

# **BIVALVES**

by J.H. Leal, Bailey-Matthews Shell Museum, Florida, USA

## GENERAL REMARKS

The Bivalvia is the second most speciose class in the phylum Mollusca. Bivalves are distinctive within the Mollusca in that they are almost always completely enclosed within their shells. They are laterally compressed, typically with shells divided in two halves, or valves, hinged together dorsally by an elastic, chitinous, external or internal ligament. The bivalve shell probably originated from an evolutionary split of a single ancestral, cap-like shell along a longitudinal line. The bivalve hinge bears sets of interlocking teeth that prevent the valves from sliding along each other as a result of external forces (e.g., predation), or improperly shut. The shell is kept shut by action of the paired adductor muscles. The adductor muscles counter the tension in the elastic ligament, which tends to keep the shell valves spread apart.

Most of the bivalve body is located dorsally in the shell. The mantle cavity in bivalves is located ventrally and laterally. Folds of the mantle margin form the exhalant and inhalant siphons.

Most of the mantle cavity is occupied by the paired ctenidia, which in bivalves perform not only their original role as site of gas exchange, but also become the major food-gathering and food-sorting organs in filter-feeders. Ctenidia are important and remarkably variegated organs in the Bivalvia, and most of the higher classification in the class is based on their morphology and function.

The head in bivalves is reduced, probably as result of a sedentary or attached lifestyle. Bivalves have lost the radula, eyes, or tentacles as present in other molluscs, but some have acquired secondary tentacles and eyes along the mantle margin. The mouth is located well inside the animal, and a pair of fleshy labial palps helps direct the food particles toward the mouth after these particles have been collected and sorted by the ctenidia.

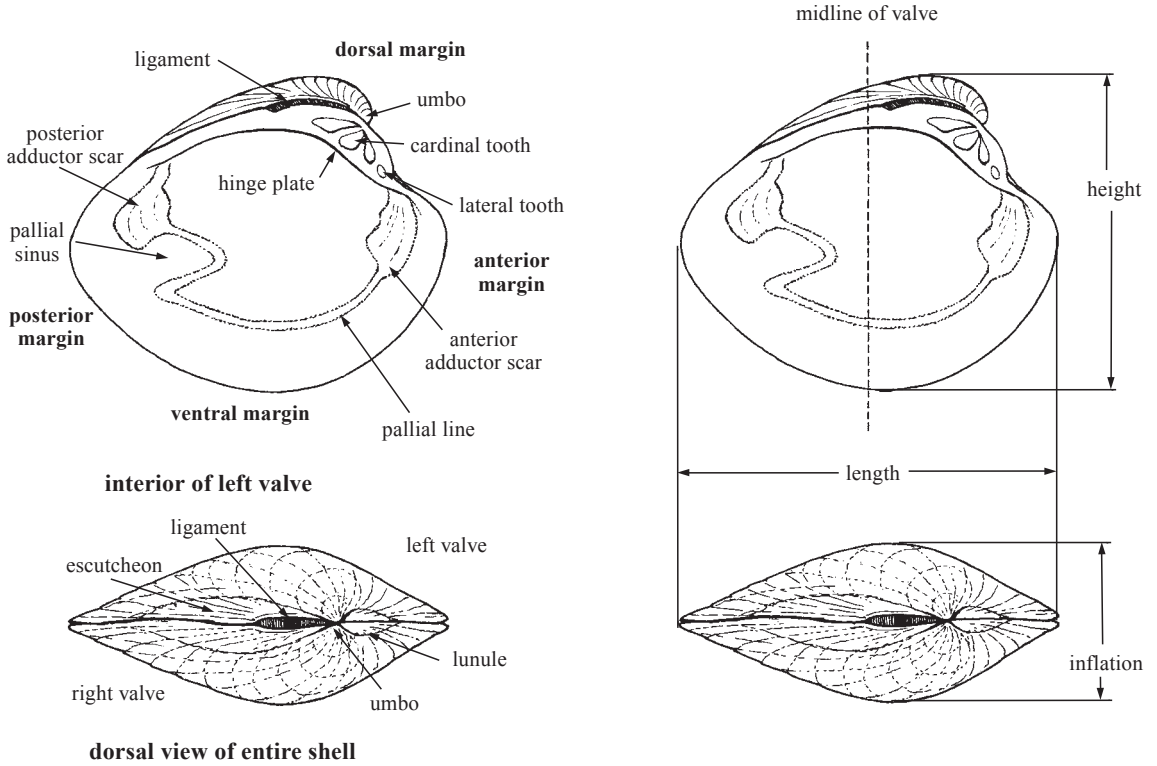
Bivalves can be deposit-feeders (subclass Protobranchia), using their long, modified labial palps to collect food particles from the bottom surface. Protobranchs do not use their ctenidia as food-collecting organs. Most bivalves are filter-feeders (e.g., subclasses Pteriomorpha and Heterodonta). Filter-feeders have well-developed ctenidia that display an elaborate sorting system of cilia-lined grooves and surfaces that select particles of the right size and density for feeding. In addition, the highly specialized carnivore bivalves in the order Septibranchia have their ctenidia modified as septa that help pump water in, sucking in small crustaceans and other small prey.

Like gastropods, bivalves can live in a highly diverse gamut of habitat conditions: oysters permanently attach themselves to hard substrates, mussels and ark shells live temporarily attached by bundles of protein fibers called byssus, most clams burrow in sand or mud, and representatives of a number of different families can bore themselves for life into rock, wood, or other hard substrates.

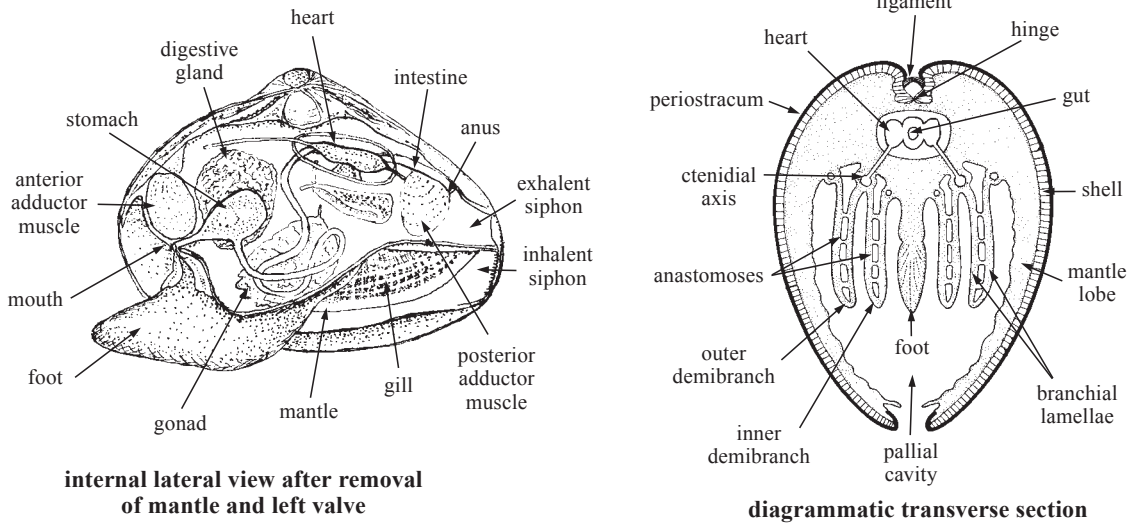
Reproduction in bivalves is mostly through external fecundation and, like gastropods, bivalves display a wide range of modes of development, from species having planktotrophic, long-duration veliger stages to those brooding their offspring in the mantle cavity.

The total catch by weight in 2000 for bivalves in Fishing Area 31 was 283 135 t, which represents about 15% of the total catch for the area. The American cupped oyster, *Crassostrea virginica*, comprised 222 866 t of the total for bivalves for that year.

**TECHNICAL TERMS AND MEASUREMENTS**



**main features of a bivalve shell**



**general anatomy of bivalves**

## GLOSSARY OF TECHNICAL TERMS

**Albino** - shell lacking normal pigmentation.

**Anterior** - region situated near the head. In bivalves: region opposite to the siphons, consequently, opposite to the shell sinus.

**Beak** - same as umbo.

**Bivalve** - molluscs that have, among other features, shell comprised of 2 halves, or valves.

**Byssal** - position relative to byssus.

**Byssal gap** - gap or opening sometimes present on the ventral margin of bivalve shells for passage of byssus.

**Byssus** - bundle of fibers secreted by some bivalves attaching the animal to the bottom. Mussels, some arks, and pen shells are attached to the substrate by byssus.

**Cancellate** - cross-barred sculpture. In bivalves, radial and concentric elements will cross to produce a cancellate sculpture.

**Chondrophore** - depression in spoon-like form housing the internal ligament of some bivalve shells.

**Chomata** - marginal crenulations in Ostreidae and Gryphaeidae, occurring all around the inner side of valves or only near the hinge, composed of small tubercles or ridgelets on the right valve, and corresponding pits on the left valve.

**Compressed** - outline of bivalves which are flattened laterally.

**Concentric** - feature of sculptural elements curving about the umbo in bivalves.

**Cord** - element of gastropod shell sculpture, usually spirally oriented, thicker than lines.

**Cordlet** - same as cord.

**Corrugated** - appearance of surfaces forming wrinkles.

**Crenulated** - appearance of surfaces which are delicately notched or corrugated. Usually applied to wrinkled shell margin or edge.

**Crenulations** - notches, or wrinkles which are small and delicate.

**Depressed** - outline of low, pressed-down gastropod shells. OBS: Term usually applied to some top shells or baby ear.

**Dorsal** - in bivalves, the region of the hinge.

**Elongate** - shell with length significantly larger than width.

**Equivalve** - characteristic of bivalves that have the 2 valves or halves of same size.

**Escutcheon** - an area of the posterodorsal shell surface near a ligament that is differentiated by sculpture and frequently demarcated by a marginal ridge or furrow.

**Excavated** - appearance of a hollow, concave surface.

**Foliated** - characteristic of being leaf-like.

**Foot** - in bivalves, hatchet-like, expandable structure involved in burrowing.

**Glassy** - surface resembling glass, vitreous, transparent.

**Granulated** - surface covered with minute grains, pustules, or beads.

**Growth lines** - lines on shell surface indicative of alternating periods of growth and rest; sometimes corresponding to seasonal changes.

**Hinge** - region of the bivalve shell where the two valves are joined together, usually including interlocking teeth and the ligament.

**Hinge teeth** - projections that interlock on the inner side of the bivalve shell hinge helping to prevent the two valves from sliding sideways past each other.

**Horny** - substance that is hardened, proteinaceous; partially or completely forming the ligament, shell periostracum, and possibly other structures.

**Incised lines** - features of shell sculpture represented by cuts or narrow grooves on the shell surface.

**Indented** - surface bearing an indentation.

**Inequivalve** - characteristic of having the two valves (halves) of different size.

**Inflated** - characteristic of being 'fat', rotund, and frequently lightweight.

**Interspaces** - spaces between sculptural features, e.g., ribs, costae, or cords.

**Juvenile** - characteristic of being young, immature, not fully grown.

**Knob** - large nodule, rounded projection.

**Knobbed** - surface bearing knobs.

**Lamella** - thin plate or blade-like projection

**Lamellation** - same as lamellae.

**Ligament** - structure that is horny, proteinaceous, acting as a spring tending to keep the valves opened in bivalve shells. Usually situated in the region of the hinge, either internally or externally.

**Line** - sculptural feature narrowly incised on shell surface.

**Lunule** - impression on the external side of the hinge, anterior to the umbo, usually heart-shaped.

**Mantle** - fleshy sheet surrounding vital organs and composed of 2 lobes, one lining and secreting each valve.

**Margin** - edge of shell.

**Nacreous** - characteristic of being iridescent, like mother-of-pearl.

**Nodules** - projections which are rounded as tubercules.

**Nodulose** - surface bearing nodules.

**Notch** - cut or depression, as on a shell margin.

**Opalescent** - characteristic of being whitish, but with nacreous luster.

**Ovate** - characteristic of having the form of an egg.

**Oval** - same as ovate.

**Pallial line** - fine scar-like impression present internally; in bivalve shells produced by the edge of the mantle.

**Periostracum** - layer of the outside part of the shell. It is horny and sometimes hair-like.

**Plication** - same as fold.

**Posterior** - in bivalves, the region of the shell sinus away from the foot.

**Prodissoconch** - shell in larval state remaining on the umbonal region of well-preserved bivalve shells.

**Radial** - structures that are directed away from the umbo toward the shell margin in bivalve shells.

**Radiating** - same as radial.

**Reticulate** - feature of shell sculpture consisting of criss-crossed, net-like texture formed by the intersection of lines at right angles.

**Reticulated** - same as reticulate.

**Ribs** - structural elements forming a well-defined, narrow ridge in gastropod shells. Term usually applied to those elements forming a plane with (or slightly oblique to) shell axis.

**Riblets** - diminutive of ribs.

**Scales** - sculptural elements that are small, raised, and plate-like.

**Septum** - partition found in the internal side of gastropod shells; characteristic of slipper-shells.

**Serrated** - outline resembling tiny saw teeth.

**Shell sinus** - embayment on the pallial line of bivalve shells that correspond to the position of the siphons.

**Siphon** - prolongation of the mollusc mantle used to convey water into or out of the mantle cavity.

**Spiral** - direction following the coiling of the gastropod shell. Usually applied as a modifier to sculptural terms such as 'spiral cords'.

**Striation** - fine, repeated lines or furrows on shell surface.

**Suture** - line or region of junction between two adjacent whorls in the gastropod shell.

**Synonym** - a scientific name applied to a species that has received an earlier name. Usually, the earlier name is the valid one.

**Thread** - same as line.

**Trigonal** - same as triangular.

**Umbo (pl. umbones)** - projected portion of the hinge. OBS: First-formed part of the bivalve shell.

**Varix (pl. varices)** - axial sculptural element that is more prominent than a costa, and usually more widely spaced; evidence of a growth halt during which a thickened lip develops.

**Valve** - one half of the bivalve shell.

**Ventral** - region of the animal opposite the dorsal region; usually region of the foot in bivalves.

## GUIDE TO FAMILIES OCCURRING IN THE AREA

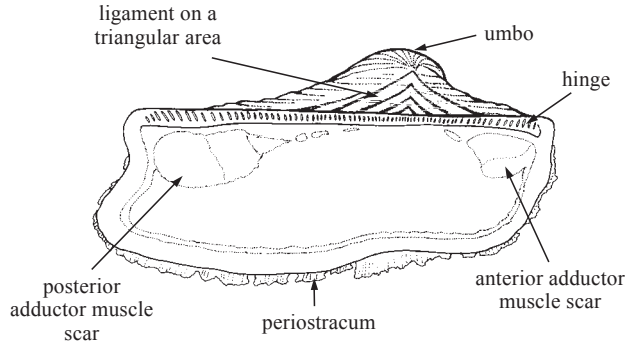
The following guide is intended to facilitate the identification of marine or brackish-water bivalve families regularly exploited or occasionally found in markets of the area. Additionally included are those families that are similar to exploited families but do not contain species that are regularly utilized. The families in this guide represent only a small part of the bivalve fauna occurring in the area, and it is probable that their number will increase once we have better information on the fisheries and utilization of this group of resources.

### ARCIDAE

p. 41

#### Ark shells

Three species of interest to fisheries in the area.

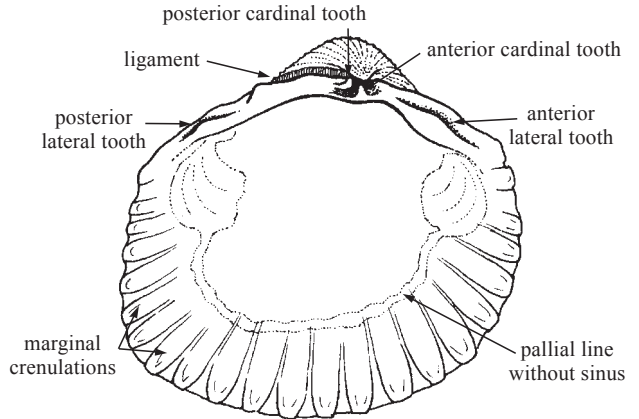


### CARDIIDAE

p. 46

#### Cockles

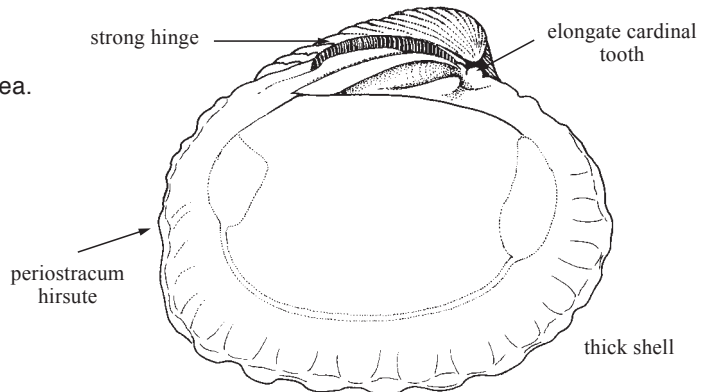
Two species of interest to fisheries in the area.



### CARDITIDAE

#### Carditas

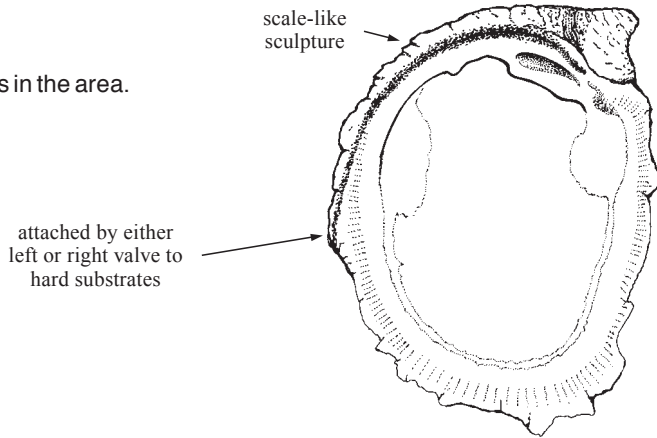
No species of interest to fisheries in the area.



**CHAMIDAE**

**Jewel box shells**

No species of interest to fisheries in the area.

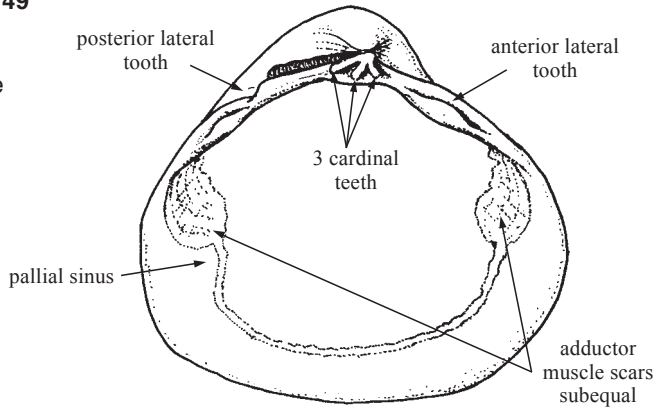


**CORBICULIDAE**

p. 49

**Marsh clams**

Three species of interest to fisheries in the area.

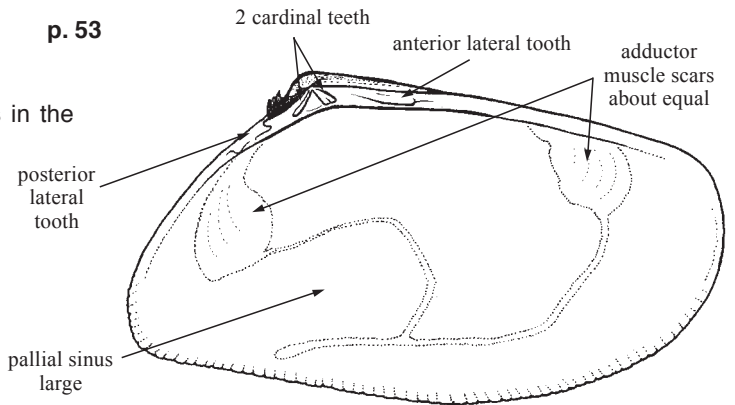


**DONACIDAE**

p. 53

**Donax clams**

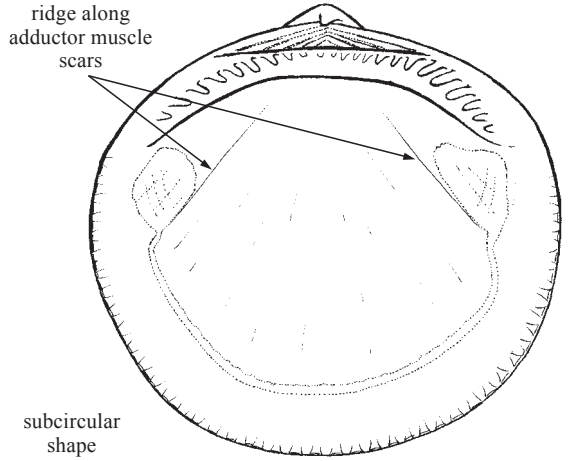
Three species of interest to fisheries in the area.



**GLYCYMERIDIDAE**

**Bittersweet clams**

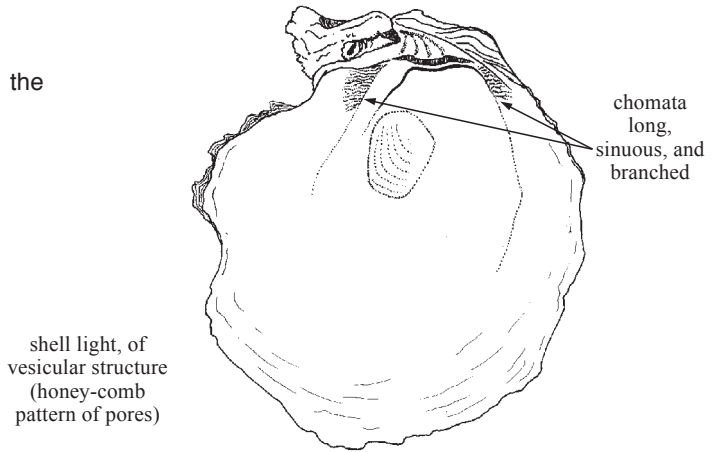
No species of interest to fisheries in the area.



**GRYPHAEIDAE**

**Honeycomb oysters**

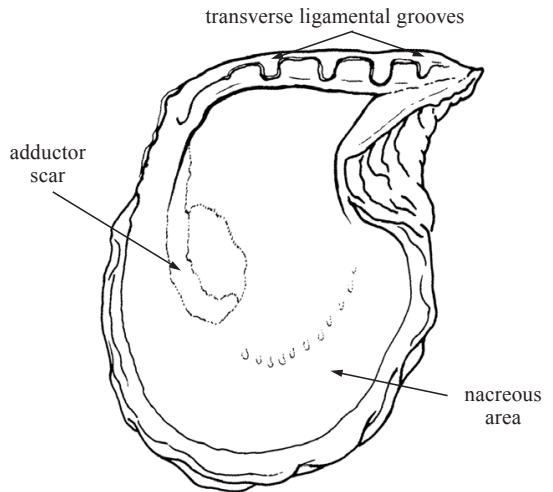
No species of interest to fisheries in the area.



**ISOGNOMONIDAE**

**Tree oysters**

No species of interest to fisheries in the area.

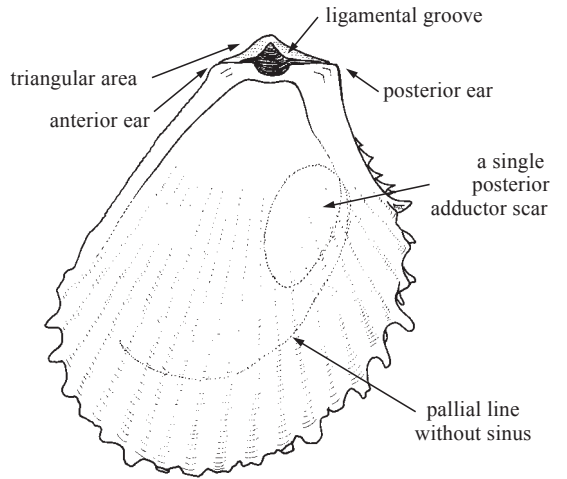




**LIMIDAE**

**File shells**

No species of interest to fisheries in the area.

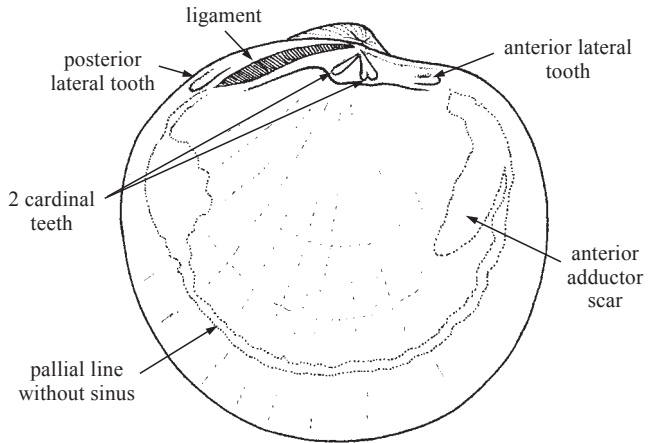


**LUCINIDAE**

p. 57

**Lucinas**

One species of interest to fisheries in the area.

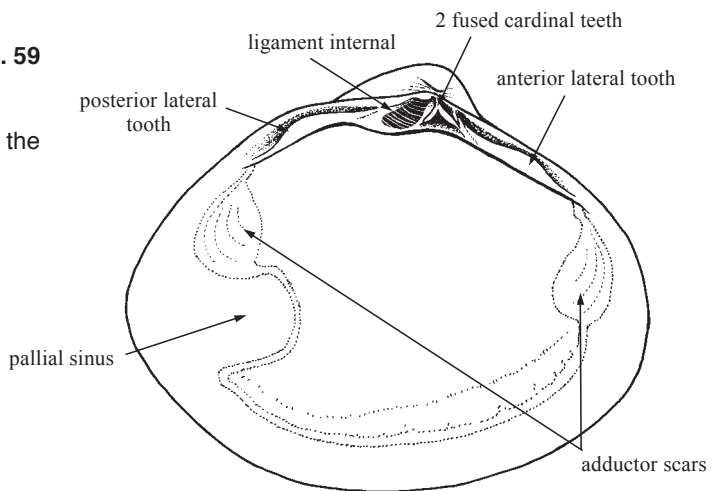


**MACTRIDAE**

p. 59

**Trough shells**

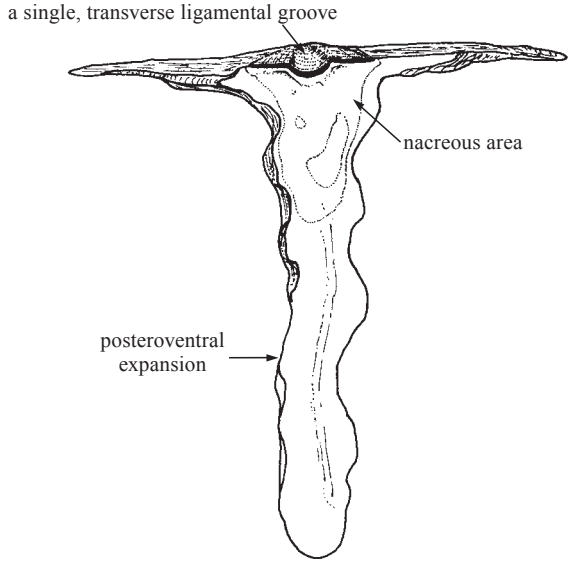
Two species of interest to fisheries in the area.



**MALLEIDAE**

**Hammer oysters**

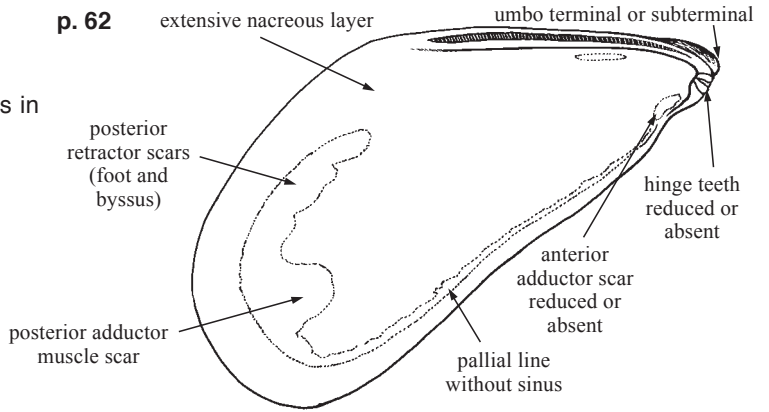
No species of interest to fisheries in the area.



**MYTILIDAE**

**Sea mussels**

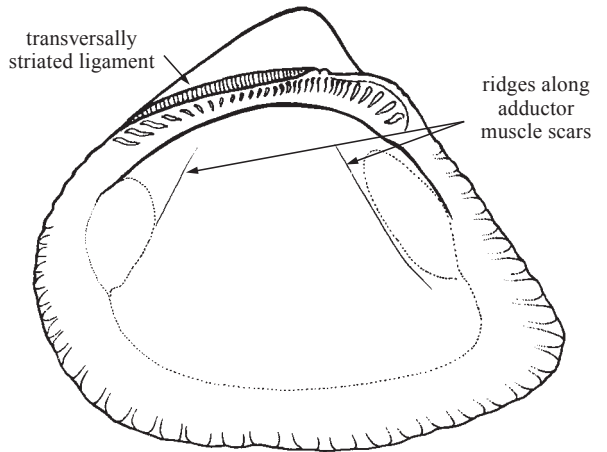
Six species of interest to fisheries in the area.



**NOETIIDAE**

**Noetiid ark shells**

No species of interest to fisheries in the area.

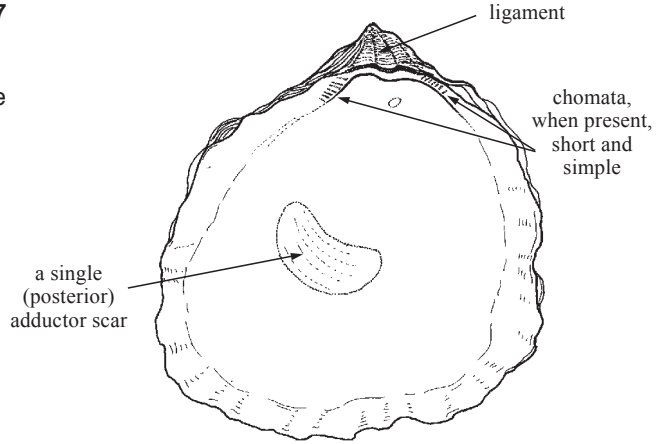


**OSTREIDAE**

p. 67

**Oysters**

Two species of interest to fisheries in the area.

