

Lineus bicolor Verrill, 1892 (MA marine subtidal benthic)

Lineus bilineatus (Renier, 1804) (*L. albolineatus* Coe, 1904) (CA marine benthic)

Lineus flavescens Coe, 1904 (CA marine benthic)

Lineus pictifrons Coe (CA marine benthic)

Lineus ruber (*Planaria r.* O.F. Muller, 1771) (= *L. viridus*) (OR, ME marine benthic)

Lineus rubescens Coe, 1904 (CA, WA marine infauna)

Lineus sanguineus (Rathke, 1799) (ME marine infauna, NB Gulf of St. Lawrence sandy marine interstitial)

Lineus torquatus Coe, 1901 (AK, CA marine benthic)

Lineus vegetus (CA marine benthic)

Lineus viridis (O.F. Mueller, 1774) (AK, eUS, Greenland, nEurope, Mediterranean marine benthic)

@*Lineus wilsoni* Coe (CA marine benthic)

Malacobdella Blainville, 1827 – Malacobdellidae ribbon worms

Malacobdella undet. sp. (CA marine benthic)

Micrura Ehrenberg, 1831- Lineidae ribbon worms

Micrura affinis (Girard, 1853) (MA marine infauna)

Micrura alaskensis Coe, 1901 (salmon white-headed ribbon worm/ AK, BC, OR, CA, WA marine infauna)

Micrura albida Verrill, 1879 (MA, ME marine benthic)

Micrura caeca Verrill, 1895 (MA marine stone & sandy infauna)

@*Micrura graffini* Coe, 1905 (CA marine benthic)

@ *Micrura kennerlyi* (WA marine infauna)

Micrura leidy (Verrill, 1892) ((MA, VA marine sandy infauna)

Micrura nebulosa Coe, 1905 (AK marine benthic)
Micrura nigrirostris Coe, 1905 (CA marine benthic)

Micrura olivaris Coe, 1905 (CA marine benthic)
Micrura pardalis Coe, 1905 (CA marine benthic)
Micrura undet. sp. (Baffin Island (neCanada) marine infauna)

Micrura verrilli (AK, BC, CA, WA marine infauna)
Micrura wilsoni (*Lineus w.* Coe, 1904 (CA marine benthic)

Nemertopsis - Emplectonematidae ribbon worms
Nemertopsis bivittata (FL marine infauna)
Nemertopsis gracilis (CA marine infauna)

Oerstedtia Quatrefages, 1846 - Prosorhochmidae ribbon worms
Oerstedtia dorsalis (*Planaria d.* Abildgaard, 1806; *Tetrastemma d.* McIntosh, 1873; *T. (Oerstedtia dorsale* Coe, 1904)) (CA, Europe, eUS, WA marine infauna)

Ototyphlonemertes Diesing, 1863 - Ototyphlonemertidae ribbon worms
Ototyphlonemertes americana Gerner, 1969 (San Juan Islands (WA) marine beaches interstitial)
Ototyphlonemertes evelinae Correa, 1948 (VA Key & Marco Island (FL) marine beaches interstitial)

Ototyphlonemertes fila Correa, 1953 (VA Key (FL), Brazil marine beaches interstitial)
Ototyphlonemertes lactea Correa, 1954 (VA Key (FL), Brazil, Columbia, Caribbean marine beaches interstitial)

Ototyphlonemertes pellucida Coe, 1943 (= *Carinella p.* Coe) (CA, VA Key (FL) & MA marine beaches interstitial)

Ototyphlonemertes spiralis Coe, 1940 (= *O. (Otohelicophora)* s. of Envall, 1996) (San Diego (CA) marine beaches interstitial)

Ototyphlonemertes undet. sp. or species (MA, NC marine interstitial)

Pantintonemertes Moore & Gibson, 1981 – Prosorhochmidae ribbon worms
Pantintonemertes californiensis R. Gibson, J. Moore & F.B. Crandall, 1982 (WA marine infauna)

Paranemertes Emplectonematidae ribbon worms
Paranemertes californica (CA, WA marine infauna)

Paranemertes carnea Coe (AK, BC, TX marine infauna)
Paranemertes pallida Coe (AK marine infauna)

Paranemertes peregrina Coe, 1901 (dark or wandering ribbon worm/ Ttx in CA sea caves; AK, BC, CA, WA marine infauna)

Paranemertes undet. sp. (WA marine infauna)

Parapolia Coe, 1895 - Lineidae ribbon worms

Parapolia aurantiaca Coe, 1895 (MA marine benthic)

Parapolia undet. sp. (Baffin Island (neCanada) marine infauna)

Procephalotrix Junoy & Gibson, 1991 - Cephalothricidae ribbon worms

Procephalotrix spiralis (Coe, 1930) (NB Gulf of St. Lawrence sandy marine interstitial)

Procephalotrix undet. sp. (CA marine beach interstitial)

Prosorhochmus Keferstein, 1862 - Prosorhochmidae ribbon worms

Prosorhochmus albidus (*Tetrastemma albidum* Coe, 1905) (CA, WA marine infauna)

Prostoma Duges, 1828 - Tetrastemmatidae ribbon worms

Prostoma canadiensis Gibson & Moore, 1978 (ON lake benthic; cosmopolitan)

Prostoma eilhardi (Montgomery, 1894) (US &/or Canada benthic; cosmopolitan)

Prostoma graecense (Bohmig, 1892; *P. rubrum*) (CA benthic; GA caves (near *P.g.*); cosmopolitan)

Prostoma undet. sp. or species (MA marine benthic; NH freshwater lake benthic)

Prostomatella Friedrich, 1935 - Tetrastemmatidae ribbon worms

Prostomatella arenicola Freidrich, 1935 (FL marine interstitial)

Prostomatella underscribed sp.(FL marine interstitial)

Ramphogordius Rathke, 1799

Ramphogordius sanguineus Rathke, 1799 = *Lineus s.*

Tetrastemma Ehrenberg, 1831- Tetrastemmatidae ribbon worms

Tetrastemma bicolor Coe (AK marine benthic)

Tetrastemma bilineatum Coe (CA marine benthic)

Tetrastemma candidum (*Planaria candida* Muller, 1874) (CA, MA, ME, WA marine infauna)

Tetrastemma (*Oerstedtia*) *dorsale* = *O.d.* (Abildgaard, 1806)

Tetrastemma elegans (Girard, 1852) (MA marine benthic)

Tetrastemma nigrifrons Coe, 1904 (CA, WA marine infauna)

Tetrastemma quadrilineatum Coe (CA marine infauna)

Tetrastemma reticulatum Coe, 1904 (CA marine benthic)

Tetrastemma signifer Coe, 1904 (CA marine benthic)

Tetrastemma vermiculus (Quatrefages, 1846) (MA marine benthic)

Tetrastemma vittatum Verrill, 1874 (MA marine benthic)

Stichostemma – Tetrastemmatidae ribbon worms

Stichostemma undet. sp. (WA, NB, Great Lakes freshwater infauna)

Tubulanus Renier, 1804 - Tubulanidae ribbon worms

Tubulanus albocinctus (*Carinella albocincta* Coe, 1904)(CA marine infauna)

Tubulanus capistratus (*Carinella capistrata* Coe, 1901) (AK, CA, WA, Eastern Pacific marine infauna)

Tubulanus cingulatus (*Carinella cingulata* Coe, 1904 (CA marine infauna)

Tubulanus frenatus (*Carinella frenata* Coe, 1904) (CA, Eastern Pacific, WA marine infauna)

Tubulanus nothus (*Carinella n.* Burger, 1892) (CA, WA marine infauna)

Tubulanus pellucidus (Coe, 1895) (Eastern Pacific, CA, MA, NY, VA, WA marine infauna)

Tubulanus polymorphus (*Carinella p.* Renier, 1804; *C. pellucida* Coe, 1895, *C. rubra* Griffin, 1898; *C. speciosa* Coes, 1091) (AK, BC, CA, OR, WA marine infauna)

Tubulanus rhabdotus Correa, 1954 (FL marine infauna)

Tubulanus sexlineatus (Griffin) (*C. dinema* Coe) (CA, BC, OR, AK marine infauna)

Zygeupolia C.B. Thompson, 1900 - Lineidae ribbon worms

Zygeupolia littoralis C.B. Thompson, 1900 (CA marine benthic)

Zygeupolia rubens (*Valencinia r.* Coe, 1895; *Z. littoralis* Thompson, 1900) (MA marine sandy infauna)

Zygeupolia undet. sp. (ME marine benthic)

Zygonemertes Montgomery, 1897 - Amphiporidae ribbon worms

Zygonemertes albida Coe (BC marine infauna)

Zygonemertes thalassina Coe (AK marine infauna)

Zygonemertes virescens (*Amphiporus v.* Verrill, 1879) (CA, MA, WA marine infauna)

Sipunculid Worms

(peanut worms) - Phylum Sipunculida (=Sipuncula) of the; Protostomia. About 320 species in 17 genera. 1-66 cm long, almost cylindrical and nonsegmented. Thick trunk often furrowed or covered with tubercles and a slender, protrusible trunk. Mouth almost always surrounded by wreath of small tentacle. Bibl.: Cutler 1994.

Class Phascolosomatidea

Order Aspidosiphoniformes

Family Aspidosiphonidae (*Aspidosiphon*)

Order Phascolosomatiformes

Family Phascolosomatidae (*Antillesoma*, *Phascolosoma*)

Class Sipunculidea

Order Golfingiiformes

Family Golfingiidae (*Golfingia*, *Phascolion*)

Family Phascolidae (*Phascolion*)

Family Themistidae (*Themiste*)

Order Sipunculiformes

Family Sipunculidae (*Siphonosoma*, *Siphonosomecus*, *Sipunculus*, *Thysanocardia*)

Aspidosiphon Diesing, 1851 - Aspidosiphonidae peanut worms

Aspidosiphon fischeri ten Broeke, 1925 (FL marine benthic)

Aspidosiphon (*Paraaspidosiphon*) *parvulus* Gerould, 1913 (FL marine benthic)

Aspidosiphon (*Paraaspidosiphon*) *steenstrupii* s. Diesing, 1859 (FL marine benthic)

Antillesoma Stephen & Edmunds, 1972 - Phascolosomatidae peanut worms

Antillesoma antillarum Stephen & Edmunds, 1972 (FL marine benthic)

Golfingia Lankester, 1885 - Golfingiidae sipunculid worms

Golfingia gouldi (*Phascolosoma* g. Pourtales, 1851) (MA, ME marine benthic)

Golfingia improvisum (*Phascolosoma* i. Theel, 1905) = *P. minutum* (NJ marine benthic)

Golfingia (*G.*) *margaritacea* (*Sipunculus* m. Sars, 1851) (AK, CA, WA marine infauna)

Golfingia pugettensis (AK, BC, WA marine infauna)

Golfingia undet. sp. (CA marine infauna)

Golfingia vulgaris (*Sipunculus* v. de Blainville, 1827) (AK, WA marine infauna)

Nephasoma Pergament, 1946 - Golfingiidae sipunculid worms

Nephasoma diaphanes (*Phascolosoma* d. Gerould, 1913) (CA, WA marine infauna)

Nephasoma emremita (*Sipunculus* e. M. Sars, 1851) (CA marine benthic)

Nephasoma pellucida (FL marine benthic)

Phascolion Theel, 1875 - Pascolidae peanut worms (once in Golfingiidae)

Phascolion (*Lesenka*) *cryptum* (*Lysenka cryptus* Hendrix, 1975) Cutler & Cutler, 1985 (FL marine benthic)

Phascolion undet sp. or species (e,wFL marine interstitial coarse shelly sand; CA marine infauna)

Phascolion strombi (Montagu, 1804) (AK, e,wFL, Virginian (rare), TX marine infauna)

Phascolosoma Leuckart, 1828 - Phascolosomatidae peanut worms

Phascolosoma* (*P.*) *agassizii Keferstein, 1866 (CA, WA marine infauna)

Phascolosoma minutum Keferstein, 1862 (= *Phascolosoma improvisum* Theel, 1905) (NJ marine benthic)

Phascolosoma perlucens Baird, 1868 (FL marine benthic)

Phascolosoma* (*P.*) *varians Keferstein, 1866 (FL marine benthic)

Siphonomecus Fisher, 1947- Sipunculidae peanut worms

Siphonomecus ingens = *Siphonosoma i.*

Siphonosoma Spengel, 1912 - Sipunculidae peanut worms

Siphonosoma* (*Damosiphon*) *cumanense (*Phascolosoma c.* Keferstein, 1867) (FL marine benthic)

Siphonosoma ingens (= *Siphonomecus i.* Fisher, 1947) (FL, CA marine benthic)

Siphonosoma polymyotis = *Sipunculus p.*

Sipunculus Linnaeus, 1867 - Sipunculidae peanut worms

Sipunculus nudus Linnaeus, 1766 (CA, NC marine infauna)

Sipunculus polymyotus Fisher, 1947 (= *Siphonosoma p.*) (FL marine benthic)

Themiste Gray, 1828 - Themistidae peanut worms.

