

CUMBERLANDIA MONODONTA (SAY, 1829)  
Cumberland Pearl Shell

## SYNONYMY:

- Unio monodonta Say, 1829. (Say, 1829:293)  
Type Locality: Falls of the Ohio and Wabash River.
- Unio soleniformis Lea, 1831. (Lea, 1831:87, pl. 10, fig. 17)  
Type Locality: Ohio River
- Alasmodonta monodonta (Say, 1829). (Ferussac, 1835:26)
- Margarita monodontus (Say, 1829). (Lea, 1836:40; 1838:26)
- Margaron monodontus (Say, 1829). (Lea, 1852:39; 1870:62)
- Margaritana monodonta (Say, 1829). (Courad, 1853:262)
- Margaritana soleniformis (Lea, 1831). (Paetel, 1890:173)
- Cumberlandia monodonta (Say, 1829). (Ortmann, 1919:13)

## CLASSIFICATION:

- Family Margaritiferidae (Ortmann, 1911) Haas, 1940.  
Subfamily Cumberlandinae Hear and Cuckert, 1971.  
Genus Cumberlandia Ortmann, 1912.

CHARACTERISTICS: Shell unusually elongate, compressed, typically arcuate, thin when young, becoming subsolid to solid with age; umbo scarcely elevated above the hinge line, sculpture straight or slightly emarginate, moderately prominent ridges paralleling the early growth lines, anterior and posterior extremes evenly rounded; posterior ridge broadly rounded; surface of disc without sculpture except for a broad flat mid-ventral sulcus; periostracum rayless, smooth greenish brown when young, becoming a rough dull black with age; cardinal teeth represented by a single smooth tubercle in each valve; lateral teeth usually poorly developed, sometimes absent, when discernible two in the left valve and one in the right; nacre white with scattered small pit-like mantle attachment scars within the pallial line; adductor scars obvious, the anterior deep and rough, the posterior shallow and smooth.

The anatomy of the soft parts of this species differs rather obviously from all other Ohio species in two ways:

- 1) The interlamellar connections within the gills are either scattered or tend to form diagonal rows running forward as they approach the ventral gill margin.
- 2) The inner gills are free posteriorly from the abdominal sac (mesially) and the outer gills are free posteriorly from the mantle lobes. Incurrent and excurrent apertures are either continuous or very poorly defined.

**SIMILAR SPECIES:** Unionid mollusks of Ohio which may be elongate and have a dark periostracum are few in number: Simpsonia ambigua (Say, 1825), Elliptio dilatata (Rafinesque, 1820) and Ligumia recta (Lamarck, 1819). An examination of the soft anatomy will quickly separate C. monodonta. The well-developed lateral teeth of E. dilatata and L. recta will readily identify these species as not being C. monodonta. Simpson's Shell, however, superficially resembles a small swollen C. monodonta. Shell outline and cardinal teeth can be very similar. The umbonal sculpture of S. ambigua is clearly double-looped, however, and the lateral teeth are completely lacking. The small size of S. ambigua (10-55mm) compared with C. monodonta (10-180mm) and the greenish-yellow color of the periostracum are also helpful characters.

**RANGE:** Cumberlandia monodonta is restricted to the Mississippi River drainage and once occupied a far greater range than it does today. Originally its range extended from western Pennsylvania west to the Ozark Plateau of Missouri; from the upper Mississippi River in Wisconsin south to Arkansas and southeast to northern Alabama and western Virginia. Today it still persists in a few rivers in the Ozarks, the Green River of Kentucky, and some of the tributaries of the Cumberland and Tennessee Rivers.)

**RANGE IN OHIO:** There are numerous records of C. monodonta for the Ohio River upstream as far as Cincinnati. Records above Cincinnati are few and those from streams within Ohio are all but absent. Sullivant (1838:10) lists it from the "Ohio and Sciota Rivers," but it is not recorded from within the state by other Ohio collectors except from the Ohio River proper or the non-committal "Ohio". The first evidence of this species from Pennsylvania was supplied early last year (1981) by the recovery of a single valve from a prehistoric village site (Winter, 1981: personal communication). This evidence and the nature of its distribution in stream systems less disturbed than the upper Ohio indicates that this species was probably limited within the state to the lower reaches of the largest tributaries of the Ohio River. It is not known from the St. Lawrence drainage.

There are no known in-state records since that of Sullivant (1838) and no "Ohio River at Cincinnati" records since Sterki (1907:393). It appears to be extirpated from the Ohio River main stem and from all tributaries above the Green River of Kentucky.

**HABITAT:** Say (1829) described the habitat at the Falls of the Ohio (River), the type locality, as "rocky flats which are exposed in a low state of water." Call (1900:526) gives greater detail:

"The habits of the animal render it difficult to find and it is not common in even good collections. It buries itself far down in the gravel and mud, on the falls, under large flat rocks where water circulates freely, or alongside submerged timbers which are well buried in the mud of the river bottom. The foot is long, slender, but very powerful and serves to anchor the animal firmly in even the swift waters of the falls."

My own search (Stansbery, 1966:29-30) for the habitat of this species, guided by Call's observations, led to the discovery of several different habitats having the following characteristics in common:

- a) fine sediments, usually a firm mud.
- b) relatively quiet water immediately surrounding the animals.
- c) very close to (but never quite in) rapids or turbulent water of some description.

Individuals completely buried (or nearly so) in the substrate also occupy the same or similar habitat. It should be added that this species, when found today, occupies fairly high gradient, cool water, relatively clean, medium to large rivers.

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