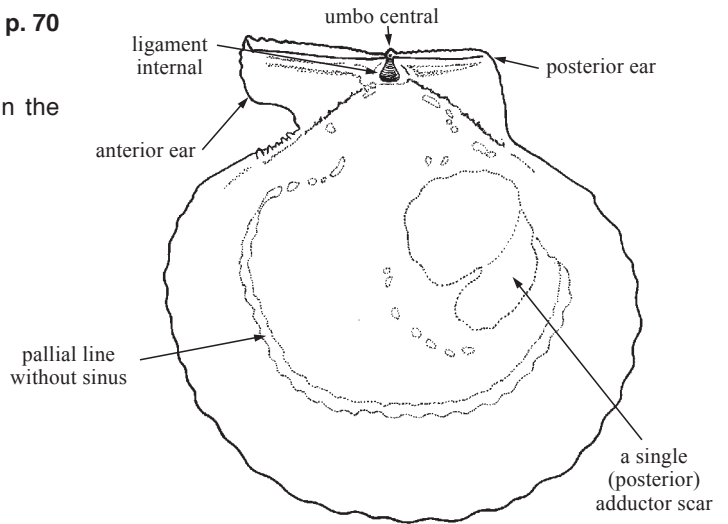


**PECTINIDAE**

p. 70

**Scallops**

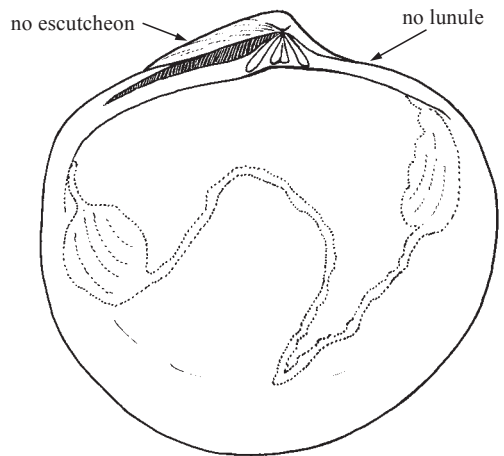
Four species of interest to fisheries in the area.



**PETRICOLIDAE**

**Petricolid clams**

No species of interest to fisheries in the area.

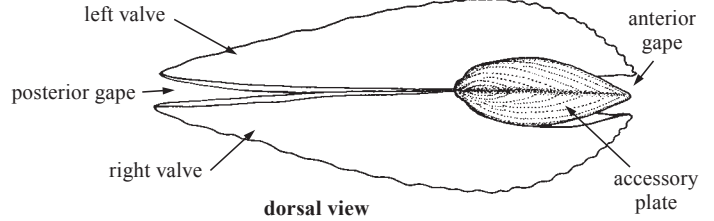
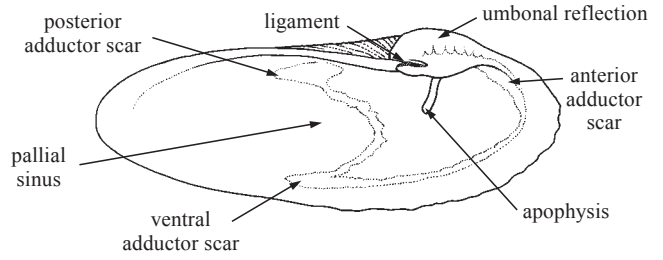


**PHOLADIDAE**

**Angel wings**

One species of interest to fisheries in the area.

p. 76

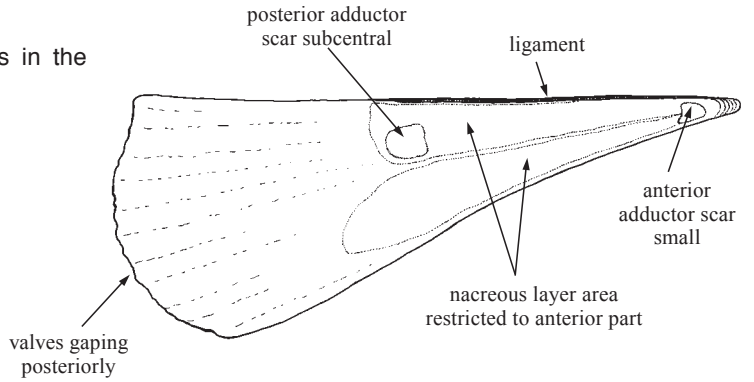


**PINNIDAE**

**Pen shells**

Two species of interest to fisheries in the area.

p. 78

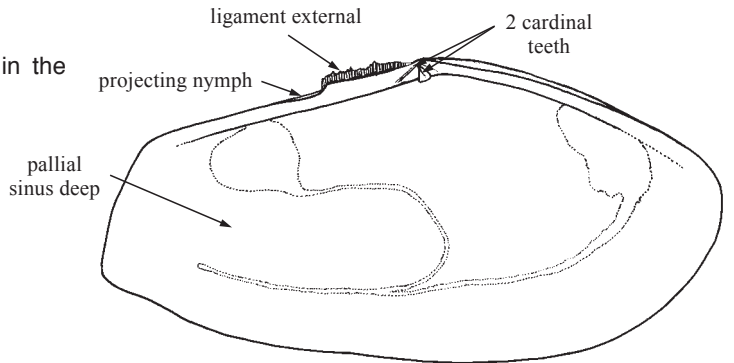


**PSAMMOBIIDAE**

**Sunset clams, sanguins**

One species of interest to fisheries in the area.

p. 81

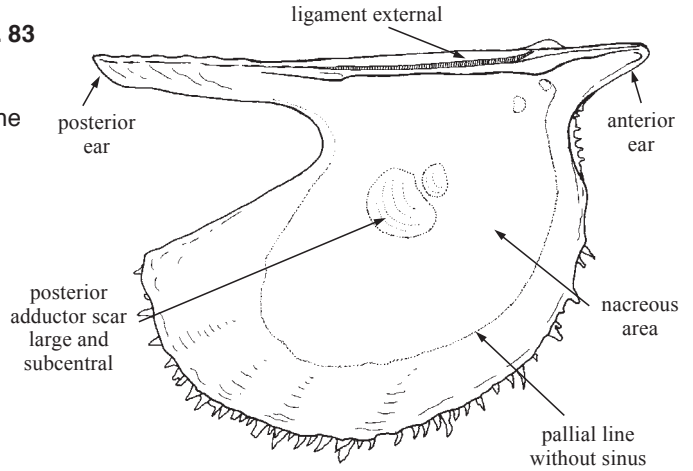


**PTERIIDAE**

p. 83

**Pearl oysters**

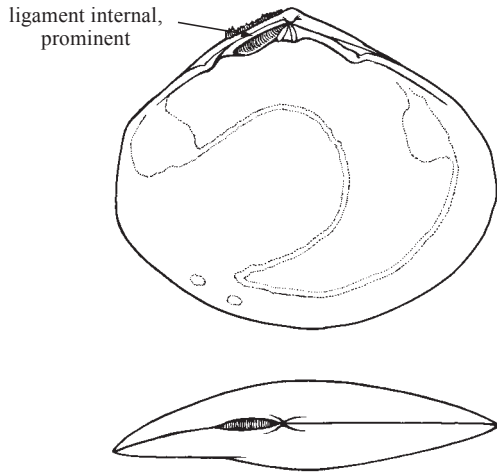
One species of interest to fisheries in the area.



**SEMELIDAE**

**Semelids**

No species of interest to fisheries in the area.

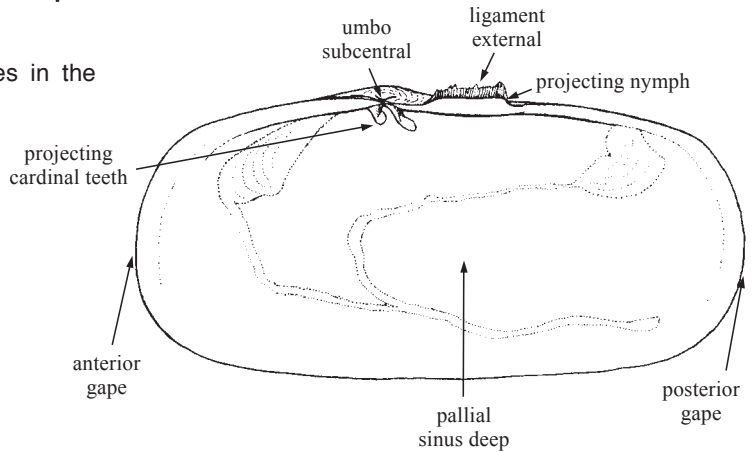


**SOLECURTIDAE**

p. 85

**Short razor clams**

One species of interest to fisheries in the area.

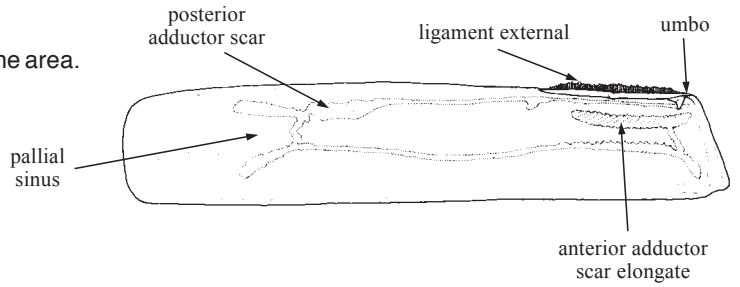


**SOLENIIDAE**

p. 87

**Knife and razor clams**

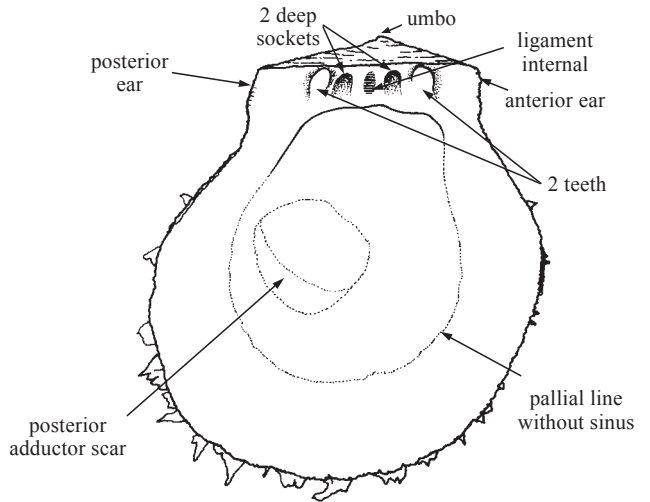
One species of interest to fisheries in the area.



**SPONDYLIDAE**

**Thorny oysters**

No species of interest to fisheries in the area.

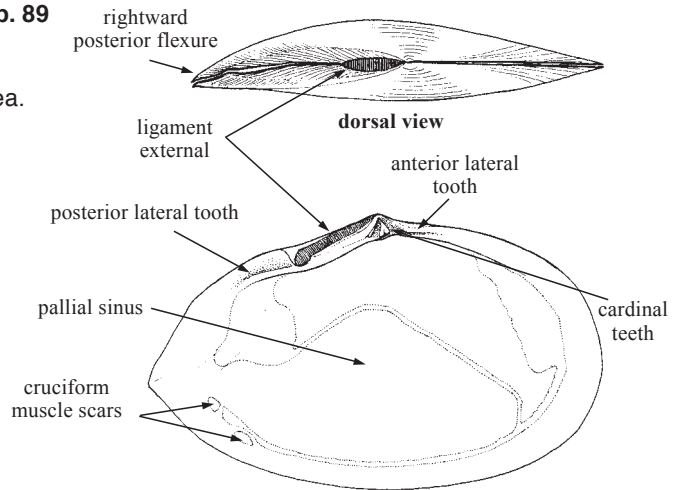


**TELLINIDAE**

p. 89

**Tellins**

Two species of interest to fisheries in the area.

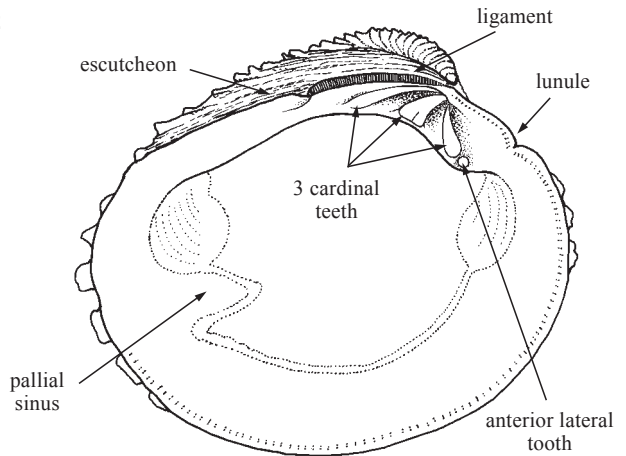


**VENERIDAE**

p. 92

**Venus clams**

Five species of interest to fisheries in the area.



**LIST OF FAMILIES AND SPECIES OF INTEREST TO FISHERIES  
OCCURRING IN THE AREA**

The symbol 🐚 is given when species accounts are included.

**ARCIDAE**

- 🐚 *Anadara brasiliiana* (Lamarck, 1819).
- 🐚 *Anadara notabilis* (Röding, 1798).
- 🐚 *Arca zebra* (Swainson, 1833).

**CARDIIDAE**

- 🐚 *Dinocardium robustum* (Lightfoot, 1786).
- 🐚 *Trachycardium muricatum* (Linnaeus, 1758).

**CORBICULIDAE**

- 🐚 *Polymesoda caroliniana* (Bosc, 1801).
- 🐚 *Polymesoda triangula* (Philippi, 1849).
- 🐚 *Polymesoda arctata* (Deshayes, 1854).

**DONACIDAE**

- 🐚 *Donax denticulatus* Linnaeus, 1758.
- 🐚 *Donax striatus* Linnaeus, 1767.
- 🐚 *Iphigenia brasiliiana* (Lamarck, 1818).

**LUCINIDAE**

- 🐚 *Codakia orbicularis* (Linnaeus, 1758).

**MACTRIDAE**

- 🐚 *Mactrellona alata* (Spengler, 1802).
- 🐚 *Rangia cuneata* (G. B. Sowerby I, 1831).

## MYTILIDAE

- 🐚 *Geukensia demissa* (Dillwyn, 1817).
- 🐚 *Modiolus americanus* (Leach, 1815).
- 🐚 *Modiolus squamosus* Beuaperthuy, 1867.
- 🐚 *Mytella guyanensis* (Lamarck, 1819).
- 🐚 *Mytella strigata* (Hanley, 1843).
- 🐚 *Perna perna* (Linnaeus, 1767).

## OSTREIDAE

- 🐚 *Crassostrea rhizophorae* (Guilding, 1828).
- 🐚 *Crassostrea virginica* (Gmelin, 1791).

## PECTINIDAE

- 🐚 *Amusium laurenti* (Gmelin, 1791).
- 🐚 *Argopecten gibbus* (Linnaeus, 1758).
- 🐚 *Argopecten irradians* (Lamarck, 1819).
- 🐚 *Euvola ziczac* (Linnaeus, 1758).

## PHOLADIDAE

- 🐚 *Cyrtopleura costata* (Linnaeus, 1758).

## PINNIDAE

- 🐚 *Atrina rigida* (Lightfoot, 1786).
- 🐚 *Atrina seminuda* (Lamarck, 1819).

## PSAMMOBIIDAE

- 🐚 *Asaphis deflorata* (Linnaeus, 1758).

## PTERIIDAE

- 🐚 *Pinctada imbricata* (Röding, 1798).

## SOLECURTIDAE

- 🐚 *Tagelus plebeius* (Lightfoot, 1786).

## SOLENIDAE

- 🐚 *Solen obliquus* Spengler, 1794.

## TELLINIDAE

- 🐚 *Tellina fausta* Pulteney, 1799.
- 🐚 *Tellina laevigata* Linnaeus, 1758.

## VENERIDAE

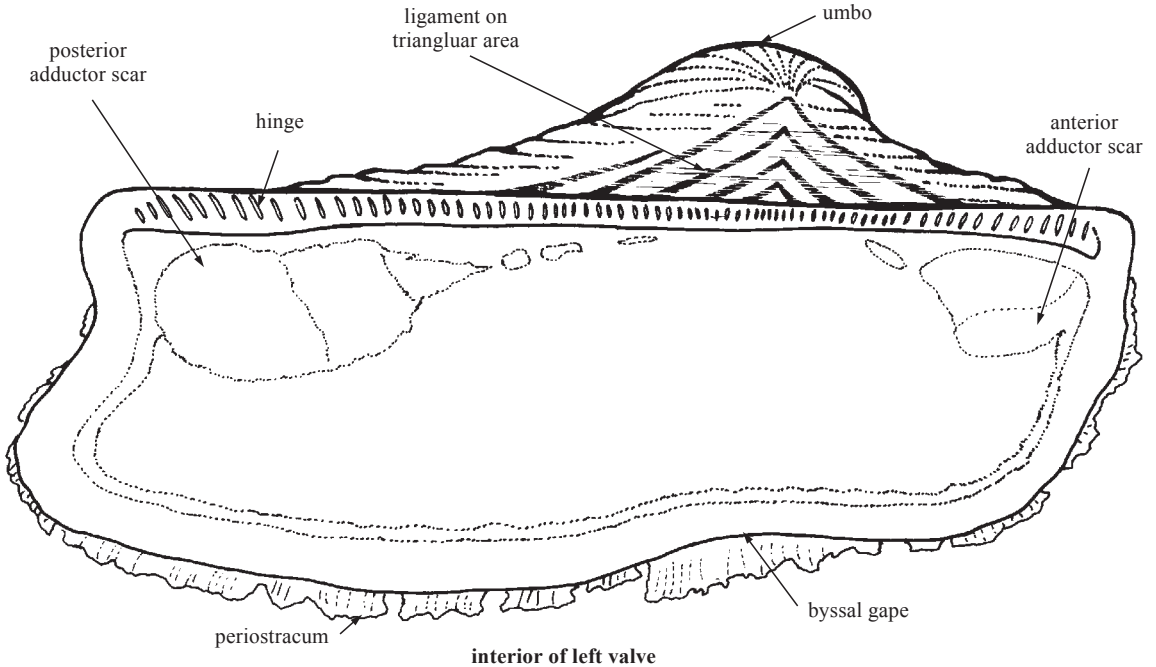
- 🐚 *Chione cancellata* (Linnaeus, 1767).
- 🐚 *Macrocallista maculata* (Linnaeus, 1758).
- 🐚 *Macrocallista nimbose* (Lightfoot, 1786).
- 🐚 *Mercenaria campechiensis* (Gmelin, 1791).
- 🐚 *Tivela mactroides* (Born, 1778).



**ARCIDAE**

**Ark shells**

**Diagnostic characters:** Shells very thick, heavy, box-like. Hinge with a large number of teeth perpendicular to main shell axis, usually of equal size and perpendicular to main shell axis. Usually with thick, dark periostracum.



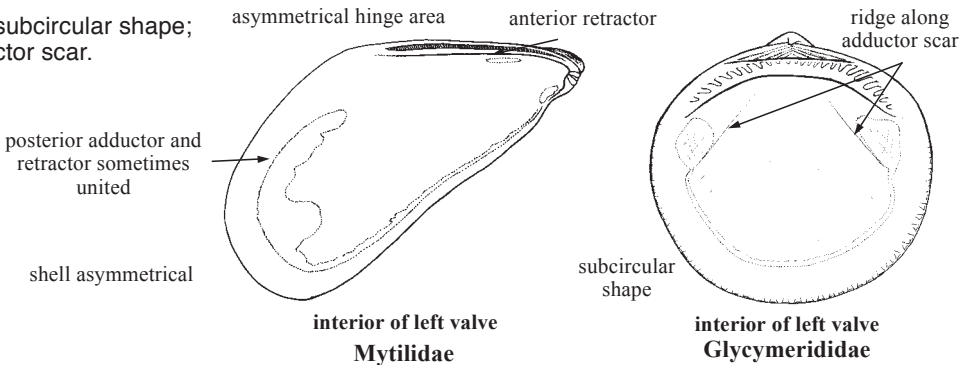
**Habitat, biology, and fisheries:** Most representatives of the family (for example, the genera *Arca* and *Barbatia*) live attached by byssus to the underside of rocks, coral heads, and other hard substrates. Other species (for example, the genus *Anadara*) live buried in sandy mud.

**Remarks:** Species listed are edible and mostly collected for food in the southern half of the area. Not usually eaten in the USA because of their bitter taste and because of the hemoglobin content of the blood in some species.


**Similar families occurring in the area**




**Mytilidae:** shell elongate, with umbones near or at anterior end; ligament in anterior margin; hinge without teeth or with tiny denticles; internal surface nacreous; adductor muscle scars differing in size, the anterior small or absent.

**Glycymerididae:** subcircular shape; ridge along adductor scar.



**List of species of interest to fisheries occurring in the area**

The symbol  is given when species accounts are included.

-  *Anadara notabilis* (Röding, 1798).
-  *Arca zebra* (Swainson, 1833).
-  *Scapharca brasiliana* (Lamarck, 1819).

**References**

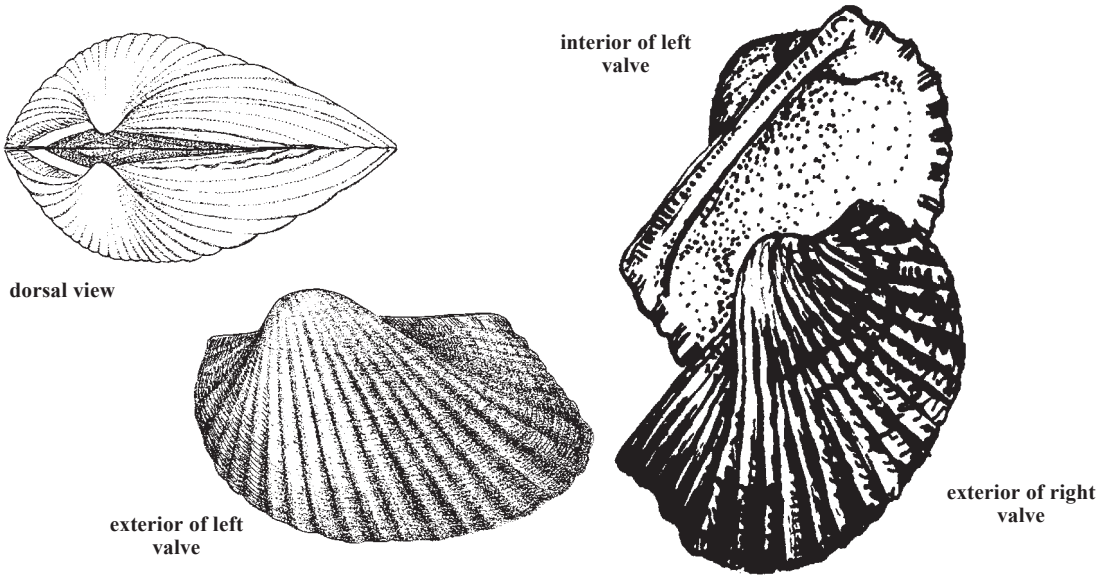
- Manrique, R. 1982. *Estudio de la producción y algunos aspectos ecológicos de la pepitona roja Anadara notabilis del Golfo de Cariaco*. Tesis Licenciatura en Biología, Universidad de Oriente, Cumaná, Venezuela, 94 p.
- Waller, T. R. 1980. Scanning electron microscopy of shell and mantle in the order Arcoidea (Mollusca: Bivalvia). *Smithsonian Contr. Zool.*, 313:1-58.

***Anadara notabilis* (Röding, 1798)**

NDL

**Frequent synonyms / misidentifications:** None / *Scapharca brasiliana* (Lamarck, 1819).

**FAO names:** En - Eared ark; Fr - Arche auriculée; Sp - Arca auriculada.

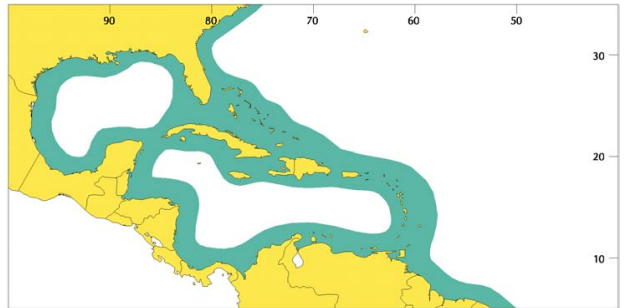


**Diagnostic characters:** Shell heavy, sturdy, inequivalve, with one valve slightly larger than the other. Anterior end short and rounded, posterior end longer and angled. Hinge straight. Sculpture of 25 to 27 radial ribs crossed by fine concentric lines prominent between ribs. Ribs never bifurcated. Umbones prominent, ligamental area large, hinge long, straight. Periostracum heavy. **Colour:** white; periostracum brown.

**Size:** To 90 mm.

**Habitat, biology, and fisheries:** Soft bottoms (mud or sand), sometimes in seagrass environments, at shallow intertidal depths. Consumed locally in soups and chowders.

**Distribution:** North Carolina to eastern Florida, Caribbean, south to Brazil.

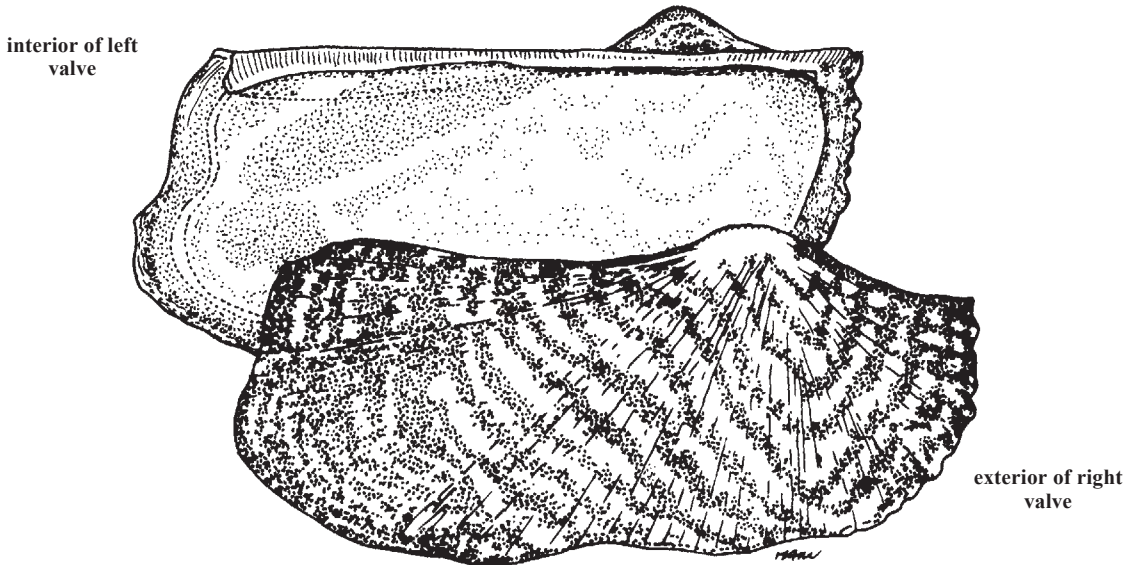


*Arca zebra* (Swainson, 1833)

RQZ

**Frequent synonyms / misidentifications:** None / *Arca imbricata* Bruguière, 1789

**FAO names:** En - Turkey wing; Fr - Arche zèbre; Sp - Arca cebra.

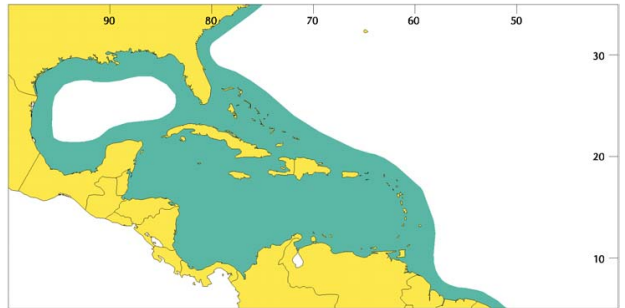


**Diagnostic characters:** Shell rectangular, elongate (twice as long as wide), equivalve. Sculpture of about 24 to 30 irregular radial ribs, and fine concentric threads that cross-ribs and interspaces. Byssal gap present opposite to hinge, moderately narrow. Hinge long, straight. **Colour:** creamy white, streaked with reddish to dark brown wavy bands. Periostracum brown and dense on fresh shells, covering colour pattern almost completely.

**Size:** To 100 mm.

**Habitat, biology, and fisheries:** Attached to the underside of rocks and coral heads by byssus. A relatively important resource in the southern half of the area (e.g., Venezuela), although detailed data about its fisheries are not available.