Themiste* (*T.*) *alutacea (Grube & Oersted, 1858) (FL marine benthic)

Themiste* (*T.*) *dyscritum (*Dendrostomum d.* Fisher, 1952 (CA marine benthic)

Themiste lageniformis Baird, 1868 (= *t. (Lagenopsis) l.*) (FL marine benthic)

Themiste* (*T.*) *perimeces (*Dendrostomum p.* Fischer, 1928) (CA marine benthic)

Themiste pyroides (*Dendrostoma p.* Chamberlain, 1928) (CA marine benthic)

Thysanocardia Fisher, 1950 - Sipunculidae peanut worms

Thysanocardia margaritacea = *Golfingia m.*

Thysanocardia nigra (*Phascolosoma n.* Ikeda, 1904) (CA, WA marine infauna)

Spoon Worms

Echiura (=Echiurida) is a phylum of the Protostomia. About 140 species.

Order Echiuroidea

Bonelliidae (*Nellobia*)

Echiuridae

Subfamily Echiurinae (*Echiurus*)

Subfamily Thalassematinae

(*Arhynchite*, *Lissomyema*, *Thalassema* (put in Thalassematidae))

Thalassematidae (*Thalassema*) (also put in Echiuridae), Subfamily Thalassematinae)

Arhynchite Bird & Holdich, 1984 - Echiuridae spoon worms, Subfamily Thalassematinae
Arhynchite californicus Fisher, 1949 (sCA marine infauna)
Arhynchite pugettensis (WA marine infauna)

Echiurus - Echiuridae spoon worms, Subfamily Echiurinae
Echiurus echiurus (Pallas, 1767) (WA marine infauna)
Echiurus echiurus alaskanus (WA marine infauna)

Lissomyema Fisher, 1946 - Echiuridae spoon worms, Subfamily Thalassematinae
Lissomyema muelitta (*Thalassema m.* Conn, 1886) (NC marine infauna)

Nellobia Fisher, 1946 – Bonelliidae spoon worms
Nellobia eusoma Fisher, 1946 (WA marine infauna)

Thalassema Pallas, 1771 – Thalassematidae spoon worms, Subfamily Thalassematinae (also put in Echiuridae)

Thalassema harmani Fisher, 1947 (TX & Carolinian marine infauna)
Thalassema melitta Conn = *Lissomyema m.*

Trematodes

Trematoda, a class of Phylum Platyhelminthes (flatworms). Known also as "Flukes" "Suckers" and "Flat worms" are internal parasites with unsegmented dorso-ventral flattened body, supplied with one or two suckers. Some cylindrical and threadlike species. Thick cuticle, often with spines or hooks, esp. at rear end. From 1mm to 7 mm long with most a few cm. Parasites in crickets, bats, woodrats, salamanders and other vertebrates living or occasionally visiting caves. Digenean trematodes are hermaphrodites (possessing both female and male reproductive systems in a single body) and have very complicated life cycle express by alternation of several generations (known as adult, egg, miracidia, sporocyst, redia, cercaria, metacercaria (adolescaria), and mesocercaria) and replacement of several host categories (known as final, first and second intermediate hosts). About 6,000 species.

Bibl.: Stiles & Hassall (1899); Rudolphi (1809, 1819); Diesing (1850, 1850); Looss (1899, 1901, 1907); Luehe (1909) Skrjabin 1923-1987; Yamaguti (1958, 1971, 1975), and many other authors and publications listed in the Index Catalog of Medical and Veterinary Zoology, Washington 1960-1984; Helminthological Abstract, London 1960- 1999; Referative Journal, Moscow, 1960-1999.

Phylum Platyhelminthes (flatworms)
Class Trematoda
Subclass Digenea

Order Strigeida

Superfamily Clinostomoidea

Family Clinostomidae

Subfamily Clinostominae: *Clinostomum*;

Superfamily Diplostomoidea

Family Diplostomidae

Subfamily Alariinae (*Alaria*)

Subfamily Diplostominae: *Diplostomum*;

Superfamily Brachylaimoidea

Family Brachylaimidae

Subfamily Brachylaiminae: *Brachylaema*, *Brachylaima*, *Brachylaemus*;

Order Paramphistomida

Superfamily Paramphistomoidea

Family Diplodiscidae

Subfamily Diplodiscinae

(*Diplodiscus*; *Megalodiscus*; *Opisthodiscus*; *Pseudopisthodiscus*)

Order Plagiorchiida

Suborder Plagiorchiata: Macroderoididae (*Alloglossoides*)

Superfamily Allocreadioidea

Family Allocreadiidae

Subfamily Allocreadiinae: *Allocreadium*;

Family Opecoelidae (*Cainocreadium*, *Distoma*)

Subfamily Plagioporinae: *Plagioporus*;

Superfamily Opisthorchioidea

Family Opisthorchiidae

Subfamily Ratzinae: *Ratzia*

Superfamily Microphalloidea

Family Anterotremitidae

Subfamily Anterotrematinae: *Anterotrema*

Family Microphallidae

Subfamily Microphallinae: *Microphallus*; *Levinseniella*;

Subfamily Renischetrematinae: *Renischetrema*;

Superfamily Plagiorchioidea

Family Allassogonoporidae

Subfamily Allassogonoporinae: *Allassogonoporus*; *Myotitrema*

Family Brachycoelidae

Subfamily Brachycoelinae: *Brachycoelium*;

Subfamily Brachylecithinae: *Brachylecithum*;

Subfamily Mesocoeliinae: *Mesocoelum*;

Family Cephalogonimidae
Subfamily Cephalogoniminae: *Cephalogonimus*;

Family Dicrocoeliidae (*Lyperosomum*)
Subfamily Dicrocoeliinae: *Dicrocoelium*; *Lutziella*, *Lutzitrema*;
Zyperosomum;

Subfamily Eutrematinae: *Conspicuum*;

Family Gorgoderidae
Subfamily Gorgoderinae: *Gorgodera*; *Gorgoderina*
Subfamily Phyllodistominae: *Phyllodistomum*;

Family Lecithodendriidae (*Ototrema*) (undet. Genus in TN *Myotis grisescens*
bats)

Subfamily Lecithodendriinae: *Lecithodendrium*;

Subfamily Gyrabascinae: *Gyrabascus*; *Limatulum*; *Limatuloides*;
Tremajoannes;

Subfamily Maxbarauniinae: *Maxbraunium*

Subfamily Parabascinae: *Parabascus*;
Subfamily Paralecithodendriinae: *Paralecithodendrium*;

Subfamily Phaneropsolinae: *Phaneropsolus*;
Subfamily Pleurogeninae: *Pleurogenes*; *Glyptoporus*;

Subfamily Prosthodendriinae
Prosthodendrium; *Ochoterenatrema*; *Travassodendrium*

Subfamily Pycnoporinae: *Pycnoporus*;

Family Plagiorchiidae
Subfamily Plagiorchiinae: *Plagiorchis*;
Subfamily Styphlodorinae:
Manodistomum; *Paralepoderma*; *Plagitura*; *Pseudorenifer*;
Zeugorchis

Family Prosthogonimidae
Subfamily Prosthogoniminae: *Prosthogonimus*;

Family Stomilotrematidae
Subfamily Stomylotrematinae: *Stomylotrema*;

Family Telorchiidae
Subfamily Telorchinae: *Telorchis*;

Family Urotrematidae

Subfamily Urotrematinae: *Urotrema*; *Urotrematulum*;

Subclass Monogenea

Order Monogenea

Suborder Polyopisthocotyle

Superfamily Polystomatoidea

Family Sphyrnidae

Subfamily Sphyrninae: *Sphyrna*;

Acanthatrium (Faust, 1919) = subgenus of *Prosthodendrium* (Intestinal parasites of bats and other animals).

Alaria Schrank, 1788 - Diplostomatidae trematodes, Subfamily Alariinae (Intestinal parasites of various animals, including salamanders).

Alaria *arisaemoides* Augustinae & Urbie, 1927 (endoparasite in TX, MN *Triturus viridescens* salamanders)

Alaria *canis* La Rue & Fallis, 1934 (endoparasite in OK, TX, MN *Triturus viridescens* salamanders)

Allassogonoporus Olivier, 1938 - Allassogonoporidae trematodes, Subfamily Allassogonoporinae (Intestinal parasites of various animals, including bats)

Allassogonoporus *marginalis* Olivier, 1938 (= *A. verspertilionis* Macy, 1940; *Myotitrema asymmetrica* Macy, 1940 (fide Gilford, 1955)) (endoparasite in KY *Myotis sodalis*, MN, OR & WI *Eptesicus fuscus*), OR *Myotis californicus caurinus*, KS *Myotis grisescens*, KS, IN (Green Co.) *Myotis velifer*, MI, IN *Pipistrellus subflavus*, LA *Tadarida brasiliensis cynocephala*, IN, MN, MI, IA, OR, WI *Myotis lucifugus* & IN, MN, MI, IA, OR *Myotis evotis* bats)

Allassogonoporus *marginalis* Olivier, 1938 (endoparasite in IN (rare), MN, WI *Eptesicus fuscus* bats; in KS *Myotis velifer incautus*; KS?, OR *Myotis californicus caurinus*; IN, KS, MN, OR, WI (Tx) *Myotis lucifugus*, IN *Pipistrellus subflavus*, KS (Tx), KY *M. sodalis*; KS *Myotis velifer* & LA *Tadarida brasiliensis* bats)

Allassogonoporus *vespertilionis* Macy, 1940 (endoparasite in OR *Myotis californicus caurinus*, & MD, IN *Eptesicus fuscus* bats).

Allocreadium Looss, 1900 - Allocreadiidae trematodes, subfamily Allocreadiinae (Intestinal and abdominal parasites of various animals, including salamanders).

Allocreadium *pseudotritoni* Rankin, 1937 (endoparasite in non-cave OH *Gyrinophilus porphyriticus duryi*, *Pseudotriton ruber* & *montanus* salamanders)

Alloglossoides Corkum & Turner, 1977 - Macroderoididae trematodes
(Internal parasites of various animals, including crayfish)

Alloglossoides caridicola Corkum & Turner, 1977 (endoparasite in non-cave LA *Procambarus acutus* a. crayfish)

Brachycoelium Stiles & Hassall, 1898 - Brachycoelidae trematodes, subfamily Brachycoelinae
(endoparasite in blood vessels, mainly veins of liver and other abdominal organs of various animals, including salamanders)

Brachycoelium ambystomae Rankin et Hughes, 1937 (endoparasite in non-cave FL *Ambystoma opacum* salamanders)

Brachycoelium undet. sp. or species (endoparasite in AL, IL, TN *Eurycea lucifuga* salamanders)

Brachycoelium dorsale Byrd, 1937 (endoparasite in non-cave LA *Ambystoma opacum* salamanders)

Brachycoelium elongatum Cheng 1959 (endoparasite in VA (Giles Co.) *Demognathus phoca*, *D. quadrimaculatus* & *Plethodon glutinosus* salamanders).

Brachycoelium hospitale (Stafford, 1900) Looss, 1902 (endoparasite in LA *Plethodon glutinosus*, PA, VA *Triturus viridescens*, NC, PA, TX *Ambystoma maculatum*, *A. opacum*, *Demognathus fuscus*, *D. ochrophaeus*, *D. phoca*, & *Eurycea bislineata cirrigera* salamanders).

Brachycoelium meridionalis Harwood, 1932 (endoparasite in TX (Houston) *Triturus meridionalis*, GA *Demognathus fuscus* & *Plethodon glutinosus* salamanders).

Brachycoelium mesorchium Byrd, 1937 (endoparasite in GA *Demognathus fuscus* salamanders).

Brachycoelium obesum Nicoll, 1914 (endoparasite in non-cave VA *Plethodon cinereus* salamanders).

Brachycoelium ovale Byrd, 1937 (endoparasite in GA *Demognathus fuscus* & *Plethodon glutinosus* salamanders).

Brachycoelium salamandrae (Froelich, 1789) Luehe, 1909 (endoparasite in MO Tb *Typhlotriton spelaeus*, IL (Tx), KY (Trigg Co.) *Eurycea lucifuga*, non-cave OH *Gyrinophilus porphyriticus duryi*, non- cave LA,CT, WI *Ambystoma opacum* & *maculatum*, non-cave *Plethodon cinereus c. albaquia* & *glutinosus* & non-cave AR *Desmognathus brimleyorum* & *Eurycea multiplicata griseogaster* & LA, NY (Tx), PA (Tx), MA (Tx), NC (Tx) *Eurycea bislineata*, NY *Triturus viridescens*, MA *Ambystoma jeffersonianum* & *maculatum* salamanders),

Brachycoelium storeriae Harwood, 1932 (endoparasite in GA *Opheodrys aestivus*, LA *Desmognathus fuscus* & non-cave NH *Eurycea bislineata* salamanders)

Brachycoelium trituri Holl, 1928 (endoparasite in MD, OH, LA *Triturus meridionalis* &

viridescens, GA *Demognathus fuscus* salamanders).

