

FRESHWATER MUSSELS *of Louisiana:*



A field guide

Francesca Ruiz and Garrett Hopper
with photos by Shalanda Warr



Contents

Introduction	4
About freshwater mussels	4
Observing freshwater mussels	6
Acknowledgements	7
Mussel Morphology and Valve Characteristics	8
Description of Species Accounts.....	10
Elktoe, <i>Alasmidonta marginata</i>	14
Threeridge, <i>Amblema plicata</i>	15
Rock Pocketbook, <i>Arcidens confragosus</i>	16
Butterfly, <i>Ellipsaria lineolata</i>	17
Alabama Spike, <i>Elliptio arca</i>	18
Elephantear, <i>Elliptio crassidens</i>	19
Spike, <i>Euryntia dilatata</i>	20
Texas Pigtoe, <i>Fusconaia askewi</i>	21
Gulf Pigtoe, <i>Fusconaia cerina</i>	22
Wabash Pigtoe, <i>Fusconaia flava</i>	23
Round Pearlsheel, <i>Glebulula rotundata</i>	24
Pink Mucket, <i>Lampsilis abrupta</i>	25
Plain Pocketbook, <i>Lampsilis cardium</i>	26
Louisiana Fatmucket, <i>Lampsilis hydlana</i>	27
Southern Pocketbook, <i>Lampsilis ornata</i>	28
Sandbank Pocketbook, <i>Lampsilis satura</i>	29
Rough Fatmucket, <i>Lampsilis straminea</i>	30
Yellow Sandshell, <i>Lampsilis teres</i>	31
Little Spectaclecase, <i>Leaunia lienosus</i>	32
Black Sandshell, <i>Ligumia recta</i>	33
Louisiana Pearlsheel, <i>Margaritifera hembeli</i>	34
Washboard, <i>Megaloniaias nervosa</i>	35
Threehorn Wartyback, <i>Obliquaria reflexa</i>	36
Southern Hickorynut, <i>Obovaria arkansasensis</i>	37
Hickorynut, <i>Obovaria olivaria</i>	38
Alabama Hickorynut, <i>Obovaria unicolor</i>	39
Mucket, <i>Ortmanniana ligamentina</i>	40
Bankclimber, <i>Plectomerus dombeyanus</i>	41
Mississippi Pigtoe, <i>Pleurobema beadleianum</i>	42
Louisiana Pigtoe, <i>Pleurobema riddellii</i>	43
Round Pigtoe, <i>Pleurobema sintoxia</i>	44
Texas Heelsplitter, <i>Potamilus amphichaenus</i>	45
Fat Pocketbook, <i>Potamilus capax</i>	46
Fragile Papershell, <i>Potamilus fragilis</i>	47
Inflated Heelsplitter, <i>Potamilus inflatus</i>	48
Pink Papershell, <i>Potamilus ohioensis</i>	49
Bleufer, <i>Potamilus purpuratus</i>	50
Southern Creekmussel, <i>Pseudodontoideus subvexus</i>	51
White Heelsplitter, <i>Pterosyna complanata</i>	52
Ouachita Kidneyshell, <i>Ptychobranchnus occidentalis</i>	53
Wartyback, <i>Pustulosa nodulata</i>	54
Pimpleback, <i>Pustulosa pustulosa</i>	55
Giant Floater, <i>Pyganodon grandis</i>	56
Gulf Mapleleaf, <i>Quadrula nobilis</i>	57
Mapleleaf, <i>Quadrula quadrula</i>	58
Pistolgrip, <i>Quadrula verrucosa</i>	59

Ebonysell, *Reginaia ebenus*60

Pondmussel, *Sagittunio subrostratus*61

Pascagoula Creekshell, *Strophitus pascagoulaensis*62

Rayed Creekshell, *Strophitus radiatus*63

Creepers, *Strophitus undulatus*.....64

Rabbitsfoot, *Theliderma cylindrica*.....65

Rockshell, *Theliderma metanevra*66

Lilliput, *Toxolasma parvum*67

Texas Lilliput, *Toxolasma texasiense*.....68

Fawnsfoot, *Truncilla donaciformis*.....69

Deertoe, *Truncilla truncata*70

Tapered Pondhorn, *Unio merus declivis*.....71

Pondhorn, *Unio merus tetralasmus*.....72

Paper Pondshell, *Utterbackia imbecillis*73

Cypress Floater, *Utterbackiana hartfieldorum*.....74

Flat Floater, *Utterbackiana suborbiculata*75

Southern Rainbow, *Villosa vibex*76

Western Fanshell, *Cyprogenia aberti* (Historical Occurrence).....77

Freshwater Golden Clam, *Corbicula fluminea* (Invasive)78

Zebra Mussel, *Dreissena polymorpha* (Invasive)78

Glossary.....80

Helpful Resources.....81

Literature Cited.....82



Gulf Mapleleaf
Quadrula nobilis

Introduction

The purpose of this guide is to help educate people, especially Louisiana residents, about the freshwater mussels inhabiting the state in the hope that everyone can better understand the importance of these wonderful creatures as both wildlife and a natural resource. Though not the most obvious animals, freshwater mussels are all around you living in many different aquatic habitats from large rivers and floodplain lakes to neighborhood ponds. If you make an effort to find them, mussels prove themselves to be quite fascinating, coming in a variety of extraordinary colors, shapes and sizes. There are currently two families of freshwater mussels present in United States and Canada: Margaritiferidae and Unionidae. Though many people are working tirelessly to conserve and protect them, freshwater mussel populations continue to decline, and many species globally are facing extinction. It is more important than ever to raise awareness of these amazing animals and what we can do to help ensure their persistence. It is our sincere hope that this guide will accurately represent the diversity of Louisiana's freshwater mussels to promote a stronger conservation ethic through education. This guide includes pictures, shell descriptions, habitat, state and federal conservation ranks, distributions, known host fishes and similar species for every freshwater mussel found in Louisiana as well as information about two common invasive bivalves. Currently, Louisiana is home to one species in the family Margaritiferidae and 62 species in the family Unionidae that in total represent about 24% of the recognized species in the U.S. About 55% of Louisiana's freshwater mussels are considered critically imperiled, imperiled or vulnerable at the state level, and five species are federally listed as threatened or endangered.

About freshwater mussels

Freshwater mussels are a type of mollusk (phylum Mollusca) classified as bivalves (class Bivalvia) due to having two symmetrical valves making up their shells. The valves have specified designations of left and right which can be observed when holding a mussel with the umbo facing up and away from you. They are filter-feeding organisms that can survive in a wide range of freshwater habitats including ponds, creeks, rivers, lakes, agricultural ditches, bayous and reservoirs. Freshwater mussels provide vital ecosystem services such as filtering large quantities of water consequently improving the overall health of the waterbody, acting as environmental indicators due to their sensitivity to changes in water quality, providing food for many other organisms, and cycling and storing nutrients. Some organisms that consume freshwater mussels include fish, aquatic birds, otters and raccoons. Freshwater mussels have an intriguing life cycle as they require a parasitic relationship with a host fish to reproduce (Figure 1). Reproduction begins with males releasing sperm into the water that are siphoned by females to internally fertilize their eggs. These eggs develop into larvae called glochidia that must attach and encapsulate themselves onto the fins or gills of a fish to metamorphose into

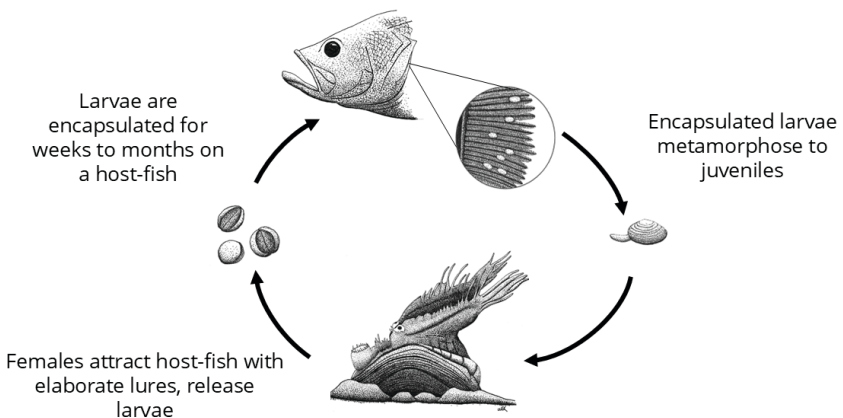


Figure 1. Generalized mussel life cycle. Illustration by William Kelso

a juvenile mussel that then detaches and becomes free-living. Depending on the species of mussel, possible host fishes can vary from general groups of fishes, such as minnows, or can be limited to a specific fish species. Female mussels have evolved extraordinary means to ensure glochidia successfully attach onto a fish including sacrificing themselves to predatory hosts, the use of false lures or baits, and the release of glochidia into the water relying solely on luck.

Female mussels may use conglomerates, packaged glochidia disguised as prey or specialized mantle flaps bearing a striking resemblance to small insects, crayfish or fish as a form of bait to attract a host (Figure 2). This results in a fish attacking the conglomerates or lures and receiving a mouthful of parasitic glochidia. Freshwater mussels currently face many threats related to the increasing demand for freshwater natural resources by a growing human population, as they are extremely sensitive to changes to their environment. Human causes of mussel decline can include surface water and groundwater pollution, excessive water extraction for agriculture and industry, habitat modifications such as river channelization and impoundment, eutrophication caused by excess nutrients entering freshwater habitats and sedimentation caused by poor land use practices. Unfortunately, the underlying causes of most mussel declines are poorly understood.



Figure 2. Female mussels may use conglomerates or specialized mantle flaps to attract hosts. Photo by Garrett Hopper

Observing freshwater mussels

Proper permits are required for the collection of freshwater mussels and their shells in Louisiana, and doing so without one is illegal. Some species are protected by the Endangered Species Act. Violation of Section 9 (Prohibited Acts) including but not limited to take, damage or removal may result in fines of up to \$50,000, imprisonment for up to one year or both. Identification and awareness are very important as any kind of interaction or disturbance concerning a mussel listed under the Endangered Species Act is a federal crime and will result in a felony. It is not a crime to simply observe these animals in their habitat but always handle species with great care and make sure they stay in the wild where they belong. Freshwater mussels may be found in almost any waterbody in Louisiana and empty shells on the shore are always a strong indicator of their presence. Live mussels are usually buried into the substrate at the bottom of the waterbody with their siphons protruding to filter feed but may be sitting on top of the substrate (Figure 3).



Figure 3. Freshwater mussels bury into the substrate at the bottom of a waterbody. Photo by Garrett Hopper

A snorkel and diving mask will be useful to observe mussels in their natural habitats, but you may have better luck finding mussels by using your hands to grub through the substrate. When removing a mussel from the substrate, be gentle as to not stress the animal and only observe them out of the water for a short amount of time. Place them back carefully in the substrate where you found them, making sure to either set them down on top of the substrate horizontally or place the anterior side of the mussel about halfway into the substrate to avoid suffocation. This will allow the animal to use its muscular foot to rebury itself. When searching in water, be aware of your surroundings and potential hazards. When looking for freshwater mussels remember to be safe, have fun and please be kind to our little friends so they can continue to be an important part of our environment.

Acknowledgements

Thank you to the people and organizations that have enabled this research, for without them this guide would not have been possible. Our deepest gratitude to the 2024 Agricultural Sciences Professional Internships in Research and Extension (ASPIRE) program through the Louisiana State University Agricultural Center and the U.S. Department of Agriculture provided the opportunity to produce a research project that resulted in the early versions of this guide. Shalanda Warr, who is responsible for the photographs included in every species account. William Kelso, for illustrating a beautiful life cycle diagram specifically for this guide. Louisiana State University Shreveport's Museum of Life Sciences, museum curator Stuart Nielson, and director of research and sponsored programs Amanda Lewis for allowing access to their collections. Robbie Ellwanger of the Mississippi Museum of Natural Science, John Slapcinsky from the Florida Museum of Natural History and John Harris of the Arkansas State University Museum of Zoology, for providing access to their specimen collection. Jake Duhé, Jennifer Haase, Madison Kuczek and Julia Morin of the LSU School of Renewable Natural Resources Fish and Mussel Ecology Lab for reviewing drafts and suggesting edits. Finally, Malcolm Vidrine for his contributions to freshwater mussel research and conservation in Louisiana and inspiring the next generation of malacologists.

Franchesca Ruiz thanks her mother, Sonia M. Portuguese, for endless encouragement and dedication to her success. Her father, Thomas A. Ruiz, for encouraging a passion for nature from a young age. Nathan Messina, for his constant and unwavering support. Karah DiVincenti, for all the late nights spent working hard together and cheering each other on. Benji Ruiz, for being the best writing assistant she could possibly ask for. Finally, to her mentor for the duration of this project, Garrett Hopper, who provided essential trait datasets for freshwater mussels of the United States, numerous photos including the cover, and the maps included in this guide. Thank you for enduring countless questions and editing requests with the patience and grace of a true scholar dedicated to the education of others. Most of all, thank you for teaching me how to be a real mussel hugger.

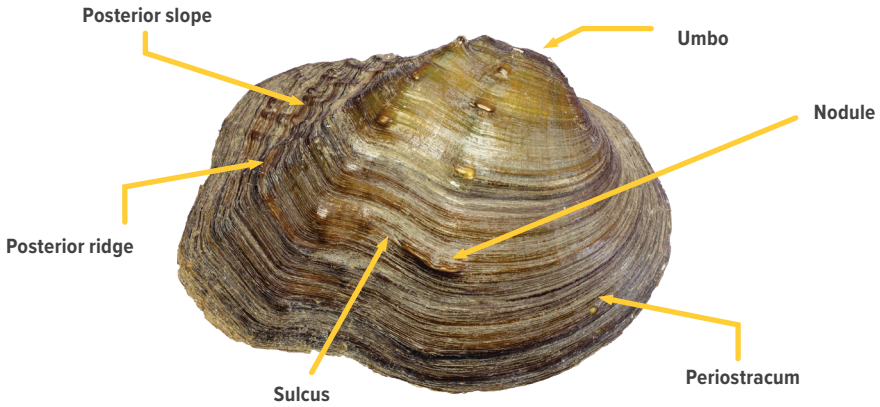


Flat Floater

Utterbackiana suborbiculata

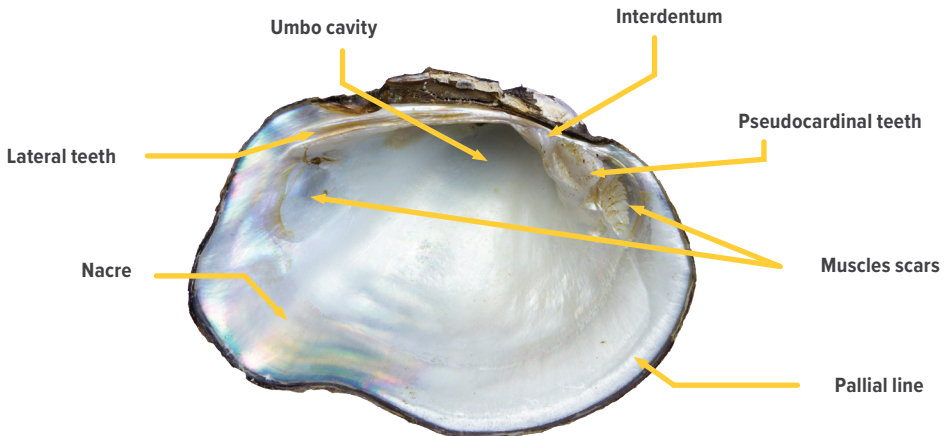
Mussel Morphology and Valve Characteristics

Dorsal



Posterior

Anterior



Ventral

Shell outlines

Round



Oval



Elliptical



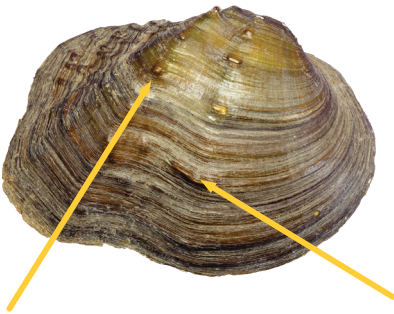
Triangular



Rhomboidal

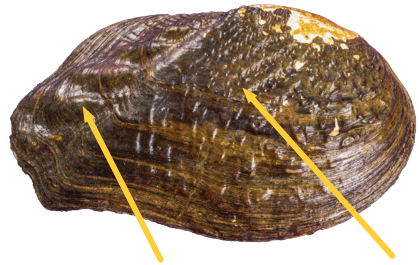


Quadrated



Pustule

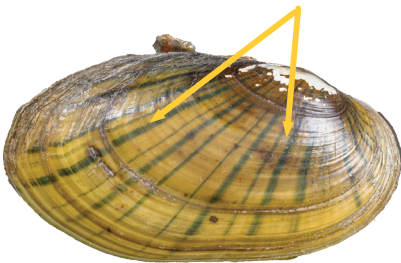
Rays



Nodule

Folds

Wrinkles

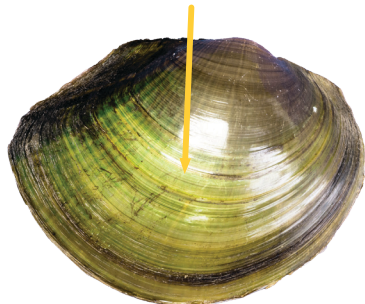


Chevrans

Dull periostracum



Shiny periostracum



Description of Species Accounts

Scientific names for each species were chosen using the most recently available taxonomic data from the Mussel Database at <https://mussel-project.uwsp.edu>. See Helpful Resources on page 81 for more information.

Along with the photographs of each species, we have provided information about the specimens photographed including measurements in millimeters, the museum catalog number if the specimens are housed at a museum or whether they are from a personal collection. Museums include Arkansas State University Museum of Zoology (ASUMZ), Florida Museum of Natural History at University of Florida (UF), Mississippi Museum of Natural Sciences (MMNS), Louisiana State University School of Renewable Natural Resources (LSURNR) and Louisiana State University Shreveport Museum of Life Sciences (LSUS).

Descriptions are limited to the features of the shell and rely on the terminology used in the previous pages. There is not an attempt to describe differences in soft tissue anatomy. There are two families of freshwater mussels present in United States and Canada: Margaritiferidae, and Unionidae. Freshwater mussels in the family Unionidae typically have two pseudocardinal teeth and two lateral teeth in the left valve, and one pseudocardinal tooth and one lateral tooth in the right valve. As a result, teeth numbers and location will be omitted from a species account if they follow the expected pattern and do not differ between valves.

Habitats reported represent where a species usually occurs, therefore some species may occur in other habitats that are not listed. Preferred sediment types are distinguished because many waterways in Louisiana do not resemble their historic condition due to human caused habitat degradation, especially from gravel mining. An example of each freshwater habitat type listed in species accounts are provided below to be used as a point of reference.

- **Small rivers or creeks:** Less than 1 meter (3 feet) to more than 10 meters (about 30 feet) wide
- **Medium rivers:** 10 meters (about 30 feet) to more than 50 meters (about 150 feet) wide
- **Large rivers:** More than 50 meters across
- **Lentic habitats:** Non-flowing habitats such as oxbow lakes, reservoirs or local neighborhood ponds

Known host fishes included for each species account were determined by confirmed occurrence in Louisiana using data from NatureServe Explorer at <https://explorer.natureserve.org/> as well as records of successful laboratory or natural transformation of glochidia from any state using data from the Freshwater Mussel Host Database at <https://fms19.naturalhistorysurvey.org/fmi/webd/Freshwater%20Mussel%20Host%20Database>. The Freshwater Mussel Host Database is maintained and curated by the Illinois Natural History Survey. See Helpful Resources on page 81 for more information. Known host fishes species lists may not be complete or represent ecologically relevant relationships. Multiple freshwater mussel species have unknown host fishes. Both native and non-native species of host fishes were included.

