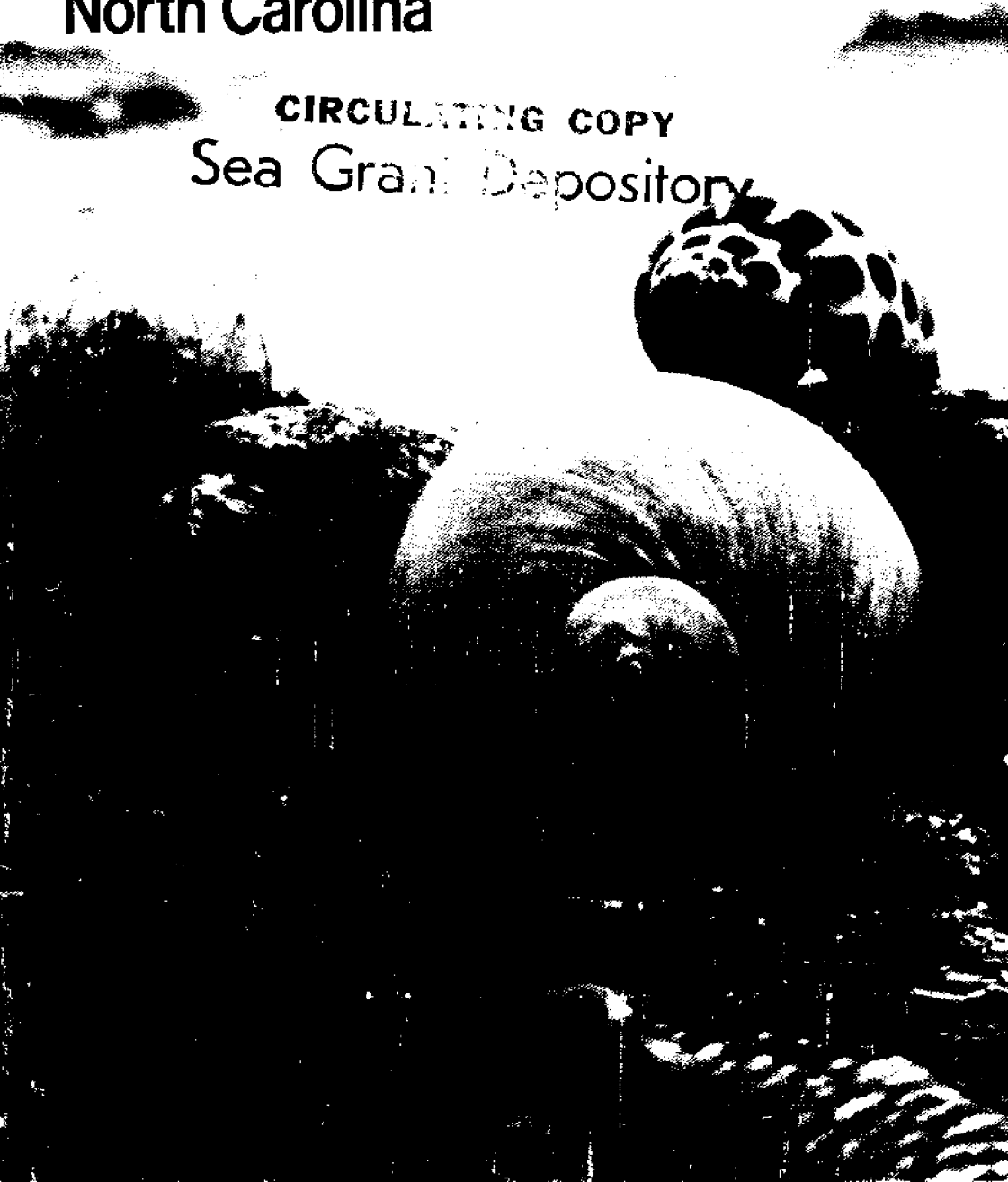


# Sea Shells

common to  
North Carolina

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## ACKNOWLEDGEMENTS

Preparation of this booklet has been aided by a number of individuals. All illustrative sketches except Figs. 12 and 14 were by Mrs. Carolyn Hoss, the latter figures by Mrs. Doris King. The junior author and Mr. Merv Hancock prepared the photographs. Miss Linda Waters, University of North Carolina Institute of Marine Sciences, was responsible for typing the text. A significant proportion of the data used and all specimens photographed or sketched are from the mollusk collection of the University of North Carolina Institute of Marine Sciences. Much of this collection has been secured from catches of North Carolina's commercial fishermen and samples brought up by the research vessels belonging to the respective institutions employing the authors and the Duke University Marine Laboratory in Beaufort, N. C.

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Shells pictured on front and back cover photo (from left to right) are: Lettered Olive, Georgia Tellin, *Phalium coronadoi* (Crosse)—This shell does not have a common name—, Atlantic Moon Snail, Atlantic Deer Cowrie and Junonia.

## NOTE

This is the second in a series of booklets published by the North Carolina Department of Natural and Economic Resources on marine life common to North Carolina waters. The first, "Marine Fishes Common to North Carolina" by Frank J. Schwartz and Jim Tyler, was published in 1970.

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**Sea**  
**Shells**  
common to  
**North Carolina**

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## INTRODUCTION

Those associated with the sea, its beaches and its products, frequently see things unfamiliar to them, and often, they have no quick way of knowing or understanding what they see. Such incidental knowledge may not seem important, but if it stimulates a person to observe his environment more closely and thereby gain an understanding of it, he or she may become a more profitable fisherman, a better teacher, or a more thoughtful inhabitant of this earth. To this end this booklet was produced.

About 700 different kinds of mollusks (shell-bearing animals) are reportedly known to exist in our North Carolina estuarine and marine waters.

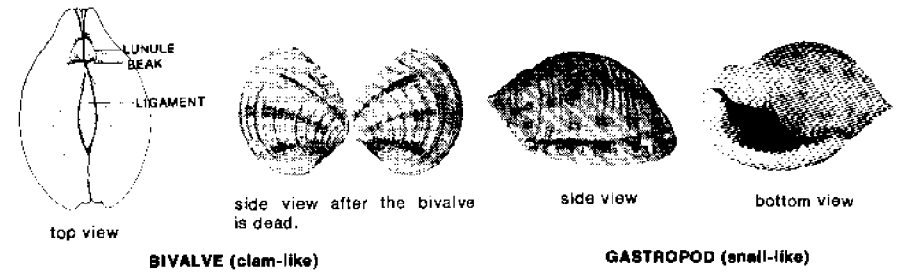
The term "seashell" here specifically refers only to those members of the Phylum Mollusca having a hard calcareous outer covering (rarely internal). By definition, not included in this booklet are: 1. Those adult mollusks without a hard calcareous outer covering; such as, octopi, most squid, sea-slugs, etc. 2. Those non-molluscan marine animals having a hard outer surface - crabs, lamp-shells, coral, etc. Shelled mollusks smaller than 1/2 inch are generally not included as few persons have a high-powered lens or microscope quickly available. Some rare seashells are included; experience has shown many to be rare only because shell collectors were not present when they were caught by our offshore fishermen.

Beach collecting for shells washed ashore is best done in early spring after winter storms and before the tourist season arrives. Very satisfying collecting can be done on the intertidal flats of our numerous lagoons and estuaries. Here, in the interest of conservation, restraint should be practiced when collecting live specimens. Collecting from decks of offshore fishing boats, and at dealers handling fish, shrimp, or offshore scallop catches should not be overlooked. The only known living specimen of the rare *Phalium coronadoi* (Crosse) was found by Dr. A. F. Chestnut, Director of the U.N.C. Institute of Marine Sciences, on the deck of a trawler which had just been fishing off our Wimble Shoals (just below Oregon Inlet). An asterisk, "\*", is used in the shell description to additionally point out shells which have been brought in by the Calico Scallop fishery. Generally, when North Carolina is listed here as the most northern range (distribution) of a seashell, the shell can be collected only south of either Cape Hatteras or Cape Lookout; the converse is true for those few with North Carolina listed as their southern limit.

## How to Use Booklet to Identify Your Seashells

The booklet is in two major sections: pages 4 to 20 are concerned only with bivalves (mollusks having two shells; pages 21 to 35 are concerned with mollusks having only one shell (generally Gastropods - snails).

First check to see if the shell in question is a **bivalve** or a **gastropod**.



Animal has two shells. The shells are held together tightly when the creature is alive. They are attached along one side by a ligament. Unless bivalves are caught alive, collectors usually find only one of a pair.

Animal has only one shell.

**Most terms used are illustrated on inside of back cover of booklet.**

FOR EASE IN IDENTIFICATION, the booklet is set up primarily as an outline (called a key by taxonomists). *Example of use:*

You have a snail-like shell which is almost flat, is not attached to other shells, has no umbilicus (see Fig. 91) and is white. Also, you have, in the outline, been referred previously to 6 from 5a.

- 6a. Shell compressed.....7.
- 6b. Shell length and width nearly equal, 8.  
*Obviously 6a is a better choice than 6b so go to 7 and not 8.*
- 7a. Pieces of shells.....cemented to shell surface.  
 Atlantic Carrier Shell
- 7b. Deep umbilicus.....  
 Common Sundial
- 7c. No deep umbilicus,  
 Common Baby's Ear  
 Maculated Baby's Ear

Here 7c is the better choice and from the descriptions of the two Baby's Ears, the first would be selected since it is the only one that is white.

Where space limitations permitted, described shells are illustrated. Sizes listed in descriptions are approximate maximum sizes of specimens known to have been collected in North Carolina. For those wishing more information, "Seashells of North America, a guide to field identification" by R. Tucker Abbott, published in 1968 by the Golden Press, New York, N.Y., is highly recommended.

# BIVALVES

## 1a. Body soft and worm-like, burrowing into wood, shells small, Fig. 1.

### Ship-worms. Family Teredinidae

Over six kinds exist in N. C. waters, identification difficult, cause millions of dollars of damage to marine properties every year.

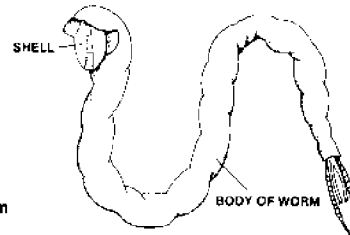


Fig. 1  
Ship-worm

- 1b. Body not soft and worm-like but with shells covering most of body ..... 2.
- 2a. Hinge with numerous teeth, teeth may be chevron-shaped, Figs. 2, 3, 9 ..... 3.
- 2b. Hinge without numerous teeth ..... 4.
- 3a. Hinge curved, circular shell, Fig. 2.

### GIANT AMERICAN BITTERSWEET *Glycymeris americana* (DeFrance) Fig. 2

Length: 3 3/4 in. Range: N. C.—Fla. Live specimens covered by dark brown velvet-like skin (periostracum); indistinct broad radial ribs sculptured with radiating scratches.

Common—beaches near and south of Cape Fear; occasional—offshore fishing boats; dense concentrations living at 75 ft. depth off Cape Fear. Species well named, thus can not be considered a commercial possibility.

### COMB BITTERSWEET *Tucetona pectinata* (Gmelin)

Length: 3/4 in. Range: N. C.—Fla. Strong smooth ribs. Common—beaches.

Two other species—the Spiral Bittersweet, *Glycymeris spectralis* Nicol and the Atlantic Bittersweet, *Glycymeris undata* (Linne) occur sporadically off our coast.

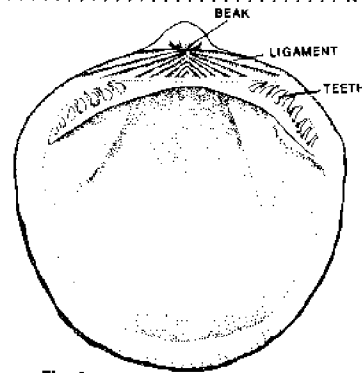


Fig. 2  
Giant American Bittersweet

- 3b. Hinge almost a straight line (note Fig. 3), elliptical or quadrate shaped shell.
  - aa. Bottom edge not cut by crenulations (teeth).

### TURKEY WING OR ZEBRA ARK *Arca zebra* Swainson Fig. 4.

Length: 3 1/2 in. Range: N. C.—Brazil. Posterior (rear) ribs not beaded, zebra-stripe markings on exterior, live specimens covered by a dense periostracum (outer skin) and/or encrusting organisms. Common—beaches; frequently attached to shell or rocks on offshore fishing grounds or inshore jetties.

### MOSSY ARK *Arca imbricata* Bruguiere

Length: 2 1/2 in. Range: N. C.—West Indies. Ribs weaker than Turkey Wing and generally beaded, part of lower edge strongly concave, no zebra-stripe markings, easily confused with Turkey Wing; like Turkey Wing in exterior covering and habitat.

### WHITE-BEARDED ARK *Barbatia candida* (Helbling)

Length: 1 in. Range: N. C.—Brazil. Numerous fine rough ribs covered by light yellow-brown periostracum. Occasional—attached to rocks in offshore waters.

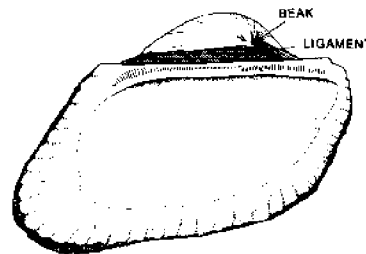


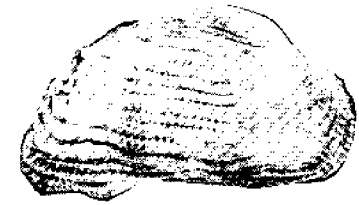
Fig. 3 Typical Ark shell  
Inner view



Fig. 4  
Turkey Wing  
Outer view

**WHITE MINIATURE ARK** *Barbatia domingensis* (Lamarck) Fig. 5.  
Length: 1 1/4 in. Range: N. C.—Fla. Concentric ridges stronger than ribbing. Occasionally common—offshore jetties, under rocks and on shells.

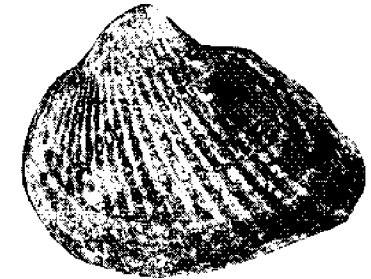
Fig. 5  
White Miniature Ark  
Outer view



**bb. Bottom edge cut by crenulations (toothed), note Fig. 3.**

**PONDEROUS ARK** *Noetia ponderosa* (Say) Fig. 6.  
Length: 2 1/2 in. Range: Va.—Texas. Square ponderous-shaped; ligament wide, cut by transverse lines (lines at a 90° angle to length of ligament); ribs not beaded but cut by fine line; fresh shells covered by black velvety periostracum. Occasionally common—beaches, living offshore\*.

