

The Freshwater Mussels of Tennessee

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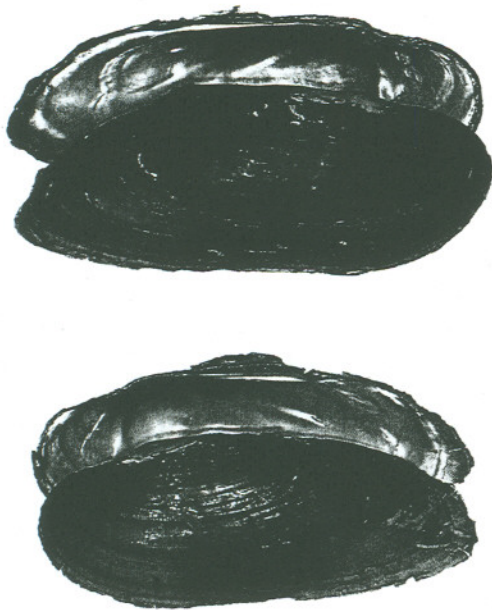


Plate 45. *Hemistena lata* (Rafinesque, 1820), Cracking Pearlymussel.

such as the unimpounded stretches of the Clinch River in upper East Tennessee and southwestern Virginia. Usually occurring in less than two feet of water in moderate current, *Hemistena lata* spends most of its life deeply buried in a substrate composed of mud, sand, and fine gravel. In spite of this trait, muskrats prove effective in finding them.

Hemistena lata is tachytictic, glochidia having been observed during mid-May (Ortmann, 1915). Little else is known about this species, including host fish for the glochidia.

Status: Endangered (Williams et al., 1993:11). This mussel has been extirpated from most of its former range, although local and apparently viable populations survive in upper Clinch River (Hancock County) in East Tennessee. A population in the Elk River persisted until 1981 (Ahlstedt, 1983; Barr et al., 1993–1994). The U.S. Fish and Wildlife Service has developed a recovery plan for this species (U.S. Fish and Wildlife Service, 1990b).

Lampsilis abrupta (Say, 1831)

Pink Mucket

RANGE MAP 45; PLATE 46

Synonymy:

Unio orbiculatus Hildreth, 1828; Hildreth, 1828:284, fig. 15
Margarita (Unio) orbiculatus (Hildreth, 1828); Lea, 1836:25
Margaron (Unio) orbiculatus (Hildreth, 1828); Lea, 1852c:28
Lampsilis orbiculatus (Hildreth, 1828); Simpson, 1900a:540
Lampsilis orbiculata (Hildreth, 1828); Daniels, 1903:647
Lampsilis orbiculata (Hildreth, 1828); Stansbery, 1971:15
Unio abruptus Say, 1831; Say, 1831a:pl. 17
Lampsilis (Ortmanniana) abrupta (Say, 1831); Haas, 1969a:461
Toxolasma cyclips Rafinesque, 1831; Rafinesque, 1831:2
Unio cyclips (Rafinesque, 1831); Férussac, 1835:28
Unio crassus Say, 1817; Conrad, 1836:34, pl. 16 [in part]
Obovaria retusa (Lamarck, 1819); Frierson, 1927:89 [in part]

Type Locality: Muskingum River, Ohio.

General Distribution: Ortmann (1925:359) recorded this mussel as occurring in the Mississippi, Ohio, Cumberland, and Tennessee rivers, and in the Tennessee River “up to the lower Clinch, where it is very rare.”

Tennessee Distribution: Typically a big river species, records of the Pink Mucket in the state primarily are from the Tennessee and Cumberland rivers. Except for an occasional relict individual (Ahlstedt and McDonough, 1994), it has about disappeared from the upper and middle stretches of the Tennessee River; probably the most stable population occurs below Pickwick Landing Dam, Hardin County. Populations of *Lampsilis abrupta* in the Cumberland River also tend to be localized, one of the larger occurring in the Carthage–Rome stretch, Smith County. Occasionally individuals become established in small to medium-sized tributaries of large rivers such as the Tennessee; Ahlstedt (1991a, b) cites several such localities that include, in addition to the Holston and French Broad rivers (that form the Tennessee River at Knoxville), the upper Clinch where it is rare.

Description: The shells of the Pink Mucket are somewhat inflated, especially so in large, mature females, and sub-square or orbicular in outline. Valves become thick and heavy in mature individuals, and males (generally averaging larger than females) may reach a length of 110–120 mm. The anterior margins are evenly rounded, while the dorsal and ventral margins are slightly curved. The posterior margin of the female shell is slightly rounded to straight, while that of the male rounded



Range Map 45. *Lampsilis abrupta* (Say, 1831), Pink Mucket.

or bluntly pointed. A posterior ridge, well defined in males, is distinct along the dorsal margin. The two valves slightly gape along the anterior margin. Beaks are located in the anterior third of the shell, and in young individuals beaks are marked by faint, scarcely looped ridges. The surface is marked by uneven concentric rest lines.