Distribution maps included for each species description represent confirmed occurrence in the river basins that are highlighted in color. Occurrence data was obtained from MusselMapR at https://musselmapr.shinyapps.io/hic_sunt_naiades/. See Helpful Resources on page 81 for more information. Distribution maps are not inclusive. River basins are highlighted only where occurrence is confirmed but does not mean that a species cannot occur outside of those boundaries, only that it has not yet been observed there.

Similar species are listed at the end of each species account and include a detailed comparison. Species accounts may omit this information if the mussel cannot be easily confused with another species.

Each entry includes two different conservation statuses: the state element rank and federal listing status as of 2025. We included N/A in some cases, which is not an official conservation status but was included where no rank was designated. Ranks are often absent due to lack of research and available data.

State element ranks are species ranks that indicate their need for conservation and are decided by each state's respective National Heritage program based on the best available data. The rankings included here are found in the 2025 Louisiana State Wildlife Action Plan which can be viewed at https://www.wlf.louisiana.gov/assets/Resources/Publications/Wildlife_Action_Plans/2025-Louisiana-Wildlife-Action-Plan_Aug_2025.pdf . The designations included in this guide for each entry are abbreviated. The official definitions are as follows.

- **S1:** Critically imperiled in Louisiana because of extreme rarity (five or fewer known extant populations) or because of some factor(s) making it especially vulnerable to extirpation
- **S2:** Imperiled in Louisiana because of rarity (six to 20 known extant populations) or because of some factor(s) making it very vulnerable to extirpation
- **S3:** Rare and local throughout the state or found locally (even abundantly at some of its locations) in a restricted region of the state, or because of other factors making it vulnerable to extirpation (21 to 100 known extant populations)
- **S4:** Apparently secure in Louisiana with many occurrences (100 to 1,000 known extant populations)
- **SH:** Of historical occurrence in Louisiana, but no recent records verified within the last 20 years; formerly part of the established biota, possibly persisting

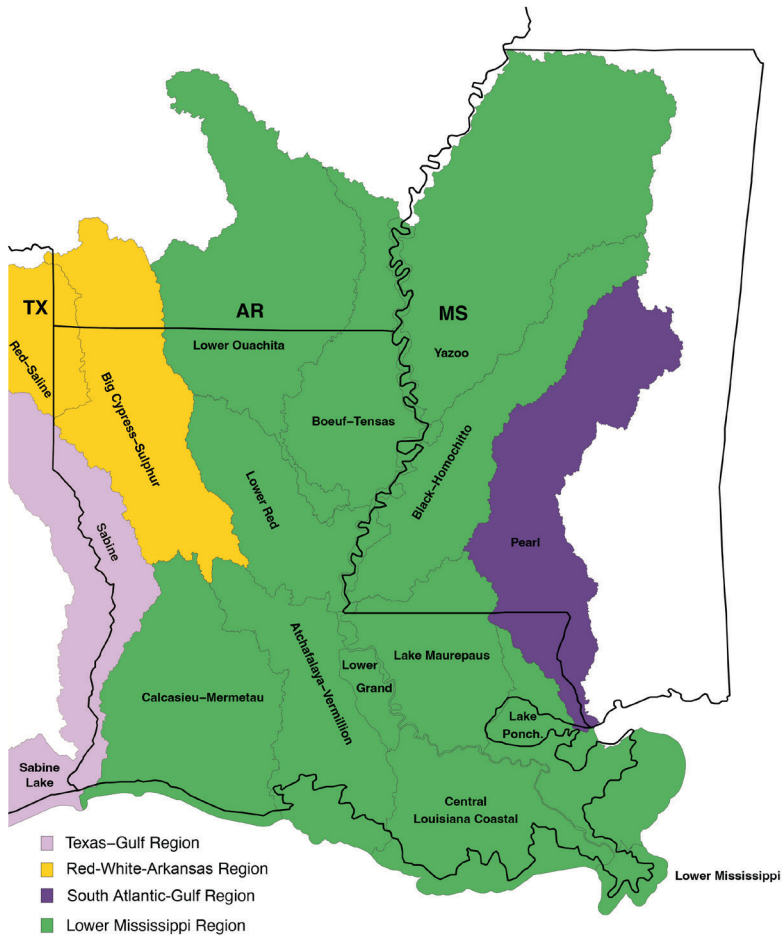


Figure 4. Drainage basins of Louisiana.

Federal listing status is determined by the Endangered Species Act (ESA) and the U.S. Fish and Wildlife Service as of 2025. The designations included in this guide for each entry are abbreviated and are defined as follows.

- **Endangered (E):** Any species which is in danger of extinction throughout all or a significant portion of its range. Endangered species are protected by the take prohibitions of section 9 under the ESA.
- **Threatened (T):** Any species which is likely to become endangered within the foreseeable future throughout all or a significant portion of its range. Threatened species are protected by the take prohibitions of section 9, consistent with any protective regulations finalized under section 4(d) of the ESA.



White heelsplitter
Pterosyna complanata



Elktoe, *Alasmidonta marginata*



ASUMZ 650
6.6 cm (2.6 in)
Ouachita River, Montgomery County, Arkansas

Description: Maximum length of 9.1 cm (3.6 in). Not sexually dimorphic. Rhomboidal to elliptical outline and slightly inflated. Shell smooth and usually thick. Periostracum yellowish, greenish or brown with solid narrow yellow, green or broken green rays. Anterior margin narrowly curved while posterior margin obliquely truncate to bluntly pointed. Posterior ridge is high and angular. Umbo high and full with a moderately deep and wide cavity. Shallow muscle scars. Left valve contains one small, thin pseudocardinal tooth. Right valve contains one or two small, thin pseudocardinals. Lateral teeth are absent, instead the hinge line is thickened. Interdentum is absent. Nacre is usually white with blue tint, possibly with pink in the umbo cavity. Rarely reddish or purple.

Habitat: Moderate- to fast-flowing large rivers and creeks. Prefers sand or gravel but can be found in silt.

State element rank: N/A

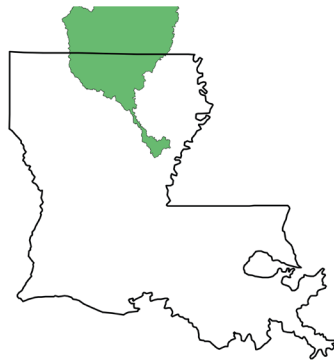
Federal listing status: N/A

Known host fishes:

- Minnows: Striped shiner (*Luxilus chrysocephalus*), golden shiner (*Notemigonus crysoleucas*), creek chub (*Semotilus atromaculatus*)
- Suckers: River carpsucker (*Carpionodes carpio*), quillback (*C. cyprinus*), northern hog sucker (*Hypentelium nigricans*), smallmouth buffalo (*Ictiobus bubalus*)
- Sunfishes: Warmouth (*Lepomis gulosus*)
- Topminnows and killifishes: Northern studfish (*Fundulus catenatus*)*, blackspotted topminnow (*F. olivaceus*)

Similar species: May be confused with fawnsfoot (*Truncilla donaciformis*) and deertoe (*Truncilla truncata*). Fawnsfoot has a more oval or triangular outline while the elktoe has a more rhomboidal outline. Lateral teeth are present in fawnsfoot but absent and represented by a thickened hinge line in the elktoe. Deertoe is more triangular while the elktoe is more elongate. Lateral teeth are present in the deertoe but absent and represented by a thickened hinge line in the elktoe. Elktoe typically has rays, whereas fawnsfoot and deertoe have chevrons organized into a ray-like pattern.

*Non-native species.



Threeridge, *Amblema plicata*



LSUS 13694
11.0 cm (4.3 in)
Bayou Pierre, Natchitoches Parish, Louisiana

Description: Maximum length of 29.1 cm (11.5 in). Not sexually dimorphic. Round to quadrate outline with variable amounts of inflation. Shell often with a low posterior dorsal wing and usually three lateral ridges, rarely with small wrinkles on the disk. Periostracum greenish, black or brown. Anterior margin broadly rounded while posterior margin obliquely truncate or rounded. Posterior ridge is low and rounded. Umbo is full with a deep cavity. Beak turned inwards towards the dorsal margin. Shallow muscle scars. Pseudocardinal teeth are large and thick. Lateral teeth are long and straight. Interdentum is wide. Nacre white with posterior iridescence, possibly with a pink or purple posterior tint.

Habitat: Slow- to fast-flowing large rivers and creeks or lentic habitats. Prefers sand or gravel but can be found in mud.

State element rank: N/A

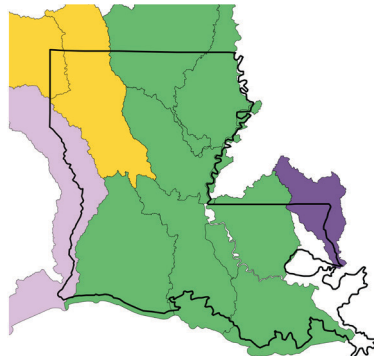
Federal listing status: N/A

Known host fishes:

- Drums: Freshwater drum/gaspergou (*Aplodinotus grunniens*)
- Gars: Shortnose gar (*Lepisosteus platostomus*)
- Minnows: Red shiner (*Cyprinella lutrensis*), blacktail shiner (*C. venusta*), steelcolor shiner (*C. whipplei*), emerald shiner (*Notropis atherinoides*)
- Mooneyes: Mooneye (*Hiodon tergisus*)
- Catfishes: Channel catfish (*Ictalurus punctatus*), flathead catfish (*Pylodictis olivaris*)
- Suckers: Northern hog sucker (*Hypentelium nigricans*)
- Perches: Logperch (*Percina caprodes*), sauger (*Sander canadensis*)

- Sunfishes: Green sunfish (*Lepomis cyanellus*), bluegill (*L. macrochirus*), longear sunfish (*L. megalotis*), largemouth bass (*Micropterus nigricans*), white crappie/sacalait (*Pomoxis annularis*), black crappie/sacalait (*P. nigromaculatus*)
- Temperate basses: White bass (*Morone chrysops*)

Similar species: Rock pocketbook (*Arcidens confragosus*) and washboard (*Megalania nervosa*). Rock pocketbook has insignificant lateral teeth and lacks an interdentum compared to threeridge which has long and straight lateral teeth, a wide interdentum and a thicker shell. Threeridge has more uniform lateral ridges, deeper valleys between the ridges, fewer wrinkles overall and a smooth umbo compared to the washboard which has many wrinkles or corrugations on the umbo.



Rock Pocketbook, *Arcidens confragosus*



LSUS 14431
10.0 cm (3.9 in)
Bayou Pierre, Red River Parish, Louisiana

Description: Maximum length of 15.3 cm (6 in). Not sexually dimorphic. Rhomboidal to oval outline and inflated. Shell with small folds and wrinkles, mostly on the posterior region. Possibly two rows of small wrinkles from the umbo to halfway through the ventral margin. Periostracum greenish-brown to brown. Juveniles possibly with green rays. Anterior margin rounded while posterior margin rounded or obliquely truncate. Posterior ridge is rounded. Umbo typically with a deep cavity. Beak turned inward toward the dorsal margin. Shallow muscle scars. Left valve contains two compressed pseudocardinal teeth. Right valve contains one compressed pseudocardinal. Lateral teeth are insignificant. Interdentum is absent. Nacre white with a dark rim.

Habitat: Slow- to moderate-flowing large rivers and creeks. Can be found in mud, sand or gravel.

State element rank: N/A

Federal listing status: N/A

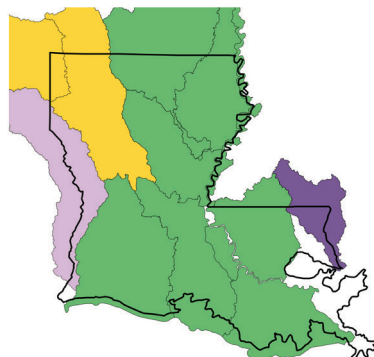
Known host fishes:

- Drums: Freshwater drum/gaspergou (*Aplodinotus grunniens*)
- Freshwater eels: American eel (*Anguilla rostrata*)
- Gizzard shads and sardinellas: Gizzard shad (*Dorosoma cepedianum*)
- Minnows: Striped shiner (*Luxilus chrysocephalus*), golden shiner (*Notemigonus crysoleucas*), creek chub (*Semotilus atromaculatus*)
- Minnows and carps: Common carp (*Cyprinus carpio*)*
- Catfishes: Channel catfish (*Ictalurus punctatus*)

- Perches: Walleye (*Sander vitreus*)*
- Suckers: River carpsucker (*Carpionodes carpio*), quillback (*C. cyprinus*), smallmouth buffalo (*Ictiobus bubalus*)
- Sunfishes: Green sunfish (*Lepomis cyanellus*), orangespotted sunfish (*L. humilis*)
- Topminnows and killifishes: Blackspotted topminnow (*Fundulus olivaceus*)

Similar species: May be confused with the threeridge (*Amblema plicata*), washboard (*Megaloniais nervosa*) or bankclimber (*Plectomerus dombeyanus*). See details for threeridge. Washboards have thick, heavy shells, with long and thick lateral teeth compared to the rock pocketbook which has insignificant lateral teeth. The posterior margin of bankclimber ends in a point while the posterior margin of the rock pocketbook is rounded. Bankclimber has purple nacre whereas the rock pocketbook has white nacre.

*Non-native species.



Butterfly, *Ellipsaria lineolata*



Left: ASUMZ 1224.2
Male, 6.6 cm (2.5 in)
Ouachita River, Ouachita County, Arkansas

Right: ASUMZ 1224.5
Female, 4.9 cm (1.92 in)

Description: Maximum length of 13 cm (5.1 in). Sexually dimorphic. Triangular outline. Males are compressed and larger in size while females are inflated and rounder in shape. Shell thick. Periostracum tan to yellow-green. Variable green to brown broken rays comprised of alternating light and dark markings. Anterior margin rounded while posterior margin curved up into a blunt point. Posterior ridge sharply curved. Umbo curved and compressed in males but inflated in females, cavity depth is variable. Well defined muscle scars. Pseudocardinal teeth are very large and triangular. Lateral teeth are variable. Interdentum is short and wide. Nacre white to cream.

Habitat: Moderate- to fast-flowing large rivers and creeks. Prefers sand or gravel but can be found in mud.

State element rank: S1 (critically imperiled)

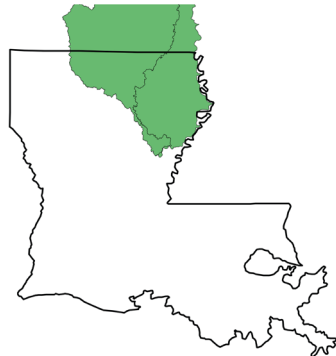
Federal listing status: N/A

Known host fishes:

- Drums: Freshwater drum/gaspergou (*Aplodinotus grunniens*)

- Sunfishes: Green sunfish (*Lepomis cyanellus*)
- Perches: Sauger (*Sander canadensis*)

Similar species: May be confused with the deertoe (*Truncilla truncata*). Deertoe has a shallow sulcus on the anterior side of the posterior ridge while butterfly does not. Deertoe has a short and narrow interdentum while butterfly has a short and wide interdentum.



Alabama Spike, *Elliptio arca*



Garret Hopper personal collection
6.0 cm (2.3 in)
Sipsey River, Greene County, Alabama

Description: Maximum length of 9 cm (3.5 in). Not sexually dimorphic. Elliptical to rhomboidal outline and inflated. Shell bulky. Periostracum dark green or yellow-brown. Juveniles are dull and rayed. Anterior margin rounded while posterior margin bluntly pointed with the apex in middle to lower half. Posterior ridge variable. Umbo slightly elevated and sub-compressed with a wide cavity. Deep muscle scars. Pseudocardinal teeth are low but variable. Lateral teeth are short and straight. Interdentum is long and narrow. Nacre purple, pink or white.

Note: Alabama spike (*Elliptio arca*) only occurs in the Florida parishes (Pearl River drainage).

Habitat: Slow- to fast-flowing large rivers and creeks. Prefers sand or gravel but can be found in mud or silt.

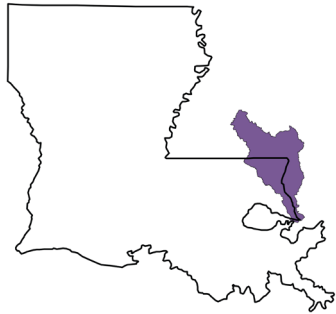
State element rank: S1 (critically imperiled)

Federal listing status: N/A

Known host fishes:

- Perches: Redspot darter (*Etheostoma artesiae*), blackbanded darter (*Percina nigrofasciata*).

Similar species: May be confused with the elephantear (*Elliptio crassidens*) or spike (*Euryntia dilatata*). The periostracum of elephantear is usually darker than periostracum of the Alabama spike. Elephantear has larger pseudocardinal teeth and a convex ventral margin while the Alabama spike has smaller pseudocardinal teeth and a straight to nearly straight ventral margin. Elephantear are typically larger than the Alabama spike. The spike and Alabama spike do not co-occur. Refer to the distribution map in each species account to differentiate the two.



Elephantear, *Elliptio crassidens*



Garrett Hopper personal collection
12.5 cm (4.9 in)
Bogue Chitto River, Washington Parish, Louisiana

Description: Maximum length of 15.4 cm (6.1 in). Not sexually dimorphic. Rhomboidal, oval or quadrate outline and moderately inflated. Shell bulky. Periostracum reddish, dark brown or black possibly with weak rays. Anterior margin broadly rounded while posterior margin obliquely truncate to bluntly pointed. Posterior ridge angular. Umbo broad and slightly elevated with a wide and shallow cavity. Small, deep muscle scars. Pseudocardinal teeth are large and triangular. Lateral teeth are thick. Interdentum is variable. Nacre is usually purple but possibly white, salmon or pink.

Habitat: Moderate- to fast-flowing rivers and creeks. Can be found in mud, sand or gravel.

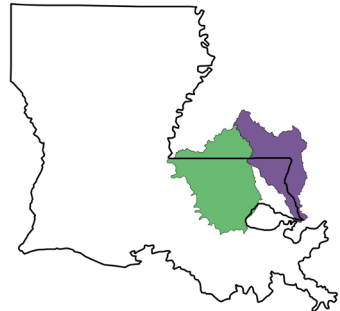
State element rank: S3 (vulnerable to extirpation)

Federal listing status: N/A

Known host fishes:

- Shads and sardines: Alabama shad (*Alosa alabamae*), skipjack herring (*A. chrysochloris*)

Similar species: May be confused with the Alabama spike (*Elliptio arca*). See species description for Alabama spike.



Spike, *Euryntia dilatata*



LSUS 27552

9.2 cm (3.6 in)

Bayou Bartholomew, Morehouse Parish, Louisiana

Description: Maximum length of 13.6 cm (5.4 in). Not sexually dimorphic. Elliptical outline and variably inflated. Shell usually thick. Periostracum tan, greenish-brown or brown possibly with rays. Older individuals usually darken to dark brown or black. Anterior margin curved or rounded while posterior margin bluntly pointed. Posterior ridge usually rounded but possibly angular. Umbo broad and slightly elevated with a wide and shallow cavity. Deep muscle scars. Pseudocardinal teeth are small, thick and triangular. Lateral teeth are long, thick and straight. Interdentum is variable. Nacre is usually purple but possibly white or salmon.

Note: Spike (*Euryntia dilatata*) only occurs in lower Red, Ouachita and Boeuf-Tensas watersheds (Figure 2).

Habitat: Moderate- to fast-flowing rivers and creeks. Can be found in mud, sand or gravel.