Fig. 6  
Ponderous Ark  
Outer view



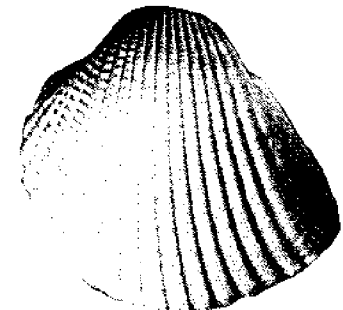
**CUT-RIBBED ARK** *Anadara ilenosa floridana* (Conrad) Fig. 7.  
Length: 4 1/2 in. Range: N. C.—Texas. Large rectangular-shaped, 30 or more ribs, ribs not beaded but cut by fine line, fresh shells covered by dense mossy-like periostracum. Occasional—beaches; common—living offshore\*.

Fig. 7  
Cut-ribbed Ark  
Outer view



**INCONGRUOUS ARK** *Anadara brasiliana* (Lamarck) Fig. 8.  
Length: 2 1/2 in. Range: N. C.—Brazil. 26-28 ribs—some strongly sculptured with bar-like beads, ligament in front and in back of beak. Very common—offshore beaches.

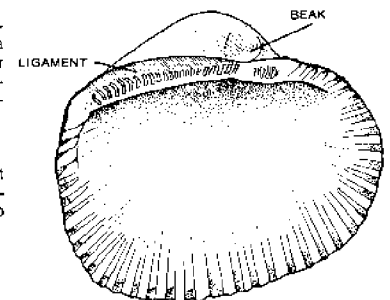
Fig. 8  
Incongruous Ark  
Outer view



**BLOOD ARK** *Anadara ovalis* (Bruguière) Fig. 9.  
Length: 2 1/4 in. Range: Mass.—Texas. 26 to 35 smoothish ribs not crossed by any strong bars, ligament area completely in back of beak, teeth in hinge distinctive for this ark—extend only slightly beyond beak. Animal unusual in that it has red blood—thus its name. Very common—offshore beaches.

**TRANSVERSE ARK** *Anadara transversa* (Say)  
Length: 1 in. Range: Mass.—Texas. 30-35 ribs, ligament both in front and in back of beak; ribs may be beaded—not cut lengthwise by fine line. Occasional—attached to rocks, shell, driftwood offshore, in sounds and inlets.

Fig. 9  
Blood Ark  
Inner view



- 4a. Found living in low salinity areas (almost freshwater): Albemarle Sound and tributaries, Pamlico River, Neuse River, etc. .... 23.
- 4b. Hinge line with ears, note Figs. 11, 15 ..... 5.
- 4c. Large, wedge-shaped, Figs. 16, 17, thin fragile shell with pearly interior .... 6.
- 4d. Front top margin of shell reflected outward (rolled out) Fig. 18 ..... 7.
- 4e. Shell pear or cigar shaped - generally wide and more than twice as long as high, beaks at one end of shell ..... 8.
- 4f. Long shell (not cigar or pear shaped) - generally more than twice as long as high, narrow width ..... 9.
- 4g. Large, almost rectangular shape - one end rounded, the other blunt and concave.

**ATLANTIC GEODUCK** *Panopea bitruncata* Conrad  
 Fig. 10.  
 Length: 7 1/4 in. Range: N. C.—Texas. Occasionally washed up on beaches, living specimens extremely rare—considered extinct until recently.

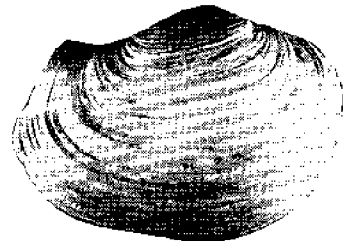


Fig. 10  
 Atlantic Geoduck  
 Outer view

- 4h. None of the above descriptions ..... 10.
- 5a. Triangular shape, hinge longest part of shell.

**ATLANTIC WING OYSTER** *Pteria colymbus* (Roding)  
 Fig. 11.  
 Length: 3 3/4 in. Range: N. C.—Brazil. Brown exterior, pearly interior. Occasional—beaches, commonly attached to sea whip strands in sounds and offshore\*. Closely related to Pearl Oysters.

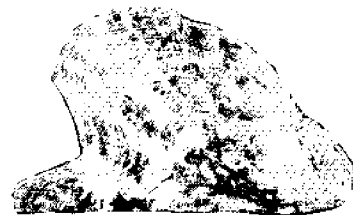


Fig. 11  
 Atlantic Wing Oyster  
 Outer view

HINGE LINE

- 5b. Scallop-shaped, hinge not longest part of shell.
  - aa. No ribbing—occasionally very fine ribbing.

**ATLANTIC DEEP-SEA SCALLOP** *Placopecten magellanicus* (Gmelin) Fig. 12.  
 Length: 6 in. Range: Labrador—N. C. Smooth surface, top valve reddish brown—sometimes rayed, bottom valve white, albinos occasionally noted. Fished commercially offshore—not known below Cape Hatteras.

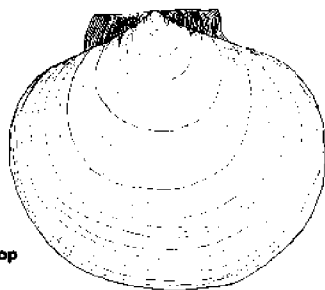


Fig. 12  
 Atlantic Deep-sea Scallop  
 Outer view

- bb. Ribs present—smooth.

**RAVENEL'S SCALLOP** *Pecten raveneli* Dall Fig. 13.  
 Length: 2 3/4 in. Range: N. C. - West Indies. Lower valve (shell) quite cupped, upper valve flat (not due to water pressure pressing down on a sick Calico Scallop, as suggested by local superstition). Common—living offshore\*.



Fig. 13  
 Ravenel's Scallop  
 Outer view



**Calico Scallop** *Argopecten gibbus* (Linne)

Length: 3 in. Range: Del. - Gulf of Mexico. Both valves (shells) cupped, upper valve with mixed shades of red in stripes or blotches on a yellow or pinkish background. Similar in shape and sculpturing to Bay Scallop (Fig. 14). Common - beaches, fished commercially offshore east of Cape Lookout and southwest of Beaufort Inlet at about 100 ft. depths. (Lives only in ocean).

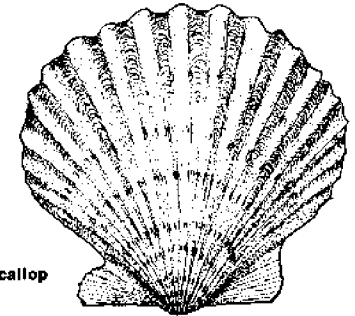


Fig. 14  
Atlantic Bay Scallop  
Outer view

**Atlantic Bay Scallop** *Argopecten irradians* (Lamarck)

Fig. 14

Length: 3½ in. Range: Mass. - Mexico. Similar in shape and sculpturing to Calico Scallop; upper valve (shell) - gray, brown or blackish with sometimes only upper surface of ribs colored. Lives only in sounds and estuaries where it forms a major commercial fishery.

**cc. Ribs roughened by large nodules, numerous small spines or scales.**

**Lion's Paw** *Lyropecten nodosus* (Linne) Fig. 15

Length: 4 ¾ in. Range: N. C. - Brazil. Ribs with large nodules; shell resembles paw of a large cat; orange, red or black. Rare - offshore beaches, occasional - living offshore\*. Reported to be excellent eating.

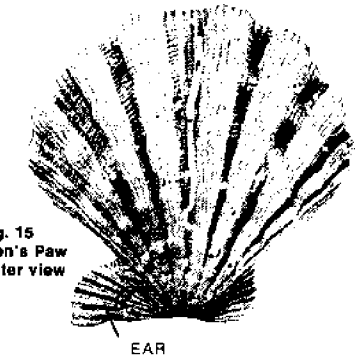


Fig. 15  
Lion's Paw  
Outer view

**Rough Scallop** *Aequipecten muscosus* (Wood)

Length: 1 ¾ in. Range: N. C. - West Indies. Numerous erect scales or small spines on ribs, dark red, typical scallop shape. Occasional - living offshore\*.

**6. Pen Shells.**

After winter storms, three ocean species frequently washed onto offshore beaches; Rigid Pen Shell also found living in our sounds. All may reach 10 inches length. Hard to keep in shell collections because of brittleness of shells. Meat edible and considered valuable in some parts of world, only shell-fish in our marine waters known to produce a valuable pearl. Bysal threads, which help hold Pen Shells in the sand, have been woven into cloth for small garments in Mediterranean countries.

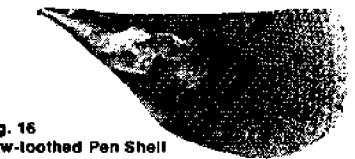


Fig. 16  
Saw-toothed Pen Shell  
Outer view

**Saw-toothed Pen Shell** *Atrina serrata* Sowerby Fig. 16

Range: N. C. - Columbia. About 30 ribs - each covered with small spines.

**Rigid Pen Shell** *Atrina rigida* (Lightfoot) Fig. 17

Range: N. C. - Florida. Less than 20 ribs - some containing large spines, similar to Half-naked Pen Shell except on mid interior of shell, the large muscle scar borders the edge of the inner shiny (nacreous) area which extends to the narrow beak end.

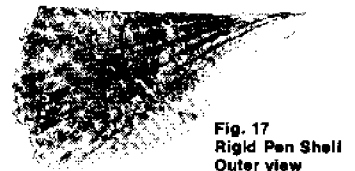


Fig. 17  
Rigid Pen Shell  
Outer view

**Half-naked Pen Shell** *Atrina seminuda* (Lamarck)

Range: N. C. - Argentina. Similar to Rigid Pen Shell except on mid-interior of shell, the large muscle scar is not on the edge but is surrounded by the shiny (nacreous) area which extends to the narrow beak end.

## 7. Boring Clams.

### Angel Wing *Cyrtopleura costata* (Linne) Fig. 18

Length: 5 1/2 in. Range: N. J. - Brazil. White, reflected hinge on top surface not braced by numerous partitions, both ends rounded. Occasional - beaches; lives offshore and in estuaries; clay or mud burrower.



Fig. 18  
Angel Wing  
Outer view

**Campeche Angel Wing** *Pholas campechiensis* (Gmelin)  
Length: 2 3/4 in. Range: N. C. - Brazil. Like Angel Wing except numerous partitions brace upper reflected hinge. Occasionally common - beaches near and south of Cape Fear.

### Fallen Angel Wing *Barnea truncata* Say Fig. 19

Length: 3 3/4 in. Range: Maine - Brazil. Neither end rounded, live specimens have loose accessory plates (note Fig. 20) on top of where the hinge should be. Occasional - beaches; bores into mud, clay, soft wood.



Fig. 19  
Fallen Angel Wing  
Outer view

**Wedge-shaped Martesia** *Martesia cuneiformis* Say Fig. 20  
Length: 1/2 in. Range: N. C. - Brazil. Series of loose accessory plates on top of hinge line, ridge running from top to bottom separates exterior sculpture into two areas. Common - submerged driftwood burrower.

One of about six small boring clams listed from our waters - some shell and/or rock burrowers. Identification based largely on characteristics of accessory plates.

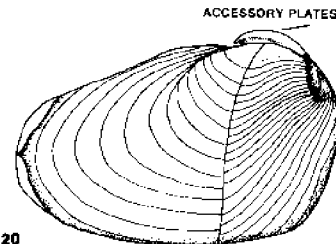


Fig. 20  
Wedge-shaped Martesia  
Outer view

## 8a. Strong ribbing at beak end of shell, hinge teeth present.

### False Angel Wing *Petricola pholadiformis* Lamarck Fig. 21

Length: 2 1/4 in. Range: Canada - Gulf of Mexico. White, variable in width particularly at the non-beak end; looks like a small Angel Wing (p. 8), note absence of rolled out hinge area. Common - beaches, in intertidal area a hard clay or peat borer.

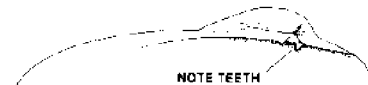


Fig. 21  
False Angel Wing  
Inner view of hinge

## 8b. Weakest ribbing, when present, at beak end of shell; hinge teeth absent (crenulations similar to weak teeth may be present).

**Common Awning Clam** *Solemya veium* (Say) Fig. 22  
Length: -1 in. Range: Nova Scotia - Fla. Smooth and fragile, brown with some light radial rays. Common - intertidal sand flats of our sounds; shells rare on beaches.

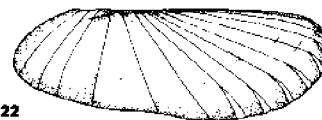


Fig. 22  
Common Awning Clam  
Outer View

## aa. Ribbing present.

### Scorched Mussel *Brachidontes exustus* (Linne)

Length: 3/4 in. Range: N. C. - West Indies. Narrow end not strongly hooked, exterior light brownish-yellow. Frequently attached to oysters or other shell and rocks in estuaries.

**Hooked Mussel** *Brachidontes recurvus* (Rafinesque)  
 Fig. 23  
 Length: 1 3/4 in. Range: Mass. - West Indies. Narrow end strongly hooked in shape, beak area with some tooth-like crenulations, exterior color - dark grayish-black. Same habitat as Scorched Mussel.

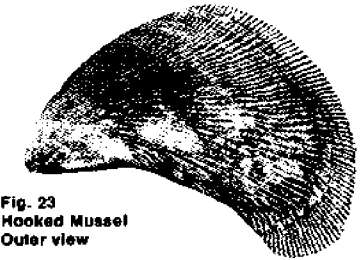


Fig. 23  
 Hooked Mussel  
 Outer view

**Atlantic Ribbed Mussel** *Modiolus demissus* (Dillwyn)  
 Fig. 24  
 Length: 5/8 in. Range: Nova Scotia - Fla. No tooth-like crenulations in beak area, dark brown to purple exterior, interior blue-white, strong heavy ribs. Large living beds embedded in brackish water marshes.