Brachylaema Yamaguti, 1958 - Brachylaimidae trematodes, subfamily Brachylaiminae (Parasites in small intestines of various birds and rodents, including those found in caves).

Brachylaema peromyscis = *Brachylaemus p.*

Brachylaema dolichodirus = *Brachylaima d.*

Brachylaema raushi = *Brachylaima r.*

Brachylaemus Blanchard, 1847 - Brachylaimidae trematodes, subfamily Brachylaiminae (Parasites in small intestine of various rodents and birds, including in woodrats)

Brachylaemus peromyscis Reynolds, 1937 (endoparasite in NM, CA *Neotoma albigula* & *stephensi* woodrats).

Brachylaima Dujardin, 1843 or 1845 (= *Brachylaemus*) Brachylaimidae trematodes, subfamily Brachylaiminae (Parasites in small intestine of various rodents and birds, including in woodrats)

Brachylaima dolichodirus Mason, 1953 (endoparasite in Tx, TX, AZ *Neotoma micropus* & *albigula* woodrats)

Brachylaima raushi McIntosh, 1950 (endoparasite in NM, TX, AZ *Neotoma albigula*, *micropus* & *stephensi* woodrats).

Brachylecithum Storm, 1940 - Brachycoelidae trematodes, subfamily Brachylecithinae (Parasites in gall bladder and liver of various birds, including in swallows)

Brachylecithum americanum Denton, 1945 (endoparasite in NM, CA *Hirundo rustica* & *fulva* swallows).

Brachylecithum delicatum Denton & Byrd, 1951 (in MN, ND *Hirundo fulva* cave swallow).

Cainocreadium Nicoll, 1909 - Opecoelidae trematodes, subfamily (Intestinal and abdominal parasites of various animals, including salamanders).

Cainocreadium pseudotritoni (Rankin, 1937) Yamaguti, 1958 (endoparasite in non- cave OH *Gyrinophilus porphyriticus duryi*, *Pseudotriton ruber* & *montanus* salamanders)

Cephalogonimus Poirier, 1886 - Cephalogonimidae trematodes, subfamily Cephalogoniminae (Intestinal parasites of various amphibians and reptiles, including salamanders).

Cephalogonimus brevicirrus Ingles, 1932 (endoparasite in CA *Triton cristatus* salamanders)

Cephalogonimus compactus Stunkard, 1924 (endoparasite in Fl *Triton palmatus* salamanders)

Cephalogonimus vesicaudus Nicerson, 1912 (endoparasite in AZ, TX *Triton punctatus* salamanders)

Clinostomum Leidy, 1856 - Clinostomidae trematodes, subfamily Clinostominae
(Intestinal parasites of various birds, amphibians and reptiles, including salamanders).

Clinostomum complanatum (Rudolphi, 1814) (endoparasite in TX (Real Co.) *Eurycea neotenes* salamander),

Conspicuum (Bhalerao, 1936) Shtrom, 1940 - Dicrocoeliidae trematodes, subfamily Eutrematinae (Parasites in gall bladder of various birds and mammals, including bats).

Conspicuum icteridorum Denton et Byrd, 1951 (endoparasite in LA, TX (Tx) *Tadarida brasiliensis* & TX *Myotis lucifugus* bats).

Conspicuum macrorchis Denton et Byrd, 1951 (endoparasite in TX (San Antonio) *Tadarida brasiliensis* bats).

Dicrocoelium (Dujardin, 1845) Blanchard, 1847 - Dicrocoeliidae trematodes, subfamily Dicrocoeliinae (Parasites in liver & biliary bladder & ducts of some mammals & birds, incl. bats)

Dicrocoelium lasiuri McIntosh, 1933 (endoparasite in DC *Lasiurus borealis* bats)

Dicrocoelium rileyi Macy, 1931 (endoparasite in LA, NM, OK, TX, KS *Myotis velifer*, *Nycticeius humeralis*; IA *Eptesicus fuscus*; FL, LA, OK *Tadarida brasiliensis cynocephala* & OK, TX (Tx) *Tadarida brasiliensis mexicana* bats)

Diplodiscus Diesing, 1836 - Diplodiscidae trematodes, subfamily Diplodiscinae
(Parasites in endgut of amphibians, including salamanders).

Diplodiscus intermedius Hutner, 1930 (endoparasite in NC *Desmognathus fuscus* salamanders).

Diplodiscus temperatus Stafford, 1905 (endoparasite in NC, NY, FL *Ambystoma opacum* & *tigrinum*, *Desmognathus fuscus*, & *Triturus granulatus* salamanders).

Diplostomum (Nordmann, 1832) Brandes, 1892 - Diplostomidae trematodes, subfamily Diplostominae (Intestinal parasites of various birds and amphibians, including salamanders)

Diplostomum ambystomae Rankin & Hughes, 1937 (endoparasite in NC (Durham), MI *Ambystoma opacum*, *maculatum* & *tigrinum* salamanders).

Diplostomum desmognathus Rankin, 1937 (endoparasite in NC (Bent Creek *Desmognathus fuscus*, *phoca* & *quadramaculatus* salamanders).

Diplostomum undet. sp. (endoparasite in VA *Triturus viridescens* salamander)

Bibl.: Lautenschlager, 1958

Diplostomum undet. sp. (endoparasite in PA *Triturus viridescens* salamander). **Bibl.:** Shaw 1933

Distoma Zeder, 1800 (= *Orchipeidum*) (liver fluke) Opecoelidae trematodes
Distoma undet. sp. or species (endoparasite in TN? *Lasiurus borealis* & DC, WI *Lasiurus cinereus* bats)

Distoma tubiformum Braun, 1900 (endoparasite in *Lasiurus borealis* bats)

Glyptoporus Macy, 1936 - Lecithodendriidae trematodes, subfamily Pleurogeninae
(Intestinal parasites of bats)

Glyptoporus collaris nomen nudum (in CA intestine of *Macrotus californicus* bats)

Glyptoporus noctophilus Macy, 1936 (endoparasite in IN, WI, MN *Myotis lucifugus*; WI, MN *E. fuscus*; WI *Myotis keeni*; IN (Tx) *Myotis sodalis* & TX *Tadarida brasiliensis mexicana* bats).

Glyptoporus undet. sp. (endoparasite in AB *Eptesicus fuscus* & *Myotis lucifugus* bats).

Gorgoderina Looss, 1899 - Gorgoderidae trematodes, subfamily Gorgoderinae
(Parasites in urinary bladder of amphibians, including salamanders).

Gorgoderina amplicava Looss, 1892 (endoparasite in *Pseudotriton ruber* & *montanus*, & *Ambystoma maculatum* salamanders).

Gorgoderina attenuata Stafford, 1902 (endoparasite in ME, NY *Triturus viridescens* & TX *Ambystoma tigrinum* salamanders).

Gorgoderina minima Cort, 1912 (endoparasite in IL, MI *Triturus viridescens* salamander).

Gorgoderina opaca Stafford, 1902 (endoparasite in ME, IL *Triturus viridescens* salamander).

Gorgoderina translucida Stafford, 1902 (endoparasite in ME *Triturus viridescens* salamander).

Gorgoderina Looss, 1902 - Gorgoderidae trematodes, subfamily Gorgoderinae
(Parasites in urinary bladder of amphibians and fishes, including salamanders).

Gorgoderina attenuata (Stafford, 1902) Stafford, 1905 (endoparasite in ME, NY *Triturus viridescens* & TX *Ambystoma tigrinum* salamanders).

Gorgoderina aurora Ingles, 1936 (endoparasite in NC *Desmognathus fuscus*, *Ambystoma opacum*, *Pseudotriton ruber* & *montanus*, & *Triturus viridescens* salamanders).

Gorgoderina bilobata Rankin, 1937 (in NC (Durham) *Ambystoma opacum*, *Desmognathus fuscus*, *Pseudotriton ruber* & *Triturus viridescens* salamanders).

Gorgoderina intermedia Hall, 1928 (endoparasite in PA *Triturus viridescens* salamanders).

Gorgoderina opaca (Stafford, 1902) Stafford, 1905 (endoparasite in ME, IL *Triturus viridescens*

salamander).

Gorgoderina tenuis Rankin, 1937 (endoparasite in non-cave NC *Eurycea guttolineata* salamander).

Gorgoderina translucida (Stafford, 1902) Stafford, 1905 (endoparasite in ME *Triturus viridescens* salamanders).

Gyrabascus Macy, 1935 - Lecithodendriidae trematodes, subfamily Prosthodendriinae (Intestinal parasites of Chiroptera)

Gyrabascus brevisgastrus Macy, 1935 (endoparasite in WI, MN *Myotis lucifugus* bats)

Gyrabascus echinus McIntosh 1936 (endoparasite in CA, AZ *Myotis californicus* bats)

Hamatoloechus Looss, 1899 - Plagiorchiidae trematodes (Parasites in lungs of amphibians, including salamanders)

Haematoloechus longiplexus Stafford, 1902 (endoparasite in TX *Desmognathus fuscus* & *Ambystoma tigrinum* salamanders).

Haematoloechus pulcher Bravo-Hollis, 1943 (endoparasite in Az *Ambystoma tigrinum* salamanders)

Lecithodendrium Looss, 1896 - Lecithodendriidae trematodes, subfamily Lecithodendriinae (Parasites of Chiroptera, occasionally of chameleons)

@***Lecithodendrium anticum*** (*ascidioides*) (endoparasite in Canadian *Myotis subulatus* bats)

Lecithodendrium breckenridgei Macy, 1936 (endoparasite in MN (St. Peter) *Pipistrellus subflavus* bats)

Lecithodendrium linstowi Dollfus, 1931 (endoparasite in MN *Eptesicus fuscus* & TX *Tadarida mexicana* bats).

Lecithodendrium nycteridis (Faust, 1919) Pande, 1935 = *Prosthodendrium* n

@***Lecithodendrium posticum*** (endoparasite in Canadian *Myotis subulatus* bats)

Lecithodendrium pricei Perez Viguera, 1940 (endoparasite in IN *Eptesicus fuscus*, MN *Pipistrellus subflavus* bats)

Lecithodendrium undet. sp. or species (endoparasite in TN, WI *Lasiurus borealis* bats)

Lecithodendrium vivianae (Groschafft & Valle, 1969) Odening, 1969 (endoparasite in IN, MN *Eptesicus fuscus*; IN, MN *Pipistrellus subflavus* bats).

@~**Lecithodendrium** Cheng, 1959 (in VA (Albemarle Co) *Eptesicus fuscus* & DC *Lasionycteris noctivagans* bat).

Levinseniella Stiles & Hassall in Ward, 1901 - Microphallidae trematodes, subfamily Microphallinae (Parasites in digestive tract of birds, including in cave swallow).

Levinseniella amnicolae Etges, 1953 (endoparasite in KY *Hirundo fulva*, & NY *Hirundo rusticola* swallow birds).

Levinseniella carcinidis Rankin, 1939 endoparasite (in MI, *Hirundo fulva* swallows).

Limatulum Travassos, 1921 - Lecithodendriidae trematodes, subfamily Lecithodendriinae (Gastrointestinal parasites of Chiroptera)

Limatulum diminutum Chandler, 1938 (endoparasite in TX (Houston) *Nycticeius humeralis* batw).

Limatulum gastroides Macy, 1935 (endoparasite in KY (Tx) *Myotis sodalis*; AB, OR *Myotis californicus caurinus*; IA, IN (Tx), MA, MI, MN, WI (Tx) *Myotis lucifugus* & *Tadarida brasiliensis*; WI *Myotis keeni*; IN *Lasionycteris noctivagans* & IN, WI *Eptesicus fuscus* bats)

Limatulum limatulum (Braun, 1900) Travassos, 1921 (endoparasite in TX *Myotis velifer* bats)

Limatulum mcdanieli Brooks & Coggins, 1983 (endoparasite in WI *Myotis lucifugus* bats)

Limatulum noctophilum (*Glyptoporus n.* Macy, 1931) (endoparasite in US *Myotis lucifugus* & IN *Myotis sodalis* bats)

Limatulum oklahomense Macy, 1931 (endoparasite in KS *Myotis grisescens*, FL,KS,OK *Tadarida b. cynocephala* & TX (Tx) *Tadarida b. mexicana* bats)

Lutziella (Rodhe, 1966) Yamaguti, 1971 (also treated as subgenus of *Lutztrema*) - Dicrocoeliidae trematodes, subfamily Dicrocoeliinae (Parasites in liver and gall bladder of mammals, including bats)

Lutziella microacetabulare (Rodhe, 1966) Yamaguti, 1971 (= *Lutztrema* (*Lutziella*) *m.*) Byrd, 1937) (endoparasite in IN *Myotis lucifugus* bats),

Lutztrema Travassos, 1941 - Dicrocoeliidae trematodes, subfamily Dicrocoeliinae (Parasites in liver -gall bladder and bile ducts of birds and mammals, including in cave swallows).