**Distribution:** North Carolina to Florida, Texas, Caribbean, south to Brazil, and Bermuda.

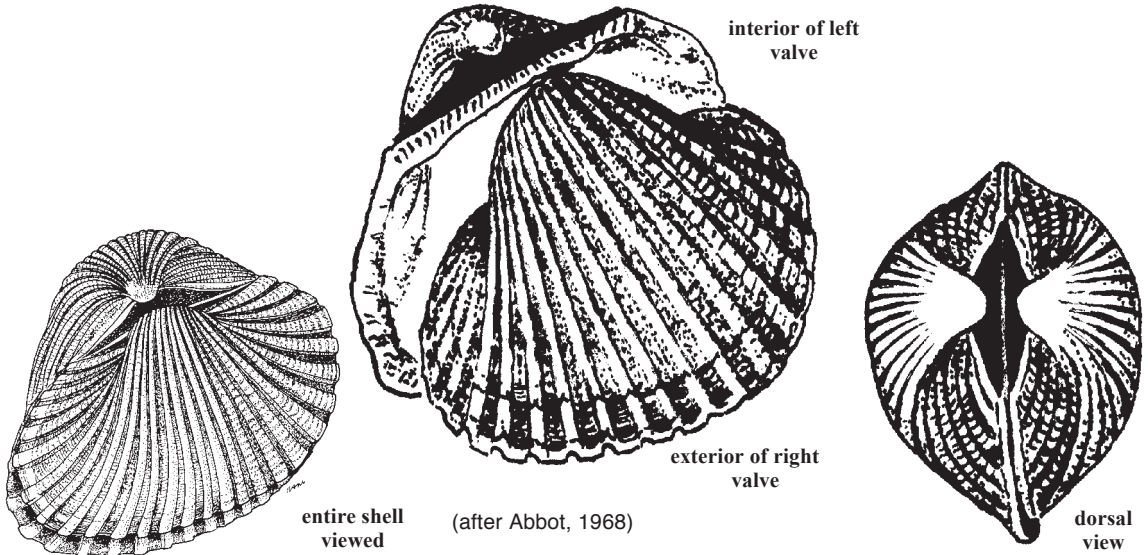


*Scapharca brasiliana* (Lamarck, 1819)

FCR

**Frequent synonyms / misidentifications:** None / *Anadara notabilis* (Röding, 1798).

**FAO names:** En - Incongruous ark; Fr - Arche incongrue; Sp - Arca pepitona.

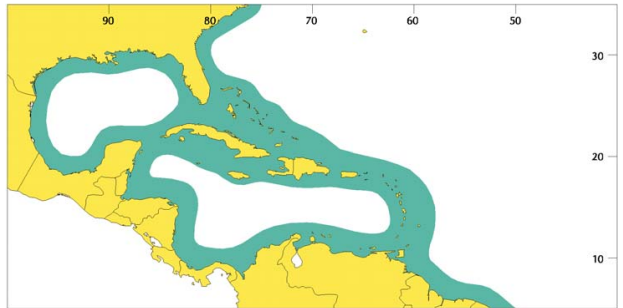


**Diagnostic characters:** Shell heavy, sturdy, almost as high as long, inequivalve, with left valve overlapping right. Sculpture of 26 to 28 radial ribs of square cross-section, each with prominent beads. Umbones facing each other. Hinge straight, ligament short, ligamental area with transversal striations. Periostracum thin. **Color:** white, periostracum light brown.

**Size:** To 78 mm.

**Habitat, biology, and fisheries:** On sand, shell rubble, and seagrass beds, at shallow subtidal depths. Collected for food mostly in the southern half of the area.

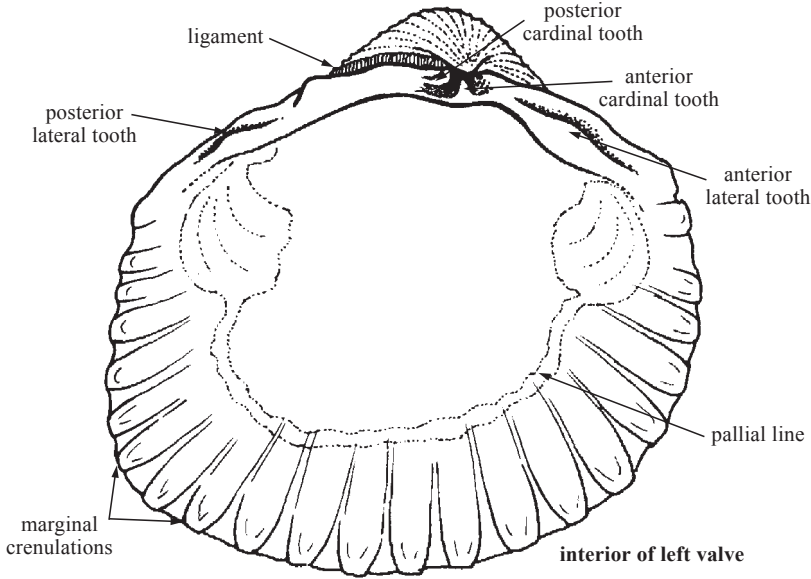
**Distribution:** North Carolina to Florida, Texas, Caribbean, and south to Brazil.



## CARDIIDAE

### Cockles

**Diagnostic characters:** Shell round, large, inflated, usually with strong radial sculpture that yields crenulated shell margins; scales or spines sometimes present along radial sculpture elements. Foot long and strong.

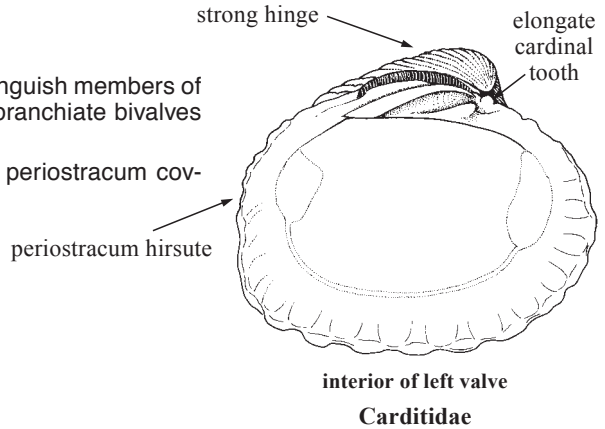


**Habitat, biology, and fisheries:** In sand, from the intertidal zone to deeper, sublittoral waters. Collected locally for food, mostly in the southern Caribbean.


#### Similar families occurring in the area



The characteristic features of the hinge easily distinguish members of the Cardiidae from other radially ribbed eulamellibranchiate bivalves such as the Carditidae.

Carditidae: hinge strong; cardinal tooth elongate; periostracum covered with hairy projections.



#### List of species of interest to fisheries occurring in the area

The symbol  is given when species accounts are included.

-  *Dinocardium robustum* (Lightfoot, 1786).
-  *Trachycardium muricatum* (Linnaeus, 1758).

#### References

- Schneider, J.A. 1992. Preliminary cladistic analysis of the bivalve family Cardiidae. *Am. Malac. Bull.*, 9(2):145-155.
- Schneider, J.A. 1995. Phylogeny of the Cardiidae (Mollusca, Bivalvia): Protocardiinae, Laevicardiinae, Lahiliinae, Tulongocardiinae subfam. n. and Pleurocardiinae subfam. n. *Zool. Scripta*, 24(4):321-346.

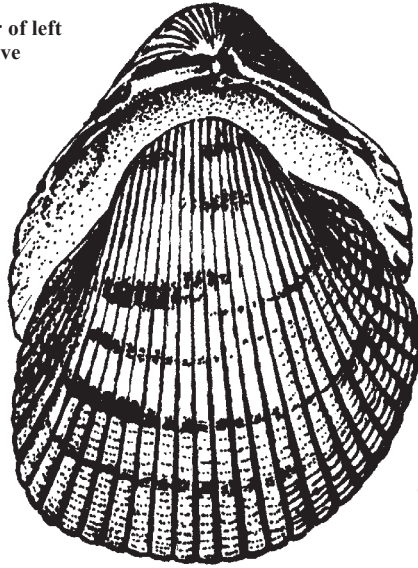
*Dinocardium robustum* (Lightfoot, 1786)

DKR

**Frequent synonyms / misidentifications:** None / None.

**FAO names:** En - Giant Atlantic cockle (AFS: Atlantic giant cockle); Fr - Bucarde géant de l'Atlantique; Sp - Berberecho del Atlántico.

interior of left  
valve



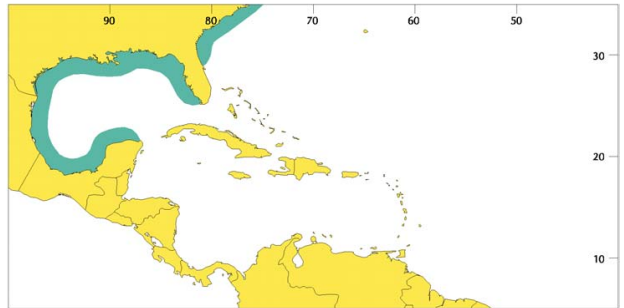
exterior of right  
valve

**Diagnostic characters:** Shell very large for family, inflated, obliquely ovate. Sculpture of about 32 to 36 rounded, smooth radial ribs. Pallial line simple. Margins crenulated. Umbones rounded. **Colour:** pale tan to yellowish brown, mottled irregularly with red-brown. Posterior slope mahogany brown. Interior salmon pink.

**Size:** To 125 mm.

**Habitat, biology, and fisheries:** Buried in sand in shallow subtidal environments. Hand-collected, consumed locally in chowders and soups.

**Distribution:** Virginia to Florida, Texas, and Mexico.

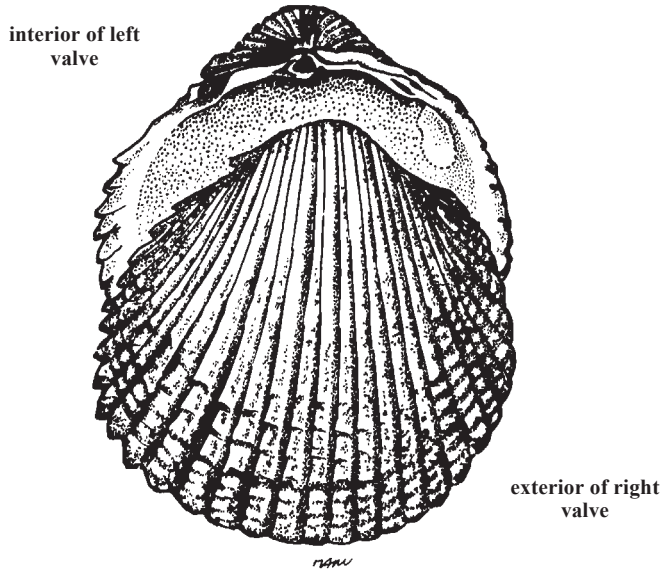


***Trachycardium muricatum*** (Linnaeus, 1758)

TIX

**Frequent synonyms / misidentifications:** None / *Trachycardium egmontianum* (Shuttleworth, 1856); *Trachycardium magnum* (Linnaeus, 1758).

**FAO names:** **En** - American yellow cockle (AFS: Yellow prickly cockle); **Fr** - Bucarde jaune; **Sp** - Berberecho amarillo.

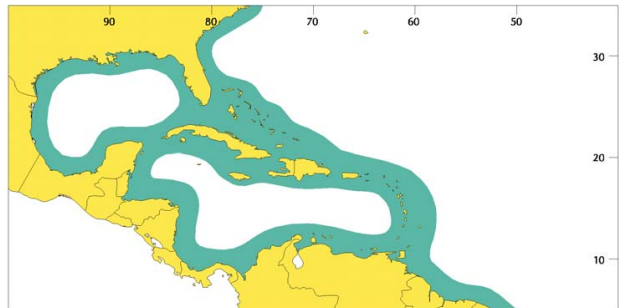


**Diagnostic characters:** Shell with circular to oval outline, equivalve, higher than long. Sculpture of 30 to 40 radial ribs with sharp scales. Scales less prominent on central ribs. Hinge well developed. **Colour:** externally light cream with irregular patches of brownish red or yellow; internally white, rarely yellowish.

**Size:** To 50 mm.

**Habitat, biology, and fisheries:** Buried in sand in moderately shallow subtidal conditions, sometimes in coral reef environments. Collected by hand, consumed locally in stews, chowders, and soups.

**Distribution:** North Carolina to Florida, Texas, Caribbean, and south to Brazil.

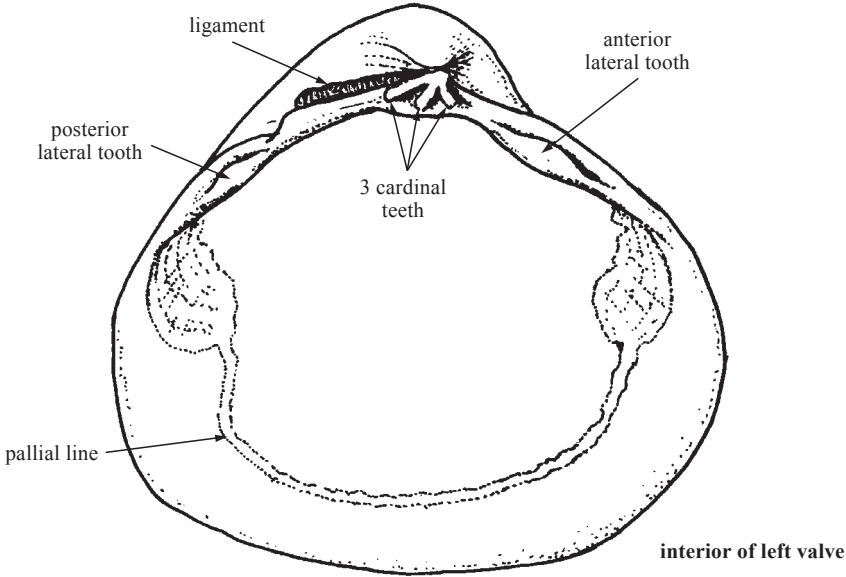




## CORBICULIDAE

## Marsh clams

**Diagnostic characters:** Shell oval to triangular. No lunule or scutcheon. Hinge with 3 cardinal teeth in either valve. Pallial sinus short to absent.

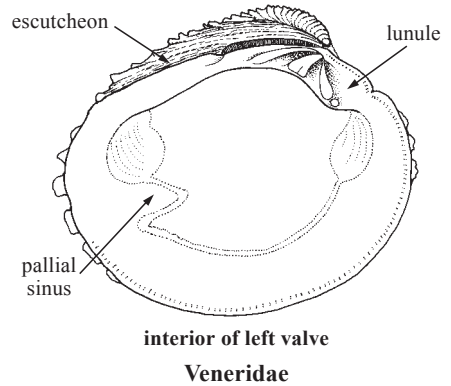


**Habitat, biology, and fisheries:** Buried in mud in estuaries, coastal lagoons, and other brackish-water environments. The listed species are consumed locally.

**Remarks:** Fisheries for these species in the USA are mainly prevented by restrictions prompted by degradation of enclosed brackish-water habitats.

## Similar families occurring in the area

Veneridae: shell usually solid, umbones anterior to midline, lunule and scutcheon usually present, sculpture usually concentric, sometimes lacking; ligament external; hinge with 3 or rarely 2 cardinal teeth in each valve; adductor muscles (and their scars) usually equivalent in size



## List of species of interest to fisheries occurring in the area

The symbol 🐚 is given when species accounts are included.

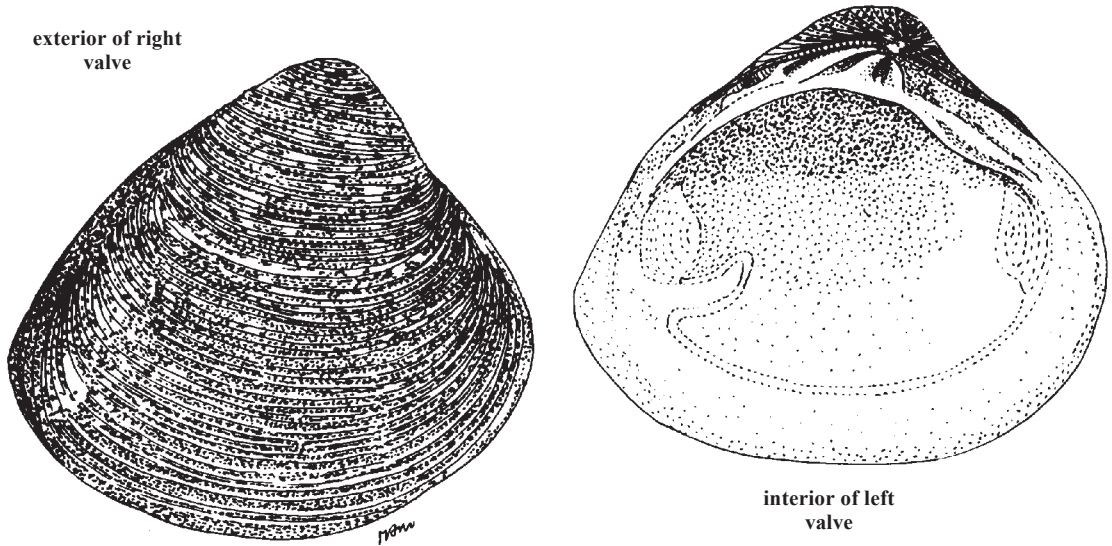
- 🐚 *Polymesoda arctata* (Deshayes, 1854).
- 🐚 *Polymesoda caroliniana* (Bosc, 1801).
- 🐚 *Polymesoda triangula* (Philippi, 1849).

***Polymesoda arctata*** (Deshayes, 1854)

YMK

**Frequent synonyms / misidentifications:** None / *Polymesoda triangula* (Philippi, 1849), *Polymesoda aequilatera* (Deshayes, 1854).

**FAO names:** **En** - Slender marsh clam; **Fr** - Cyrène élancée; **Sp** - Guacuco de marjal esbelto.



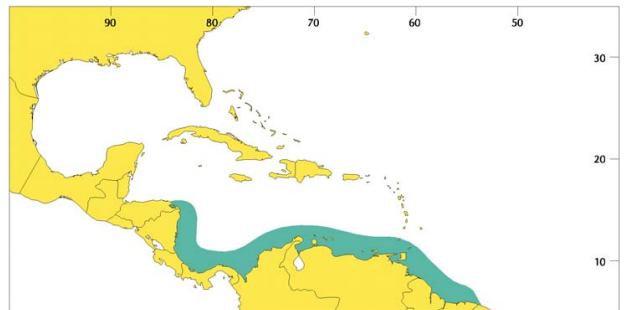
**Diagnostic characters:** Shell outline subtriangular, as high as long, inflated, heavy, slightly pointed posteriorly. Sculpture of well-defined concentric threads. Hinge with 3 cardinal teeth situated under umbo; 1 anterior and 1 posterior lateral tooth. Lateral teeth smooth. Ligament long, narrow. Periostracum with minute scales, fuzzy. **Colour:** externally cream-white, sometimes tinged with purple or grey, internally white often stained with purple and frequently with darker radial stripes at both ends; periostracum pale or dark brown.

**Size:** To 40 mm.

**Habitat, biology, and fisheries:** Infaunal in mud or sandy-mud in estuaries, mangrove swamps and coastal lagoons. Consumed locally, boiled.

**Distribution:** Southern Caribbean and northern South America.

**Remarks:** The similar species *Polymesoda aequilatera* (Deshayes, 1854) is apparently restricted to Suriname and Guyana.



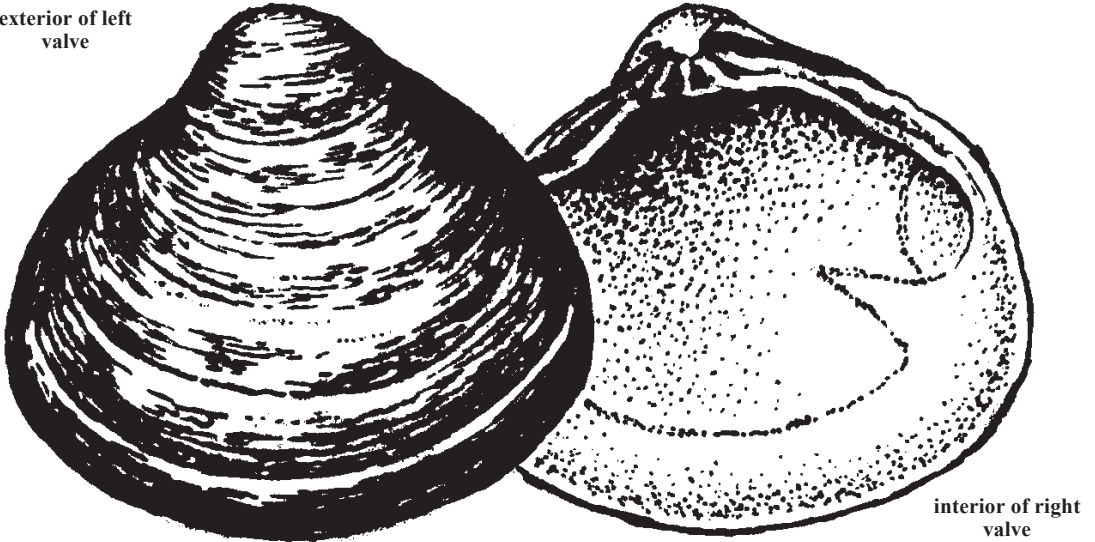
***Polymesoda caroliniana*** (Bosc, 1801)

YMR

**Frequent synonyms / misidentifications:** None / *Polymesoda triangula* (Philippi, 1849).

**FAO names:** **En** - Carolina marsh clam; **Fr** - Praire marais de la Caroline; **Sp** - Almeja de marjal.

exterior of left  
valve



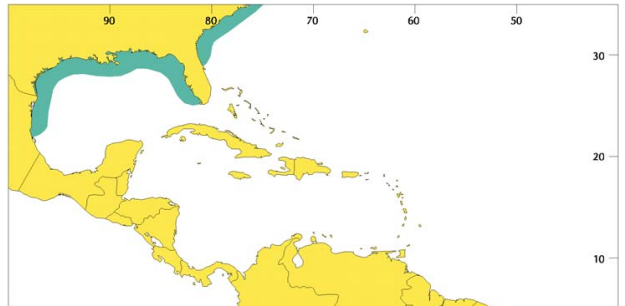
interior of right  
valve

**Diagnostic characters:** Shell outline subtriangular, as high as long, inflated, heavy. Shell smooth, sculpture absent. Hinge with three cardinal teeth situated under umbo; 1 anterior and 1 posterior lateral tooth. Ligament long, narrow. Periostracum with minute scales, fuzzy, thin. **Colour:** externally dull white, internally white rarely stained with purple; periostracum glossy brown.

**Size:** To 35 mm.

**Habitat, biology, and fisheries:** Infaunal in mud or sandy mud in estuaries, mangrove swamps, and coastal lagoons. Consumed locally boiled, restrictions due to habitat degradation hamper exploitation in parts of area.

**Distribution:** Texas and Virginia to northern Florida.

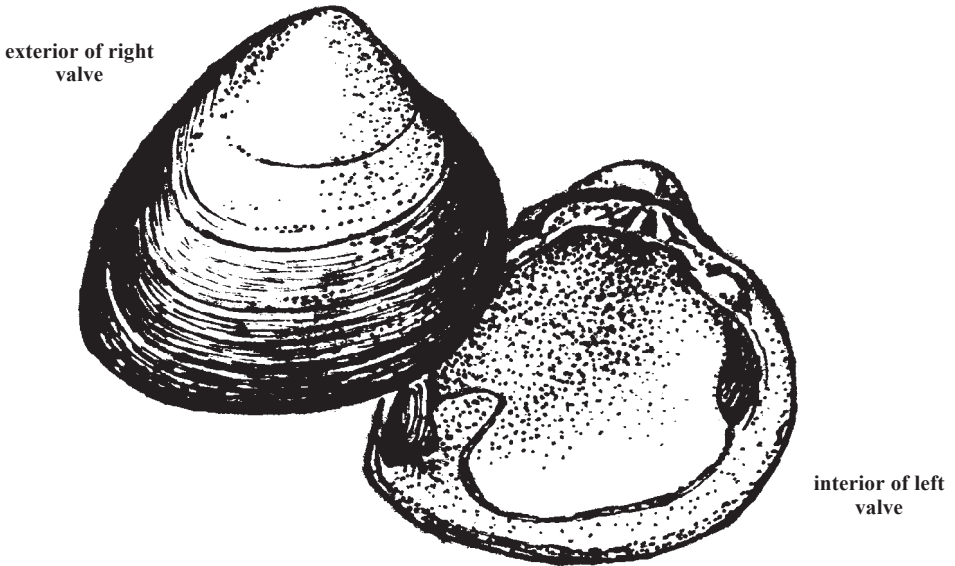


***Polymesoda triangula*** (Philippi, 1849)

YMT

**Frequent synonyms / misidentifications:** None / *Polymesoda arctata* (Deshayes, 1854), *Polymesoda aequilatera* (Deshayes, 1854).

**FAO names:** En - Triangular marsh clam; Fr - Praire marais triangulaire; Sp - Almeja de marjal triangular.



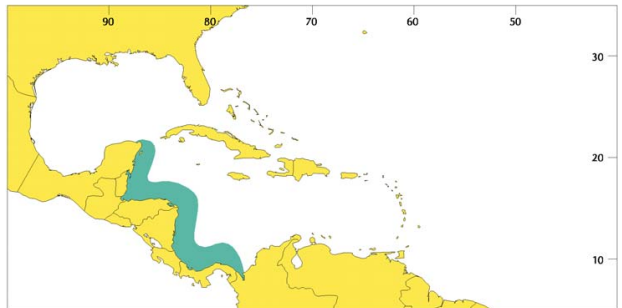
**Diagnostic characters:** Shell outline triangular, as high as long, inflated, heavy. Shell smooth, sculpture absent. Hinge with 3 cardinal teeth situated under umbo; 1 anterior and 1 posterior lateral tooth. Ligament long, narrow. Periostracum smooth. **Colour:** externally dull white, internally white; periostracum grey to greyish brown.

**Size:** To 45 mm.

**Habitat, biology, and fisheries:** Infaunal in mud or sandy mud in estuaries, mangrove swamps, and coastal lagoons. Consumed locally boiled.

**Distribution:** Mexican Caribbean to Panama.

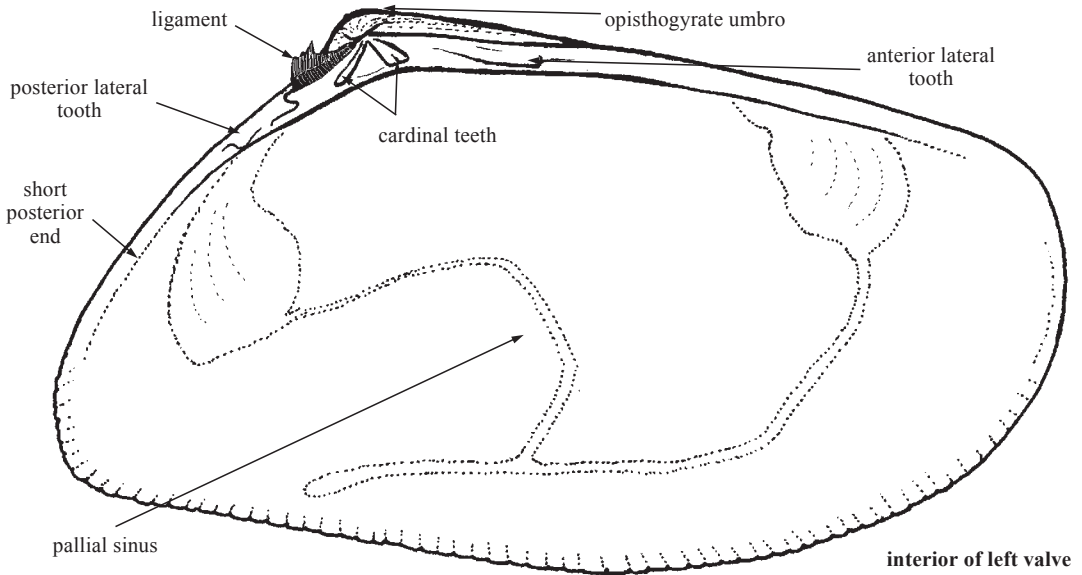
**Remarks:** The similar species *Polymesoda aequilatera* (Deshayes, 1854) is apparently restricted to Suriname and Guyana.



**DONACIDAE**

**Donax clams**

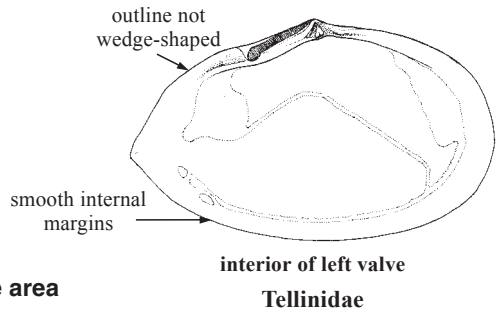
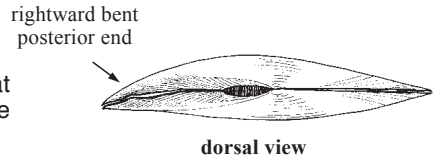
**Diagnostic characters:** Shell wedge-shaped, usually with an angled (keel-like) posterior surface. Ligament external. Hinge with 2 cardinal teeth on each valve. Adductor muscle scars subequal.



**Habitat, biology, and fisheries:** Species well-adapted to the intertidal zone of high-energy, sandy beaches. Three species of interest to fisheries in the area. Collected by hand, rakes, dredges, or shovels. Consumed locally raw, marinated, or in chowders.

**Similar families occurring in the area**

Tellinidae: shell compressed, oval to oblong, usually with flexed at posterior end; sculpture mostly lacking; ligament external; hinge with 2 cardinal teeth in each valve; pallial sinus deep.



**List of species of interest to fisheries occurring in the area**

The symbol 🐚 is given when species accounts are included.

- 🐚 *Donax denticulatus* Linnaeus, 1758.
- 🐚 *Donax striatus* Linnaeus, 1767.
- 🐚 *Iphigenia brasiliana* (Lamarck, 1818).

**Reference**

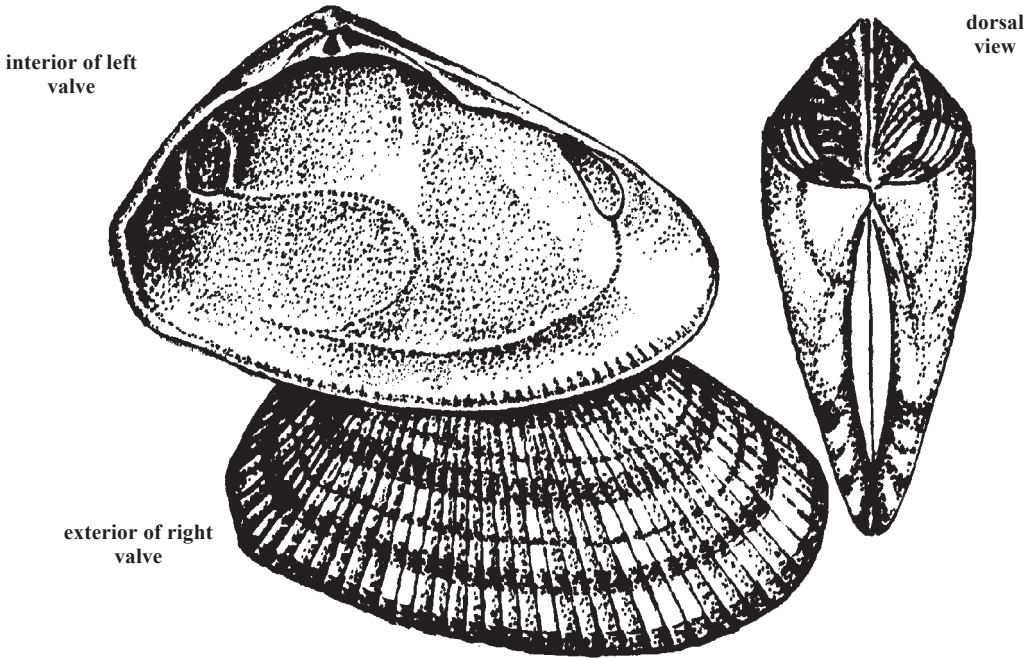
Adamkewicz, S.L. and M.G. Harasewych. 1996. Systematics and biogeography of the genus *Donax* (Bivalvia: Donacidae) in North America. *Am. Malac. Bull.*, 13:97-103.

