

# A Demo of : Beachcomber Sea Shells of the Caribbean

Correlated to 6 key books.



## Richard H. McBee Jr.

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## **Beachcomber Seashells of the Caribbean: A field guide, correlated to 6 key reference books.**

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3. Shells – West Indies – Identification.

# Sample Table of Contents

(Some \* areas listed below have active portions or are shown – Click and see!)

Introduction: [Introduction](#)\*, [Using this Book](#)\*

[Section 1 –Shell Anatomy of Univalves](#) \*, [Pictorial Keys for Univalves](#) \*,

[Section 2 –Bivalve Shell Anatomy](#) \*, [Pictorial Key for Bivalves](#) \*,

[Section 5 – Other Sea Life](#) \*, [Pictorial Key](#) \*.

Appendix: [Southern Caribbean Collecting Sites](#) \*.

Indices: [Index of Scientific Names](#) \*and [Index of Common Names](#) \*

and [About the Author](#) \*.

# Introduction

**You are using an Electronic version of this book**, your usual finger taps and motions will transport you from page to page. You can also navigate to various parts of the book directly from the hyperlinks in the Table of Contents or by tapping on any of the blue hyperlink typing within the book.

With the seashell keys, simply tapping on the picture associated with your seashell, will hyperlink you to the next key or to the Family of shells which contains your specimen.

**Note the Kindle Version of the book is not quite as interactive as this demo. The full electronic version will be available in 2017.**

I have also used two icons to assist navigation back to the Table of Contents or back to one of the three main touch keys at the beginnings of the sections from which most of your classification work will start.



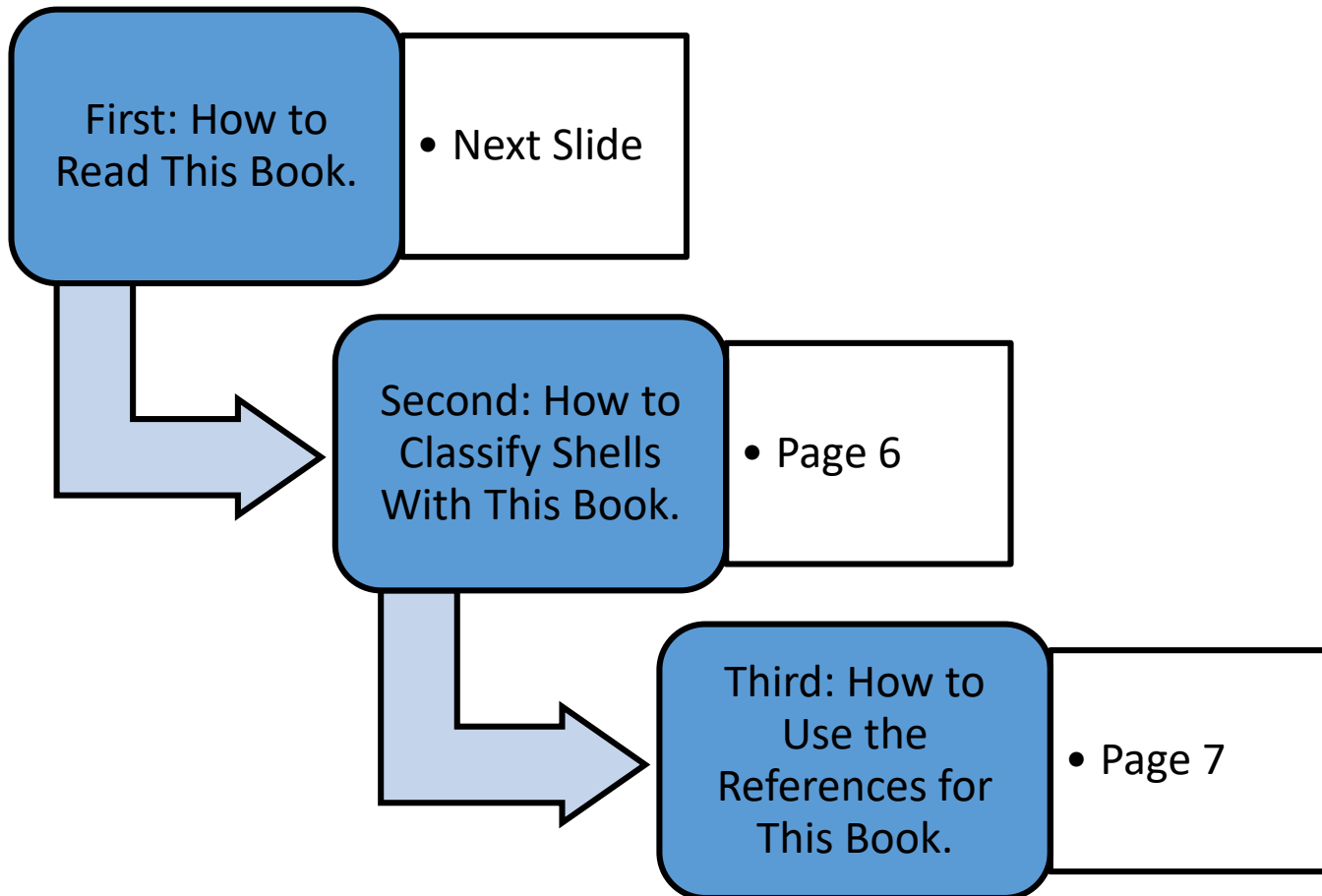
Will return you to the main pictorial key for the section you are in.



