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The Evolution of the Eastern North American Isopods of the Genus *Asellus* (Crustacea: Asellidae)

Part I

by

Laurence E. FLEMING*

This paper is the first in a three part series concerned with the evolution of North American isopods of the genus *Asellus*. It contains the descriptions of four new species of isopods and a list of pertinent new range data of presently known species. Subsequent papers will deal with the generic status of *Asellus*, recently discovered synonymies and a consideration of the evolution of the genus *Asellus*. These three papers will constitute a thorough discussion of the genus *Asellus* emphasizing the relationships between epigean and troglobitic species and the zoogeography of both. I am grateful to the following individuals for collecting this material and making it available to me: O.H. Tomson, R.S. Fox and L. Hubricht. I would like to thank Dr. Perry C. Holt for reviewing the manuscript.

Asellus holti, sp. nov. (Figs. 1-5)

Type-specimens. –Holotype, UNSM 79308; Allotype, UNSM 138241; 6 paratypes, UNSM 138242; taken from a small stream, 1.8 miles east of Casa, Perry County, Arkansas by Leslie Hubricht, May 4, 1940.

Diagnosis. Peduncle of male second pleopod 1.3 times longer than wide; exopod 0.55 times as long as peduncle; distal segment of exopod triangular; endopod terminating in 4 processes; lateral process, mesial process, cannula and accessory process; peduncle of first pleopod with 5 coupling hooks; palmar margin of propodus of gnathopod with 2 processes: medial and distal.

Description. –A moderate sized, pigmented isopod with reduced eyes; holotype (largest male) 7.2 mm in length and 1.6 mm in width; allotype (ovigerous) 7.2 mm in length and 1.9 mm in width (at brood pouch); body slender, length (excluding uropods) 4.5 times width in holotype and 3.7 times width in allotype.

Palmar margin of propodus of male gnathopod (peraeopod 1) with 2 processes (Fig. 1): (1) large, subacute, medial process directed distally and (2) small distal process with flattened apex. Proximal end of palmar margin has 3 stout spines. A

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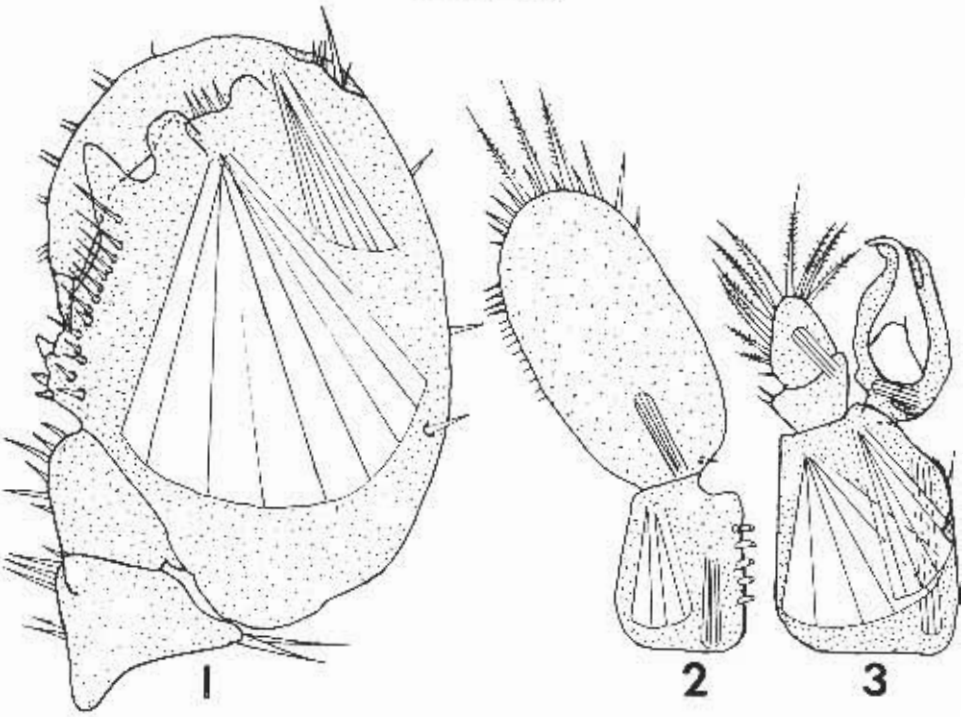
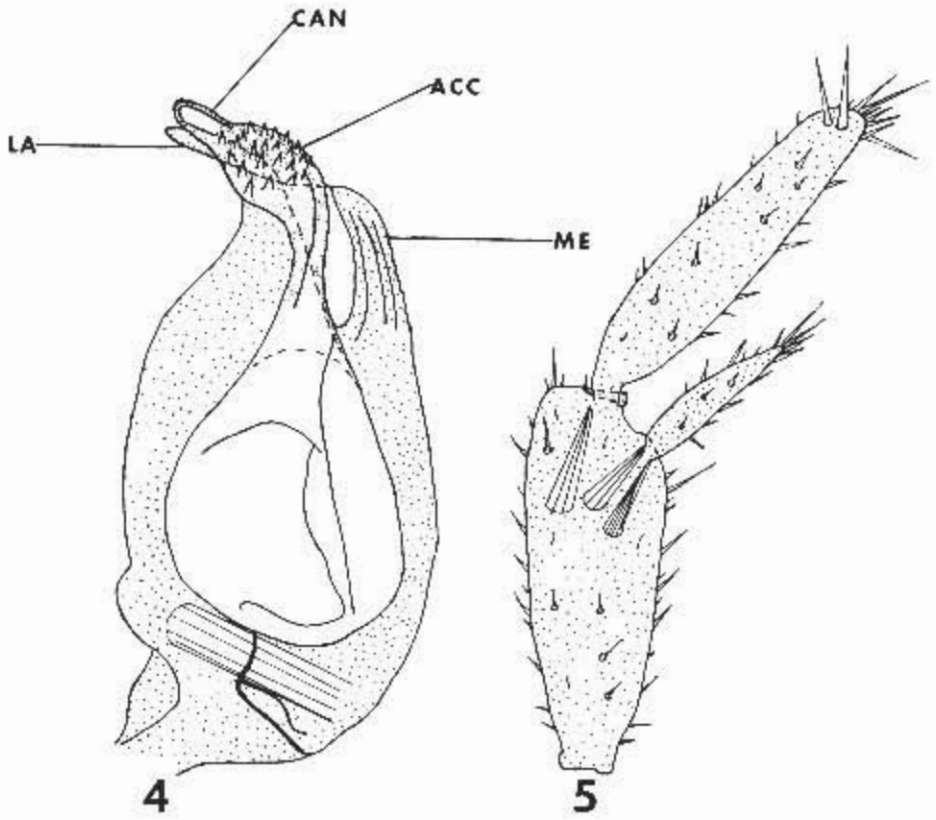


single row of slender setae located between 3 proximal spines and medial process. A single row of slender setae located between 3 proximal spines and medial process. Opposable margin of dactyl without processes or spines. Dactyl very short not reaching to proximal border of palm.

Peduncle of first pleopod with 5 coupling hooks (Fig. 2). Exopod oval and 1.8 times longer than peduncle and 1.9 times longer than wide. Lateral margin of exopod bears short, slender setae. Single short seta on proximomesial border. Apex covered with long, slender setae; some plumose setae.

Peduncle of second pleopod 1.3 times longer than wide with one slender seta on mediodistal border; comb-like row of small setae or spines on mesiodistal border turning inward proximally (Fig. 3). Exopod 0.55 times as long as peduncle. Proximal segment of exopod has 2 slender setae on lateral border. Distal segment of exopod triangular with obtuse apex and long, slender plumose setae on entire lateral margin to distal ½ of mesial margin. Endopod much larger than exopod with slight obtuse lateral apophysis and no mesial apophysis in basal part. Distal part of endopod with apex directed strongly laterad terminating in 4 parts (Fig. 4): (1) mesial process (ME) large, broad and plate-like with serrated mesial border, extending ½ distance of cannula and separated from other processes by shallow groove, (2) lateral process (LA) elliptical, lying under cannula and extending outward from



Figs. 1–5. *Asellus holti*. 1, lateral view of distal podomeres of male left gnathopod; 2, cephalic view of left first pleopod; 3, cephalic view of male left second pleopod; 4, cephalic view of tip of endopodite of male left second pleopod, CAN = cannula, LA = lateral process, ME = mesial process, ACC = accessory process; 5, dorsal view of male left uropod.

endopodial tip a distance equal to that of cannula, (3) cannula (CAN) elliptical process containing endopodial groove, lying over lateral process and partially covered by another process, and (4) accessary process (ACC) rounded containing many short spike-like spines forming cover over part of endopodial groove lying in cannula.

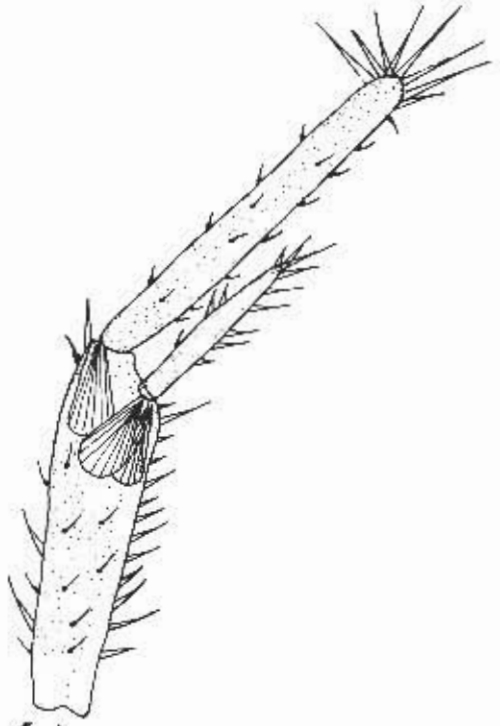
Uropod of male (Fig. 5) has peduncle 2.1 times longer than exopod. Endopod approximately 2.1 times longer than exopod. Rami and peduncle sparsely covered with short setae. Apices of rami possess several long, slender setae.

Etymology. –This species is named in honor of Dr. Perry C. Holt for his major contributions to our knowledge of the invertebrates.

Variation. – Several minor variations have been noted. The first pleopod in some

specimens has 4 coupling hooks. In some specimens the gnathopod is different from the holotype. There is but a single process (the medial process) in some and the length the dactyl reaches on the palmar margin varies, often reaching beyond the proximal border. The rami of the uropod may differ in size. This disparity in size is often not as pronounced as that seen in the holotype.