Lutztrema monenteron (Price & McIntosh, 1935) Travassos, 1941 (endoparasite in LA *Hirundo fulva* swallow).

Lyperosomum Looss, 1899 - Dicrocoeliidae trematodes, subfamily (Parasites in liver -gall bladder and bile ducts of birds and mammals, including in cave swallows)

Lyperosomum sp. Humes, 1941 (endoparasite in LA *Hirundo fulva* swallows).

Lyperosomum sp. Denton, 1942 (endoparasite in TX *Hirundo fulva* swallow).

Manodistomum Stafford, 1905 - Plagiorchiidae trematodes, subfamily Styphlodorinae (Parasites in alimentary tract and lungs of amphibians and reptiles, including salamanders).

Manodistomum intermedium (Etges & Bonner, 1965) Yamaguti, 1971 (endoparasite in IN *Triturus viridescens* salamander).

Manodistomum occultum Stafford, 1905 (endoparasite in non-cave NC *Eurycea guttolineata* salamander),

Manodistomum megacystis (Steward, 1960) Yamaguti, 1971 (endoparasite in KS *Triturus viridescens* salamander).

Manodistomum parvum (Stunkard, 1933) Yamaguti, 1958 (endoparasite in OH *Triturus viridescens* salamander)

Manodistomum salamandra (Holl, 1928) Yamaguti, 1958 (in NC, NY, MD, VA *Triturus viridescens* & *Ambystoma opacum* salamanders).

Maxbraunium Caballero & Zerecero, 1942 - Lecithodendriidae trematodes, subfamily Pleurogeninae Maxbrauniinae (Gastrointestinal parasites of Chiroptera).

Maxbraunium tubiporum (Braun, 1900) Caballero & Zerecero, 1942 (endoparasite in TX *Pipistrellus subflavus*, *Lasiurus borealis*, *Myotis californicus* bats).

Megalodiscus Chandler, 1923 - Diplodiscidae trematodes, subfamily Diplodiscinae (Parasites in rectum, occasionally in bladder of amphibians, including salamanders).

Megalodiscus americanus Chandler, 1923 (endoparasite in OR (Benton Co) *Triturus granulosus*, NC *Desmognathus fuscus* & NC, OR (Linn Co) *Ambystoma gracile* salamanders).

Megalodiscus intermedius (Hutner, 1930) Harwood, 1932 (endoparasite in NC *Desmognathus fuscus* salamander).

Megalodiscus rankini Bravo-Hollis, 1941 (endoparasite in VA, NC *Triturus viridescens* salamander).

Megalodiscus temperatus (Stafford, 1905) Harwood, 1932 (in NC, NY, FL *Ambystoma opacum* & *tigrinum*, *Desmognathus fuscus*, & *Triturus granulosus* salamanders).

Mesocoelium Odhner, 1910 - Brachycoelidae trematodes, subfamily Mesocoeliinae (Intestinal parasites of amphibians and reptiles, including salamanders).

Mesocoelium americanum Harwood, 1932 (endoparasite in TX (Houston) *Triturus meridionalis*

salamander).

Microphallus Ward, 1901 - Microphallidae trematodes, subfamily Microphallinae
(Intestinal and abdominal parasites of fishes)

Microphallus fonti Overstreet, Head & Lotz, 1992 (endoparasite in non-cave LA *Procambarus clarki* crayfish).

Myotitrema Macy, 1939 - Allassogonoporidae trematodes, subfamily Allassogonoporinae
(Intestinal parasites of Chiroptera)

Myotitrema asymmetricum Macy, 1939 (endoparasite in MN *Myotis licifugus* bats).

Ochoterenatrema Caballero, 1943 - Lecithodendriidae trematodes, Subfamily Prosthodendriinae (Intestinal parasites of Chiroptera)

Ochoterenatrema breckenridgei (*Lecithodendrium b.* Macy, 1936; *L. pricei* Perez Vigueras, 1940; *O. p.* Odening, 1969; *L. viviana* Groschaft & Valle, 1969 (fide Odening, 1973)) Caballero, 1943 (endoparasite in Cuba, IN, MN, WI *Eptesicus fuscus*; Cuba *Artebius jamaicensis*; IN, MN *Pipistrellus subflavus* & FL *Tadarida brasiliensis cynocephala* bats)

Ochoterenatrema costarricensis Caballero & Madrigal, 1958 (endoparasite in NM, TX *Eptesicus fuscus* & WI *Myotis keeni* bats).

Ochoterenatrema diminutum (*Limatulum d.* Chandler, 1938; *O. caballeroi* Freitas, 1957; *Prosthodendrium n.* Williams, 1961; *P. nokomis* Groschaft & Valle, 1969; *P. bunogermis* Groschaft & Valle, 1969) Caballero, 1943 (endoparasite in Cuba, IN, MN, WI *Eptesicus fuscus*, MS *Lasiurus intermedius*), IN (Tx) *Myotis keeni* ; KY *Myotis sodalis*; TX, IN *Myotis lucifugus*; TX *Nycticeius humeralis* & IN *Pipistrellus subflavus* & *Tadarida b.* bats)

Ochoterenatrema fraternum Teixeira de Freitas & Ibanez H., 1962 (endoparasite in NM *Tadarida b.* bats).

Ochoterenatrema labda (Caballero, 1943) Yamaguti, 1958 (endoparasite in FL, LA, NM, TX *Tadarida brasiliensis*; LA *Myotis austroriparius*; MN, WI *Eptesicus fuscus* & FL, TX (Tx) *Tadarida brasiliensis cynocephala* bats).

Ochoterenatrema travassosi (*Prosthodendrium t.* Macy, 1938; *Pycnoporos t.* Yamaguti, 1938) (endoparasite in WI & MN *Eptesicus fuscus* bats)

Ochoterenatrema undesc. sp. (Tx in IN *Eptesicus fuscus* bats).

Opisthodiscus Cohn, 1904 - Diplodiscidae trematodes, subfamily Diplodiscinae
(Parasites in large intestine of batrachians).

Opisthodiscus amereicanus Holl, 1928 (endoparasite in OH *Triturus viridescens* salamanders).

Ototrema Font, 1978 - Lecithodendriidae trematodes, subfamily (Intestinal parasites of bats).
Ototrema schildti Font, 1978 (endoparasite in WI & MN *Myotis lucifugus* (Tx) & WI *Myotis keeni* bats)

Parabascus Looss, 1907 - Lecithodendriidae trematodes, subfamily Parabascinae
(Parasites of Chiroptera)

Parabascus lepidotus Looss, 1907 (endoparasite in CA, TX *Myotis lucifugus* & *Eptesicus fuscus* bats).

Paralecithodendrium (Odhner, 1911) Travassos, 1921 (= *Prosthodendrium* Dolfus, 1931; *Chiroptedendrium*, *Skrjabinodendrium* Travassodendrium Skarbilovich, 1943; *Longitrema* Cheng, 1954) - Lecithodendriidae trematodes, subfamily Paralecithodendriinae (Intestinal parasites of mammals, especially of Chiroptera).

Paralecithodendrium carlsbadensis Cain, 1966 (type locality in Carlsbad C. (NM)/ endoparasite on *Tadarida brasiliensis* bats)

Paralecithodendrium chilostomum (*Distoma c.* Mehlis, 1831; *D. ascidiodes* Van Beneden, 1873; *Lecithodendrium cordiforme laxmii* Bhalerao, 1926; *Prosthodendrium oligolechithum* Manter & Debus, 1945; *Travassodendrium rhinolophi* Rsvavy, 1956; *T. raabei* Soltys, 1959) Travassos, 1921 (endoparasite in MN, IN & WI *Eptesicus fuscus*, FL *Tadarida b. cynocephala*, NE *Myotis californicus*; IN *Myotis lucifugus* & NB *Pipistrellus subflavus* bats),

Paralecithodendrium longiforme (Bhalerao, 1926) Nortrup, 1928 (endoparasite in CA, TX *Eptesicus fuscus* bats).

Paralecithodendrium lucifugi (Macy, 1937) (endoparasite in WI, MN *Myotis lucifugus* & *Eptesicus fuscus* bats)

Paralecithodendrium macnabi (*Prosthodendrium m.* Macy, 1936; *Prosthodendrium mizellei* Seamster & Stevens, 1948; *P. duboisi* Neiland, 1962) Lotz & Font, 1983 (endoparasite in BC, MN, IN & WI *Eptesicus fuscus*; AK, IN (Tippecanoe Co.) *Myotis lucifugus*, & IN, BC *Lasionycteris noctivagans* bats).

Paralecithodendrium naviculum (*Prosthodendrium n.* Macy, 1936; *P. mizellei* Seamster & Stevens, 1948; *P. duboisi* Neiland, 1962) (endoparasite in MN, IN & WI *Eptesicus fuscus*; IN *Myotis lucifugus*, *Myotis sodalis*, *Eptesicus fuscus*; MS *Lasiurus intermedius floridanus*; Mex. *Lasiurus cinereus*, *Tadarida brasiliensis* & BC *Myotis volans* bats).

Paralecithodendrium nokomis ((*Prosthodendrium n.* Macy, 1935) (endoparasite in MN, IN & WI *Eptesicus fuscus*; MN & IA *Lasiurus borealis* & *Nycteris borealis* bats).

Paralecithodendrium singularium (*Prosthodendrium s.* Byrd & Macy, 1942) (endoparasite in MS *Lasiurus intermedius floridanus* bats)

Paralecithodendrium swansoni ((*Prosthodendrium s.* Macy, 1936) Lotz & Font, 1983 (= *P.*

lucifugi (Macy, 1937)) (endoparasite in IA, IN, MN, WI *Eptesicus fuscus*, KS *Myotis grisescens*; IA *Lasiurus borealis*; LA *Tadarida cynocephala*; BC, IN (Tippecanoe Co.), Jamaica, *Tadarida brasiliensis*; BC, IA, IN, MN, WI *Myotis lucifugus* & IN (Greene Co.) *Myotis keeni* & *sodalis* bats).

Paralecithodendrium transversum (*Prosthodendrium t.* Byrd & Macy, 1942) (endoparasite in Cuba, IA, IN, MN & WI *Eptesicus fuscus*; IA, IN, TN *Lasiurus borealis*, IA, IN (Tx) & WI *Myotis keeni*, IN, KY *Myotis sodalis* (Tx) & IN *Pipistrellus subflavus* & *Myotis lucifugus* bats).

Paralepoderma Dollfus, 1950 - Plagiorchiidae trematodes, subfamily Styphlodorinae (Cloacal parasites of amphibians and reptiles)

Paralepoderma cloacicola (Luehe, 1909) Dollfus, 1950 (endoparasite in TX *Ambystoma mexicana* & *Triturus viridescens* salamanders).

Phaneropsolus Looss, 1899 - Lecithodendriidae trematodes, subfamily Prosthodendriinae Phaneropsolinae:

Phaneropsolus orbicularis (Diesing, 1850) Braun, 1901 (endoparasite in CA, OR *Myotis* bats)

Phyllodistomum Braun, 1899 - Gorgoderidae trematodes, subfamily Phyllodistominae (Parasites in urinary bladder of freshwater and marine teleosts and amphibians).

Phyllodistomum americanum Osborn, 1903 (endoparasite in NM *Ambystoma punctatum*, *tigrinum* & *maculatum* salamanders).

Phyllodistomum attenuata (Stafford, 1902) Pande, 1937 (in GA *Desmognathus fuscus* bats).

Phyllodistomum coatneyi Meserve, 1941 (in WI *Ambystoma maculatum* salamander).

Phyllodistomum solidum Rankin, 1937 (in PA, NC, NY non-cave sIL *Desmognathus fuscus* & *Triturus punctatus* salamander)

Plagioporus Stafford, 1904 - Plagiorchiidae trematodes, subfamily Styphlodorinae (Parasites of marine, occasionally freshwater fishes and amphibians).

Plagioporus gyrinophili Catalano & Etges, 1981 (endoparasite in non-cave OH *Gyrinophilus porphyriticus duryi* salamanders)

Plagiorchis Luhe, 1899 Plagiorchiidae trematodes, subfamily Plagiorchiinae (Intestinal parasites of vertebrates, especially insectivores, including bats, and caves swallows).

Plagiorchis maculosus Macy, 1931 (endoparasite in AB,CO,MI & NM *Myotis* bats)

Plagiorchis (*Plagioorchis*) *micracanthos* Macy, 1931 (endoparasite in CA, NM, TX *Hirundo fusca*, *raparia* & *urtice* swallows & in NV *Pipistrellus hesperus*, KY (Tx) *Myotis sodalis*; MN,OH *Eptesicus fuscus*; MN,NM *Myotis lucifugus*; KS *Myotis grisescens*; CA *Myotis*

californicus; TN *Myotis sodalis*, WA *Lasionycteris noctivagans* & NB *Pipistrellus subflavus* bats).