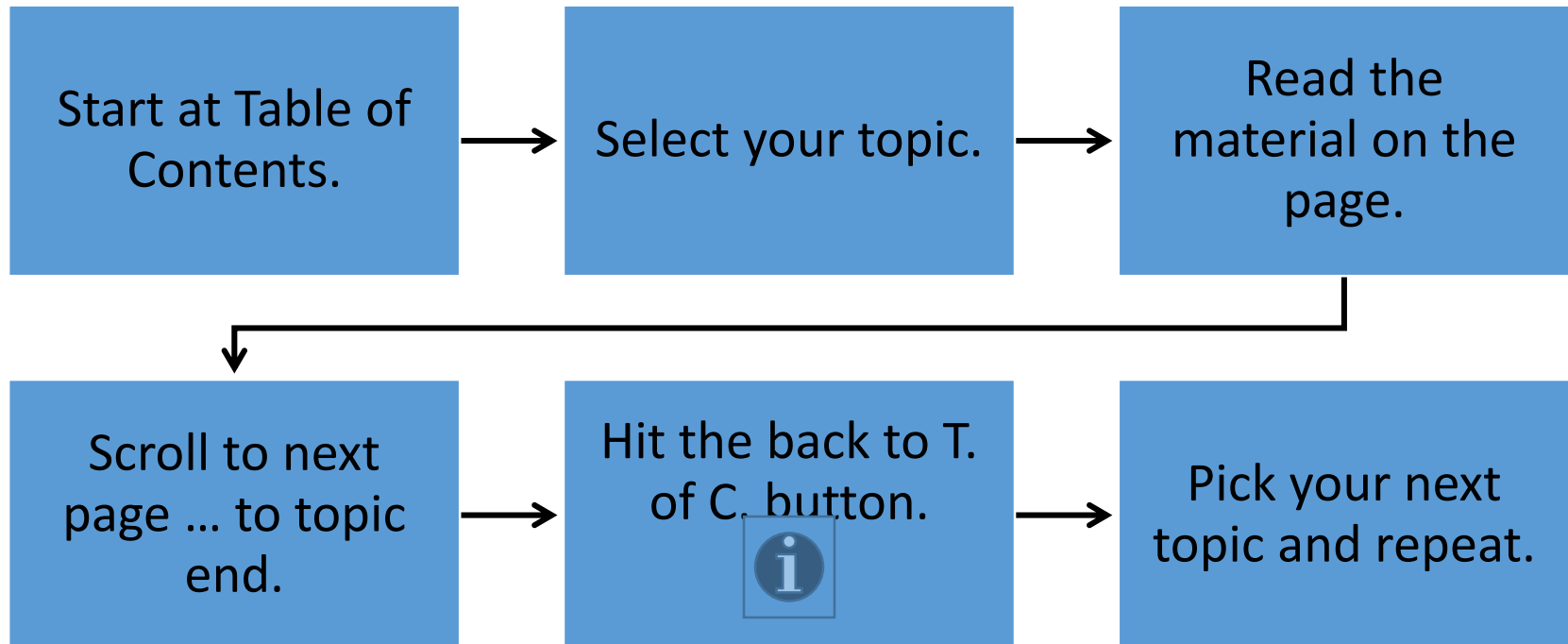
Will return you to the Table of Contents.

A scale of size is included next to each shell. The smallest ruler increments are in millimeters. Remember, that 25 mm or 2.5 cm equals one U.S. inch.

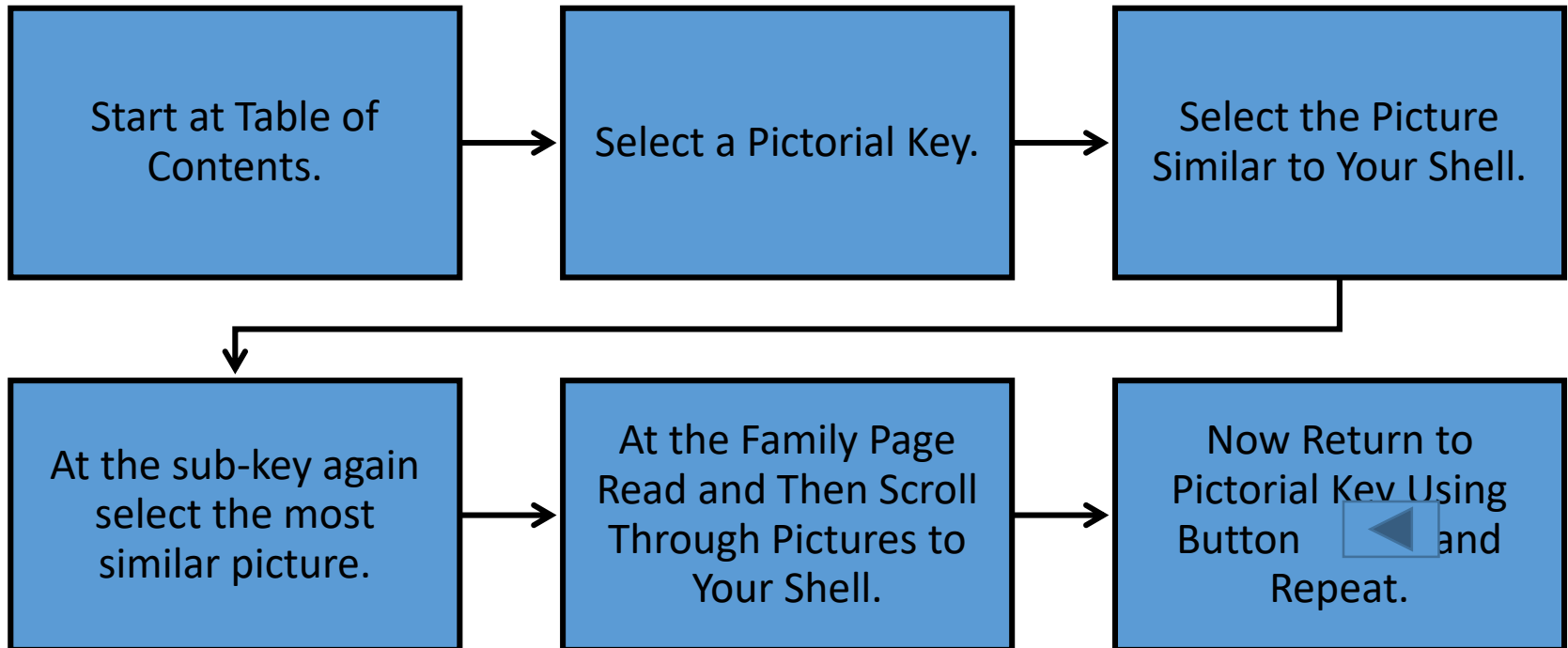
# Three Steps to Using This Book



# Reading this E-book



# Classifying your Shells



# Using The Other References

On each shell page, this book refers you directly to the following 6 excellent hardback books for more complete information on your shells:

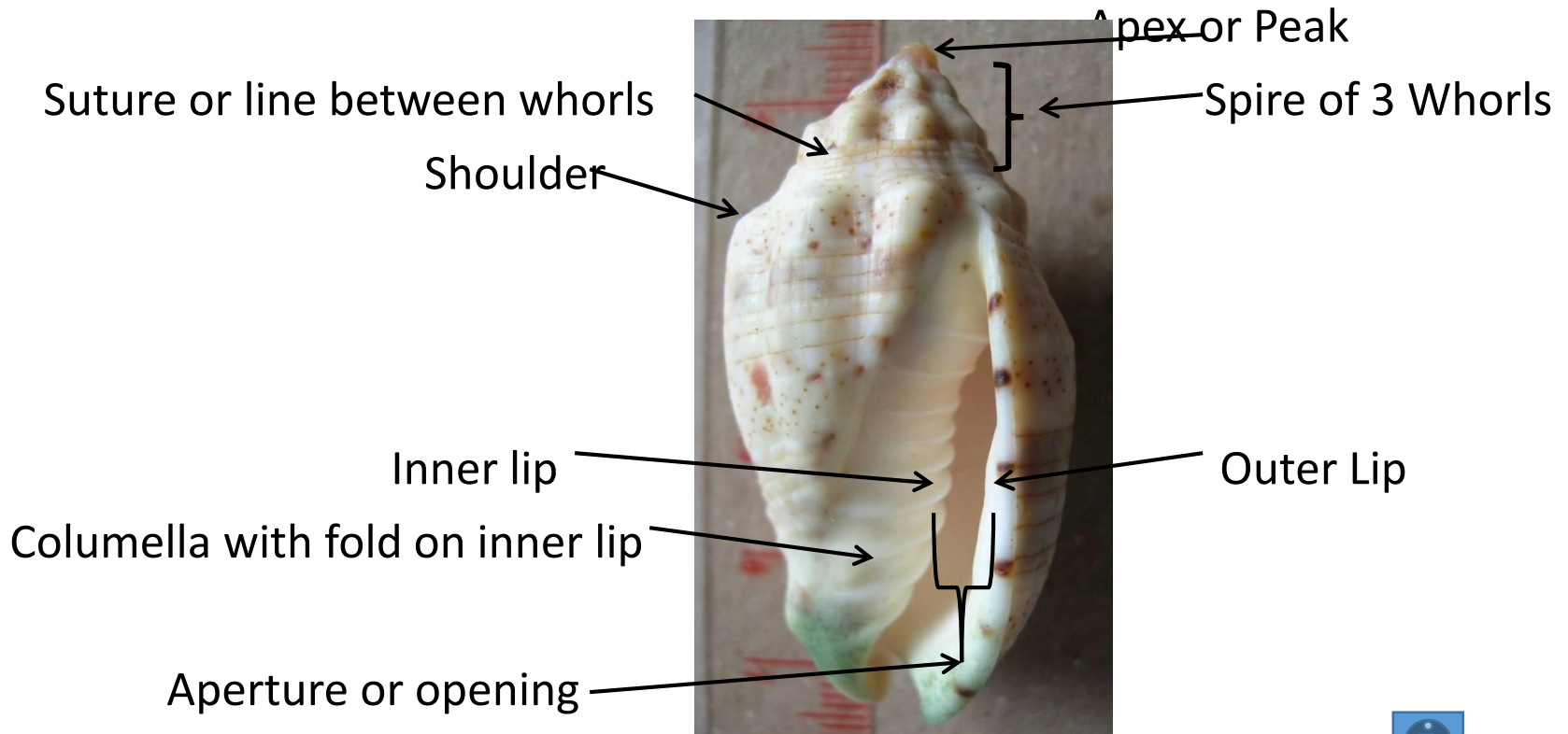
1. **P1\*** = **Shells of the Atlantic and Gulf Coasts and the West Indies**, 1995, R. Abbott & P. A. Morris, Peterson Field Guides, 350p.
2. **P2\*** = **A Field Guide to Shells of the Atlantic and Gulf Coasts and the West Indies**, 1973, P. A. Morris, The Peterson Field Guide Series, 330p.
3. **G\*** = **A Guide to Field Identification Shells of North America**, 1968, R. T. Abbott, A Golden Field Guide, 280p.
4. **A\*** = **The Audubon Society Field Guide to North American Shells**, 1990, H. A Rehder, et. al., 5<sup>th</sup> Ed., 894p.
5. **S\*** = **Simon and Schuster's Guide to Shells**, 1980, B. Sabelli, H. S. Feinberg, Ed., (translation), 512p.
6. **H\*** = **Sea shells of the West Indies**, 1975, Michael Humfrey, Taplinger Publishing Co., Inc. New York, N.Y. 351 p.





# Shell Anatomy of Univalves

Some technical vocabulary is necessary for this book. The labeled anatomy pictures will help you quickly learn the vocabulary of seashells. This vocabulary is transferrable to the worldwide stage of shell collecting.

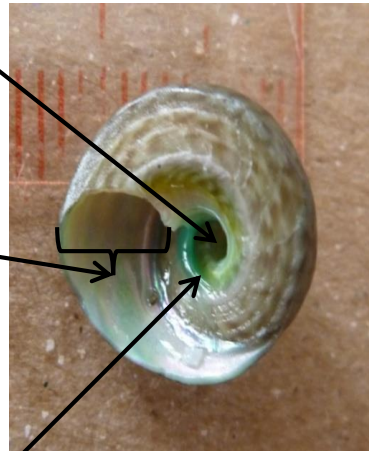


# Shell Anatomy of Univalves

- Umbilicus (hole)

Aperture (opening)

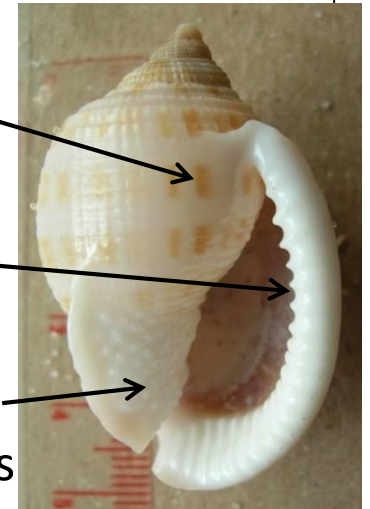
Callus (thickened area)











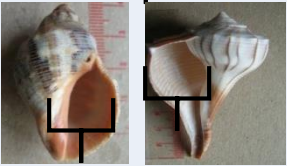

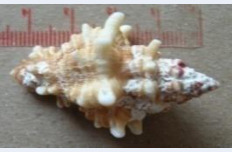




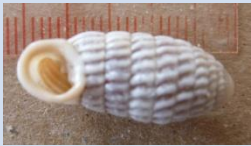
Spot

Teeth

Pustules (pimples)



# Pictorial key for Univalves by Approximate Shape. Cap and Top Shells Are Active here!

<p>Cap - Like</p> 	<p>Top - like</p> 	<p>Globular</p> 	<p>Turret - like</p> 
<p>Cowry - like</p> 	<p>Conch - like</p> 	<p>Cone - like</p> 	<p>Have Varices</p> 
<p>Wide Aperture</p> 	<p>Smooth</p> 	<p>Rugged</p> 	<p>Olive - like</p> 
<p>Worm - Like</p> 	<p>Table of Contents</p> 	<p>Volute</p> 	<p>Salt Marsh</p> 

# Subgroup Key: Cap - Like Shells

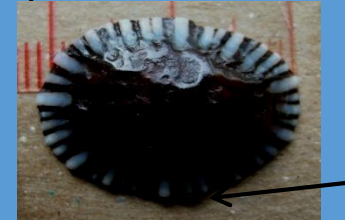
Usually an opening in top: Family Fissurellidae, Keyhole Limpets.