Fig. 24  
 Atlantic Ribbed Mussel  
 Outer view

**bb. Ribbing not present, top and bottom edges not parallel to each other.**

**Common Blue Mussel** *Mytilus edulis* Linne Fig. 25  
 Length: 2 in. Range: Arctic Ocean - S. C. Exterior bluish black, small teeth present just under beak. Common - north of Cape Hatteras; adults rare - south of Cape Hatteras. Attached to rocks in mouths of estuaries and offshore. The popular edible mussel of Europe; has a large potential for advanced aquaculture.



Fig. 25  
 Common Blue Mussel  
 Outer view

**Paper Mussel** *Amygdalum papyria* Conrad  
 Length: 1 in. Range: Maryland - Texas. Shiny light blue or tan with brown cobwebby design. Occasional - living offshore\*.

**Tulip Mussel** *Modiolus americanus* (Leach)  
 Length: 1 3/4 in. Range: N. C. - West Indies. Deep chestnut colored splotch in lower front area, hairy lightbrown periostracum, similarly shaped but not as large and heavy as N. Horse Mussel. Common - beaches after storms; attached to rocks and shells in sounds and offshore\*.

**Northern Horse Mussel** *Modiolus modiolus* (Linne) Fig. 26  
 Length: 4 1/2 in. Range: Artic Seas - Fla. No chestnut colored splotch on lower front area, coarse and thick brown-black periostracum. Occasional - attached to rocks or shell offshore.

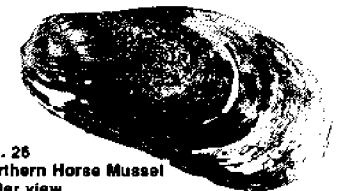


Fig. 26  
 Northern Horse Mussel  
 Outer view

**cc. Cigar-shaped. Found boring into submerged wood, thick shell, bases of coral lumps, or sometimes rock.**

**Giant Date Mussel** *Lithophaga antillarum* (Orbigny)  
 Length: 3 1/4 in. Range: N. C. - British Honduras. Light yellow-brown, sculptured with light verticle lines. Ends rounded. Not common; off Cape Lookout in coral lumps.

**Scissor Date Mussel** *Lithophaga aristata* Dillwyn  
 Fig. 27  
 Length: 1 1/4 in. Range: N. C. - Brazil. Extended ends look like crossed fingers or end of a small scissors, exterior generally covered by a white calcareous deposit. Frequent - offshore boring into coral or thick shells.

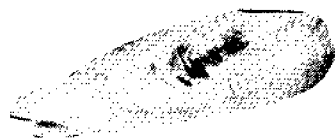


Fig. 27  
 Scissor Date Mussel  
 Outer view

**Mahogany Date Mussel** *Lithophaga bisulcata* (Orbigny)  
 Fig. 28  
 Length: 1 in. Range: N. C. - Brazil. Exterior surface divided by oblique line, exterior white calcareous deposit present, exterior ends not crossed. Common - sounds and offshore.



Fig. 28  
 Mahogany Date Mussel  
 Outer view

**Cinnamon Chestnut Mussel** *Botula fusca* (Gmelin)  
 Length: 1/2 in. Range: N. C. - West Indies. Strong concentric growth lines, lower edge concave. Common - living offshore\*; rock or shell borer.

**9a. Crescent-shaped with one end shaped like a small tube.**

**Say's Pandora** *Pandora trilineata* Say Fig. 29  
 Length: 1 in. Range: Va. - Texas. One of five similar species found in sounds and shallower offshore areas; may be common, rarely seen by collectors.

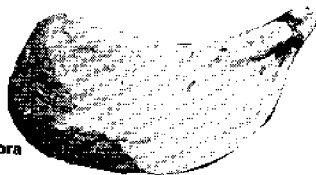


Fig. 29  
 Say's Pandora  
 Outer view

**9b. Length greater than four times the height, blunt ends, looks like an old-fashioned razor.**

**Atlantic Jackknife Clam** *Ensis directus* Conrad Fig. 30  
 Length: 5 in. Range: Canada - S. C. Six times as long as high (a similar but smaller species, the Small Jackknife Clam - *Ensis minor* Dall, also reported from our waters, is nine times as long as high); olive to brown outer skin, white and violet underneath. Common - beaches (particularly above Cape Hatteras), muddy sand burrower in our sounds and offshore. Excellent eating.



Fig. 30  
 Atlantic Jackknife Clam  
 Outer view

**Green Jackknife Clam** *Solen viridis* Say  
 Length: about 1 1/2 in. Range: Rhode Island - Texas. Only four or five times as long as high, upper border almost straight - not as concave as Atlantic Jackknife Clam, green. Occasional - sounds and offshore beaches.

**9c. Rectangular shape, shell length less than 4 times height, beak not quite central in location.**

**aa. Oblique lines overlaying regular concentric growth lines.**

**Corrugated Razor Clam** *Solecurtus cumingianus*  
 Dunker Fig. 31  
 Length: 2 3/4 in. Range: N. C. - Fla. Occasional - living offshore\*.

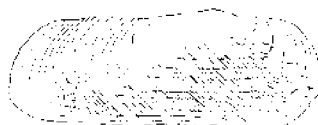
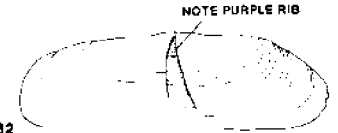


Fig. 31  
 Corrugated Razor Clam  
 Outer view

**bb. No oblique lines overlaying regular concentric growth lines.**

**Purplish Tagelus** *Tagelus divisus* Spengler Fig. 32  
 Length: 1 1/4 in. Range: Mass. - Texas. Inner purplish raised rib (weak) running from beak to lower shell edge; yellowish periostracum with purple rib showing through. Common - beaches; lives in sounds and offshore.

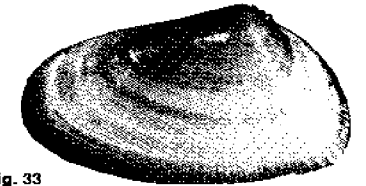


**Fig. 32**  
**Purplish Tagelus**  
**Outer view**

**Stout Tagelus** *Tagelus plebeius* (Lightfoot)  
 Length: 3 1/2 in. Range: Mass. - Fla. Interior without verticle raised rib running down from beak, exterior without purplish rays, outline shape somewhat similar to Corrugated Razor Clam. Common - offshore beaches, sounds.

**9d. Ends rounded, shell not crescent or rectangular shaped, beak not centrally located (about 1/3 rd in from end of shell).**

**Florida Coquina** *Donax variabilis* Say Fig. 33  
 Length: 1 in. Range: Virg. - Texas. No external raised ribbing on shell except possibly at beak end of shell; hinge teeth present; extremely variable coloration - white, yellow, purple, red, etc., in varying shades of solid, ringed or rayed condition. Extremely common - intertidal zone, sandy ocean beaches. Makes an excellent soup. Two other species - *Donax fossar* and *Donax parvula* recorded from N. C. waters.



**Fig. 33**  
**Florida Coquina**  
**Outer view**

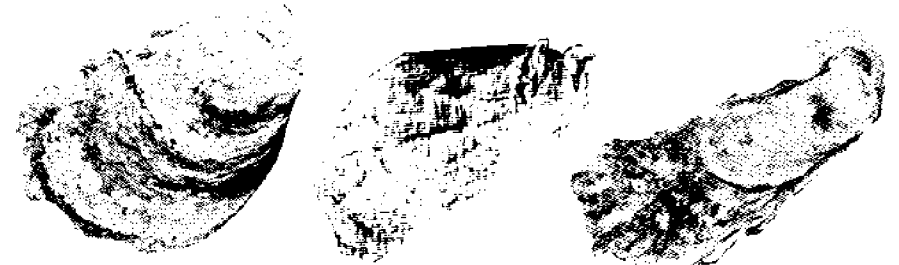
**Glassy Lyonsia** *Lyonsia hyalina* Conrad  
 Length: 3/4 in. Range: Canada - S. C. Fine ribbing covers shell, dull white, very fragile, no hinge teeth, sand grains frequently attached to outer skin (periostracum). Living - estuaries, offshore. A second species, *Lyonsia beana*, occasionally found offshore.

- 10a. No hinge teeth present ..... 11.
- 10b. Hinge teeth present, shell with rounded triangular shape, prominent heavy ribs ..... 12.
- 10c. Hinge teeth present, shell elliptical or round shape ..... 13.
- 11a. Single prominent muscle scar, lower valve cemented to another hard surface.

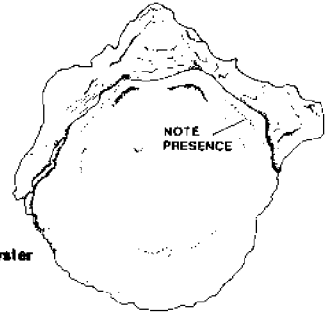
**Eastern Oyster** *Crassostrea virginica* (Gmelin) Fig. 34  
 Height: 8 in. Range: New Brunswick - Gulf of Mexico. Muscle scar generally dark purple, shell very variable in shape - can be thick and massive or thin and brittle, no pimple-like depressions on either side of the hinge. Basis of large and important fishery in North Carolina's estuarine waters. So called "coon-oysters", found in intertidal areas near mouths of sounds and estuaries, are the Eastern Oyster. The Sponge Oyster, *Ostrea permollis* Sowerby, occasional - living offshore\*, lives only in sponges.



**Fig. 34**  
**Eastern Oyster**  
 1 - inner view (note prominent muscle scar),  
 3 - outer views



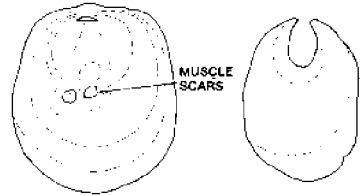
**Crested Oyster** *Ostrea equestris* Say Fig. 35  
 Height: 2 in. Range: Va. - Texas. Very similar to Eastern Oyster, muscle scar generally not colored, small pimple-like depressions on either side of hinge. Common - high salinity areas (mouths of sounds, estuaries and offshore). Not utilized commercially.



**Fig. 35**  
**Crested Oyster**  
 Inner view

**11b. Several small muscle scars very close to each other, living animal attached but not cemented to another hard surface.**

**Atlantic Jingle** *Anomia simplex* Orbigny Fig. 36  
 Height: 1 1/2 in. Range: N. Y. - West Indies. Shell thin and almost transparent; variously colored - white, yellow, yellow-orange, silvery black; top shell whole and convex in shape; bottom shell smaller, flat, very fragile, and with a slotlike hole near the hinge line; frequently assumes sculpturing pattern of the surface to which it is attached. Upper valves common on beaches.

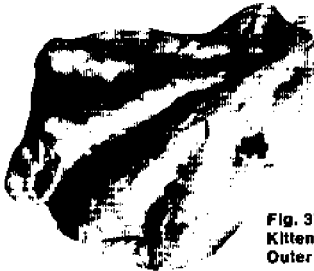


**Fig. 36**  
**Atlantic Jingle**  
 Inner view of top shell on left, lower shell on right

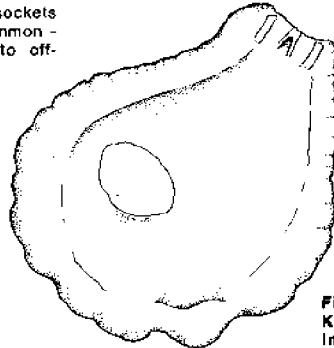
A small prickly kind, the Prickly Jingle - *Anomia aculeata* (Gmelin), reported off coast.

**12a. Flat shells, ribs with few if any spines.**

**Kitten's Paw** *Plicatula gibbosa* (Linne) Figs. 37, 38  
 Length: 1 1/2 in. Range: N. C. - Gulf States. Thick shell, two strong teeth in upper valve fit into sockets of lower valve, one muscle scar, well named. Common - offshore beaches; living specimens cemented to offshore shells and/or rock.



**Fig. 37**  
**Kitten's Paw**  
 Outer view



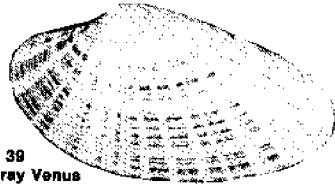
**Fig. 38**  
**Kitten's Paw**  
 Inner view

- 12b. Deeply cupped shells, ribs with many prominent raised spines ..... 16a.
- 13a. Lunule and pallial sinus present ..... 15.
- 13b. Lunule, pallial sinus or both, not present ..... 14.
- 14a. Rough raised concentric ridges - leafy type sculpture, may include some radial ribbing, lower valve attached to hard surface and quite cupped in shape, upper valve a semi-flat lid to lower valve ..... 16.
- 14b. Radial ribbing present (refers to 16b only) ..... 17.
- 14c. Eggshell-like surface, circular or higher than wide-ovate shape ..... 18.
- 14d. Sculpture of fine concentric ridges or growth lines; if smooth, not a higher than wide-ovate shape ..... 19.
- 15a. Oval shape and smooth shiny surface.

**Calico Clam *Macrocallista maculata* (Linne)**

Length: 3 1/2 in. Range: N. C. - Brazil. Checkerboard coloration with dark brown on light tan or pinkish tan. Occasional - beaches south of Cape Hatteras; known living - 50 & 120 ft. depths south of Cape Lookout\*.

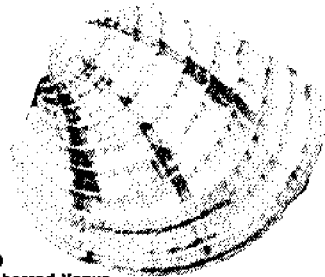
**Sunray Venus *Macrocallista nimosa* (Lightfoot) Fig. 39**  
Length: 6 1/2 in. Range: N. C. - Texas. Greyish salmon color, frequently with dull lavender radial stripes (colors fade rapidly in the sun). Common - beaches below Cape Hatteras (particularly Cape Lookout); live collected - intertidal zone to +65 ft. depth, sounds. Excellent chowder clam - fished commercially in Florida.



**Fig. 39  
Sunray Venus  
Outer view**

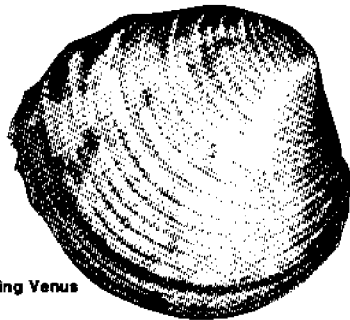
**15b. Ribbing present, lower shell edge toothed (crenulated).**

**Cross-barrred Venus *Chione cancellata* (Linne) Fig. 40**  
Length: 1 3/4 in. Range: N. C. - Brazil. Palial sinus small, strong concentric ridges crossing strong radial ribbing, interior usually with strong purple area, occasional specimens have a few lavender exterior radial stripes on normal white base color. Very common - sand bottom (sounds, offshore shallow waters). Edible but rarely eaten - said to be sweeter tasting than Northern Quahog.



