Borrower: GZU

Lending String: *GZN,WIS,FLT,XLM,LLM

Patron: SCHWEFEL, BETHANY

Journal Title: The Nautilus.

Volume/Issue: 2?/
Month/Year: /1979 TRY
Pages: 70-73

Article Author:

Article Title: Van Devender, S; A new Vertigo (Pulmonata; Pupillidae) from the Ozarkian uplift

Imprint: Silver Spring, MD [etc.], Trophon Corp.

ILL Number: 74745046

Call Number: QL401 .N25

Location: CSE

ARIEL
Charge
Maxcost: $10IFM

Shipping Address:
Murphy Library, ILL
University of Wisconsin-La Crosse
1631 Pine St.
La Crosse, WI 54601

Fax:
Ariel:

L. verrucosa was found in the Tennessee River at Florence, Alabama, along the south shore below U.S. Highway 72 bridge. It undoubtedly occurs elsewhere in the river, but its total distribution is not now known. Historically, this species was found in large rivers and large tributaries such as the Ohio, Tennessee, Wabash; Black, and Spring Rivers in Arkansas (Goodrich, 1940); Cypress and Flint River tributaries of the Tennessee River in Alabama; the Nolichucky River in Tennessee (Davis, 1974); and other streams. Sinclair (1969) indicated that *L. verrucosa* was limited to areas below Kentucky and Pickwick Dams in the Tennessee River.

P. alveare was found just below Wheeler Dam on limestone bluff outcrops, generally in water to three meters deep. Sinclair (1969) assumed this species was killed off by impoundment, while Stein (1976) indicated that status of "other" populations was unknown. Historically this species was limited, in the Tennessee River, to the shoals near Florence, Alabama, and to a number of local tributaries, particularly Cypress Creek (Goodrich, 1934a, 1934b, 1940, 1941).

These snails were collected by scuba divers. Collection by scuba divers is a very effective technique for sampling rocky substrates, which are difficult to sample effectively with conventional grab samplers. We expect to develop additional data on these species through the coming months. We particularly wish to thank W. Jeffrey Pardue and Jimmy G. Walden for their participation in this project.

LITERATURE CITED

Davis, George M., 1974. Report on the Rare and Endangered Status of a Selected Number of Freshwater Gastropoda from Southeastern U.S.A. For the U. S. Department of the Interior, Fish and Wildlife Service, Contract No. 14016-0008-766. pp. 32-35.

Goodrich, Calvin, 1934a. Studies of the Gastropod Family Pleuroceridae-I. *Occ. Papers*, Museum of Zoology, University of Michigan, No. 286: 17 pages, 1 plate.

_____. 1934b. Study of the Gastropod Family Pleuroceridae-III. *Occ. Papers*, Museum of Zoology, University of Michigan, No. 300: 11 pages.

_____. 1940. The Pleuroceridae of the Ohio River Drainage System. *Occ. Papers*, Museum of Zoology, University of Michigan, No. 417: 21 pages.

_____. 1941. Studies of the Gastropod Family Pleuroceridae-VIII. *Occ. Papers*, Museum of Zoology, University of Michigan, No. 447: 13 pages.

Sinclair, Ralph M., 1969. The Pleurocerid Fauna of the Tennessee River Gastropoda: Prosobranchia. *American Malacological Union, Annual Report:* pp. 45-47.

Stein, Carol B., 1976. Gastropods. In: Endangered and Threatened Plants and Animals of Alabama. *Bull. Alabama Museum of Natural History*, No. 2, pp. 21-52.

A NEW *VERTIGO* (PULMONATA: PUPILLIDAE) FROM THE OZARKIAN UPLIFT

Amy Shrader Van Devender
Mollusk Division, Museum of Zoology
University of Michigan
Ann Arbor, Michigan 48109

ABSTRACT

A new species of pupillid, Vertigo meramecensis, *is described from Crawford County, Missouri. It is most similar to* Vertigo gouldi *and is the sixth Recent* Vertigo *reported from the Northern Ozark Plateau. The type locality along Huzzah Creek would be flooded periodically if the proposed dam on the Meramec River is completed.*

On 12 June 1976 five other people and I were exploring some wooded limestone bluffs in Crawford County, Missouri. The site was south of Huzzah Creek, a few miles south of where it joins Courtois Creek which flows into the Meramec River nearby. This area lies at the northern edge

of the Ozarkian Uplift (or Ozark Mountains), a large plateau covering parts of four states. A representative collection of land snails, including a new species of *Vertigo*, was made just after dark. The evening was warm and muggy; and snails were common, actively browsing in the plant cover on the bluff face. The tiny *Vertigo*, found alive, was first seen by Meg LaVal, who was using a headlamp to search the mosses and lichens on the limestone bluff.