State element rank: S1 (critically imperiled)

Federal listing status: N/A

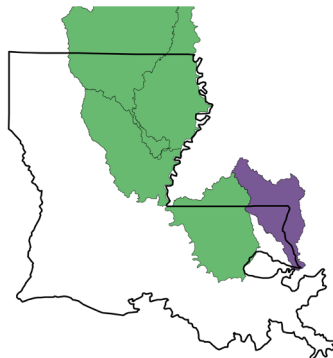
Known host fishes:

- Gars: Longnose gar (*Lepisosteus osseus*)
- Gizzard shads and sardinellas: Gizzard shad (*Dorosoma cepedianum*)
- Freshwater eels: American eel (*Anguilla rostrata*)
- Minnows: Golden shiner (*Notemigonus crysoleucas*)

- Catfishes: Flathead catfish (*Pylodictis olivaris*)
- Perches: Rainbow darter (*Etheostoma caeruleum*), logperch (*Percina caprodes*), blackside darter (*P. maculata*), river darter (*P. shumardi*), sauger (*Sander canadensis*), walleye (*S. vitreus*)*
- Sunfishes: Green sunfish (*Lepomis cyanellus*), bluegill (*L. macrochirus*), largemouth bass (*Micropterus nigricans*), black crappie/sacalait (*Pomoxis nigromaculatus*)
- Topminnows and killifishes: Blackspotted topminnow (*Fundulus olivaceus*).

Similar species: May be confused with the Alabama spike (*Elliptio arca*). See species description for Alabama spike.

*Non-native species.



Texas Pigtoe, *Fusconaia askewi*



LSUS 24632
3.8 cm (1.5 in)
Vernon Parish, Louisiana

Description: Maximum length of 6.3 cm 2.5 (in). riangular to rhomboidal outline. Periostracum brown. Anterior margin rounded while posterior margin obliquely truncate to bluntly pointed. Posterior ridge prominent and triangular. Umbo slightly elevated with a deep cavity. Impressed muscle scars. Pseudocardinal teeth are thick and triangular. Lateral teeth are short and thick. Interdentum is variable. Nacre white.

Habitat: Moderate- to fast-flowing rivers. Prefers sand or gravel but can be found in mud or silt.

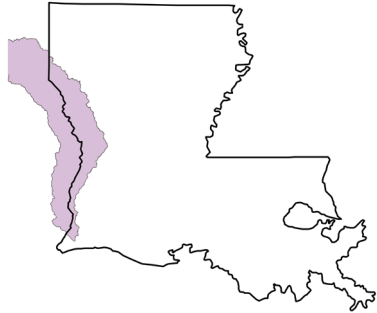
State element rank: S1 (critically imperiled)

Federal listing status: N/A

Known host fishes:

- Minnows: Red Shiner (*Cyprinella lutrensis*), Black-tail Shiner (*Cyprinella venusta*), Bullhead Minnow (*Pimephales vigilax*)

Similar species: May be confused with Wabash Pigtoe (*Fusconaia flava*), but the two species do not cooccur. Texas Pigtoe is restricted to the Sabine River drainage in Louisiana.



Gulf Pigtoe, *Fusconaia cerina*



Garrett Hopper personal collection
5.2 cm (2.0 in)
Bogue Chitto River, Washington Parish, Louisiana

Description: Maximum length of 8 cm (3.1 in). Not sexually dimorphic. Triangular to rhomboidal outline. Periostracum brown or black. Anterior margin rounded while posterior margin obliquely truncate to bluntly pointed. Posterior ridge prominent and angular. Umbo slightly elevated with a deep cavity. Impressed muscle scars. Pseudocardinal teeth are thick and triangular. Lateral teeth are short and thick. Interdentum is variable. Nacre white or pink.

Note: Specimens from small creeks are compressed and have thinner shells. Specimens from large rivers are inflated, have thicker shells with a more triangular outline, and have relatively fuller and higher umbos.

Habitat: Slow- to fast-flowing large rivers and creeks. Can be found in mud, sand or gravel.

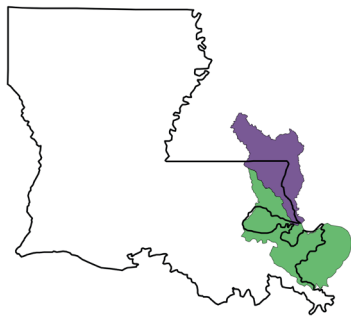
State element rank: N/A

Federal listing status: N/A

Known host fishes:

- Minnows: Blacktail shiner (*Cyprinella venusta*), clear chub (*Hybopsis winchelli*), striped shiner (*Luxilus chrysocephalus*), bluehead chub (*Nocomis biguttatus*), golden shiner (*Notemigonus crysoleucas*), emerald shiner (*Notropis atherinoides*), bluntnose minnow (*Pimephales notatus*)

Similar species: May be confused with the Wabash pigtoe (*Fusconaia flava*), Mississippi pigtoe (*Pleurobema beadleianum*), Louisiana pigtoe (*Pleurobema riddellii*) or ebonyshell (*Reginaia ebenus*). Wabash pigtoe and Gulf pigtoe do not co-occur. Refer to the distribution map in each species account to differentiate the two. Mississippi pigtoe lacks a sulcus and is round or elliptical while the Gulf pigtoe has a sulcus and is more triangular or quadrate. Louisiana pigtoe is more inflated and lacks a sulcus while Gulf pigtoe is comparatively less inflated and has a wide shallow sulcus. Ebonyshell has a low and rounded posterior ridge while the Gulf pigtoe has a prominent and angular posterior ridge.



Wabash Pigtoe, *Fusconaia flava*



LSUS 35650
6.0 cm (2.4 in)
Allen Parish, Louisiana

Description: Maximum length of 10.1 cm (4 in). Not sexually dimorphic. Triangular, quadrate, or oval outline. Inflation and shell thickness variable. Periostracum reddish or yellowish-brown, brown or black sometimes with faint rays. Anterior margin rounded while posterior margin bluntly pointed or rounded. Posterior ridge prominent, angular and ending at a blunt point. Umbo high and full with a deep cavity. Beak turned inwards towards the dorsal margin. Very deep muscle scars. Pseudocardinal teeth are triangular. Lateral teeth are variable. Interdentum is wide. Nacre white, possibly with a pink or salmon tint.

Note: Specimens from small creeks are compressed and have thinner shells. Specimens from large rivers are inflated, have thicker shells with a more triangular outline and have relatively fuller and higher umbos.

Habitat: Moderate- to fast-flowing rivers. Prefers sand or gravel but can be found in mud or silt.

State element rank: N/A

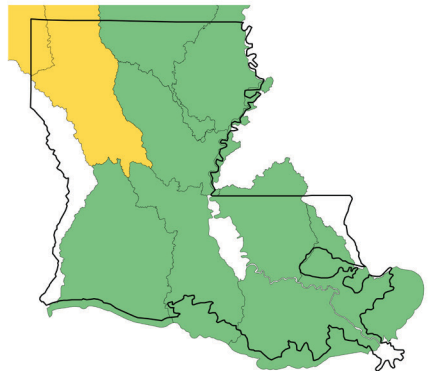
Federal listing status: N/A

Known host fishes:

- Minnows: Silver chub (*Macrhybopsis storeriana*), emerald shiner (*Notropis atherinoides*), creek chub (*Semotilus atromaculatus*)
- Minnows or carps: Goldfish (*Carassius auratus*)*

Similar species: May be confused with the Gulf pigtoe (*Fusconaia cerina*), ebonyshell (*Reginaia eburnus*) or Louisiana pigtoe (*Pleurobema riddellii*). See description for Gulf pigtoe. The posterior ridge of the ebonyshell is low and rounded compared to the Wabash pigtoe which is prominent, angular and ends at a blunt point. Louisiana pigtoe lacks the wide, shallow sulcus and is comparatively more inflated than Wabash pigtoe.

*Non-native species.



Round Pearlshell, *Glebula rotundata*



Garrett Hopper personal collection
7.8 cm (3.1 in)
Bayou Fountain, East Baton Rouge Parish, Louisiana

Description: Maximum length of 15 cm (5.9 in). Sexually dimorphic. Oval to round outline and inflated. Females with slight posterior swelling and slightly less elongate than males. Shell thick with a cloth-like texture. Periostacum dull and greenish-brown to dark brown. Older individuals usually darken to black. Anterior margin rounded while posterior margin rounded to obliquely truncate with the tip possibly pointing slightly towards the ventral margin. Posterior ridge rounded to angular. Umbo with a variable depth cavity. Beak slightly elevated in adults, but even with the hinge line in juveniles. Muscle scars large and deep. Left valve contains two small, serrate pseudocardinal teeth and two short, lateral teeth. Right valve contains two small, serrate pseudocardinal teeth and one short lateral. Interdendum is long and narrow. Nacre white, possibly with purple or pink tint.

Habitat: Slow- to moderate-flowing rivers and creeks or lentic habitats. Can be found in mud, sand or silt.

Note: The round pearlshell is unique in that it is somewhat tolerant to salinity and therefore can be found in brackish water, especially near the coast.

State element rank: S4 (apparently secure)

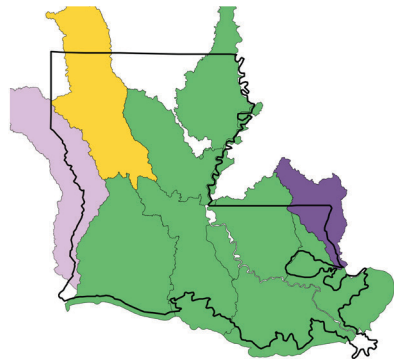
Federal listing status: N/A

Known host fishes:

- American soles: Hogchoker (*Trinectes maculatus*)
- Anchovies: Bay anchovy (*Anchoa mitchilli*)
- Gars: Spotted gar (*Lepisosteus oculatus*)
- Minnows and carps: Common carp (*Cyprinus carpio*)*
- Sunfishes: Green sunfish (*Lepomis cyanellus*), bluegill (*L. macrochirus*)
- Temperate basses: White bass (*Morone chrysops*)

Similar species: May be confused with any of the three *Obovaria* species (e.g., hickorynut) found in the Louisiana. Round pearlshell has teeth that are much smaller than any *Obovaria* species.

* Non-native species.



Pink Mucket, *Lampsilis abrupta*



UF 518794
6.0 cm (2.4 in)
Ashley County, Arkansas

Description: Maximum length of 12 cm (4.7 in). Sexually dimorphic. Outline for males usually oval while females usually oval to quadrate. Typically inflated and females expanded posteroventrally. Periostracum tan to brown possibly with faint rays. Juveniles may be light yellow. Anterior margin rounded while posterior margin rounded for males and slightly rounded to truncate for females. Posterior ridge rounded. Umbo high and full with a deep cavity. Impressed muscle scars. Pseudocardinal teeth are large and triangular. Lateral teeth are short and thick. Interdendum is short and wide. Nacre white, pink or salmon.

Habitat: Slow- to moderate-flowing rivers and creeks. Can be found in sand or gravel.

State element rank: S1 (critically imperiled)

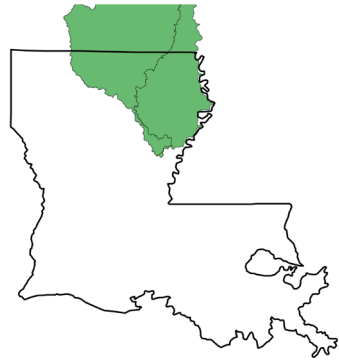
Federal listing status: Endangered

Known host fishes:

- Drums: Freshwater drum/gaspergou (*Aplodinotus grunniens*)
- Perches: Walleye (*Sander vitreus*)*
- Sunfishes: Spotted bass (*Micropterus punctulatus*), largemouth bass (*M. nigricans*)

Similar species: N/A

* Non-native species.



Plain Pocketbook, *Lampsilis cardium*



Left: ASUMZ 1896.4
Male, 10.0 cm (3.9 in)
Saline River, Ashley County, Arkansas

Right: ASUMZ 1896.5
Female, 8.8 cm (3.4 in)

Description: Maximum length of 15 cm (5.9 in). Sexually dimorphic. Oval to triangular outline and moderately inflated in males while greatly inflated in females. Shell shiny. Periostracum greenish-yellow, yellowish-brown or brown with green or black rays. Anterior margin curved while posterior margin bluntly pointed in males and rounded or truncate in females. Posterior ridge broadly rounded. Umbo high and full with a deep cavity. Shallow muscle scars. Pseudocardinal teeth are compressed. Lateral teeth are short. Interdentum is narrow or absent. Nacre white, possibly with a blue tint or pink.

Habitat: Slow- to fast-flowing rivers. Can be found in sand or gravel.

State element rank: S2 (impaired)

Federal listing status: N/A

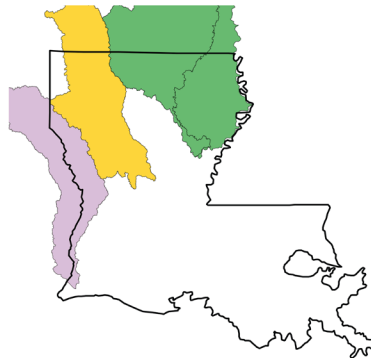
Known host fishes:

- Perches: Sauger (*Sander canadensis*), walleye (*S. vitreus*)*
- Sunfishes: Green sunfish (*Lepomis cyanellus*), bluegill (*L. macrochirus*), largemouth bass (*Micropterus nigricans*), white crappie/sacalait (*Pomoxis annularis*), black crappie/sacalait (*P. nigromaculatus*)

Note: The Eastern tiger salamander (*Ambystoma tigrinum*) has been identified as a host though this has not been specifically documented in Louisiana.

Similar species: May be confused with the Southern pocketbook (*Lampsilis ornata*). Southern pocketbook and plain pocketbook do not co-occur. Refer to the distribution map in each species account to differentiate the two.

* Non-native species.



Louisiana Fatmucket, *Lampsilis hydiana*



Left: ASUMZ 465.2253

Male, 7.7 cm (3.0 in)

Bayou de Loutre, Union Parish, Louisiana

Right: ASUMZ 465.2253

Female, 8.3 cm (3.2 in)

Description: Maximum length of 12.7 cm (5 in). Sexually dimorphic. Outline oval in males but almost quadrate in females. Shell shiny and inflated especially in females at the post basal region. Periostracum greenish, yellowish or orangish-yellow, almost always with green rays that extend onto the umbo. Anterior margin curved while posterior margin broadly pointed to obliquely truncate. Posterior ridge rounded. Umbo high with a deep cavity. Muscle scars impressed. Left valve contains two pseudocardinal teeth and two curved lateral teeth. Right valve contains two pseudocardinals and one curved lateral. Interdentum is narrow or absent. Nacre white.

Habitat: Slow- to moderate-flowing rivers and creeks. Prefers sand but can be found in mud.

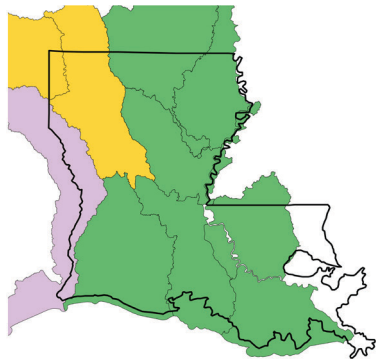
State element rank: N/A

Federal listing status: N/A

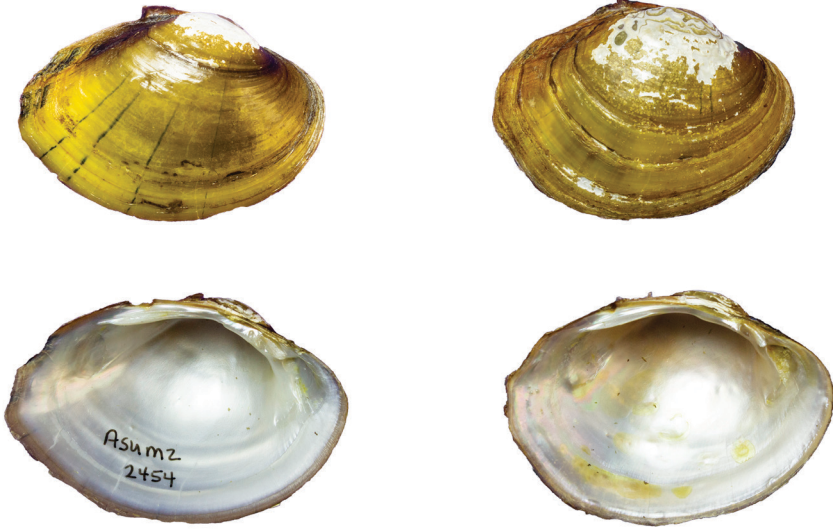
Known host fishes:

- Catfishes: Blue catfish (*Ictalurus furcatus*), channel catfish (*I. punctatus*)
- Sunfishes: Green sunfish (*Lepomis cyanellus*)

Similar species: May be confused with *Lampsilis straminea*. *Lampsilis hydiana* typically features rays extending onto the umbo and is relatively wider, whereas *L. straminea* does not feature rays and is compressed. *Lampsilis hydiana* is more widely distributed, occurring in the western part of the state, whereas *L. straminea* is found in the southeastern part of the state.



Southern Pocketbook, *Lampsilis ornata*



Left: ASUMZ 2454
Male, 6.7 cm (2.6 in)
Saline River, Saline County, Arkansas

Right: ASUMZ 518-2455
Female, 6.5 cm (2.5 in)

Description: Maximum length of 11.5 cm (4.5 in). Sexually dimorphic. Oval to triangular outline and inflated, females usually with greater posterior inflation. Shell smooth and shiny. Periostracum greenish-yellow or tan. Older individuals usually darken to brown. Anterior margin curved while posterior margin rounded to bluntly pointed, males tend to be more pointed. Posterior ridge usually prominent and angular but may be rounded. Umbo high and full with a deep cavity. Beak turned inwards towards the dorsal margin. Muscle scars shallow. Pseudocardinal teeth are compressed. Lateral teeth are short. Interdentum is long and narrow. Nacre white, possibly with a pink tint.

Habitat: Slow- to moderate-flowing large rivers and creeks. Can be found in sand or gravel.

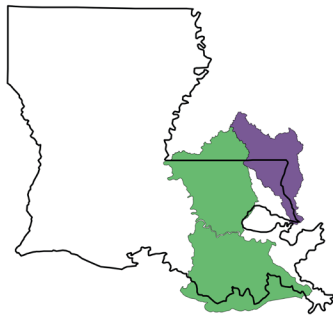
State element rank: S3 (vulnerable to extirpation)

Federal listing status: N/A

Known host fishes:

Sunfishes: Largemouth bass (*Micropterus nigricans*)

Similar species: May be confused with the plain pocketbook (*Lampsilis cardium*). See species description for *Lampsilis ornata*.



Sandbank Pocketbook, *Lampsilis satura*



LSUS 3037

8.0 cm (3.1 in)

Whisky Chitto Creek, Vernon/Beauregard Parish,
Louisiana

Description: Maximum length of 15 cm (5.9 in). Sexually dimorphic. Females are truncately swollen. Oval to triangular outline and inflated. Shell usually thick. Periostracum glossy black, greenish-brown or brown and possibly with green rays. Anterior margin bluntly pointed while posterior margin rounded or obliquely truncate. Posterior ridge rounded or angular. Umbo large with a deep cavity. Beak turned inwards towards the dorsal margin. Shallow muscle scars. Pseudocardinal teeth are thin and triangular. Lateral teeth are thin. Interdentum is long and narrow. Nacre white.

Habitat: Slow- to moderate-flowing rivers. Can be found in sand or gravel.

