

Activity 3.1

Beach-in-a-Box—Exploring Shell Collections

- Grade Level
3-5
- Subject Areas
Science
- Duration
One 30-minute class sessions
- Setting
Classroom
- Skills
Sorting, grouping, describing
- Vocabulary
Invertebrate, mollusk, bivalve, gastropod, univalve, taxonomy
- Correlation with Next Generation Science Standards
1-LS1-1, MS-LS4-2

Materials:

- Plastic boxes containing sand and a variety of seashells collected from coastal areas of New Jersey
- Reference guide or books for common seashells
- Student Worksheet-Activity 3.1

Charting the Course

Students will examine shell collections and reference sheets. They will learn that shells are made by animals and provide protection to the soft-bodied animals within. A sorting activity introduces students to how scientists classify animals.

Background

Shells can be found in almost any habitat, but most often we associate them with the seashore. A careful treasure hunt on the beach will reveal a host of shells, some empty and some still with an animal attached. Shells are the hard outer-coverings that offer protection to soft-bodied invertebrate animals. The shells not only protect animals from hungry predators, but also protect them from changes in the environment, such as severe weather events. Many different types of animals have shells including turtles, crabs, lobsters, snails, clams, and oysters.

Common seashells belong to the group of animals known as mollusks, which are classified in the phylum *Mullusca*. The phylum *Mollusca* is comprised of more than 100,000 species. There are seven classes of animals within this phylum. Four classes are common in the marine environment—*Gastropoda* (single shelled mollusks), *Bivalvia* (two-shelled mollusks), *Cephalopoda* (squid and octopi), and *Polyplacophora* (chitons). Most mollusks are aquatic and can be found in marine or fresh water environments, but there are also land species, which includes the slug. Scientists classify organisms into various groups using a system based on relationship (eg. similar body structure). This classification is called taxonomy.

The body of a mullusk is comprised of a soft visceral mass, containing the organs, and a surrounding outer tissue layer, the mantle. The mantle of shell forming molluscs contains glands that secrete the material that forms the shell. Some mollusks have a muscular foot that is used for crawling and borrowing.

A reference list of common seashells will typically include gastropods and bivalves. Gastropods, snails, have only one shell, which usually coils in a spiral and has a wide opening at one end. Gastropods are also called univalves. Bivalves, which include but are not limited to clams, oysters, mussels, and scallops, have two shells, which are joined together at one side by a hinge. The living bivalve animal has strong muscles that are affixed to the shells and control opening and closing of the valves.

Objectives / Students will be able to:

1. Identify common shells.
2. Sort shells according to like-characteristics.
3. Describe the function of a seashell.
4. Become acquainted to the group of animals known as mollusks.
5. Become acquainted with the concept of classification.

Procedure / Warm Up

Have a class discussion about visiting the seashore. Lead into discussion of seashell collection. Query, where do shells come from? Discuss mollusks and their key features. After describing the soft-bodied invertebrate animals that live within the shells ask students state the function of the shell. Explain that there are more than 100,000 species of mollusks, each differing from one another.

The Activity

1. Divide students into teams and provide each team with a beach box and reference materials.
2. Have students sort the shells into groups having similar characteristics.
3. Have students utilize the reference guides to identify the seashells.
4. Have students prepare a survey list and illustrations of the different types of shells that they've identified.

Extensions / Take the class on a scavenger hunt to the beach, how many different types of shells can they find. Have them construct their own shell collections. Visit the Education Program at the website of the New Jersey Marine Science Consortium (njmsc.org) for more activities such as Seashell Homes and Holey Clamshells.

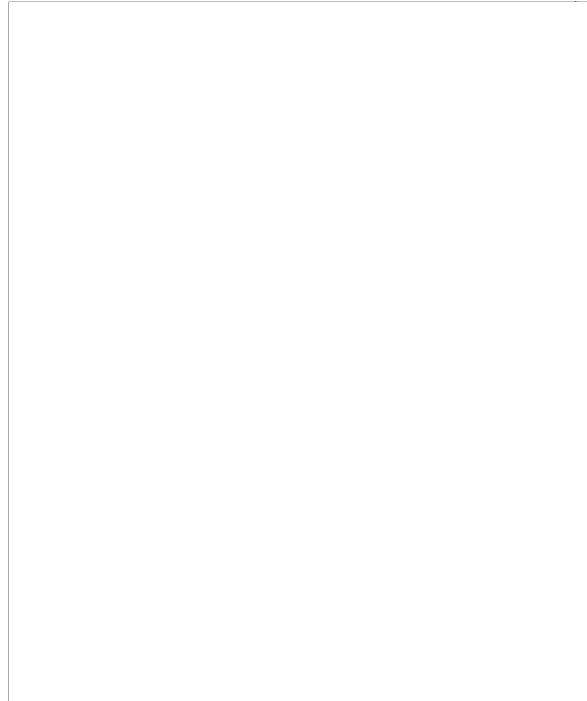
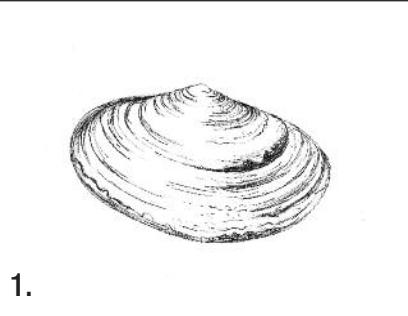