The left valve has two large triangular pseudocardinal teeth separated from two strong, slightly curved lateral teeth by a short, broad interdentum. The right valve has one large triangular pseudocardinal tooth; sometimes there are smaller teeth before and behind the larger tooth. There is one large, slightly curved lateral tooth in the right valve. Anterior muscle scars are deep and rough, posterior muscle scars are well defined but shallow. The beak cavity is broad and deep. The periostracum color varies from a light yellow (in juveniles) or yellowish brown to dark brown and is occasionally marked with broken fine to fairly wide dark green rays. The nacre color varies from white to pink to salmon, with the posterior margin iridescent.

The posterior margin of the male shell is bluntly pointed; the female shell is squared off posteriorly and is inflated posteriorly to accommodate the marsupium (Hildreth, 1828; Simpson, 1914). Simpson (1900a:540) noted that "Some specimens can hardly be separated from *L. higginsii*"; in the case of the males, close similarities also exist between the shells of *L. abrupta* and *Actinonaias ligamentina*.

Life History and Ecology: Hickman (1937) collected specimens of the Pink Mucket in the Clinch and Holston rivers from locales with a rocky bottom and swift current, in less than three feet of water. Ortmann (1919) noted that he had collected *L. abrupta* from riffles with a strong current in large rivers (e.g., Ohio River). The

Pink Mucket is bradyctytic; it becomes gravid in August, and females contain glochidia in September which are discharged the following June (Ortmann, 1912a, 1919). Fuller (1974) recorded the host fish for *L. abrupta* as the sauger (*Stizostedion canadense*) and freshwater drum (*Aplodinotus grunniens*). However, Surber (1913)



Plate 46. *Lampsilis abrupta* (Say, 1831), Pink Mucket.

listed the sauger as the host fish for *L. higginsii*, and the records Fuller (1974) used are for *higginsii*, which he probably considered a synonym of *L. abrupta*.

Status: Endangered (Williams et al., 1993:11). This mussel has been found living in tailwaters of several dams, and there is a localized relict population in the Cumberland River, Smith County, but all individuals examined appear to be old adults. Recently collected specimens, those taken by commercial shellers, are mature and appear to be relict individuals of former (perhaps preimpoundment) populations. The U.S. Fish and Wildlife Service has developed a recovery plan for this species (U.S. Fish and Wildlife Service, 1985b) and has created a watershed implementation schedule for the recovery plan (U.S. Fish and Wildlife Service, 1989b).

Lampsilis altilis (Conrad, 1834)

Finelined Pocketbook

RANGE MAP 46; PLATE 47

Synonymy:

- Unio altilis* Conrad, 1834; Conrad, 1834a:43, 68, pl. 2, fig. 1
Margarita (Unio) altilis (Conrad, 1834); Lea, 1836:24
Margaron (Unio) altilis (Conrad, 1834); Lea, 1852c:27
Lampsilis altilis (Conrad, 1834); Simpson, 1900a:529
Lampsilis (Lampsilis) altilis (Conrad, 1834); Simpson, 1900a:529
Unio clarkianus Lea, 1852; Lea, 1852a:251; Lea, 1852b:273, pl. 21, fig. 30
Margaron (Unio) clarkianus (Lea, 1852); Lea, 1852c:27
Lampsilis clarkianus (Lea, 1852); Simpson, 1900a:532
Unio spillmanii Lea, 1861; Lea, 1861a:39; Lea, 1862b:98, pl. 15, fig. 246
Margaron (Unio) spillmanii (Lea, 1861); Lea, 1870:42
Lampsilis (Lampsilis) spillmani (Lea, 1861); Frierson, 1927:69 [misspelling]
Unio gerhardtii Lea, 1862; Lea, 1862a:168; Lea, 1862c:208, pl. 31, fig. 277

Margaron (Unio) gerhardtii (Lea, 1862); Lea, 1870:35
Lampsilis (Lampsilis) gerhardtii (Lea, 1862); Simpson, 1900a:532