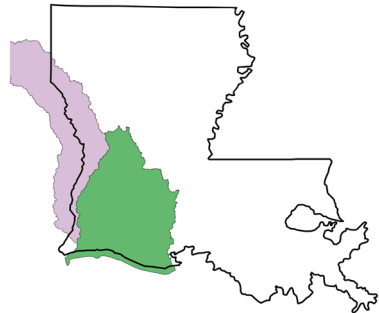
State element rank: S2 (imperiled)

Federal listing status: N/A

Known host fishes:

- Sunfishes: Bluegill (*Lepomis macrochirus*)

Similar species: N/A



Rough Fatmucket, *Lampsilis straminea*



Garrett Hopper personal collection
6.5 cm (2.5 in)
Bogue Chitto River, Washington Parish, Louisiana

Description: Maximum length of 10 cm (3.9 in). Sexually dimorphic. Elliptical to oval outline and inflated, females with greater inflation. Shell somewhat thick and shiny. Periostracum yellow, greenish-yellow or tan. Juveniles possibly with faint rays. Anterior margin curved or rounded while posterior margin rounded in males while wider and truncate in females. Posterior ridge low and round. Umbo slightly elevated with a variable depth cavity. Impressed muscle scars. Left valve contains two triangular pseudocardinal teeth and two long, thin lateral teeth. Right valve contains two triangular pseudocardinals and one long, thin lateral. Interdentum is long and narrow. Nacre white, possibly with a yellow or pink tint.

Note: The subspecies *L. straminea claibornensis* has raised growth lines.

Habitat: Slow- to moderate-flowing large rivers and creeks. Can be found in mud, sand or gravel.

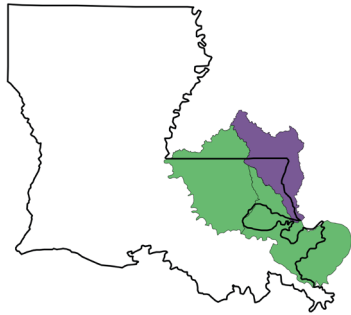
State element rank: N/A

Federal listing status: N/A

Known host fishes:

- Minnows: Weed shiner (*Alburnops texanus*), golden shiner (*Notemigonus crysoleucas*)
- Catfishes: Channel catfish (*Ictalurus punctatus*)
- Sunfishes: Bluegill (*Lepomis macrochirus*), largemouth bass (*Micropterus nigricans*)
- Poeciliids: Western mosquitofish (*Gambusia affinis*)

Similar species: May be confused with the yellow sandshell (*Lampsilis teres*). Yellow sandshell is more elongate and generally has a more pointed posterior margin compared to rough fatmucket.



Yellow Sandshell, *Lampsilis teres*



Left: ASUMZ 1991.3
Male, 10.0 cm (3.9 in)
Tensas River, Tensas Parish, Louisiana

Right: ASUMZ 1991.5
Female, 7.6 cm (2.9 in)

Description: Maximum length of 18.5 cm (7.3 in). Sexually dimorphic. Elliptical outline and inflated, females with greater posterior inflation. Shell thick. Periostracum shiny yellow, yellowish-brown or tan rarely with rays. Anterior margin curved. Posterior margin bluntly pointed in males while truncate to rounded in females. Posterior ridge low and rounded. Umbo broad with a wide shallow cavity. Large impressed muscle scars. Left valve contains two triangular pseudocardinal teeth and two long, thin lateral teeth. Right valve contains one or two triangular pseudocardinals and one long, thin lateral. Interdium is long and narrow. Nacre white, possibly with a pink or salmon tint in umbo cavity.

Habitat: Slow- to moderate-flowing large rivers. Can be found in mud, sand or gravel.

State element rank: N/A

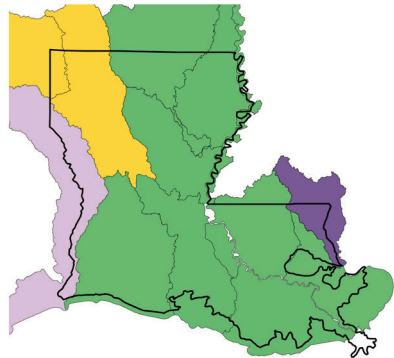
Federal listing status: N/A

Known host fishes:

- Gars: Alligator gar (*Atractosteus spatula*), long-nose gar (*Lepisosteus osseus*), shortnose gar (*L. platostomus*)
- Sturgeons: Shovelnose sturgeon (*Scaphirhynchus platyrhynchus*)
- Sunfishes: Bluegill (*Lepomis macrochirus*), redbreast sunfish (*L. auritus*)*

Similar species: May be confused with the rough fatmucket (*Lampsilis straminea*). See species description for rough fatmucket.

* Non-native species.



Little Spectaclecase, *Leunio lienosus*



Left: ASUMZ 652.3089
Male, 4.2 cm (1.6 in)
Ouachita River, Montgomery County, Arkansas

Right: ASUMZ 652.3090
Female, 4.4 cm (1.7 in)

Description: Maximum length of 7.5 cm (3 in). Sexually dimorphic. Oval to elliptical outline and inflated, females with greater posterior inflation. Shell somewhat thick. Periostacum tan to brown and somewhat dull. Older individuals may darken with age. Anterior margin curved, posterior margin in males bluntly pointed while in females broadly rounded to obliquely truncate. Posterior ridge rounded. Umbo slightly elevated with a shallow cavity. Small muscle scars. Pseudocardinal teeth are small. Lateral teeth are short. Interdentum is long and narrow. Nacre is usually purple, but possibly salmon, white or tan.

Habitat: Slow- to fast-flowing rivers and creeks. Can be found in mud, sand or gravel.

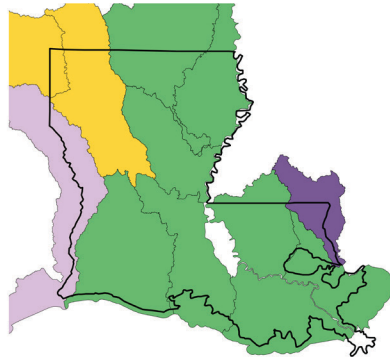
State element rank: N/A

Federal listing status: N/A

Known host fishes:

- Catfishes: Brown bullhead (*Ameiurus nebulosus*), channel catfish (*Ictalurus punctatus*)
- Sunfishes: Green sunfish (*Lepomis cyanellus*), orangespotted sunfish (*L. humilis*), bluegill (*L. macrochirus*), longear sunfish (*L. megalotis*), redear sunfish (*L. microlophus*), largemouth bass (*Micropterus nigricans*)

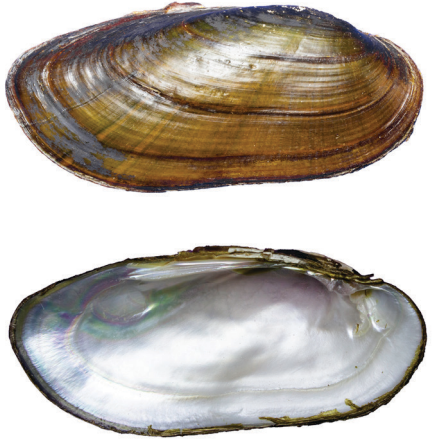
Similar species: May be confused with the Southern rainbow (*Villosa vibex*). Southern rainbow has thick, obvious rays, a thinner shell, pseudocardinal teeth and lateral teeth compared to the little spectaclecase.



Black Sandshell, *Ligumia recta*



Left: ASUMZ 1449.4
Male, 11.7 cm (4.6 in)
Ouachita River, Clark County, Arkansas



Right: ASUMZ 1449.3
Female, 12.6 cm (4.9 in)

Description: Maximum length of 19.5 cm (7.7 in). Sexually dimorphic. Elliptical outline and inflated, females with marsupial swelling. Periostracum dark green to brown, possibly with dark green rays. Older individuals usually darken to black with age. Anterior margin rounded and short. Posterior margin in males bluntly pointed while in females obliquely truncate. Posterior ridge low and round. Umbo full and slightly lowered with a broad shallow cavity. Shallow muscle scars. Pseudocardinal teeth are large and triangular. Lateral teeth are long. Interdentum is long and narrow. Nacre purple, pink or white possibly with purple in the umbo cavity.

Habitat: Moderate- to fast-flowing rivers and creeks or lakes. Can be found in sand or gravel.

State element rank: S1 (critically imperiled)

Federal listing status: N/A

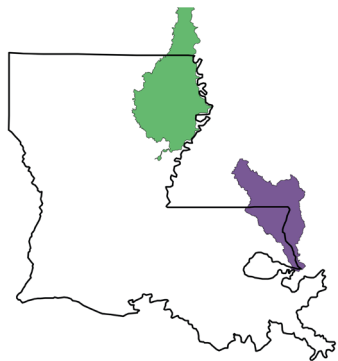
Known host fishes:

- Freshwater eels: American eel (*Anguilla rostrata*)
- Minnows: Central stoneroller (*Campostoma anomalum*), redbfin shiner (*Lythrurus umbratilis*)
- Perches: Sauger (*Sander canadensis*) and walleye (*S. vitreus*)*

- Sunfishes: Redbreast sunfish (*Lepomis auritus*), green sunfish (*L. cyanellus*), orangespotted sunfish (*L. humilis*), bluegill (*L. macrochirus*), longear sunfish (*L. megalotis*), largemouth bass (*Micropterus nigricans*), white crappie/sacalait (*Pomoxis annularis*), black crappie/sacalait (*P. nigromaculatus*)

Similar species: May be confused with the spike (*Euryntia dilatata*). See species description for spike.

* Non-native species.



Louisiana Pearlshell, *Margaritifera hembeli*



LSUS 29386
12.0 cm (4.7 in)
Rapides Parish, Louisiana

Description: Maximum length of 12.4 cm (4.9 in). Not sexually dimorphic. Oval to rhomboidal outline and compressed. Shell usually somewhat plicated with faint corrugated sculpturing on the posterior margin. Periostracum brown to black. Anterior margin rounded while posterior margin bluntly pointed. Posterior ridge low. Umbo moderately full with a shallow cavity. Impressed muscle scars. Pseudo-cardinal teeth are rough and low. Lateral teeth are weak. Interdentum is usually short. Nacre white or purple with a pitted surface.

Note: This species only occurs in Grant Parish and Rapides Parish.

Habitat: Slow- to moderate-flowing small creeks. Prefers sand but can be found in gravel.

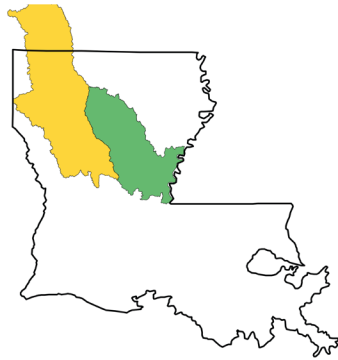
State element rank: S2 (imperiled)

Federal listing status: Threatened

Known host fishes:

- Minnows: Striped shiner (*Luxilus chrysocephalus*), redbfin shiner (*Lythrurus umbratilis*), golden shiner (*Notemigonus crysoleucas*)
- Pikes: Grass pickerel (*Esox americanus*)

Similar species: N/A



Washboard, *Megaloniais nervosa*



LSUS 35912

14 cm (5.5 in)

West Pearl River, St. Tammany Parish, Louisiana

Description: Maximum length of 28 cm (11 in). Not sexually dimorphic. Rhomboid, oval, or quadrate outline with variable inflation. Shell with small posterior dorsal wing, three to five large posterior ridges, small wrinkles spanning from posterior slope to dorsal margin, sometimes flat nodules near umbo, and possibly other variable wrinkles. Periostracum dark brown to black. Juveniles may be greenish-brown. Anterior margin rounded while posterior margin obliquely truncate to rounded. Posterior ridge low. Umbo broad and high with a deep cavity. Large muscle scars. Pseudocardinal teeth are very large and triangular. Lateral teeth are long and thick. Interdentum is variable. Nacre white, rarely pink.

Habitat: Slow- to fast-flowing rivers. Prefers sand or gravel but can be found in mud.

State element rank: N/A

Federal listing status: N/A

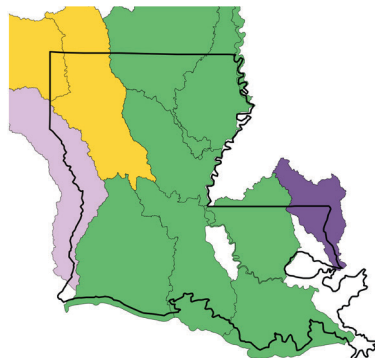
Known host fishes:

- Bowfins: Bowfin/choupique (*Amia calva*)
- Drums: Freshwater drum/gaspergou (*Aplodinotus grunniens*)
- Freshwater eels: American eel (*Anguilla rostrata*)
- Gars: Longnose gar (*Lepisosteus osseus*)
- Gizzard shads and sardinellas: Gizzard shad (*Dorosoma cepedianum*)
- Minnows: Central stoneroller (*Campostoma anomalum*), golden shiner (*Notemigonus crysoleucas*), bluntnose minnow (*Pimephales notatus*)
- Mooneyes: Goldeye (*Hiodon alosoides*)
- Catfishes: Black bullhead (*Ameiurus melas*), yellow bullhead (*A. natalis*), brown bullhead (*A. nebulosus*), channel catfish (*Ictalurus punctatus*), flathead catfish (*Pylodictis olivaris*)

- Perches: Logperch (*Percina caprodes*), sauger (*Sander canadensis*)*
- Shads and sardines: Skipjack herring (*Alosa chrysochloris*)
- Suckers: Highfin carpsucker (*Carpionodes velifer*)
- Sunfishes: Green sunfish (*Lepomis cyanellus*), bluegill (*L. macrochirus*), longear sunfish (*L. megalotis*), largemouth bass (*Micropterus nigricans*), white crappie/sacalait (*Pomoxis annularis*), black crappie/sacalait (*P. nigromaculatus*)
- Sturgeons: Shovelnose sturgeon (*Scaphirhynchus platyrhynchus*)
- Temperate basses: White bass (*Morone chrysops*)
- Topminnows and killifishes: Northern studfish (*Fundulus catenatus*)

Similar species: May be confused with the rock pocketbook (*Arcidens confragosus*), threeridge (*Amblema plicata*) or bankclimber (*Plectomerus dombeyanus*). See species descriptions for threeridge and rock pocketbook. The posterior ridge of bankclimber is well developed, high and angular compared to washboard which has a poorly developed and low posterior ridge. The posterior end of bankclimber ends in a point while the posterior end of the washboard does not.

* Non-native species.



Threehorn Wartyback, *Obliquaria reflexa*



LSUS 22403-4

5.0 cm (1.9 in)

Bayou Courtableau, St. Landry Parish, Louisiana

Description: Maximum length of 8 cm (3.1 in). Not sexually dimorphic. Triangular to oval outline and inflated. Shell with a central parallel row of three compressed knobs, though possibly between two and five, and variable small wrinkles spanning the posterior ridge, slope and sulcus to the dorsal margin. Periostracum yellowish-green, tan or brown possibly with thin rays or chevrons. Anterior margin rounded while posterior margin obliquely truncate to bluntly pointed. Posterior ridge angular or rounded. Umbo high and full with a variable cavity. Small muscle scars. Pseudocardinal teeth are thick and triangular. Lateral teeth are short and thick. Interdentum is short and wide. Nacre is usually white, but possibly pink or reddish.

Habitat: Slow- to fast-flowing large rivers. Can be found in mud, sand or gravel.

State element rank: N/A

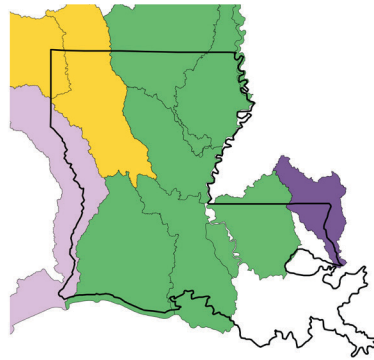
Federal listing status: N/A

Known host fishes:

- Drums: Freshwater drum/gaspergou (*Aplodinotus grunniens*)
- Gizzard shads and sardinellas: Gizzard shad (*Dorosoma cepedianum*)
- Minnows: Striped shiner (*Luxilus chrysocephalus*)
- Perches: Walleye (*Sander vitreus*)*
- Sunfishes: Largemouth bass (*Micropterus nigricans*)

Similar species: N/A

* Non-native species.



Southern Hickorynut, *Obovaria arkansasensis*



Left: ASUMZ 796.4533
Male, 3.2 cm (1.2 in)
Saline River, Ashley County, Arkansas

Right: ASUMZ 796.4535
Female, 3.0 cm (1.1 in)

Description: Maximum length of 5.5 cm (2.2 in). Sexually dimorphic. Round to oval outline and moderately inflated. Shell thick and smooth. Periostracum greenish-brown, orange-brown, brown or black possibly with green or black rays. Anterior margin rounded while posterior margin usually bluntly pointed in males and truncate in females. Posterior ridge low and rounded. Umbo broad and slightly elevated with a variable depth cavity. Small deep muscle scars. Pseudocardinal teeth are triangular. Lateral teeth are short and straight. Interdentum is variable. Nacre white, possibly with a blue tint.

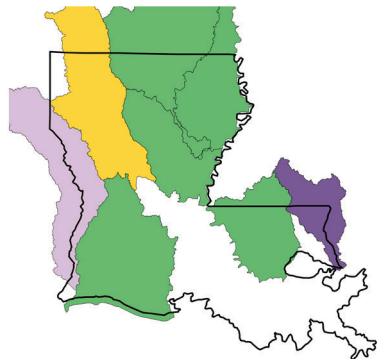
Habitat: Slow- to moderate-flowing rivers and creeks. Can be found in sand or gravel.

State element rank: S3 (vulnerable to extirpation)

Federal listing status: N/A

Known host fishes: N/A

Similar species: May be confused with the hickorynut (*Obovaria olivaria*) or Alabama hickorynut (*Obovaria unicolor*). Hickorynut has a more oval outline compared to the Southern hickorynut which has a more rounded outline. Alabama hickorynut can co-occur with Southern hickorynut and is more rounded and has a centered umbo compared to Southern hickorynut.



Hickorynut, *Obovaria olivaria*



MMNS 4533

3.0 cm (1.2 in)

Bayou Bartholomew, Morehouse Parish, Louisiana

Description: Maximum length of 10 cm (3.9 in). Sex is difficult to distinguish. Oval to round outline and inflated. Females slightly more inflated posteriorly. Shell thick. Periostracum greenish or yellowish-brown with horizontal green rays. Older individuals usually dark brown. Anterior margin broadly rounded while posterior margin broadly curved. Posterior ridge weak. Umbo full and high with a shallow cavity. Small muscle scars. Pseudocardinal teeth are large and triangular. Lateral teeth are long. Interdentum is short and wide. Nacre white, possibly with pink or cream in the umbo cavity.

Habitat: Slow- to fast-flowing large rivers. Can be found in sand or gravel.

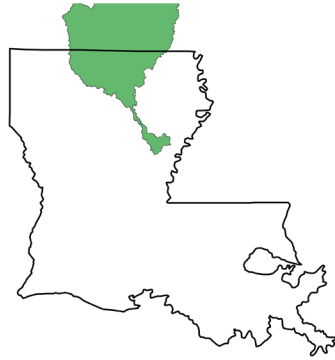
State element rank: S1 (critically imperiled)

Federal listing status: N/A

Known host fishes:

- Sturgeons: Shovelnose sturgeon (*Scaphirhynchus platyrhynchus*)

Similar species: May be confused with the Southern hickorynut (*Obovaria arkansasensis*) or Alabama hickorynut (*Obovaria unicolor*). See species descriptions for Southern hickorynut. Alabama hickorynut has a more rounded outline compared to hickorynut which is oval in comparison.



Alabama Hickorynut, *Obovaria unicolor*



LSUS 14847

3.5 cm (1.4 in)

West Fork Amite River, Amite County, Mississippi

Description: Maximum length of 7 cm (2.7 in). Sexually dimorphic. Round to oval outline and moderately inflated, females slightly more inflated at the posterior base. Shell thick, mostly smooth. Periostracum brown or yellowish-brown. Juveniles greenish and possibly slightly rayed. Older individuals usually dark brown. Anterior margin curved while posterior margin broadly rounded. Posterior ridge low and somewhat rounded. Umbo high and full with a deep cavity. Small muscle scars. Pseudocardinal teeth are triangular. Lateral teeth are short and straight. Interdendum is short. Nacre is usually pink, but possibly white or blue.