Affinities. – *Asellus holti* has its closest affinities with two species: *A. stiladactylus* (Mackin and Hubricht, 1940) and *A. dentadactylus* Mackin and Hubricht, 1938. *A. holti* resembles *A. stiladactylus* in the shape of the uropod, the armament of the gnathopod, the shape of the first pleopod and some features of the second pleopod. The uropod of *A. holti* has an elongated endopod, a greatly shortened exopod and a covering of both rami and the peduncle by slender setae. The uropod of *A. stiladactylus* (Fig. 6 is an illustration of the uropod of *A. stiladactylus* which was not included in the description by Mackin and Hubricht) is quite similar to that described above for *A. holti*. The gnathopod of both species has two processes (a large medial and a small distal one). The first pleopod in both species has short, slender setae on the lateral margin of the exopod and long, slender setae on the apex. The second pleopod in *A. holti* resembles that of *A. stiladactylus* by having a



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somewhat triangular exopod with an obtuse apex and a complicated set of processes on the endopodial tip bearing heavy spines or ridges. The endopodial tip of *A. stiladactylus* is retractile (this is the only known example of such a phenomenon in an isopod) and Fig. 6 shows it in both the erect and the recumbent stages (both stages were not illustrated by Mackin and Hubricht). *A. holti* differs from *A. stiladactylus* in the armament of the gnathopod, the shape of the first pleopod and certain features of the second pleopod. The palmar margin of the propodus of the gnathopod in *A. holti* has a small distal process with a flattened apex (it is bidentate in *A. stiladactylus*) and 3 stout proximal spines (there is only one in *A. stiladactylus*). The first pleopod in *A.* holti has an oval exopod (it is more elongated in *A. stiladactylus*). The second pleopod in *A. holti* has a single peduncular seta (there are 2-3 in *A. stiladactylus*), two lateral setae on the proximal segment of the exopod (there are 5-8 in *A. stiladactylus*), a very small lateral apophysis on the basal part of the endopod (there is a very prominent lateral apophysis in *A. stiladactylus*) and numerous small spines on the endopodial tip (there are numerous small ridges in *A. stiladactylus*).

A. holti resembles *A. dentadactylus* in the anatomy of the first pleopod,

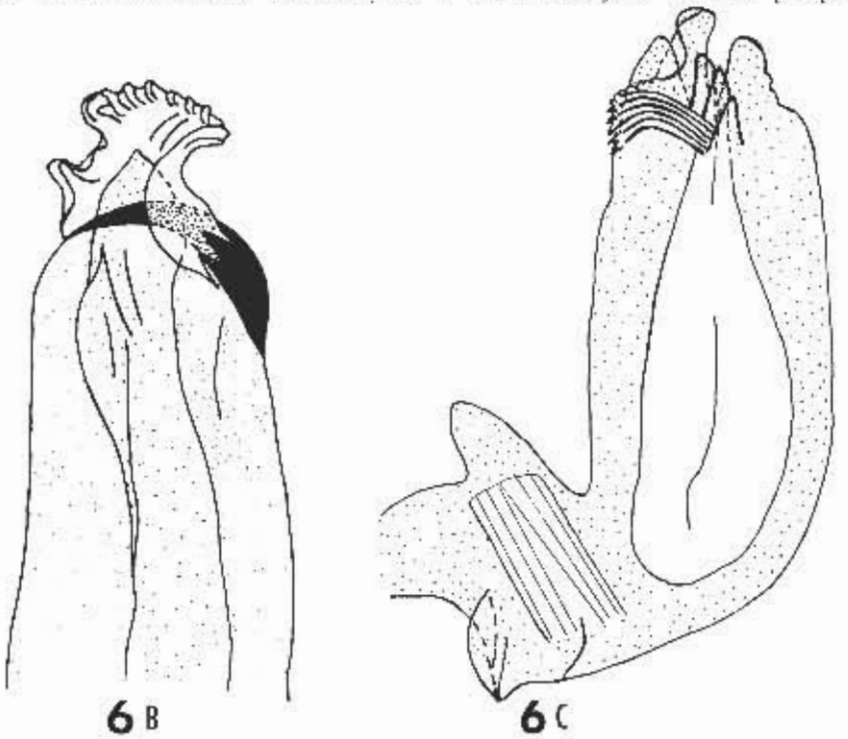


Fig. 6. – *Asellus stiladactylus* (Mackin and Hubricht). a, dorsal view of male left uropod; b, cephalic view of tip of endopodite of male left second pleopod in the erect stage; c, cephalic view of tip of endopodite of male left second pleopod in the recumbent stage.

armament of the gnathopod and certain features of the second pleopod. Both species have 5 coupling hooks on the peduncle of the first pleopod and a small short seta on the mesioproximal border of the exopod. Both species have a large medial process, small distal process and 3 stout proximal spines on the gnathopod. Both species have a triangular exopod with an obtuse apex on the exopod of the second pleopod and an endopodial tip with complex processes containing stout spines or ridges.

A. holti can be distinguished from *A. dentadactylus* by the shape of the uropod, shape of the first pleopod and features of the second pleopod. The uropod in *A. holti* has a very large endopod and a very small exopod, but the size differences between these rami are not so distinctive in *A. dentadactylus*. The exopod of the first pleopod in *A. holti* is oval, but in *A. dentadactylus* there is a convex lateroproximal region and a concave laterodistal region. The second pleopod in *A. holti* has a single seta on the peduncle (there is none in *A. dentadactylus*), two setae on the lateral border of the proximal segment (there are 4 in *A. dentadactylus*), a small lateral apophysis and no mesial apophyses in the basal part of the endopod (there are distinctive lateral and mesial apophyses in *A. dentadactylus*) and stout spines on the endopodial tip (there are ridges in *A. dentadactylus*).

Material Examined. –Known only from the type-material.

Distribution. –Known only from the type-locality.

Asellus extensolinguahs, sp. nov. (Figs. 7-11)

Type-specimens. –Holotype, USNM 108576; allotype, UNSM 138243; 2 paratypes, UNSM 138244; taken from an intermittent stream, 5 0 miles south of the town of Mill Creek, Madison County, Missouri by Leslie Hubricht, April 5, 1941.

Diagnosis. Peduncle of male second pleopod 1.3 times longer than wide; exopod 0.70 times as long as peduncle; distal segment of exopod spatulate; endopod terminating in two processes, lateral process, cannula; peduncle of first pleopod with 4 coupling hooks; palmer margin of propodus of gnathopod with three processes: proximal, medial and distal.

Description. – *Asellus extensolinguahs* is a moderate to large sized, eyeless isopod with slight body pigmentation. Holotype (largest male) 11.9 mm in length; 1.7 mm in width. Allotype 7.4 mm length; 1.3 mm in width (largest female 9.7 mm length; 1.5 mm in width). Body slender, length (excluding uropods) 7.0 times width in allotype.

Palmar margin of propodus of male gnathopod (peraeopod 1) with 3 processes (Fig. 7): (1) proximal, small subacute process, (2) medial, large subacute process directed distally and (3) small distal bluntly rounded process. Opposable margin dactyl devoid of processes, spines or setae.

Peduncle of first pleopod with 4 coupling hooks (Fig. 8). Peduncle 0.53 times as long as the exopod. Exopod approximately 2.0 times longer than wide, lateral border slightly convex bearing 4 long slender setae and several small setae; apex exopod obtuse with 1 long slender seta on mesiodistal border, 9-10 small slender setae on apex and 7-8 small, hair-like setae on laterodistal border.

Peduncle male second pleopod approximately 1.3 times longer than wide (Fig. 9). Exopod approximately 0.70 times as long as peduncle. Proximal segment exopod with 5-6 long, slender setae on lateral border. Distal segment exopod spatulate and armed with slender, plumose setae on distal ½ of lateral border to distal ¼ of mesial border. Endopod shorter than exopod bearing large, rounded lateral apophysis and smaller, rounded mesial apophysis on basal segment. Distal segment terminates in 2 processes (Fig. 10): (1) lateral process (LA), a tongue-like laterally extended projection and (2) cannula (CAN), small rounded process containing endopodial groove, extended only slightly beyond tip endopod.

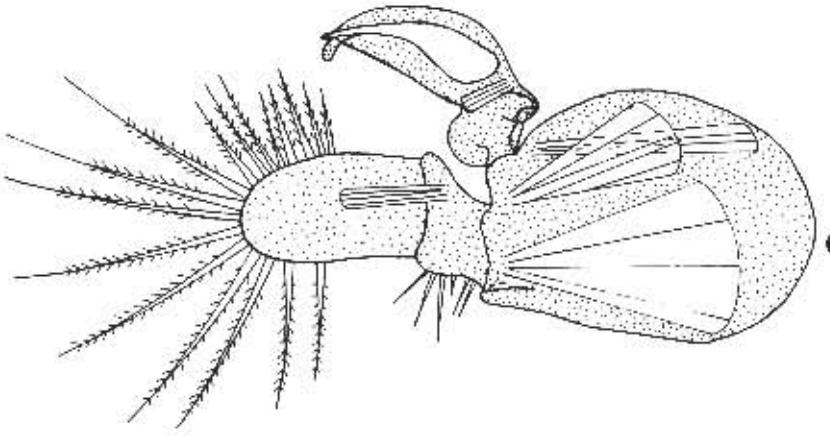
Uropod of male (Fig. 11) with peduncle approximately 4.7 times longer than exopod. Endopod approximately 3.8 times longer than exopod. Both rami armed with long, slender setae on apices. Both rami and peduncle sparsely covered with setae.

Etymology. –*extensus*, Latin = extended, *lingua*, Latin = tongue, referring to the extended tongue-like lateral process of the endopodial tip of the male second pleopod.

Variation. – Very little variation is noted with the exception of the male gnathopod. The distal process of the palmar region in some specimens is larger than that of the holotype and has a subacute apex. Also the proximal process on the palmar region of the propodus has an acute tip in some specimens.

Affinities. *A. extensolingualus* has its closest affinities with *A. antricolus* (Creaser, 1931). It also reveals some affinities with *A. stygius* (Packard, 1871), *A. alabamensis* (Stafford, 1911) and *A. intermedius* Forbes, 1876. It closely resembles *A. antricolus* in all taxonomically valuable characteristics (male gnathopod, uropod, first and second pleopods) and it would be superfluous to discuss the multitude of similarities between these two species. *A. extensolingualus* can be distinguished from *A. antricolus* by the anatomy of the first pleopod, the gnathopod and some features of the second pleopod. *A. extensolingualus* has 3 processes on the palmar margin of the propodus of the gnathopod, while *A. antricolus* has only 2 processes with the distal process bidentate. The first pleopod in *A. antricolus* has 7 coupling hooks while *A. extensolingualus* has only 4 hooks. The second pleopod in *A. antricolus* has short, pointed mesial and lateral apophyses on the basal segment, while *A. extensolingualus* has broad, rounded apophyses. The endopodial tip of *A. antricolus* has 4 processes: mesial, lateral, caudal and cannula. The endopodial tip in *A. extensolingualus* has only 2 processes: cannula and lateral.