**Fig. 40  
Cross-barrred Venus  
Outer view**

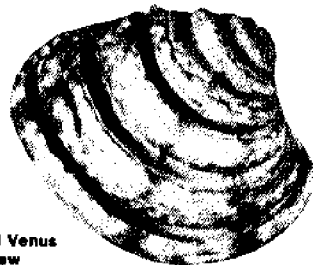
**Lady-in-waiting Venus *Chione intapurpurea* Conrad Fig. 41**  
Length: 1 1/2 in. Range: N. C. - Texas. Sculptured mainly by concentric ridges, ridges serrated or toothed along lower edge - thus appear to be crossed by light ribbing, exterior colored frequently by broken radial stripes of lavender. Occasional - beaches, living offshore\*.



**Fig. 41  
Lady-in-waiting Venus  
Outer view**

**15c. Concentric sculpture of large heavy ridges, lower edge of shell not toothed.**

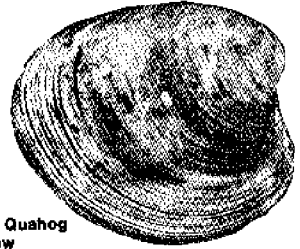
**Imperial Venus *Chione latilirata* Conrad Fig. 42**  
Length: 1 1/2 in. Range: N. C. - Texas. Ridges rounded and often sharply shelved at top, tan exterior broken up by lavender blotches and radial stripes. Occasional - beaches, frequent - living south of Cape Hatteras at 60 - 120 ft. depth\*.



**Fig. 42  
Imperial Venus  
Outer view**

**15d. Concentric sculpture of fine ridges, shell not a flat disk.**

**Northern Quahog or Hard Shell Clam** *Mercenaria mercenaria* (Linne) Fig. 43  
Length: 4 1/2 in. Range: Canada - Texas. Lower edge of shell toothed, exterior central area smooth, interior frequently with some purple, heavy shell. Common - beaches, sounds, and mouths of estuaries near ocean. Basis of large commercial fishery in our waters; large marine farming potential.



**Fig. 43**  
Northern Quahog  
Outer view

**Southern Quahog** *Mercenaria campechiensis* (Gmelin)  
Length: 4 3/4 in. Range: Va. - Texas. Closely related to Northern Quahog, exterior central area of the shell not smooth but sharply ridged, interior all white. Common - offshore beaches; living - 40-50 ft. depth offshore near inlets. Bed between Cape Lookout and Beaufort Inlet at one time was fished commercially.

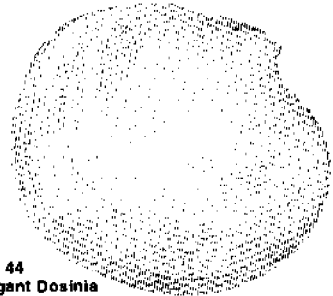
Two above species seem to hybridize in our inlets; hybrid specimens may reach six inches in length.

**Morhua Venus** *Pitar morhuana* (Linsley)  
Length: 1 1/2 in. Range: Canada - N. C. Looks like small quahog, lower edge of shell not toothed, thin fat shell, dull gray. Common - offshore beaches.

**15e. Concentric sculpture of fine ridges, shell a flat disk.**

**Disk Dosinia** *Dosinia discus* (Reeve)  
Length: 3 in. Range: Va. - Yucatan. Similar to Elegant Dosinia, about 50 ridges per inch. Common - beaches; living in sounds and just offshore in shallow sandflats.

**Elegant Dosinia** *Dosinia elegans* Conrad Fig. 44  
Length: 4 in. Range: N. C. - Yucatan. About 25 ridges per inch. Lives off coast in deeper waters than that reported for the Disk Dosinia; common - Cape Lookout beaches.



**Fig. 44**  
Elegant Dosinia  
Outer view

**16a. Many prominent raised spines on ribs, both valves deeply cupped.**

**Florida Spiny Jewel Box** *Arcinella cornuta* (Conrad) Fig. 45  
Height: 2 in. Range: N. C. - Texas. Lunule prominent, adults not cemented to any hard surface, white. Occasional - offshore beaches, living offshore.



**Fig. 45**  
Florida Spiny Jewel Box  
Outer view

**16b. Rough sometimes indistinct ribbing and/or concentric ridges present, no lunule, lower valve attached to hard surface and quite cupped in shape, upper valve a semi-flat lid for lower valve.**



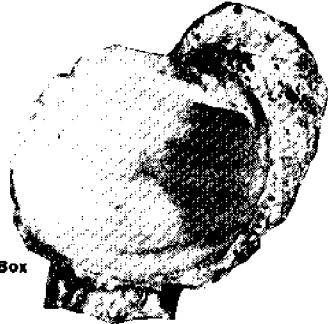
**Little Corrugated Jewel Box** *Chama congregata* Conrad  
 Height: 1 1/4 in. Range: N. C. - Texas. Beaks pointing to right, surface sculpture of low wavy radial cords. Occasional shells - offshore beaches, common - attached to living or dead shell and rocks in offshore waters\*.

The rarer **Leafy Jewel Box**, *Chama macerophylla* Gmelin Fig. 46, differs in having leafy (foliated) and sometimes spiny sculpture; similar habitat. Height: 1 1/2 in. Range: N. C. - West Indies.



**Fig. 46**  
**Leafy Jewel Box (top shell)**  
**Outer view (note Jewel Box attached to another shell)**

**Atlantic Left-handed Jewel Box** *Pseudochama radians* (Lamarck) Fig. 47  
 Height: 2 1/4 in. Range: N. C. - West Indies. Beaks pointing to left, almost a mirror image of the Leafy Jewel Box. Occasional - beaches, attached to shell and rocks in shallow and deep offshore waters.



**Fig. 47**  
**Atlantic Left-handed Jewel Box**  
**Inner view**

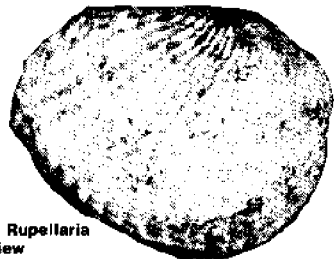
**17a. Concentric ridges as strong or almost as prominent as ribbing.**

**Cancelate Semele** *Semele bellastrata* (Conrad)  
 Length: 3/4 in. Range: N. C. - West Indies. Cream color with pink - purple specks or blotches. Occasional - living known offshore at depths up to about 300 ft. (Note closely related species on p. 19).

**17b. Rough with sometimes indistinct ribbing or spines, lower valve attached to hard surface and quite cupped in shape - upper valve a semi-flat lid to lower valve** ..... 16.

**17c. Palial sinus present, beak about 1/4 of length from front end, no good lateral teeth, found boring into rock or shell.**

**Atlantic Rupellaria** *Petricola typica* (Jonas) Fig. 48  
 Length: 1 in. Range: N. C. - West Indies. White to grayish, very variable in shape. Common - offshore rock, shell or coral borer\*. (Note closely related species listed on p. 8).

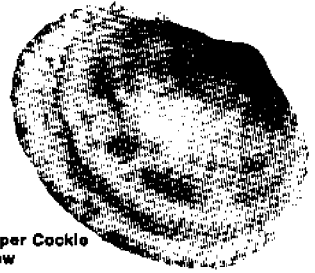


**Fig. 48**  
**Atlantic Rupellaria**  
**Outer view**

**17d. Palial sinus not present; beak somewhat central; prominent lateral teeth, Fig. 51; non rock, coral, or shell borer** ..... 18.

**18a. Shell longer than high, ribbing present.**

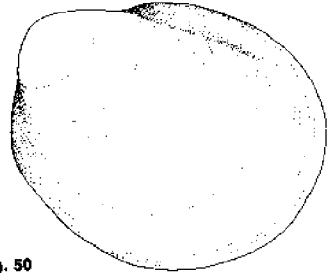
**Spiny Paper Cockle** *Papyridea soleniformis* (Bruguiere)  
 Fig. 49  
 Length: 1 1/2 in. Range: N. C. - Brazil. Thin shelled,  
 not deeply cupped, brownish orange. Occasional -  
 beach specimens from Cape Lookout south.



**Fig. 49**  
**Spiny Paper Cockle**  
 Outer view

**18b. Eggshell-like surface with either very light or no ribbing, circular or higher than wide-ovate shape.**

**Common Egg Cockle** *Laevicardium laevigatum* Linne  
 Fig. 50  
 Height: 2 3/4 in. Range: N. C. - Brazil. Thin shelled,  
 cream with brown tints. Common - living known at  
 150 ft. offshore depths\*, less common - beaches.



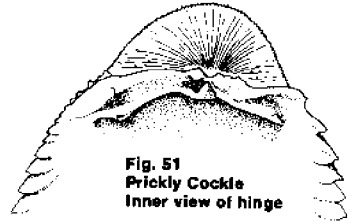
**Fig. 50**  
**Common Egg Cockle**  
 Outer view

**Ravenel's Egg Cockle** *Laevicardium pictum* (Ravenel)  
 Height: 1 in. Range: N. C. - Gulf of Mexico. Oblique  
 shape. Common - offshore.

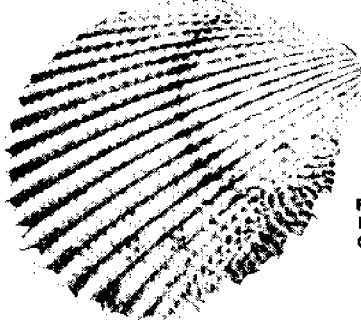
**Morton's Egg Cockle** *Laevicardium mortoni* (Conrad)  
 Height: 3/4 in. Range: Mass. - Guatemala. Almost  
 round shape. Common - sounds and estuaries.

**18c. Shell with spines or elevated scales on ribs.**

**Prickly Cockle** *Trachycardium egmontianum* (Shuttleworth)  
 Fig. 51, 52  
 Height: 2 1/2 in. Range: N. C. - Fla. Shell uniformly  
 covered by ribs bearing raised scales which cover  
 more than half of each rib; interior - salmon, vivid pinks  
 and purple. Occasionally common - beaches, lives in  
 mouths of estuaries and shallow offshore waters.

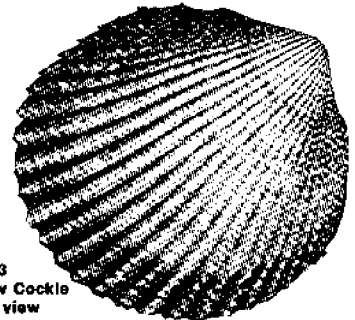


**Fig. 51**  
**Prickly Cockle**  
 Inner view of hinge



**Fig. 52**  
**Prickly Cockle**  
 Outer view

**Yellow Cockle** *Trachycardium muricatum* (Linne) Fig. 53  
 Height: 1 1/2 in. Range: N. C. - Argentina. Center of  
 shell with smooth ribs, small solid spines on ribs in  
 lateral areas, interior - white and yellow. More common  
 on beaches south of Morehead City.

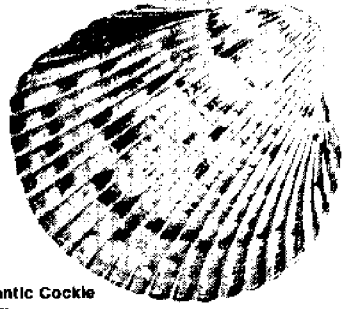


**Fig. 53**  
**Yellow Cockle**  
 Outer view

**18d. Ribs without spines or elevated scales (ribs may be rough).**

**Atlantic Strawberry Cockle** *Americardia media* (Linne)  
Height: 1 1/2 in. Range: N. C. - Brazil. Thick squarish shell with smooth white interior. Occasional - living offshore\*.

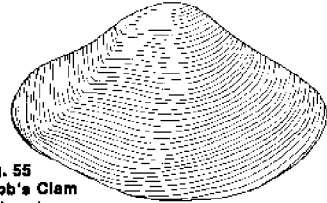
**Giant Atlantic Cockle** *Dinocardium robustum* (Lightfoot)  
Fig. 54  
Height: 4 1/2 in. Range: Va. - British Honduras. Rose to white colored, interior ribbed. Very common - beaches, lives in sounds and shallow offshore waters. Reddish meat makes an excellent chowder.



**Fig. 54**  
**Giant Atlantic Cockle**  
**Outer view**

**19a. One end rostrate (pulled out slightly forming a blunt hooklike extension), strong concentric ridges.**

**Gibb's Clam** *Eucrassetella speciosa* (A. Adams) Fig. 55  
Length: 2 1/2 in. Range: N. C. - West Indies. Thick shelled, brown exterior, no palial sinus. Common - living offshore\*.



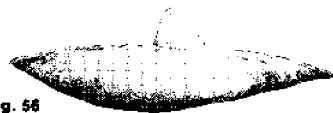
**Fig. 55**  
**Gibb's Clam**  
**Outer view**

**19b. Neither end rostrate, chondrophore (triangular depression in hinge enclosing the ligament) present** ..... 20.

**19c. Chondrophore not visible by naked eye** ..... 21.

**20a. Chondrophore present in one valve only and, when present, on a horizontal projection (note Fig. 56); one end of live animal widely gaping, a long meaty neck protrudes thru the end.**

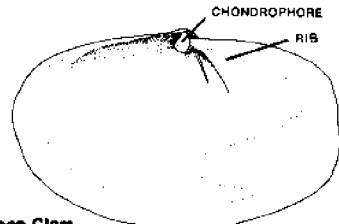
**Soft-shell Clam (also Steamer)** *Mya arenaria* Linne  
Fig. 56  
Length: 3 1/2 in. Range: Labrador - S. C. White, thin shell. Large fossil shells frequently on offshore beaches; some small noncommercial-sized clams found in sounds. Forms a major fishery in more northern states.



**Fig. 56**  
**Soft-shell Clam**  
**Outer top view**

**20b. Both valves with chondrophore, blunt end of shell with curved internal rib running from chondrophore about half way to lower edge.**

**Lee's Spoon Clam** *Periploma leanum* (Conrad) Fig. 57  
Length: 1 3/4 in. Range: Nova Scotia - N. C. Smooth shell, white. Uncommon - beaches.



**Fig. 57**  
**Lee's Spoon Clam**  
**Inner view**

20c. No internal rib, one end rounded the other almost pointed, concentric ridges present.