Plagiorchis muris Tanabe, 1922 (endoparasite in Tx *Myotis velifer* bats).

Plagiorchis undet. sp. (ectoparasite in TN *Nycticeius humeralis* bats)

Plagiorchis (*Plagiorchis*) *vespertilionis* (Muller, 1784) Braun, 1900 (endoparasite in *Myotis grisescens*; IA, IN, KS, WI *Eptesicus fuscus*, IN *Lasiurus borealis*, *Lasionycteris noctivagans*, *Pipistrellus subflavus*, *Myotis sodalis*; IA, IN, WI *Myotis keeni*; IA, IN *Lasiurus cinereus*; LA, TX (Tx) *Tadarida b. mexicana* & *cynocephala*; Canadian *Myotis subulatus*, IA, IN, NB *Myotis lucifugus* & WA *M.l. alascensis* bats)

Plagiorchis vespertilionis microcanthus (Macy, 1956) Odening, 1959 (endoparasite in OR, WA *Hirundo fusca* cave swallows & KY (Tx) *Myotis sodalis* & WA *Myotis lucifugus* bats).

Plagiorchis vespertilionis parorchis Macy, 1956 (endoparasite in OR, WA, *Hirundo fusca* cave swallows; LA, TX (Tx) *Tadarida brasiliensis* & NB, WA *Myotis lucifugus* bats)

Plagitura Holl, 1938 - Plagiorchiidae trematodes, subfamily Styphlodorinae
(Parasites in alimentary tract and lungs of amphibians and reptiles, including salamanders).

Plagitura intermedium (Etges & Bonner, 1965) Holl, 1938 (endoparasite in IN *Triturus veridescens* salamanders)

Plagitura parvum (Stunkard, 1933) Holl, 1938 (endoparasite in OH, NY, MA *Triturus veridescens* salamanders)

Plagitura salamandra Holl, 1928 (endoparasite in NC, NY, MD, VA *Triturus veridescens* & *Ambystoma opacum* salamanders).

Plagitura sp. Etges & Patzer, 1956 (endoparasite in OH (Scioto CO) *Triturus veridescens* salamanders).

Plagitura sp. Rankin, 1937 (endoparasite in NC *Ambystoma opacum* salamanders).

Plagitura sp. Rankin, 1937 (endoparasite in NC *Triturus veridescens* salamanders).

Pleurogenes Looss, 1896 - - Lecithodendriidae trematodes, subfamily Pleurogeninae
(Intestinal parasites of amphibians, including salamanders).

Pleurogenes medians (Olsson, 1896) Klein, 1905 (endoparasite in OR, *Triton palmatus* salamanders).

Prosthodendrium Dollfus, 1931 (= *Prosthodendrium* Dollfus, 1931; *Chiroptodendrium*, *Travassodendrium* Skarbilovich, 1943; *Ochoterenatrema* Caballero, 1943; *Paralecithodendrium* Travassos, 1928; *Lecithodendrium* Looss, 1896) Lecithodendriidae trematodes, subfamily

Prosthodendriinae (Intestinal parasites of mammals, especially of Chiroptera).

Prosthodendrium (*Prosthodendrium*) *alaskense* or *alaskensis* Neiland, 1962 (endoparasite in AB *Eptesicus fuscus*, *Myotis lucifugus* & *Lasionycteris noctivagans* & non-cave? AK *Myotis lucifugus* bats)

Prosthodendrium (*Acanthatrium*) *alicatai* Macy, 1940 (endoparasite in Tx *Tadarida b.* & DC, IN, MD, MN, TX *Eptesicus fuscus* bats).

Prosthodendrium (*Acanthatrium*) *anticum* (Stafford, 1905) Dollfus, 1948 (endoparasite in MN *Eptesicus fuscus* bats)

Prosthodendrium (*Acanthatrium*) *amphidymum* (*Acanthatrium amphidymum* Cheng, 1957) (endoparasite in VA *Eptesicus fuscus* bats)

Prosthodendrium (*Acanthatrium*) *beuschleini* (*Acanthatrium b.Cheng*, 1957) (endoparasite in VA *Eptesicus fuscus* bats)

Prosthodendrium *diminutum* Chandler, 1938 (endoparasite in IA, TX *Nycticeius humeralis* bats)

Prosthodendrium (*Prosthodendrium*) *duboisii* Neiland, 1962 (endoparasite in MN *Eptesicus fuscus* & AK *Myotis lucifugus* bats)

Prosthodendrium (*Acanthatrium*) *eptesici* (*Acanthatrium e.* Alicata, 1932) Skarbilovich, 1948 (endoparasite in MA (Tx), DC *Myotis velifer* bats; BC, DC, IN, MA (Tx), MN, WI, VA *Eptesicus fuscus*; AB, IN (Tx), MI *Myotis keeni*; IA, IN *Lasiurus borealis*; IN *Myotis lucifugus* & *sodalis*, *Lasionycteris noctivagans*, *Pipistrellus subflavus*, *Nycticeius humeralis*, TX, OK *Tadarida brasiliensis mexicana*, FL *Tadarida brasiliensis cynocephala* & OH *P. subflavus* bats)

Prosthodendrium (*Prosthodendrium*) *labda* (Caballero, 1943) (endoparasite in *Lasionycteris noctivagans* & non- cave? AK *Myotis lucifugus* bats).

Prosthodendrium (*Prosthodendrium*) *longiforme* (Bhalerao, 1926) Macy, 1936 (endoparasite in KS, TX *Eptesicus fuscus* bats).

Prosthodendrium (*Paralecithodendrium*) *lucifugi* Macy, 1937 (endoparasite in MN *Myotis lucifugus* & AB *Eptesicus fuscus* bats).

Prosthodendrium (*Acanthatrium*) *lunatum* (A.I. Williams, 1960) (endoparasite in IA *Lasiurus borealis* & IA, KY, OH *Eptesicus fuscus* bats),

Prosthodendrium (*Prosthodendrium*) *macnabi* Macy, 1936 (endoparasite in MN, WI *Eptesicus fuscus* & Mexico *Lasiurus cinereus* bats).

Prosthodendrium (*Acanthatrium*) *macyi* (A. *macyi* Sogandareberrel (= Songadares-Bernal), 1956) (endoparasite in *Pipistrellus hesperus* bats)

Prosthodendrium* (*Acanthatrium*) *microacanthum (Macy, 1940) (= *Acanthatrium microacanthum* Macy, 1940 (in part; *A. breuschleini* Cheng, 1959 (fied Dubois, 1961)) (endoparasite in AZ IN, MN, VA, WI *Eptesicus fuscus*; IN, VA *Myotis lucifugus*; IA *Lasiurus borealis*; OK *Tadarida brasiliensis* & IN *Pipistrellus subflavus* bats).

Prosthodendrium* (*Prosthodendrium*) *mizellei Seamster & Stevens, 1948 (endoparasite in CA, IN *Eptesicus fuscus* bats)

Prosthodendrium* (*Prosthodendrium*) *naviculum Macy, 1936 (endoparasite in AB, WI & MN *Eptesicus fuscus*, TX *Tadarida b.* & *Myotis velifer*, AB, IN & CO *Myotis lucifugus* & KY (Tx) *Myotis sodalis* bats).

Prosthodendrium* (*Paralecithodendrium*) *nokomis Macy, 1936 (endoparasite in MN, WI *Eptesicus fuscus* bats).

Prosthodendrium* (*Acanthatrium*) *nycteridis (*A.n.* Faust, 1919) (endoparasite in IL *Lasiurus borealis*, TX (Tx), MD (Tx) *Nycticeius borealis*; IL, TX (Tx) *Tadarida brasiliensis*; NM *Eptesicus fuscus* bat & IN MD *Myotis lucifugus* bats)

Prosthodendrium* (*Acanthatrium*) *oligacanthum (*A.o.* Cheng, 1957) (endoparasite in IN, MN, OR, WI *Eptesicus fuscus*; IN *Nycticeius humeralis*, NB *Pipistrellus subflavus* & VA, IN *Myotis lucifugus*, *sodalis* & *keenii* bats)

Prosthodendrium* (*Prosthodendrium*) *oligolecithum Manter et Debus, 1945 (endoparasite in NE *Pipistrellus hesperus* & *Myotis californicus*; VA *Myotis lucifugus* & VA, MN, WI *Eptesicus fuscus* bats).

Prosthodendrium* (*Acanthatrium*) *oregonense (*Acanthatrium oregonense* Macy, 1939) Yamaguti, 1958 (endoparasite in Tx *Myotis velifer*, OR, TX *Eptesicus fuscus*, NW *Myotis lucifugus* *M.* & *evotis*, non-cave OR *Myotis californicus caurinus*; & *M. evotis* bats)

Prosthodendrium* (*Acanthatrium*) *ovatum (Yamaguti, 1939) Yamaguti, 1958 (in CA, TX, NM *Eptesicus fuscus* & AB, MN *Myotis lucifugus* bats).

Prosthodendrium* (*Acanthatrium*) *pipistrelli (*A.c.* Macy, 1940) (endoparasite in IA, KY (Tx), MN, OH & WI *Eptesicus fuscus*, IA *Lasiurus borealis*, MN, IN *Pipistrellus subflavus* & VA, IA, IN (Greene Co.) *Myotis lucifugus* bats)

***Prosthodendrium* (*Acanthatrium*) undet. sp.** Faster & Metrins, 1966 (endoparasite in FL, TX *Tadarida brasiliensis* bat; TX *Myotis velifer*, KS *Myotis grisescens* & IA, WI *Eptesicus fuscus* bats) Faster & Metrins, 1966

***Prosthodendrium* (*Acanthatrium*) undescr. sp.** (endoparasite in FL *Tadarida brasiliensis cynocephala* bats)

***Prosthodendrium* undet. sp.** (IL, IN, MO/ 2 Tx sp. in OR).

Prosthodendrium (*Prosthodendrium*) *swansoni* Macy, 1936 (endoparasite in AB *Eptesicus fuscus*; AB,MN *Myotis lucifugus*, OK *Tadarida brasiliensis mexicana* & KS *Myotis velifer incautus* bats)

Prosthodendrium (*Prosthodendrium*) *transversum* Byrd & Macy, 1942 (endoparasite in KY (Tx), IN *Myotis sodalis*, MN *Eptesicus fuscus* & DC,IN,TN *Lasiurus borealis* bats).

Prosthodendrium (*Prosthodendrium*) *travassosi* Macy, 1938 (endoparasite in MN *Eptesicus fuscus* bats).

@***Prosthodendrium*** (*Acanthatrium*) *umbraculati* (endoparasite in OH *Myotis lucifugus* bats)

Prosthodendrium *volaticum* Blankespoor & Szymusiak, 1974 (endoparasite in WI *Myotis keeni*; IA *Lasiurus borealis* & *Eptesicus fuscus* & WI *Myotis lucifugus* (Tx) bats)

Prosthogonimus Luehe, 1899 - Prosthogonimidae trematodes, subfamily Prosthogoniminae (Parasitic in oviduct, bursa fabricii or cloaca of birds).

Prosthogonimus *ovatus* (Rudolphi, 1803) Looss, 1899 (endoparasite in CA, TX, AZ *Hirundo nigrita* & *rustica* swallows).

Pseudopisthodiscus Yamaguti, 1958 - Diplodiscidae trematodes, subfamily Diplodiscinae (endoparasite in colon of newts)

Pseudopisthodiscus *americanus* (Holl, 1928) Yamaguti, 1958 (in NC *Triturus viridescens* salamander).

Pseudorenifer Price, 1935 - Plagiorchiidae trematodes, subfamily Styphlodorinae (Parasites in mouth, oesophagus and lungs of reptiles and amphibians, including salamanders).

Pseudorenifer *syntomentera* (Sumwald, 1926) Price, 1935 (endoparasite in CA, *Triturus viridescens* salamander).

Pycnopor Looss, 1899 - Lecithodendriidae trematodes, subfamily Pycnoporinae ((Intestinal parasites of Criroptera)

Pscnopor *travassosi* (Macy, 1938) Yamaguti, 1958 (endoparasite in MN *Eptesicus fuscus* bats)

Ratzia Poche, 1926 - Opisthorchiidae trematodes, subfamily Ratzinae (Parasites in amphibians as progenetic larvae (metacercaria) and in reptiles as adult)

Ratzia *joyeuxi* (Brumpt, 1922) Joyeux, 1927 (endoparasite in KS, OH *Ambystoma mexicanum* salamander).

Renischetrema Rodhe, 1964 - Microphallidae trematodes, subfamily Microphallinae (Intestinal parasites of Chiroptera)

Renischetrema *malayai* Rodhe, 1964 (endoparasite in WI *Pipisterlus subflavus* bats).