Unio doliaris Lea, 1865; Lea, 1865:88; Lea, 1868b:260, pl. 32, fig. 75

Margaron (Unio) doliaris (Lea, 1865); Lea, 1870:42

Lampsilis (Lampsilis) doliaris (Lea, 1865); Simpson, 1900a:533

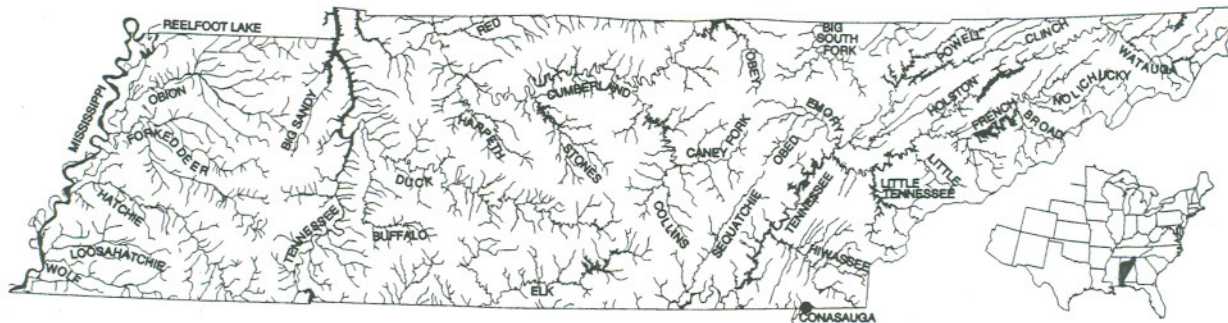
Type Locality: Alabama River, Claiborne, Alabama.

General Distribution: Alabama River drainage (Simpson, 1914).

Tennessee Distribution: Conasauga River, Polk and Bradley counties.

Description: The shell is fairly thin, subelliptical to ovate in outline; specimens from the Conasauga River are moderately inflated; those from small tributaries, such as Coahulla Creek, are more compressed. Mature individuals from the Conasauga River, Bradley County, Tennessee, attain a maximum length of about 85 mm. The anterior end is broadly rounded in creek forms, somewhat more narrowly so in Conasauga River specimens; the ventral margin is slightly curved; the posterior end is bluntly rounded. Some individuals develop a very low, rounded posterior ridge. Beaks are moderately swollen, only slightly projecting beyond the hinge line.

The left valve has two moderately thin, finely serrated pseudocardinal teeth, and the anterior one is generally more elevated; there are two thin lateral teeth which are widely spread and elevated. The right valve has two pseudocardinal teeth, the largest fairly heavy and triangular; the second tooth anterior to it is low, elongated, and thin. The single lateral tooth is straight, thin, and high. The interdentum is narrow, the beak cavity is moderately deep, and the anterior muscle scars



Range Map 46. *Lampsilis altilis* (Conrad, 1834), Finelined Pocketbook.



Plate 88. *Pleurobema perovatatum* (Conrad, 1834), Ovate Clubshell.

strate in stretches of river with moderate current and typically at a depth of less than three feet. Like other closely related species of *Pleurobema*, the Ovate Clubshell is probably a summer breeder. Host fish for *Pleurobema perovatatum* unknown. This mussel apparently no longer occurs in Tennessee stretches of the Conasauga River.

Status: Endangered (Williams et al. 1993:13). The U.S. Fish and Wildlife Service has developed a recovery plan for this species (U.S. Fish and Wildlife Service, 1994).

Pleurobema plenum (Lea, 1840)

Rough Pigtoe

RANGE MAP 88; PLATE 89

Synonymy:

Quadrula obliqua (Lamarck, 1819); Daniels, 1903:652 [in part]
Pleurobema obliquum (Lamarck, 1819); Ortmann, 1910:117
 [in part]