A. extensolingualus resembles *A. stygius* in the anatomy of the uropod and in certain characteristics of the second pleopod. The uropod is similar in both species as it has an elongated, flattened endopod and a greatly shortened exopod both of which are covered by slender setae. The second pleopod is similar in both species having an exopod with only the distal ¾ possessing setae and a rounded lateral apophysis. The endopodial tip in the two species has a slightly projecting cannula and an additional process which is extended near the tip of the cannula. *A. extensolingualus* differs from *A. stygius* in the shape of the first pleopod, armament of the gnathopod and in features of the second pleopod. The first pleopod in *A.*



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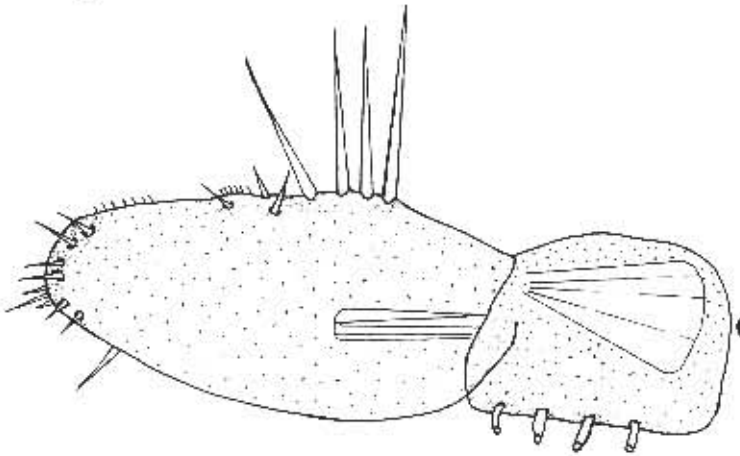

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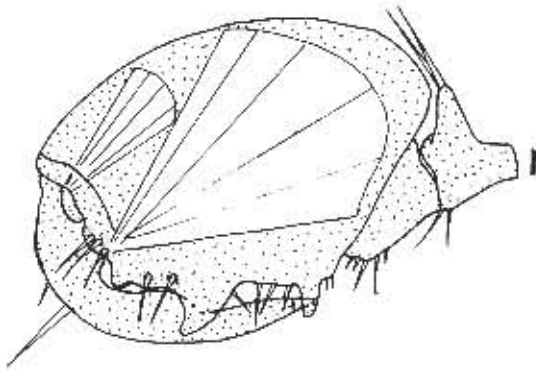

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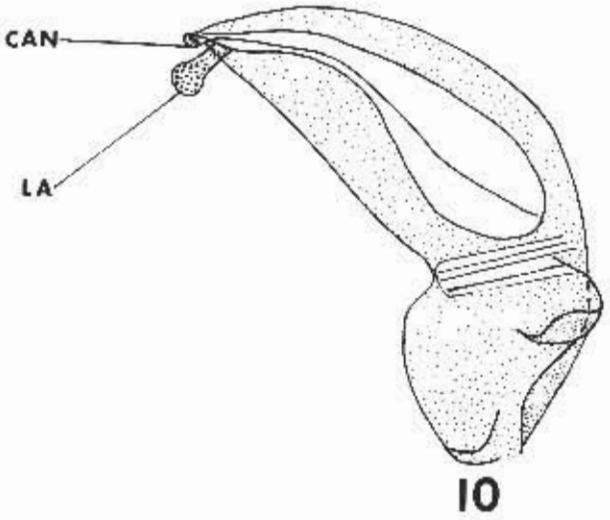
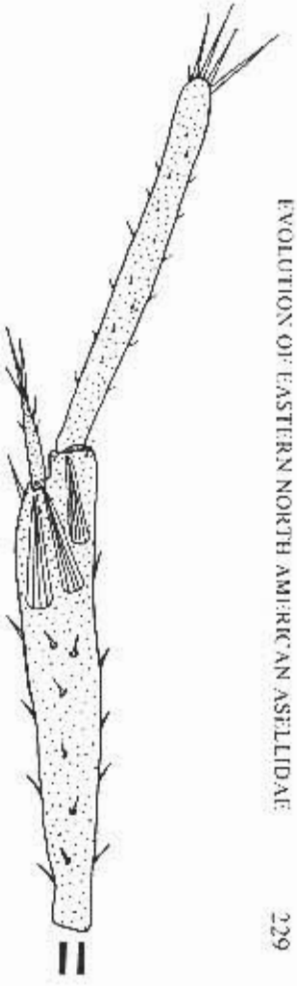




Figs. 7–11. – *Asellus extensolingualus*. 7, lateral view of distal podomeres of male left gnathopod; 8, caudal view of left first pleopod; 9, cephalic view of male left second pleopod; 10, cephalic view of tip of endopodite of male left second pleopod, CAN – cannula, LA lateral process; 11, ventral view of male left uropod.

stygius has 5 coupling hooks (4 in *A. extensolinguatus*) and an apex that is flattened (it is obtuse in *A. extensolinguatus*). The palmar margin of the gnathopod in *A. stygius* has a small medial process (smaller than the distal process) and a small bidentate distal process. *A. extensolinguatus* has a large medial process (larger than the distal process) and a small distal process that is not bidentate. The second pleopod in *A. stygius* bears 2 mesiodistal setae on the peduncle, an ovate exopod and 3 processes on the endopodial tip: cannula, caudal process and lateral process. *A. extensolinguatus* lacks the 2 mesiodistal setae on the peduncle, it has a spatulate exopod and bears only 2 processes on the endopodial tip: cannula and lateral.

A. extensolinguatus resembles *A. alabamensis* in the uropod, first pleopod and features of the male second pleopod. The uropod in both species has an elongated, flattened endopod, a short exopod and a sparse covering of long, slender setae. The first pleopod in both species has an obtuse apex and long, slender lateral setae. The second pleopod in both species has long, slender setae on the lateral border of the proximal segment of the exopod, broadly rounded lateral and mesial apophyses and a slightly projecting cannula and an additional process extended near the tip of the cannula. *A. extensolinguatus* can be distinguished from *A. alabamensis* by the gnathopod and the first and second pleopods. The gnathopod in *A. extensolinguatus* has 3 processes, none of which are bidentate. *A. alabamensis* possesses a gnathopod with two processes, both of which are bidentate. The first pleopod in *A. extensolinguatus* has 4 coupling hooks, a convex lateral border of the exopod and a very slightly convex median exopod margin. *A. alabamensis* has a first pleopod with 3 coupling hooks, a rectilinear lateral exopod margin and an extremely convex median exopod border. The second pleopod in *A. extensolinguatus* lacks peduncular setae, has a spatulate exopod and only 2 endopodial processes: cannula and lateral. *A. alabamensis* has a second pleopod with 3-4 setae on the mesiodistal margin of the peduncle, an acute tipped exopod and 4 endopodial processes: cannula, caudal process, mesial process and lateral process.

A. extensolinguatus resembles *A. intermedius* in the second pleopod. Both species have a second pleopod with no peduncular setae, a spatulate exopod and only 2 endopodial processes, one of which is a cannula that extends beyond the tip of the endopod. *A. extensolinguatus* can be distinguished from *A. intermedius* by the shape of the first pleopod, armament of the gnathopod, shape of the uropod and male second pleopod. The first pleopod in *A. extensolinguatus* has 4 coupling hooks (3 in *A. intermedius*) and a convex lateral exopod margin with long slender setae (absent in *A. intermedius*). The palmar margin of the gnathopod of *A. extensolinguatus* has 3 processes, while there is only one in *A. intermedius*. The uropod in *A. extensolinguatus* has an extremely long endopod and a very short exopod (the endopod is 3.8 times longer than the exopod), while in *A. intermedius* the difference in size between these two species is much less than in *A. extensolinguatus* (the endopod is aproximately 1.1 times longer than the exopod). The second pleopod in *A. extensolinguatus* has 5-6 setae on the lateral margin of the proximal segment of the exopod (*A. intermedius* has one), prominent, rounded mesial and lateral apophyses of the basal segment of the endopod (absent in *A. intermedius*) and a cannula and a lateral process on the endopodial tip (*A.*

intermedius has a cannula and a caudal process).

Three of the above mentioned species (*A. stygius*, *A. antricolus* and *A. alabamensis*) which show affinities with *A. extensolinguatus* are members of the Stygius Group of asellids. For this reason *A. extensolinguatus* should be placed in the Stygius Group.

Material Examined. –Known only from the type-material.

Distribution. –Known only from the type-locality.

Asellus foxi, sp. nov. (Figs. 12-16)

Type-specimens. Holotype, USNM 138280; 1 male paratype, UNSM 138281; taken from One Mile Beach in Pass Christian on 28th Street, Harrison County, Mississippi by O.H. Tomson, April 5, 1968.

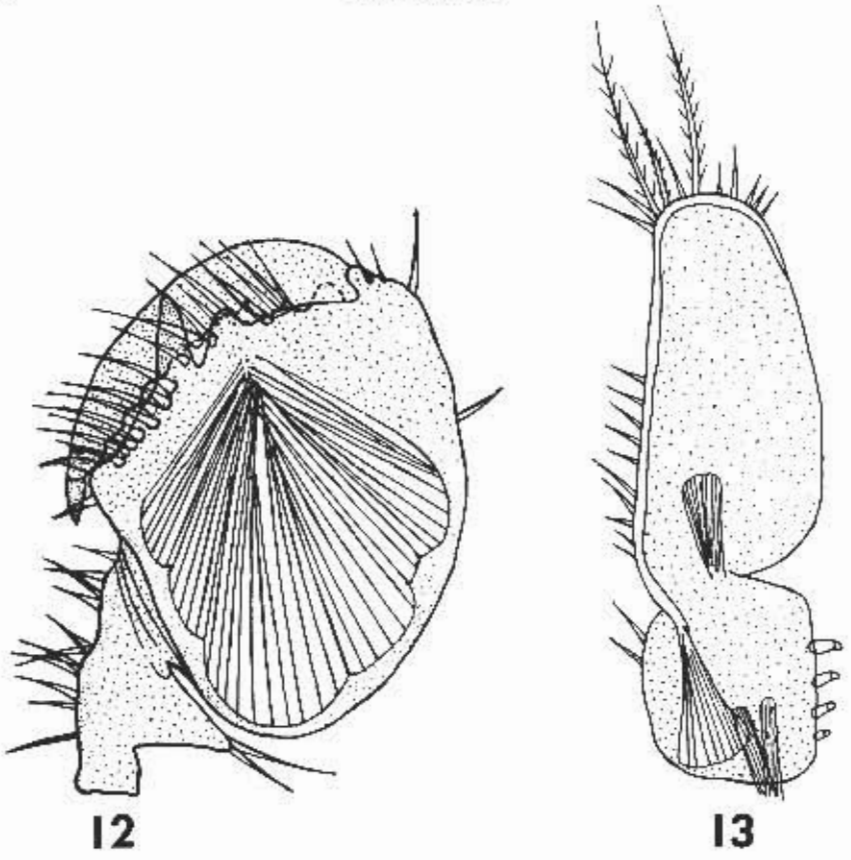
Diagnosis. Peduncle of male second pleopod 1.1. times longer than wide; exopod 1.2 times longer than peduncle; distal segment of exopod narrow; endopod terminating in 2 processes: cannula and lateral process. Peduncle of first pleopod with 3–4 coupling hooks; palmar margin of propodus of gnathopod with 2 processes; medial and distal. Uropod with peduncle 1.8 times longer than exopod.

