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PLEUROCERIDAE OF THE MISSISSIPPI RIVER
BASIN EXCLUSIVE OF THE OHIO
RIVER SYSTEM*

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THE Pleuroceridae herein dealt with represent geologically recent intrusions or invasions from the eastward rather than direct descent from the pleurocerids which flourished in the Upper Cretaceous of northwestern North America. They are made up of four genera, *Lithasia*, *Pleurocera*, *Goniobasis*, and *Anculosa* (or *Nitocris*). The one species of *Lithasia* is widespread in the basin of the Ohio River. The single species of *Anculosa* (or *Nitocris*) may prove to be identical with one in the Ohio River. Of the three species of *Pleurocera*, only one has developed distinctive subspecific forms. The *Goniobasis* is of simple characters that resemble those of some members of the genus living in the Ohio River basin, but the mollusk is separable from them at least upon shell characteristics. Two ecological races of the species occupy springs of the Ozarkian area.

LITHASIA

Lithasia verrucosa (Rafinesque), 1820. A ventricose to cylindrical mollusk the plicate sculpture of which has evolved

* This is the second paper written in preparation for a molluscan check list that is to be compiled by the American Malacological Union.

into irregular and more or less conspicuous nodules. Until found in the Black and Spring rivers of Lawrence County, Arkansas, the species was known only from the Ohio and Tennessee rivers and a few of their tributaries. The synonymy of *verrucosa* will be considered in a forthcoming paper.

PLEUROCERA

Pleurocera alveare (Conrad), 1834. This plicate and nodulous species, the only one of the genus so sculptured, has been found in White and Spring rivers, Baxter County, and in Black River, Lawrence County—all of Arkansas. Of the several forms taken by *alveare*, only one has so far appeared in the areas under consideration.

Pleurocera canaliculatum (Say), 1821. Ohio River forms of this species are taken as the typical ones. The spire is loosely coiled, the aperture oblique; the body whorl is usually rounded, and frequently canalized. The Walker collection contains specimens assigned to Omaha, Nebraska. It seems probable that the species occupied the upper Mississippi River before it became polluted. The synonymy will be published in a later paper.

Pleurocera canaliculatum undulatum (Say), 1829. This shell commonly differs from *canaliculatum* in that the carinae of the juvenile shell are carried to the adult body whorl. It has been taken in Rock River, Illinois, on the east side of the Mississippi, but no mollusks that can be so named have been seen which come from the main river itself or its western tributaries.

Pleurocera acuta Rafinesque, 1831. An elongate shell that merges with *canaliculatum* or *canaliculatum undulatum* in certain streams of the Ohio River basin. *P. acuta* occurs in lakes and streams of Minnesota to streams of Louisiana on the western side of the Mississippi, and in the St. Croix River on the east side to the Illinois River. It is absent apparently in streams of the east side below the Ohio River basin. It is reported by Aughey from Blue River, Nebraska. Shells of Missouri and Arkansas that have been determined as *P. eleva-*

tum belong to *acuta*. The Mississippi River material that has been seen is usually striate, cylindrical in shape rather than conic. Synonyms of *acuta* of the regions dealt with here are:

Melania alexandrensis Lea, 1845 *Goniobasis lawrencei* Lea, 1869
Melania haleiana Lea, 1845

Pleurocera acuta lewisii Lea, 1862. The subspecies has the conic shape of ordinary *acuta*, but is more prominently striate. It is the *Pleurocera* of the upper and middle parts of the Illinois and merges into the more typical form in lower stretches of the stream. It has been taken also in the tributary Kankakee River.

Pleurocera acuta hinkleyi (Goodrich), 1921. This differs from more typical *acuta* principally in a tendency to become scalariform. Probably only a local race. Little Muddy River, Dubois, Washington County, Illinois.

GONIOBASIS

Goniobasis potosiensis Lea, 1841. A shell of the upland streams of a few Missouri counties. It is distinctly conic and carinate. It developed without doubt out of *plebeius* (Anthony) which was named later and under nomenclatorial rules is required to take the misleading position of a subspecies.

Goniobasis potosiensis plebeius (Anthony), 1850. Varies from pyramidal, tightly-coiled, flat-whorled forms to elongate, loosely-coiled, striate, and keeled phases. It appears to be nearer to *G. livescens* (Menke) than the latter is to *G. semicarinata* (Say), which occupies neighboring streams. Common in rivers and creeks of the Ozarkian area of Missouri and Arkansas, and in Oklahoma counties bordering Missouri. Probably in parts of southeastern Kansas. The Walker collection contains a specimen, identical with Missouri forms of *plebeius*, purporting to come from a lagoon on the edge of Aberdeen, Brown County, South Dakota. Until verified, this record must be taken as of doubtful authenticity.

Goniobasis potosiensis crandalli (Pilsbry), 1890. A small,

compact form of unusually rounded whorls. Known only from Mammoth Springs, Fulton County, Arkansas.

Goniobasis potosiensis ozarkensis (Call), 1886. Small, very much carinated, the carinae often carried to the body whorl as a keel. Probably depauperate, and corresponding to *G. acutocarinata* (Lea) of East Tennessee, an aberrant form of *G. clavaeformis* (Lea) occupying the same kind of habitat that *ozarkensis* does. Seen only from springs of Shannon, Carter, Washington, Dent, and Camden counties, Missouri.

Goniobasis plicifera silicula (Gould), 1847. This Pacific coast pleurocerid was mentioned in 1861 as occurring in Hell Gate River, Montana, and in 1874 as an occupant of Hell Gate River and Missouri River, above the Falls, Montana. Both citations are probably errors.

ANCULOSA

Anculosa arkansensis Hinkley, 1915. A small species that in general appearance is close to *Nitocris trilineata* (Say) of the Ohio River, and may prove to belong at least to the same genus. The first specimens were taken by Hinkley in White River, Baxter County, Arkansas. It has recently been found by Leslie Hubricht in the North Fork of White River, east of Richville, Douglas County, Missouri.

Samuel Aughey¹ (1877), lists the following Pleuroceridae taken by him in Blue, Nemaha, and Elkhorn rivers, Nebraska:

Pleurocera neglectum Anthony. This is the same as *P. acuta* Rafinesque.

Goniobasis larvaeformis Lea?, *occulta* Anthony, *depygis* Say, and *semicarinata* Say. Probably none of these species occurs in Nebraska, but what Aughey found it is impossible to say.

Anculosa carinata Bruguière. This species, now recognized as belonging to the genus *Nitocris*, is unknown outside of areas draining directly into the Atlantic Ocean.

¹ "Catalogue of the Land and Fresh-water Shells of Nebraska," *Bull. U. S. Geol. and Geogr. Surv. Terr.*, 3, No. 3: 702.