*Donax denticulatus* Linnaeus, 1758

DXD

**Frequent synonyms / misidentifications:** None / *Donax striatus* Linnaeus, 1767.

**FAO names:** **En** - Common Caribbean donax; **Fr** - Flion des Caraïbes; **Sp** - Coquina del Caribe.

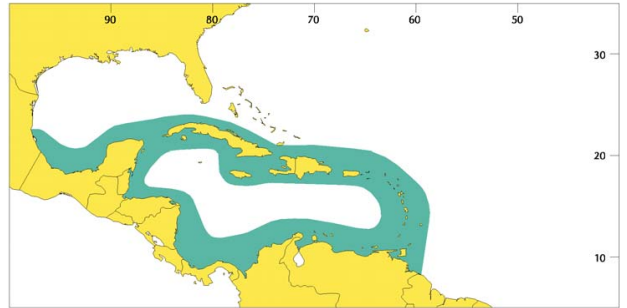


**Diagnostic characters:** Shell wedge-shaped, inflated. Posterior slope with 2 curved ridges. Surface sculpture consisting of fine radial grooves of microscopic pinpoints. **Colour:** variable, usually brown, yellowish, or purple, with rays of darker hues.

**Size:** To 25 mm.

**Habitat, biology, and fisheries:** Infaunal in shallow sand, usually in environments rich in particulate organic matter. Consumed locally in soups and chowders.

**Distribution:** Southeastern Caribbean to northern Brazil.

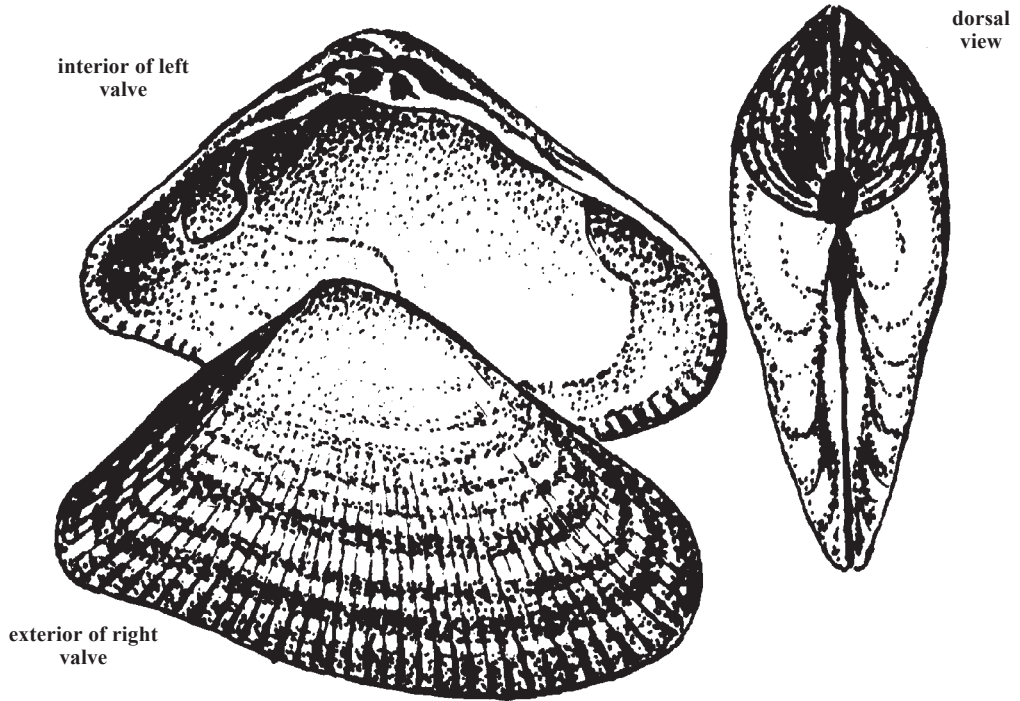


*Donax striatus* Linnaeus, 1767

DNT

**Frequent synonyms / misidentifications:** None / *Donax denticulatus* Linnaeus, 1758.

**FAO names:** **En** - Striate donax; **Fr** - Flion ridée; **Sp** - Coquina rayada.



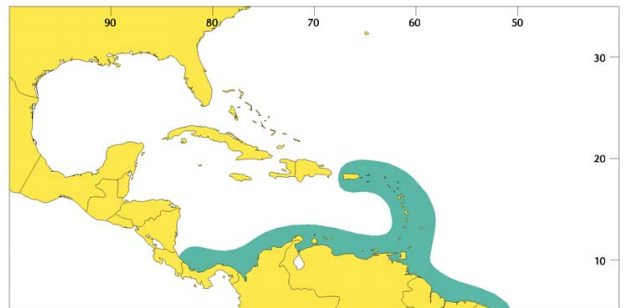
**Diagnostic characters:** Shell wedge-shaped, inflated. Posterior slope flat or concave, with fine radial threads.

**Colour:** variable, usually cream with purplish or bluish tinges. Umbones usually of darker hues.

**Size:** To 25 mm.

**Habitat, biology, and fisheries:** Infaunal in shallow sand, usually in environments rich in particulate organic matter. Consumed locally in soups and chowders.

**Distribution:** Caribbean and Lower Antilles to northern South America.

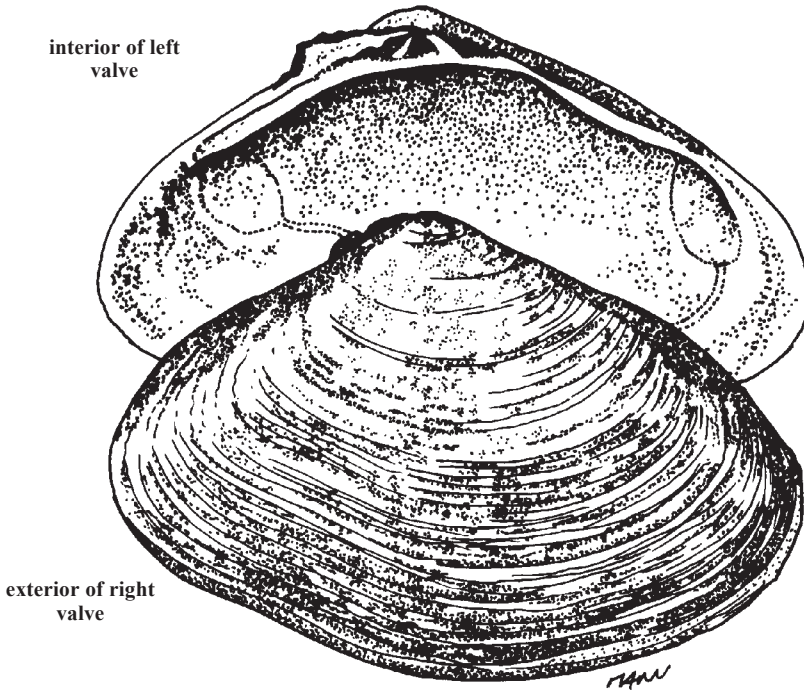


*Iphigenia brasiliana* (Lamarck, 1818)

IFB

**Frequent synonyms / misidentifications:** None / *Polymesoda arctata* (Deshayes, 1854).

**FAO names:** **En** - Giant false donax (AFS: Giant coquina); **Fr** - Donace géanté; **Sp** - Coquina gigante.

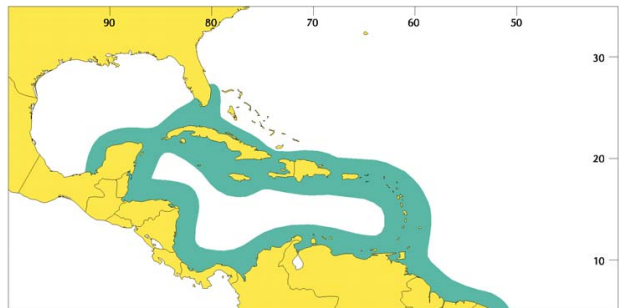


**Diagnostic characters:** Shell wedge-shaped, heavy, moderately inflated, with rhomboidal outline. Shell surface smooth. Posterodorsal slope somewhat flat. Pallial sinus large. Hinge with 2 lateral teeth (1 bifid) on each valve, lateral teeth absent. Umbones slightly posterior. Periostracum thin, glossy. **Colour:** tan cream with purple umbonal region; periostracum brown.

**Size:** To 65 mm.

**Habitat, biology, and fisheries:** Infaunal in shallow sandy bottoms. Consumed locally in stews and chowders.

**Distribution:** Southern Florida to Brazil.

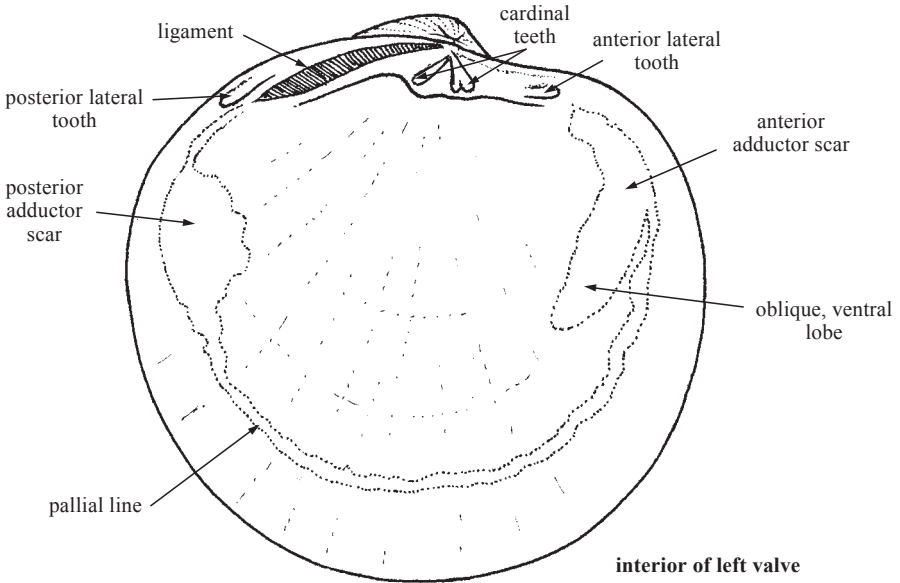




## LUCINIDAE

### Lucinas

**Diagnostic characters:** Shell disk-shaped, ligament external, hinge typically with 2 cardinal and 2 lateral teeth. Pallial sinus absent. Foot long.

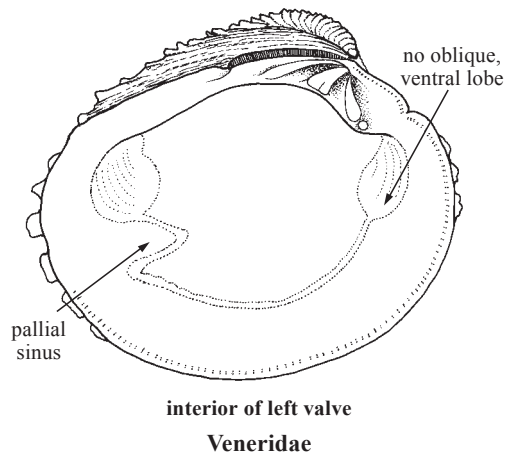


**Habitat, biology, and fisheries:** Shallow-water, subtidal habitat. Buried deeply in sand or sandy-mud. Hand-collected, consumed locally.

**Remarks:** Members of the family typically host symbiotic bacteria in their gills.

#### Similar families occurring in the area

Veneridae: shell usually solid, umbones anterior to midline, lunule and scutcheon usually present, sculpture usually concentric, sometimes lacking; ligament external; hinge with 3 or rarely 2 cardinal teeth in each valve; adductor muscles (and their scars) usually equivalent in size.



#### List of species of interest to fisheries occurring in the area

The symbol 🐚 is given when species accounts are included.

🐚 *Codakia orbicularis* (Linnaeus, 1758).

#### References

- Brestsky, S. S. 1976. Evolution and classification of the Lucinidae (Mollusca: Bivalvia). *Paleontogr. Am.*, 8(50):219-337.
- Gros, O., L. Frenkiel, and M. Mouéza. 1997. Embryonic, larval, and post-larval development in the symbiotic clam *Codakia orbicularis* (Bivalvia: Lucinidae). *Inv. Biol.* 116(2):86-101.

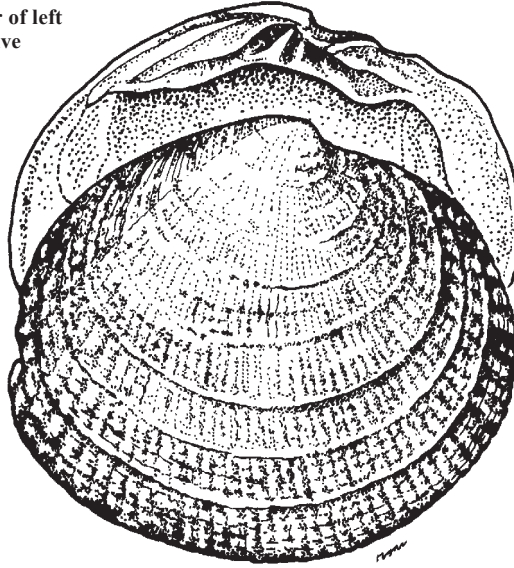
*Codakia orbicularis* (Linnaeus, 1758)

KKO

**Frequent synonyms / misidentifications:** None / *Codakia orbiculata* (Montagu, 1808); *Codakia costata* (d'Orbigny, 1842)

**FAO names:** **En** - Atlantic tiger lucine (AFS: Tiger lucine); **Fr** - Lucine tigrée américaine; **Sp** - Lucina tigre americana.

interior of left  
valve



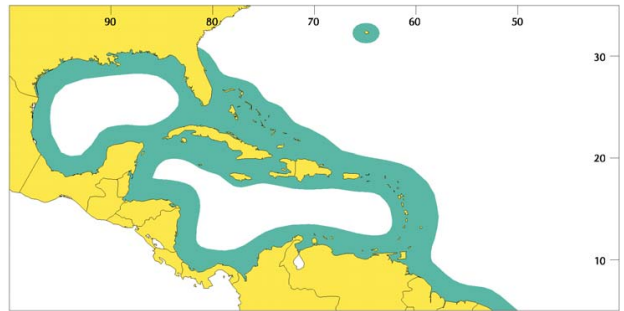
exterior of right  
valve

**Diagnostic characters:** Shell circular (but slightly longer than taller), compressed, thick. Sculpture of radial lines crossed by finer concentric threads, except for smooth surfaces of umbones and 5 mm of subsequent growth. Lunule deep, heart-shaped, larger on right valve. Periostracum thin. **Colour:** externally white, internally white to pale lemon yellow, with pink margins; periostracum brownish.

**Size:** To 85 mm.

**Habitat, biology, and fisheries:** Infaunal, burying deeply in sand at subtidal depths. Consumed locally.

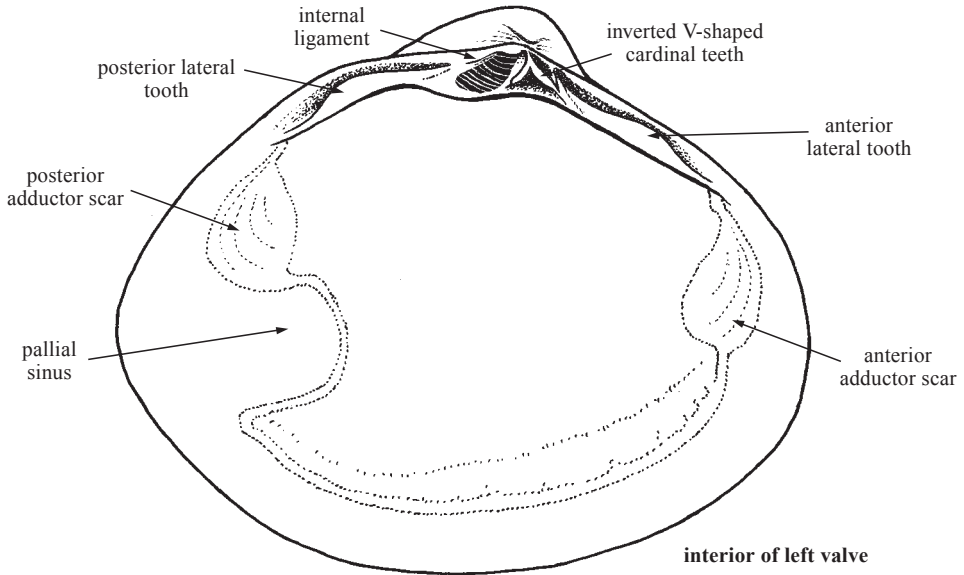
**Distribution:** Florida to Texas, Caribbean south to Brazil, and Bermuda.



## MACTRIDAE

### Trough shells

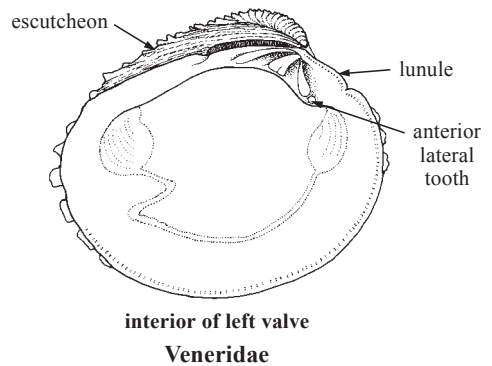
**Diagnostic characters:** Shell triangular to subtriangular, internal ligament, with chondrophore, typically with 2 fused cardinal teeth forming an 'inverted V' in left valve. Siphons fused.



**Habitat, biology, and fisheries:** Found in sandy or muddy sand bottoms. Outside area, surf clams are known to be added to catches of quahogs. Consumed locally in areas where pollution is minimal or nonexistent.

### Similar families occurring in the area

Veneridae: Shell usually solid, umbones anterior to midline, lunule and scutcheon usually present, sculpture usually concentric, sometimes lacking; ligament external; hinge with 3 or rarely 2 cardinal teeth in each valve; adductor muscles (and their scars) usually equivalent in size.



### List of species of interest to fisheries occurring in the area

The symbol 🐚 is given when species accounts are included.

🐚 *Mactrellona alata* (Spengler, 1802).

🐚 *Rangia cuneata* (G. B. Sowerby I, 1831).

### References

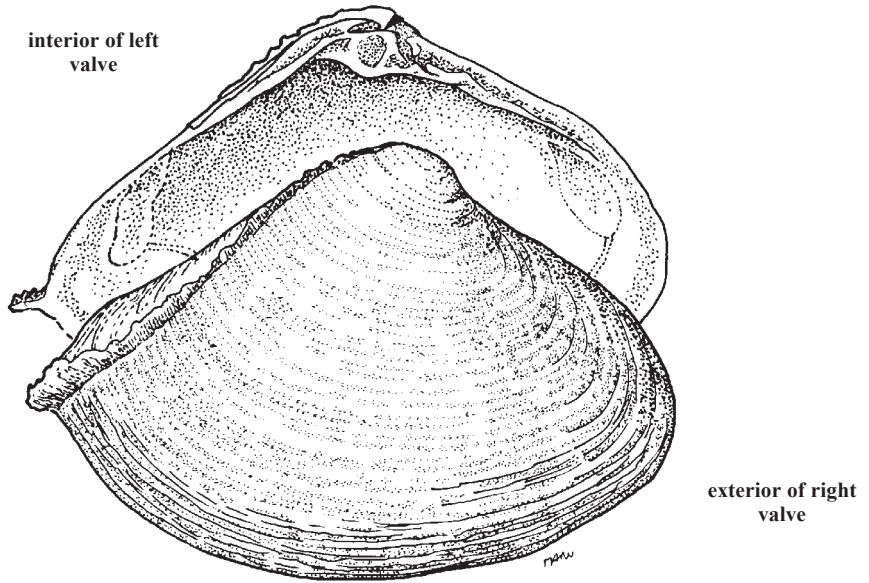
- Sundberg, K. and V.S. Kennedy. 1992. Growth and development in the Atlantic rangia, *Rangia cuneata*. *J. Shell. Res.*, 11(1):9-12.
- Sundberg, K. and V.S. Kennedy. 1993. Larval settlement of the Atlantic rangia, *Rangia cuneata* (Bivalvia: Mactridae). *Estuaries*, 16:223-228.

*Mactrellona alata* (Spengler, 1802)

WMC

**Frequent synonyms / misidentifications:** None / None.

**FAO names:** En - Caribbean winged mactra; Fr - Mactre ailée; Sp - Mactra alada.

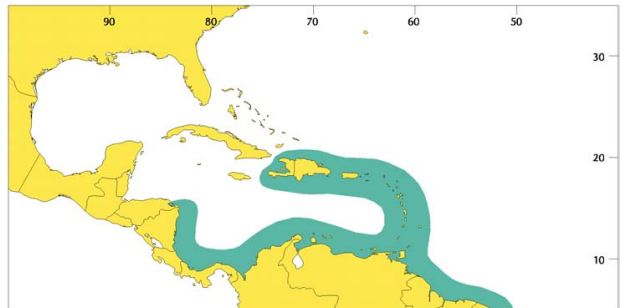


**Diagnostic characters:** Shell thin, triangular, inflated, light. Posterior slope typically flattened and bound by characteristically elevated, 'keel-like' ridge. Hinge with anterior lateral teeth short. Umbones prominent, twisted inward. Periostracum thin, flaky when dry. **Colour:** white; periostracum yellowish.

**Size:** To 100 mm.

**Habitat, biology, and fisheries:** Infaunal, in shallow subtidal sand. Consumed locally in chowders, soups, and stews.

**Distribution:** Caribbean to southeastern Brazil and tropical eastern Pacific.

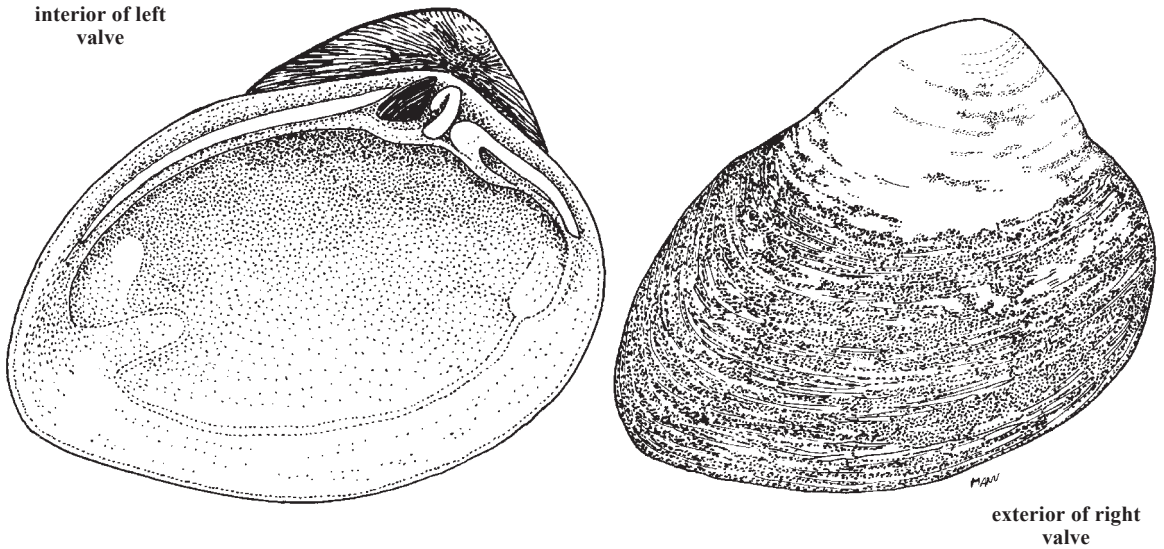


*Rangia cuneata* (G. B. Sowerby I, 1831)

RGQ

**Frequent synonyms / misidentifications:** None / *Tivela mactroides* (Born, 1778).

**FAO names:** **En** - Common rangia (AFS: Atlantic rangia); **Fr** - Rangie américaine; **Sp** - Rangia americana.



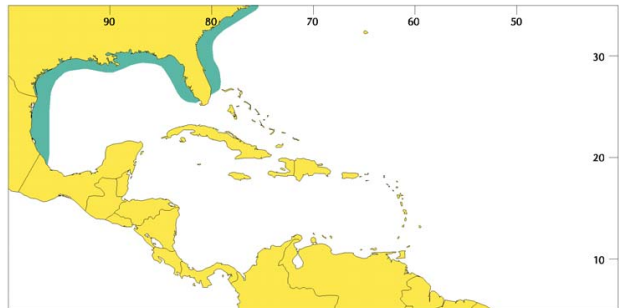
**Diagnostic characters:** Shell oval, heavy, very thick. Hinge with lateral teeth transversally striated. Pallial sinus reduced. Umbones anterior, pointing inward and in anterior direction. Periostracum strong and smooth.

**Colour:** externally dirt white, internally glossy white with slight blue-grey tinge; periostracum grey-brown.

**Size:** To 50 mm.

**Habitat, biology, and fisheries:** Infaunal in sandy mud, in very low salinity brackish water. Consumed locally in chowders.

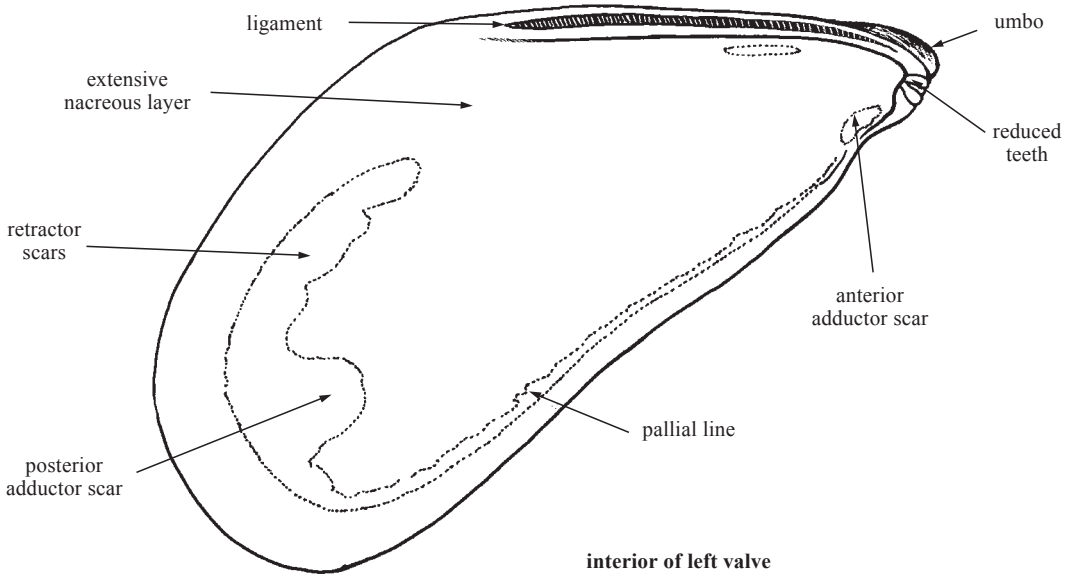
**Distribution:** Maryland to Texas and eastern Gulf of Mexico.



## MYTILIDAE

### Sea mussels

**Diagnostic characters:** Shell elongate, with umbones near or at anterior end. Ligament in anterior margin. Hinge without teeth or with tiny denticles. Internal surface nacreous. Adductor muscle scars differing in size, the anterior small or absent.

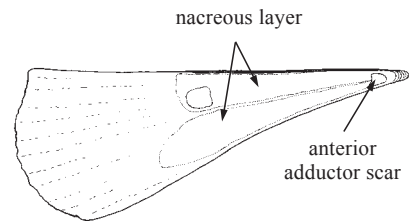


interior of left valve

**Habitat, biology, and fisheries:** Species of interest to fisheries live attached to hard substrates by byssus in the intertidal. Mostly consumed locally, but species in the genus *Perna* and *Mytilus* heavily exploited commercially.

### Similar families occurring in the area

Pinnidae: shell large, brittle, triangular, with pointed umbones at anterior end; ligament internal, posterior, inset along interior shell margin; adductor muscle scars different in size, anterior muscle small, near umbo, posterior muscle large, central.



interior of left valve

Pinnidae

### List of species of interest to fisheries occurring in the area

The symbol 🐚 is given when species accounts are included.

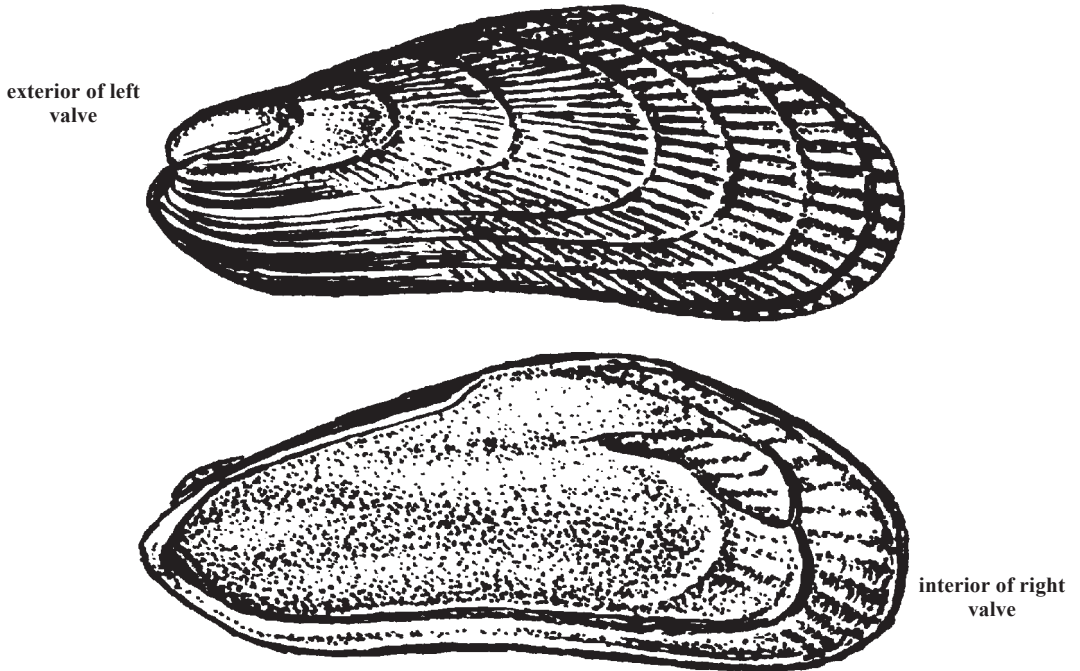
- 🐚 *Geukensia demissa* (Dillwyn, 1817).
- 🐚 *Modiolus americanus* (Leach, 1815).
- Modiolus squamosus* Beuperthuy, 1867.
- 🐚 *Mytella guyanensis* (Lamarck, 1819).
- Mytella strigata* (Hanley, 1843).
- 🐚 *Perna perna* (Linnaeus, 1767).