Description. A small to moderate sized, pigmented, eyed isopod; holotype (largest specimen) 6.0 mm. in length, 2.1 mm. in width; body robust, length (excluding uropods) 2.9 times as long as wide.

Palmar margin propodus male gnathopod (peraeopod 1) with 2 processes (Fig. 12): (1) medial, large, subacute process directed distally and (2) distal, small, bluntly-rounded process. Propodus also contains single large spine located on proximal tip of palmar margin plus a row of slender setae between proximal spine and medial process. Opposable margin dactyl without processes but possessing small undulations of margin.

Peduncle first pleopod with 3–4 coupling hooks (Fig. 13) and 2 slender setae on lateral margin. Exopod 1.9 times longer than peduncle and 2.1 times longer than wide. Exopod slightly tapers distally to rounded apex containing 3–4 long, plumose setae and 8–10 short, slender setae. Lateral border of exopod is sclerotized ridge bearing 10–12 short, slender setae. Median margin exopod slightly expanded mesially.

Peduncle male second pleopod 1.1 times longer than wide (Fig. 14) with 2 slender setae on mesiodistal margin. Exopod 1.2 times longer than peduncle; proximal segment lacks setae. Distal segment exopod narrow with subacute apex bearing 15–20 long, plumose setae on entire lateral margin to distal ¼ of mesial margin. Endopod approximately same width as but longer than exopod and bears bluntly-rounded, much reduced mesial apophysis in proximal part but lacking lateral apophysis. Distal part endopod tapers distally with undulating mesial border. It terminates in 2 parts (Fig. 15): (1) the cannula (CAN), containing extension of endopodial groove and (2) lateral process (LA), a small flap-like structure extending short distance up cannula and bearing undulated lateral margin. Cannula is straight, extending greatly beyond tip of endopod.

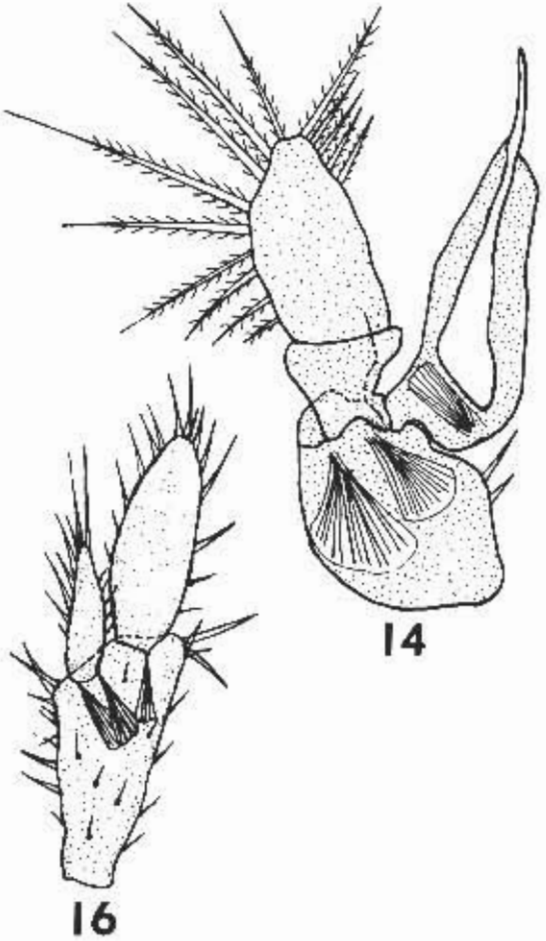


Figs. 12–16. – *Asellus foxi*. 12, lateral view of distal podomeres of male left gnathopod; 13, cephalic view of left first pleopod; 14, cephalic view of male left second pleopod; 15, cephalic view of tip of endopodite of male left second pleopod, CAN – cannula, LA – lateral process; 16, ventral view of male left uropod.

Uropods (Fig. 16) of male possess peduncle approximately 1.8 times longer than exopod. Endopod spatulate and approximately 1.6 times longer than exopod. Both rami and peduncle sparsely covered with long, slender setae. Apex exopod with several long, slender setae.

Etymology. – This species is named in honor of Mr. Richard S. Fox, a biologist and ardent collector of amphipods and isopods.

Variation. – Only minor variations are exhibited by the various specimens examined and most of the variations concern the presence or absence of setae. On the second pleopod of the male the mesiodistal margin of the peduncle sometimes possesses only one setae altogether, while the proximal segment of the exopod often possesses 1 long and 2 short, slender setae. The lateral margin of the peduncle



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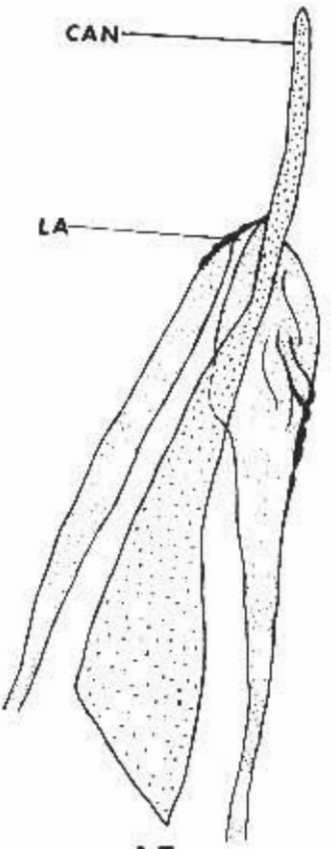

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of the first pleopod sometimes lacks the 2 slender setae. Many specimens have uropods which are densely covered with long, slender setae.

The shape of the exopod of the male second pleopod often varies, being quite narrow in some specimens and spatulate in others.

The male gnathopod is very stable in morphology with only one specimen showing some variation. This specimen possesses only a small medial process and no distal process on the palmar margin of the propodus.

Affinities. – *Asellus foxi* has its closest affinities with another epigean species, *Asellus laticaudatus* Williams, 1970. *A. foxi* resembles *A. laticaudatus* in the shape of the male uropod, the gnathopod of the male, and the shape and armament of the endopodial tip of the male second pleopod. Both species possess uropods with spatulate endopods and both have long slender setae covering their rami and the

peduncles. The gnathopod is quite similar in the two species with a large medial process and a small bluntly rounded distal process. The endopodial tip of the second pleopod is similar in the two: in both there is a prominent extended cannula containing the endopodial groove.

Asellus foxi can be distinguished from *A. laticaudatus* by the first pleopod, the shape of the male second pleopod and the endopodial tip of the male second pleopod. The first pleopod in *A. foxi* has generally 2 slender setae on the lateral margin of the peduncle and an exopod that tapers apically and contains sclerotized ridge with setae on the lateral border. The exopod in *A. foxi* is approximately twice as long as the peduncle. The first pleopod in *A. laticaudatus* lacks the 2 lateral setae on the peduncle, has a broadly rounded apex on the exopod, lacks the lateral sclerotized ridge and setae and has the exopod only approximately 1.3 to 1.5 times longer than the peduncle. The male second pleopod in *A. foxi* has a narrow exopod and an endopod as large as or larger than the exopod, whereas *A. laticaudatus* has an oval exopod and the endopod is much smaller than the exopod. The proximal part of the endopod in *A. laticaudatus* bears well developed mesial and lateral apophyses, while *A. foxi* has a much reduced mesial apophysis. The endopodial tip in *A. foxi* bears a lateral process in addition to the cannula but *A. laticaudatus* lacks the lateral process.

Due to the obvious morphological similarities between these 2 species a close relationship is evident. It is therefore proposed that these two species, together with two other species (*A. communis* and *A. occidentalis*) be placed in a species group to be called the Communis Group. The affinities of the members of this group among themselves and with the two species discussed here will be reviewed in greater detail in a later paper.

Material examined. In addition to the types, specimens belonging to this species from the following localities have been studied:

Arkansas: White Oak Creek at Rt. 24 bridge about 4 miles west of Chidester, Quachita County. Richard S. Fox. December 26, 1970. 2 ♂♂ 1 ♀.

Louisiana: Among dead leaves in a small creek below an artificial pond, propoerty of Caroline Doronan, 2 miles south of Saline, Natchitoches Parish. Leslie Hubricht. April 12, 1939. 37 specimens.

Distribution. *A. foxi* is known from a locality in Mississippi (probably a ditch or a slough), a creek in Arkansas and a creek in Louisiana. It thus exists in a somewhat restricted range in the southeastern part of the United States. The three localities from which it was collected are separated by great distances and it can thus be reasonable assumed that this species will be found in intermediate areas.

Remarks. It is noteworthy that two of the three collecions of this species were not monotypic collections. The type-material was collected with specimens (1 ♂ 2 ♀♀) of *A. obtusus* Williams, 1970 and *Lircus* sp. (1 ♀), and the Louisiana collection also had some specimens of *A. dentadactylus* (Mackin and Hubricht, 1940).

Asellus serratus, sp. nov. (Figs. 17–21)

Type-specimens. – Holotype, USNM 79317; Allotype, USNM 138245; 44 paratypes, USNM 108532; taken from a small stream in Branson Cave, one mile northwest of Alley, Shannon County, Missouri by Leslie Hubricht on August 31, 1940.

Diagnosis. – Peduncle of male second pleopod 1.3 times longer than wide; exopod 1.1 times longer than peduncle; distal segment of exopod ovate; endopod terminating in single process, the cannula; peduncle of first pleopod without coupling hooks; no processes on palmar margin of propodus of gnathopod.