Malacologists have long found the Ozarks to contain an interesting and diverse snail fauna. As the literature survey in Reeder and Miles (1976) points out, though, collecting has been spotty with only a few areas at all well known. It is not surprising to note that since Pilsbry (1948), only Hubricht (1964, 1972) mentions any *Vertigo* from southern Missouri.

Vertigo meramecensis, n. sp.

Figs. 1a, b; 3b

Description of Holotype: Shell (Fig. 1a) oblong, tapering with five well-rounded whorls, perforate: 1.86 mm long and 1.15 mm wide, H/D = 1.82. Shell surface (especially middle whorls) strongly, but irregularly striate with embryonic whorls smooth. Shell translucent, chestnut in color; lip darker than shell and reflexed with only a slight constriction. Penultimate whorl bears a crest (Fig. 1b) which separates the lip from a broad depression external to the palatal teeth and extends to just above the middle of the whorl. Aperture (Fig. 3b) one third shell length, angular, slightly higher than wide. Tooth formula 1-2-2; subcolumellar weakly developed; all teeth, white, situated near the lip edge with lower palatal slightly more recessed than the upper; parietal in line with the lower palatal.

Paratypes: Sixteen specimens. Adults ($n = 10$) have a reflexed lip and range in length from 1.72 mm to 2.01 mm ($\bar{x} = 1.83 \pm 0.01$) and in width from 1.05 mm to 1.20 mm ($\bar{x} = 1.10 \pm 0.01$). Half of the adults lack a subcolumellar lamella altogether. The lower palatal is more recessed from the lip edge and longer than the upper palatal. The lower palatal is variable in length; three specimens have the long, slightly curved lower palatal shown in Fig. 3b while the fold is knob-like in the holotype. This character may depend on the maturity of the animals.

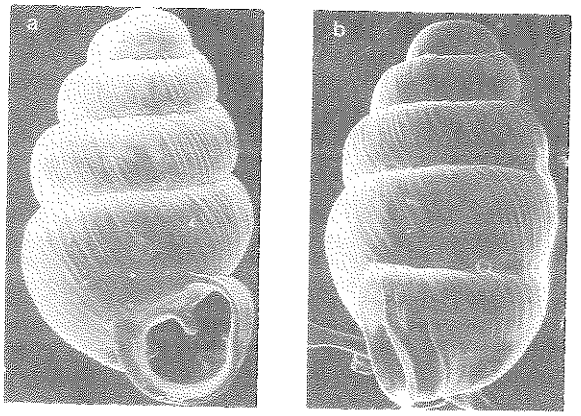

FIG. 1a, Vertigo meramecensis *Van Devender, new species. Holotype (UMMZ 247640). 1.86 mm. Crawford Co., Missouri.* b, *Paratype (UMMZ 247641). 1.87 mm.*

Etymology: From the Meramec River drainage where the species was collected and the proposed Meramec Dam which would periodically flood the type locality (*pers. comm.* Dr. R. K. LaVal, Missouri Department of Conservation).

Types: Holotype, Museum of Zoology, University of Michigan 247640; 13 paratypes in the Museum of Zoology, University of Michigan 247641; 2 in the Field Museum of Natural History and the collection of the author.

Type Locality: Wooded limestone bluffs above Huzzah Creek, 13.8 km E of Steelville, Crawford County, Missouri (USGS Berryman 15′ NWSW-SWNWNE Sec 24, T38N, R3W).

Discussion: Vertigo meramecensis belongs in the genus *Vertigo* because of its small size, red-brown color, and moderately well-developed teeth. Pilsbry (1948: 943-1000) discussed the shell characters of *Vertigo* and placed most species in the subgenus *Vertigo (sensu stricto)*. He divided the subgenus into seven species groups whose component species vary so widely and overlap so greatly that Pilsbry himself was unable to construct a key to them. The new species shares some characters with at least two species groups, the *Vertigo modesta* group and the *Vertigo gouldi* group, but seems closest to the *Vertigo gouldi* group. Pilsbry (1948) and Hubricht (1964, 1972) report eight species of *Vertigo* from the northern Ozarks. Of these, two are placed in the *Vertigo gouldi* species group - *V. gouldi gouldi* and *V. hubrichti*, which was described as a subspecies of *V. gouldi* and is known only from fossil material.