***Geukensia demissa*** (Dillwyn, 1817)

GKD

**Frequent synonyms / misidentifications:** None / *Ischadium recurvum* (Rafinesque, 1820); *Brachidontes exustus* (Linnaeus, 1758).

**FAO names:** **En** - Atlantic ribbed mussel (AFS: Ribbed mussel); **Fr** - Moule côtelé de l'Atlantique; **Sp** - Mejillón costilludo atlántico.

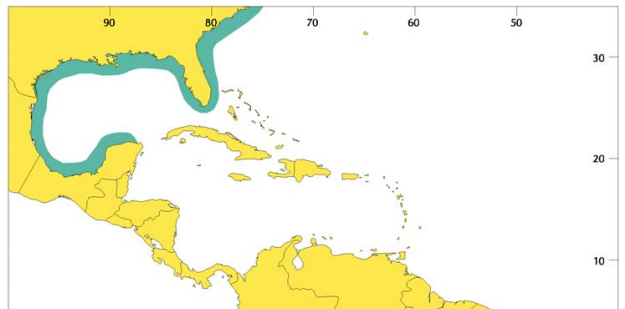


**Diagnostic characters:** Shell mussel-shaped, thin but strong. Shell margins crenulated. Sculpture of strong, numerous, bifurcating radial ribs, weaker on anteroventral area. Hinge teeth absent. **Colour:** externally variable, usually yellowish brown, greenish brown, or dark brown, internally bluish white with posterior end (rounded area) purplish.

**Size:** To 80 mm.

**Habitat, biology, and fisheries:** Lives attached to hard substrates intertidally or at shallow subtidal depths. Commercially exploited in the Yucatán/Campeche area of Mexico. Consumed locally boiled, grilled, or marinated.

**Distribution:** Canada to northeastern Florida; Gulf of Mexico; introduced to California.



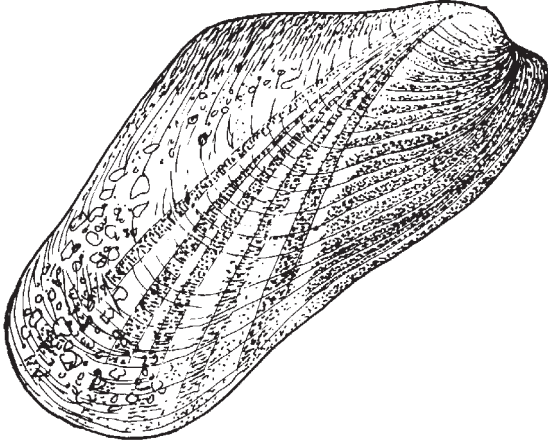
*Modiolus americanus* (Leach, 1815)

DJI

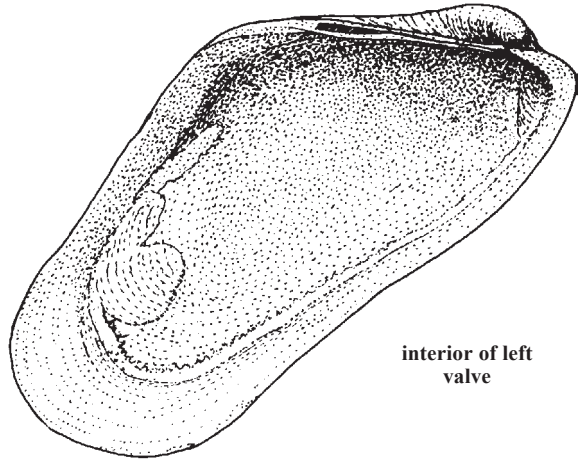
**Frequent synonyms / misidentifications:** None / *Modiolus modiolus* (Linnaeus, 1758)

**FAO names:** **En** - Tulip mussel (AFS: American horse mussel); **Fr** - Modiole tulipe; **Sp** - Mejillón tulipán.

exterior of right  
valve



interior of left  
valve

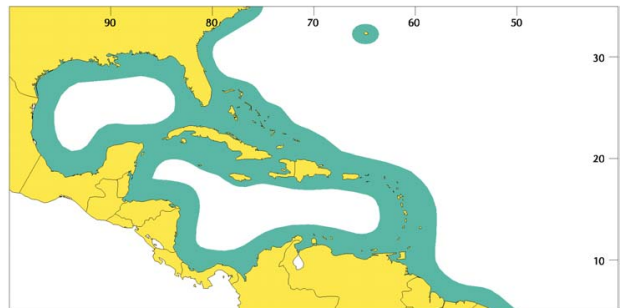


**Diagnostic characters:** Shell mussel-shaped, trigonal, thin. Sculpture of fine growth lines. Umbones swollen, not terminal (away from pointed end of shell). Hinge teeth absent. Periostracum heavy, sometimes hair-like. **Colour:** externally light brown with blush of rose, purple, or orange (concentrated on umbones) and purple streaks, but with a white oblique streak in middle of shell, internally pearly whitish, tinged with rose or purple.

**Size:** To 110 mm.

**Habitat, biology, and fisheries:** Lives attached to hard substrates intertidally or at shallow subtidal depths, mostly in coral reef areas. Consumed locally boiled, grilled, or marinated.

**Distribution:** South Carolina to Florida, Caribbean to Brazil, Bermuda, and Gulf of California to Peru.



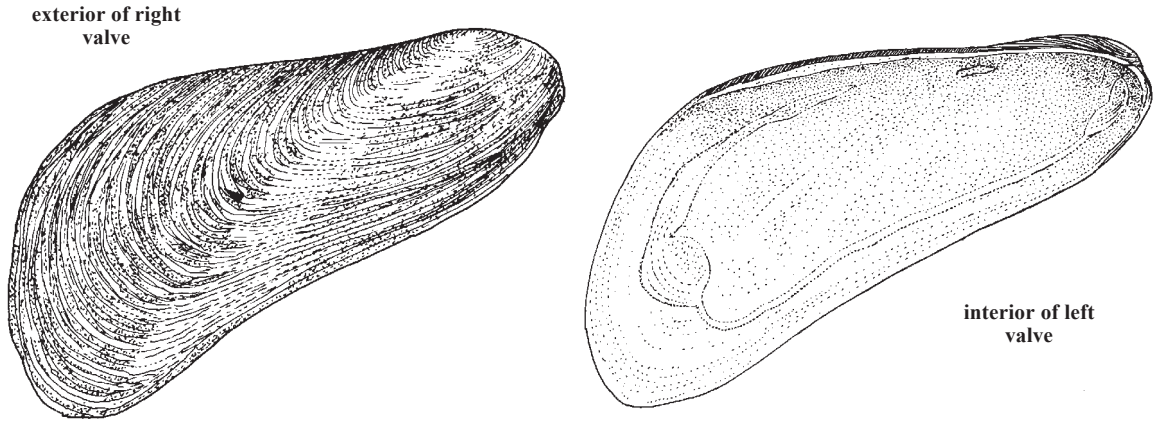


*Mytella guyanensis* (Lamarck, 1819)

YEG

**Frequent synonyms / misidentifications:** None / *Mytella strigata* (Hanley, 1843)

**FAO names:** **En** - Guyana swamp mussel; **Fr** - Moule de Guyane; **Sp** - Mejillón fanguero de Guayana.

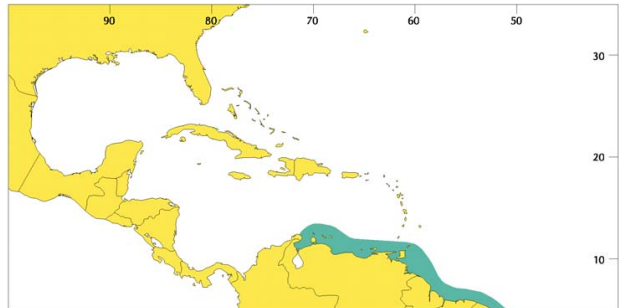


**Diagnostic characters:** Shell mussel-shaped, elongate, ventral region concave. Oblique ridge runs anterodorsal to posteroventral region of valve. Umbones subterminal. Posterior part of the mantle with branching tentacles. **Colour:** externally greenish on posterodorsal region (above ridge) and yellowish brown on anteroventral region (below ridge).

**Size:** To 90 mm.

**Habitat, biology, and fisheries:** Intertidal in bays and protected areas, forming clumps attached to mangrove prop roots or other hard substrates. Consumed locally (in southern part of area) in stews, boiled, grilled, or with rice.

**Distribution:** Southern Caribbean to southeastern Brazil.

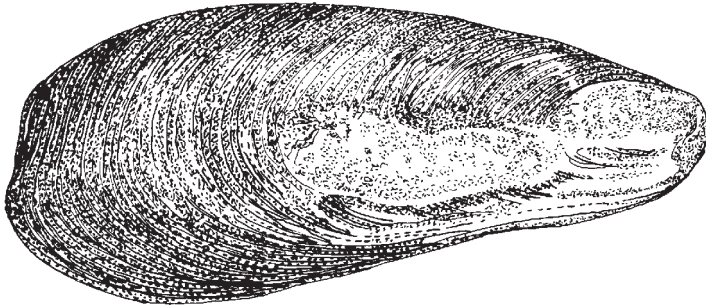


*Perna perna* (Linnaeus, 1767)

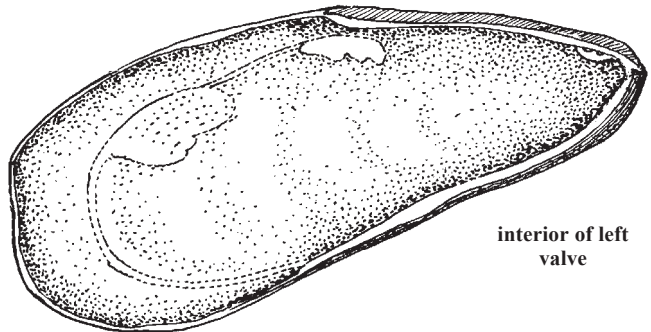
MSL

**Frequent synonyms / misidentifications:** None / *Mytilus edulis* Linnaeus, 1758.

**FAO names:** **En** - South American rock mussel (AFS: Brown mussel); **Fr** - Moule roche sudaméricaine; **Sp** - Mejillón de roca sudamericano.



exterior of right  
valve



interior of left  
valve

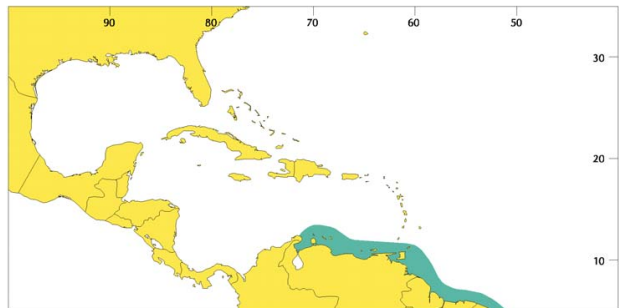
**Diagnostic characters:** Shell mussel-shaped, ventral margin straight, posterior end rounded. Shell surface smooth except for fine growth lines. Hinge with 1 or 2 teeth. Periostracum flaky. **Colour:** externally brown or light brown with concentric yellow bands near ventral margin, internally purple, nacreous.

**Size:** To 170 mm.

**Habitat, biology, and fisheries:** Attached by byssus onto hard substrates, common in high-energy rocky coasts. Species heavily exploited commercially, stocks are dwindling in southernmost part of range. Consumed boiled in own juices, marinated, grilled, with rice, or in a number of different local dishes. Canned industrially.

**Distribution:** Southern Caribbean to Brazil.

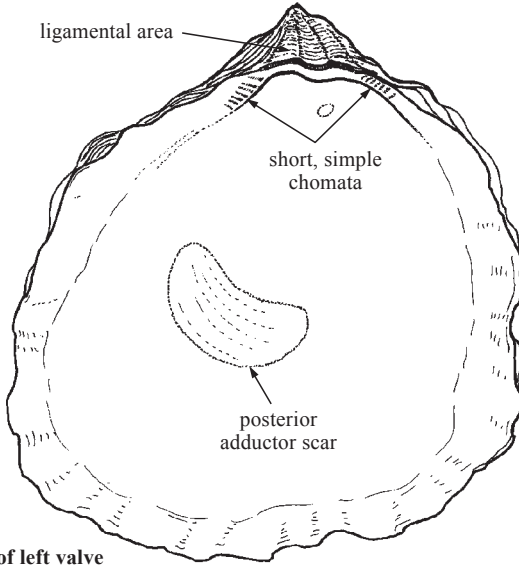
**Remarks:** Largest mytilid in area.



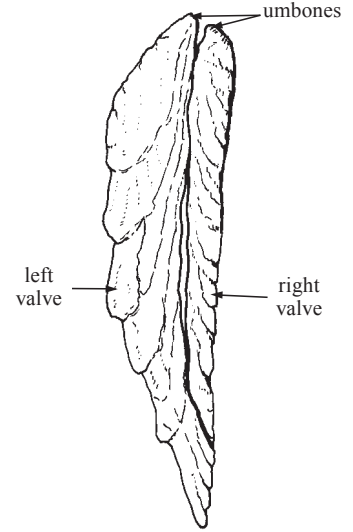
**OSTREIDAE**

**Oysters**

**Diagnostic characters:** Shell irregularly shaped, attached (cemented) to hard substrate by the left valve. Ligament external, in shallow depression. Only posterior adductor muscle scar present.



interior of left valve



posterior view of entire shell

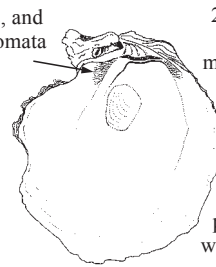
**Habitat, biology, and fisheries:** Oysters attach themselves to hard substrates, inhabiting the intertidal zone in protected, bay waters, usually in mangrove-associated habitats. The 2 species covered represent some of the most heavily exploited bivalves in the area. Populations have dwindled in several countries due to over-exploitation.

**Similar families occurring in the area**

**Gryphaeidae:** shell structure vesicular, distinguishable under a lens on an eroded part of the shell, or along peripheral area of the interior; adductor muscle scar nearer to the hinge than to the ventral margin; chromata long, sinuous, and branched.

**Chamidae:** pallial line without sinus; hinge with large curved teeth parallel to dorsal margin; 2 subequal adductor muscle scars.

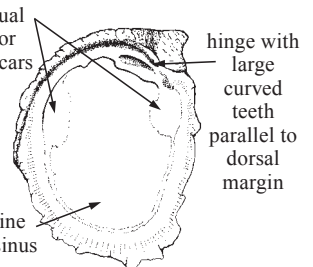
long, sinuous, and branched chromata



interior of left valve

**Gryphaeidae**


2 subequal adductor muscle scars





interior of left valve

**Chamidae**

**List of species of interest to fisheries occurring in the area**

The symbol  is given when species accounts are included.

 *Crassostrea rhizophorae* (Guilding, 1828).

 *Crassostrea virginica* (Gmelin, 1791).

**References**

Harry, H. 1985. Synopsis of the supraspecific classification of living oysters (Bivalvia: Gryphaeidae and Ostreidae). *The Veliger*, 28:121-158.

Kennedy, V.S. 1996. The ecological role of the eastern oyster *Crassostrea virginica*, with remarks on disease. *J. Shell. Res.*, 15:177-183.

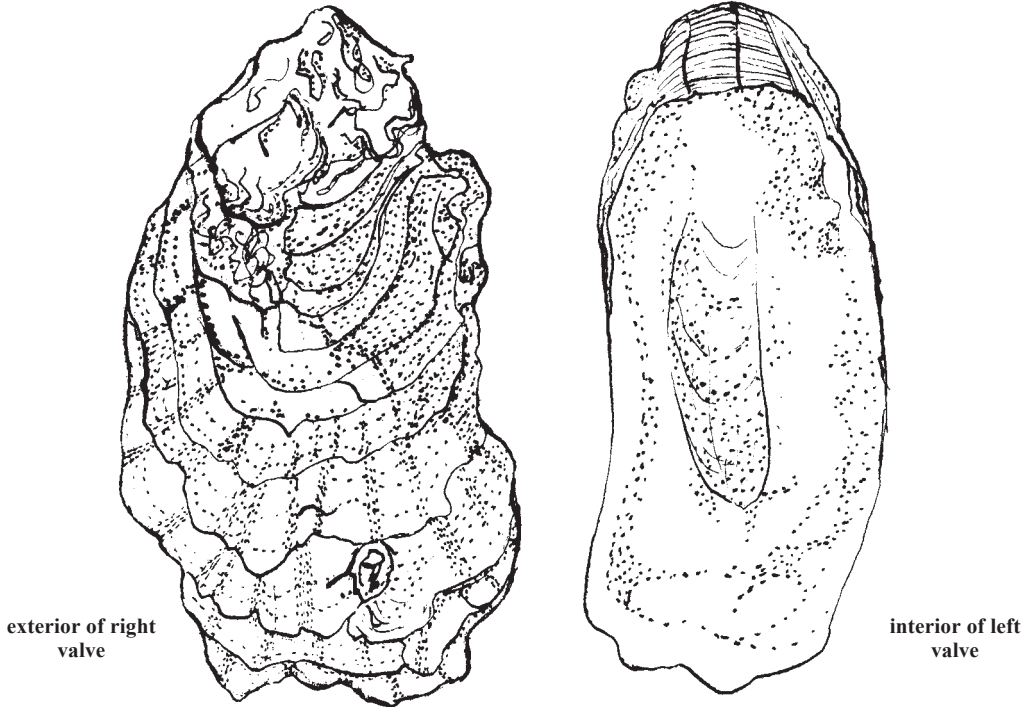
Littlewood, D.T.J. 1989. A bibliography of literature on the mangrove oyster *Crassostrea rhizophorae* (Guilding, 1828). *J. Shell. Res.*, 7:389-393.

*Crassostrea rhizophorae* (Guilding, 1828)

OYM

**Frequent synonyms / misidentifications:** None / *Crassostrea virginica* (Gmelin, 1791)

**FAO names:** **En** - Mangrove cupped oyster; **Fr** - Huître creuse des Caraïbes; **Sp** - Ostión de mangle.

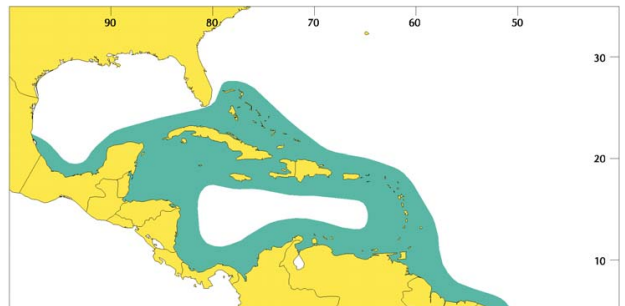


**Diagnostic characters:** Shell lightweight, deep-cupped, inequivalve, left valve (attached) larger than right. Shell shape and outline variable. Inner margin smooth. Resilium transversally striated. **Colour:** externally dirty light grey, internally whitish or light grey spotted with bluish purple.

**Size:** To 120 mm.

**Habitat, biology, and fisheries:** Attached to prop roots of red mangrove, *Rhizophora mangle*, rocks, or other oyster shells. It is mostly an intertidal or shallow-subtidal species. Represents one of the most heavily exploited bivalves in the area. Populations are strongly depleted due to over exploitation or contaminated by organic pollutants. The species may face ecological competition from the introduced Japanese oyster, *Crassostrea gigas* (Thunberg, 1793) in parts of the area. Consumed raw, fried, grilled, or boiled. Canned industrially.

**Distribution:** Caribbean to Brazil.

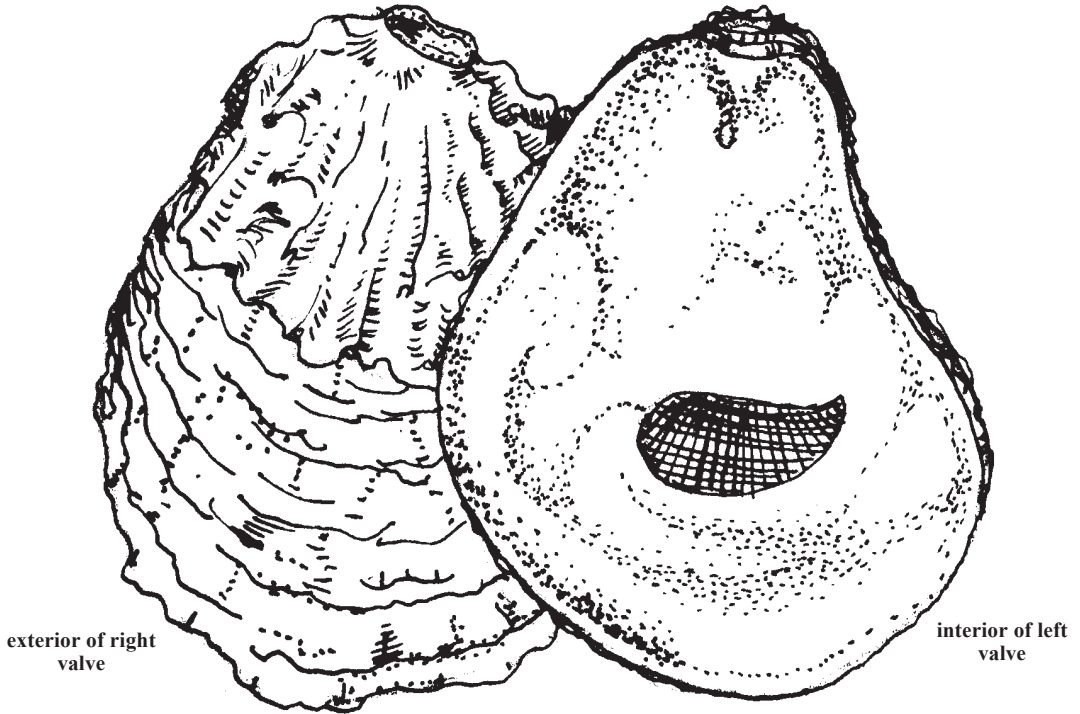


*Crassostrea virginica* (Gmelin, 1791)

OYA

**Frequent synonyms / misidentifications:** None / *Crassostrea rhizophorae* (Goulding, 1828).

**FAO names:** **En** - American cupped oyster (AFS: Eastern oyster); **Fr** - Huître creuse américaine; **Sp** - Ostión americano.

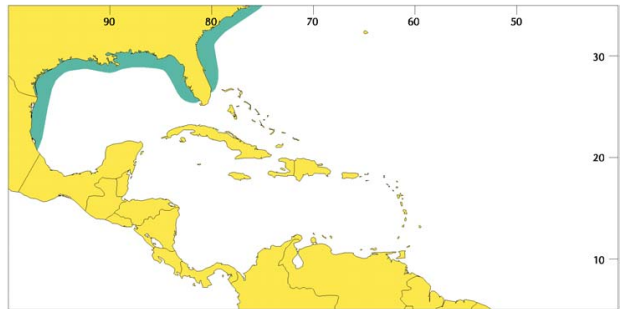


**Diagnostic characters:** Shell thick and heavy, usually narrow and elongate, but extremely variable in shape. Upper valve flatter, smaller than lower valve; lower valve convex. Shell shape and outline variable. Shell margins undulating to straight. Umbones long and curved. **Colour:** dirty to light grey, internally white with muscle scar deep purple.

**Size:** To 300 mm.

**Habitat, biology, and fisheries:** Species represents the northern counterpart of *Crassostrea rhizophorae* (distribution of the 2 species overlaps in the northern Caribbean). Lives attached to rocks, other oyster shells, or other hard substrates. It is mostly an intertidal or shallow-subtidal species. Represents one of the most heavily exploited bivalves in the area. Populations are strongly depleted due to over-exploitation or contaminated by organic pollutants. Consumed raw, fried, grilled, boiled. Canned industrially.

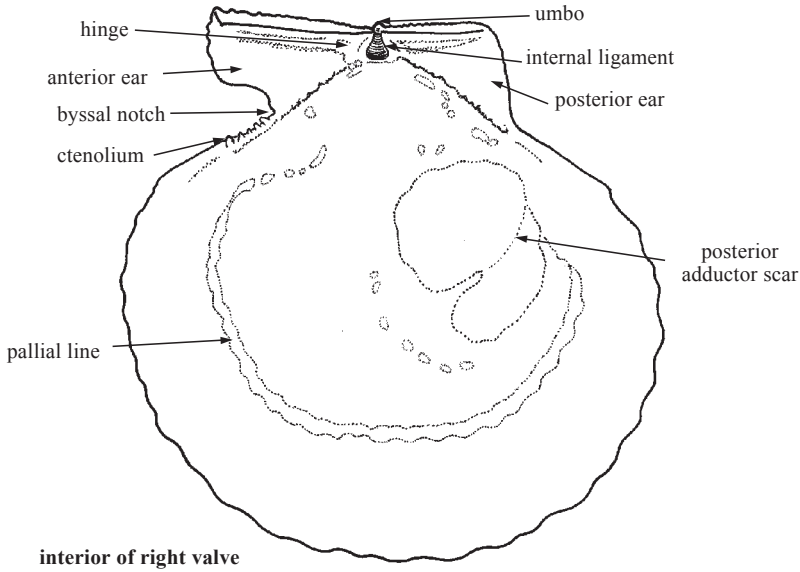
**Distribution:** Gulf of St. Lawrence (Canada) to the Gulf of Mexico.



## PECTINIDAE

### Scallops

**Diagnostic characters:** Shell oval to circular, umbones centrally located, hinge typically with wing-like expansions. In some genera (e.g., *Euvola*) top valve is flattish and bottom valve deeply convex. Ligament internal. Hinge without teeth. Single adductor muscle, pallial sinus absent.

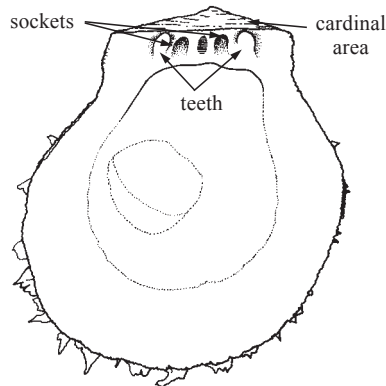


**Habitat, biology, and fisheries:** Species of interest to fisheries live on (or partially buried in) sandy bottoms and/or seagrass meadows at moderate depth, where individuals are capable of short bursts of active swimming. These species are usually short-lived, spawning throughout the year or seasonally. They (e.g., calico and bay scallops) are included amongst the most valuable and over-exploited species in area. Taken with designated bottom trawls.

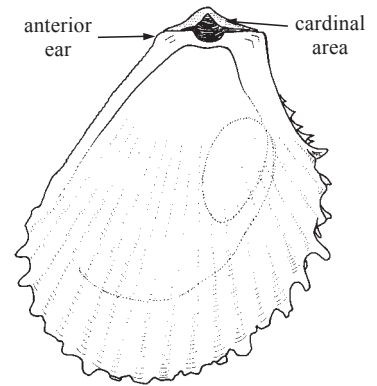
#### Similar families occurring in the area

**Spondylidae:** Shell stout, irregularly rounded, and higher than long; outer sculpture mainly radial, often scaly to spinose; umbones separated from hinge line by a triangular area; hinge line straight with a small triangular expansion at each end; ligament internal, in a deep median pit; single adductor muscle scar; no pallial sinus.

**Limidae:** shell equivalve, higher than long, slightly oblique; umbo separated from hinge line by a triangular area; hinge line straight, with 2 small expansions and a central ligamental groove; hinge toothless; single, faint adductor muscle scar; no pallial sinus.







interior of left valve  
**Spondylidae**



interior of right valve  
**Limidae**

**List of species of interest to fisheries occurring in the area**

The symbol  is given when species accounts are included.

-  *Amusium laurenti* (Gmelin, 1791).
-  *Argopecten gibbus* (Linnaeus, 1758).
-  *Argopecten irradians* (Lamarck, 1819).
-  *Euvola ziczac* (Linnaeus, 1758).

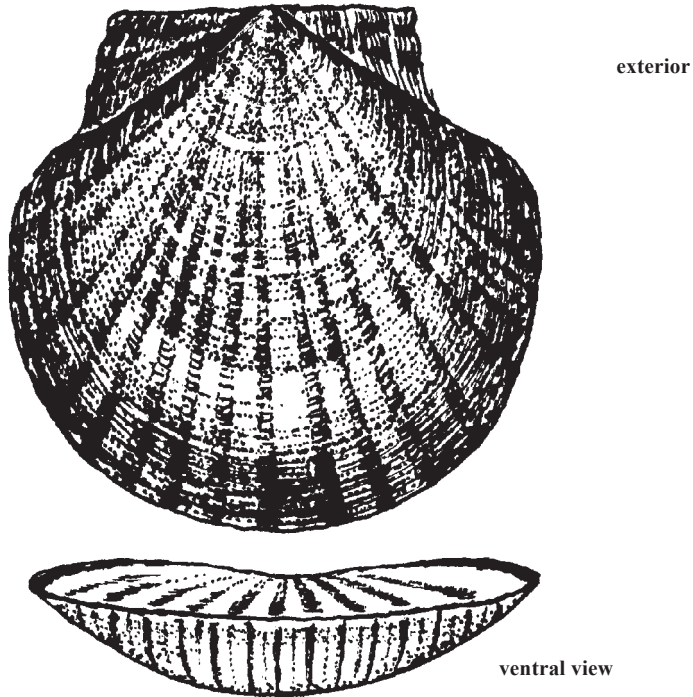
**References**

- Blake, N.J. and M.A. Moyer. 1991. The calico scallop, *Argopecten gibbus*, fishery of Cape Canaveral, Florida. In *Scallops: Biology, Ecology, and Aquaculture*, edited by S.E. Shumway. New York, Elsevier Science Publ. Co., pp. 899-911.
- Marelli, D.C., M.K. Krause, W.S. Arnold, and W.G. Lyons. 1997. Systematic relationships among Florida populations of *Argopecten irradians* (Lamarck, 1819). *The Nautilus*, 110:31-41.
- Moyer, M.A. and N.J. Blake. 1986. Fluctuations in calico scallop production (*Argopecten gibbus*). *Proc. 11th Ann. Trop. Subtrop. Fish. Conf. Am.*, pp. 45-58.
- Roe, R.B., R. Cummins, Jr., and H.R. Bullis, Jr. 1971. Calico scallop distribution, abundance and yield off eastern Florida, 1967-68. *Fish. Bull.*, 69:399-409.
- Waller, T.R. 1991. Evolutionary relationships among commercial scallops (Mollusca: Bivalvia: Pectinidae) In *Scallops: Biology, Ecology and Aquaculture*, edited by S. E. Shumway. New York, Elsevier, pp. 1-73.