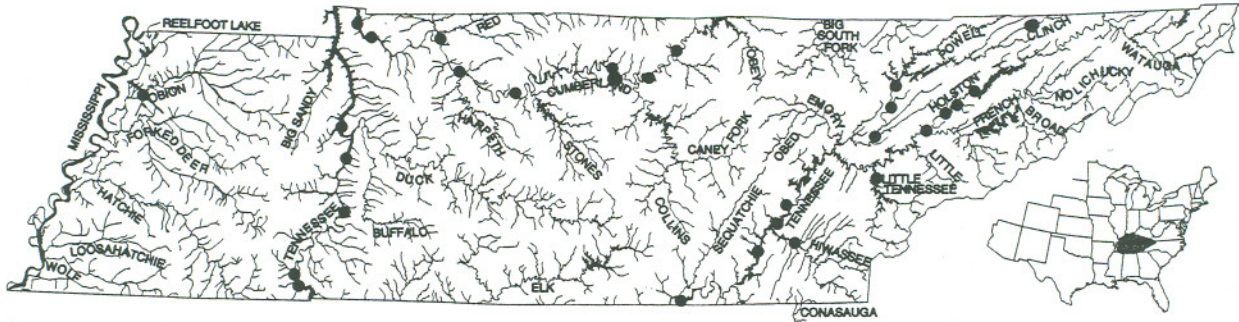
Pleurobema obliquum cordatum (Rafinesque, 1820); Ortmann, 1918:548 [in part]
Quadrula cordata (Rafinesque, 1820); Vanatta, 1915:558 [misidentification]
Pleurobema cordatum (Rafinesque, 1820); Bickel, 1968:20 [in part]
Pleurobema premorsa (Rafinesque, 1820); Morrison, 1969:23 [misidentification]
Unio plenus Lea, 1840; Lea, 1840:286; Lea, 1842b:211, pl. 14, fig. 26
 Margaron (*Unio plenus*) (Lea, 1840); Lea, 1852c:25
Quadrula plena (Lea, 1840); Simpson, 1900a:790
Pleurobema obliquum var. *plenum* (Lea, 1840); Utterback, 1915:188
Pleurobema plenum (Lea, 1840); Ortmann and Walker, 1922:23
Pleurobema cordatum var. *plenum* (Lea, 1840); Ortmann, 1925:339
Quadrula (Obliquata) cordata plena (Lea, 1840); Frierson, 1927:53
Fusconaia plena (Lea, 1840); Morrison, 1942:354
Quadrula (Obliquata) cordata var. *plena* (Lea, 1840); Haas, 1969a:298

Type Locality: Ohio River, Cincinnati, Ohio.

General Distribution: Ohio, Cumberland, and Tennessee River systems, southwest to Kansas and Arkansas (Simpson, 1914).

Tennessee Distribution: The Rough Pigtoe, prior to 1960, occurred in the French Broad, Holston, and Tennessee rivers (Starnes and Bogan, 1988). During his study of the Clinch River mussel fauna from 1978 to 1983, Ahlstedt (1991a) found *Pleurobema plenum* to be a rare species, reporting it from only three locations in Hancock County, Tennessee. It is a rare shell in stretches of the middle Cumberland River, primarily Smith and Trousdale counties, where commercial shellers inadvertently take an occasional individual. The species exists as a relict population in the Tennessee River above Chattanooga (Ahlstedt and McDonough, 1994).

Description: The shell is solid, inflated, and subtriangular in outline. Mature individuals reach about 75–80 mm in length. Beaks are full, high, turned forward, and projecting well beyond the hinge line; sculpture consists of a few irregular nodulous ridges. The anterior margin is sharply truncated, the dorsal margin is slightly curved, the ventral margin is rounded, and the posterior margin is nearly straight, often with a shallow sulcus before the posterior ridge. The posterior



Range Map 88. *Pleurobema plenum* (Lea, 1840), Rough Pigtoe.

ridge is narrowly rounded, ending in a blunt point. The median ridge is high, wide, and rounded, being separated from the posterior ridge by a radial depression. The surface is marked by irregular growth lines.

The left valve has two sculptured, radiate pseudocardinal teeth separated from two short, thick lateral teeth by a broad interdendum. The right valve has one large, striated pseudocardinal tooth, often with a small tooth before and behind. The lateral tooth in the right valve may be single or have a second reduced tooth. The beak cavity is moderately deep, wide, and open. Muscle scars are small and deeply impressed; anterior scars are sculptured. The periostracum is satinlike and yellowish brown to reddish brown in color. Shells may be unrayed or have a series of fine dark green lines over the posterior half of the shell or beak; these often become obliterated with age. The nacre color varies from white to pink and is iridescent posteriorly.

Life History and Ecology: Although *Pleurobema plenum* may become established in small rivers or in headwater stretches of medium-sized rivers, such as the upper Clinch River, it is a species most typical of large rivers such as the Cumberland. Individuals taken in the impounded stretches of the Cumberland River (Smith County, Tennessee) occurred at depths of 12 to 15 feet, and on a substrate composed of firmly packed gravel and sand. The Rough Pigtoe appears to be tachytictic, based on gravid females of *Pleurobema cordatum* found in May (Ortmann, 1919). Host fish for the glochidia of this species unknown.

Status: Endangered (Williams et al., 1993:13). Ortmann (1919) considered certain recognized "species" of *Pleurobema* (e.g., *catillus*, *sintoxia*, *rubrum*) as simply forms

or varieties of *Pleurobema obliquum* (= *cordatum*); *P. plenum* would also be considered a part of this complex. The U.S. Fish and Wildlife Service has developed a recovery plan for this species (U.S. Fish and Wildlife Service, 1984e) and has created a watershed implementation schedule for the recovery plan (U.S. Fish and Wildlife Service, 1989b).



Plate 89. *Pleurobema plenum* (Lea, 1840), Rough Pigtoe.