Tellin-like *Cumingia* *Cumingia tellinoides* (Conrad)  
Length: 1 in. Range: Nova Scotia - Fla. Fine concentric ridges, thin. Occasional - beaches; living in sounds and shallow offshore waters attached to drift wood.

20d. Both ends well rounded. .... 21.

21a. Lateral teeth not prominent.

Channeled Duck Clam *Anatina plicatella* (Lamarck)  
Fig. 58  
Length: 2 3/4 in. Range: N. C. - Texas. Strong concentric ridges on exterior, very thin shelled, white. Occasionally very common - offshore beaches.

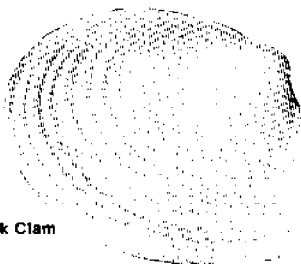


Fig. 58  
Channeled Duck Clam  
Outer View

Smooth Duck Clam *Anatina anatina* (Spengler) Fig. 59  
Length: 2 3/4 in. Range: N. C. - Texas. Fine concentric lines, very thin shell, proportionately longer and less common on offshore beaches than Channeled Duck Clam.

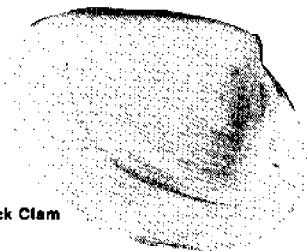


Fig. 59  
Smooth Duck Clam  
Outer view

21b. Lateral teeth present as strong thin plates.

Fragile Atlantic *Mactra* *Mactra fragilis* Gmelin Fig. 60  
Length: 2 in. Range: N. C. - Texas. Ends broadly rounded, smooth exterior, beaks central on shell, palial sinus broad and almost under beak. Occasional - beaches; living in sounds and shallow offshore waters.



Fig. 60  
Fragile Atlantic Mactra  
Outer view

Atlantic Surf Clam *Spisula solidissima* Dillwyn Fig. 61  
Length: 4 1/4 in. Range: Nova Scotia - S. C. Ends narrowly rounded, beaks not quite central on shell, palial sinus narrow and not extending under beak. Numerous large fossil (?) shells on beaches; known beds of living specimens offshore and north of Cape Hatteras; frequently washed ashore after storms.

The Surf Clam fishery off the coast of New Jersey is the largest active molluscan fishery in our country.

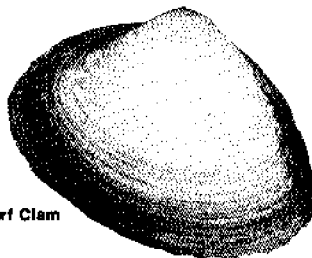


Fig. 61  
Atlantic Surf Clam  
Outer view

22a. Large, black brown periostracum, no lunule or palial sinus.

**Ocean Quahog or Mahogany Clam *Arctica islandica***  
(Linne)

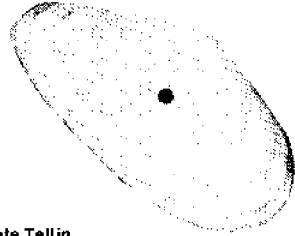
Range: Newfoundland - N. C. Similar in shape and size to Northern Quahog. Beds occur in offshore waters north of Cape Hatteras. Edible.

**22b. Elliptical shape - length greater than height, compressed width.**

**Alternate Tellin *Tellina alternata* Say Fig. 62**

Length: 2 1/2 in. Range: N. C. - Texas. Solid, shiny white, numerous fine but prominent concentric lines. Frequent - offshore beaches. The Georgia Tellin, *Tellina nitens* C. B. Adams (Range: N. C. - Texas. Occasional - living offshore\*), almost identical in shape and sculpture.

About 16 Tellins known off our coast and in our estuaries; all but the Great Tellin, *Tellina magna* Spengler, which may reach a length of 4 1/4 inches, are much smaller than the Alternate Tellin.

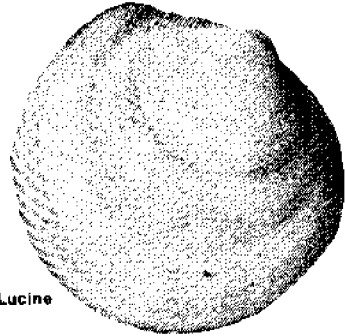


**Fig. 62**  
**Alternate Tellin**  
Outer view (hole drilled probably by "Shark Eye", note on p. 26)

**22c. Oval.**

**Cross-hatched Lucine *Divaricella quadrisulcata* Orbigny**  
Fig. 63

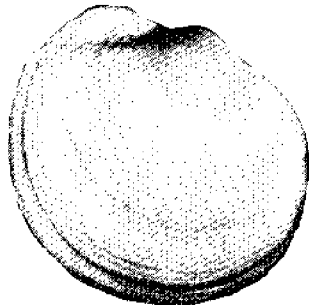
Length: 3/4 in. Range: Mass. - Brazil. Inflated width, white with chevron-like sculpture. Common - beaches.



**Fig. 63**  
**Cross-hatched Lucine**  
Outer view

**Buttercup Lucine *Anodonta alba* Link Fig. 64**

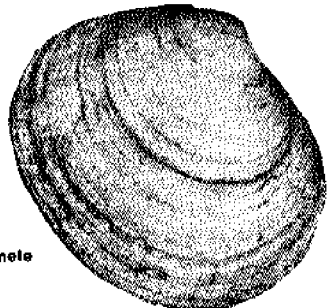
Length: 2 3/4 in. Range: N. C. - West Indies. Large inflated specimens with indistinct hinge teeth, no pallial sinus, weak concentric sculpture, interior with some orange. Occasional valves - offshore beaches.



**Fig. 64**  
**Buttercup Lucine**  
Outer view

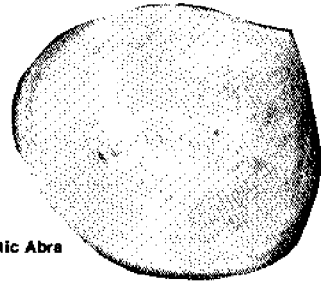
**White Atlantic Semele *Semele proficua* (Pulteney)**  
Fig. 65

Length: 1 1/2 in. Range: N. C. - West Indies. Narrow width, lateral hinge teeth present, concentric lines may be 1/16th inch apart. Infrequent - sounds, shallow offshore waters, and offshore beaches.



**Fig. 65**  
**White Atlantic Semele**  
Outer view

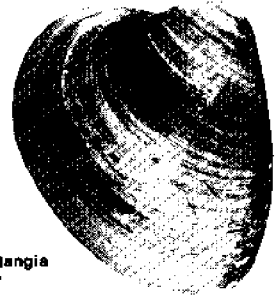
**Common Atlantic Abra** *Abra aequalis* (Say) Fig. 66  
 Length: 1/2 in. Range: N. C. - Texas. Exterior smooth and slightly iridescent, very thin shelled, inflated. Somewhat common on offshore beaches; living common in sounds, mouths of estuaries and shallow offshore waters.



**Fig. 66**  
**Common Atlantic Abra**  
**Outer view**

**23a. Heavy thick shell frequently with gray-brown outer skin.**

**Common Rangia** *Rangia cuneata* (Gray) Fig. 67  
 Length: 3 1/4 in. Range: Va. - Texas. Shaped somewhat like a quahog. May be confused with Carolina Marsh Clam - *Polymesoda caroliniana* (Bosc.) (Range: N. C. - Texas), but the latter has a rough, flaky, dark-brown outer skin and does not have a chondrophore (triangular depression) in its hinge area as with the Rangia clam. Known to be very common in low salinity to almost fresh water areas of Albemarle and Croatan Sounds and Neuse and Pamlico Rivers whereas the Carolina Marsh Clam is found in low-salinity marshy areas. A small commercial fishery exists for the former; given certain food technological advances, this fishery could become one of N. C.'s major fishery resources.

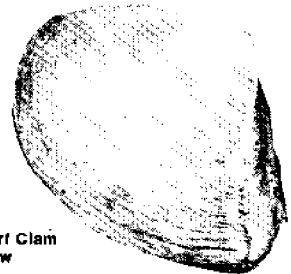


**Fig. 67**  
**Common Rangia**  
**Outer view**

**23b. Small, relatively thin shelled . . . . . 24.**

**24a. Prominent, bulbous and centrally located beaks; clam width about 1/2 of clam length.**

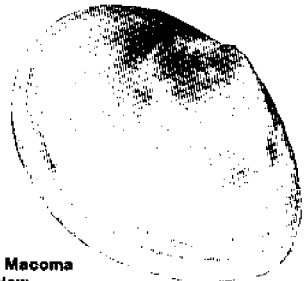
**Dwarf Surf Clam** *Mulinia lateralis* (Say) Fig. 68  
 Length: 3/4 in. Range: Maine to Texas. Tan to ivory colored, radial ridge on pointed end of exterior; small forms very similar to Common Rangia. Common - waters saltier than those containing Common Rangia.



**Fig. 68**  
**Dwarf Surf Clam**  
**Outer view**

**24b. Narrow (almost wedge-shaped) shell without bulbous beak, very thin shell.**

**Baltic Macoma** *Macoma balthica* (Linne) Fig. 69  
 Length: 1 in. Range: Arctic Seas (including the Baltic Sea) to Ga. Oval to round in outline, beak central. Very common in low salinities, mud bottom.



**Fig. 69**  
**Baltic Macoma**  
**Outer view**

**Phenax Macoma** *Macoma phenax* Dall  
 Length: 3/4 in. Range: Va. - Fla. Somewhat oblong with beak not quite central, lower edge of shell almost flat and not rounded as the Baltic Macoma. Common, having about same distribution as Dwarf Surf Clam.

# GASTROPODS

## TUSK-SHELLS, SQUIDS

### 1a. Shell shaped like a small low cone.

**Cayenne Keyhole Limpet** *Diodora cayenensis* (Lamarck)  
Fig. 70

Length: 1 in. Range: N. J. - Brazil. Numerous ribs radiating from small keyhole-like opening on top of shell, gray to brown coloration. Common - inlets and offshore waters, live attached to rock or shell.

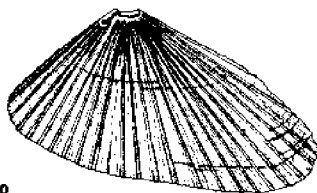


Fig. 70  
Cayenne Keyhole Limpet

### 1b. Shell cap-shaped with a small deck or shelf underneath, Fig. 71, live attached to rock or other shells.

**Common Atlantic Slipper Shell** *Crepidula fornicata* (Linne) Fig. 71

Length: 2 1/2 in. Range: Nova Scotia - Texas. Shelf light colored or white - rest of shell darker, shell not strongly arched, pointed end of deck not deep in shell. Common - offshore and sound beaches; frequently attached to each other.

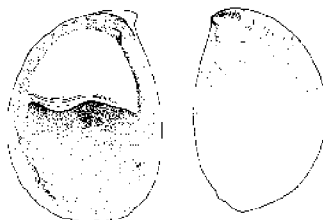


Fig. 71  
Common Atlantic Slipper Shell  
Inner and outer views

**Convex Slipper Shell** *Crepidula convexa* Say

Length: 1/2 in. Range: Mass. - Texas. Shelf or deck same color as rest of shell, shell strongly arched, pointed end with deck deep in shell. Occasionally common - offshore and sound beaches; not living on each other.

**Eastern White Slipper Shell** *Crepidula plana* Say

Length: 1 1/2 in. Range: Nova Scotia - Texas. White inside and out, shell very flat or with concave shape. Common - sounds and offshore; generally living inside empty snail shells.

**Spiny Slipper Shell** *Crepidula aculeata* (Gmelin)

Length: 1 in. Range: N. C. - Texas. Only Slipper shell with rough or spiny exterior. Occasional - beaches south of Cape Hatteras.

### 1c. Shell, a small hollow tube - tusk-like, Fig. 72.

About 24 kinds of Tusk-shells have been recorded from off our coast - most are small and from deep water. Live Tusk-shells typically are buried in mud with only the narrow end showing.

**Ivory Tusk** *Dentalium eborum* Conrad

Length: 2 in. Range: N. C. - West Indies. Smooth and shiny surface. Occasional - high or low tide drift lines on offshore beaches (easily missed).

**Panelled Tusk** *Dentalium laqueatum* Verrill

Length: 2 in. Range: N. C. - West Indies. Our largest and heaviest Tusk-shell, has 9 - 12 longitudinal ribs (running the length of the shell). Deep offshore waters (200 - 750 ft. depth).

**Texas Tusk** *Dentalium texasianum* Philippi

Length: 1 in. Range: N. C. - Gulf States. Hexagonal in cross-section (6 longitudinal ribs). Occasional - high or low tide drift lines of sound or ocean beaches (easily missed).

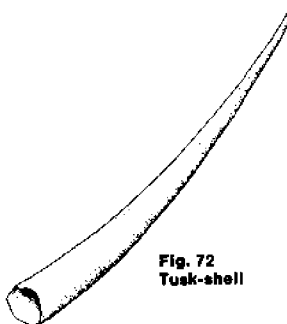


Fig. 72  
Tusk-shell

1d. Shell coiled and looking like a ram's horn.

**Common Spirula or Ram's Horn** *Spirula spirula* (Linne) Fig. 73

Coil width: about 1 in. Range: Cape Cod - West Indies. Formed inside a living, deep-sea, squid; when animal dies, gas-filled inner chambers cause shell to float. Occasionally common - ocean beaches.

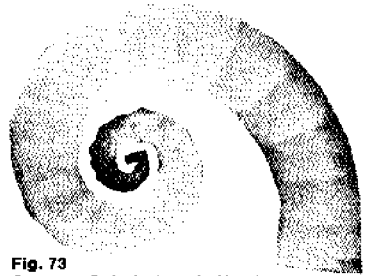


Fig. 73  
Common Spirula (Ram's Horn)

- 1e. Shell coiled and not looking like a ram's horn ..... 2.  
2a. Not all whorls attached to each other in a tight coil.

**Knorr's Worm Shell** *Vermicularia knorri* Deshayes Fig. 74  
Range: N. C. - Gulf of Mexico. Tight coil white and about 1/2 in. long, later whorls running without apparent direction; shells may become entangled with each other thus producing large worm-shell masses. Common - ocean beaches, living offshore.