*Amusium laurenti* (Gmelin, 1791)

**Frequent synonyms / misidentifications:** None / *Amusium papyraceum* (Gabb, 1873).

**FAO names:** **En** - Laurent's scallop; **Fr** - Peigne de Laurent; **Sp** - Peine lorenzo.

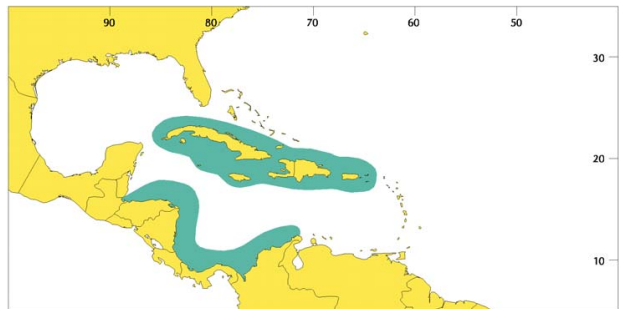


**Diagnostic characters:** Shell thin but strong, circular, moderately inflated, inequivalve. Wing-like projections small. Surface smooth, glossy, but internally with 30 to 40 paired radial ribs. Lower (right) valve more convex than upper (left) valve. Hinge straight. **Colour:** lower valve cream with light brown rays, upper valve reddish brown mottled with white.

**Size:** To 60 mm.

**Habitat, biology, and fisheries:** On sandy mud bottoms around 20 to 25 m.

**Distribution:** Northern Caribbean, from Honduras to Greater Antilles.



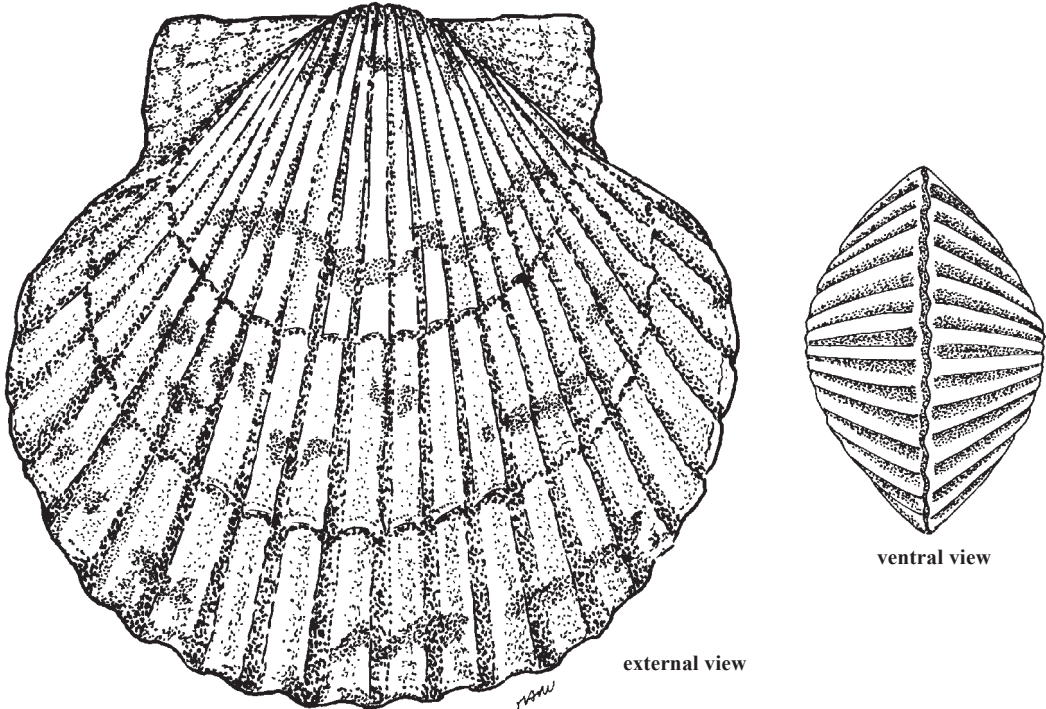


*Argopecten gibbus* (Linnaeus, 1758)

SCC

**Frequent synonyms / misidentifications:** None / *Argopecten irradians* (Lamarck, 1819).

**FAO names:** **En** - Calico scallop (AFS: Atlantic calico scallop); **Fr** - Peigne calicot; **Sp** - Peine percal.

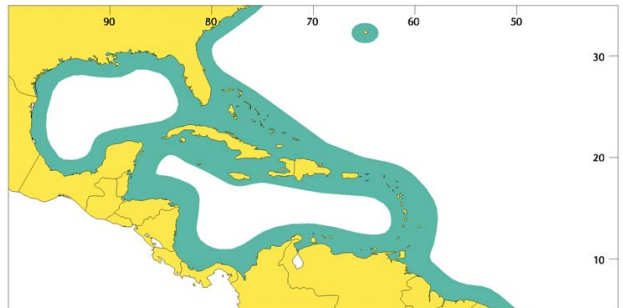


**Diagnostic characters:** Shell outline almost circular, valves very inflated, wing-like projections relatively poorly developed. Surface sculpture of about 20 ribs, smooth square in cross-section. Hinge straight. **Colour:** upper valve bright, variable, ranging from brown to red to lavender rose to whitish with purplish or reddish mottlings, colour of lower valve much lighter, whitish with lighter markings.

**Size:** To 63 mm.

**Habitat, biology, and fisheries:** Live in beds in shallow to moderately deep water, usually on (or buried in) sandy bottoms. Relatively short lifespan of about 18 to 24 months (Roe et al., 1971). Spawning and recruitment occur throughout the year, with peaks in late autumn and spring. Typically exploited in the northern half of the area. Catches in the USA have declined from more than 120 000 t (live weight) in 1988 to 262 t in 1992. In more recent years catches have slowly risen to 2 400 t in 1993 and about 3 000 t in 1994.

**Distribution:** Maryland to Florida, Texas, and south to northern Brazil, Bermuda.

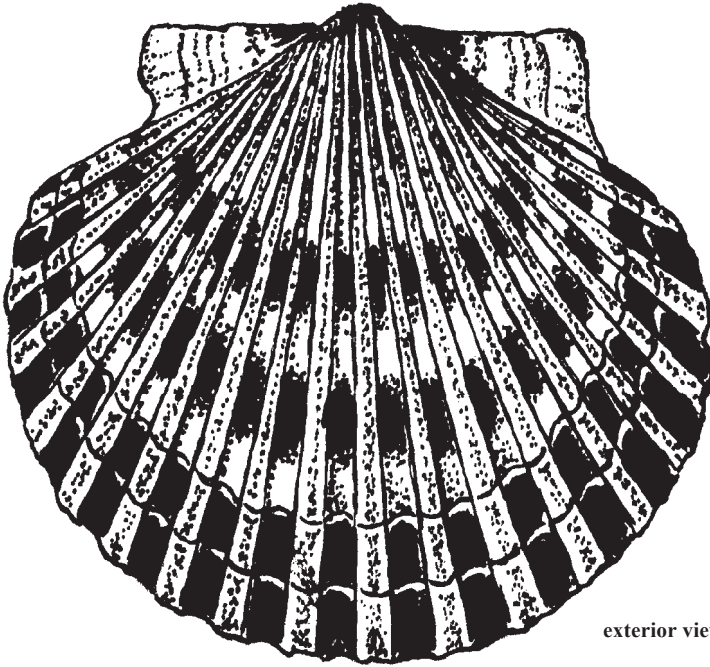


*Argopecten irradians* (Lamarck, 1819)

SCB

**Frequent synonyms / misidentifications:** None / *Argopecten gibbus* (Linnaeus, 1758).

**FAO names:** **En** - Atlantic bay scallop (AFS: Bay scallop); **Fr** - Peigne baie de l'Atlantique; **Sp** - Peine caletero atlántico.



exterior view



ventral view

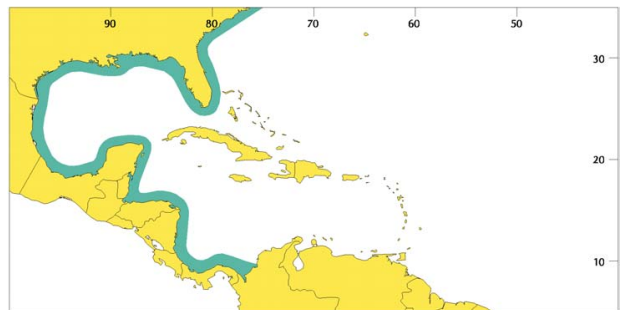
**Diagnostic characters:** Shell valves convex, upper valve less convex than more inflated lower valve. Surface sculpture of 19 to 21 strong, squarish ribs. Hinge with wing-like projections of about same size. **Colour:** lower valve light, usually whitish, upper valve dark brown to dark grey with darker markings.

**Size:** To 75 mm.

**Habitat, biology, and fisheries:** Form beds on sandy, eelgrass, or other seagrass bottoms. Average life span of 20 to 26 months. Spawns after 1 year of age, during mass-spawning events that take place almost always in July.

**Distribution:** Canada to Gulf of Mexico and southern Caribbean (Colombia).

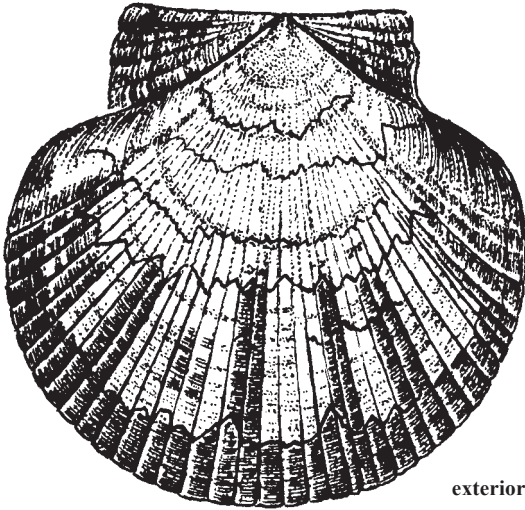
**Remarks:** A recent study has shown that the subspecific nomenclature for southwest Florida populations of the bay scallop is still unresolved.



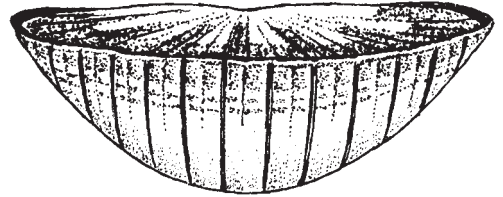
***Euvola ziczac*** (Linnaeus, 1758)

**Frequent synonyms / misidentifications:** *Pecten ziczac* (Linnaeus, 1758) / *Euvola raveneli* (Dall, 1898).

**FAO names:** En - Zigzag scallop; Fr - Peigne zigzag; Sp - Vieira zigzag.



exterior view



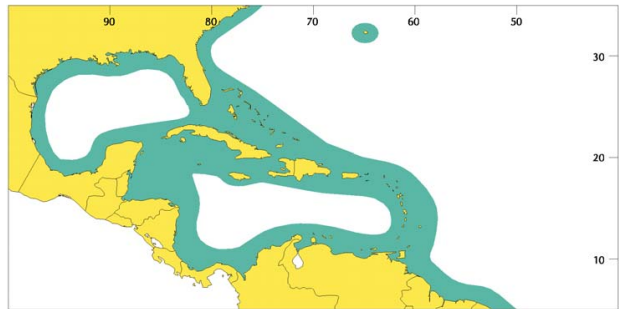
ventral view

**Diagnostic characters:** Shell circular, inequivalve, lower valve strongly concave, upper valve flatter, slightly convex. Hinge with wing-like projections of equal size. Sculpture on upper (flat) valve of about 35 ribs and interspaces of about same width. Lower (deep) valve with about 20 less prominent ribs. **Colour:** tan to light brown. Inner surface of lower valve white. Upper valve mottled with reddish brown and dark brown markings.

**Size:** To 110 mm.

**Habitat, biology, and fisheries:** Subtidal species, living in depths between 1 and 50 m, partly buried in sand. Individuals form aggregations. Commercially exploited in a broad part of the range.

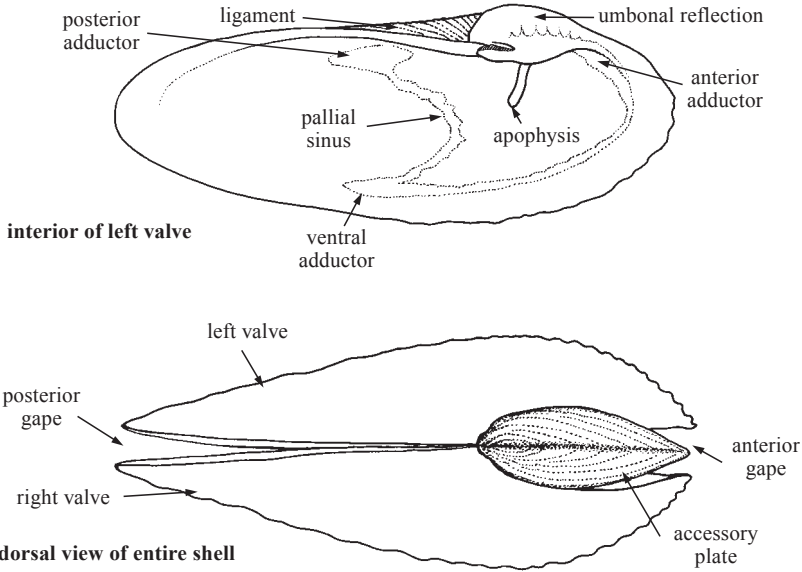
**Distribution:** North Carolina to Florida, Texas, Caribbean, south to southeastern Brazil, and Bermuda.



## PHOLADIDAE

### Angel wings

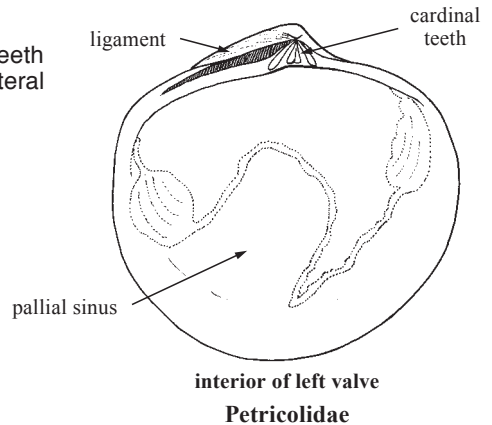
**Diagnostic characters:** Shell elongate, fragile, gaping at both extremities, shell surface with rough, scaly sculpture. Characteristic accessory plates present in hinge region. Dorsal margin rolled over umbones. Ligament internal. Siphons very long, fused, not retractable.



**Habitat, biology, and fisheries:** Species of interest to fisheries live deep in the mud in quiet, protected waters. Hand or shovel collected, consumed locally.

### Similar families occurring in the area

Petricolidae: no lunule or escutcheon; hinge with cardinal teeth only (sometimes reduced): 3 in the left valve, 2 in the right; lateral teeth always absent; pallial sinus deep.



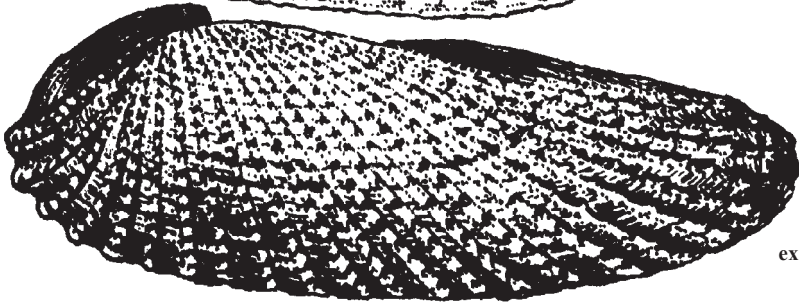
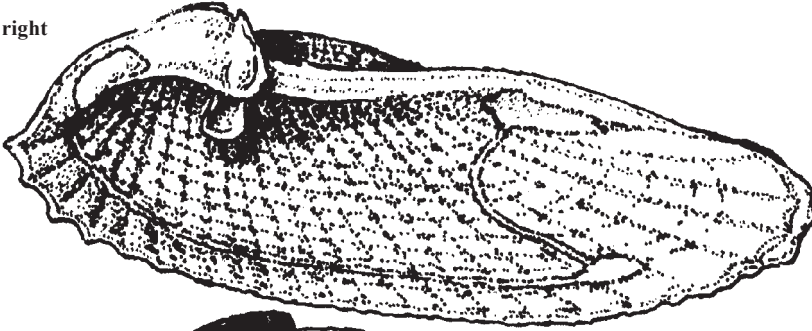
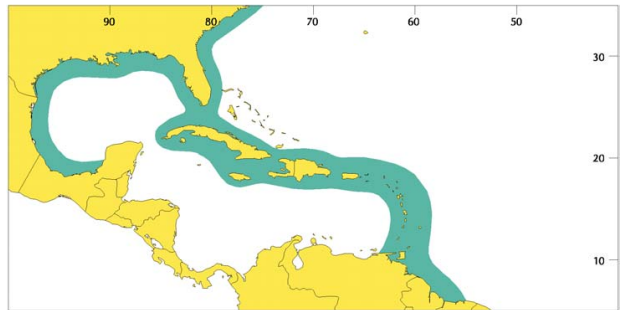
### List of species of interest to fisheries occurring in the area

The symbol 🐚 is given when species accounts are included.

🐚 *Cyrtopleura costata* (Linnaeus, 1758).

***Cyrtopleura costata*** (Linnaeus, 1758)

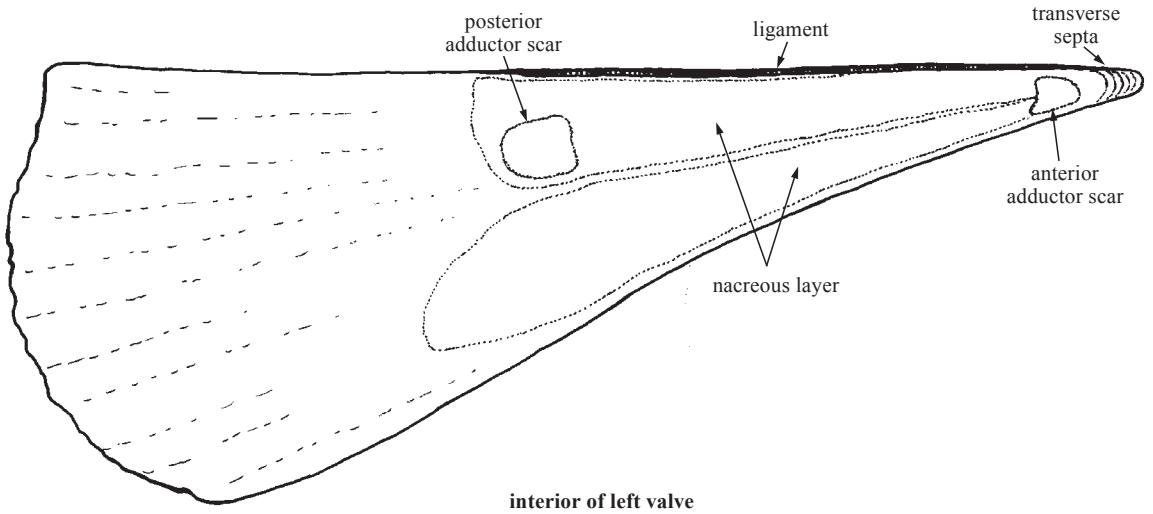
YPK

**Frequent synonyms / misidentifications:** None / *Pholas campechiensis* Gmelin, 1791.**FAO names:** **En** - Angel wing; **Fr** - Aîle d'ange; **Sp** - Ala de ángel.interior of right  
valveexterior of left  
valve**Diagnostic characters:** Shell light, thin, elongate. Sculpture of concentric ridges and strong radial ribs. Scale-like projections form at intersections of ridges and ribs. Pair of spoon-shaped structures under umbones, called apophyses, are points of attachment of foot muscles. **Colour:** pure white, seldom with delicate pinkish internal coloration.**Size:** To 180 mm.**Habitat, biology, and fisheries:** Infaunal in compact mud or sand, from intertidal to shallow subtidal depths. Borer in mud bottoms in protected bays. Consumed locally in soups and stews.**Distribution:** Massachusetts to Texas and Caribbean to northeastern Brazil.

## PINNIDAE

### Pen shells

**Diagnostic characters:** Shell large, brittle, triangular, with pointed umbones at anterior end. Ligament internal, posterior, inset along interior shell margin. Adductor muscle scars different in size, anterior muscle small, near umbo, posterior muscle large, central.

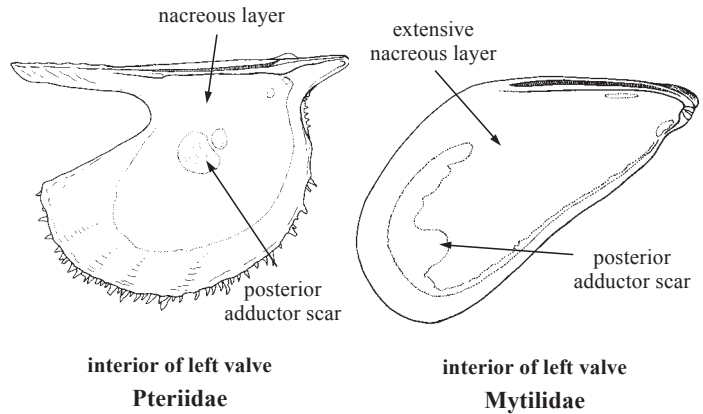


**Habitat, biology, and fisheries:** Pen shells live partially burrowed (with only posterior end showing, pointing upwards) in sand or sandy-mud bottoms, particularly in seagrass meadow habitats. Hand collected locally.

### Similar families occurring in the area

**Pteriidae:** shell compressed, usually gaping, with concentric, often scaly, sculpture; hinge lacking teeth, straight, projecting at both ends as wing-like expansions; posterior expansion usually longer; ligament external, sunken; anterior muscle scar very reduced or absent, posterior muscle scar large, central; pallial sinus absent.

**Mytilidae:** shell elongate, with umbones near or at anterior end; ligament in anterior margin; hinge without teeth or with tiny denticles; internal surface nacreous; adductor muscle scars differing in size, the anterior small or absent.



### List of species of interest to fisheries occurring in the area

The symbol 🐚 is given when species accounts are included.

- 🐚 *Atrina rigida* (Lightfoot, 1786).
- 🐚 *Atrina seminuda* (Lamarck, 1819).

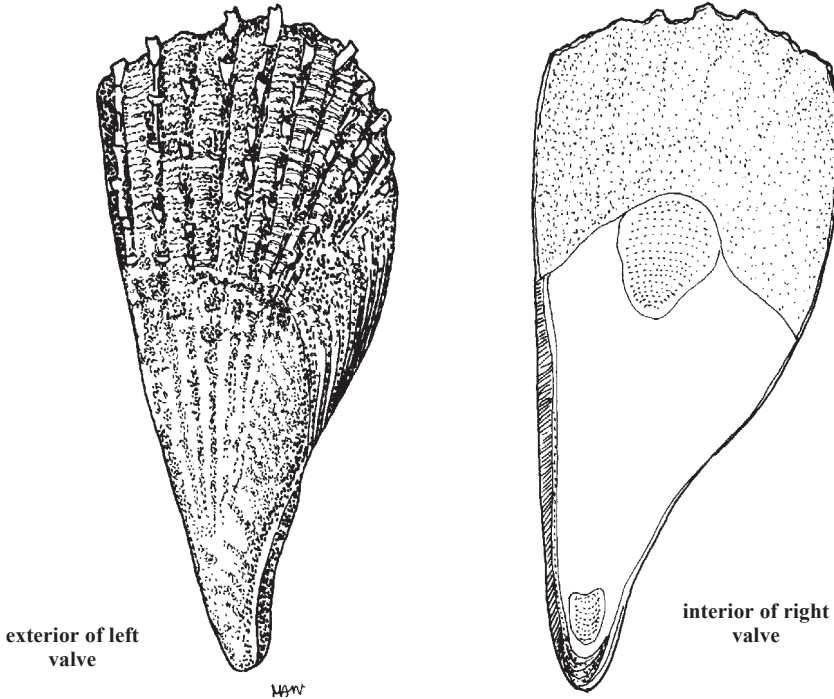
### Reference

Turner R.D. and J. Rosewater. 1958. The family Pinnidae in the western Atlantic. *Johnsonia*, 3(38):285-326.

*Atrina rigida* (Lightfoot, 1786)

**Frequent synonyms / misidentifications:** None / *Atrina seminuda* (Lamarck, 1819); *Atrina serrata* (Sowerby, 1825).

**FAO names:** En - Stiff pen shell; Fr - Jambonneau raide; Sp - Pina tiesa.

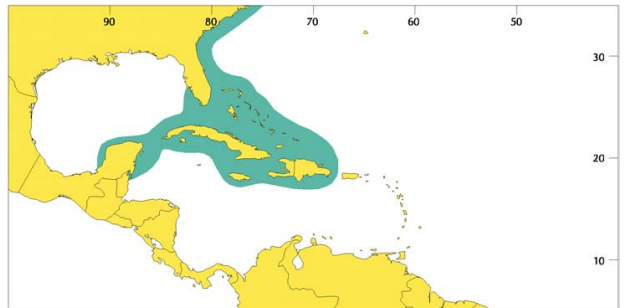


**Diagnostic characters:** Shell large, fan-shaped, triangular. Surface sculpture of about 15 narrow radial ribs separated by larger interspaces; ribs bearing regularly spaced, fluted spines. Large muscle scar inside shell touches border of nacreous area. Hinge area straight, representing larger side of triangular shell outline. Byssus at pointed extremity anchors penshell into seagrass bottom. Gaping shorter side of triangular shell outline oriented upward. **Colour:** dark olive brown; mantle colour bright golden orange.

**Size:** To 300 mm.

**Habitat, biology, and fisheries:** In shallow-water seagrass beds. Burrows in fine sand leaving only the broad posterior region exposed to the outside environment. Commercially exploited in and around Campeche, Mexico. Preyed upon by the horse conch, *Pleuroploca gigantea*. Consumed locally in soups, marinated, or grilled.

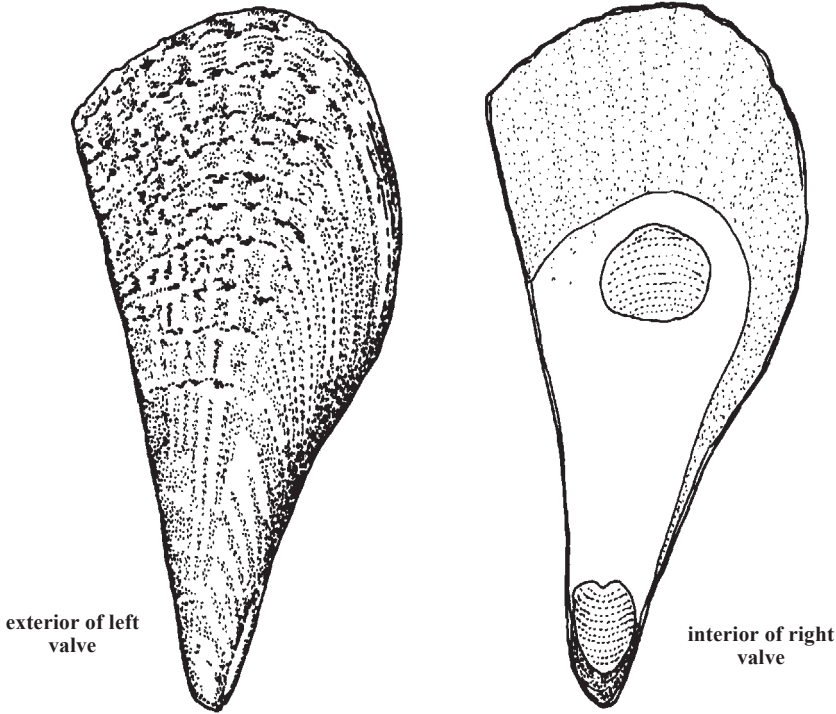
**Distribution:** North Carolina to Florida, Caribbean.



*Atrina seminuda* (Lamarck, 1819)

**Frequent synonyms / misidentifications:** None / *Atrina rigida* (Lightfoot, 1786); *Atrina serrata* (Sowerby, 1825).

**FAO names:** En - Half-naked pen shell; Fr - Jambonneau demi-lisse; Sp - Pina semilisa.



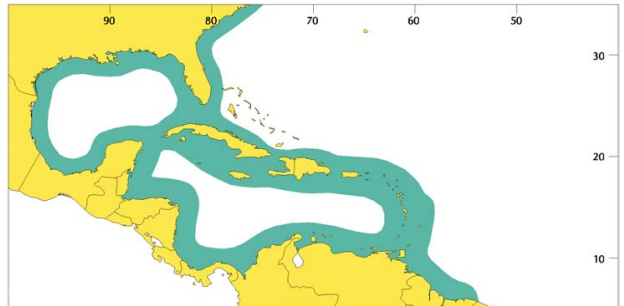
**Diagnostic characters:** Shell large, fan-shaped, triangular. Surface sculpture of about 15 narrow radial ribs separated by larger interspaces; ribs bearing regularly spaced, fluted spines. Muscle scar completely surrounded by nacreous layer. Hinge area straight, representing larger side of triangular shell outline. Byssus at pointed extremity anchors penshell into seagrass bottom. Gaping, shorter side of triangular shell outline oriented upward. **Colour:** dark olive brown; mantle colour pale yellow.

**Size:** To 230 mm.

**Habitat, biology, and fisheries:** In shallow-water seagrass beds. Burrows in fine sand leaving only the broad posterior region exposed to the outside environment. Consumed locally in soups, marinated, or grilled.

**Distribution:** North Carolina to Florida, Texas, and Caribbean to Argentina.

**Remarks:** Shell very similar to *Atrina rigida*, differing by position of posterior adductor scar well within the nacreous area.