Sphyranura Wright, 1879 - Sphyranuridae trematodes, subfamily Sphyranurinae
(Parasites on skin or gills of vertebrates, including salamanders)

Sphyranura euryceae Hughes & Moore, 1943 (endoparasite in AR (Marion Co.) *Eurycea multiplicata griseogaster* & NC *Eurycea* salamanders),

Stomylotrema Looss, 1900 - Stomylotrematidae trematodes, subfamily Stomylotrematinae
(Intestinal and cloacal parasites of birds)

Stomylotrema tagax Braun, 1901 (endoparasite in TX *Hirundo fulva* cave swallows).

Telorchis Luehe, 1899 - Telorchidae trematodes, subfamily Telorchinae
(Parasites in intestine, stomach or gall bladder of turtles, snakes and amphibians).

Telorchis corti Stunkard, 1915 (endoparasite in non-cave MI *Ambystoma tigrinum* t.salamander)

Travassodendrium Skarbilovich, 1943 - Lecithodendriidae trematodes, subfamily Prosthodendriinae (Intestinal parasites of mammals, especially of Chiroptera).

Travassodendrium oligolecithum (Manter & Debus, 1945) Skarbilovich, 1943 (in LA, *Myotis californicus* bats)

Tremajoannes Saoud, 1964 - Lecithodendriidae trematodes, subfamily Lecithodendriinae
(Intestinal parasites of Chiroptera).

Tremajoannes buckleyi Saoud, 1964 (endoparasite in TX (Val Verde Co.) *Myotis velifer*; on NM, TX *Tadarida brasiliensis* bats).

Urotrema Braun, 1900 - Urotrematidae trematodes, subfamily Urotrematinae
(Intestinal and internal parasites of mammals and reptiles).

Urotrema lasiurensis Alicata, 1932 (endoparasite in non-cave DC *Lasiurus borealis* & non-cave NY *Myotis lucifugus* bats).

Urotrema minuta Macy, 1933 (endoparasite in MN *Lasionictes noctivagus* bats).

Urotrema scabridum Braun, 1900 (= *Urotrematulum attenuatum* according to Caballero, 1942)
(endoparasite in KS *Myotis grisescens*; FL, LA, TX (Tx) *Tadarida brasiliensis mexicana* & *cynocephala* & *Myotis velifer*; IN, MN, WI *Eptesicus fuscus*; IA, IN (Tx), IL, MI *Myotis lucifugus*; WI *Myotis keeni*; DC, IN *Lasiurus borealis*; MD, TX *Nycticeius humeralis* & IN, MN *Lasionycteris noctivagans* bats).

Urotrema shilingeri Price, 1931 (endoparasite in TX (Houston) *Nycticeus humeralis*, & *Myotis lucifugus* bats)

Urotrema undet. sp. (endoparasite in DC *Myotis lucifugus* bats)

Urotrematulum Macy, 1933 - Urotrematidae trematodes, subfamily Urotrematinae (Intestinal parasites of Chiroptera).

Urotrematulum attenuatum Macy, 1933 (in IN, MN, WA *Lasionycteris noctivagans* bats)

Zeugorchis Stafford, 1905 - Plagiorchiidae trematodes, subfamily Styphlodorinae (Parasites in alimentary tract and lungs of amphibians and reptiles, including salamanders).

Zeugorchis megacystis Steward, 1960 (endoparasite in KS *Triturus veridescens* salamanders).

Zeugorchis syntomenteroides Sumwald, 1926 (endoparasite in CA *Triturus torosus* salamanders).

Turbellaria (= flatworms in part)

Once a class of the free-living Platyhelminthes flatworms, now considered by most authors a phylum, at least in the Order Acoela. Acoelomate bilateria without anus. A freeliving flatworm with a ciliated skin, different from similar Gnathostomulida by being jawless. Most < 20 mm. from flattened to oval leaflike or lanceolate to spindle-shape or stringlike elongated. Outside completely or partly covered with cilia for movement and creating currents to bring in food. Some extrude spines for defense or feeding. In most, intestines blind. Most hermaphroditic. About 3,000 species. A few are mammalian intestinal parasites. Cave-adapted ones (white & eyeless) most often in pools & streams. Most are carnivores & scavengers; *Sphalloplana* z. feeds on injured or moribund arthropods by removing soft internal parts. Negatively rheotactic & phototactic.

Flatworms are flat bodied, freshwater creatures that can regenerate their lost body parts. They live in lakes, streams, ponds, and other freshwater bodies. The planarian is non-parasitic, and eats decaying meat. The body includes: a simple nervous system that includes a 'brain' muscle bundles an internal reproductive system a blind gut branching through the body an excretory system that includes specialized cells called 'flame cells'. They can be conditioned to respond to stimuli, display the ability to master a two-choice maze, and can transfer the memory of training from one individual to another.

There are not any permanent cells in the head of a planarian. If a planarian is cut in half, the tail will grow a new head and the head will grow a new tail. That is called regeneration. So if the head and tail of a planarian are sliced down the middle, soon it will have two heads and two tails. Above the head are two organs called eye spots. It's eyes

are not like true image giving eyes, they can only sense light. It's head is a triangular shape.

Planarians can find water in a maze. When a trained planarian is cut in half, the regenerated planarians learn more quickly than untrained ones. Planaria feed the body parts of trained flatworms also learn mazes more quickly.

(partial) syn: **flatworm**. Hyman 1937, 1939-a, 1965a; Carpenter 1970, 1971; Kenk 1970, 1972; Mock 1976; Reynierse 1967, 1967a; Tyler 1986; Walter 1907; Williams 1958; Wells & Harris 1954; I.R. Ball, 1978

Bibl.: I. Ball 1974; Goubault 1994; Leml 1974; Areas: **AR:** Chandler & Darlington 1975; **FL:** Hyman 1955; KY: Schwank 1986; **MI:** Kenk 1944; NA: I. Ball 1969; Beauchamp 1931-2; Carpenter 1973; Kenk 1974b, 1989; Ruebush 1941; Walton 1912; **NY:** Kolasa, Strayer & Bannon-O'Donnell 1987; **TX:** R. Mitchell 1971; Mitchell & Kawakatsu 1971; Teshirogi & Mitchell 1976 **VA:** Kenk 1935; World: Cannon 1986; Schwank 1986.

Class Archoophora

Order Acoela (no true gut cavity or pharynx)
Otocelidae (*Otocelis*)

Order Alloecoela

Prorhynchidae (put in Order Lecithoepitheliata)
(Undet. Genus in cave in Richland Co., WI)

Class Catenulidea

Order Catenulida (=Notandropora) (=Archoophorans)
Catenulidae (now subsumed in Stenostomidae)

Stenostomidae

(*Catenula* (once put in own family), *Rhynchoscolex* (see above),
Stenostomum)

Order Rhabdocoela = Neorhabdocoela

Class Rhabditophora

Order Lecithoepitheliata (undet. Genus in CA marine beach interstitial)
Prorhynchidae (*Geocentrophora*, *Prorhynchus*) R. Porter 1936

Subclass Eulecithophora

Order Rhabdocoela (=Neorhabdocoela)
Suborder Kalyptorhynchia (CA marine beach interstitial)

Suborder Typhloplanoida (CA marine beach interstitial))

Typhloplanidae (also put in own order Typhloplanida)
(*Limnoruanis*, *Mesostoma*, *Pseudophaenocora*, *Stronglostoma*)

Order Typhloplanida
Suborder Typhloplanoida (see above)
Typhloplanidae (see above)

Subclass Macrostomida
Order Macrostomorpha
Macrostomidae (*Macrostomum*)
Microstomidae (*Microstomum*)

Subclass Neoophora
Infraorder Eukalyptorhynchia

Order Neorhabdocoela (spr., St., wells) (subsumed in Macrostomida?)

Suborder Kalyptorhynchia (also as order or put in Subclass
Archoophora)

Polycystididae
Subfamily Gyratricinae (*Gyratrix*)

Order Dalyelloida
Dalyelliidae Graff, 1908 (*Dalyellia*)

Provorticidae
Subfamily Provorticinae (*Vejdovskya*)

Order Seriata (often called planarians)

Suborder or Order Proseriata
Bothrioplanidae (also put in Order Prolecithophora & Bothrioplanida)
(*Bothrioplana*)

Infraorder or Order Tricladida
Suborder Paludicola

Dendrocoelidae
Subfamily Dendrocoelinae (*Dendrocoelopsis*,
Dendroecoelum)

Planariidae (*Paraplanaria*, *Phagocata*, *Planaria*, *Polycelis*,
Procotyla, *Speophila*,
Sphalloplana (once in Dugesiiidae)

undescr. Tb genus in Piedmont, PA & New England)

1974a Suborder Terricola. **Bibl.:** Goubault 1986b; Hyman 1931; Kenk 1974,

Bipaliidae von Graff, 1896 (*Bipalium*)

Dugesiidae (*Dugesia*, *Girardia*)

Procerodidae (*Foviella*)

Rhynchodemidae (also put in Suborder Paludicola)
(*Rhynchoscolex* (now in Stenostomidae)

Subfamily Microplaninae (*Microplana*)

Subfamily Rhynchodeminae (*Rhynchodemus*)

Subfamily Kenkiinae (also suggested as family Kenkiidae)
(*Kenkia*, *Macrocotyla*, *Sphalloplana*)

Bibl.: Mitchell 1968; Kawakatsu & Mitchell 1981

Uteriporidae

Subfamily Uteriporinae (*Uteriporus*)

Suborder Typhloplanida

Typhloplanidae (also put in Infraorder or Order)

Subfamily Mesostominae (*Mesostoma*)

Subfamily Typhloplaninae (*Limnoruanis*, *Stronglostoma*)

Infraorder or Order Prolecithophora

Order Polycladida

Suborder Acotylea

Superfamily Planoceroidea

Family Callioplanidae (*Discosolenia*)

Family Emprosthoparyngidae (*Emprosthoparynx*)

Family Hoploplanidae (*Hoploplana*)

Family Leptoplanidae (*Euplana*)

Family Planoceridae (*Paraplanocera*)

Superfamily Stylochoidea

Family Cryptocelididae (*Cryptocelis*)

Family Plehniidae (*Plehnia*)

Family Pleioplanidae (*Pleioplana*)
Family Stylochidae (*Imogine*, *Kaburakia*, *Stylochus*,
Stylochopsis)

Suborder Cotylea
Superfamily Pseudocerotoidea
Family Euryleptidae (*Acerotisa*, *Eurylepta*,
Stylostomum)

Family Prosthlostomidae (*Prosthlostomum*)
Family Pseudocerotoidea (*Pseudoceros*)

Acerotisa – Euryleptidae Turbellaria (flatworms)
Acerotisa alba (Freeman, 1933) (WA marine infauna)

Bipalium Stimpson, 1857 - Bipaliidae Turbellaria (flatworms)

Bipalium kewense Moseley, 1878 (type locality cave in Hays Co., + caves in Bell Co., TX & FL C.?, Jackson Co., FL/ epigeal in AL, AK, CA DC, FL, GA, IL, KY, LA, ME, MA, MD, MI, NJ, NC, OH, PA, SC, TN, TX, UT, VA, WA, Manitoba, Ontario, Mexico; cosmopolitan) **Bibl.:** Chandler 1976; Morton & Kleingina 1971; Ogren 1995

Bothrioplana Braun, 1881 - Bothrioplanidae Turbellaria (flatworms)
Bothrioplana semperi M. Brown, 1881 (NY/interstitial)

Catenula Duges, 1832 - Stenostomidae Turbellaria (flatworms) (also placed in Catenulidae)
Catenula lemnae Duges, 1832 (NY/interstitial)
Catenula undet. sp. (sandy hyporheic in TX)

Cryptocelis – Cryptocelidae Turbellaria (flatworms)
Cryptocelis occidentalis Hyman, 1953 (CA marine infauna)

Dalyellia Flemming, 1822 - Dalyelliidae Turbellaria (flatworms)
Dalyellia undet. sp. (MI interstitial; MN lake benthic)
Dalyellia viridis (G. Shaw, 1791) (MN lake benthic)

Dendrocoelopsis Beauchamp, 1919 - Dendrocoelidae Turbellaria (flatworms), Subfamily Dendrocoelinae. **Bibl.:** Kenk 1973a

Dendrocoelopsis alaskensis Kenk, 1953 (AK St., interstitial? in phreatic springs)

Dendrocoelopsis americana (= *Sorocelis a.* Hyman, 1939) (type locality & 2 other caves in Adair Co., neOK + AR (WA & Logan Cos.) & Rockwall Co., TX) + MO/ Tp (eyeless

in TX),spr. G3G4). **Bibl.:** Gourbault 1975; Kawakatsu & Mitchell 1961, 1981a; Kawakatsu, Vaughn & Mitchell 1995; Levengood 1939

Dendrocoelopsis hymanae (Kawakatsu, 1968) (*Lake Tahoe, CA & NV/Pb?, white, blind St)

Dendrocoelum Oersted, 1844 - Dendrocoelidae Turbellaria (flatworms)
Dendrocoelum percoecum = *Sphalloplana p.*