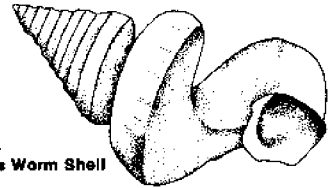


Fig. 74  
Knorr's Worm Shell

- 2b. All whorls attached to each other in a tight coil ..... 3.  
3a. Shell high spired - spire two or more times length of aperture (mouth), (note Figs. 75, 76), whorls joined to each other in a tight coil ..... 4.  
3b. Spire less than twice aperture length, (note Fig. 86), whorls joined to each other in a tight coil ..... 5.  
4a. Aperture (mouth) rounded in outline (note Fig. 75).  
aa. Outside covered by spiral lines.

**Eastern Turritella** *Turritella oxoleta* (Linne)

Length: 2 3/4 in. Range: N. C. - West Indies. Each whorl with a strong smooth spiral cord at its top and at bottom - concave between, sharply pointed spire, white with brownish markings, closely related to Worm Shells. Rare - living offshore in deep water.

- bb. Strong rounded ribs on whorls Wentletraps. About 24 known kinds of Wentletraps recorded off N. C. waters. Most are white, rather small, and thus easily passed over. Some known to suck juices from sea anemones. The Precious Wentletrap (up to 2 3/4 in. long and from the Pacific Ocean) is one of the prettiest shells known; while somewhat common now, it was quite valuable in ancient times.

**Angulate Wentletrap** *Epitonium angulatum* (Say) Fig. 75  
Length: 1 in. Range: N. Y. - Texas. Glossy white, 9 - 10 ribs per whorl - each slightly angled on shoulder of whorl. Occasional - ocean beaches.



Fig. 75  
Angulate Wentletrap

**Brown-banded Wentletrap** *Epitonium rupicola* (Kurtz)  
Length: 1/2 in. Range: Mass. - Texas. Last whorl with 2 brown spiral bands on a lighter background, other whorls with one band, 12-18 rather weak ribs per whorl. Occasional - beaches; living in our sounds and just offshore.

**Humphrey's Wentletrap** *Epitonium humphreysi* (Kiener)  
Length: 3/4 in. Range: Mass. - Texas. Very similar to Angulate Wentletrap in appearance, habitat and numbers; 8 - 9 ribs per whorl - ribs round and not angulate at shoulder; ribs thicker than those on Angulate Wentletrap.



**Reticulated Wentletrap** *Amasa retifera* (Dall) Fig. 76  
 Length: 3/4 in. Range: N. C. - West Indies. Straw-yellow to pale brown color, sculptured by numerous bladelike ribs and spiral ridges - ridges not as strong as ribs. Occasional - living offshore\*.



Fig. 76  
 Reticulated Wentletrap

- 4b. Aperature with notch at bottom (see Figs. 77, 78).  
 aa. Axial ribs low but more prominent than spiral lines.

**Atlantic Auger** *Terebra distocata* Say Fig. 79  
 Length: 1 3/4 in. Range: Va. - Texas. Prominent spiral cord at top of each whorl, both cord and remainder of whorl cut by 20-25 low ribs. Whorls not concave. Common - sounds and offshore on shallow sand flats.



Fig. 77  
 Atlantic Auger

**Concave Auger** *Terebra concava* Say  
 Length: 1 in. Range: N. C. - Fla. Similar to Atlantic Auger except whorls are concave in outline. Occasional - ocean beaches.

- bb. Spiral lines quite knobby and more prominent than axial ribs.

**Florida Cerith** *Cerithium floridanum* Murch Fig. 78  
 Length: 1 3/4 in. Range: N. C. - Texas. Brownish gray exterior, spiral lines well beaded, heavy looking shell. Occasional - beaches, south of Cape Hatteras in sounds and near inlets.



Fig. 78  
 Florida Cerith

- 5a. Aperature (mouth) completely rounded or elliptical, Fig. 86 ..... 6.  
 5b. Aperature rounded with upper part (posterior) narrow and apex (where spire should be) with a hole in it.

**West Indian Bubble** *Bulla occidentalis* A. Adams Fig. 79  
 Length: 1 3/4 in. Range: N. C. - West Indies. Smooth, shiny, mottled-brown exterior. Occasional - ocean beaches.

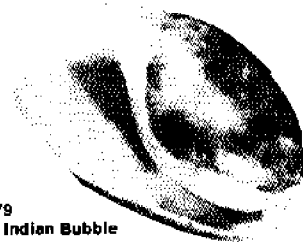


Fig. 79  
 West Indian Bubble

- 5c. Aperature narrow.  
 aa. Aperature extending less than 2/3 length of shell and with a large, bulbous, canal-like depression on its inner margin, Fig. 80.

**Atlantic Distorsio** *Distorsio clathrata* (Lamarck) Fig. 80  
 Length: 2 3/4 in. Range: N. C. - British Guiana. Misshapen, both sides of aperature heavily ridged, brown hairy periostracum, numerous equal-strength axial and spiral ribs which give exterior a knobby appearance. Rare - ocean beaches, occasionally common - living offshore in 100-200 ft. depth south of Cape Hatteras\*.

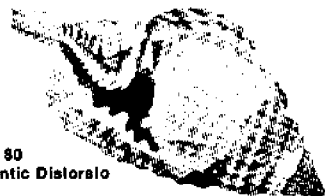


Fig. 80  
 Atlantic Distorsio

- bb. Aperture extending almost length of shell and without a large bulbous, canal-like depression on its inner margin ..... 10.
- 5d. Aperture wide (not narrow) and having a notch (canal) at its top, its bottom, or both Fig. 111 ..... 14.
- 6a. Shell compressed - shell width much greater than shell length, Fig. 82 ..... 7.
- 6b. Shell length and width nearly equal, Fig. 86 ..... 8.
- 7a. Pieces of shells, stone or coral cemented to shell surface.

**Atlantic Carrier Shell** *Xenophora conchyliophora* (Born)  
 Fig. 81  
 Width: 2 in. Range: N. C. - Brazil. Attached shells cause this to look like a small pile of shells, making detection difficult for the collector. Occasional - living offshore\*.

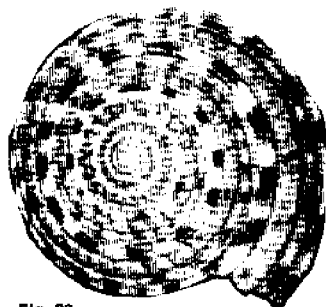
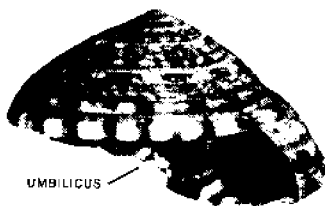


**Fig. 81**  
**Atlantic Carrier Shell**

**7b. Deep umbilicus (large funnel-shaped hole under shell), Fig. 82.**

**Common Sundial** *Architectonica nobilis* Roding Figs. 82, 83  
 Width: 2 1/4 in. Range: N. C. - Texas. Prominent beaded spiral cords both on top and on bottom, brown spotted. Occasional - ocean beaches, living offshore south of Cape Hatteras (particularly between Cape Hatteras and Cape Lookout)\*.

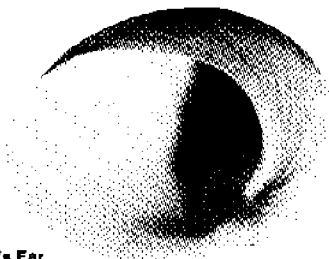
**Fig. 82**  
**Common Sundial**  
**Side view**



**Fig. 83**  
**Common Sundial**  
**Top view**

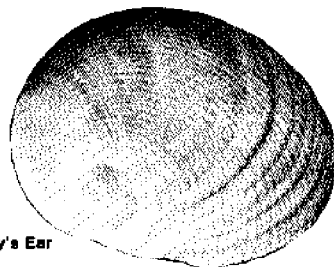
**7c. No deep umbilicus, Fig. 81.**

**Common Baby's Ear** *Sinum perspectivum* (Say)  
 Width: 1 3/4 in. Range: Va. - West Indies. White, very flat, well named; shell of live specimens almost completely surrounded by animal - looks like a piece of whitish gristle. Common - ocean beaches and shallow offshore waters.



**Fig. 84**  
**Maculated Baby's Ear**  
**Bottom view**

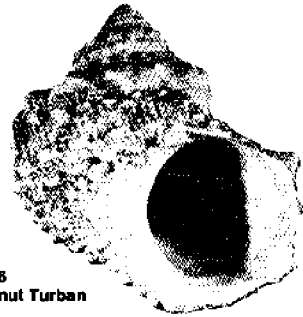
**Maculated Baby's Ear** *Sinum maculatum* (Say) Figs. 84, 85  
 Width: 1 3/4 in. Range: N. C. - Fla. Brownish exterior and not as flat as Common Baby's Ear, animal reddish-brown spotted. Occasional - living offshore\*.



**Fig. 85**  
**Maculated Baby's Ear**  
**Top view**

**8a. Interior of aperture (mouth) very shiny and iridescent (nacreous), outer shell surface quite rough, sides of whorls rounded.**

**Chestnut Turban** *Turbo castanea* Gmelin Fig. 86  
 Length: 1 1/2 in. Range: N. C. - Brazil. Beaded surface, heavy shell; gray, brown, or greenish exterior. Occasional - ocean beaches, living - inlet areas and offshore\*.



**Fig. 86**  
**Chestnut Turban**

**8b. Interior of aperture iridescent, outer shell sculpture not rough, sides of whorls flat, Fig. 84.**

**A rather difficult group to identify; at least 16 kinds of Top Shells recorded from our waters, most are small and from areas not accessible to the average collector.**

**Beautiful Atlantic Top Shell** *Calliostoma pulchrum* (C. B. Adams)  
 Length: 1/2 in. Range: N. C. - Fla. Spiral beaded ridges stronger near sutures and with reddish spots on yellow-brown surface, no umbilical opening. Occasional - sounds, slightly offshore.



**Fig. 87**  
**Sculptured Top Shell**

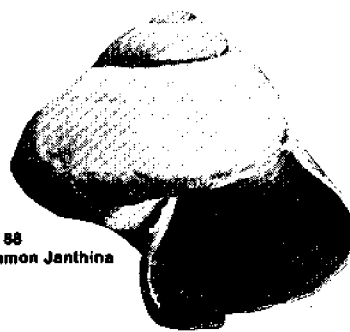
**Sculptured Top Shell** *Calliostoma euglyptum* A. Adams Fig. 87  
 Length: 1 in. Range: N. C. - Texas. Beaded ridges equal strength, yellow-brown surface with darker brown bars sometimes running width of whorl, no umbilical opening. Occasional - near inlet rock jetties and living offshore\*.

**Yucatan Top Shell** *Calliostoma yucatecanum* Dall  
 Length: 1/2 in. Range: N. C. - Yucatan. Deep umbilical opening present, yellow to pink base color with darker spots or bars present; broader shell than Sculptured Top Shell. Occasional - living offshore\*.

**8c. Interior of aperture not iridescent** ..... **9.**  
**9a. Thin, smooth, bright violet shell (Violet snails).**

**Common Janthina** *Janthina janthina* (Linne) Fig. 88  
 Width: about 1 in. Top half of shell - light purple, lower half - deep purple, whorls slightly angular in outline. Rare - beaches.

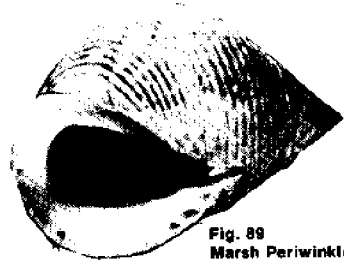
**Elongate Janthina** *Janthina globosa* (Swainson)  
 Length: 1 in. Top and bottom halves nearly similar in color, whorls well rounded. Rare - beaches.



**Fig. 88**  
**Common Janthina**

**9b. Top-shaped.**

**Marsh Periwinkle** *Littorina irrorata* (Say) Fig. 89  
Length: 1 in. Range: N. J. - Texas. Thick-shelled,  
gray-cream color with reddish streak on columella area.  
Very common - brackish water marshes on marsh grass.

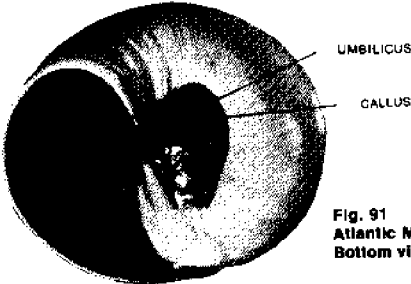


**Fig. 89**  
**Marsh Periwinkle**

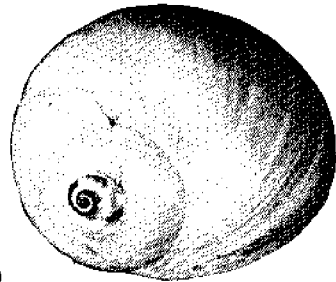
**9c. Globular (ball) shaped, smooth surface.**

Very active predators, attack other mollusks including relatives by drilling a beveled hole through shell of prey (note hole in Fig. 62). Eggs laid attached to underside of gelatinous "sand collars" which they have formed out of sand.

**Atlantic Moon Snail (Shark Eye)** *Polinices duplicatus*  
(Say) Figs. 90, 91  
Width: 3 1/4 in. Range: Cape Cod - Texas. Gray,  
umbilicus almost covered by large brown button-like  
callus. (note Fig. 91), operculum (trap door) - horny,  
light brown and somewhat transparent. Common -  
sounds, beaches, living offshore\*.



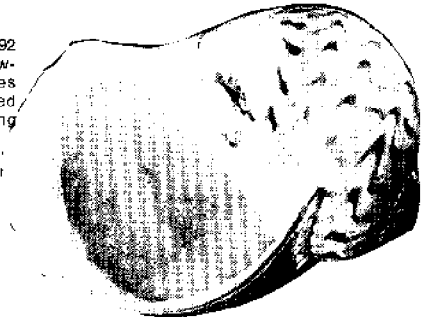
**Fig. 91**  
**Atlantic Moon Snail (Shark Eye)**  
**Bottom view**



**Fig. 90**  
**Atlantic Moon Snail (Shark Eye)**  
**Top view**

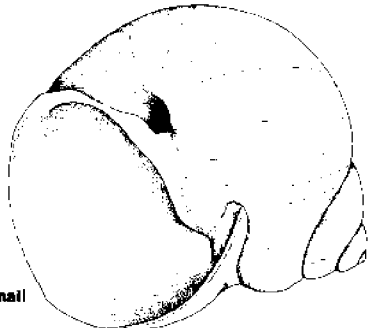
**Colorful Atlantic Natica** *Natica canrena* (Linne) Fig. 92  
Length: 1 3/4 in. Range: N. C. - West Indies. Yellow-  
tan exterior; white base; numerous radial brown stripes  
crossed by about 4 large white spiral, brown-spotted  
stripes; white shelly operculum. Occasional living  
offshore-.