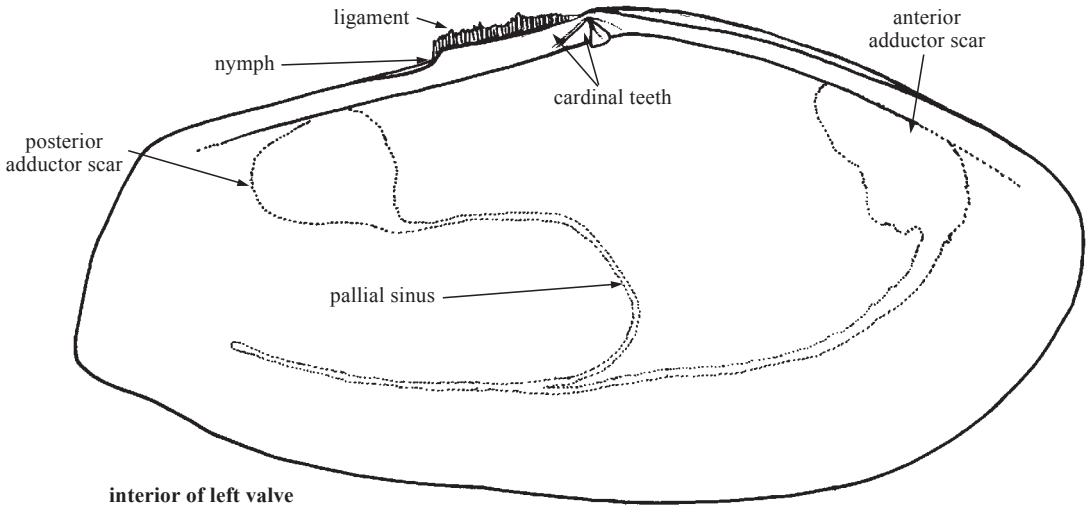




**PSAMMOBIIDAE**

**Sunset clams, sanguins**

**Diagnostic characters:** Shell oblong to oval, slightly gaping, sculpture mostly concentric, ligament external, strong, attached behind umbones on projecting narrow shelves. Hinge with 2 small cardinal teeth. Pallial sinus large.

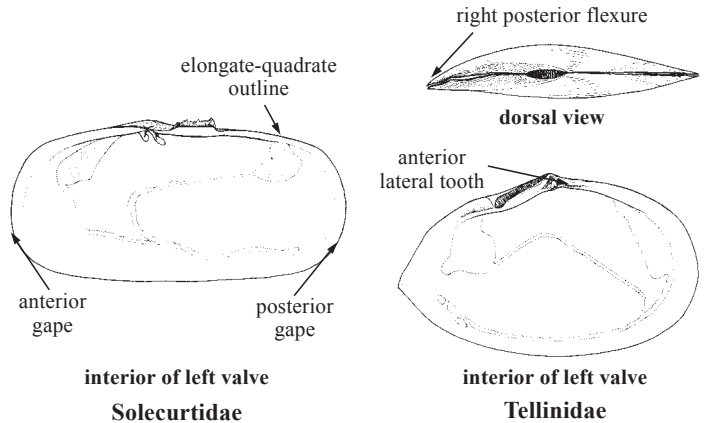


**Habitat, biology, and fisheries:** Subtidal in shallow water, in sand or sandy mud bottoms. Consumed locally and/or used as fish bait.

**Similar families occurring in the area**

**Solecurtidae:** shell elongate, gaping at both ends, umbones subcentral; ligament external, often on projecting shelves; hinge with 2 small cardinal teeth on each valve; siphons long, separate.

**Tellinidae:** shell compressed, oval to oblong, usually with flexed at posterior end; sculpture mostly lacking. Ligament external. Hinge with 2 cardinal teeth in each valve. Pallial sinus deep.



**List of species of interest to fisheries occurring in the area**

The symbol 🐚 is given when species accounts are included.

🐚 *Asaphis deflorata* (Linnaeus, 1758).

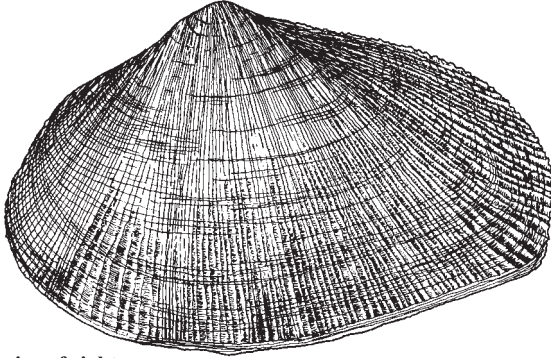
**Reference**

Berg, C. J. and P. Alatalo. 1985. Biology of the tropical bivalve *Asaphis deflorata* (Linné, 1758). *Bull. Mar. Sci.*, 37:827-838.

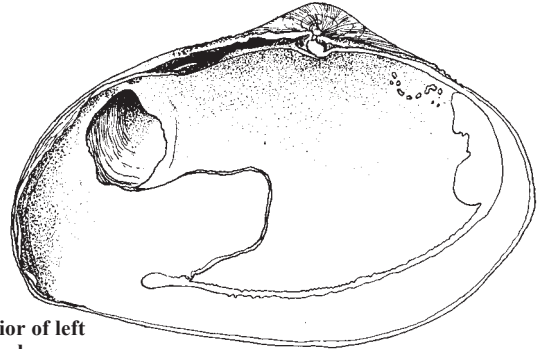
*Asaphis deflorata* (Linnaeus, 1758)

**Frequent misidentifications:** None / *Papyridea soleniformis* (Bruguère, 1789); *Sanguinolaria cruenta* (Lightfoot, 1786); *Semele purpurascens* (Gmelin, 1791).

**FAO names:** **En** - Gaudy asaphis (AFS: Gaudy sanguin); **Fr** - Sanguinoilaire ridée; **Sp** - Asafis arrugada.



exterior of right valve



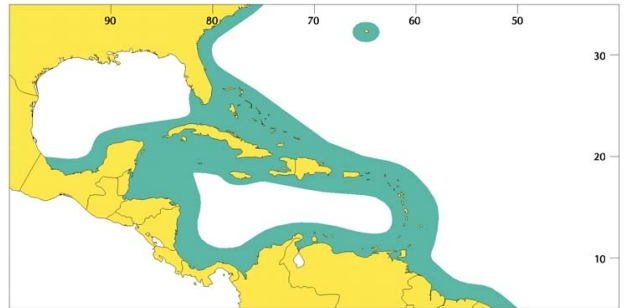
interior of left valve

**Diagnostic characters:** Shell moderately elongate, moderately inflated. Sculpture of numerous, coarse radial threads irregular in size. Pallial sinus large. Hinge with 2 cardinal teeth, lateral teeth absent. Umbones slightly coiled inward. **Colour:** variable (usually brighter internally), yellow, or stained with red, rose, or purple.

**Size:** To 78 mm.

**Habitat, biology, and fisheries:** In shallow water, sand or sandy mud bottoms. Hand collected, consumed locally or as bait. Darkly coloured visceral mass and gritty texture are apparent causes for restricted consumption (Berg and Alatalo, 1985).

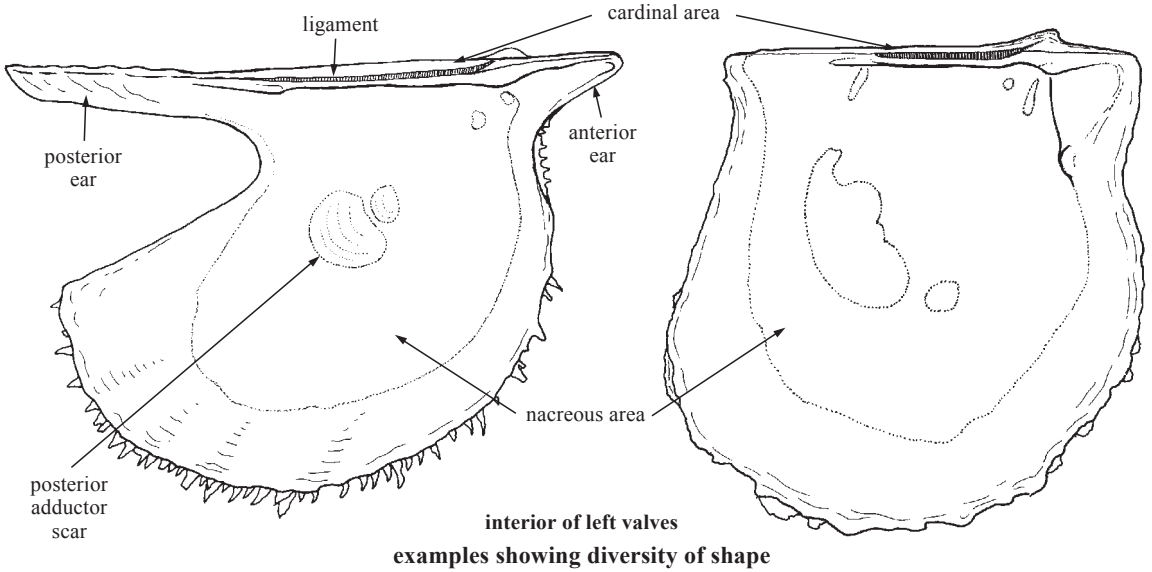
**Distribution:** Southeastern Florida, Caribbean to Brazil, and Bermuda.



**PTERIIDAE**

**Pearl oysters**

**Diagnostic characters:** Shell compressed, usually gaping, with concentric, often scaly, sculpture. Hinge lacking teeth, straight, projecting at both ends as wing-like expansions; posterior expansion usually longer. Ligament external, sunken. Anterior muscle scar very reduced or absent, posterior muscle scar large, central. Pallial sinus absent.

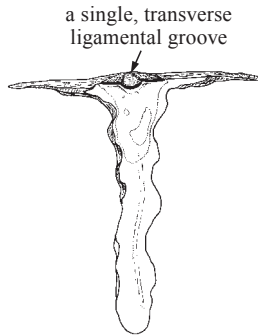


**Habitat, biology, and fisheries:** Lives attached by byssus to rocks or other hard substrates, in subtidal habitats between 1 to 20 m. Consumed locally raw or boiled. Traditionally exploited for the pearl market.

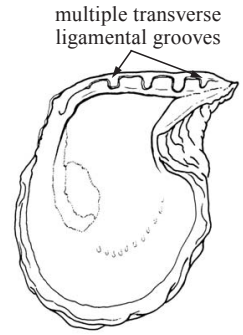
**Similar families occurring in the area**

**Malleidae:** cardinal area relatively wide, with a single transverse central groove for the ligament; shell often with a long, non-nacreous ventral to posteroventral expansion; dorsal margin of shell sometimes produced into very long wing-like expansions at both ends.

**Isognomonidae:** cardinal area with a series of transverse ligamental gooves.



**Malleidae**



**Isognomonidae**

**List of species of interest to fisheries occurring in the area**

The symbol 🐚 is given when species accounts are included.

- 🐚 *Pinctada imbricata* (Röding, 1798).

**References**

Leon, L., T. Cabrera, and L. Troccoli. 1987. *Fijación y índice de engorde de la ostra perla Pinctada imbricata, Roding 1798 (Mollusca: Bivalvia) en tres bancos naturales de nororiente de Venezuela*. Universidad de Oriente, Centro de Investigaciones Científicas, Contribuciones Científicas 12, 44 p.

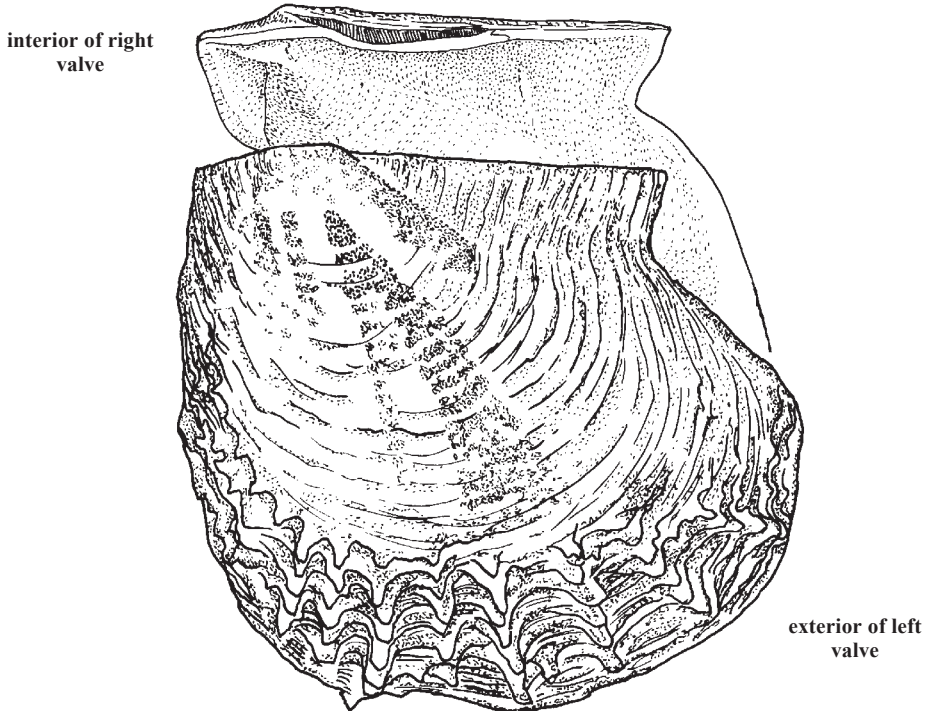
Romero, A., S. Chilbert, and M.G. Eisenhart. 1999. Cubagua's pearl-oyster beds: the first depletion of a natural resource caused by Europeans in the American continent. *J. Pol. Ecol.*, 6:57-78.

***Pinctada imbricata*** (Röding, 1798)

IKI

**Frequent synonyms / misidentifications:** None / *Pteria colymbus* (Röding, 1798).

**FAO names:** En - Atlantic pearl oyster; Fr - Huître perlière de l'Atlantique; Sp - Ostra perlera Atlántica.

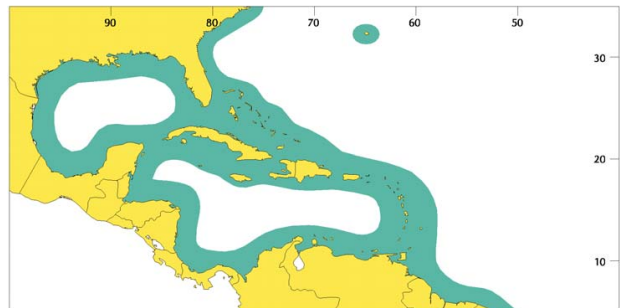


**Diagnostic characters:** Shell roundish, thin, flattened to moderately inflated, inequivalve. Hinge with 2 wing-like projections, posterior projection shorter than that of *Pteria colymbus*. Periostracum with flat, scale-like projections aligned concentrically. **Colour:** externally tan, brown, or purplish, with greenish cast, internally nacreous.

**Size:** To 76 mm.

**Habitat, biology, and fisheries:** Lives attached to rocks or other hard substrates, in shallow subtidal depths. Collected by free-diving by hand. Consumed locally, marinated or in stews. Historically exploited for the pearl market (Romero et al., 1999).

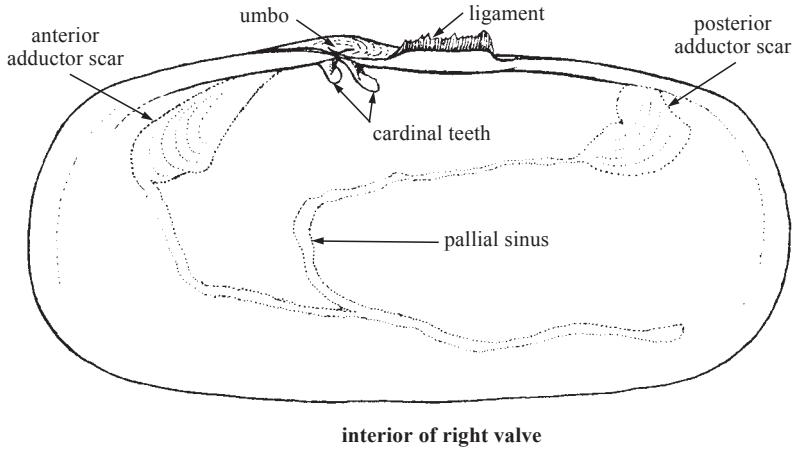
**Distribution:** South Carolina to Florida, Texas, and Caribbean to Brazil. Bermuda.



## SOLECURTIDAE

### Short razor clams

**Diagnostic characters:** Shell elongate, gaping at both ends, umbones subcentral. Ligament external, often on projecting shelves. Hinge with 2 small cardinal teeth on each valve. Siphons long, separate.

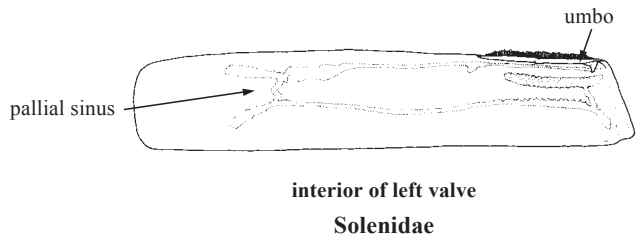
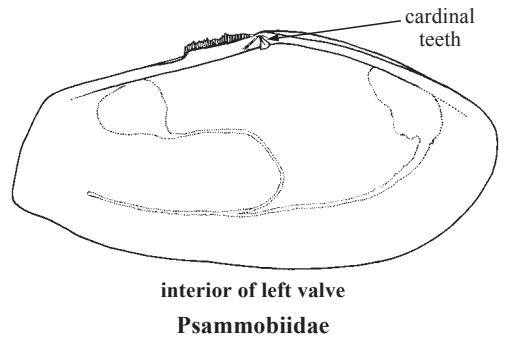


**Habitat, biology, and fisheries:** In mud in protected bays, from intertidal to shallow subtidal. Hand- or shovel collected, consumed locally in stews.

#### Similar families occurring in the area

**Psammobiidae:** shell inequilateral, ovate to subelliptical or trapezoidal in outline, less widely gaping and sometimes slightly flexed posteriorly.

**Solenidae:** shell narrowly elongate, very inequilateral; umbones near the anterodorsal end of valves; pallial sinus relatively shallow; siphons generally quite short, fused at their base.



#### List of species of interest to fisheries occurring in the area

The symbol is given when species accounts are included.

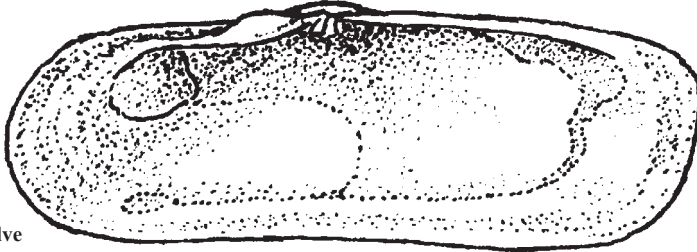
*Tagelus plebeius* (Lightfoot, 1786).

***Tagelus plebeius*** (Lightfoot, 1786)

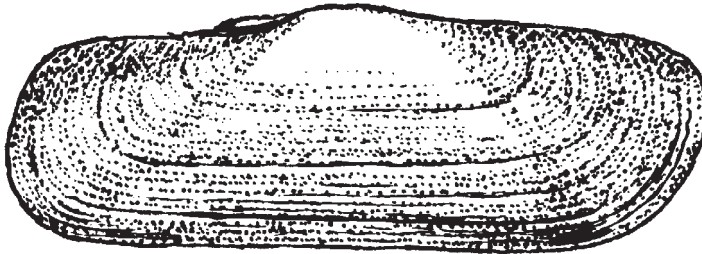
TEX

**Frequent synonyms / misidentifications:** None / *Tagelus divisus* (Spengler, 1794).

**FAO names:** En - Stout tagelus; Fr - Tagal corpulent; Sp - Tagelo plebeyo.



interior of right valve



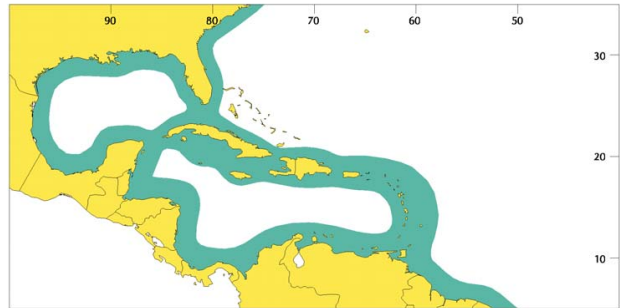
exterior of left valve

**Diagnostic characters:** Shell light, elongate, semi-cylindrical, inflated, posterior margin rounded, anterior margin straight but oblique. Weak radial ridge present posteriorly. Surface smooth except for fine concentric lines. Umbones slightly removed from centre of shell in posterior direction, indistinct. **Colour:** periostracum olive green to brownish yellow.

**Size:** To 80 mm.

**Habitat, biology, and fisheries:** Intertidal to shallow subtidal, in muddy sand or mud. Consumed locally stewed or grilled.

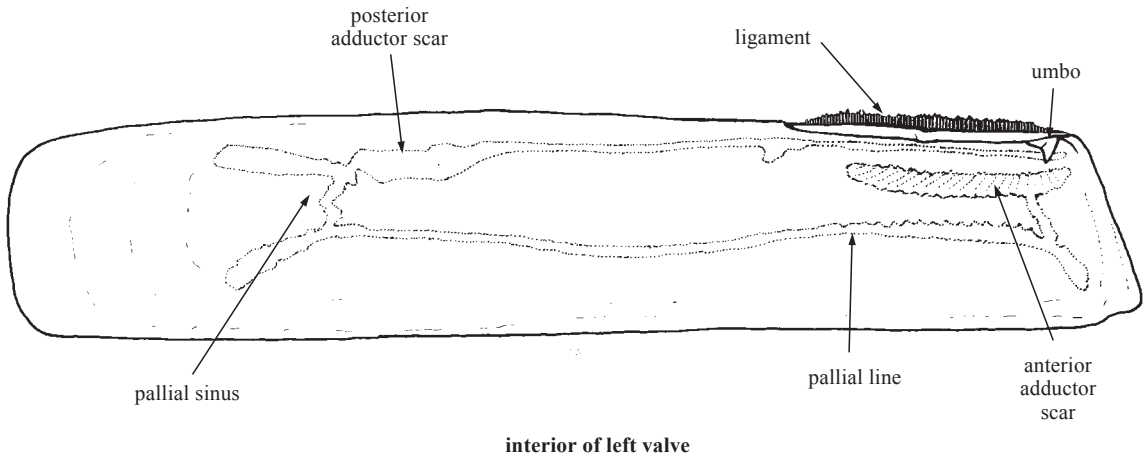
**Distribution:** Massachusetts to Florida, Texas, and Caribbean to Brazil.



## SOLENIDAE

### Knife and razor clams

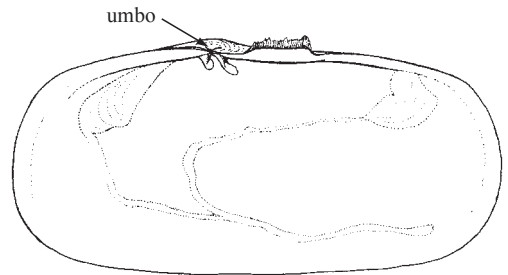
**Diagnostic characters:** Shell narrow, elongate, gaping at both ends. Umbones in anterior position. Anterior adductor muscle scar elongate, larger than posterior scar. Ligament external. Foot strong with an inflatable distal extremity.



**Habitat, biology, and fisheries:** In mud in protected bays, shallow subtidal. Hand or shovel collected, consumed locally in stews or fried.

#### Similar families occurring in the area

**Solecurtidae:** shell elongate, gaping at both ends, umbones subcentral; ligament external, often on projecting shelves; hinge with 2 small cardinal teeth on each valve; siphons long, separate.



#### Solecurtidae

#### List of species of interest to fisheries occurring in the area

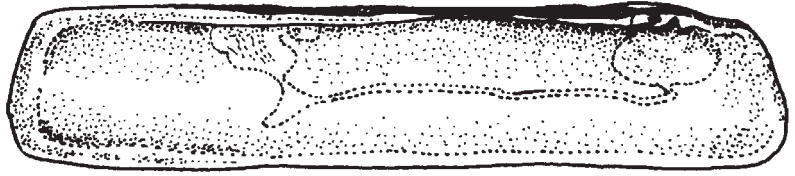
The symbol is given when species accounts are included.

*Solen obliquus* Spengler, 1794.

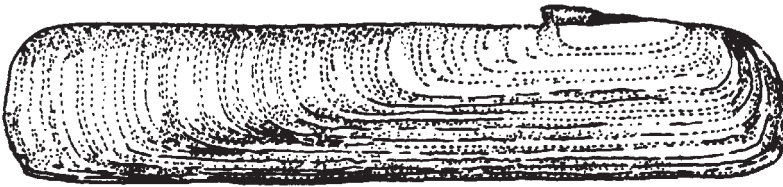
*Solen obliquus* Spengler, 1794

**Frequent synonyms / misidentifications:** None / *Solen rosewateri* Altena, 1971; *Solen tairona* Cosel, 1985.

**FAO names:** **En** - Antillean razor clam; **Fr** - Couteau antillais; **Sp** - Navaja antillana.



interior of left valve



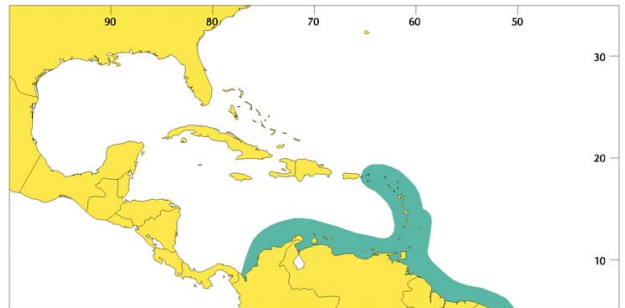
exterior of right valve

**Diagnostic characters:** Shell very elongate (ratio length: width 5:1), dorsal and ventral margins parallel, hinge posterior, with single pair of cardinal teeth. Shell thicker at anterior margin. Umbones at the angle formed by dorsal and posterior margins. **Colour:** brown to purple.

**Size:** To 96 mm.

**Habitat, biology, and fisheries:** Infaunal in muddy sand, in intertidal or shallow subtidal depths. Collected by hand, with shovels, or dredges. Consumed locally boiled, grilled, or fried.

**Distribution:** Caribbean to Brazil.

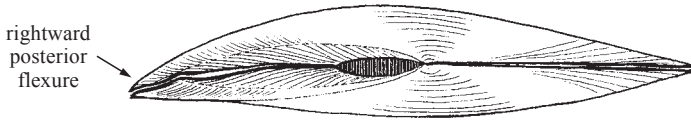




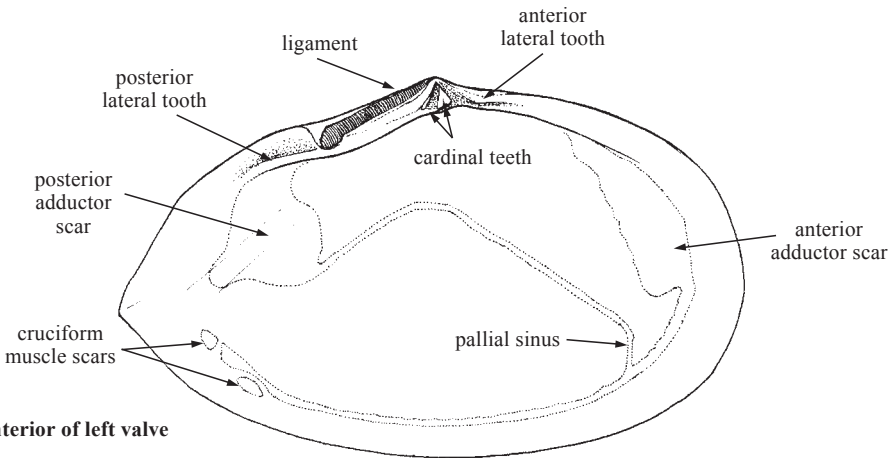
## TELLINIDAE

### Tellins

**Diagnostic characters:** Shell compressed, oval to oblong, usually with flexed at posterior end. Sculpture mostly lacking. Ligament external. Hinge with 2 cardinal teeth in each valve. Pallial sinus deep. **Colour:** shell usually brightly coloured.



dorsal view of entire shell



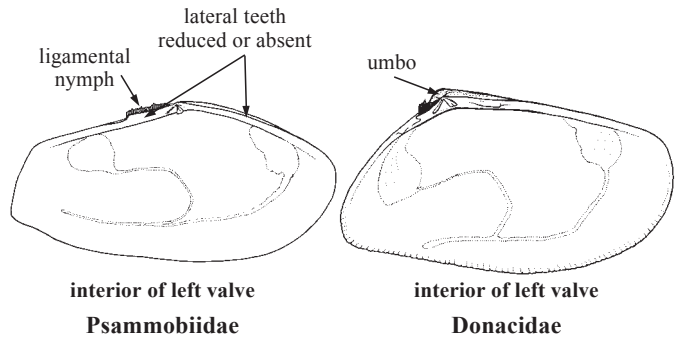
interior of left valve

**Habitat, biology, and fisheries:** Buried in sand, usually in high energy environments. Hand-collected, consumed locally.

#### Similar families occurring in the area

**Psammobiidae:** shell oblong to oval, slightly gaping, sculpture mostly concentric, ligament external, strong, attached behind umbones on projecting narrow shelves; hinge with 2 small cardinal teeth; pallial sinus large.

**Donacidae:** shell wedge-shaped, usually with an angled (keel-like) posterior surface; ligament external; hinge with 2 cardinal teeth on each valve; adductor muscle scars subequal.



interior of left valve  
**Psammobiidae**

interior of left valve  
**Donacidae**

#### List of species of interest to fisheries occurring in the area

The symbol is given when species accounts are included.

*Tellina fausta* Pulteney, 1799.

*Tellina laevigata* Linnaeus, 1758.

