

FRESH-WATER MUSSELS (UNIONACEA) OF LOUISIANA;  
A ZOOGEOGRAPHICAL CHECKLIST OF POST-1890 RECORDS

Malcolm F. Vidrine

Division of Sciences, Louisiana State University  
At Eunice, Eunice, Louisiana 70535

ABSTRACT

Fifty-three species (species groups) of fresh-water mussels have been reported from Louisiana since 1890. A zoogeographical checklist is presented for the major river systems in Louisiana.

INTRODUCTION

Fresh-water mussels (Unionidae) are a major benthic element in the streams and lakes of Louisiana. Study of this group prior to 1890 was essentially limited to species descriptions, with the single exception of a species list compiled by Featherman (1872). Vaughan (1892 and 1893) and Frierson (1897, 1898, 1899a, 1899b, 1902, 1903, 1911 and 1923) were the first to actually conduct survey work in Louisiana. Since 1900, a number of lists have been provided.

The most thorough survey involved eastern Louisiana (Florida Parishes) by Stern (1976). Much of the remaining parts of the state are poorly studied. In this paper, I have combined the available literature and my collections into a checklist with distributional data. Many taxonomic problems remain in this diverse group. I have made tentative groupings of sibling species pending further taxonomic studies.

My colleagues and I have collected aquatic invertebrates for more than a dozen years in most parts of Louisiana. We have noted four major zoogeographic subregions that can be readily separated using mussel species. These subregions include:

- southwestern Louisiana, which closely resembles southeastern Texas,
- southeastern Louisiana, which closely resembles the Alabama River drainage system,
- north central Louisiana, which closely resembles the Ouachita River drainage in Arkansas, and
- the Mississippi and Red River floodways.

Isolated relict populations of endemic Margaritifera hembeli (Conrad) in the headwaters of Bayou Teche may be considered an indication of a fifth subregion.

Checklists provided by surveys in surrounding states include Arkansas (Gordon, Kraemer and Brown, 1980; Johnson, 1980), Oklahoma (Valentine and Stansbery, 1971), Mississippi (Grantham, 1969; Stern, 1976; Vidrine and Clark, 1983) and Texas (Murray and Roy, 1968; Roback, Bereza and Vidrine, 1980; Strecker, 1931). North American checklists are collectively treated by Burch (1975). The higher taxonomy of the group is treated by Davis and Fuller (1981).

Additional regional surveys in Louisiana that were used to compile this checklist include Bereza, Vidrine and Fuller (1976); Branson (1966); Crawford (1972); Coker (1915); Curry and Vidrine (1976 and 1977); Curry, Everitt and Vidrine (1981); DeRouen and Vidrine (1975); Kuckyr and Vidrine (1975); Miller (1936); Moore (1909); Parker, Hackney and Vidrine (1984); Parker, Vidrine and Hackney (1980); Shira (1913); Shively and Vidrine (1984); Stern and Felder (1978); Vanatta (1910); Vidrine (1973, 1974, 1978 and 1980); Vidrine and Bereza (1976, 1977 and 1978); Vidrine and Clark (1981 and 1983); Vidrine and DeRouen (1976a and 1976b); Vidrine and Vidrine (1976); Vidrine, D'Addamio and Vidrine (1975); and Vidrine, DeRouen and Bereza (1976).

## RESULTS AND DISCUSSION

Table 1 with taxonomic and distributional notes summarizes the collections and reports of fresh-water mussels from Louisiana since 1890. It is apparent from the list that much work is still needed. Many areas, e.g., the oxbow lakes of the Mississippi River, the large and deep rivers, and hundreds of streams, have not been sampled, or there have only been a few stations near major highways or railroads.

Table 1. Fresh-water mussels (Unionacea) reported and collected in major river systems of Louisiana since 1890 (see Legend which follows).

