Three new Species of *Cymbella* from Mammoth Cave, Kentucky

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With 3 figures in the text

In a previous paper appearing in this Journal (VanLandingham, 1965) a series of diatoms was described from Mammoth Cave, Kentucky, from material supplied by Dr. George Claus, Florida State University. Descriptions of three species of *Cymbella* from the bottom muds of small ponds in the cave could not be found in the existing literature. Further research revealed that these diatoms were new to science. Perhaps they are unique to the cave environment.

Cymbella Clausii sp. nov.

Dimensions: length 16 µ, width 6–7 µ; striae on dorsal side 8 in 10 µ, on ventral side 10–12 in 10 µ. Fig. 2.

Iconotypus (Nomenclatural type): Camera lucida drawing by Dr. George Claus, Department of Biological Sciences, Florida State University, Tallahassee, Florida (VanLandingham 1965, fig. 2).

Type locality: Mud from small ponds in Mammoth Cave (National Park), Kentucky.

Latin Description: Valvae formis ellipsoideis asymmetricis, apicibus acute attenuatis, marginibus dorsalibus valide, ventralibus leve convexis. Raphe propter marginem ventralem sed marginem dorsalem versus convexe in latum per gradus crescit. Striae transapicales radiatae ad marginem dorsalem 8 in 10 µ, ad ventralem 10–12 µ sunt. Longitudo cellularum 16 µ, latitudo earum 6–7 µ est.

Discussion: This diatom is named in honor of Dr. G. Claus, Department of Biological Sciences, Florida State University, Tallahassee, Florida.

The most conspicuous features of this diatom are the sharply pointed apices and the broad axial area. *C. clausii* sp. nov. is similar in some respects to *C. brehmii* Hustedt but differs from the latter by having a much broader axial area and very acute apices. Also, the

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raphe curves convexly away from the dorsal side in *C. brehmii*, and it curves convexly toward the dorsal side in *C. clausii*. *C. clausii* is similar to *C. kolbei* Hustedt but differs from the latter by having a broader axial area and no strong isolated punctum (or stigma). Also, *C. clausii* is similar to *C. hustedtii* Krasske but differs from the latter mainly in possessing sharply pointed apices and a broader axial area.

Cymbella Gerloffii sp. nov.

Dimensions: length 35 µ, width 6–8 µ, striae 26 in 10 µ. Fig. 1.

Iconotypus (Nomenclatural type): Camera lucida drawing by Dr. George Claus, Department of Biological Sciences, Florida State University, Tallahassee, Florida (Van Landingham, 1965, fig. 1).

Type locality: Mud from small ponds in Mammoth Cave (National Park), Kentucky.

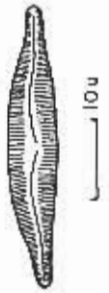

Fig. 1

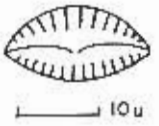

Fig. 2

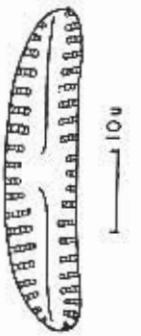

Fig. 3

Latin Description: Valvae angustae, lanceolatae et leve asymmetricae, marginibus convexis, apicibus rotundatis et plus minusve capitatis. Raphe a medio parte valvae curvatura valida ad marginem ventralem inflectit; area axialis in latum ad aream centralem per gradus crescit. Striae transapicales languidae, radiatae, circa 26 in 10 µ, sed ad apices aliquantum plures sunt. Longitudo cellularum 35 µ, latitudo earum 6–8 µ est.

Discussion: The diatom is named in honor of Dr. J. Gerloff, Botanischer Garten und Museum, Berlin-Dahlem, Germany. *C. gerloffii* sp. nov. is similar to *C. delicatula* Kütz., but the axial area is apparently not as narrow and the apices are more cephalate or capitate in *C. gerloffii*. *C. pseudodelicatula* Hustedt is similar to *C. gerloffii* but the

former has less cephalate or capitate ends and an isolated punctum (or stigma). *C. gerloffii* apparently resembles *C. sphaerophora* A. Cleve with the exception of the narrower axial and central areas and less bulged raphe in the latter.

Cymbella Hohnii sp. nov.

Dimensions: length 40 µ, width 16 µ, striae 6–8 µ. Fig. 3.

Iconotypus (Nomenclatural type): Camera lucida drawing by Dr. George Claus, Department of Biological Sciences, Florida State University, Tallahassee, Florida (VanLandingham, 1965, fig. 3).

Type locality: Mud from small ponds in Mammoth Cave (National Park), Kentucky.

Latin Description: Valvae asymmetricae, productae, marginibus dorsalibus convexis et ventralibus leviter concavis; apicibus obtuse rotundatis. Raphe a margine ventrali leve eflexit; area axialis lata, latitudinem maximum in area centrale attingit. Striae transapicales crassae, 6–8 in 10 µ sunt. Longitudo cellularum 40 µ, latitudo earum 16 µ est.

Discussion: This diatom is named in honor of Dr. M. Hohn, Department of Biology, Central Michigan University, Mount Pleasant, Michigan. *C. hohnii* sp. nov. is similar in some respects to *C. cymbiformis* (Kütz.), especially one specimen illustrated by Hustedt (1955, fig. 16) from Spitzbergen (= *C. botellus* Lagst. according to Hustedt); however, the axial area in *C. cymbiformis* is very narrow and the axial area in *C. hohnii* is broad. The raphe in *C. hohnii* is of a different nature than that of *C. cymbiformis*.

SUMMARY

During an investigation of the diatom flora of Mammoth Cave, Kentucky three *Cymbella* species were noted which could not be identified with any yet described forms. This paper contains a taxonomic description of the three new species: *Cymbella clausii*, *Cymbella gerloffii*, *Cymbella hohnii*. A common feature of all three species is the rather broad central area which may have been the result of a special adaptation to the cave environment.

ZUSAMMENFASSUNG

Während einer Untersuchung der Diatomeenflora in der Mammoth-Höhle von Kentucky wurden drei *Cymbella*-Species gefunden, welche nicht mit irgend einer der bisher beschriebenen Formen identifiziert werden konnten. Dieser Artikel enthält eine taxonomische Beschreibung der drei neuen Species, *Cymbella clausii*, *Cymbella gerloffii*, *Cymbella hohnii*. Ein gemeinsames Merkmal aller drei Species ist der ausgebreitete zentrale Teil, welcher die Folge einer besonderen Anpassung an die Höhlenumgebung sein mag.

LITERATURE

HUSTEDT, F. (1955) – Neue und wenig bekannte Diatomeen. 8. Abh. naturw. Ver. Bremen. 34: 47–48.

VANLANDINGHAM, S. L. (1965) – Diatoms from Mammoth Cave. Internat. J. Speleol. 1.(4): 517–539.