Habitat: Slow- to moderate-flowing rivers and creeks. Can be found in sand or gravel.

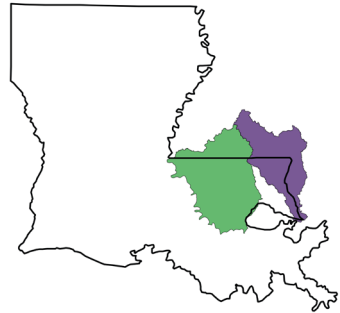
State element rank: S2 (impaired)

Federal listing status: N/A

Known host fishes:

- Perches: Naked sand darter (*Ammocrypta beanii*), redspot darter (*Etheostoma artesiae*), Gulf darter (*E. swaini*), blackbanded darter (*Percina nigrofasciata*), dusky darter (*P. sciera*)

Similar species: May be confused with the Southern hickorynut (*Obovaria arkansasensis*) or hickorynut (*Obovaria olivaria*). See species descriptions for Southern hickorynut and hickorynut.



Mucket, *Ortmanniana ligamentina*



ASUMZ 1993.6

7.4 cm (2.9 in)

Saline River, Ashley County, Arkansas

Description: Maximum length of 15.5 cm (6.1 in). Sexually dimorphic. Elliptical to oval outline and moderately inflated. Females slightly extended at the posterior base. Shell bulky. Periostracum yellowish-brown to brown often with somewhat dark rays. Anterior margin curved while posterior margin bluntly pointed. Posterior ridge low and rounded. Umbo slightly inflated with a shallow cavity. Impressed muscle scars. Pseudocardinal teeth are thick. Lateral teeth are long and thick. Interdentum is wide. Nacre white.

Habitat: Moderate- to fast-flowing creeks and large rivers. Prefers gravel but can be found in mud and sand.

State element rank: S1 (critically imperiled)

Federal listing status: N/A

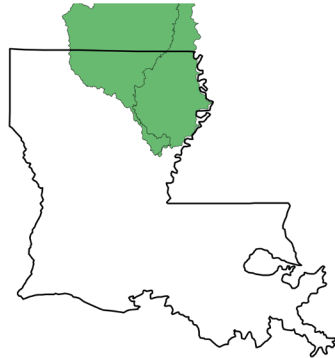
Known host fishes:

- Freshwater eels: American eel (*Anguilla rostrata*)
- Minnows: Central stoneroller (*Camptostoma anomalum*), creek chub (*Semotilus atromaculatus*)
- Sunfishes: Green sunfish (*Lepomis cyanellus*), orangespotted sunfish (*L. humilis*), largemouth bass (*Micropterus nigricans*), white crappie/sacalait (*Pomoxis annularis*), black crappie/sacalait (*P. nigromaculatus*)
- Catfishes: Tadpole madtom (*Noturus gyrinus*)
- Temperate basses: White bass (*Morone chrysops*)

- Perches: Sauger (*Sander canadensis*), walleye (*S. vitreus*)*
- Minnows or carps: Common carp (*Cyprinus carpio*)*

Similar species: N/A

* Non-native species.



Bankclimber, *Plectomerus dombeyanus*



LSUS 34247

11.0 cm (4.3 in)

Calcasieu River, Allen Parish, Louisiana

Description: Maximum length of 15 cm (5.9 in). Not sexually dimorphic. Rhomboidal to rectangular outline and moderately inflated. Shell very textured with parallel folds from posterior ridge to slope and angled folds from posterior ridge towards anterior margin. Periostacum brown to black. Anterior margin round while posterior margin obliquely truncate with a slight curve ending in a point. Posterior ridge high and angular. Umbo moderately full and slightly elevated with a deep cavity. Large muscle scars. Pseudocardinal teeth are thick and triangular. Lateral teeth are long and slightly curved. Interdentum is long and narrow. Nacre purple to red, possibly with a copper tint.

Habitat: Slow- to fast-flowing large rivers or lentic habitats. Can be found in mud, sand, silt or gravel.

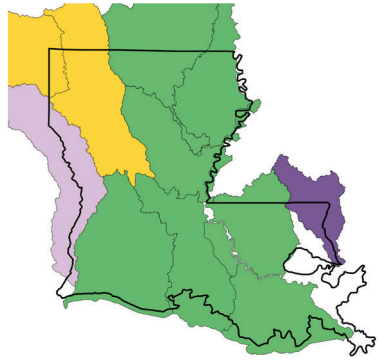
State element rank: N/A

Federal listing status: N/A

Known host fishes:

- Minnows: Red shiner (*Cyprinella lutrensis*), black-stripe topminnow (*Fundulus notatus*)

Similar species: May be confused with the rock pocketbook (*Arcidens confragosus*) or washboard (*Megaloniais nervosa*). See species descriptions for rock pocketbook and washboard.



Mississippi Pigtoe, *Pleurobema beadleanum*



LSUS 16101
6.0 cm (2.4 in)
Tangipahoa River, Tangipahoa Parish, Louisiana

Description: Maximum length of 5.4 cm (2.1 in). Not sexually dimorphic. Round, triangular, or rhomboidal outline and inflated. Shell thick. Periostracum reddish-brown to brown, possibly with black or green rays. Anterior margin rounded while posterior margin bluntly pointed to obliquely truncate. Posterior ridge prominent. Umbo full and high with a shallow cavity. Deep muscle scars. The left valve contains two triangular pseudocardinal teeth and two short straight lateral teeth. The right valve contains one large triangular pseudocardinal and one short straight lateral. Interdentum is wide. Nacre white, sometimes with a purple or salmon tint.

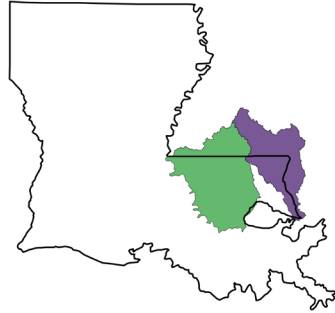
Habitat: Rivers. Can be found in sand or gravel.

State element rank: S2 (imperiled)

Federal listing status: N/A

Known host fishes: N/A

Similar species: May be confused with the Gulf pigtoe (*Fusconaia cerina*) or Louisiana pigtoe (*Pleurobema riddellii*). See species description for Gulf pigtoe. The shell of Louisiana pigtoe is more inflated with a deep umbo cavity while the shell of Mississippi pigtoe is more compressed with a shallow umbo cavity.



Louisiana Pigtoe, *Pleurobema riddellii*



MMNS 15702

3.0 cm (1.2 in)

Pearl River, Pearl River County, Mississippi

Description: Maximum length of 6.6 cm (2.6 in). Not sexually dimorphic. Triangular to quadrate outline and inflated. Shell thick. Periostracum reddish-brown, brown or black. Anterior margin rounded while posterior margin almost squarely truncate. Posterior ridge elevated and angular. Umbo high and full with a deep cavity. Small deep muscle scars. Pseudocardinal teeth are thick and triangular. Lateral teeth are short. Interdendum is short and wide. Nacre white with an iridescent posterior, possibly with a blue tint.

Habitat: Slow- to fast-flowing rivers. Can be found in sand or gravel.

State element rank: S3 (vulnerable to extirpation)

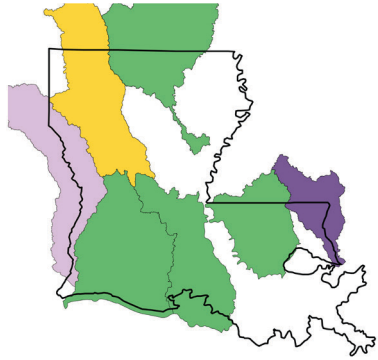
Federal listing status: N/A

Known host fishes:

- Minnows: Blacktail shiner (*Cyprinella venusta*)

Similar species: : May be confused with the Gulf pigtoe (*Fusconaia cerina*), Wabash pigtoe (*Fusconaia flava*) or Mississippi pigtoe (*Pleurobema beadleianum*).

See species descriptions for Gulf pigtoe, Wabash pigtoe and Mississippi pigtoe.



Round Pigtoe, *Pleurobema sintoxia*



LSUS 31840

7.0 cm (2.75 in)

Bayou Bartholomew, Morehouse Parish, Louisiana

Description: Maximum length of 10 cm (3.9 in). Not sexually dimorphic. Triangular outline and moderately inflated anteriorly but moderately compressed posteriorly. Shell thick. Periostracum is yellowish- to greenish-brown, brown or black. Juveniles with rays. Anterior margin slightly rounded to straight while posterior margin narrowly rounded. Posterior ridge low and rounded. Umbo slightly elevated with a variable depth cavity. Beak turned inwards towards the dorsal margin. Small deep muscle scars. Pseudocardinal teeth are large and triangular. Lateral teeth are long. Interdentum is wide. Nacre white or light pink.

Habitat: Slow- to fast-flowing rivers and creeks. Can be found in sand or gravel.

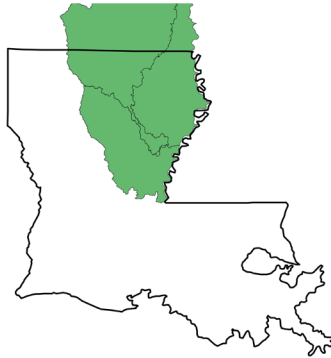
State element rank: S2 (imperiled)

Federal listing status: N/A

Known host fishes:

- Drums: Freshwater drum/gaspergou (*Aplodinotus grunniens*)
- Minnows: Central stoneroller (*Campostoma anomalum*), red shiner (*Cyprinella lutrensis*), blacktail shiner (*C. venusta*), bigeye shiner (*Notropis boops*), mimic shiner (*Paranotropis volucellus*), bluntnose minnow (*Pimephales notatus*), creek chub (*Semotilus atromaculatus*)
- Sunfishes: Bluegill (*Lepomis macrochirus*)

Similar species: May be confused with the ebonyshell (*Reginaia ebenus*), Gulf pigtoe (*Fusconaia cerina*) and Wabash pigtoe (*Fusconaia flava*). Ebonyshell has a deep umbo cavity and more massive hinge teeth while round pigtoe has a shallow umbo cavity and smaller hinge teeth. Gulf pigtoe and Wabash pigtoe both have a more pronounced posterior ridge compared to round pigtoe.



Texas Heelsplitter, *Potamilus amphichaenus*



UF 439483

9.5 cm (3.75 in)

Sabine River, DeSoto Parish, Louisiana

Description: Maximum length of 17.7 cm (7 in). Sexually dimorphic. Elliptical outline and slightly inflated. Shell glossy and thin with a small posterior dorsal wing that may be missing. Periostracum dark brown or black, possibly with rays. Anterior margin rounded while posterior margin bluntly pointed in males while broadly rounded in females. Posterior ridge rounded. Umbo broad with a shallow cavity. Very shallow muscle scars. Left valve contains one sharp pseudocardinal tooth and two short lateral teeth. Right valve contains one sharp pseudocardinal and one short lateral. Interdentum is long and narrow. Nacre purple or white, possibly with a blue tint.

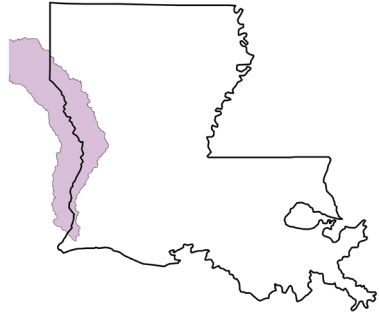
Habitat: Slow- to fast-flowing small rivers and creeks or lentic habitats. Can be found in mud or sand.

State element rank: S1 (critically imperiled)

Federal listing status: N/A

Known host fishes: N/A

Similar species: Texas heelsplitter could be confused with fragile papershell (*Potamilus fragilis*) and pink papershell (*P. ohioensis*), but Texas heelsplitter is more inflated and elongated than either of the latter.



Fat Pocketbook, *Potamilus capax*



MMNS 9502

Female, 10.0 cm (3.9 in)

Mississippi River, Warren County, Mississippi

Description: Maximum length of 12.9 cm (5.1 in). Sexually dimorphic. Oval to quadrate outline and exceptionally inflated. Females with greater inflation at the posterior base. Shell moderately thick, smooth, and shiny with the hinge line curved ventrally below the umbo. Periostracum greenish, yellowish, reddish or dark brown. Anterior and posterior margin widely rounded. Posterior ridge full and rounded. Umbo full, elevated and bluntly pointed with a very deep and wide cavity. Beak curved inwards towards the dorsal margin. Shallow muscle scars. Left valve contains one or two compressed pseudocardinal teeth and two small, distant lateral teeth. Right valve contains two compressed pseudocardinals and one high, thin lateral. Interdentum is narrow. Nacre pink, salmon or white, possibly with a blue or cream tint.

Habitat: Slow-flowing rivers and creeks. Can be found in mud, sand or silt.

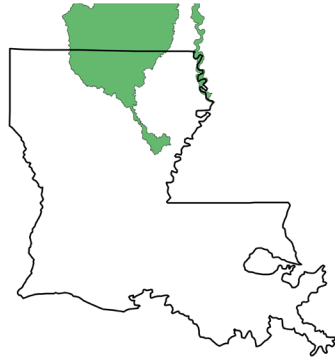
State element rank: S1 (critically imperiled)

Federal listing status: Endangered

Known host fishes:

- Drums: Freshwater drum/gaspergou (*Aplodinotus grunniens*)

Similar species: May be confused with plain pocketbook (*Lampsilis cardium*). Plain pocketbook are less inflated than the fat pocketbook. Plain pocketbook often has rays whereas fat pocketbook do not.



Fragile Papershell, *Potamilus fragilis*



Left: ASUMZ 1792.12
Male, 8.2 cm (3.2 in)
St. Francis River, Cross County Arkansas

Right: ASUMZ 1792.8
Female, 8.2 cm (3.2 in)

Description: Maximum length of 15.2 cm (6 in). Sexually dimorphic. Oval outline and slightly inflated. Females often with greater posterior inflation. Shell thin with a small posterior dorsal wing that may be missing. Periostracum greenish-yellow to tan, possibly with green rays. Anterior and posterior margin rounded, females often more broadly rounded than males. Posterior ridge rounded. Umbo high with a shallow cavity. Faint muscle scars. Pseudocardinal teeth are compressed. Lateral teeth are short, small and thin. Interdentum is narrow or absent. Nacre white or pink, possibly with pink in umbo cavity.

Note: Females may have marsupial swelling and a bluntly pointed posterior margin

Habitat: Slow-flowing rivers and creeks or lentic habitats. Can be found in mud, sand or gravel.

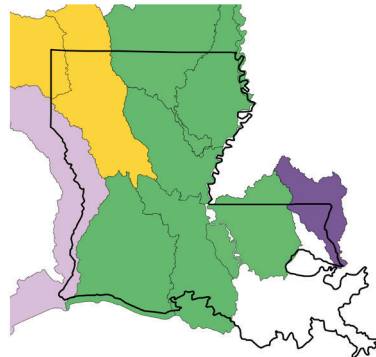
State element rank: N/A

Federal listing status: N/A

Known host fishes:

- Drums: Freshwater drum/gaspergou (*Aplodinotus grunniens*)

Similar species: May be confused with pink papershell (*Potamilus ohioensis*). Both species can have yellow periostracum as juveniles, but as they age fragile papershell usually retains the yellow color while pink papershell usually darkens to brown. The left valve of the fragile papershell contains two compressed pseudocardinal teeth while the left valve of the pink papershell contains one compressed pseudocardinal. May also be confused with Texas heelsplitter (*Potamilus amphichaenus*). See species account for Texas heelsplitter.



Inflated Heelsplitter, *Potamilus inflatus*



MMNS 4556

12 cm (4.8 in)

Amite River, East Baton Rouge Parish, Louisiana

Description: Maximum length of 16 cm (6.3 in). Sexually dimorphic. Triangular to rhomboidal outline and moderately inflated. Shell thin with a large, round, posterior dorsal wing and small, triangular, anterior dorsal wing that is usually missing. Size largest in mature males. Periostracum dark or greenish-brown, rarely with rays. Anterior margin narrowly rounded while posterior margin rounded to obliquely truncate that may be expanded in females. Posterior ridge low. Umbo low with a shallow cavity. Low muscle scars. Left valve contains one long, thin pseudocardinal tooth and two short, thin lateral teeth. Right valve contains one long, thin pseudocardinal and one short, thin lateral. Interdentum is long and narrow. Nacre purple in older males, bluish in young males and females.

Habitat: Slow-flowing rivers and creeks. Can be found in mud or sand.

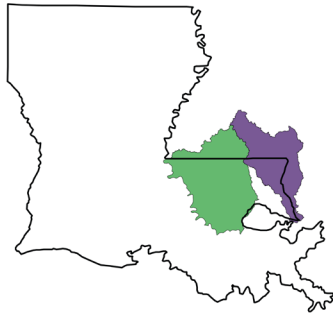
State element rank: S1 (critically imperiled)

Federal listing status: Threatened

Known host fishes:

- Drums: Freshwater drum/gaspergou (*Aplodinotus grunniens*)

Similar species: Can resemble fragile papershell (*Potamilus fragilis*), but the poster wing is typically larger and the anterior wing is well developed in inflated heelsplitter. Fragile papershell typically have yellow periostracum and have nacre that is more pink than purple.



Pink Papershell, *Potamilus ohiensis*



LSUS 27659

12.1 cm (4.8 in)

Atchafalaya River, St. Landry Parish, Louisiana

Description: Maximum length of 14 cm (5.5 in). Not sexually dimorphic. Triangular outline with wing, oval or elliptical without and subcompressed. Shell shiny and thin with a high, triangular, posterior dorsal wing and a small, triangular, anterior dorsal wing that are usually missing. Periostracum brown, greenish-brown or greenish-gray, rarely with faint rays. Older individuals may darken with age. Anterior and posterior margin rounded. Posterior ridge low or absent. Umbo weak with a wide shallow cavity, Shallow muscle scars. Left valve contains one compressed pseudocardinal tooth and two long lateral teeth. The right valve contains one compressed pseudocardinal and one long lateral. Interdentum is long and narrow. Nacre is usually pink or purple, possibly white, sometimes with a blue tint.

Habitat: Lentic habitats or slow-flowing rivers and creeks. Can be found in mud or sand.

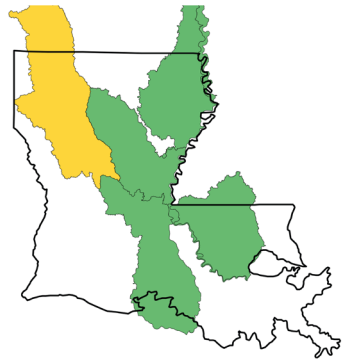
State element rank: N/A

Federal listing status: N/A

Known host fishes:

- Drums: Freshwater drum/gaspergou (*Aplodinotus grunniens*)
- Sunfishes: White crappie/sacalait (*Pomoxis annularis*)

Similar species: May be confused with fragile papershell (*Potamilus fragilis*). See the species description for fragile papershell.



Bleufer, *Potamilus purpuratus*



Left: ASUMZ 1450.2
Male, 7.9 cm, (3.1 in)
Tensas River, Madison Parish, Louisiana

Right: ASUMZ 1450.3
Female, 6.1 cm (2.4 in)

Description: Maximum length of 20.4 cm (8 in). Sexually dimorphic. Oval to triangular outline and inflated. Females with prominent marsupial swelling. Shell is shiny and moderately thick with two to three radial ridges on posterior slope and a low posterior dorsal wing that may be missing. Periostracum brown to black. Juveniles may have weak rays. Anterior margin rounded while posterior margin broad and bluntly pointed in males while truncate in females. Posterior ridge broadly rounded. Umbo high and full with a deep cavity. Large muscle scars. Pseudocardinal teeth are triangular and somewhat compressed. Lateral teeth are short and thick. Interdentum is long and narrow. Nacre a rich deep purple to pink, possibly with blue in the umbo cavity.