	Sabine	Calcasieu	Mermentau	Teche	Atchafalaya	Red	Duglemona	Ouachita	Tensas	Mississippi	Amite	Tickfaw	Tangipahoa	Tchefuncte	Pearl
<sup>1</sup> <u>Margaritifera hembeli</u> (Conrad 1838)					X										
<u>Anodonta grandis</u> Say 1829	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
<u>Anodonta imbecillus</u> Say 1829	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
<u>Anodonta suborbiculata</u> Say 1831				X	X	X	X	X				X			
<u>Arcidens confragosus</u> (Say 1829)	X	X		X	X	X		X		X					
<sup>2</sup> <u>Strophitus undulatus</u> (Say 1817)	X						X	X							
<sup>2</sup> <u>Strophitus subvexus</u> (Conrad 1834)	X	X						X							
<sup>2</sup> <u>Strophitus radiatus</u> (Conrad 1834)													X	X	X
<u>Amblema plicata</u> Say 1817	X	X		X	X	X	X	X	X	X	X	X	X	X	
<u>Amblema dombeyana</u> (Valenciennes 1833)	X	X	X	X	X	X	X	X	X	X	X	X			X
<u>Amblema gigantea</u> (Barnes 1823)	X			X	X	X	X	X	X	X	X				
<sup>3</sup> <u>Orthonymus cylindrica</u> (Say 1817)								X							
<sup>3</sup> <u>Orthonymus metanevra</u> (Rafinesque 1820)								X							
<u>Quadrula nodulata</u> Rafinesque 1820	X	X	X	X	X	X	X	X							
<sup>4</sup> <u>Quadrula pustulosa</u> (Lea 1831)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
<u>Quadrula apiculata</u> (Say 1829)	X	X	X	X	X	X	X	X							X
<u>Quadrula quadrula</u> (Rafinesque 1820)	X			X	X	X	X	X		X					
<u>Tritogonia verrucosa</u> (Rafinesque 1820)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
<u>Elliptio beadliana</u> (Lea 1861)												X	X	X	X
<u>Elliptio crassidens</u> (Lamarck 1819)												X	X	X	X
<u>Elliptio dilatata</u> Rafinesque 1820							X	X	X						
<u>Fusconaia ebena</u> (Lea 1831)								X	X						X
<sup>5</sup> <u>Fusconaia flava</u> (Rafinesque 1820)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
<sup>6</sup> <u>Fusconaia lananensis</u> (Frierson 1900)	X	X													
<sup>7</sup> <u>Fusconaia friersoni</u> (Wright 1896)	X				X										
<u>Pleurobema cordatum</u> (Rafinesque 1820)								X	X						

Table 1. Continued from previous page.

	Sabine	Calcasieu	Mermentau	Teche	Atchafalaya	Red	Dugdemona	Ouachita	Tensas	Mississippi	Amite	Tickfaw	Tangipahoa	Tchefuncte	Pearl
<u>Pleurobema riddelli</u> (Lea 1861)	X	X													
<sup>8</sup> <u>Uniomerus tetralasmus</u> (Say 1831)	X	X	X	X		X	X	X	X	X	X		X		X
<sup>3</sup> <u>Actinonaias carinata</u> (Simpson 1900)								X							
<sup>9</sup> <u>Carunculina parva</u> (Barnes 1823)	X	X	X	X	X	X		X	X	X	X	X	X		X
<sup>3</sup> <u>Ellipsaria lineolata</u> (Rafinesque 1820)								X							
<u>Glebula rotundata</u> (Lamarck 1819)	X	X	X	X	X	X			X		X	X			
<sup>10</sup> <u>Lampsilis claibornensis</u> (Lea 1838)												X	X	X	X
<sup>11</sup> <u>Lampsilis excavata</u> Lea 1857												X	X	X	X
<sup>11</sup> <u>Lampsilis satura</u> (Lea 1852)	X	X						X	X						
<u>Lampsilis hydiana</u> (Lea 1838)	X	X	X	X	X	X	X	X	X		X				
<u>Lampsilis teres</u> (Rafinesque 1820)	X	X	X	X	X	X	X	X	X		X	X	X		X
<u>Leptodea fragilis</u> (Rafinesque 1820)	X	X	X	X	X	X	X	X	X		X		X		X
<u>Proptera purpurata</u> (Lamarck 1819)	X	X	X	X	X	X	X	X	X		X		X		X
<sup>12</sup> <u>Proptera capax</u> (Green 1832)									X						
<u>Proptera amphichaena</u> (Frierson 1898)	X														
<u>Proptera laevissima</u> (Lea 1830)	X				X										
<sup>13</sup> <u>Proptera inflata</u> (Lea 1831)											X				
<u>Ligumia recta</u> (Lamarck 1819)								X							X
<u>Ligumia subrostrata</u> (Say 1831)	X	X	X	X		X		X	X		X	X			
<sup>14</sup> <u>Obovaria castenea</u> (Lea 1831)	X	X				X	X	X							
<sup>14</sup> <u>Obovaria jacksoniana</u> Frierson 1912											X		X		X
<sup>14</sup> <u>Obovaria unicolor</u> (Lea 1845)											X	X	X		X
<u>Truncilla donaciformis</u> (Lea 1828)	X	X		X		X	X	X		X					
<u>Truncilla truncata</u> Rafinesque 1820	X		X			X		X	X						
<u>Villosa lienosa</u> (Conrad 1834)	X	X	X	X		X	X	X		X	X	X	X	X	X
<u>Villosa vibex</u> (Conrad 1834)										X	X	X	X	X	X