**Fig. 92**  
**Colorful Atlantic Natica**



**Common Northern Moon Snail** *Lunatia heros* (Say) Fig. 93  
Length: 4 1/4 in. Range: Canada - N. C. Gray, umbilicus  
not partially closed by a button-shaped callus, horny  
light brown operculum. Occasional - ocean beaches;  
not known living south of Cape Hatteras.

**Fig. 93**  
**Common Northern Moon Snail**



**Dwarf White Moon Snail** *Polinices uberinus* (Orbigny)  
 Length: 3/4 in. Range: N. C. - Fla. Glossy white exterior, white button-shaped callus partially closing umbilicus, red horny operculum. Occasional - living offshore\*.

- 10a. Spire present ..... 11.
- 10b. Spire not present ..... 13.
- 11a. Exterior shiny ..... 12.
- 11b. Exterior surface not shiny, inner and outer margins of aperture heavily ridged.
  - aa. Shoulder without knobs, brown-checked external appearance.

**Reticulated Cowrie-helmel** *Cypraeacassis testiculatus*  
 Linne Fig. 94

Length: 2 3/4 in. Range: N. C. - Brazil. Shield and outer lip - orange, outer lip with row of dark brown dots, tan-orange exterior with spiral rows of dark brown spots. Rare - living offshore.

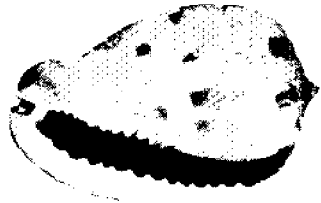


Fig. 94  
 Reticulated Cowrie-helmel

bb. Shoulder with knobs, massive shell up to about 10 1/2 inch length.

**Emperor or Queen Helmet** *Cassis madagascariensis*  
 Lamarck Fig. 95

Range: N. C. - West Indies. Large orange shield, white aperture teeth surrounded by dark brown, white exterior with some faint tan markings, ponderous shell. At one time shells common on Cape Lookout beaches; living offshore\*.



Fig. 95  
 Emperor or Queen Helmet

12a About 1/2 in. length. Marginellas.  
 About 11 Marginellas recorded from N. C. waters, the following are most commonly collected.

**Common Atlantic Marginella** *Prunum apicinum* (Menke)  
 Range: N. C. - West Indies. Golden-brown and usually with 2 - 3 darker spiral bands, 2 - 4 brownish spots on outer aperture lip, differs from Jersey Marginella mainly in its lack of white specks on outer surface; both species frequently confused. Occasional - near inlets and offshore.

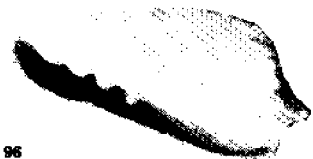


Fig. 96  
 Jersey Marginella

**Jersey Marginella** *Prunum roscidum* (Redfield) Fig. 96  
 Range: N. J. - S. C. Light cream background with 3 brownish spiral bands, white flecks covering surface, outer lip marked with 4 brown spots. Occasional - living offshore\*.

12b. Olive shaped, up to about 2 3/4 in. length.

**Lettered Olive** *Oliva sayana* Ravenel Fig. 97  
 Range: N. C. - Gulf States. Cream background with brown zigzag markings. Occasionally common - ocean beaches; living in shallow-water sand flats near inlets and deeper offshore waters.



Fig. 97  
 Lettered Olive

**12c. Cone-shaped, Fig. 98.**

Live cones should be handled with care; they can inflict a semi-poisonous sting.

**Floridensis Cone *Conus floridensis* Sowerby**

Length: 1 1/2 in. Range: N. C. - Fla. Light yellow brown exterior with many spiral rows of darker brown and crowded dots. Rare - ocean beaches, occasional - living offshore\*.

**Sozon's Cone *Conus sozoni* Bartsch Fig. 98**

Length: 3 3/4 in. Range: N. C. - Fla. Light yellow - orange exterior with 2 large white spiral bands - many light, uneven, brown-spotted spiral lines on top of basic exterior color pattern. Occasional - living offshore\*.



Fig. 98  
Sozon's Cone

**13a. Inner and outer margins of aperture (mouth) smooth.**

aa. White shell with a humped back, up to about 1 1/4 inch long.

**McGinty's Cyphoma *Cyphoma mcgintyi* Pilsbry Fig. 98a**

Range: N. C. - Fla. When found living, shell may be almost completely surrounded by living animal - cream colored with dark brown spots. Rare - known living in inlets and offshore south of Cape Hatteras\*. Animal lives and feeds on sea whips (sometimes called soft coral).

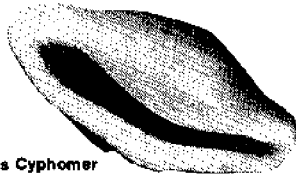


Fig. 98a  
McGinty's Cyphomer

bb. Thin, fragile, yellow or occasionally light purple shell.

**Single-toothed Simnia *Neosimnia uniplicata* (Sowerby)**

Fig. 99

Length: 3/4 in. Range: Va. - West Indies. Color dependant on color of the sea whips which they are feeding on. Best collected in inlets and/or offshore on living sea whips.



Fig. 99  
Single-toothed Simnia

**13b. Margins of aperture heavily ridged.**

**Atlantic Deer Cowrie *Cypraea cervus* Linne Fig. 100**

Length: 5 in. Range: N. C. - Yucatan. Light to dark brown with many white spots - color pattern similar to that of a young fawn, teeth on aperture margin dark brown. Rare - ocean beaches, occasional - living offshore south of Cape Hatteras\*.

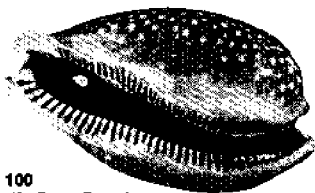


Fig. 100  
Atlantic Deer Cowrie

**Atlantic Yellow Cowrie *Cypraea spurca acicularis* Gmelin**

Length: 3/4 in. Range: N. C. - Brazil. Yellow with small brown flecks and spots, margin teeth of aperture not colored. Occasional - living offshore\*.

14a. Small, exterior surface slightly rough and dark brown, aperture solid black brown ..... 20a.

14b. Exterior shell surface smooth and shiny ..... 15a.

14c. Exterior shell surface rough ..... 16.

15a. Exterior marked with spiral rows of large purplish brown spots.

**Junonia *Scaphella junonia* (Shaw) Fig. 101**

Length: 5 1/4 in. Range: N. C. - Texas. Cream background under purple spots, folds or ridges on inner edge of aperture (columella). Rare - ocean beaches, living offshore.

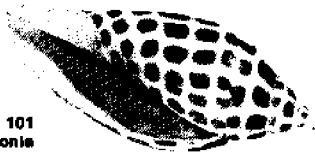


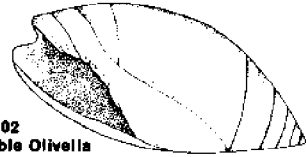
Fig. 101  
Junonia

**15b. Exterior not marked with spiral rows of large purplish-brown spots.**

**aa. Small, about 1/2 in. long.**

**Variable Olivella** *Olivella mutica* (Say) Fig. 102

Range: N. C. - Bahamas. White-cream exterior with about 3 deep reddish-brown spiral bands. Common - sandy bottom in sounds, inlets and offshore areas. Closely related to Lettered Olive (p. 27). Of the possibly 6 different Olivellas off our coast, this species may be the most common and easiest to identify.



**Fig. 102**  
Variable Olivella

**bb. Shells up to about 9 in long.**

**Banded Tulip** *Fasciolaria hunteria* (Perry) Fig. 103

Length: 4 1/2 in. Range: N. C. - Texas. Cream-pink background with brown markings on top, a few thin solid brown spiral lines - lines do not run into aperture, sutures between whorls smooth. Common - sounds and living offshore\*.



**Fig. 103**  
Banded Tulip

**True Tulip** *Fasciolaria tulipa* (Linne) Fig. 103a

Length: 8 3/4 in. Range: N. C. - West Indies. Cream to pink background with light to deep brown spiral bands, numerous darker and broken spiral lines running into aperture, sutures between whorls rough. Occasional - living offshore (live specimens have been found in Cape Lookout bight)\*.



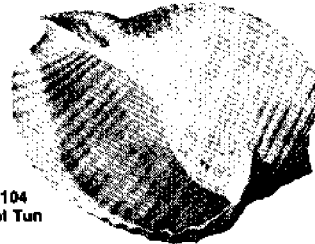
**Fig. 103a**  
True Tulip

**16a. Globular shell**

**aa. Large, thin-shelled, spire compressed, no parietal shield.**

**Giant Tun** *Tonna galea* (Linne) Fig. 104

Length: 6 1/4 in. Range: N. C. - Brazil. White to brown, varnish-like outer skin (periostracum). 19 - 21 broad flattened spiral ridges, shell easily broken, tip end of spire (apex) a deep golden brown. Because of fragility, rare on offshore beaches; occasionally common - living offshore\*.

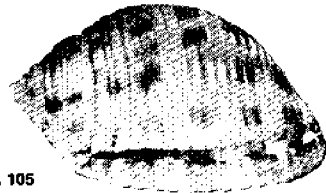


**Fig. 104**  
Giant Tun

**bb. Medium sized, parietal shield with raised pustules or pimples on lower portion.**

**Scotch Bonnet** *Phalium granulatum* (Born) Figs. 105, 106  
Length: 3 1/2 in. Range: N. C. - Brazil. Numerous spiral ridges; white exterior with some spiral rows of brownish-orange square spots; occasionally a thickened rib (varix), representing the remains of an earlier outer lip, present. Fragments common on ocean beaches, whole specimens only occasionally; living common offshore\*. By act of the North Carolina General Assembly in May 1965, the Scotch Bonnet was named official state seashell in memory of the early Scotch settlers in this state. In doing so, North Carolina became the first state to designate an official state seashell.

The closely related species, *Phalium coronadoi* (Crosse) (see note in Introduction), reaches 4 1/2 in. length, has several rows of low knobs near its shoulder and is colored a solid brownish-tan.



**Fig. 105**  
Scotch Bonnet  
Side view



**Fig. 106**  
Scotch Bonnet  
Bottom view

**16b. Small, thin spindle-shaped, length of spire greater than length of aperture.**

**Greedy Dove Shell** *Anachis avara* (Say) Fig. 107  
 Length: 1/2 in. Range: N. J. - Texas. About 12 smooth ribs on last whorl, ribs cover only top half of whorl, grey. Common - shallow-water sand flats in sounds, inlets, and just offshore.



**Fig. 107**  
**Greedy Dove Shell**

A similar form, the **Well-ribbed Dove Shell**, *Anachis translirata* (Ravenel), has more and stronger ribs and occurs primarily in offshore waters; this mollusk unfortunately is easily confused with a common but as yet unnamed (?) form also occurring in our offshore waters.

**16c. Not large globular, or small thin spindle-shaped. . . . . 17**

**17a. Inner margin of aperture (columella) sculptured with spiral ridges running into interior (see Figs. 109, 110). . . . . 18.**

**17b. Inner margin of aperture smooth. . . . . 19.**

**18a. Very large; spindle-shaped; large specimens covered by a blackish-brown flaky outer skin (periostracum) - smaller specimens a dark orange or red to brown coloration; no extra large ribs (varices).**

**Florida Horse Conch** *Pleurotopoca gigantea* (Kiener) Fig. 108  
 Length: 16 1/4 in. Range: N. C. - Mexico. Aperture cream or orange. Closely related to Tulip shells (p. 29). Rare - ocean beaches; occasional - living offshore. One of the largest living gastropods, known to reach over 19 in. length.



**Fig. 108**  
**Florida Horse Conch**

**18b. Small, two to four raised spiral ridges on inner margin of aperture, no extra large axial ribs (varices).**

**Common Nutmeg** *Cancellaria reticulata* (Linne) Fig. 109  
 Length: 1 3/4 in. Range: N. C. - Texas. Cream with several broad brown spiral bands, numerous spiral and slightly beaded cords crossing numerous weak axial ribs. Occasional - living offshore\*.



**Fig. 109**  
**Common Nutmeg**

**Smith's nutmeg** *Trigonostoma smithi* (Dall) Fig. 110  
 Length: 1/2 in. Range: N. C. - S. C. (?). Brown - red-brown; 7 - 9 strong, well-rounded axial ribs. Occasional - living offshore (recorded out to about 300 ft. offshore depth).



**Fig. 110**  
**Smith's Nutmeg**

**18c. Medium sized, low spiral ridges on inner margin of aperture, small parietal shield may be present.**

**aa. Flattened shell (caused by a large thickened rib on left hand side of the whorl directly opposite to thickened outer lip of aperture on right hand side of shell).**



**Chestnut Frog Shell** *Bursa bufo* (Bruguiere) = (*Bursa spadicosa* Montfort) Fig. 111

Length: 2 1/4 in. Range: N. C. - Fla. Dark brown and tan, broad spiral strips; upper end of aperture (posterior end) with long and narrow canal. Occasional - living offshore\*.



Fig. 111  
Chestnut Frog Shell

- bb. Shell not flattened, live specimens may be covered by a heavy fringed or hairy outer skin (periostracum), not pear-shaped, aperture not as long as total shell length.

**Krebs' Triton** *Cymatium krebsii* (Morch)

Length: 2 1/4 in. Range: N. C. - West Indies. White, thin light brown outer skin, last whorl having one major thickened axial rib in addition to its heavy outer lip (inner margin with 6 - 7 strong teeth), 6 - 7 heavy spiral cords on last whorl. Rare to occasional - living offshore\*.

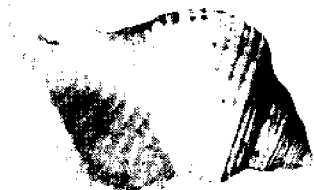


Fig. 112  
Poulsen's Triton

**Poulsen's Triton** *Cymatium poulsenii* (Morch) Fig. 112

Length: 2 3/4 in. Range: Virg. - Venezuela. White with thin brown outer skin, last whorl with 18 - 20 strong spiral cords - no axial ribs. Outer lip of aperture not thickened but slightly flared out, thin shelled. Rare to occasional - living offshore\*.