No opening in top: Family Acmaeidae, True Limpets.



Distinct bulge on edge of shell: Family Siphonariidae, False Limpets.



Inner cap has horseshoe growth: Family Hipponicidae, Hoof Shells.



One end of the cap is turned under: Family Capulidae, In-curved Cap Shells.



Inner cap has cup or is slipper like: Family Crepidulidae: Cup & Saucers & Slippers.

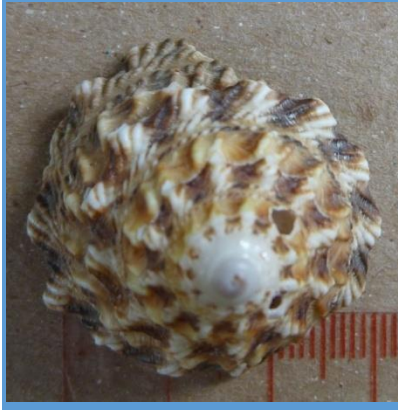


# Subgroup Key: Top - Like Shells

Finely coiled pyramidal shape with smooth sides. Operculum has horny spirals. An umbilicus is present: Family Trochidae, the Pearly Top Shells.



More heavily coiled pyramidal shells, may have protruding spines. Umbilicus present, operculum is calcareous: Family Turbinidae, the Turban shells.



Conical shells generally lacking an umbilicus. Few spirals on horny operculum. May be smooth or with knobs: Family Littorinidae, Periwinkles.



# Family Fissurellidae

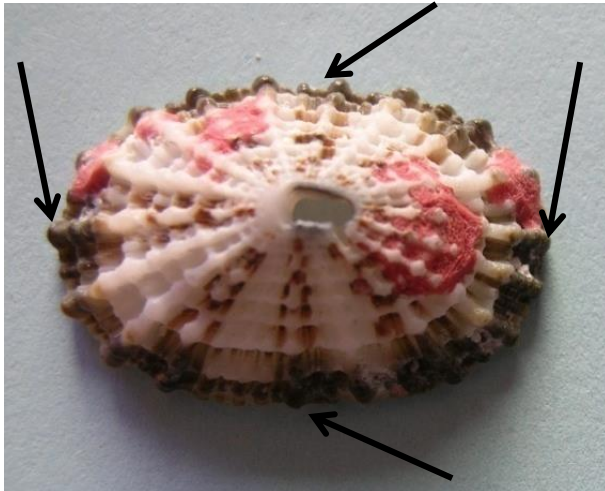
## Keyhole Limpet Shells (2 examples)

- Shell Shape: Conical or hat-shaped.
- Shell Features: With or without an anal hole or slit in the top of the cap or anterior edge. Generally no operculum.
- Respiration and reproduction: Paired gills.
- World Distribution: Tropical and temperate.
- Foods: Mainly herbivorous with a few being carnivorous on sponges.
- Depth: Intertidal to benthic.
- Human uses: Jewelry and food.



# Dyson's Keyhole Limpet

## Family Fissurellidae



- Guides: **P1\***, pl. 40, p. 127, **P2\***, pl. 36, p. 110, **G\***, pl. 61, p. 60, **A\***, pl. 399, p. 350, **S\***, similar, pl. & p. 162, **H\***, pl. 2, p. 50.
- Diodora dysoni (Reeve, 1850)
- White with 8 - 10 solid or broken black rays; an equal number of white rays in between. Black bordered orifice appears triangular.
- Note Arrow: Three ribs between the four compass point ribs.
- Distribution: Florida to Brazil.
- Photo specimen: Tocopero, Venezuela.



# Rayed Keyhole Limpet

## Family Fissurellidae



- Guides: **P1\***, similar, pl. 40, p. 125, **P2\***, similar, pl. 35, p. 108, **G\***, similar, pl. 61, p. 60, **A\***, pl. 411, p. 354, **S\***, similar, pl. & p. 162, **H\***, pl. 2, p. 54.
- *Fisurella nimbosa*, (Linne, 1758)
- A yellowish buff colored shell with radiating bands of black, dark brown or red. Surface relatively smooth with concentric growth lines. Orifice is oblong.
- Distribution: Puerto Rico to Venezuela.
- Photo specimen: Curacao.





# Family Acmaeidae

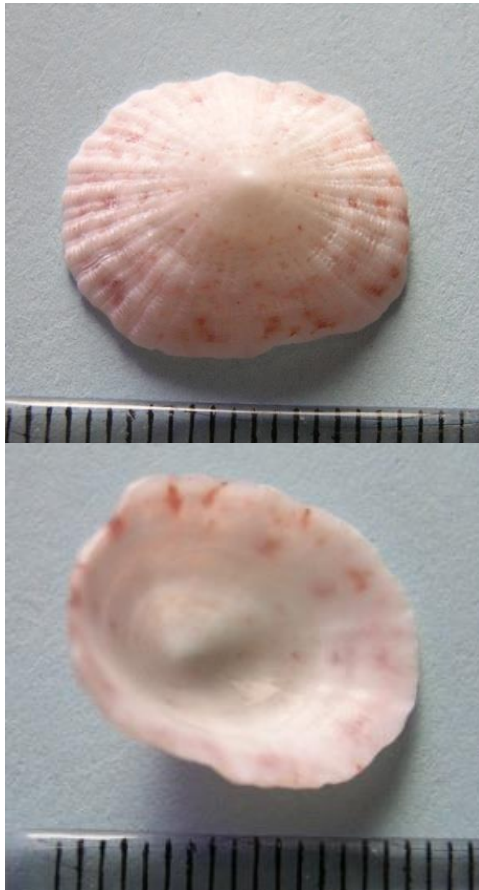
## True Limpet Shells

- Shell Shape: Hat or cap-like.
- Shell Features: Lacks a hole in the shell apex.
- Respiration/reproduction: A single gill, sexes are separate.
- World Distribution: Tropical and temperate.
- Foods: Herbivorous feeding with a radula.
- Depth: Mainly intertidal some upper benthic.
- Human uses: Eaten as food and some jewelry.