Habitat: Slow- to fast-flowing rivers and creeks. Can be found in sand or gravel.

State element rank: N/A

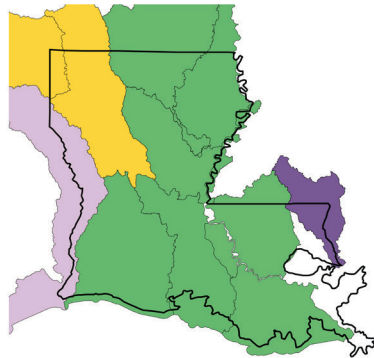
Federal listing status: N/A

Known host fishes:

- Drums: Freshwater drum/gaspergou (*Aploidinotus grunniens*)

- Minnows: Red shiner (*Cyprinella lutrensis*), golden shiner (*Notemigonus crysoleucas*)
- Sunfishes: Warmouth (*Lepomis gulosus*)

Similar species: Can be confused with other species of *Potamilus*. Bleufer typically have thicker shells and much darker purple nacre.



Southern Creekmussel, *Pseudodontoideus subvexus*



MMNS 5825
7.0 cm (2.75 in)
Yellow Creek, Lowndes County, Mississippi

Description: Maximum length of 11.1 cm (4.4 in). Not sexually dimorphic. Rhomboidal to oval outline and inflated. Shell thin. Periostracum greenish-brown or black with faint posterior rays. Anterior margin curved while posterior margin rounded or bluntly pointed. Posterior ridge prominent and angled to rounded. Umbo high and full with a shallow cavity. Beak turned inwards towards the dorsal margin. Muscle scars faint. Left and right valve each contain one rudimentary pseudocardinal tooth represented by swellings on the hinge line. Lateral teeth and interdentum are absent. Nacre white, possibly with a blue or yellow tint.

Habitat: Slow-flowing small rivers and creeks. Can be found in sand or gravel.

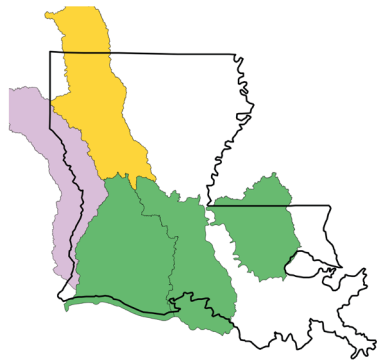
State element rank: S1 (critically imperiled)

Federal listing status: N/A

Known host fishes:

- Minnows: Creek chub (*Semotilus atromaculatus*)
- Perches: Blackbanded darter (*Percina nigrofasciata*)
- Sunfishes: Longear sunfish (*Lepomis megalotis*), largemouth bass (*Micropterus nigricans*)
- Topminnows and killifishes: Blackspotted topminnow (*Fundulus olivaceus*)

Similar species: May be confused with Pascagoula creekshell (*Strophitus pascagoulaensis*), rayed creekshell (*Strophitus radiatus*) or creeper (*Strophitus undulatus*). Southern creekmussel are nearly quadrate in outline with a broadly rounded, nearly square posterior end, compared to the three other species which all have elliptical to oval outlines.



White Heelsplitter, *Pterosyna complanata*



ASUMZ 728.3532

9.6 cm (3.8 in)

Little River, Sevier County, Arkansas

Description: Maximum length of 20 cm (7.9 in). Not sexually dimorphic. Triangular outline with wing but oval without and usually compressed. Shell usually moderately thick with a triangular posterior dorsal wing, possibly with small lateral wrinkles that may be missing. Periostacum dark greenish-brown, brown or black. Anterior margin curved while posterior margin obliquely truncate to rounded. Posterior ridge low and possibly doubled. Umbo broad with a shallow cavity. Large muscle scars. Pseudocardinal teeth are triangular. Lateral teeth are rudimentary. Interdentum is short and wide. Nacre white.

Habitat: Slow-flowing, large rivers and creeks. Can be found in mud, sand or gravel.

State element rank: S2 (imperiled)

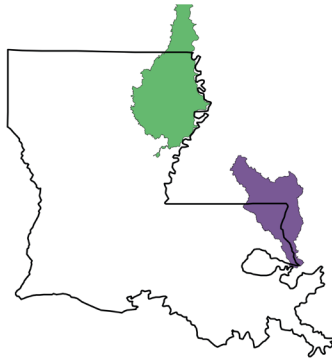
Federal listing status: N/A

Known host fishes:

- Minnows or carps: Common carp (*Cyprinus carpio*)*
- Sunfishes: Green sunfish (*Lepomis cyanellus*), orangespotted sunfish (*L. humilis*), longear sunfish (*L. megalotis*), largemouth bass (*Micropterus nigricans*), white crappie/sacalait (*Pomoxis annularis*), black crappie/sacalait (*P. nigromaculatus*)

Similar species: Can be similar to small washboard (*Megalania nervosa*), but washboard has a thicker shell, well developed lateral teeth and the corrugations on the shell are more extensive.

* Non-native species.



Ouachita Kidneyshell, *Ptychobranhus occidentalis*



LSUS 21608

7.0 cm (2.75 in)

Ouachita River, Montgomery County, Arkansas

Description: Maximum length of 10.6 cm (4.2 in). Sexually dimorphic. Oval to rhomboidal outline and compressed, males often rhomboidal. Females with a long and full marsupial swelling. Periostracum yellow, yellowish-green, tan or brown with rays that are most distinct on the posterior margin of the shell. Anterior margin curved while posterior margin bluntly but prominently pointed. Posterior ridge faint. Umbo slightly elevated with a somewhat shallow cavity. Impressed muscle scars. Left valve contains two pseudocardinal teeth and two lateral teeth, of which the interior is raised. Right valve contains two pseudocardinals and one lateral. Interdentum is long. Nacre white, possibly with a blue tint.

Habitat: Slow- to moderate-flowing creeks. Can be found in sand, silt or gravel.

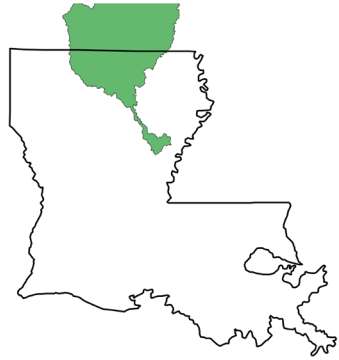
State element rank: S1 (critically imperiled)

Federal listing status: N/A

Known host fishes:

- Perches: Rainbow darter (*Etheostoma caeruleum*)

Similar species: Can look similar to spike (*Eurynia dilata*). Spike has darker periostracum and purple nacre.



Wartyback, *Pustulosa nodulata*



ASUMZ 1846.1
4.0 cm (1.5 in)
Mississippi River, Mississippi County, Arkansas

Description: Maximum length of 6.3 cm (2.5 in). Not sexually dimorphic. Subquadrate to oval outline and moderately inflated. Shell thick, usually with two vertical rows of large pustules spanning from the umbo to the ventral margin, possibly with other random pustules on disk. Periostracum tan, brown or yellowish-green. Anterior margin rounded while posterior margin truncated or rounded. Posterior ridge prominent and rounded. Umbo high and full with a deep compressed cavity. Beak turned inwards towards the dorsal margin. Anterior muscle scars small and deep. Pseudocardinal teeth are large and triangular. Lateral teeth are wide. Interdentum is short. Nacre white with posterior iridescence.

Habitat: Slow- to fast-flowing large rivers. Can be found in mud, sand or gravel.

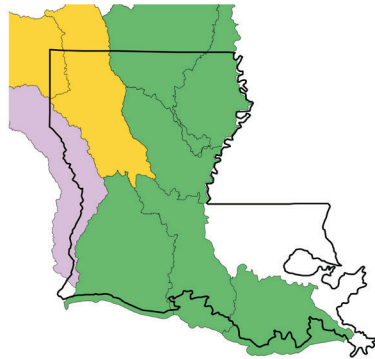
State element rank: N/A

Federal listing status: N/A

Known host fishes:

- Catfishes: Black bullhead (*Ameiurus melas*), brown bullhead (*A. nebulosus*), blue catfish (*Ictalurus furcatus*), channel catfish (*I. punctatus*), flathead catfish (*Pylodictis olivaris*)
- Sunfishes: Bluegill (*Lepomis macrochirus*), largemouth bass (*Micropterus nigricans*), white crappie/sacalait (*Pomoxis annularis*), black crappie/sacalait (*P. nigromaculatus*)

Similar species: May be confused with pimpleback (*Pustulosa pustulosa*). Wartyback has two rows of nodules on the disk compared to the pimpleback which has pustules spanning most of the disk.



Pimpleback, *Pustulosa pustulosa*



Left: ASUMZ 1251.2

5.0 cm (2 in)

Ouachita River, Morehouse Parish, Louisiana

Right: ASUMZ 1251.5

4.5 cm, (1.77 in)

Ouachita River, Morehouse Parish, Louisiana

Description: Maximum length of 8.2 cm (3.2 in). Not sexually dimorphic. Round to subquadrate and moderately inflated. Shell has variable amounts of pustules usually from posterior ridge to anterior margin, as well as on the posterior slope. Some forms may lack pustules entirely, but will retain the same outline, color, and other characteristics. Periostracum brown, reddish or yellowish-brown, typically with a broad broken dark green ray extending from the umbo; it can be black or dark brown in older individuals. Anterior and posterior margin rounded to obliquely truncate. Posterior ridge rounded and low. Umbo slightly inflated with a deep cavity. Impressed muscle scars. Pseudocardinal teeth are thick. Lateral teeth are short. Interdentum is wide. Nacre white with posterior iridescence. Some individuals, especially juveniles, may have purple nacre only past the pallial line forming an outer rim.

Habitat: Slow- to moderate-flowing large rivers and creeks. Prefers sand or gravel but can be found in mud.

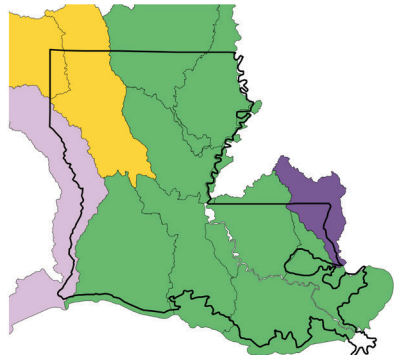
State element rank: N/A

Federal listing status: N/A

Known host fishes:

- Catfishes: Black bullhead (*Ameiurus melas*), brown bullhead (*A. nebulosus*), channel catfish (*Ictalurus punctatus*), flathead catfish (*Pylodictis olivaris*)
- Sturgeons: Shovelnose sturgeon (*Scaphirhynchus platyrhynchus*)
- Sunfishes: White crappie/sacalait (*Pomoxis annularis*)

Similar species: May be confused with the wartyback (*Pustulosa nodulata*). See species description for wartyback.



Giant Floater, *Pyganodon grandis*



ASUMZ 103, 420A-2
10.0 cm (3.9 in)
Oauchita River, Montgomery County, Arkansas

Description: Maximum length of 25.4 cm (10 in). Not sexually dimorphic. Oval, triangular or elliptical outline and inflated. Shell shiny and thin with a low posterior dorsal wing that is usually missing. Periostracum greenish-brown, tan or black, possibly with three faint but dark rays. Anterior margin rounded while posterior margin bluntly pointed. Posterior ridge rounded. Umbo full and high with a deep cavity. Very faint muscle scars. Pseudocardinal teeth, lateral teeth and interdentum are absent. Nacre white, sometimes with a blue or yellow tint.

Habitat: Lentic habitats or slow-flowing rivers. Can be found in mud or sand.

State element rank: N/A

Federal listing status: N/A

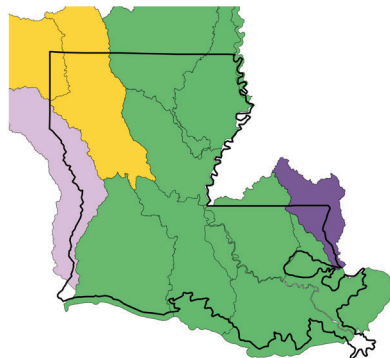
Known host fishes:

- Cichlids: Rio Grande cichlid (*Herichthys cyanoguttatus*)*
- Drums: Freshwater drum/gaspergou (*Aplodinotus grunniens*)
- Gars: Longnose gar (*Lepisosteus osseus*)
- Gizzard shads and sardinellas: Gizzard shad (*Dorosoma cepedianum*)
- Minnows: Central stoneroller (*Campostoma anomalum*), striped shiner (*Luxilus chrysocephalus*), redbfin shiner (*Lythrurus umbratilis*), golden shiner (*Notemigonus crysoleucas*), bluntnose minnow (*Pimephales notatus*), creek chub (*Semotilus atromaculatus*)
- Minnows or carps: Goldfish (*Carassius auratus*)*, common carp (*Cyprinus carpio*)*
- Neotropical silversides: Brook silverside (*Labidesthes sicculus*)
- Catfishes: Yellow bullhead (*Ameiurus natalis*)

- Shads and sardines: Skipjack herring (*Alosa chrysochloris*)
- Suckers: River carpsucker (*Carpodius carpio*)
- Sunfishes: Green sunfish (*Lepomis cyanellus*), orangespotted sunfish (*L. humilis*), bluegill (*L. macrochirus*), longear sunfish (*L. megalotis*), largemouth bass (*Micropterus nigricans*), white crappie/sacalait (*Pomoxis annularis*), black crappie/sacalait (*P. nigromaculatus*)
- Perches: Rainbow darter (*Etheostoma caeruleum*)
- Temperate basses: White bass (*Morone chrysops*)
- Topminnows and killifishes: Golden topminnow (*Fundulus chrysotus*)

Similar species: May be confused with flat floater (*Utterbackiana suborbiculata*) and cypress floater (*U. hartfieldorum*). Both of those species are more round than elliptical and have a very broadly rounded ventral margin compared to the relatively strait ventral margin of giant floater. May also be confused with paper pondshell (*U. imbecillis*) which has an umbo even with or below the hingeline, but the umbo of giant floater extends well above the hingeline.

*Non-native species.



Gulf Mapleleaf, *Quadrula nobilis*



LSUS reference collection
8.5 cm (3.3 in)

Description: Maximum length of 13 cm (5.1 in). Not sexually dimorphic. Rhomboidal to quadrate outline and moderately inflated. Shell somewhat thick with small pustules either sparsely covering the surface or covering much of the surface. Two rows of pustules usually extend from the umbo to the ventral margin of the shell on either side of the sulcus and anterior to the posterior ridge. These rows may be complete or present only near the umbo. Periostracum usually dark brown, but possibly reddish-brown or black. Anterior margin rounded while posterior margin obliquely truncate (beveled). Posterior ridge prominent. Umbo slightly elevated with a deep cavity. Somewhat deep muscle scars. Pseudocardinal teeth are large and triangular. Lateral teeth are thick. Interdium is short and wide. Nacre white with posterior iridescence.

Habitat: Slow- to fast-flowing large rivers. Can be found in mud, sand or gravel.

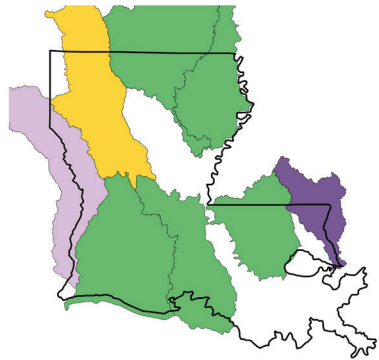
State element rank: N/A

Federal listing status: N/A

Known host fishes:

- Catfishes: Channel catfish (*Ictalurus punctatus*), flathead catfish (*Pylodictis olivaris*)

Similar species: May be confused with the mapleleaf (*Quadrula quadrula*). Gulf mapleleaf have paired tubercles on either side of the sulcus, and the anterior tubercles are shelf-like. Gulf mapleleaf have a beveled posterior margin compared to the rounded posterior margin of mapleleaf.



Mapleleaf, *Quadrula quadrula*



Left: Beau Gregory personal collection
6.2 cm (2.4 in)
Calcasieu River, Allen Parish, Louisiana



Right: Garrett Hopper personal collection
7.3 cm (2.8 in), alternate form previously known as
Quadrula apiculata
Bayou Fountain, East Baton Rouge Parish, Louisiana

Description: Maximum length of 14 cm (5.5 in). Not sexually dimorphic. Quadrate to triangular outline and moderately inflated. Shell thick with variable small pustules extending from ventral margin to posterior and medial ridge on both sides of sulcus. Sculpturing is highly variable. Some populations may have variable pustules on the disk including the sulcus (see right picture specimen). Periostracum greenish-yellow, reddish-brown or brown. Juveniles may have weak green rays. Anterior margin rounded while posterior margin obliquely truncate. Posterior ridge narrow and prominent. Umbo high and full with a deep cavity. Small and somewhat deep muscle scars. Pseudocardinal teeth are thick and triangular. Lateral teeth are long, thick and slightly curved. Interdentum is short. Nacre white.

Habitat: Slow- to fast-flowing rivers. Can be found in mud, sand or gravel.

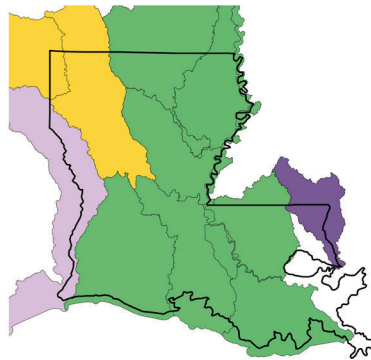
State element rank: N/A

Federal listing status: N/A

Known host fishes:

- Catfishes: Yellow bullhead (*Ameiurus natalis*), channel catfish (*Ictalurus punctatus*), flathead catfish (*Pylodictis olivaris*)

Similar species: May be confused with the Gulf mapleleaf (*Quadrula nobilis*). See species description for Gulf mapleleaf.



Pistolgrip, *Quadrula verrucosa*



Left: ASUMZ 976, 5685
Male, 7.0 cm (2.75 in)
Saline River, Ashley County, Arkansas

Right: ASUMZ 976, 5682
Female, 6.1cm (2.4 in)

Description: Maximum length of 16.2 cm (6.4 in). Sexually dimorphic. Elliptical to rhomboidal outline and compressed. Females with greater compression. Shell thick with parallel folds spanning from the posterior ridge to the posterior slope. Variable pustules and small wrinkles span the disk. Periostracum greenish or yellowish-brown, brown or black. Anterior margin rounded while posterior margin is rounded or obliquely truncate in males and rounded or bluntly pointed with flattened expansion in females. Posterior ridge prominent with irregular pustules. Umbo slightly elevated with a deep cavity. Impressed muscle scars. Pseudocardinal teeth are thick and triangular. Lateral teeth are long. Interdendum is long. Nacre is usually white, rarely purple.

Habitat: Slow- to fast-flowing rivers and creeks. Can be found in sand or gravel.

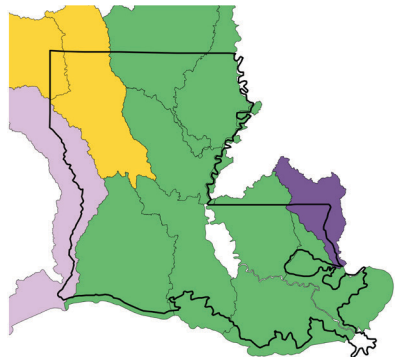
State element rank: N/A

Federal listing status: N/A

Known host fishes:

- Catfishes: Yellow bullhead (*Ameiurus natalis*), brown bullhead (*A. nebulosus*), channel catfish (*Ictalurus punctatus*) and flathead catfish (*Pylodictis olivaris*)

Similar species: N/A



Ebonyshell, *Reginaia eburnus*



ASUMZ 1978.1

5.2 cm (2.0 in)

Ouachita River, Catahoula Parish, Louisiana

Description: Maximum length of 11 cm (4.3 in). Not sexually dimorphic. Round, triangular or quadrate outline and inflated. Shell thick. Periostracum tawny, reddish-brown or black. Juveniles may have yellowish-green coloration on the umbo. Anterior and posterior margin rounded. Posterior ridge low and round. Umbo is high and full with a deep and compressed cavity. Beak turned inwards towards the anterior margin. Muscle scars deep. Pseudocardinal teeth are large and triangular, of which the dorsal tooth is aligned parallel to the lateral teeth. Lateral teeth are thick and long. Interdendum is short and wide. Nacre white.