Discosolenia Heath & McGregor, 1912 – Callioplanidae Turbellaria (flatworms)
Discosolenia burchami = *Koinostylochus b.*

Dugesia Girard, 1850 - Dugesiidae Turbellaria (flatworms) (also put in Planariidae)
Bibl.: Chandler & Darlington 1984; Hyman 1939 (restricted to Old World)

Dugesia diabolis Hyman, 1956 = *Girardia dorocephala*
Dugesia dorocephala & *tigrina* = *Girardia d.* & *t.*

Emprostopharynx Bock, 1913 - Emprostopharyngidae Turbellaria (flatworms)
Emprostopharynx gracilis (*Stylochoplana g.* Heath & McGregor, 1912)

Euplana Girard, 1883 - Leptoplanidae Turbellaria (flatworms)
Euplana gracilis (Girard, 1850) (FL, MA, ME, NJ marine benthic)

Eurylepta Faubel, 1984 – Euryleptidae Turbellaria (flatworms)
Eurylepta alba (Freeman, 1933) (WA marine infauna)
Eurylepta undet. sp. (CA marine infauna)

Foviella Beck, 1925 - Procerodidae Turbellaria (flatworms)
Foviella affinis (Oersted, 1843) (NB Gulf of St. Lawrence sandy marine interstitial)

Geocentrophora de Man, 1876 - Prorhynchidae Turbellaria (flatworms)

Geocentrophora cavernicola Carpenter, 1970 (type locality cave in Jackson Co.,KY + cave each in Pendleton Co.,WV +Tazewell Co.,VA/ Tb/ VA T&E S1 rank;WV T&E SH rank & global G3G4 rank)

Geodesmus Metschnikoff, 1865 - subsumed in *Microplana*

Girardia Ball, 1974 - Dugesiidae Turbellaria (flatworms)
Girardia dorocephala (*Planaria d.* Woodworth, 1897; *Dugesia d.* Hyman 1931; *P. agilis* Stringer 1909, *Euplanaria d. & a.* Kenk, 1930; *E. philadelphica* Kenk, 1931; *D. (Girardia) d.*) (PA,VA to West coast, sCanada, Mex./mostly springs; Pb & streams in TN; CO hyporheic; NV sinkhole) **Bibl.:** Best 1995; Hyman, 1925; Jenkins & Brown 1963; Morita & Best 1995

Girardia tigrina (*Dugesia t.* Girard, 1850; *Planaria maculata*; *D. (Girardia) d.* Kenk) (type? locality cave in Manitoba/ NA to Brazil, alien to Australia, Europe, Israel, Japan/ pond, lake, river/Tp or Tx in MO, MB, TN (prob.)) **Bibl.:** Abbott 1960; Bueno et al. 1995, 1995a; Folsom & Clifford 1978; Kenk 1941, 1970; Krichinskaya 1986; Nixon & Taylor 1977

Gyratrix Ehrenberg, 1831 - Polycystididae Turbellaria (flatworms), Subfamily Gyratricinae

Gyratrix hermaphroditus h. Ehrenberg, 1831 (MI interstitial; MN lake benthic)

Hoploplana – Hoploplanidae Turbellaria (flatworms)

Hoploplana undet. sp. (CA marine infauna)

Hymanella Castle, 1941 - Planariidae Turbellaria (flatworms)

Hymanella retenuova Castle, 1941 (vernal pools and seepages in East US)

Imogine Girard, 1853 - Stylochidae Turbellaria (flatworms)

Imogine exiguous (*Stylochus e.* Hyman, 1953)(CA marine infauna)

Kaburakia - Stylochidae Turbellaria (flatworms)

Kaburakia excelsa Bock, 1925 (*Cryptophallus magnus* Freeman, 1933) (CA, WA marine infauna)

Kenkia Hyman, 1937 (= *Macrotyla*) Dendrocoelidae Turbellaria (flatworms), Subfamily Kenkiinae (also suggested as family Kenkiidae)

Kenkia glandulosa (*Macrocotyla g.* Hyman, 1956) (type locality (just below spring outlet) & 1 other cave in Boone Co.,MO & cave in Jackson Co.,IA/ Tp, spr./ type for genera/ MO T&E G3G4 /Pink Planarian) **Bibl.:** Kenk 1975

Kenkia rhynchida = *Macrocotyla r.*

Koinostylochus Faubel, 1983 – Callioplanidae Turbellaria (flatworms)

Koinostylochus burchami (*Planocera b.* Heath & McGregor, 1912; *Discosolenia b.*) (CA marine infauna)

Limnoruanis J. Kolasa, 1977 - Typhloplanidae Turbellaria (flatworm), Subfamily Typhloplaninae

Limnoruanis romanae J. Kolasa, 1977 (NY/St)

Macrocotyla Hyman, 1956 - Dendrocoelidae Turbellaria (flatworms), Subfamily Kenkiinae (also suggested as family Kenkiidae) **Bibl.:** Kwakatsu & Mirchell 1981; Kenk 1975 (see *Kenkia*)

Macrocotyla glandulosa = *Kenkia g.*

Macrocotyla hoffmasteri (= *Speophila h.* Hyman, 1954; *Sphalloplana h.*) Kenk, 1975 (type locality cave in Tucker Co. + cave each in Pendleton, Tucker & Randolph Co.s & 2 caves in Greenbrier Co., WV & caves in MD (WA Co.)/ Tb/ MD state rare T&E G3/ Hoffman's cave flatworm)

Macrocotyla lewisi Kenk, 1975 (***type locality & 2 other caves in Perry Co., MO/ Tb)

Macrocotyla rhynchida (*Kenkia r.* Hyman, 1937) (*type locality cave in Harney Co., OR/ type for genus & family/ FC-2 T&E) Benedict & McEvoy 1995; Benedict 1973d; Hyman, Kawakatsu & Mitchell 1981

Macrostomum Schmidt, 1848 - Macrostomidae Turbellaria (flatworms) **Bibl.:** Ferguson 1940

Macrostomum undet. sp. (MI interstitial)

Mesostoma Ehrenberg, 1831 - Typhloplanidae Turbellaria (flatworms), Subfamily Mesostominae

Mesostoma macropenis Ehrenbertg, 1831 (MI interstitial)

Microplana Vejdowsky, 1890 - Rhynchodemidae Turbellaria (flatworms), Subfamily Microplaninae

Microplana atrocyana (*Rhyncodesmus a.* Walton, 1912; *Geodesmus a.* Ogren, 1955) (**?type locality cave in Perry Co. & cave in Camden Co., MO/ Tp?/ pink planaria/State T&E)

Microstomum Schmidt, 1848 - Microstomidae Turbellaria (flatworms)

Microstomum undet. sp. or species (MI, NY interstitial; MN lake benthic)

Notoplana Laidlaw, 1903 – Leptoplanidae Turbellaria (flatworms)

Notoplana acticola (Boone, 1929) (CA marine infauna)

Notoplana cf. *iniquita* (WA marine infauna)

Notoplana rupicola (CA marine infauna)

Otocelis Diesing, 1862 - Otocelidae Turbellaria (flatworms)

Otocelis undet. sp. (marine in Anemone C., ME)

Paraplanocera Laidlaw, 1903 – Planoceridae Turbellaria (flatworms)

Paraplanocera oligoglana (*Stylochus o.* Schmarda, 1859) (CA marine infauna)

Parviplana – Leptoplanidae Turbellaria (flatworms)

Parviplana californica (*Stylochopana c.* Woodworth, 1894) (CA marine infauna)

Phagocata Leidy, 1847 (= *Planaria* Muller, 1776; *Fonticola* & *Albiplanaria* Komarek,

1926). Planariidae Turbellaria (flatworms)

Phagocata **Bibl.:** Abbott 1960; Aycock 1942; Crawshaw 1974; R. Davis & Harris 1936; McWhinnie & O'Connor 1967; Bull & Mitchell 1970, 1972; Elliott 1971-2; Elliott & Mitchell 1975; Kenk 1970, 1987; Norris et al., 1963; Peck 1985; M. Porter 1995; Poulson & Lavoie 1990; Sexton & Hunt, 1980; Studier & Lavoie 1991; Studier, Lavoie, Wares & Linn 1987; Phillipotts 1989; Wiens & Armitage 1961

Phagocata angusta Kenk, 1977a (**?type locality cave in Tucker Co., WV + cave or caves in wNC/ Pb/ WV T& E SU G1G2)

Phagocata bulbosa Kenk, 1970 (NC seepage spr., NC/ Pb)

Phagocata bursaperforata Darlington, 1959 (= *Fonticola b.* Ball, 1969) (pools on Mt. Panola & Stone Mt., DeKalb Co. GA; Tp? In Eudy C., Marshall Co., AL/, spr., rivulet)
Bibl.: Carpenter 1977

Phagocata carolinensis Kenk, 1979b (= *P. cavernicola* Hyman, 1954; Kenk, 1974) (*type locality cave in Burke Co., NC/ Tp or Tb/ G1G2) **Bibl.:** Kenk 1987

Phagocata cavernicola - see *P. morgani*

Phagocata crenophila Carpenter, 1969 (SW epigean/ spr. in CA, UT; Tp? in cave in Siskiyou Co., CA)

Phagocata gracilis (*Planaria g.* Haldeman, 1840; *Euplanaria g.* Kenk, 1930; *Fonticola* & *Procotyla g.* Castle & Hyman, 1934; *Fonticola truncata* Hyman, 1931; *Phagocata subterranea* & *morgani* Hyman, 1937) Leidy, 1847 (type locality in spr. at Chickies (Near Columbia), Lancaster Co., PA/ sprs., streams & caves in E from Canada to AL/ Pb, Tp, spr. in DC, PA; caves in IN (Lawrence, Monroe Cos.), sIL, KY (Pulaski, Jackson, Jessamine, Rockcastle Cos.), MO (Perry Co.), OH (Adams Co.), PA, VA, WV) **Bibl.:** A. Stewart 1968; Woodworth 1891

Bibl.: Abbott 1960; Chandler 1966; C. & Darlington 1984; Eddy & Glenn 1932; Griffard 1963; Hyman, 1970; Paslee 1910; Reynierse 1966, 1967a, 1973a, 1973a; R. & Ellis 1973; A. Stewart 1968; Weimer 1918; Weimer et al. 1938; Woodsworth 1891

Phagocata gracilis monopharyngea = *P. velata*

Phagocata holleri Kenk, 1979a (*type locality cave in Burke Co., NC/ Tb G1G2)

Phagocata monophryngea Hyman, 1945 = *P. velata*

Phagocata morgani m. (*Planaria truncata* Leidy, 1851 (name preoccupied); *Planaria m.* Stevens & Boring, 1906; *Phagocata cavernicola* Hyman, 1954; *Dendrocoelum truncatum* Girard, 1893 & *superbum?* Girard, 1850; *Fonticola t.* Hyman, 1931; *F.*

morgani Castle & Hyman, 1934) & *morgani m.* Ball, 1969) **Bibl.** Kenk, 1972

(type locality cave in Westmoreland Co., & poss. cave in, Cumberland Co., PA/ spr., cr. in Appalachia, MI, WI, Canada, introduced into CA/ Pb in cave each in PA (Giles Co.) & MD (WA, Garrett Cos. (Tp)), 3 caves in VA (Tazewell Co.), VA, 6 caves in IL + Greenbrier, Randolph, Pocahontas, & Pendleton Cos., WV, Allen, Estill, Jackson, Pulaski, Powell Cos., KY & Jackson Co., AL)

Phagocata nivea (Kenk, 1953 (AK epigean/ Pp in 2 AK c.)

Phagocata oregonensis Hyman, 1963 (*Fonticola o.* Ball, 1969) (OR, WA/ spr. near Portland, Multnomah Co., OR)

Phagocata procera Kenk, 1984 (type locality cave in Jackson Co., + Burke, McDowell, Mitchell & Yancey Cos., NC/ Pb)

Phagocata pygmaea Kenk, 1987 (*type locality cave in Stokes Co., NC/ Tb)

Phagocata undescr. sp. (IN/Pb)

Phagocata undet. sp. (WV hyporheic)

Phagocata spuria Kenk, 1987 ** (type locality & 1 other cave in McDowell Co., NC/ Tb)

Phagocata subterranea = *P. gracilis*

Phagocata velata (*Planaria* v. Stringer, 1909; *Fonticola* v. Kenk, 1930; *P. gracilis monopharyngea* Hyman, 1945; *P. m.* Kenk, 1972; *P. vernalis* Kenk, 1944 (in part); *Fonticola g. m.* Ball, 1969) Hyman, 1937 (type locality cave in Ontario/ Tp/ spr., cr. in IA, MI, MS Valley w. to NB, CO(prob.)/ Tp in ON, TN; Pb in IA). **Bibl.:** Castle 1927

Planaria Muller, 1776 (= *Dendroplanaria* Komarek, 1926) Planariidae Turbellaria (flatworms). **Bibl.:** I. Ball & Gourbault, 1978

Planaria dactyligera d. Kenk, 1969 (= *P. d.* Kenk, 1935) (VA caves, spr., cr.)