Description. – A small, albinistic, eyeless isopod; holotype (largest male) 2.5 mm in length and 0.6 mm in width; allotype (largest female) 2.5 mm in length and 0.6 mm in width; body slender, length (excluding uropods) approximately 4.1 times as long as wide in holotype and 4.2 times as long as wide in allotype.

Palmar margin of propodus of male gnathopod (peracopod 1) without processes but possessing 4–5 long, slender spines (Fig. 17). Opposable margin of dactyl without processes but armed with single long slender spine.

Peduncle first pleopod lacking coupling hooks (Fig. 18). Exopod 2.6 times longer than peduncle and 2.1 times longer than wide (at point of greatest width). Exopod triangular with subacute apex containing a single slender seta and 3–4 long slender setae on lateral border exopod.

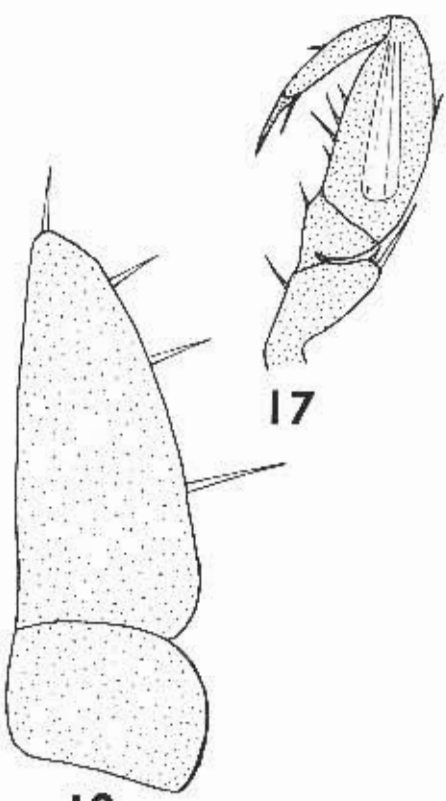
Peduncle male second pleopod approximately 1.3 times longer than wide (Fig. 19), with 5 saw-like spines on lateral border. Exopod 1.1 times longer than peduncle and not clearly divisible into proximal and distal segments. Exopod ovate with obtuse apex bearing single slender setae. Proximolateral border of exopod armed with 1–2 long, slender and 4–5 short setae. Endopod longer and larger than exopod bearing slight mesial reduced apophysis in the basal segment. Endopodial tip (Fig. 20) terminates in a single process, cannula (CAN), containing endopodial groove. Cannula extended greatly beyond apex of endopod with slightly grooved tip.

Uropod of male (Fig. 21) with peduncle 0.62 times as long as exopod. Endopod 1.6 times longer thans exopod. Apices both rami armed with several long slender setae. Both rami densely covered by very small hair-like setae. Peduncle contains one large, slender seta on laterodistal and one on mesiodistal border.

Etymology. – *serratus*, Latin = past participle of *serrare*, to saw, referring to the saw-like spines on the lateral border of the peduncle of the male second pleopod which gives a saw-like appearance to the structure.

Variation. – The only discernible variation from structures as seen in the holotype was the occurrence of more numerous spines on the palmar margin of the propodus of the male gnathopod in some specimens.

Affinities. – *Asellus serratus* has its closest affinities with another troglobitic species, *A. dimorphus* (Mackin and Hubricht, 1940), which it resembles primarily in the structure of the male endopodial tip. Both species possess an endopodial tip composed of only a cannula which is moderately elongate and projects beyond the



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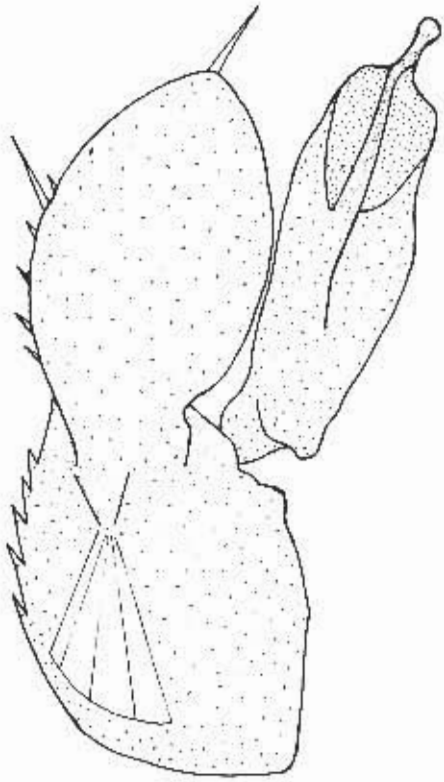

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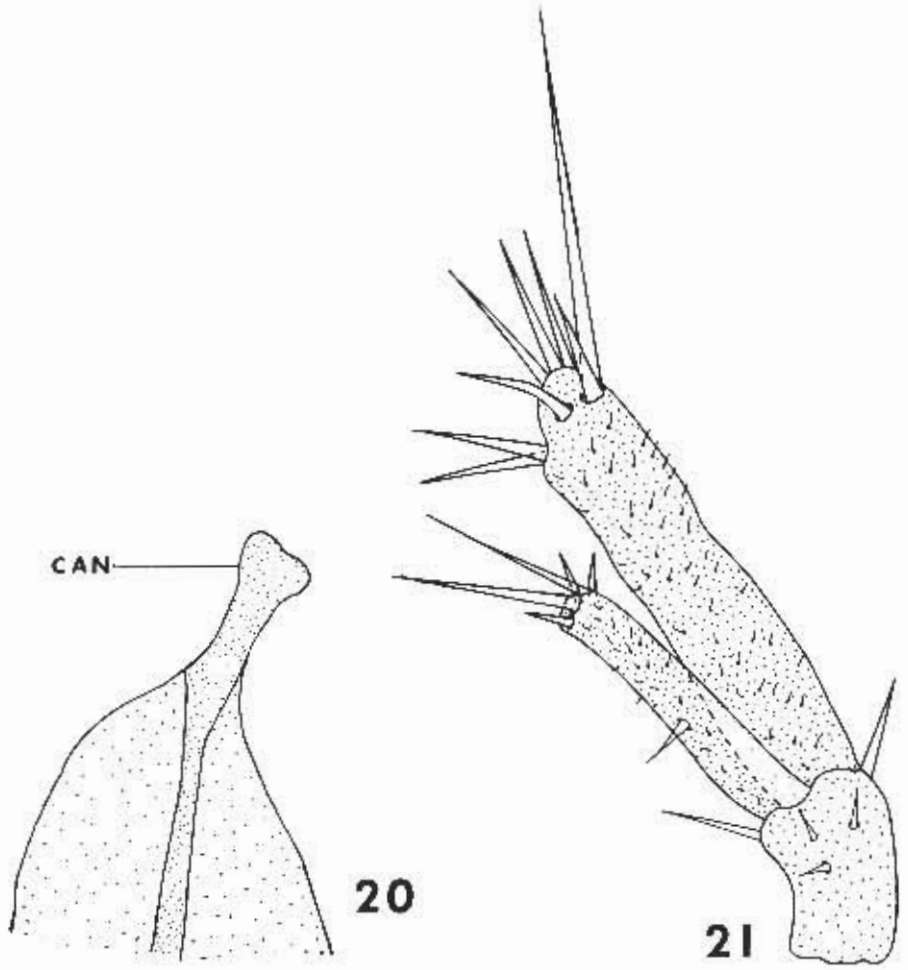
apex of the endopod. The cannula in both species narrows sharply from an enlarged endopod with the tip of the cannula bulbous.

A. serratus can be distinguished from *A. dimorphus* by the structure of the exopod of the second pleopod, the armament of the gnathopod, the structure of the first pleopod and the shape of the uropod. The exopod of the second pleopod in *A. serratus* is nearly triangular and has a fewer setae than that of *A. dimorphus*. The gnathopod of *A. serratus* is narrow and without processes, while that of *A. dimorphus* is broad with a large median and a small distal process. The first pleopod of *A. serratus* lacks coupling hooks and is triangular shaped, while that of *A. dimorphus* possesses 6–7 coupling hooks and is not triangular. The uropod of *A. serratus* has broad paddle-like rami only slightly differing in size, while that of *A. dimorphus* has narrow rami with the exopod much shorter than the endopod.

Because of the affinities of the 2 species for one another they are placed together in a small species groop to be called the Dimorphus Group.

Material Examined. – Known only from the type-material.



Figs. 17–21. – *Asellus serratus*. 17, lateral view of distal podomeres of male left gnathopod; 18, caudal view of left first pleopod; 19, cephalic view of male left second pleopod; 20, cephalic view of tip of endopodite of male left second pleopod. CAN – cannula; 21, ventral view of male left uropod.

Distribution. – Known only from the type-locality.

Remarks. – The extremely small size of this species (average size of males is 2.4 mm) would at first seem to lead to questions concerning the maturity of the specimens. These are mature, however, as shown by the advanced development of the first and second pleopod (especially the latter) of the male and by the presence, within the population, of many ovigerous females (some in late stages).

NEW LOCALITY RECORDS

The following is a list of collections which were found to be new locality records for various species thereby increasing the known ranges of those involved. In order to simplify the presentation of these data only initials will be used for the collections. It should be noted that the initials refer to the entire collections not to the individual collector(s). The collections are the personal collections of the writer (LEF), both epigean and hypogean; those of Dr. J.R. Holsinger (JRH), primarily troglobitic; Dr. Sewart B. Peck (SBP), both epigean and hypogean; Dr. John E. Cooper (JEC), primarily troglobitic; Dr. David Culver (DC), entirely troglobitic; the Mississippi State University Invertebrate Collections (MSU); Dr. H.R. Steeves, III (HRS), primarily troglobitic; Richard W. Heard (RWH), entirely epigean; Leslie Hubricht (LH), both epigean and troglobitic; Richard S. Fox (RSF), primarily epigean; R.M. Norton (RMN), entirely troglobitic, and the National Museum of Natural History (NMNH), both epigean and troglobitic.