**von Sallé's Triton** *Cymatium parthenopeum* (von Sallé) Figs. 113, 114

Length: 6 1/8 in. Range: N. C. - Brazil. Brownish-yellow with some darker brown spiral bands, aperture with dark brown blotches, aperture usually with thickened outer lip, 5 - 6 heavy rough spiral cords, heavy thick brown outer skin (Fig. 114). Occasionally common - living offshore\*. Before Calico Scallop fishery started a few years ago, this and the other Tritons were almost unknown from N. C. waters by collectors.

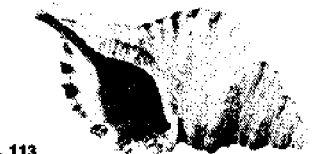


Fig. 113  
von Sallé's Triton



Fig. 114  
von Sallé's Triton  
Living specimen with outer skin still present

- cc. Thin, pear-shaped aperture almost as long as total shell length.

**Common Fig Shell** *Ficus communis* Roding Fig. 115

Length: 4 1/2 in. Range: N. C. - Mexico. Cream colored with broken light brown spiral stripes, numerous pronounced spiral ridges crossed by finer axial riblets. Occasional - living offshore\*. Do not confuse with Pear Whelk (see p. 32) whose spiral ridges are not crossed by fine axial riblets.



Fig. 115  
Common Fig Shell

- 19a. Pear-shaped, large heavy or thin shell, whorls shouldered.

More species of whelks are common in North Carolina waters than probably any other east coast U. S. A. locality; beauty and size of specimens are also

outstanding. Several are serious Quahog predators. North Carolina Conch Chowder (Carteret County Conch Chowder, etc., if you prefer) is made from these whelks; in Florida, conch chowder or soup is generally made from the Queen Conch (a true Conch) which is closely related to our Florida Fighting Conch (see p. 33). Nomenclature of local whelk species is an unsettled mess.  
 aa. Aperture on left side of whorl.

**Lightning Whelk** *Busycon contrarium* (Conrad) Fig. 116  
 Length: 11 3/4 in. Range: N. J. - Fla. Shoulder of whorl strongly knobbed, very little sculpturing on sides of whorls; large specimens generally white on outside, smaller specimens have numerous brown or brownish purple axial streaks (running top to bottom), aperture may be shaded in yellow to violet tints. Common - sandy bottom in sounds, inlets and just offshore. Major predator on Quahogs.



Fig. 116  
 Lightning Whelk

bb. Aperture on right, heavy shelled with large knobs on whorl shoulder.

**Knobbed Whelk** *Busycon carica* (Gmelin) Fig. 117  
 Length: 11 1/4 in. Range: Mass. - Georgia. Somewhat similar to Lightning Whelk; aperture solid colored or with blotches of dark colors - cream, yellow, orange, dark red, brown. Common - sounds, inlets, and shallow offshore waters; serious clam predator, specimens from offshore waters with whorl exterior colored by axial streaks of brownish-purple (see Lightning Whelk) are believed by some to be another kind of whelk. A heavy form, with noticeable spiral ridge or swelling near the lower part of last whorl, occurs below Cape Fear and may be Kieners Whelk, *Busycon eliceans* (Montfort).

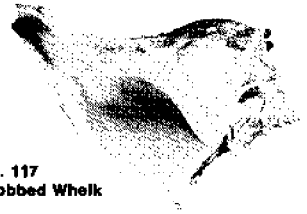


Fig. 117  
 Knobbed Whelk

cc. Aperture on right, thin shelled with no large knobs on whorl shoulder.

**Channeled Whelk** *Busycon canaliculata* (Linne) Fig. 118  
 Length: 7 3/4 in. Range: Mass. - Fla. On shoulders of early-formed whorls there are numerous small knobs, named from the channel occurring at juncture of previous whorl, fine spiral ridges, fuzzy outer skin, aperture colored in shades of yellow, orange, violet. Common - sounds and inlets (deeper water areas mainly) and in shallow offshore waters.



Fig. 118  
 Channeled Whelk

**Pear Whelk** *Busycon spiratum* (Lamarck) Fig. 118a  
 Length: 5 1/4 in. Range: N. C. - Texas. No small knobs on shoulder whorl, whorls joined to previous whorl at shoulder whereas in Channeled Whelk the whorls are joined below the shoulder of the previous whorl (distance below about equal to width of shoulder); whorl with some broad spiral color bands of brown on cream crossed by thin axial stripes of same color. Shell may be confused with Fig Shell (p. 31). Occasional - living offshore\*.



Fig. 118a  
 Pear Whelk

19b. Spindle-shaped - whorls not shouldered, thin chalky-white shell, fine spiral lines only.

**Stimpson's Colus** *Colus stimpsoni* (Morch)  
 Length: 4 1/4 in. Range: Labrador - N. C. Brown outer skin, shape similar to that of Tulip shells (p. 29). Possibly our largest gastropod from deep waters, look for only in deep-water fishing trawlers (particularly those engaged in lobster fishing); known in N. C. waters above Cape Hatteras at 900 ft. depth.

- 19c. Broad spindle-shaped, length about 2 3/4 in., sculpture of strong spiral lines only, thin shell, whorl with angular shoulder . . . . . Poulsen's Triton p. 31
- 19d. Heavy shelled, outer lip flaring with a notch near the bottom canal (see Fig. 119).

**Florida Fighting Conch** *Strombus alatus* Gmelin Fig. 119  
 Length: 4 1/2 in. Range: N. C. - Yucatan. Light - dark brown; parietal shield area a shiny, metallic, dark reddish-orange to reddish-purple; inside of aperture similarly colored but not metallic; whorl shoulders sharply knobbed. Occasional - ocean beaches particularly Cape Lookout and Shackleford Banks, known living in depths up to 120 ft., occasionally common - living offshore\*.



Fig. 119  
 Florida Fighting Conch

- 19e. Spiral lines almost as strong as axial ribbing (small ribs which run from top to bottom) . . . . . 20.
- 19f. Large prominent axial ribs - spiral ridges not as prominent, occasionally with long narrow bottom canal . . . . . 21.
- 20a. Small (maximum length: 3/4 in.), prominent parietal shield may be present.

**MUD SNAILS**

**Common Eastern Nassa** *Nassarius vibex* (Say) Fig. 120  
 Length: 1/2 in. Range: Mass. - Gulf States. Flattened whorls, ribs coarsely beaded, gray-brown color, prominent cream-colored parietal shield. Very common - shallow-water sand flats of sounds, inlets and just offshore.



Fig. 120  
 Common Eastern Nassa

**Eastern Mud Nassa** *Ilyanassa obsoleta* (Say) Fig. 121  
 Length: 3/4 in. Range: Canada - Fla. Rough dark brown exterior - no prominent axial ribs or spiral ribbing, aperture and parietal shield solid black brown color. Large aggregations found living in intertidal zones of our sounds and inlets.



Fig. 121  
 Eastern Mud Nassa

**New England Nassa** *Nassarius trivittatus* (Say)  
 Length: 3/4 in. Range: Nova Scotia - Georgia. Prominent beading on whorls - spiral lines as strong as axial ribs, parietal shield small, shaped with higher spire than other Nassas. Occasional - ocean beaches and offshore catches.

**Variable Nassa** *Nassarius albus* (Say)  
 Length: 1/2 in. Range: N. C. - Fla. White exterior sometimes with light brown spiral lines, strong rounded ribs (not flattened) crossed by numerous spiral lines, weak white parietal shield. Occasional - living offshore\*.

- 20b. Medium sized (maximum length about 4 in.), parietal shield not present.  
 aa. White aperture area, up to about 1 inch length.

**Tinted Cantharus** *Cantharus tinctus* (Conrad) Fig. 122  
 Length: 1 1/4 in. Range: N. C. - Texas. Occasionally with light, broad axial ribs, strong spiral ridges; mottled brown and cream exterior; aperture occasionally with some brown blotches. Occasional - rock jetties in inlets, living offshore\*. Easily confused with Florida Rock Shell.



Fig. 122  
 Tinted Cantharus

**bb. Yellow-orange aperture area, up to 3 3/4 inches length.**

**Florida Rock Shell (Southern Oyster Drill)** *Thais haemastoma floridana* (Conrad) Fig. 123  
Range: Va. - Brazil. May or may not have several rows of knobs on and just below shoulder of whorl, gray exterior. Found near or on rock jetties and oyster beds occurring near inlets; good population near Ocracoke. Feeds on oysters, etc., in Gulf of Mexico it is a greater threat to the oyster industry than in North Carolina waters.

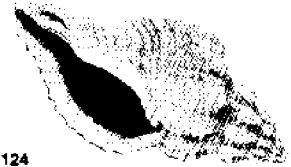


**Fig. 123**  
**Florida Rock Shell**

**21a. Short lower canal - canal not a narrow slit, axial ribs equal in size, maximum length about 1 1/2 inches.**

**aa. Rounded whorls**

**Atlantic Oyster Drill** *Urosalpinx cinerea* (Say) Fig. 124  
Length: 1 1/2 in. Range: Nova Scotia - Fla. 9-12 axial ribs, gray exterior, aperture frequently violet-colored. Very common - sounds and inlets on pilings, rock jetties and oyster reefs; lives in and just below intertidal area. While this is one of the most serious predators of oysters in U.S. waters, its effect on the industry in North Carolina is not nearly as bad as in the more northern states.



**Fig. 124**  
**Atlantic Oyster Drill**

**bb. Whorls with angular shoulders**

**Caribbean Coral Shell** *Coralliophila caribaea* Abbott Fig. 125

Length: 1 in. Range: N. C. - West Indies. Aperture length noticeably greater than 1/2 total shell length, exterior color a frosty white, aperture color sometimes violet. Occasional - living offshore\*.



**Fig. 125**  
**Caribbean Coral Shell**

**False Drill** *Cantharus multangulus* (Philippi)

Length: 1 1/2 in. Range: N. C. - West Indies. Aperture length equal to about 1/2 of total shell length, exterior color - cream-orange, axial ribs more pronounced and squarer than Caribbean Coral-Shell. Occasional - living offshore\*.

**21b. Long lower canal - canal a long slit . . . . . 22.**

**22a. Two ribs stronger than others - giving shell a flattened appearance, maximum length about 1 1/2 inches.**

**Thick-lipped Drill** *Eupleura caudata* (Say) Fig. 126

Length: 1 1/2 in. Range: Mass. - Fla. Two to six smaller ribs between last major ribs (varices), sharp angular shoulder on whorl, white exterior (occasionally whorls have several purple spiral bands). Not uncommon in sounds, inlets and just offshore; generally not found in intertidal zone. Further north this species also is a very serious oyster predator.



**Fig. 126**  
**Thick-lipped Drill**

**22b. Three ribs (varices) stronger than others.**

**Apple Murex** *Murex pomum* Gmelin Fig. 126a  
Length: 3 in. Range: N. C. - Brazil. No long spines on strong ribs, solid or reddish brown and occasionally spirally striped exterior, 4 dark brown spots on inner portion of outer lip of aperture, aperture color frequently pinkish. Rare - ocean beaches, common - living offshore\*.



**Fig. 126a**  
**Apple Murex**

**Lace Murex** *Murex diluctus* A. Adams Fig. 127  
Length: 2 3/4 in. Range: N. C. - West Indies. Long foliated spines on each varix (strong rib), cream or light brown exterior sometimes with fine darker brown spiral lines. Rare - living offshore.



**Fig. 127**  
**Lace Murex**

**22c. More than three strong axial ribs (varices).**

**Thin Ribbed Murex** *Murex leviculus* (Dall) Fig. 128  
Length: 3/4 in. Range: N. C. - Fla. Small, five or more varices with spaces between smooth, varices with erect foliated spines - those on shoulder of whorl curved upwards like a hook, light brown exterior. May be common (easily missed because of size) - living offshore\*.



**Fig. 128**  
**Thin Ribbed Murex**

**Giant Atlantic Murex** *Murex fulvescens* Sowerby Fig. 129  
Length: 7 in. Range: N. C. - Texas. Large heavy shell, 6-10 spiny axial ribs per whorl, raised spiral ridges between axial ribs, spines prominent and erect, exterior color white with fine purple spiral threads, aperture white and porcelaneous. Common - living offshore\*.



**Fig. 129**  
**Giant Atlantic Murex**

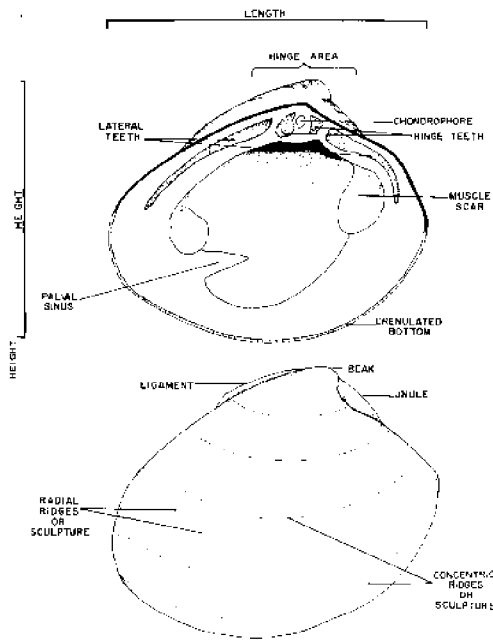
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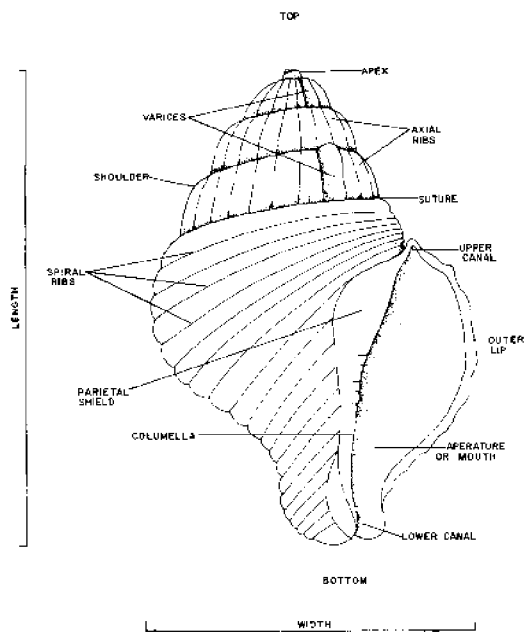
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