Planaria dactyligera musculosa Kenk, 1969 (= *P. m.*) (LA, NC, VA epigean/ streams, spr.),

Planaria dorotocephala = *Girardia d.*

Planaria Kenk, 1969 = *Paraplanaria o.*

Plehnia – Plehniidae Turbellaria (flatworms)

Plehnia caeca Hyman, 1953 (CA marine infauna)

Pleioplana A. Faubel, 1983 – Leptoplanidae Turbellaria (flatworms) (also put in Pleioplanidae)

Pleioplana atomata (O.F. Muller, 1776) (NB, PQ Gulf of St. Lawrence sandy marine interstitial)

Pleioplana inquieta (*Leptoplana i.* Heath & McGregor, 1912) (CA marine infauna)

Polycelis Ehrenberg, 1831 - Planariidae Turbellaria (flatworms) **Bibl.:** Kenk 1973

***Polycelis* (*P.*) *borealis* (*P. (P.) coronata b.* Kenk, 1972) (Pp in Tx or Ac in 2 AK caves)**

***Polycelis coronata c.* (*Phagocata c.* Girard, 1891) Kenk, 1973 (AK, CO, ID, MT, NM, OR, SD, UT, WA, W Y/ cave, spr., cold cr., CO hyporheic). **Bibl.:** J. Chapman 1969; Hyman, 1928, 1931a; Nixon, 1974; N. & Taylor, 1977**

***Polycelis coronata brevipenis* (*P.c.* Hyman, 1931) Kenk, 1972 (SD, CO (Larimer Co.)/ Pb)**

Procerodes Girard, 1851 - Procerodidae Turbellaria (flatworms)

***Procerodes littoralis* (Strom, 1768) (O.F. Muller, 1776) (NB Gulf of St. Lawrence sandy marine interstitial)**

Procotyla Leidy, 1857 (See *Phagocata g.*) Planariidae Turbellaria (flatworms) **Bibl.:** Chandler & Darlington 1984

***Procotyla fluviatilis* Leidy, 1857 (NE to WI, IL, Canada, s. to NC/Tp? in wTN) **Bibl.:** Chandler, 1968; Hyman 1925; Kenk, 1935 (spr., pond, FL/Tp in VA) **Bibl.:** A. Stewart 1968**

Procotyla gracilis - See *Phagocata g.*

***Procotyla typhlops* Kenk, 1935 (FL, MD, VA/ Pb)**

Procotyla velata - see *Phagocata v.*

Paraplanaria Ball & Gourbault, 1978 - Planariidae Turbellaria (flatworms)

***Paraplanaria occulta* (*Planaria occulta* Kenk, 1969) (VA/*well/ heavily infested with protist *Sieboldiellina planariarum*)**

Prosthiostomum - Prosthiostomidae Turbellaria (flatworms)

***Prosthiostomum latocelis* Hyman, 1953 (CA marine infauna)**

Pseudoceros Lang, 1884 – Pseudocerotidae Turbellaria (flatworms)

***Pseudoceros* undet. sp. (CA marine infauna)**

Rhynchodemus Leidy, 1851 - Subfamily Rhynchodeminae - See *Macroplana*

Sorocelis Grube, 1872 - See *Dendrocoelopsis*

Speophila Hyman, 1937 = *Sphalloplana*

Sphalloplana Beauchamp, 1931 (see *Dendrocoelum p.*) (= *Dendrocoelum* Orsted, 1844 (in part); *Fonticola* Komarek, 1926 (in part); *Speophila* Hyman, 1937) Planariidae Turbellaria (flatworms) **Bibl.:** Kenk 1977

Sphalloplana alabamensis Hyman, 1945 (considered a junior syn. of *S. percoeca* by Carpenter 1971) (type locality & 1 other caves in Jackson Co.+ Campbell, Putnam Cos., AL & TN (Rutherford, Van Buren Cos.),TN; KY (Caldwell Co.) & WV (Pendleton Co.) /Tb)

Sphalloplana buchanani (*Speophila b.* Hyman, 1937) Mitchell, 1968 (Mammoth C., KY/ Edmonson Co.,KY & cave in Davidson Co.,TN/Tb) **Bibl.:** Hyman 1954

Sphalloplana* (S.) *californica Kenk, 1977 (*type locality cave in Mariposa Co.,CA/ Pb)

Sphalloplana chandleri Kenk, 1977 (S.c.) (type locality cave in Claiborne Co. + caves in Davidson Co.,TN & IN(spr. in Floyd Co.; cave in Harrison Co. (IN S1)) & disjunct swVA (Tazewell Co.)/ Pb, one spr./VA T&E S1 rank/Chandler's Planarian or cave flatworm - IN T&E)

Sphalloplana* (S.) *consimilis Kenk, 1977 (type locality cave in *Lee Co.,VA +adjacent TN /Tb/ VA Special Concern T&E/Powell Valley cave planarian/ G3G4)

Sphalloplana* (S.) *culveri Kenk, 1977 (*type locality cave in Tucker Co.,WV/ Tb/ Fed. Species of Concern),

Sphalloplana* (S.) *evaginata Kenk, 1977 (****type locality & 3 other caves in Perry CO.,MO/ G1G2/ Tb)

Sphalloplana* (S.) *georgiana Hyman, 1954 (**type locality & 2 other caves in Dade Co. & poss. 2 caves in Walker Co., GA/ Tb) **Bibl.:** Buhlmann, 1996

Sphalloplana hoffmasteri = *Macrocotyla h.*

Sphalloplana* (*Speophila*) *holsingeri Kenk, 1977 (Fairfax Co.,VA/Pb/VA Endangered T&E/ Holsinger's groundwater planarian)

Sphalloplana hubrichti (= *Speophila h.* Hyman, 1945) Mitchell, 1968 (type locality cave in Monroe Co. + Jackson, St. Clair & Union Cos.,IL & Kohn's C. (Ste. Genevieve Co.,MO) & spr.(Jefferson Co.),MO/ Tp/ G3G4) **Bibl.:** Kenk, 1972, 1977

Sphalloplana hypogea Kenk, 1984 (drains on Isle of Wight Co.,VA/ Pb)

Sphalloplana* (S.) *kansensis Hyman, 1945 (*Purity Spr.,near Augusta,Butler Co.,KS/ Pb)

Sphalloplana kutscheri Mitchell, 1968 (TX/ Tb/ geographically isolated but considered a junior syn. of *S. mohri*) by some authors)

Sphalloplana* (*Polypharyngea*) *mohri Hyman, 1938 (*S. kutscheri* Mitchell, 1968, *reddelli*, *zeschi* & *sloani* Mitchell, 1968) (type locality cave in Hays Co. + Kendall,

Mason, San Saba, Travis Cos., TX +AR, OK, MO/ Tb) **Bibl.:** Mitchell 1968; Teshirogi & Mitchell 1976

Sphalloplana* (*S.*) *percoeca (*Dendrocoelum* p. Packard, 1879; *D. percaecum* Banta, 1907; *Fonticola* p. Hyman, 1931) Beauchamp, 1931 (type locality cave in Mammoth C., KY (parasitic in *Adelops hirtus* beetle larvae/ ecKY (Caldwell, Carter, Edmonson (Mammoth Cave), Estill, Hart, Jackson, Wayne Cos.), AL (Jackson, Madison Cos.) & TN (Campbell, Davidson, Putnam, Rutherford, Van Burne Cos.))/ Tb G4G5) **Bibl.:** de Beauchamp 1931; Buchanan 1936

Sphalloplana* (*Speophila*) *pricei (= *Speophila* p. Hyman, 1937; *Speophila buchanani* Hyman, 1937; *Speophila hubrichti* Human, 1945; *Speophila hoffmasteri* Human, 1954; *Speophila hoffmeisteri* Ball, 1969)) Mitchell, 1968 (type locality cave in Lancaster Co. + Dauphin, Mifflin Cos., PA + caves in VA, KY, WV, w. to IL, MO/ Tb)

Sphalloplana reddelli Mitchell, 1968 (TX/Tb/geographically isolated but considered a junior syn. of *S. mohri* by some authors)

Sphalloplana sloani Mitchell, 1968 (type locality cave in San Saba Co., TX/Tb/geographically isolated but considered a junior syn. of *S. mohri* by some authors)

Sphalloplana undet. sp. or species (Pb in MD(WA Co.), Madison Co., AL & NC (Blount Co.))

Sphalloplana undet. or undescr. sp. (Tb in 2 caves in Walker Co., GA)

Sphalloplana* (*S.*) *subtilis Kenk, 1977 (Fairfax Co., VA/ Pb/ G1G2 VA T&E SX rank & global GH rank) (possibly extinct)

Sphalloplana* (*Speophila*) *virginiana Hyman, 1945 (*type locality cave in Rockbridge Co., VA/ Tb/ G1G2 VA Endangered T&E or VA T&E S1 rank, Species of Concern & global G1 rank; cave filled in with dirt & rocks/Rockbridge Co. cave planarian))

Sphalloplana weingartneri Kenk, 1970a (type locality cave in Crawford Co., IN/10 sites s. of White River in Clark, Harrison, Jefferson, Lawrence & Orange Cos., IN/ Weingartner's cave flatworm/ Tb; IN T&E S2 G2G3)

Sphalloplana zeschi Mitchell, 1968 (*type locality cave in Mason Co., TX/Tb/geographically isolated but considered a junior syn. of *S. mohri* by some authors),

Stenostomum Schmidt, 1848 - Stenostomidae Turbellaria (flatworms)

Stenostomum leucops von Graff, 1911 (highly questionable species according to Nuttycombe & Waters, 1938) (NY/interstitial)

Stenostomum occultum von Graff, 1911 (NY interstitial)
Stenostomum pegephilum Nuttycombe & Waters, 1938 (NY interstitial)
Stenostomum undet. sp. or species (MI interstitial; Tp or Tb in cave in Bell Co., TX)

Stenostomum temporaneum Kolasa, 1981 (NY interstitial)
Stenostomum tenuicaudatum von Graff, 1911 (Tp in cave in Hays Co., TX)
Stenostomum unicolor von Graff, 1911 (NY interstitial)

Stylochoplana Stimpson, 1857 – Leptoplanidae Turbellaria (flatworms)
Stylochoplana longipenis Hyman, 1953 (CA marine infauna)

Stylochopsis Verrill, 1873 - Stylochidae Turbellaria (flatworms)
Stylochopsis ellipticus (Girard, 1850) (PEI Gulf of St. Lawrence sandy marine interstitial)

Stylochus Ehrenberg, 1836 - Stylochidae Turbellaria (flatworms)
Stylochus californicus Hyman, 1935 (CA marine infauna)

Stylochus exiguus (WA marine infauna)
Stylochus ellipticus (Girard, 1850) (MA, NJ, Virginian marine sandy infauna)

Stylochus franciscanus Hyman, 1935 (CA marine infauna)
Stylochus undet. sp. (FL marine benthic)
Stylochus tripartitus Hyman, 1935 (CA marine infauna)

Stylostonium Lang, 1884 – Euryleptidae Turbellaria (flatworms)
Stylostonium undet. sp. (CA marine infauna)

Uteriporus - Uteriporidae, Subfamily Uteriporinae - Turbellaria (flatworms)
Uteriporus vulgaris Bergendal, 1890 (PQ Gulf of St. Lawrence sandy marine interstitial)

Vejdovskya L.V. Graff, 1905 - Provorticidae, Subfamily Provorticinae
Vejdovskya parapellucida Az, 1997 (SC brackish interstitial)

xeno(o)enic - Syn.: accidental.

xeric - Said of a habitat characterized by a low or inadequate supply of moisture.

xerophyte - A plant adapted to dry conditions.

xylophage - Animal guild dependent on plant detritus and/or associated decomposers for wood.

xylophilous - Adj. for species whose main habitat is woody debris.

yearling - An animal at the beginning of its second year of life.

yeast - See fungi

YOY (young of the year) - Juveniles during the period from the last larval stage to adulthood, or one year of age--whichever comes sooner.

zeitgeber - An environmental clue (e.g. light) that synchronizes, entrains, or modifies a circadian rhythm.

zonation - The organization of a habitat into a more or less orderly series of distinctive plant & animal associations as a result of variations in environments. Zones in a cave are the twilight zone, the variable-temperature zone, & the constant temperature zone. The zone of aeration is the zone in permeable soil or rock that is above the zone saturated with water, the zone of vadose water.

zoocology - The study of the relationships of animals & their environment.

zoogenic rock - A biogenic rock produced by animals or directly attributable to the presence or activities of animals, such as shell limestone, coral reefs, guano & lithified calcareous ooze. Bibl. - See biokarst.

zoogeography - see biogeography

Zoraptera – Insect Order (angel insects) not known from US or Canadian caves or aquatic interstitial habitats. Bibl.: Gurney 1938; Riegal & Ferguson 1960

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