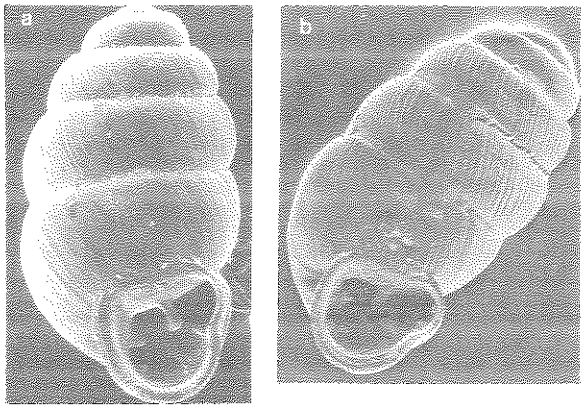

FIG. 2a, Vertigo gouldi gouldi *(Binney). (UMMZ 42321). 1.9 mm. Cumberland Co., Maine.* **b**, Vertigo hubrichti *Pilsbry. Paratype (ANSP 160362). 2.03 mm. St. Louis Co., Missouri.*

Vertigo meramecensis resembles the species and subspecies in the *V. gouldi* group in that it has a distinctly striate shell, averages less than 2 mm long and displays about 5 moderately well-developed, white teeth. Unlike the majority of members in the species group, it lacks an angular lamella and its parietal lamella is directly in line with the lower palatal fold.

Comparisons with the Ozarkian members of the *V. gouldi* group are in order. *Vertigo meramecensis* at least superficially resembles the illustration in Pilsbry (1948:973, Fig. 521) of the fossil *V. hubrichti*. Examination of four paratypes of *Vertigo gouldi hubrichti* (ANSP 160362, Fig. 2b), however, shows that *V. meramecensis* has a smaller, more tapered and more distinctly striate shell. While the lower palatal fold of *V. hubrichti* (Fig. 3a) is situated very deeply in the mouth of the shell like *V. gouldi paradoxa* and *V. nylanderi*, the palatals of *V. meramecensis* (Fig. 3b) are close to the lip edge with lower fold only slightly more recessed than the upper. The parietal of *V. hubrichti* points toward the upper rather than the lower palatal fold. The sculpture of *Vertigo meramecensis* is heavier and more irregular than in *Vertigo gouldi gouldi* (Fig. 2a) and *V. meramecensis* with smaller teeth has a more open aperture than *V. gouldi*. The parietal tooth especially is less massive and straighter than in *V. gouldi* (Fig. 3c) whose parietal points between its palatal folds.

Of the *Vertigo* species known from outside the Ozarks, *V. meramecensis* most closely resembles the illustrations of *Vertigo gouldi cristata* from Eastern Canada (Pilsbry 1948:967-4,5). Comparisons with a series of shells from Southern Ontario (UMMZ 180213) show that *V. meramecensis* has heavier teeth, a more nearly square aperture, a darker (redder) color and a weaker crest than *cristata*. *Vertigo meramecensis* sometimes has the subcolumellar (basal) lamella that never occurs in *V. g. cristata*.

Land snails collected with *Vertigo meramecensis* include *Anguispira alternata* (1), *Glphyalinia indentata* (2), *Mesodon thyroidus* (1), *Mesodon zaletus* (18), *Triodopsis fosteri* (39), and *Triodopsis albolabris* (5).

ACKNOWLEDGMENTS

The scanning electron micrographs were taken by the author with the help and advice from the staff of the SEM Laboratory, Department of Metallurgy and Dr. Alex Tompa, Museum of Zoology, University of Michigan. Dr. Tompa and