1. EPIGEAN ASELLIDS: NEW LOCATIONS

STATE	COUNTY	SITE	DATE	COLLECTION
		Asellus communis		
Michigan	Wayne	Small stream in River Rouge Park in Detroit	3/3/46	LH
New Hampshire	Stafford	Old Reservoir in Durham	8/12/54	LEF
New York	Herkimer	Kenyon Cave	10/19/68	SBP
		Asellus laticaudatus		
Alabama	Pickens	5.2 mi. E. of Alabama-Mississippi state line in a creek	2/17/69	
Illinois	Jo Daviess	Little Princess Mine, California Diggings	11/30/65	SBP
Louisiana	Tangipahoa	I-55 S. of Ponchatoula, 0.7 mi. N. of Jct. U.S. 52	12/27/68	LEF
Louisiana	Tangipahoa	Roadside drainage canal on I-55, 2.3 Mi. S. of Jct. St. Rt. 22	8/18/69	LEF
Mississippi	Clay	? ?	3/29/69	MSU

STATE	COUNTY	SITE	DATE	COLLECTION
Mississippi	Hinds	Backwater pool SW pump station, Jackson Water Works on Pearl River.	3/24/67	MSU
Mississippi	Humphreys	Little Eagle Lake, 15 mi. from Belzoni	3/3/67	MSU
Mississippi	Lowndes	Beaver Dam on Clay-Lowndes Co. line on St. Rt. 50	5/15/67	MSU
Mississippi	Noxubee	15 mi. S. of Starkville	9/25/67	MSU
Mississippi	Noxubee	Noxubee Wildlife Refuge, under first bridge at main W. Entrance	3/2/68	MSU
Mississippi	Oktibbeha	Beaver Pond on Sun Creek, 6 mi. N. of Starkville	5/10/67	MSU
Mississippi	Oktibbeha	12.1 mi. S. of Starkville, at Jct. St. Rt. 12 and St. Rt. 25 at Noxubee River	2/19/68	MSU
Mississippi	Oktibbeha	In Starkville, 7 mi. S. of St. Rt. 25 Jct. St. Rt. 12	4/20/69	MSU
Mississippi	Oktibbeha	0.6 mi. N. of Okktibeha-Noxubee Co. line under bridge	4/23/69	MSU
Mississippi	Oktibbeha	8 mi. S. of St. Rt. 25 on St. Rt. 12	3/25/69	MSU
Mississippi	Oktibbeha	Keaton Tower Rd., 2.7 mi. from Jct. with St. Rt. 25	2/24/69	MSU
Mississippi	Oktibbeha	6 mi. S. of St. Rt. 12 on St. Rt. 25 near bridge in overflow	? /? /?	MSU
		Asellus intermedius		
Illinois	Carroll	Wakarusha R. at Mt. Carroll	8/4/68	SBP
Illinois	McDonough	Vishnu Springs at Colchester	4/21/66	SBP
Virginia	Nansemond	Small spring and stream, 2 mi. ESE of Chuckatuck	2/5/69	JRH
Virginia	Smyth	I-81 Cave	1/13/69	JRH

STATE	COUNTY	SITE	DATE	COLLECTION
		Asellus brevicauda		
Illinois	Calhoun	McNabb Hollow Cave	11/25/65	SBP
Illinois	Hardin	Cave Spring Cave	10/24/65	SBP
Illinois	Jackson	Ava Cave	6/26/65	SBP
Illinois	Jersey	Spring near Grafton	11/26/65	SBP
Illinois	Pike	Lost Creek Cave	11/25/65	SBP
Illinois	Randolph	Spring in Allied Chemical Quarry, Prairie du Rocher	5/13/66	SBP
Missouri	Perry	Crevice Cave	9/23/61	SBP
Missouri	Perry	Tom Moore Cave	10/4/64	JRH
Missouri	St. Charles	Dinglidine Cave	6/9/64	JRH
Missouri	St. Genevieve	Kohms Cave	5/14/66	SBP
Missouri	St. Genevieve	Gegg Cave	5/15/66	SBP
Missouri	St. Genevieve	Batty's Cave	5/15/66	SBP
		Asellus dentadactylus		
Alabama	Blount	Swampy stream in woods 13S/2W/ sec. 18	12/31/65	JEC
Arkansas	Grant	Unmarked stream on dirt road *ca.* 8 mi. S. of Jct. with U.S. 65 at Jct. U.S. 65 with St. Rt. 865	12/27/70	RSF
Mississippi	Adams	Under Homochitto R. bridge on U.S. 61 in ditch	1/1/71	LEF
Mississippi	Clay	3.3 mi. N. on U.S. 45 from Jct. U.S. 82 on gravel road	2/11/68	MSU
Mississippi	Lowndes	1.4 mi. S. on U.S. 45 from Jct. U.S. 82 in ditch	3/31/69	MSU
Mississippi	Oktibbeha	3.6 mi. W. on U.S. 82 from Jct. U.S. 45, 2.3 mi. SE on secondary road	2/11/68	MSU

STATE	COUNTY	SITE	DATE	COLLECTION
Mississippi	Wilkinson	St. Rt. 563 0.8 mi. from Jct. St. Rt. 563 and St. Rt. 33N in ditch	2/22/69	MSU
		Asellus scrupulosus		
Georgia	Clarke	Sandy Creek Swamp	3/27/67	RWH
Virginia	Lee	Cliff Cave	11/24/66	RMN
Virginia	Montgomery	Small stream across street from old town spring house, Blacksburg	7/12/69	LEF
Virginia	Montgomery	Small stream behing Smithfield Plantation Home on V.P.I. and S.U. campus	7/12/69	LEF
W. Va.	Greenbrier	Pond 2 mi. N. of Rainelle	5/6/66	JRH
W. Va.	Greenbrier	Piercy's Cave	8/13/66	JRH
W. Va.	Greenbrier	Benedicts Cave	8/20/66	JRH
W.Va.	Greenbrier	Buckeye Cr. Cave	8/18/63	JRH
W. Va.	Monroe	Crossroad Cave	9/1/67	JRH
W. Va.	Monroe	Hunt Cave	10/?/70	DC
W. Va.	Pendleton	Spring 1 mi. S. of Circleville	8/23/39	LH
		Asellus forbesi		
Georgia	Polk	Roadside ditch, 5.7 mi. S. of Cedartown on St. Rt. 27	4/18/66	NMNH
Kentucky	Laurel	Little Laurel River under bridge on U.S. 25 between London and Fariston	12/11/70	LEF
Tennessee	Carroll	Unmarked stream ½ mi. N. Carroll Madison Co. line on U.S. 70	12/30/70	RSF
Tennessee	Henry	Unmarked stream 11 mi. N. of Henry Co. courthouse on U.S. 641	12/30/70	RSF

STATE	COUNTY	SITE	DATE	COLLECTION
Virginia	Giles	Ditch across from sewage plant at U. Va. Biological Station at Mountain Lake	10/22/69	LEF
Virginia	Giles	Twin Springs, 1 mi. W. of U. Va. Biological Station at Mountain Lake	10/22/69	LEF
Virginia	Nansemond	Washington Ditch, Dismal Swamp, 2 mi. ENE of Saunders	11/21/43	LH
Virginia	Norfolk	Temporary pool, Dismal Swamp, 2 mi. SSE of Bowers Hill	11/14/43	LH
		Asellus racovitzai racovitzai		
Virginia	Northumberland	5.2 mi. E. of Callao on U.S. 360	4/4/53	NMNH
Virginia	Pulaski	New River below Big Reed Island Creek	8/26/70	LEF
Virginia	Roanoke	Old Mill Dam on Roanoke R.	5/16/69	LEF
Virginia	Tazewell	Lawson's Cave	4/12/63	JRH
Virginia	Tazewell	Quarry Cave #1	7/16/69	JRH
		Asellus racovitzai australis		
Florida	Brevard	St. Johns River	2/9/70	RSF
Florida	Dade	Little Nursery Well	2/13/69	NMNH
Mississippi	Oktibbeha	Bluff Lake Road	3/9/67	MSU
		Asellus obtusus		
Alabama	Jackson	Surface stream near Stevenson	4/9/66	JEC
Alabama	Pickens	5.2 mi. E. of Ala.-Miss. state line in a creek	2/17/69	MSU
Arkansas	Grant	Big Creek on U.S. 270	12/24/70	RSF
Arkansas	Jefferson	Stream 1 mi. from Jefferson on Jeffersin-Sheridan Rd.	12/21/70	RSF

STATE	COUNTY	SITE	DATE	COLLECTION
Arkansas	Nevada	Intermittent stream on St. Rt. 24 300 yd. N. of Jct. St. Rt. 368 with St. Rt. 24	12/26/70	RSF
Florida	Levy	Waccosassa R. and St. Rt 24 under bridge	1/28/70	RSF
Georgia	Ben Hill	Ossawichee Springs	10/11/68	RWH
Georgia	Clarke	Linton Springs	8/5/67	RWH
Mississippi	Adams	U.S. 61 Homochitto R. bridge at Wilkinson-Adams Co. line	3/1/69	MSU
Mississippi	Amite	Nebo Lake, 4.3 mi. N. of Coles	2/15/69	MSU
Mississippi	Clay	3.3 mi. N. of Starkville on U.S. 45 3.6 mi. E. of Jct. U.S. 82 with U.S. 45	2/11/68	MSU
Mississippi	Humphreys	St. Rt. 12 near Tchula 15 mi. E. of Belzoni	3/30/67	MSU
Mississippi	Harrison	1 mi. beach in Pass Christian on 28th St.	5/5/68	MSU
Mississippi	Harrison	Gulfport-behind VA hospital	3/23/68	MSU
Mississippi	Madison	Beaver Dam at Ross Barnett Reservoir	5/13/67	MSU
Mississippi	Lauderdale	1.6 mi. SE of Newton-Lauderdale Co. line on St. Rt. 19	3/17/68	MSU
Mississippi	Lauderdale	Meridian-Tom Bailey Dr.	3/19/66	LEF
Mississippi	Lauderdale	Pond U.S. 80-Meridian	3/19/66	LEF
Mississippi	Noxubee	Macon, U.S. 45 at Jct. with St. Rt. 14	2/26/67	MSU
Mississippi	Noxubee	15 mi. S. of Starkville on St. Rt. 25 0.5 mi. S. of Oktibbeha county line	9/25/67	MSU
Mississippi	Oktibbeha	2.7 mi. SW of Jct. St. Rt. 12 on St. Rt. 25 in ditch	2/26/68	MSU

STATE	COUNTY	SITE	DATE	COLLECTION
Mississippi	Oktibbeha	St. Rt. 389 at clay-Oktibbeha Co. line 13.7 mi. from Starkville	3/8/68	MSU
Mississippi	Rankin	Old Pelahatchie Creek 200 yds. S. of Ross Barnett Reservoir	5/12/67	MSU
Mississippi	Scott	8.1 mi. W. of Newton-Scott Co. line on U.S. 82	3/8/69	MSU
Mississippi	Wilkinson	St. Rt. 563 in ditch 0.8 mi. from Jct. 33N with St. Rt. 563	2/22/69	MSU
Mississippi	Winston	2.9 mi. W. of Spillway at Bluff Lake on gravel road	2/11/68	MSU