# Spotted Limpet

## Family Acmaeidae



- Guides: **P1\***, pl. 41, p. 130, **P2\***, pl. 37, p. 114, **G\***, pl. 65, p. 64, **A\***, pl. 373, p. 367, **S\***, similar, pl. & p. 183, **H\***, pl. 2, p. 55.
- Lottia pustulata (Helbling, 1779)
- Pink dots are easily visible on both interior and exterior of these white shells making this an easy variety of true limpet to identify.
- Distribution: Florida to Venezuela.
- Photo specimen: Margarita, Venezuela.



# Black Ribbed Limpet Family Acmaeidae



- Guides: P1\*, pl. 41, p. 130, P2\*, pl. 37, p. 114, G\*, similar, pl. 65, p. 64, A\*, pl. 394, p. 362, S\*, similar, pl. & p. 183, H\*, pl. 2, p. 56.
- Lottia leucopleura (Gmelin, 1791)
- Well elevated shell from side. Black lines radiate from apex on the white shell. Brown callus in interior may be more or less arrow a definite arrow shape.
- Note: will be under genus Collisella or Acmaea in older books.
- Note arrow: Interior white with a thin checkered border of alternating black and white.
- Distribution: Florida to Venezuela.
- Photo specimen: Curacao.



# Family Trochidae

## Top Shells

- Shell Shape: Finely coiled conical shape.
- Shell Features: Sharp pointed apex, pearly interior. Has a thin horny operculum of many turns. Generally have an umbilicus.
- Respiration/reproduction: Gills, sexes are separate.
- World Distribution: temperate and tropical
- Foods: Herbivorous feeding with a radula.
- Depth: Littoral to deep benthic regions
- Human uses: Jewelry and eaten as food.



# Chocolate Lined or Java Top Shell

## Family Trochidae

- Guides: **P1\***, pl. 41, p. 136, **P2\***, pl. 37, p. 119, **G\***, pl. 71, p. 70, **A\***, similar, pl. 263, p. 379, **S\***, similar, p. & pl. 143 & 144, **H\***, pl. 3, p. 58.
- Calliostoma javanicum (Lamarck, 1822).
- Beautifully pointed shell with pearly interior make this a rare beauty to collect on a beach as it is fragile. Search after big storms along normally sheltered bays where their food, algae, would grow. Deep white umbilicus.
- Distribution: Florida to Venezuela.
- Photo specimen: Curacao.



# Family Turbinidae

## Turban Shells

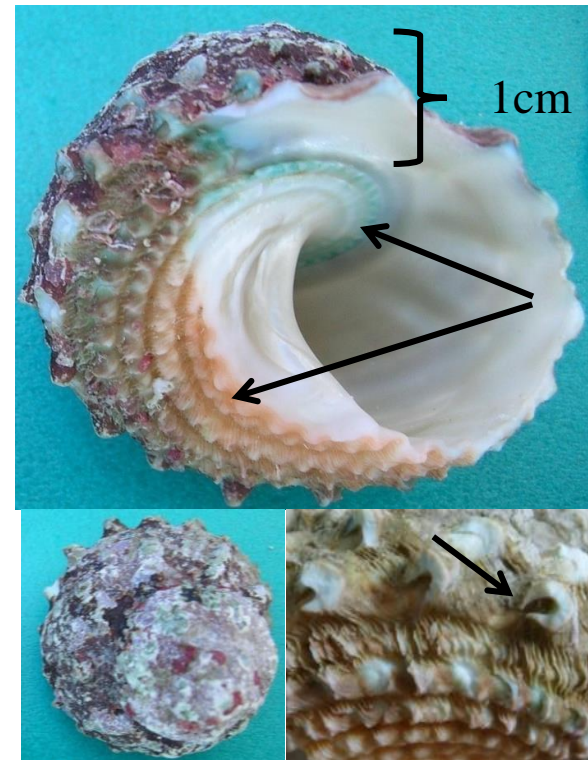
- Shell Shape: Heavy pyramidal or top-shaped coiled shells.
- Shell Features: Generally do not have an umbilicus. The operculum is calcareous rather than horny in nature.
- Respiration/reproduction: Gills, sexes separate.
- World Distribution: Tropical waters worldwide.
- Foods: Herbivorous feeding with a radula.
- Depth: Intertidal zone to deep benthic.
- Human uses: Jewelry.



# Carved Star Shell

## Family Turbinidae

- Guides: **P1\***, pl. 42, p. 141, **P2\***, p. 124, pl. 38, **G\***, p. 76, pl. 77, **A\***, p. 390, pl. 267, **S\***, similar, pl. 224, **H\***, pl. 5, p. 63.
- Astraea caelata (Gmelin, 1791)
- Similar in size and habitat to American star shell. The furrowed spines are often worn down in older specimens.
- Note arrow: It may have an orange and green colored area near the aperture, but these do not take the form of a callus. Worn furrowed spines appear like broken hollow tubules.
- Distribution: Florida to Venezuela.
- Photo specimen: Curacao.



# Family Crepidulidae

## Slipper and Cup and Saucer Shells

- Shell Shape: Cap-like, twisted slightly.
- Shell Features: inner shell with a plate or platform along anterior supporting soft parts.
- Respiration/repro.: Gill breathers/Protandrous hermaphrodites (male first, changing to females).
- World Distribution: world wide.
- Foods: filter feeders on algae.
- Depth: generally shallow waters 1- 30 ft.
- Human uses: none.





# Rosy or West Indian Cup and Saucer

## Family Crepidulidae (Calyptraeidae)



- Guides: **P1\***, pl. 49, p. 180, **P2\***, pl. 45, p. 163, **G\***, pl. 101, p. 100, **A\***, similar, pl. 414, p. 463. **S\***, similar, pl. & p. 145, **H\***, p. 95.
- Crucibulum auricula (Gmelin, 1791).
- Very definite diagonal ribs on outer surface of clean and unworn shells. Interior cup free from outer shell. Color of interior light to dark pink, outer shell white to brown.
- Distribution: Florida to Venezuela
- Photo specimen: Margarita and Tocopero, Venezuela.