Habitat: Moderate- to fast-flowing large rivers. Prefers sand or gravel but can be found in silt.

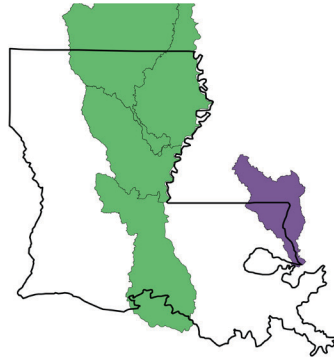
State element rank: S3 (vulnerable to extirpation)

Federal listing status: N/A

Known host fishes:

- Gizzard shad and sardinellas: Gizzard shad (*Dorosoma cepedianum*)
- Mooneyes: Goldeye (*Hiodon alosoides*)
- Shads and sardines: Skipjack herring (*Alosa chrysochloris*)
- Sunfishes: Largemouth bass (*Micropterus nigricans*), white crappie/sacalait (*Pomoxis annularis*), black crappie/sacalait (*P. nigromaculatus*)

Similar species: May be confused with the Gulf pigtoe (*Fusconaia cerina*), Wabash pigtoe (*Fusconaia flava*) or round pigtoe (*Pleurobema sintoxia*). See species account for Gulf pigtoe, Wabash pigtoe and round pigtoe.



Pondmussel, *Sagittunio subrostratus*



Left: ASUMZ 1323.2
Male, 8.7 cm (3.4 in)
East Flat Fork Creek, Woodruff County, Arkansas

Right: ASUMZ 1323.3
Female, 8.4 cm (3.3 in)

Description: Maximum length of 9 cm (3.5 in). Sexually dimorphic. Elliptical outline and somewhat inflated. Females with rounded marsupial swelling. Shell somewhat thin. Periostracum yellowish-green, yellowish-brown, brown or black with green or black rays. Anterior margin curved while posterior margin bluntly pointed in males and obliquely truncate in females. Posterior ridge prominent and rounded. Umbo broad with a shallow cavity. Shallow muscle scars. Pseudocardinal teeth are compressed. Lateral teeth are thin and straight. Interdentum is long and narrow. Nacre white, possibly with a blue tint.

Habitat: Lentic habitats or slow-flowing rivers and creeks. Can be found in mud or sand.

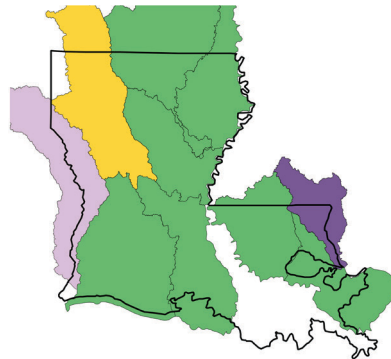
State element rank: N/A

Federal listing status: N/A

Known host fishes:

- Bowfins: Bowfin/choupique (*Amia calva*)
- Catfishes: Tadpole madtom (*Noturus gyrinus*)
- Suckers: Bigmouth buffalo (*Ictiobus cyprinellus*)
- Sunfishes: Green sunfish (*Lepomis cyanellus*), warmouth (*L. gulosus*), orangespotted sunfish (*L. humilis*), bluegill (*L. macrochirus*), largemouth bass (*Micropterus nigricans*), black crappie/sacalait (*Pomoxis nigromaculatus*)

Similar species: May be confused with the Southern creekmussel (*Pseudodontoideus subvexus*), Pascagoula creekshell (*Strophitus pascagoulaensis*) or rayed creekshell (*Strophitus radiatus*). Pondmussel is more elliptical, has a small posterior wing, and the terminus of the posterior ridge extends into a blunted point, whereas the other three species are more rounded, the posterior ridges do not have the blunted extension. Pondmussel has two pseudocardinal teeth in the left valve and lateral teeth, the other three species have one pseudocardinal in the left valve and lack lateral teeth.



Pascagoula Creekshell, *Strophitus pascagoulaensis*



MMNS 15257
5.7 cm (2.2 in)
Big Black River, Montgomery County, Mississippi

Description: Maximum length of 5.8 cm (2.3 in). Not sexually dimorphic. Elliptical to oval outline and moderately inflated. Shell thin. Periostracum yellowish, greenish, or brown with dark rays. Older individuals may darken with age causing decreased visibility of rays. Anterior margin curved while posterior margin narrowly rounded or bluntly pointed. Posterior ridge broadly rounded. Umbo slightly elevated with a wide, shallow cavity. Faint muscle scars. Left and right valve each contain one rudimentary pseudocardinal tooth represented by swellings on the hinge line. Lateral teeth and interdentum are absent. Nacre white, possibly with a blue tint.

Habitat: Small rivers and creeks. Can be found in sand or gravel.

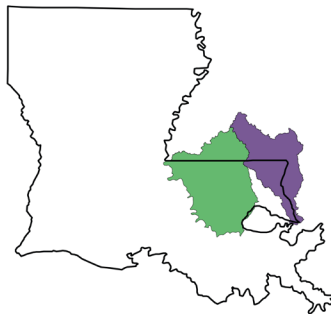
Note: Endemic to the Pascagoula, Pearl and Lake Pontchartrain drainages.

State element rank: S2 (imperiled)

Federal listing status: N/A

Known host fishes: N/A

Similar species: May be confused with the Southern creekmussel (*Pseudodontoideus subvexus*), pond-mussel (*Sagittunio subrostratus*) or rayed creekshell (*Strophitus radiatus*). See species description for Southern creekmussel and pondmussel. The valves of living specimens of rayed creekshell, Southern creekshell and Pascagoula creekshell can be gently wiggled due to the lack of lateral teeth. Rayed creekshell and Southern creekmussel do not co-occur.



Rayed Creekshell, *Strophitus radiatus*



MMNS 4722

8.0 cm (3.2 in)

Howard's Creek, Rankin County, Mississippi

Description: Maximum length of 8.4 cm (3.3 in). Not sexually dimorphic. Elliptical to oval outline and moderately inflated. Shell thin. Periostracum brown or yellowish to greenish-brown with dark green rays. Anterior margin rounded while posterior margin bluntly pointed. Posterior ridge broadly rounded. Umbo slightly elevated with a shallow cavity. Shallow muscle scars. Left and right valves contain one small pseudocardinal tooth appearing as small, thin swellings on the hinge line. Lateral teeth and interdentum are absent. Nacre white, possibly with a blue or yellow tint.

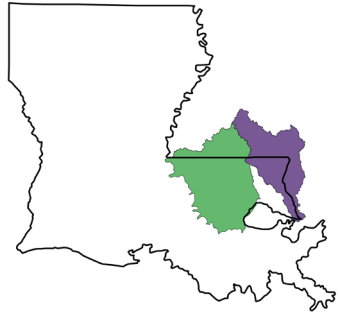
Habitat: Slow- to moderate-flowing rivers and creeks. Prefers sand or gravel but can be found in mud.

State element rank: S2 (imperiled)

Federal listing status: N/A

Known host fishes: N/A

Similar species: May be confused with the Southern creekmussel (*Pseudodontoideus subvexus*), pondmussel (*Sagittunio subrostratus*) or Pascagoula creekshell (*Strophitus pascagoulaensis*). See species descriptions for Southern creekmussel, pondmussel and Pascagoula creekshell.



Creeper, *Strophitus undulatus*



LSUS 26607

8.9 cm (3.5 in)

Calcasieu River, Allen Parish, Louisiana

Description: Maximum length of 14.9 cm (5.9 in). Not sexually dimorphic. Rhomboidal to oval outline with variable inflation. Periostracum greenish-brown, brown or black possibly with rays. Anterior margin curved while posterior margin bluntly pointed or truncated. Posterior ridge prominent. Umbo slightly elevated with a cavity of variable depth. Beak turned inwards towards the dorsal margin. Faint muscle scars. Pseudocardinal teeth are rudimentary and represented by a thickened hinge line. Lateral teeth and interdentum are absent. Nacre white, possibly with a blue or yellow tint, often with yellow or salmon in the umbo cavity.

Habitat: Slow-flowing rivers and creeks or lentic habitats. Can be found in mud, sand or gravel.

State element rank: S2 (impaired)

Federal listing status: N/A

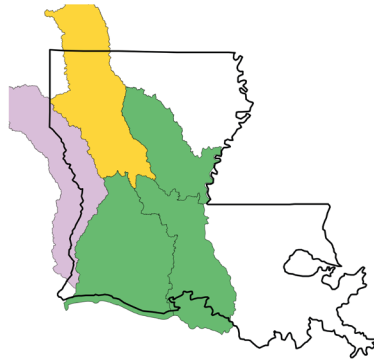
Known host fishes:

- Minnows: Central stoneroller (*Campostoma anomalum*), golden shiner (*Notemigonus crysoleucas*), bluntnose minnow (*Pimephales notatus*), fathead minnow (*P. promelas*), creek chub (*Semotilus atromaculatus*)
- Catfishes: Black bullhead (*Ameiurus melas*), yellow bullhead (*A. natalis*), brown bullhead (*A. nebulosus*), channel catfish (*Ictalurus punctatus*), flathead catfish (*Pylodictis olivaris*)
- Perches: Rainbow darter (*Etheostoma caeruleum*), logperch (*Percina caprodes*), blackside darter (*P. maculata*), walleye (*Sander vitreus*)*
- Salmonids: Rainbow trout (*Oncorhynchus mykiss*)*
- Sturgeons: Atlantic sturgeon (*Acipenser oxyrinchus*)

- Sunfishes: Green sunfish (*Lepomis cyanellus*), bluegill (*L. macrochirus*), longear sunfish (*L. megalotis*), largemouth bass (*Micropterus nigricans*), white crappie/sacalait (*Pomoxis annularis*), black crappie/sacalait (*P. nigromaculatus*)
- **Note:** The Eastern newt (*Notophthalmus viridescens*) has been identified as a host though this has not been specifically documented in Louisiana.

Similar species: May be confused with giant floater (*Pyganodon grandis*). See description of that species.

* Non-native species.



Rabbitsfoot, *Theliderma cylindrica*



MMNS 4524

10.0 cm (3.9 in)

Bartholomew Bayou, Morehouse Parish, Louisiana

Description: Maximum length of 12.3 cm (4.8 in). Not sexually dimorphic. Elliptical to rectangular outline and moderately inflated. Juveniles may be somewhat compressed. Shell smooth and thick with parallel folds on the posterior slope, large knobs along the posterior ridge and pustules spanning the surface. Periostracum yellowish-green, tan or brown with dark green chevrons, radial stripes and triangles. Anterior margin rounded while posterior margin truncate. Posterior ridge rounded. Umbo full and high with a deep cavity. Impressed muscle scars. Pseudocardinal teeth are thick. Lateral teeth are long and slightly curved. Interdendum is long and narrow. Nacre white.

Habitat: Slow- to fast-flowing rivers. Prefers gravel but can be found in mud or sand.

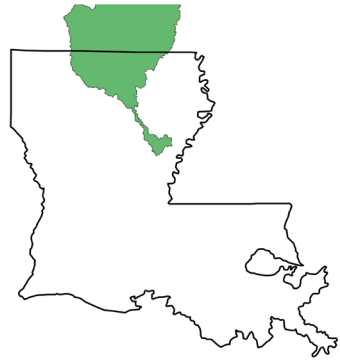
State element rank: S1 (critically imperiled)

Federal listing status: N/A

Known host fishes:

- Minnows: Red shiner (*Cyprinella lutrensis*), black-tail shiner (*C. venusta*), blackstripe topminnow (*Fundulus notatus*), striped shiner (*Luxilus chrysocephalus*), emerald shiner (*Notropis atherinoides*), bullhead minnow (*Pimephales vigilax*)
- Perches: Rainbow darter (*Etheostoma caeruleum*)

Similar species: N/A



Rockshell, *Theliderma metanevra*



LSUS 35181

5.7 cm (2.2 in)

Bayou Bartholomew, Morehouse Parish, Louisiana

Description: Maximum length of 11 cm (4.3 in). Not sexually dimorphic. Rhomboidal to quadrate outline and variably inflated. Shell thick and very textured with small corrugations on the posterior slope, variable pustules covering the shell from the anterior margin to the posterior ridge or sulcus, and low nodules on the posterior ridge. Periostacum light to dark brown, possibly with green chevrons. Anterior margin rounded while posterior margin indented and emarginate. Posterior ridge very high and wide extending beyond shell margin. Umbo full and high with a deep cavity. Impressed muscle scars. Pseudocardinal teeth are thick and triangular. Lateral teeth are short and thick. Interdentum is short and wide. Nacre white.

Habitat: Slow- to fast-flowing rivers. Can be found in sand or gravel.

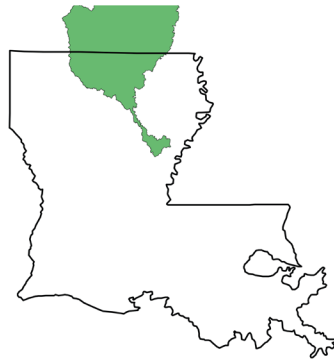
State element rank: S2 (imperiled)

Federal listing status: N/A

Known host fishes:

- Minnows: Central stoneroller (*Campostoma anomalum*), red shiner (*Cyprinella lutrensis*), blacktail shiner (*C. venusta*), steelcolor shiner (*C. whipplei*), Mississippi silvery minnow (*Hybognathus nuchalis*), striped shiner (*Luxilus chrysocephalus*), silver chub (*Macrhybopsis storeriana*), bluntnose minnow (*Pimephales notatus*), fathead minnow (*P. promelas*), creek chub (*Semotilus atromaculatus*)
- Perches: Sauger (*Sander canadensis*)
- Sunfishes: Green sunfish (*Lepomis cyanellus*), bluegill (*L. macrochirus*)

Similar species: N/A



Lilliput, *Toxolasma parvum*



LSUS 24650-59

4.0 cm (1.5 in)

Fort Polk, Vernon Parish, Louisiana

Description: Maximum length of 4 cm (1.6 in). Sexually dimorphic. Elliptical to oval outline and moderately inflated. The dorsal and ventral margins are nearly straight. Females more inflated. Shell is somewhat thin with a cloth-like texture. Periostracum greenish-brown, brown or black. Anterior margin curved while posterior margin rounded to obliquely truncate. Posterior ridge rounded. Umbo low with a shallow cavity. Beak curved inwards towards the dorsal margin. Shallow muscle scars. Pseudocardinal teeth are triangular and compressed. Lateral teeth are thin. Interdentum is short and narrow. Nacre white, possibly with a blue tint.

Habitat: : Lentic habitats or slow flowing rivers and creeks. Can be found in mud or sand.

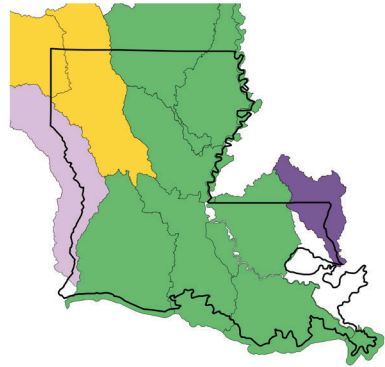
State element rank: N/A

Federal listing status: N/A

Known host fishes:

- Sunfishes: Green sunfish (*Lepomis cyanellus*), warmouth (*L. gulosus*), orangespotted sunfish (*L. humilis*), bluegill (*L. macrochirus*), white crappie/sacalait (*Pomoxis annularis*)

Similar species: May be confused with the Texas lilliput (*Toxolasma texasiense*). Texas lilliput is typically larger, has a broadly rounded posterior ridge and more obvious sexual dimorphism. This results in males having a bluntly pointed posterior margin that almost looks tapered while females have obvious marsupial swelling. Lilliput is smaller, has a more uniformly rounded posterior margin, and nearly parallel dorsal and ventral margins, and less obvious sexual dimorphism that does not greatly alter its appearance.



Texas Lilliput, *Toxolasma texasiense*



Left: ASUMZ 1730.1
Male, 5.1 cm (2.0 in)
Tensas River, Madison Parish, Louisiana

Right: ASUMZ 1730.2
Female, 3.9 cm (1.5 in)

Description: Maximum length of 6.3 cm (2.5 in). Sexually dimorphic. Elliptical outline with variable inflation, females with marsupial swelling. Shell thick with a cloth-like texture. Periostracum dark brown to black. Anterior margin rounded while posterior margin bluntly pointed in males and obliquely truncate in females. Posterior ridge broadly rounded. Umbo broad and slightly elevated with a shallow cavity. Large muscle scars. Pseudocardinal teeth are triangular and compressed. Lateral teeth are long and thin. Interdentum is short or absent. Nacre white, possibly with a blue tint or salmon.

Habitat: Lentic habitats or slow-flowing small rivers and creeks. Can be found in mud or sand.

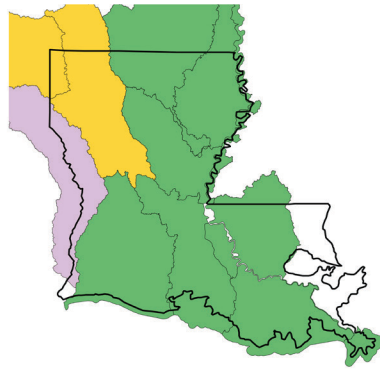
State element rank: N/A

Federal listing status: N/A

Known host fishes:

- Sunfishes: Warmouth (*Lepomis gulosus*), bluegill (*Lepomis macrochirus*)

Similar species: May be confused with the lilliput (*Toxolasma parvum*). See the description for that species.



Fawnsfoot, *Truncilla donaciformis*



Left: ASUMZ 1928.3
Male, 2.8 cm (1.1 in)
St. Francis River, Cross County, Arkansas

Right: ASUMZ 1928.1
Female, 3.1 cm (1.2 in)

Description: Maximum length of 5.2 cm (5.2 in). Sexually dimorphic. Oval, elliptical or triangular outline and moderately inflated. Females usually smaller than males with marsupial swelling. Shell thin and shiny. Periostracum yellowish to greenish-brown with dark green solid rays or broken rays composed of chevrons or zigzags. Anterior margin rounded while posterior margin bluntly pointed or narrowly curved. Posterior ridge somewhat angular. Umbo high and inflated with a shallow cavity. Impressed muscle scars. Pseudocardinal teeth are thin and compressed. Lateral teeth are short, straight and thick. Interdentum is short and narrow. Nacre white, possibly with a blue tint.

Habitat: Slow- to fast-flowing rivers and creeks. Prefers sand or gravel but can be found in mud.

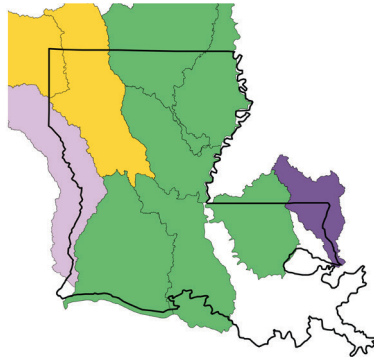
State element rank: S2 (imperiled)

Federal listing status: N/A

Known host fishes:

- Drums: Freshwater drum/gaspergou (*Aplodinotus grunniens*)
- Perches: Sauger (*Sander canadensis*)

Similar species: May be confused with the elktoe (*Alasmidonta marginata*) or deertoe (*Truncilla truncata*). See description for elktoe. Deertoe has a thicker shell and a more triangular or rhomboidal outline compared to the fawnsfoot which has a more oval or elliptical outline.