2. TROGLOBITIC ASELLIDS NEW LOCATIONS

		Asellus hobbsi		
Florida	Marion	Rainbow Acres Cave	6/?/67	JLC
		Asellus adentus		
Oklahoma	Murray	Small cave near Turner Falls	6/24/64	RMN
		Asellus spatulatus		
Illinois	Carroll	Smith Park Cave	11/1/65	SBP
Illinois	DeWitt	Covered spring Weldon State Park	5/16/66	SBP
Maryland	Princes Georges	Bowie (High Bridge)	12/23/52	NMNH
		Asellus recurvatus		
Tennessee	Knox	Spring beside U.S. 441	1/4/71	RSF
Virginia	Smyth	McMullin Cave	7/17/69	JRH
		Asellus richardsonae		
Alabama	Bibb	S.C. Rolen's Well, Woodstock	4/10/41	LH

STATE	COUNTY	SITE	DATE	COLLECTION
Alabama	Blount	Randolph Cave	12/23/65	SBP
Alabama	Calhoun	Meadows Cave	9/3/68	SBP
Alabama	Jackson	Horseskull Cave	8/3/67	SBP
Alabama	Jackson	Wynne Cave	8/10/67	SBP
Tennessee	Bledsoe	Aaron-Tollett Cave	11/12/67	JRH
Tennessee	Maury	Hobbs Cave	10/29/69	JRH
Virginia	Scott	Moccasin Valley Cave	8/25/69	JRH
Virginia	Scott	Wolfe Cave	8/14/69	JRH
		Asellus antricolus		
Arkansas	Stone	Rowland Cave	?	JRH
Kentucky	Todd	Twin Level Cave	4/18/64	RMN
Missouri	Green	Fantastic Caverns	8/21/68	JRH
Missouri	Perry	Berome Cave	10/4/64	HRS
Missouri	Perry	Tom Moore Cave	10/4/64	HRS
Missouri	Phelps	Saltpeter Cave	8/18/68	JRH
Missouri	Phelps	Spencer Cave	8/18/68	JRH
Missouri	Wright	Smittle Cave	8/19/68	JRH
		Asellus alabamensis		
Alabama	Colbert	Gullymore Cave	12/21/65	SBP
Alabama	Colbert	McKinney Pit	10/15/66	JLC
Alabama	Jackson	Borderline Cave	1/27/68	JLC
Alabama	Jackson	Cave in Henshaw Cove	7/16/67	RMN
Alabama	Jackson	Crossing Cave	8/5/67	SBP
Alabama	Jackson	Fern Cave System	2/10/69	JEC
Alabama	Jackson	Guess Creek Cave	9/5/65	SBP
Alabama	Jackson	Indian Rock Cave	3/3/?	JEC

STATE	COUNTY	SITE	DATE	COLLECTION
Alabama	Jackson	Jess Elliott Cave	9/23/67	JEC
Alabama	Jackson	Kennamer Cave	5/19/68	JEC
Alabama	Jackson	LimmRock Blowing Cave	12/12/68	JEC
Alabama	Jackson	McFarland Cave	5/14/65	JEC
Alabama	Jackson	New Fern Cave	5/3/69	JEC
Alabama	Jackson	Out Cave	8/13/67	SBP
Alabama	Jackson	Pig Pen Cave	7/28/67	SBP
Alabama	Jackson	Rousseau Cave	5/13/65	JEC
Alabama	Jackson	Russell Cave	8/31/65	SBP
Alabama	Jackson	Salt River Cave	9/2/65	SBP
Alabama	Jackson	Schiffmans Cave	3/15/66	SBP
Alabama	Jackson	Sheldon's Cave	9/14/68	JEC
Alabama	Jackson	The Morgue Cave	6/22/68	JEC
Alabama	Jackson	Unnamed Cave	1/21/68	JEC
Alabama	Jackson	William's Saltpeter Cave	8/5/67	SBP
Alabama	Lawrence	Ranie Willis Cave	1/4/69	JEC
Alabama	Limestone	Pope Cave	8/19/65	SBP
Alabama	Limestone	Spencer Cave	8/19/65	SBP
Alabama	Madison	Cave Spring Cave	12/30/65	JEC
Alabama	Madison	Spook Cave	3/21/66	SBP
Alabama	Marshall	Bishop Cave	8/4/66	SBP
Alabama	Marshall	Beech Spring Cave	9/9/65	SBP
Alabama	Marshall	Bullocks Cave	11/24/67	JEC
Alabama	Marshall	Cathedral Caverns	8/3/65	SBP
Alabama	Marshall	Eudy Cave	3/19/64	JRH
Alabama	Marshall	Keller's Cave	8/18/67	JEC

STATE	COUNTY	SITE	DATE	COLLECTION
Alabama	Marshall	Ledbetter Cave	12/31/67	JEC
Alabama	Marshall	Merrill Cave	6/26/67	SBP
Alabama	Marshall	Old Blowing Cave	6/27/67	SBP
Alabama	Morgan	Cave Spring Cave	8/22/65	SBP
Alabama	Morgan	Disappointment Cave	7/1/65	SBP
Alabama	Morgan	Roper Cave	8/30/65	SBP
Alabama	Morgan	Talucah Cave	3/2/?	JEC
Alabama	Morgan	Tarkington Farms Cave	8/20/67	JEC
Alabama	Morgan	Turtle Cave	1/1/66	JEC
Alabama	Morgan	Waterfall Cave	8/1/61	SBP
Illinois	Union	Cricket Cave	6/14/65	JRH
Indiana	Monroe	Seep under Jordan Hall, Indiana University	6/18/65	JRH
Kentucky	Barren	Brown Cave	9/25/65	RMN
Kentucky	Barren	Cole Cave	2/12/65	RMN
Kentucky	Barren	Edmon's Cave	2/19/65	RMN
Kentucky	Caldwell	Cave Street Cave	7/7/65	JRH
Kentucky	Caldwell	Lisanby Cave	7/9/65	JRH
Kentucky	Caldwell	Mill Bluff Cave	7/9/65	JRH
Kentucky	Christian	Cave Spring Cave	7/10/65	JRH
Kentucky	Christian	Reeves Cave	8/12/65	JRH
Kentucky	Crittendon	Cannon Cave	7/8/65	JRH
Kentucky	Edmonson	Cedar Sink Cave	8/31/39	LH
Kentucky	Edmonson	Cave Mouth at Cotton Gin Hollow	1/12/57	LH
Kentucky	Hart	Burd Cave	9/18/65	RMN
Kentucky	Hart	Hidden River Cave	8/30/39	LH

STATE	COUNTY	SITE	DATE	COLLECTION
Kentucky	Livingston	McElroy's Cave	7/8/65	JRH
Kentucky	Logan	Mud River Cave	8/13/65	JRH
Kentucky	Logan	Robertson Cave	8/13/65	JRH
Kentucky	Metcalfe	Cave Hill Cave	10/2/65	RMN
Kentucky	Metcalfe	Devil's Den Cave	9/25/65	RMN
Kentucky	Metcalfe	Route 68 Cave	7/5/67	JEC
Kentucky	Todd	Haddon Cave	7/16/65	JRH
Kentucky	Todd	Twinn Level Cave	4/18/64	RMN
Kentucky	Trigg	Taylor Cave	8/12/65	JRH
Kentucky	Warren	Cave near Bowling Green	12/25/56	LH
Tennessee	Cannon	Cave 3.5 mi. SSW of Bradyville	8/21/67	SBP
Tennessee	Cannon	Wenpenny Cave	8/9/67	SBP
Tennessee	DeKalb	Overall Cave	12/26/64	RMN
Tennessee	Franklin	Caroline Cove Cave	7/11/67	SBP
Tennessee	Franklin	Lost Cove Cave	8/27/68	SBP
Tennessee	Franklin	Mill Hollowhead Cave	7/30/67	SBP
Tennessee	Franklin	Pitcher Ridge Cave	8/19/67	SBP
Tennessee	Franklin	Putnam Spring Cave	7/19/67	SBP
Tennessee	Franklin	Roundit Cave	7/30/67	SBP
Tennessee	Giles	Searles Cave	6/16/62	RMN
Tennessee	Grundy	Big Mouth Cave	6/22/63	HRS
Tennessee	Lawrence	Powell Cave	6/17/67	RMN
Tennessee	Maury	Hobbs Cave	10/29/69	JRH
Tennessee	Wayne	Sheep Cave	6/17/67	RMN
Tennessee	White	Moore Cave	10/28/69	JRH
Tennessee	Wilson	Hayes Cave	8/8/67	SBP

STATE	COUNTY	SITE	DATE	COLLECTION
Tennessee	Wilson	Jackson Cave	8/22/67	SBP
		Asellus stygius		
Illinois	Hardin	Cave Spring Cave	7/15/65	JRH
Illinois	Hardin	Griffith Cave	9/19/65	SBP
Illinois	Hardin	Layoff Cave	10/24/65	SBP
Indiana	Crawford	Archibald Cave	2/8/64	JRH
Indiana	Crawford	Seep Pools near Milltown	2/8/64	JRH
Indiana	Crawford	Siberts Well Cave	6/12/65	JRH
Indiana	Greene	Ray's Cave	6/18/65	JRH
Indiana	Harrison	Stearstetter Cave	8/17/57	LH
Indiana	Jefferson	Wilson's Cave	8/9/64	JRH
Indiana	Lawrence	Buddha Cave	6/14/65	SBP
Indiana	Lawrence	Donaldson Cave	11/13/65	RMN
Indiana	Lawrence	Donnehue Cave	8/8/64	JRH
Indiana	Lawrence	Lower Twin Cave	9/2/39	LH
Indiana	Martin	Tow Cave	7/19/67	RMN
Indiana	Monroe	Salamander Cave	6/18/65	HRS
Indiana	Orange	Boiling Springs Cave	6/15/65	JRH
Indiana	Orange	Elrod Cave	8/19/42	LH
Indiana	Orange	Wesley Chapel Cave	6/15/65	JRH
Indiana	Orange	Wildcat Cave	?/?/?	JRH
Indiana	Owen	Porter's Cave	8/1/67	RMN
Indiana	Washington	Endless Caverns	6/13/65	HRS
Indiana	Washington	May Cave	7/17/67	RMN
Indiana	Washington	Tinkle Caverns	7/17/67	RMN
Kentucky	Adair	Fanny Haliday Cave	7/29/64	JRH
Kentucky	Adair	Que Cave	7/29/64	JRH