# Family Siphonariidae

- Shell Shape: Hat-like or hollow cone.
- Shell Features: Horseshoe shaped muscle scar, siphonal groove on side of shell.
- Respiration/reproduction: Lungs and gills/ Hermaphroditic.
- World Distribution: Tropical world-wide.
- Foods: Herbivorous on shallow water plants.
- Depth:
- Human uses:



# Striped False Limpet

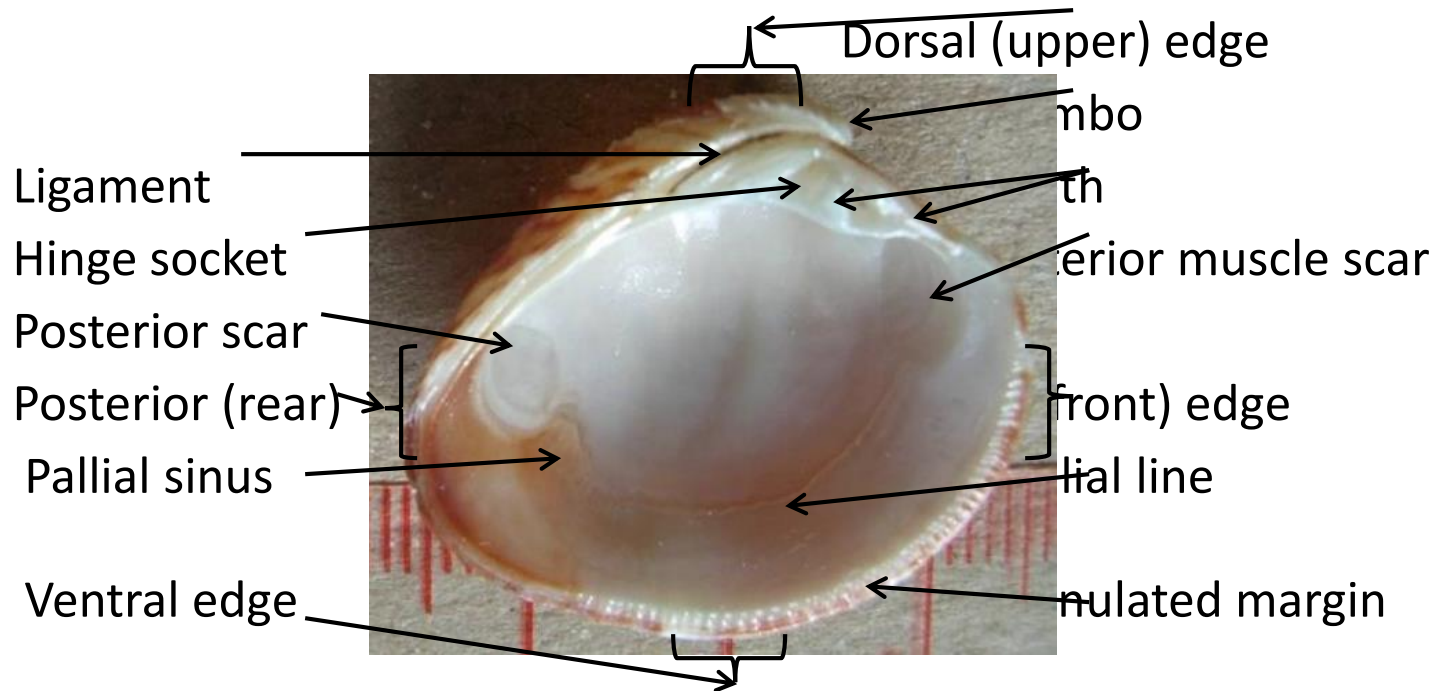
## Family Siphonaridae



- Guides: **P1\***, pl. 65, p. 274, **P2\***, pl. 74, p. 272, **G\***, absent, **A\***, pl. 383, p. 652, **S\***, similar, pl & p. 210, **H\***, pl. 22, p. 197.
- Siphonaria pectinata, (Linnaeus, 1758).
- Inner shell translucent with the lined margin of shell showing through. The color is tan to a deep blackish-brown. These mollusks are often mistaken for limpets although they differ in having lung and gills and are thus more advanced evolutionarily.
- Note Arrow: raised siphon groove along edge.
- Distribution: Florida to Venezuela.
- Photo specimen: Curacao, Margarita, Ven.



# Interior Bivalve Shell Anatomy



Note: The Pallial line is a the line along which the mantle of the mollusk was attached to the shell and the sinus indicates the area of the siphon retracting muscles. Crenulated means “wrinkled.”



