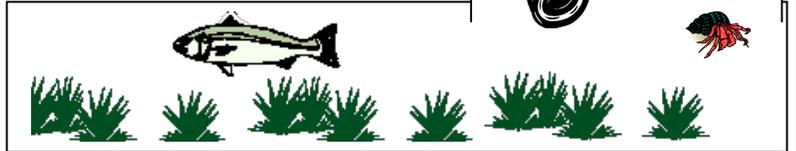


Classifying Sarasota Bay Mollusks

Grade Level: 6th through 12th

Subject: Science

Duration: 45 Minutes



Materials: Estuary Power Point, Dip net video. 6 sets of the dichotomous key to Mollusks, 6 Shells of Florida's Gulf Coast tri-fold, 30 specimens, 15 containers, 24 hand lenses, data sheets (optional: computer with Internet access)

Next Generation SSS

SC.6.L.15.1, SC.7.L.17.1 SC.7.L.17.2, SC.7.L.17.3, SC.8.N.1.6, SC.912.L.17.2, SC.912.L.17.3, SC.912.L.17.6, SC.912.L.17.7, SC.912.L.17.9 SC.912.L.17.19, SC.912.L.17.20

Common Core Benchmarks

LACC.68.RST.1.1, LACC.68.RST.1.3, LACC.1112.RST.1.1, LACC.1112.RST.1.3

Overview: Students will observe mollusk specimens that can be found in Sarasota Bay seagrass beds. They will use dichotomous keys to identify each of these specimens and classify them.

Objectives: Students will understand that the estuary is the "nursery of the sea", where many creatures begin their life cycles. Students will identify a variety of mollusks found in the Sarasota Bay Estuary.

Background: Invertebrates such a sea stars, oysters, sea urchins, and crabs live in among the seagrasses and the mangroves.

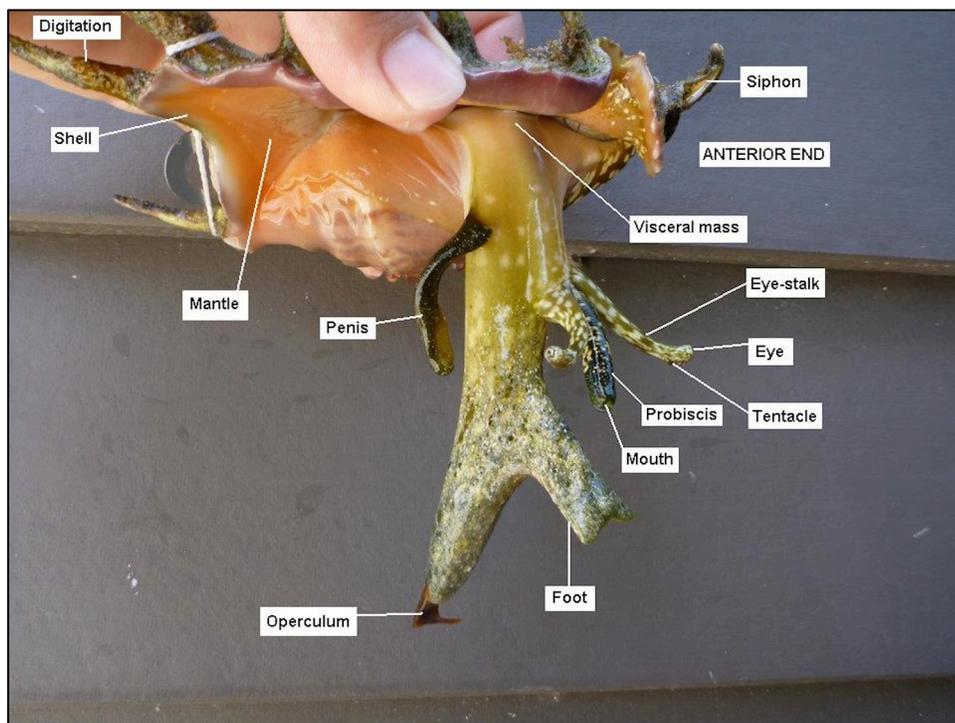
Mollusks are a group of invertebrates of the phylum Mollusca, typically having a soft unsegmented body, a mantle, and a protective calcareous shell and including edible shellfish and snails along with squid, octopuses, and sea hares. Mollusks with one shell are called univalves. The lightning whelk and the crown conch are examples of univalves. Mollusks with two shells are called bivalves. Examples of bivalves include clams and oysters. The octopus and squid are mollusks that do not have an external shell. Scientists estimate that there are more than 100,000 species of mollusks alive today. Mollusks are the second largest phylum of animals, having fewer species than only the arthropods; and the largest marine phylum, comprising about 23% of all named marine organisms.

Most mollusks have a univalve (one-piece) or bivalve (two-piece) shell, but in some species the shell is poorly developed or missing. A typical mollusk has a soft, jointless

Classifying Sarasota Bay Mollusks continued

body. The lower portion of the body typically forms a muscular foot, which is used for creeping or burrowing; the upper portion of the body is covered by a layer of skin called the mantle. Under the mantle there is a space called the mantle cavity, which contains respiratory organs. In addition, the mantle itself functions as a respiratory organ. A typical mollusk also has a heart; a liver; kidneys, sex glands; interconnected nerves; and, a radula, a rasping tongue used to shred food and draw it into the mouth.

Mollusks vary not only in size but also anatomical structure. They all have a soft body and bilateral symmetry. They share two basic parts: a foot and a visceral mass. The foot is muscular structure located on the underside of the body, which secretes mucus from the bottom of its foot to lubricate the underlying surface of the animal. This helps the mollusk move by repeated contraction and stretching of the foot muscle. The visceral mass, which is located above the foot and below the mantle, contains the internal organs that perform the functions of digestion, circulation, reproduction and excretion. The mantle is a layer of tissue that covers the visceral mass and in many mollusks it contains glands, which secrete a hard shell that covers and protects the visceral mass. This protective shell is made of chitin, proteins and calcium carbonate. Mollusks with one shell are called univalves. The lightning whelk and the crown conch are examples of univalves. Mollusks with two shells are called bivalves. Examples of bivalves include clams and oysters. The octopus and squid are mollusks that do not have an external shell.



Classifying Sarasota Bay Mollusks continued

Suggested Procedure:

1. Give each group of students the Dichotomous Key to Mollusks.
2. Explain how do use a dichotomous key.
3. Give each group a container with 2-3 mollusk specimens. Ask students to use the key to identify each specimen and complete the survey. The survey includes the common name of the organism, the phylum it belongs in, the scientific name, it's role in the estuarine ecosystem (this may need further research) and a drawing.

Students can use the data sheet included or make their own.

4. Once students have keyed out the organism, they can use the Shells of Florida's Gulf Coast trifold field guide to verify their answer.
5. Identify other specimens (in addition to the mollusks) in the box using the Shells of Florida's Gulf Coast tri-fold or other resources.

Assessment:

Have students write a persuasive essay describing the importance of protecting the estuary. Include information about the seagrass beds, the mangroves and some of the important creatures that live there. Optional: share your essays with local public figures such as City or County Commissioners.

Resources

Invertebrates Found in the Gulf of Mexico <http://eol.org/collections/103>

"Flora and Fauna" American Littoral Society Southeast Chapter South Atlantic/Gulf Coast <http://www.sealitsoc.org/>

Sarasota Bay Estuary Program, <http://sarasotabay.org/>

Dichotomous Keys,

http://www.scs.sk.ca/cyber/elem/learningcommunity/sciences/biology20/curr_content/biology20/unit3/unit3_mod1_les2.htm