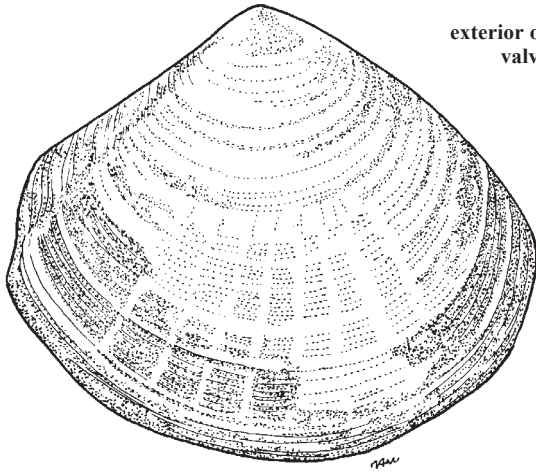
#### References

- Boss, K.J. 1966. The subfamily Tellininae in the western Atlantic. The genus *Tellina* (part I). *Johnsonia*, 4(45):217-272.
- Boss, K.J. 1968. The subfamily Tellininae in the western Atlantic. The genera *Tellina* (part II) and *Tellidora*. *Johnsonia*, 4(46):273-344.

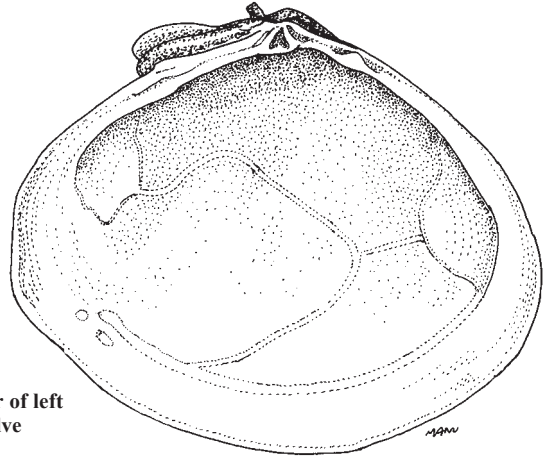
*Tellina fausta* Pulteney, 1799

**Frequent synonyms / misidentifications:** None / None.

**FAO names:** **En** - Faust tellin (AFS: Favored tellin); **Fr** - Telline fasute; **Sp** - Tellina lisa.



exterior of right  
valve



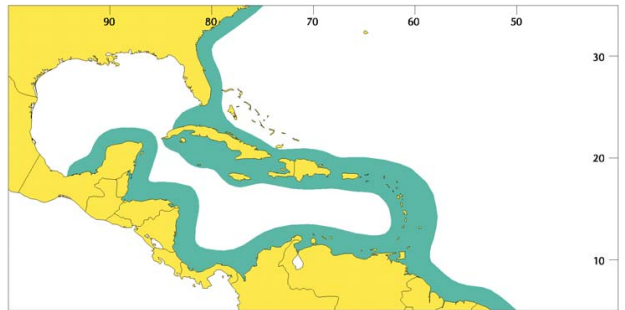
interior of left  
valve

**Diagnostic characters:** Shell subcircular, heavy, inequivalve. Shell surface smooth except for fine, irregular growth lines. Hinge well developed, with posterior lateral tooth long and strong. Pallial sinus large, well developed. Umbones at central part of dorsal region. Oblique ridge runs from umbo to middle of posterior margin. Posterior shell margin sinuous in posterior view: posterior margin of right valve concave and of left valve concave. **Colour:** externally white, internally glossier white with yellow tinges.

**Size:** To 98 mm.

**Habitat, biology, and fisheries:** In shallow water, deeply burrowing in intertidal sand near seagrass beds. Consumed locally.

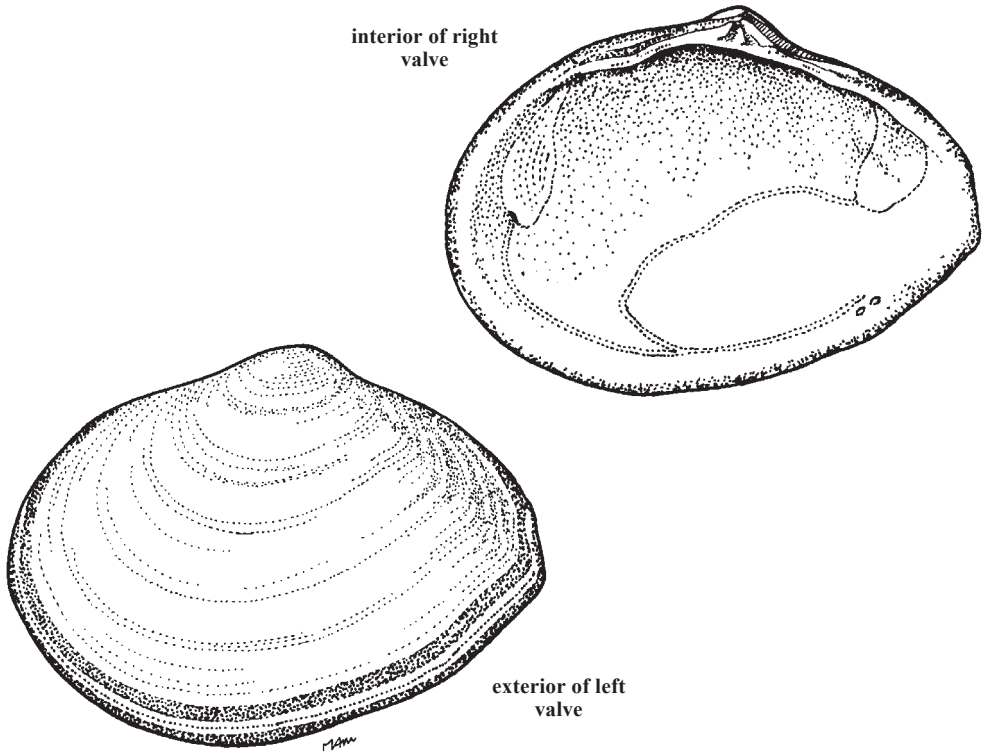
**Distribution:** North Carolina to southeastern Florida and Caribbean to Brazil.



*Tellina laevigata* Linnaeus, 1758

**Frequent synonyms / misidentifications:** None / None.

**FAO names:** **En** - Smooth tellin; **Fr** - Telline lisse; **Sp** - Telina lisa.

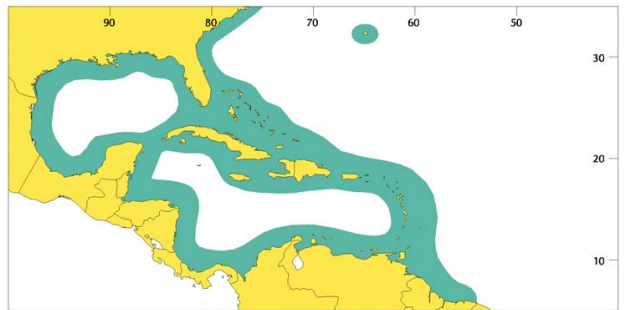


**Diagnostic characters:** Shell oval to slightly elongate, moderately compressed, strong. Surface smooth except for microscopic, irregular lines. Hinge with lateral and cardinal teeth present. **Colour:** externally whitish, rayed, or banded at ventral margins with light orange, internally white or with yellowish tinges.

**Size:** To 88 mm.

**Habitat, biology, and fisheries:** Sandy bottoms, in shallow water.

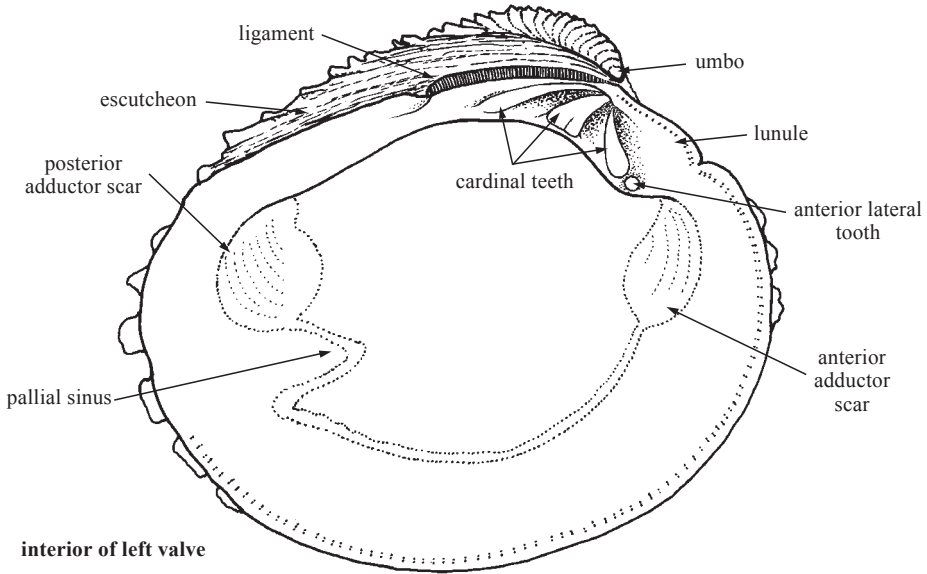
**Distribution:** North Carolina to southern Caribbean, and Bermuda.



## VENERIDAE

### Venus clams

**Diagnostic characters:** Shell usually solid, umbones anterior to midline, lunule and escutcheon usually present, sculpture usually concentric, sometimes lacking. Ligament external. Hinge with 3 or rarely 2 cardinal teeth in each valve. Adductor muscles (and their scars) usually equivalent in size.



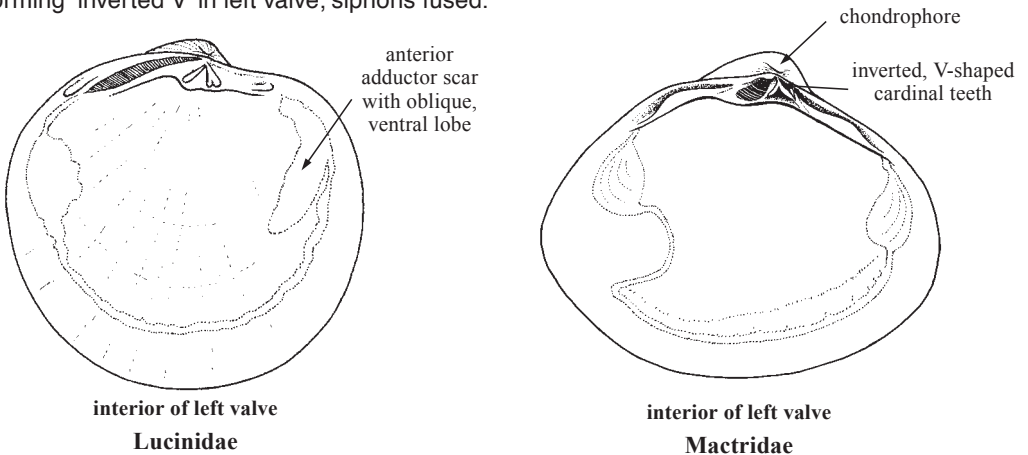
**Habitat, biology, and fisheries:** Species of interest to fisheries inhabit soft bottoms, usually in shallow subtidal environments. Some species, such as the southern quahog, represent a large fraction of local catches and efforts in aquaculture, particularly in the northern half of the area.

**Remarks:** Venus clams belong to the most specious family of marine bivalves. Due to a renewed interest in bivalve systematics, the taxonomy of the family is currently undergoing major rearrangements.


### Similar families occurring in the area






**Lucinidae:** shell disk-shaped, ligament external, hinge typically with 2 cardinal and 2 lateral teeth; pallial sinus absent; foot long.

**Mactridae:** shell triangular to subtriangular, internal ligament, with chondrophore, typically with 2 fused cardinal teeth forming 'inverted V' in left valve; siphons fused.



**List of species of interest to fisheries occurring in the area**

The symbol  is given when species accounts are included.

-  *Chione cancellata* (Linnaeus, 1767).
-  *Macrocallista maculata* (Linnaeus, 1758).
-  *Macrocallista nimbose* (Lightfoot, 1786).
-  *Mercenaria campechiensis* (Gmelin, 1791).
-  *Tivela mactroides* (Born, 1778).

**References**

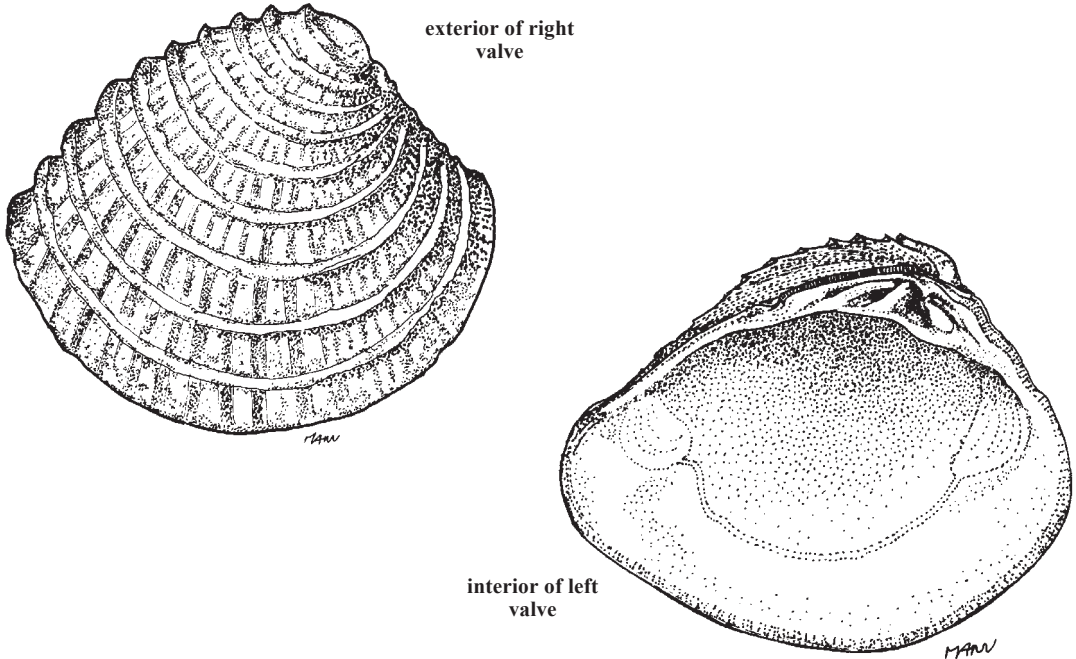
- Jolley, J.W., Jr. 1971. Exploratory fishing for the sunray venus, *Macrocallista nimbose*, in northeastern Florida. *Fla. Dep. Nat. Res., Mar. Res. Lab., Tech. Ser.*, 67:42 p.
- Moore, H.B. and N.N. Lopez. 1969. The ecology of *Chione cancellata*. *Bull. Mar. Sci.*, 19(1):131-148.
- Prieto, A.S., C. Ramos, and D. Arrieche. 1998. Producción secundaria de una población de *Chione cancellata* de la costa sur del Golfo de Cariaco, Venezuela. *Rev. Biol. Trop.*, 46(4).
- Roopnarine, P. and G.J. Vermeij. 2000. One species becomes two: the case of *Chione cancellata*, the resurrected *Chione elevata*, and a phylogenetic analysis of *Chione*. *J. Moll. Stud.*, 66:517-534.

*Chione cancellata* (Linnaeus, 1767)

KNN

**Frequent synonyms / misidentifications:** None / *Chione elevata* (Say, 1822); juveniles of *Mercenaria campechiensis* (Gmelin, 1791).

**FAO names:** **En** - Cross-barred venus; **Fr** - Vénus quadrillée; **Sp** - Venus cuadrilla.



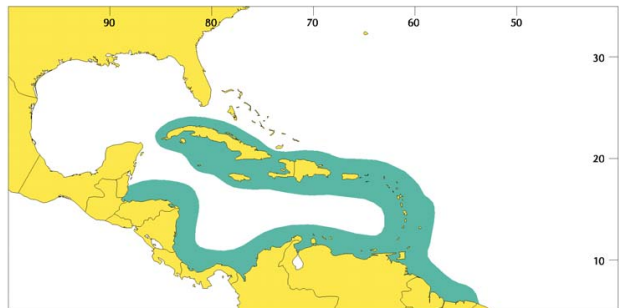
**Diagnostic characters:** Shell thick, trigonal. Sculpture of blade-like concentric ridges crossed by radial ribs. Interspaces between ribs smaller than between ridges. Lunule heart-shaped, dark. **Colour:** externally white to light grey, sometimes with brown rays, internally white, frequently with blue-purple markings.

**Size:** To 45 mm.

**Habitat, biology, and fisheries:** Sand in shallow subtidal environments, often in seagrass beds. Consumed locally in chowders or soups.

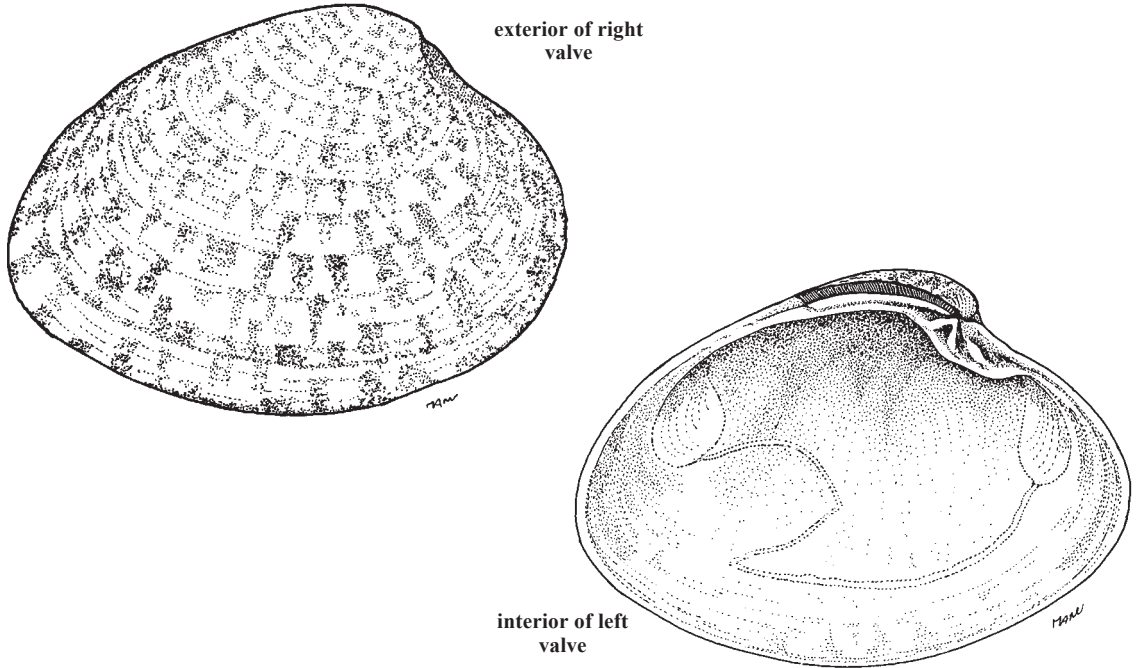
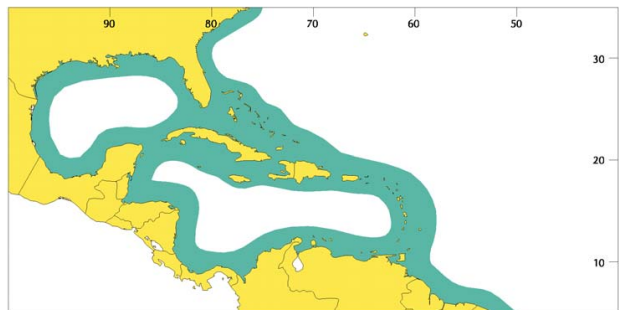
**Distribution:** Caribbean and from Honduras to southeastern Brazil.

**Remarks:** Populations formerly attributed to this species in northern sector of area (from Belize and Mexican Caribbean northward) have been shown by Roopnarine and Vermeij (2000) to belong to a separate species, *Chione elevata* (Say, 1822).



***Macrocallista maculata*** (Linnaeus, 1758)

KSM

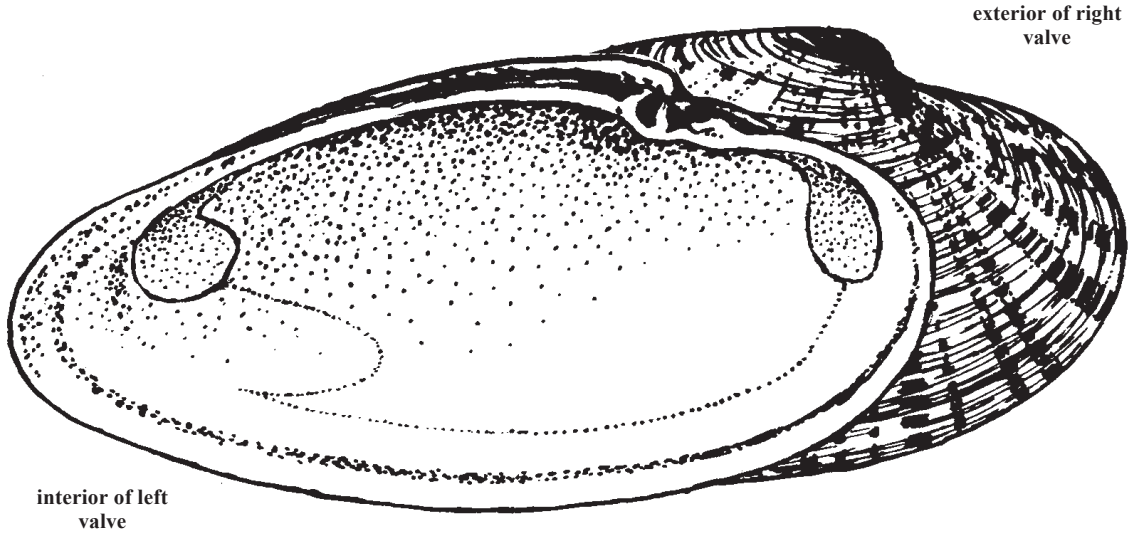
**Frequent synonyms / misidentifications:** None / *Macrocallista nimbosa* (Lightfoot, 1786)**FAO names:** En - Calico clam; Fr - Vénus calicot; Sp - Almeja calico.**Diagnostic characters:** Shell ovate, much less elongate than *Macrocallista nimbosa*. Surface highly glossy. Sculpture of very fine growth lines under glossy layer. Umbones small. Lunule small. **Colour:** tan with irregular brown marks, sometimes arranged in radial bands. Internally white.**Size:** To 70 mm.**Habitat, biology, and fisheries:** Lives in coarse sand, often near seagrass beds, in shallow subtidal depths. Consumed locally in southern half of area in chowders and stews.**Distribution:** North Carolina to Florida, Texas, Caribbean to Brazil, and Bermuda.

*Macrocallista nimbosa* (Lightfoot, 1786)

KSN

**Frequent synonyms / misidentifications:** None / *Macrocallista maculata* (Linnaeus, 1758).

**FAO names:** **En** - Sunray venus; **Fr** - Vénus rayon de soleil; **Sp** - Venus rayo de sol.

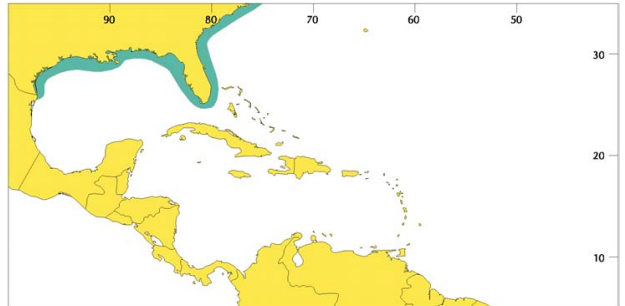


**Diagnostic characters:** Shell elongate, ovate. Surface glossy. Sculpture almost completely absent, except for weak growth lines and radial riblets. Lunule oval. Long external ligament. **Colour:** salmon to greyish purple, with darker, brownish radial bands; lunule purplish.

**Size:** To 150 mm.

**Habitat, biology, and fisheries:** Lives in sandy bottoms. Commercial production ceased in Florida in 1973. Consumed locally in chowders.

**Distribution:** North Carolina through Florida to Texas.



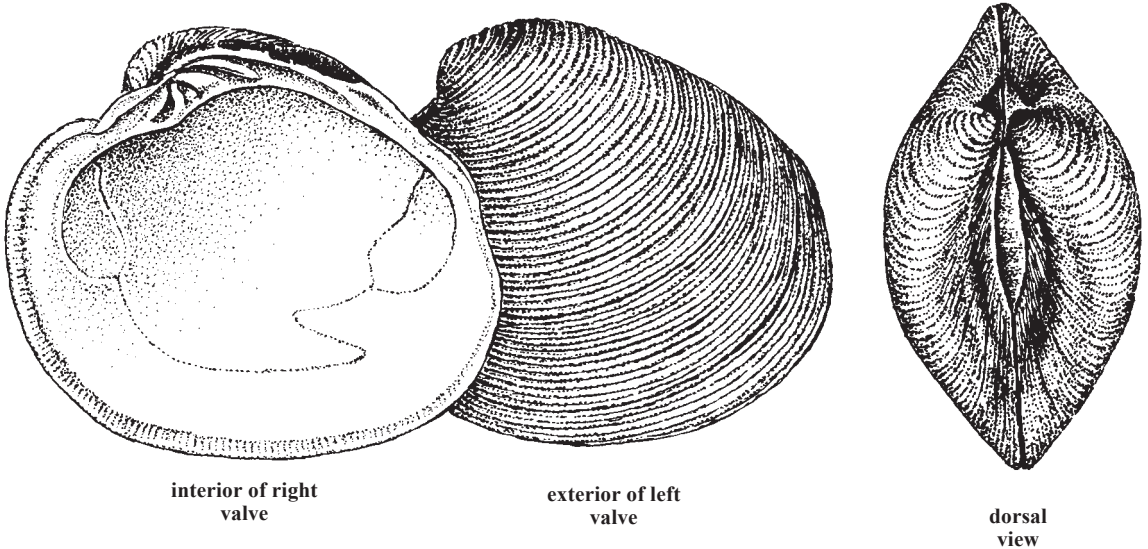


*Mercenaria campechiensis* (Gmelin, 1791)

EKK

**Frequent synonyms / misidentifications:** None / *Mercenaria mercenaria* (Linnaeus, 1758).

**FAO names:** **En** - Southern hardshell clam (AFS: Southern quahog); **Fr** - Praire du sud; **Sp** - Almeja del sur.



interior of right  
valve

exterior of left  
valve

dorsal  
view

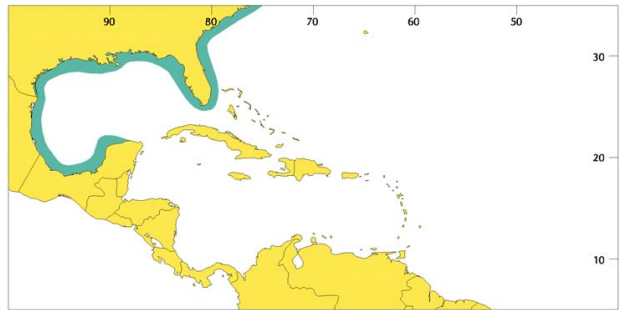
**Diagnostic characters:** Shell thick, more inflated than in *Mercenaria mercenaria*, ovate-trigonal. Sculpture of irregular lines, more separated than in *M. mercenaria*. Lines never absent in middle of valve. Lunule as long as wide. **Colour:** dull white to grey. Internally sometimes stained with purple.

**Size:** To 150 mm.

**Habitat, biology, and fisheries:** Lives from the intertidal to the shallow subtidal (to about 16 m depth), in moderately hard sandy bottoms or in sandy mud. Sometimes in close association with seagrass beds and algae. Rarely found in the surf zone. One of the most commercially exploited bivalve species in the area. Species is harvested by digging in shallow water. Also collected by recreational fishermen by 'treading' (probing with bare feet), and in deeper water by bull rakes and clam tongs. Mechanical harvesting not permitted in Florida. Species is high in protein and virtually fat-free. Consumed in chowders, with pasta, on the half-shell, or in a variety of dishes.

**Distribution:** Southern New Jersey to Florida to Texas and Yucatán, Mexico, and northern Cuba.

**Remarks:** This species may form hybrids with individuals of *M. mercenaria* in the southeastern USA.

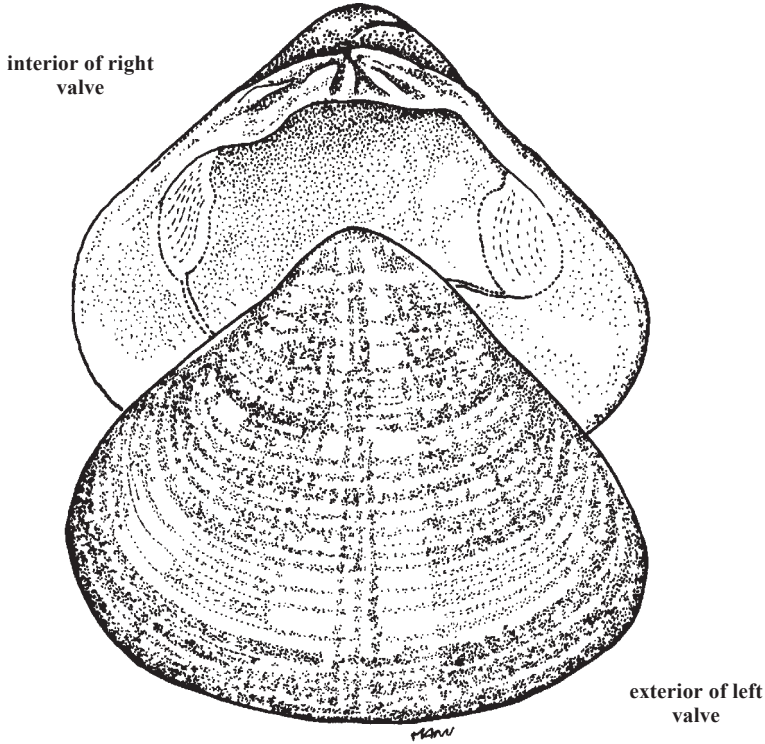


*Tivela mactroides* (Born, 1778)

TVM

**Frequent synonyms / misidentifications:** None / *Polymesoda arctata* (Deshayes, 1854); *Polymesoda aequilatera* (Deshayes, 1855).

**FAO names:** En - Trigonal tivala; Fr - Tivèle trigone; Sp - Tivela triangular.



**Diagnostic characters:** Shell heavy, thick, inflated, triangular. Shell surface umbones central and prominent. Hinge with 3 cardinal teeth, with smaller secondary teeth present. Lateral tooth in left valve large. Lunula large, escutcheon absent. Periostracum like varnish. **Colour:** whitish with brown tinges and rays.

**Size:** To 38 mm.

**Habitat, biology, and fisheries:** Lives in sand, from the intertidal to very shallow subtidal. Consumed locally in soups, stews, or on the half-shell.

**Distribution:** Caribbean to Brazil.