Table 1. Continued from previous pages.

	Sabine	Calcasieu	Mermentau	Teche	Atchafalaya	Red	Dugemona	Ouachita	Tensas	Mississippi	Amite	Tickfaw	Tangipahoa	Tchefuncta	Pearl
<u>Obliquaria reflexa</u> Rafinesque 1820	X	X		X	X	X		X	X		X				
<sup>1</sup> Recently separated taxonomically from Alabama populations (Johnson, 1983) and now restricted to the headwater creeks (Rapides Parish) of the Teche System.															
<sup>2</sup> Conchological differences are used to separate these sibling species.															
<sup>3</sup> Known only from the upper Ouachita River (Moore, 1909; Vanatta, 1910) and not collected in Louisiana since these records.															
<sup>4</sup> Variation in this group has resulted in several named species of uncertain species status.															
<sup>5</sup> <u>Fusconaia undata</u> (Barnes 1823) is considered an ecophenotype (Stern, 1976).															
<sup>6</sup> <u>Fusconaia askewi</u> (Marsh 1896) is included.															
<sup>7</sup> Not reported since Frierson (1899a).															
<sup>8</sup> <u>Uniomereus declivus</u> (Say 1831) is included.															
<sup>9</sup> <u>Carunculina texasensis</u> (Lea 1857) is included.															
<sup>10</sup> <u>Lampsilis straminea</u> (Conrad 1834) is a possible synonym.															
<sup>11</sup> Variation in this group does not permit ready separation; the forms west of the Mississippi River are placed in <u>L. satura</u> and the forms east of the Mississippi River are placed in <u>L. excavata</u> .															
<sup>12</sup> Known from a single specimen (Branson, 1966).															
<sup>13</sup> Known from several specimens (Stern, 1970).															
<sup>14</sup> Variation in this group is best seen in conchological features, but it is not easy to distinguish random lots of these species.															

Many taxonomic problems exist in Gulf coast mussels. Several sibling species groups are of primary interest among Louisiana inhabitants. Biological information on ecology and life history of most of the Louisiana populations are scant or nonexistent.

This paper treats 53 species of native fresh-water mussels, although it is possible that other species that occur in surrounding states also occur in Louisiana. Numerous ecophenotypes also exist in the varied habitats afforded by Louisiana waterways.

Along with M. hembeli, Louisiana contains several other species (G. rotundata, Q. apiculata and A. dombeyana) that are not common elsewhere. The distributional notes mention several species that have not been collected in recent times. Although several areas in Louisiana have dramatic declines in mussel diversity and abundance following insult by paper mill effluents, sewerage treatment plant effluents, dredging, sand and gravel mining and impoundment, numerous localities maintain enormous mussel populations, e.g., rice irrigation canals, ponds, and most intermediate rivers. These populations provide an excellent source of information for the study of ecology and natural history of this benthic fauna.

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