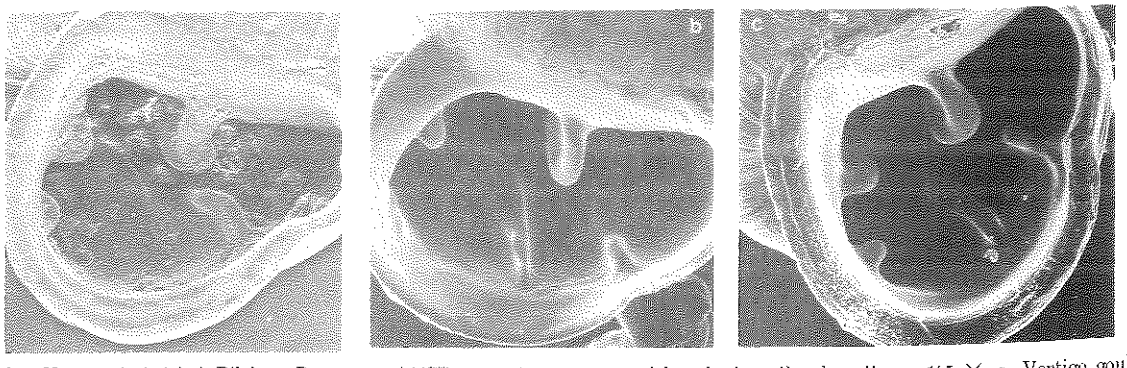

FIG. 3a, Vertigo hubrichti *Pilsbry. Paratype (ANSP 160362). Enlargement of aperture, c. 155* ×. **b**, Vertigo meramecensis *Van Devender, new species. Paratype (UMMZ 247041). Aperture with subcolumellar lamella, c. 145* ×. **c**, Vertigo gouldi gouldi *(Binney). (UMMZ 42321). Enlargement of aperture, c. 145* ×.

Dr. J. B. Burch (both UMMZ) and Dr. George M. Davis (ANSP) kindly let me examine and take micrographs of material in their care. I want to thank Meg and Richard LaVal and Richard W. Fullington who read early drafts of the manuscript. Special thanks to R. W. Van Devender, Leslie Hubricht, and J. B. Burch who each in his own way encouraged me to write this paper.

LITERATURE CITED

Hubricht, Leslie. 1964. Some Pleistocene Land Snail Records from Missouri and Illinois. *Sterkiana*, (13): 7-17.

———. 1972. Land Snail Records from Missouri. *Sterkiana*, (45): 34-35.

Pilsbry, Henry A. 1948. Land Mollusca of North America (North of Mexico). *Monograph Acad. Nat. Sci. Philadelphia* 3, 2(2): 868-1018.

Reeder, Richard L. and Charles D. Miles. 1976. Land Snails from Northern Missouri. *Sterkiana*, (61): 15-18.

OBSERVATIONS ON THE FINGERNAIL CLAM, *MUSCULIUM PARTUMEIUM* (PISIDIIDAE), AND ITS ASSOCIATION WITH THE INTRODUCED ASIATIC CLAM, *CORBICULA FLUMINEA*

Alton C. Boozer and P. E. Mirkes
Department of Environmental Science, School of Public Health
Belle W. Baruch Institute for Marine Biology and
Coastal Research, and The Department of Biology
University of South Carolina
Columbia, South Carolina 29208

ABSTRACT

In the cooling water system at the ERDA Savannah River Plant, the introduced Asiatic clam, Corbicula fluminea, *is inhabiting the floor of the sedimentation basin and is contributing to fouling problems. A second species of bivalves, the fingernail clam,* Musculium partumeium, *permanently inhabits the wall of the basin by means of a byssal-like attachment. The possibility of spatial competition between these two bivalves is discussed with emphasis on observations on reproduction. It is concluded that because of physiological adaptability* M. partumeium *can coexist with* Corbicula.

The Asiatic clam, *Corbicula fluminea* (Müller)[1], was first reported in the United States in 1938 in the Columbia River of Washington State (Ingram, 1959). By 1963, *Corbicula* had spread into the Mississippi and Gulf of Mexico Drainage, as evidenced by the Ohio River and Tennessee River discoveries (Sinclair and Ingram, 1961; Keup *et al.*, 1963). Sinclair (1971) excluded the Atlantic Slope region from the known range of *Corbicula* until Sickel (1973) reported that the exotic clam had probably been introduced to the Altamaha River of the Southern Atlantic Slope region of Georgia in 1968 or 1969. Fuller and Powell (1973) reported *Corbicula* in the Savannah River and Delaware River. Diaz (1974) found *Corbicula* in the James River, Virginia, and more recently, Rodgers *et al.*, (1977) reported *Corbicula* in the New River, Virginia.

During the course of its range extension, *Corbicula* has caused a dramatic increase in water use interference. Ingram (1959) reported *Corbicula* fouling problems in California, as did

[1] This species is called *Corbicula manilensis* Philippi by many workers, but we prefer to use the earlier name, *fluminea* (Müller).