# External Bivalve Shell Anatomy

Dorsal edge

Umbo or beak curved anteriorly

Concentric ridges

Posterior edge

Lateral view of beaks

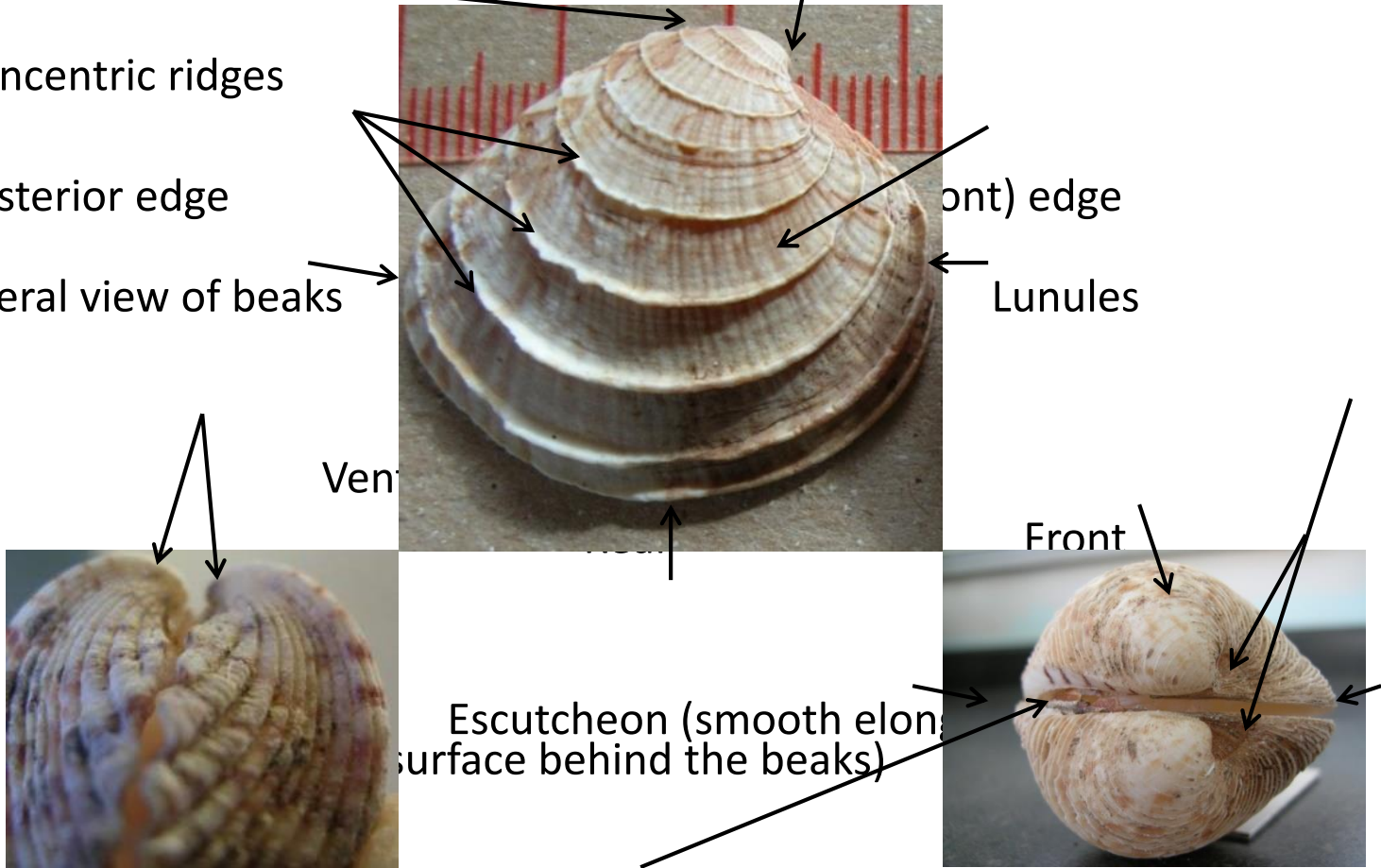
(Anterior) edge

Lunules














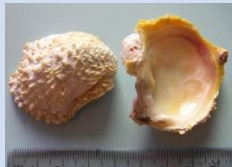










Ventral

Front

Escutcheon (smooth elongated surface behind the beaks)



# Pictorial Key for Bivalves, Chitons and Spirulids.

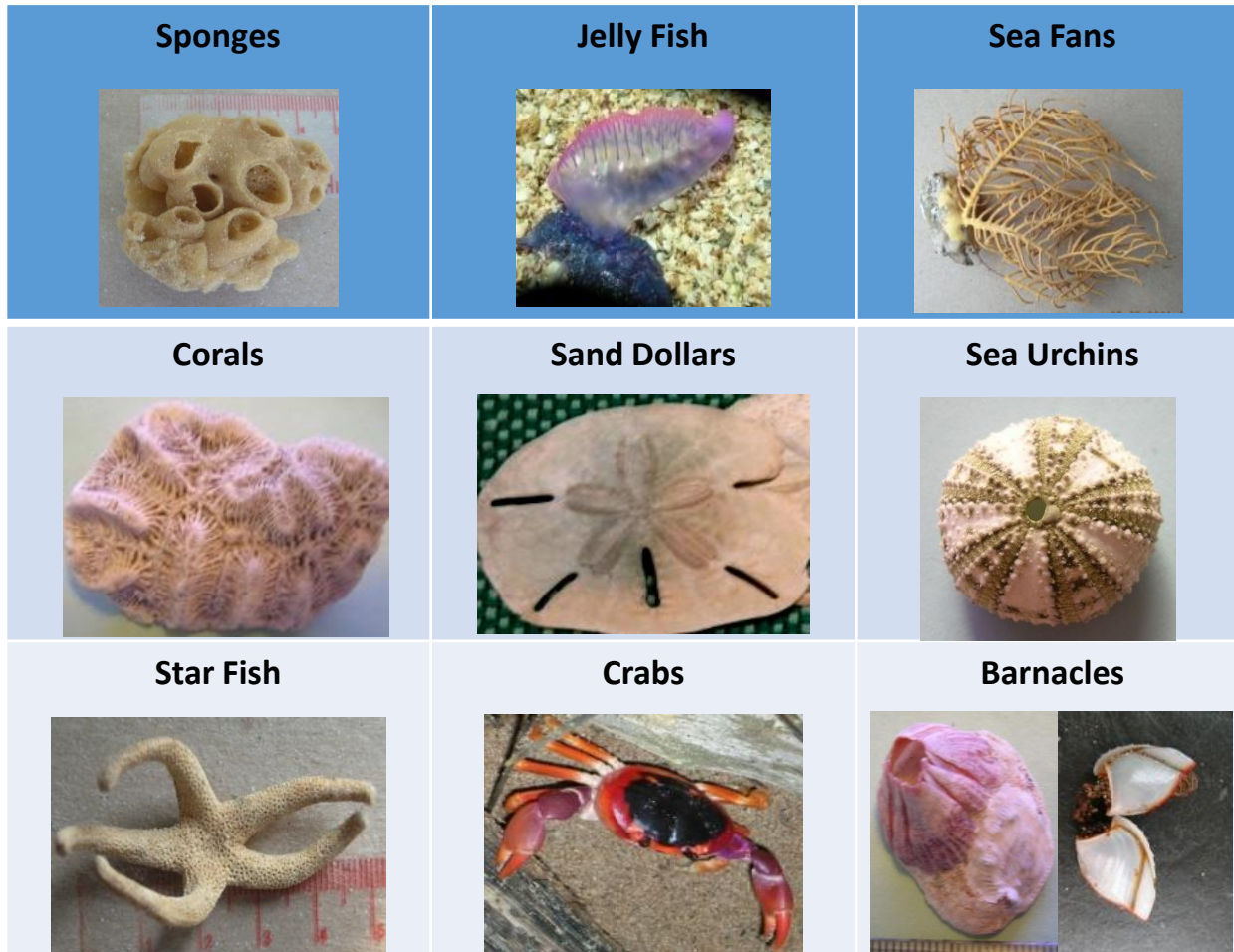
<b>Arks</b> 	<b>Bittersweet</b> 	<b>Mussels</b> 	<b>Tree Oyst.</b> 	<b>Pearl Oyst.</b> 	<b>Pen Shell</b> 	<b>Scallops</b> 
<b>File Shells</b> 	<b>Spiny Oyst.</b> 	<b>Kitten Paw</b> 	<b>True Oyst.</b> 	<b>Jingle Shell</b> 	<b>Lucines</b> 	<b>Jewel Box</b> 
<b>Cockles</b> 	<b>Venus Clam</b> 	<b>Surf Clam</b> 	<b>Tellin Clam</b> 	<b>Bean Clam</b> 	<b>Razor Clam</b> 	<b>Piddocks</b> 
<b>Chitons</b> 						<b>Spirulids</b> 

# Other Sea Life on Beaches

- In addition to the shells of Mollusks, the wandering beachcomber is likely to run across some of the following other members of the animal kingdom. Some of these make wonderful decorations and are collectables while others should be seen but not touched due to their poisonous nature.
- As with all coastal organisms, remember that shells, sponges and even dead corals act as the homes for other creatures. If we remove their homes, or pollute the waters they live in, then these organisms disappear from the beaches and the surrounding seas. Remember to take photos and leave your castaway shells on the beaches for others to see.
- A good example of a creature needing a beach shell home is the Hermit Crab that lives in empty snail shells. Care should be taken to only collect empty shells. You will generally know if you have a crab when the shell gets up and walks away. Then take it back to the beach and release it.