Deertoe, *Truncilla truncata*



Garrett Hopper personal collection
6.0 cm (2.4 in)
Duck River, Columbia, Maury County, Tennessee

Description: Maximum length of 8.3 cm (3.3 in). Sexually dimorphic. Triangular to rhomboidal outline and moderately inflated. The middle of the ventral margin extends slightly more in females than in males. Shell somewhat thick and slightly shiny. Periostracum may be tan, yellow-green or brown with broken rays comprised of chevrons or blotches. Older individuals may darken with age. Anterior margin curved while posterior margin bluntly pointed. Posterior ridge angular. Umbo high and full with variable cavity depth. Impressed muscle scars. Left valve contains two thick, triangular pseudocardinal teeth and two short, lateral teeth. Right valve contains one to two thick, triangular pseudocardinals and one short lateral. Interdentum is short and narrow. Nacre white, salmon, pink or reddish.

Habitat: Slow- to fast-flowing rivers and creeks. Prefers sand or gravel but can be found in mud.

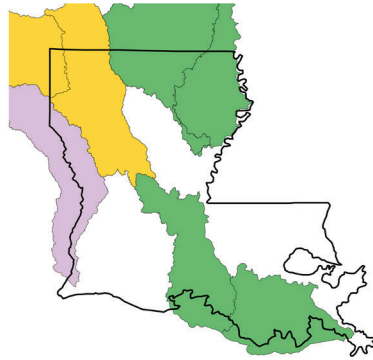
State element rank: N/A

Federal listing status: N/A

Known host fishes:

- Drums: Freshwater drum/gaspergou (*Aplodinotus grunniens*)
- Perches: Sauger (*Sander canadensis*)

Similar species: May be confused with the elktoe (*Alasmodonta marginata*) or fawnsfoot (*Truncilla donaciformis*). See species description for those species.



Tapered Pondhorn, *Uniomerus declivis*



LSUS 27891

7.9 cm (3.1 in)

Bayou des Cannes, Evangeline/St. Landry Parish border, Louisiana

Description: Maximum length of 13.5 cm (5.3 in). Not sexually dimorphic. Elliptical to rhomboidal and moderately inflated. Shell somewhat rough with variable thickness. Periostracum brown, dark brown or black. Anterior margin rounded while posterior margin pointed to obliquely truncate. Posterior ridge high and rounded. Umbo broad and slightly elevated with a shallow cavity. Shallow muscle scars. Pseudo-cardinal teeth are small. Lateral teeth are short and thin. Interdentum is long. Nacre white, possibly with a purple tint.

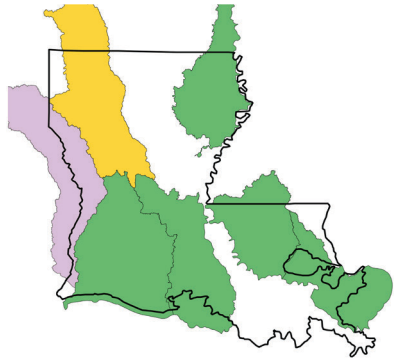
Habitat: Lentic habitats or moderate- to fast-flowing small rivers and creeks. Can be found in mud or sand.

State element rank: N/A

Federal listing status: N/A

Known host fishes: N/A

Similar species: May be confused with the pondhorn (*Uniomerus tetralasmus*). Pondhorn usually has a thinner shell, more rounded posterior ridge, and less pointed posterior margin compared to tapered pondhorn.



Pondhorn, *Uniomerus tetralasmus*



LSUS 16204

7.0 cm (2.7 in)

B'Cazan'x Lake, Evangeline Parish, Louisiana

Description: Maximum length of 13.5 cm (5.3 in). Not sexually dimorphic. Elliptical to rhomboidal outline with variable inflation. Shell thin. Periostracum smooth and shiny in younger individuals but may become dull and rough with age. Yellowish-brown, brown or black, rarely with rays. Anterior margin curved while posterior margin narrowly rounded to obliquely truncate. Posterior ridge rounded. Umbo slightly elevated with a shallow cavity. Shallow muscle scars. Pseudocardinal teeth are thick and compressed. Lateral teeth are short and thin. Interdendum is long and narrow. Nacre white, possibly with a blue tint.

Habitat: Lentic habitats or slow-flowing small rivers and creeks. Can be found in mud or sand.

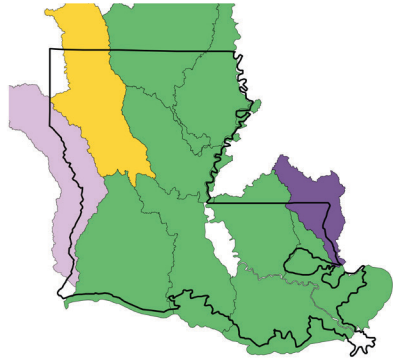
State element rank: N/A

Federal listing status: N/A

Known host fishes:

- Minnows: Golden shiner
(*Notemigonus crysoleucas*)

Similar species: May be confused with the tapered pondhorn (*Uniomerus declivis*). See description for that species.



Paper Pondshell, *Utterbackia imbecillis*



ASUMZ 1216.2
4.5 cm (1.7 in)
Little River, Hempstead County, Arkansas

Description: Maximum length of 12 cm (4.7 in). Not sexually dimorphic. Elliptical to oval outline with variable inflation. Shell smooth and thin, possibly with a weak posterior dorsal wing that is usually reduced with age. Periostacum yellowish-green, greenish-brown or brown possibly with faint rays. Anterior margin curved while posterior margin bluntly pointed. Posterior ridge low and rounded. Umbo broad with variable inflation. Beak usually below the hinge line. Faint muscle scars. Pseudocardinal teeth, lateral teeth and interdentum are absent. Nacre white, possibly with a blue tint.

Habitat: Lentic habitats or slow-flowing rivers and creeks. Prefers mud or sand but can be found in gravel.

State element rank: N/A

Federal listing status: N/A

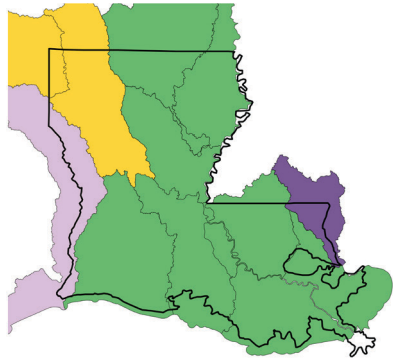
Known host fishes:

- Minnows: Golden shiner (*Notemigonus crysoleucas*), creek chub (*Semotilus atromaculatus*)
- Minnows or carps: Goldfish (*Carassius auratus*)*
- Catfishes: Channel catfish (*Ictalurus punctatus*)
- Poeciliids: Western mosquitofish (*Gambusia affinis*)
- Sunfishes: Green sunfish (*Lepomis cyanellus*), warmouth (*L. gulosus*), bluegill (*L. macrochirus*), dollar sunfish (*L. marginatus*), longear sunfish (*L. megalotis*), largemouth bass (*Micropterus nigricans*), black crappie/sacalait (*Pomoxis nigromaculatus*)

- **Note:** The Eastern tiger salamander (*Ambystoma tigrinum*) and American bullfrog (*Lithobates catesbeianus*) have been identified as hosts though this has not been specifically documented in Louisiana.

Similar species: N/A

* Non-native species.



Cypress Floater, *Utterbackiana hartfieldorum*



LSURNR 44
11.5 cm (4.5 in)
Bogue Chitto River, Washington Parish, Louisiana

Description: Maximum length of 12 cm (4.7 in). Not sexually dimorphic. Oval outline and moderately inflated. Shell thin and may have a low posterior dorsal wing. Periostracum tan, greenish-brown or brown possibly with thin green or brown rays. Anterior margin broadly rounded while posterior margin bluntly but prominently pointed. Posterior ridge low and rounded. Umbo slightly elevated and inflated with a wide and shallow cavity. Somewhat deep muscle scars. Pseudocardinal and lateral teeth are absent. Nacre white, possibly with salmon in the umbo cavity.

Habitat: Lentic habitats or slow-flowing rivers and creeks. Can be found in mud or sand.

State element rank: S3 (vulnerable to extirpation)

Federal listing status: N/A

Known host fishes: N/A

Similar species: May be confused with flat floater (*Utterbackiana suborbiculata*). Flat floater has a more rounded outline and is less inflated compared to the cypress floater. The umbo of cypress floater is above the hinge line whereas the umbo of flat floater is below the hinge line.



Flat Floater, *Utterbackiana suborbiculata*



Garrett Hopper personal collection
6.0 cm (2.4 in)
Bogue Chitto River, Washington Parish, Louisiana

Description: Maximum length of 20 cm (7.9 in). Not sexually dimorphic. Oval to round outline and compressed. Shell usually shiny, smooth and thin with a small posterior dorsal wing. Periostracum brown, yellowish-green or yellowish-white with distinct alternating light and dark bands following growth lines. Presence of rays is possible and varies depending on population. Anterior margin is rounded while posterior margin is bluntly pointed and curves slightly upward. Posterior ridge low and rounded. Umbo low with a very shallow cavity, somewhat full in adults but compressed in juveniles. Muscle scars very shallow. Pseudocardinal and lateral teeth are absent. Interdentum is absent. Nacre white and iridescent, possibly lightly tinted blue or purple.

Habitat: Lentic habitats or slow-flowing rivers and creeks. Can be found in mud or sand.

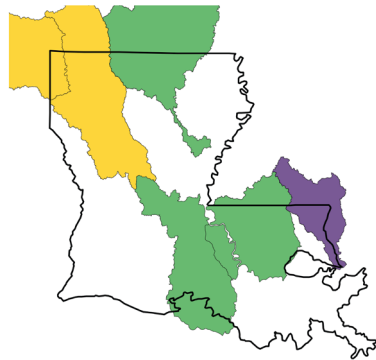
State element rank: N/A

Federal listing status: N/A

Known host fishes:

- Minnows: Golden shiner (*Notemigonus crysoleucas*)
- Catfishes: Channel catfish (*Ictalurus punctatus*)
- Sunfishes: Green sunfish (*Lepomis cyanellus*), warmouth (*L. gulosus*), longear sunfish (*L. megalotis*), largemouth bass (*Micropterus nigricans*), white crappie/sacalait (*Pomoxis annularis*)

Similar species: May be confused with the cypress floater (*Utterbackiana hartfieldorum*). See description of that species.



Southern Rainbow, *Villosa vibex*



LSURNR 062

6.4 cm (2.5 in)

Leatherwood Creek, Walthall County, Mississippi

Description: Maximum length of 10 cm (3.9 in). Sexually dimorphic. Elliptical to oval outline. Males possibly subrhomboid. Variably inflated. Females with greater posterior inflation. Shell smooth. Periostracum yellowish-green, tan, brown or dark brown usually with prominent dark green or black rays. Anterior margin rounded while posterior margin rounded or bluntly pointed for males and broadly rounded for females. Posterior ridge low and rounded. Umbo flat and slightly elevated and sculpture consists of a few double-looped ridges radiating from the beak. The umbo cavity is shallow. Shallow muscle scars. Pseudocardinal teeth are small and compressed. Lateral teeth are short and thin. Interdentum is long and narrow. Nacre white with a blue tint.

Habitat: Slow- to moderate-flowing rivers and creeks. Prefers sand or gravel but can be found in silt

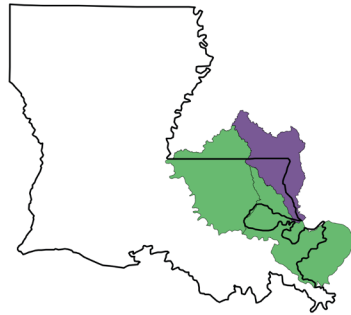
State element rank: S2 (imperiled)

Federal listing status: N/A

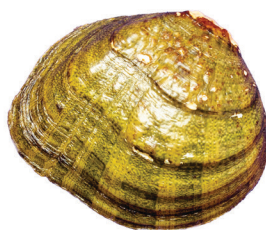
Known host fishes:

- Sunfishes: Green sunfish (*Lepomis cyanellus*), longear sunfish (*L. megalotis*), largemouth bass (*Micropterus nigricans*), spotted bass (*M. punctulatus*)
- Topminnows and killifishes: Blackspotted topminnow (*Fundulus olivaceus*)

Similar species: May be confused with the little spectaclecase (*Leaunia lienosus*). See description of that species.



Western Fanshell, *Cyprogenia aberti* (Historical Occurrence)



Left: ASUMZ 894, 5200
4.4 cm (1.7 in)
Saline River, Ashley County, Arkansas

Right: ASUMZ 894, 5202
4.7 cm (1.8 in)

Description: Maximum length of 7.6 cm (3 in). Not sexually dimorphic. Round to triangular outline with variable inflation. Shell thick with raised horizontal growth lines. Periostracum yellowish-brown, greenish-brown or tan. Anterior margin rounded while posterior margin bluntly pointed. Posterior ridge prominent. Umbo high with a somewhat deep cavity. Beak turned inwards towards the dorsal margin. Small, narrow anterior muscle scars. Pseudocardinal teeth are triangular. Lateral teeth are short and thick. Interdentum is wide. Nacre white.

Habitat: Moderate- to fast-flowing small rivers and creeks. Prefers gravel but can be found in sand or silt.

State element rank: SH (historical occurrence but no records verified within the last 20 years)

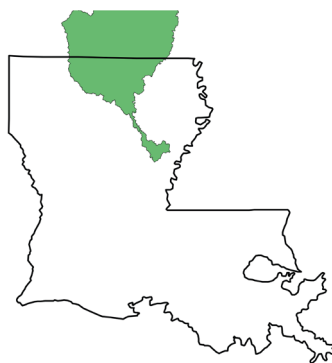
Federal listing status: Threatened

Known host fishes:

- Minnows or carps: Goldfish (*Carassius auratus*)*
- Perches: Rainbow darter (*Etheostoma caeruleum*), logperch (*Percina caprodes*)

Similar species: N/A

*Non-native species.



Freshwater Golden Clam, *Corbicula fluminea* (Invasive)



Franchesca Ruiz personal collection
Bogue Chitto River, Louisiana

Description: Maximum length of 4 cm (1.6 in). Triangular outline and inflated. Shell with horizontal rows of prominent raised lines. Periostracum yellowish- or greenish-brown to black. Left and right valve both contain three pseudocardinal teeth and two long serrated lateral teeth. Nacre light purple.

Zebra Mussel, *Dreissena polymorpha* (Invasive)



LSUS reference collection

Zebra mussels attach to and grow on various surfaces including native mussel species. Zebra mussels harm native mussels by competing for food.

Description: Maximum length of 6.5 cm (2.6 in). Triangular or elliptical outline and inflated. Shell thin. Periostracum white, yellowish-white or tan with brown lateral zigzags or stripes. Anterior margin pointed while posterior margin obliquely truncate or rounded. Pseudocardinal and lateral teeth absent. Nacre white possibly with a blue tint.



Glossary

Anterior – The foot end. Shell from the right side of the umbo to the margin when viewing the right valve, usually shorter and simpler than the posterior margin.

Beak – The outermost tip of the umbo.

Compressed – Possible in varying degrees; when looking down at a mussel's umbo and dorsal margin it appears flattened.

Disk – Surface of shell.

Dorsal – The top or hinge side of the shell where the umbo is located.

Emarginate – Having a notched or cut margin.

Foot – Large muscular organ used for movement and anchoring.

Growth lines – Lines or ridges representing the growth periods of the mussel. May be flat and only represented by color or texture. Can be raised in some individuals.

Hinge line – The line on the dorsal side of the mussel where the hinge that connects left and right valves is located.

Inflated – Possible in varying degrees, when looking at the umbo and dorsal margin it appears swollen; the width of the mussel.

Interdentum – The space between the lateral and pseudocardinal teeth. Can vary in length and width.

Lateral teeth – Elongated teeth on the hinge line of the posterior end. Can vary in size, length, thickness and curvature.

Left valve – The left half of the shell when looking at the dorsal margin with the posterior end pointing towards you and the anterior end pointing away from you.

Lentic system – An ecosystem with still freshwater. This includes ponds, lakes, reservoirs, swamps and marshes.

Marsupial swelling – Visibly inflated or expanded posterior/ventral area of a female mussel's shell that allows more room for gravid gills inside of the valves.

Muscle scar – Scars inside the shell where the anterior and posterior adductor muscles were attached to the shell in life. Can vary in size, outline and depth.

Mussel bed – A specified area with high mussel density.

Nacre – Also known as the mother of pearl. The shiny innermost layer of the shell comprised of calcium carbonate. Can be a wide variety of colors.

Nodules – Raised knob-like bumps on surface of shell. Larger and more prominent than pustules.

Obliquely – Diagonally.

Outline – Shape formed by the margin of the shell.

Pallial line – Visible line left behind from where the mantle was attached to the shell in life.

Periostracum – The external part of the shell. A thin and proteinaceous outermost layer that displays color and texture. Becomes dry and extremely flakey after the mussel dies.

Posterior – The siphon end. Shell from the left side of the umbo to margin when viewing the right valve, usually longer and more complicated than the anterior margin.

Posterior ridge – A ridge that extends from the umbo to posterior margin of the shell.

Posterior slope – The part of the shell that extends from the posterior ridge to dorsal margin, appears less elevated than the posterior ridge.

Pseudocardinal teeth – Elevated teeth that are usually prominent, on the hinge line of the anterior side in front of the lateral teeth. Can vary in outline, elevation, size and texture.

Pustules – Raised bumps on surface of shell, smaller and less prominent than nodules.

Ray – Possible pattern on periostracum. Lines of varying prominence, colors and thickness.

Right valve – The right half of the shell when looking at the dorsal margin with the posterior end pointing towards you and the anterior end pointing away from you.

Rudimentary – Simple or basic.

Sexual dimorphism – When individuals of the same species have morphological differences determined by sex.

Sulcus – A vertical depression between the posterior ridge and center of the valve that spans from the umbo to the ventral margin.

Truncated – Cut short squarely.

Umbo – Also known as the beak, oldest part of the shell that is located on the dorsal margin and raised.

Ventral – The bottom side of the shell opposite of the hinge.

Wing – A flattened extension of the disk above the hinge line. Usually posterior but can be anterior. Described as usually/possibly missing in many entries due to it being more fragile than the rest of the shell and very susceptible to breakage or erosion.

Helpful Resources

Listed below are resources that may prove helpful by providing extra information about freshwater mussels and content included in this guide. The resource, its main purpose and website are included.

- Smithsonian 3D Digitization Collections, Freshwater Mussels, Smithsonian National Museum of Natural History. Includes 3D models of freshwater mussel shells for numerous species. <https://3d.si.edu/collections/freshwater-mussels>
- MusselMapR, Smithsonian National Museum of Natural History. Web application that uses United States freshwater mussel collections data from 45 natural history museums to display occurrence data that can be searched by species or watershed (HUC6). https://musselmapr.shinyapps.io/hic_sunt_naiades/
- Musselp, the Mussel Project Database Dashboard. A searchable database with a large amount of information mostly about freshwater mussels but also includes other bivalves. <https://mussel-project.uwsp.edu/>
- MolluscaBase. A taxonomically oriented database of all molluscan species. <https://www.molluscabase.org/>
- Freshwater Mollusk Conservation Society. Their website includes information and publications about freshwater mollusks, along with how to join the society if one is interested. <https://molluskconservation.org/index.html>
- Freshwater Mollusk Biology and Conservation, the Journal of the Freshwater Mollusk Conservation Society. Includes numerous publications about freshwater mussels. <https://bioone.org/journals/freshwater-mollusk-biology-and-conservation>
- United States Geological Survey, Hydrologic Unit Codes (HUCs) Explained. Describes what HUCs are and how they are used. <https://nas.er.usgs.gov/hucs.aspx>
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