STATE	COUNTY	SITE	DATE	COLLECTION
Kentucky	Adair	Roger's Cave	10/16/65	RMN
Kentucky	Adair	Scout Cave	10/16/65	RMN
Kentucky	Barren	Diamond Cave	8/31/39	LH
Kentucky	Boyle	Crawford Cave	6/26/65	JRH
Kentucky	Boyle	Lawrence Cave	6/25/65	JRH
Kentucky	Breckinridge	Boot Hill Cave	6/30/65	JRH
Kentucky	Breckinridge	Cave E. of Cloverport	5/12/57	LH
Kentucky	Breckinridge	Harrison Spring Cave	10/19/63	JRH
Kentucky	Breckinridge	Penitentary Cave	10/19/63	JRH
Kentucky	Breckinridge	Thornhill Cave	11/14/70	RSF
Kentucky	Clark	Jones Cave	6/17/63	HRS
Kentucky	Carter	Saltpeter Cave	2/20/65	JRH
Kentucky	Crittenden	Blowing Spring Cave	7/7/65	JRH
Kentucky	Crittenden	Ellen Clark Cave	7/7/65	JRH
Kentucky	Cumberland	Mud Lick Cave	7/22/64	JRH
Kentucky	Estill	Moreland Cave	10/16/66	HRS
Kentucky	Fayette	Huffman Road Cave	11/9/63	JRH
Kentucky	Fayette	Phelps Cave	10/8/61	RMN
Kentucky	Fayette	Spring on Tate's Creek Rd.	3/1/65	JRH
Kentucky	Grayson	Condor Cave	8/6/66	RMN
Kentucky	Grayson	Willis Cave	8/6/66	RMN
Kentucky	Greene	Newt Cave	10/2/65	RMN
Kentucky	Greene	Saltpeter Cave	9/28/63	JRH
Kentucky	Greene	Wilson's Cave	8/31/63	JRH
Kentucky	Greene	Wisdom Cave	10/2/65	RMN
Kentucky	Greene	Woodard Cave	9/28/63	JRH
Kentucky	Harrison	Beaver Cave	7/16/66	JRH

STATE	COUNTY	SITE	DATE	COLLECTION
Kentucky	Hart	Cave Spring Cave	9/11/65	RMN
Kentucky	Hart	Rider's Mill Cave	10/5/65	JRH
Kentucky	Hart	Crump Cave	9/28/63	JRH
Kentucky	Jackson	Blowing Spring Cave	9/24/66	HRS
Kentucky	Jackson	Bowman's Saltpeter Cave	5/30/64	JRH
Kentucky	Jackson	Flescher's Cave	5/30/64	JRH
Kentucky	Jackson	John Roger's Cave	9/17/66	HRS
Kentucky	Jackson	Wind Cave	9/15/63	JRH
Kentucky	Jefferson	Oxmore Cave	4/17/65	JRH
Kentucky	Jessamine	Meece Cave	7/3/65	JRH
Kentucky	Jessamine	Poor Cave	8/31/64	JRH
Kentucky	Jessamine	Spring, S. of Catnip Hill Road	4/10/66	HRS
Kentucky	Lee	Ash Cave	6/29/63	HRS
Kentucky	Lee	Cathedral Domain Cave	7/16/65	JRH
Kentucky	Marion	Tatum Cave	6/23/64	RMN
Kentucky	McCreary	Steele Hollow Cave	9/26/64	RMN
Kentucky	Meade	Cold Spring Cave	6/29/65	JRH
Kentucky	Meade	Lime Kiln Cave	6/29/65	JRH
Kentucky	Meade	Rockhaven Cave	12/2/61	JRH
Kentucky	Meade	Spring, Ohio R. Bluff	8/21/56	LH
Kentucky	Menifee	Seep along St. Rt. 715	4/13/68	JEC
Kentucky	Mercer	Old Well Cave	6/26/65	JRH
Kentucky	Nelson	St. Joseph Cave	6/27/67	RMN
Kentucky	Owen	Kemper Pit Cave	5/17/67	JRH
Kentucky	Powel	Mauldin Cave	10/16/66	HRS
Kentucky	Rockcastle	Duvalt Cave	8/30/64	JRH

STATE	COUNTY	SITE	DATE	COLLECTION
Kentucky	Rockcastle	Great Saltpeter Cave	4/18/64	JRH
Kentucky	Rockcastle	Greenhill School Cave	9/5/64	RMN
Kentucky	Rockcastle	PineHill Cave	6/18/63	HRS
Kentucky	Rockcastle	Roundstone Cave	7/19/64	JRH
Kentucky	Rockcastle	Teamer's Cave	5/8/65	JRH
Kentucky	Russell	Miller Cave	7/31/64	JRH
Kentucky	Scott	Slacks Cave	2/1/64	JRH
Kentucky	Wayne	Blowing Cave	9/6/64	RMN
Kentucky	Wayne	Clark Cave	7/3/64	JRH
Kentucky	Wayne	Coopers Cave	7/3/64	JRH
Kentucky	Wayne	Hog Cave	6/13/64	RMN
Kentucky	Wayne	Horsehollow Cave	7/9/64	RMN
Kentucky	Woodford	Briton's Cave	10/2/66	RMN
Kentucky	Woodford	Keene Cave	7/16/65	JRH
Kentucky	Woodford	Wber Cave	6/6/64	JRH
Missouri	Jefferson	Anderson Cave	9/24/39	LH
Missouri	Jefferson	Rice's Cave	10/31/37	LH
Missouri	Jefferson	Spring at Antire Cr.	4/30/39	LH
Missouri	St. Louis	Cliff Cave	4/25/38	LH
Missouri	St. Louis	Spring at Old Quarry	4/25/38	LH
Missouri	St. Louis	Spring near Kirkwood	12/2/34	LH
Ohio	Adams	Cedar Fork Cave	7/16/66	JRH
Tennessee	Overton	Robinson Cave	7/11/64	JRH
		Asellus dimorphus		
Arkansas	Searcy	Spring beside St. Rt. 27 16	12/28/70	RSF

STATE	COUNTY	SITE	DATE	COLLECTION
		Asellus circulus		
Tennessee	Bledsoe	Aaron-Tollett Cave	11/12/67	JRH
		Asellus vandeli		
Virginia	Bath	Blowing Cave	4/25/71	JRH
Virginia	Botetourt	Brough Cave #2	12/25/68	JRH
Virginia	Giles	New River Cave	6/29/68	JRH
Virginia	Montgomery	Old Mill Cave	10/20/69	LEE
		Asellus holsingeri		
Maryland	Garrett	John Friend's Cave	8/29/66	JRH
Virginia	Bath	Butler Cave	11/2/68	JRH
W. Virginia	Greenbrier	Benedict's Cave	8/10/67	JRH
W. Virginia	Greenbrier	Bransford's Cave	7/2/66	JRH
W. Virginia	Greenbrier	Court Street Cave	9/?/66	JRH
W. Virginia	Greenbrier	Hayes Cave	9/24/39	LH
W. Virginia	Greenbrier	Jewell Cave	10/?/70	DC
W. Virginia	Greenbrier	Levisays Cave	3/?/67	JRH
W. Virginia	Greenbrier	Lost Cave	4/27/69	JRH
W. Virginia	Monroe	Indian Draft Cave	10/?/70	DC
W. Virginia	Monroe	McClung Zenith Cave	8/31/67	JRH
W. Virginia	Monroe	Rock Camp Cave	5/29/70	JRH
W. Virginia	Pocahontas	Blue Springs Cave	9/2/67	JRH
W. Virginia	Pocahontas	Linwood Cave	8/22/66	JRH
W. Virginia	Pocahontas	Martha's Cave	8/15/67	JRH
W. Virginia	Pocahontas	Piddling Pit Cave	9/30/67	JRH
W. Virginia	Pocahontas	Salmon Cave	9/17/67	JRH
W. Virginia	Pocahontas	Steam Cave	9/3/67	JRH
W. Virginia	Randolph	Nelson Cave	8/23/66	JRH

STATE	COUNTY	SITE	DATE	COLLECTION
		Asellus cannulus		
W. Virginia	Randolph	Alpena Cave # 1	7/2/63	JRH
W. Virginia	Randolph	Glady Cave	8/25/66	JRH
W. Virginia	Tucker	Mill Run Cave	8/24/66	JRH
		Asellus stiladactylus		
Arkansas	Benton	Big Spring, Bella Vista	5/7/40	LH
Arkansas	Benton	Cave Spring Cave	8/22/68	JRH
Missouri	Crawford	Onyx Cave	7/20/40	LH
Oklahoma	Delaware	Boulton Cave	11/29/70	JRH
		Asellus tridentatus		
Arkansas	Lawrence	Deep Cistern near Imlodan	9/18/40	LEF
Illinois	LaSalle	Outlet of drain	5/3/41	LH
Kansas	Butler	Purity Springs	6/12/64	JRH
Kansas	Butler	Rutherford Cave	6/12/64	JRH
Kansas	Cowley	Farm well	10/? /70	LEF
Missouri	St. Clair	Cave near Monegau Spring	2/6/65	HRS
Oklahoma	Murray	Bitter Enders Cave	6/24/64	JRH
Oklahoma	Murray	Wagon Wheel Cave	6/13/64	JRH
Oklahoma	Pontotoc	Coal Cave	6/2/65	HRS
Oklahoma	Tulsa	Seep at "Lost City"	3/29/52	HRS
		Asellus packardi		
Illinois	Adams	Pumpwell; S of Quincy	9/17/57	HRS
Illinois	Monroe	Foglepole Cave	6/9/64	SBP
Illinois	Monroe	Fruth's Spider Cave	6/26/65	SBP
Illinois	Monroe	Fults Creek Cave	8/17/68	SBP
Illinois	Monroe	Horsethief Cave	10/28/65	SBP
Illinois	Monroe	Illinois Mammoth Cave	6/25/65	SBP

STATE	COUNTY	SITE	DATE	COLLECTION
Illinois	Monroe	Pautler Cave	11/27/65	SBP
Illinois	Monroe	Terry Spring	11/27/65	SBP
Illinois	Pike	Croxville Cave	8/15/68	SBP
		Asellus incurvus		
Virginia	Smyth	McMullin Cave	7/17/69	JRH
		Asellus pricei		
Pennsylvania	Franklin	Waynesboro Cave	6/21/69	LEF

SUMMARY

1. This paper is the first in a three part series dealing with the evolution of North American isopods of the genus *Asellus*.

2. The descriptions of four new species of isopods of the genus *Asellus* are contained in this paper.

3. A list of pertinent new range data of presently known species of *Asellus* is also included.

RESUME

1. Cet article est le premier d'une série de trois, qui traitent de l'évolution des Isopodes d'Amérique du nord du genre *Asellus*.

2. Cet article contient les descriptions de quatre nouvelles espèces d'Isopodes du genre *Asellus*.

3. Une liste des nouvelles données relatives aux espèces d'*Asellus* actuellement connues en Amérique du nord termine l'article.

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