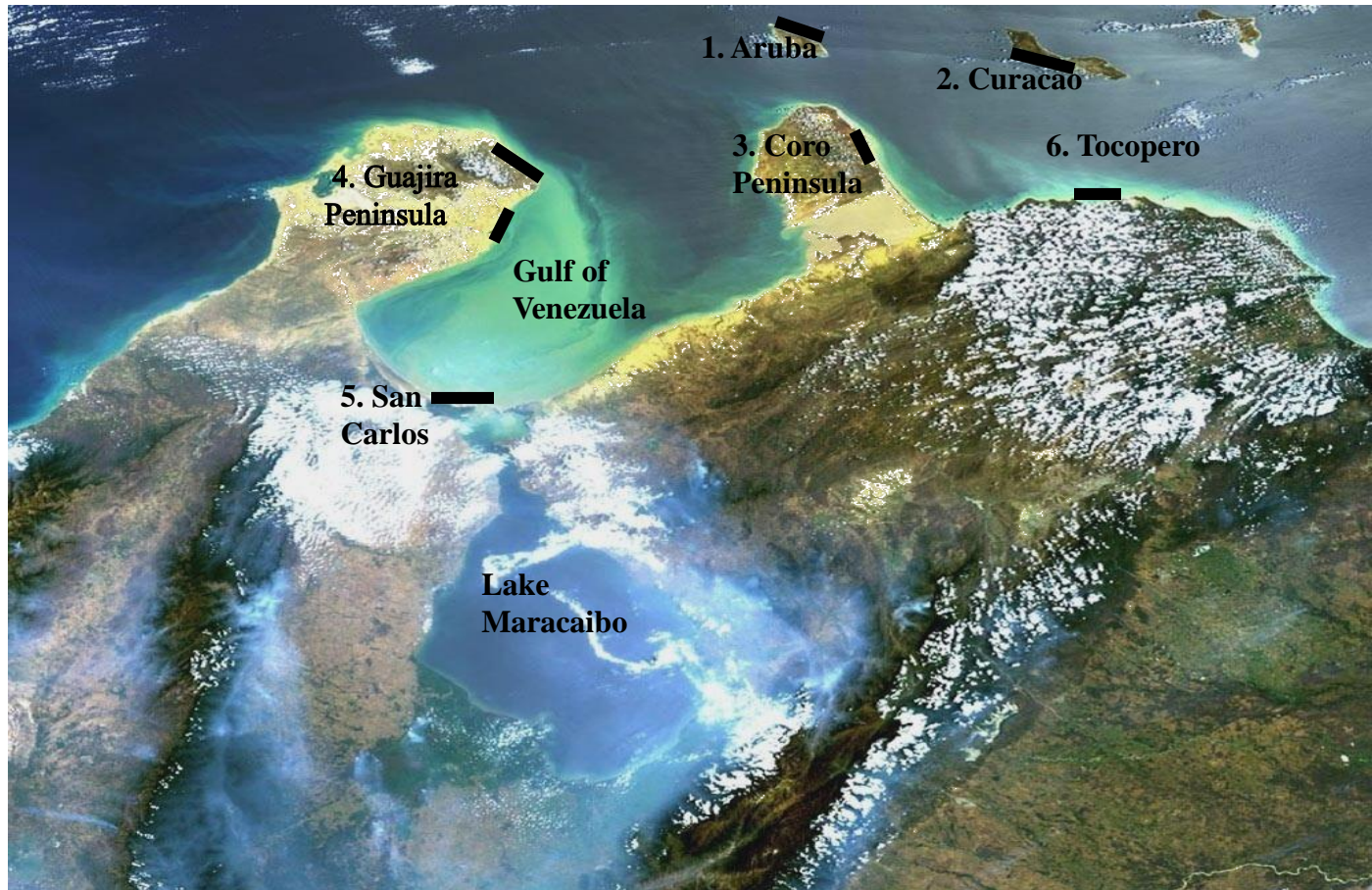
# Quick electronic pictorial index for Other Sea Life.





# Southern Caribbean Collecting Sites

My most frequently visited collection sites in Venezuela and nearby islands.  
(Map is a modified Google Earth photo.)



# Venezuela Area Collecting

- **1. Aruba and 2. Curacao** : Two of the Netherlands Antilles islands, they are situated 40 miles north of Venezuela. The southwest headlands with rocky sand, coral beaches and brackish salt marsh inlets give variety for excellent collecting. Different shells are also abundant along rocky northeast headlands and in bays on the western windward sides of these islands.
- **3. Coro Peninsula:** The east facing sheltered muddy sand flats and rocky heads plus long stretches of windward beaches are good collecting.
- **4. Guajira Peninsula:** The northeast and east facing low sand spits and beach dune areas are open to the direct coastal waves and storms of the Caribbean with loads of shells. This is a remote area and a local guide is strongly advised.
- **5. San Carlos:** A tourist area with north and east facing beaches. Walk half a mile north to headlands and dunes for excellent collecting due to waves off the Gulf of Venezuela. Don't leave unguarded personal items on beaches.
- **6. Tocopero:** A north facing rocky shore with intermittent sandy beaches and rocky headlands with waves directly off the Caribbean to the north. Stay at the beautiful local hostel of Los Ojitos for access. With a great variety of shells, this area was always a favorite of mine.



# About the Author

Richard H. McBee Jr. received his B.S. in Zoology from Oregon State University in 1966, his M.S. in Zoology from Montana State in 1972 and his M.A. in Educational Leadership from The University of Alabama in 1994. He has been an active shell collector all his life and was fortunate to be in Venezuela for an extended period of employment which allowed him to do extensive work on his shells of the Caribbean for four years. Subsequently, as an active scuba diver he has taken at least one trip to the Caribbean each year for over ten years to enjoy that sport and further his collection of seashells. He has authored two other books: Rough Enough, a work of non-fiction about the Civil War, and Kalahari, an African adventure thriller, a work of fiction, set during the time of Nelson Mandela.

All the photographs were taken by the author from his reference specimens. The reference collection for the book is currently in the author's possession at his home in Hood River, Oregon.

Visit <http://www.amazon.com/author/rickmabee> to review the book or for more information on his writing, and see his blog at <http://www.rickmabee.me>.



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