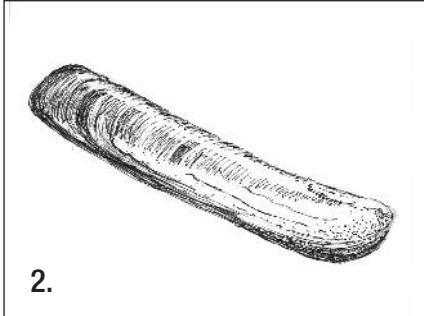
Figure 1: The Eastern oyster. Original drawing by Diane Driessen.

Student Handout

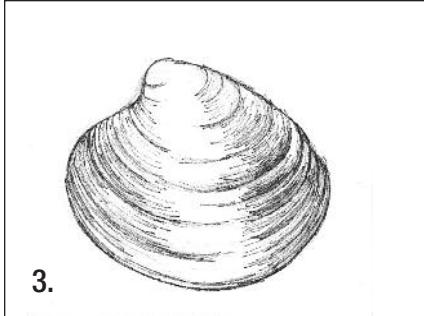
Activity 3.1—Beach in a Box



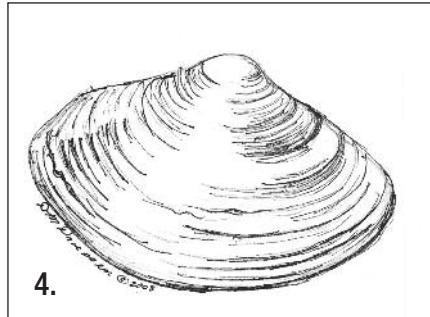
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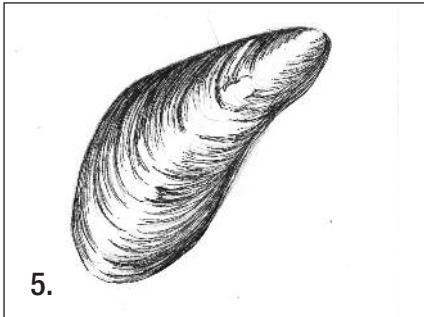
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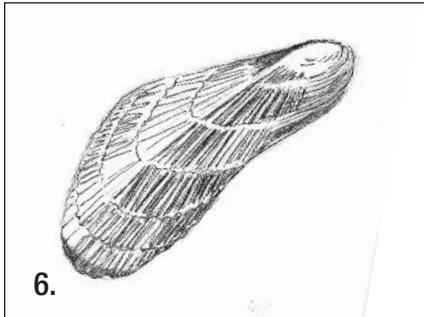
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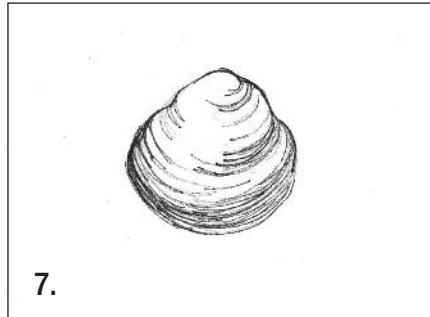
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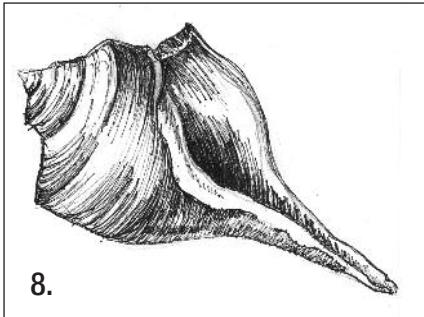
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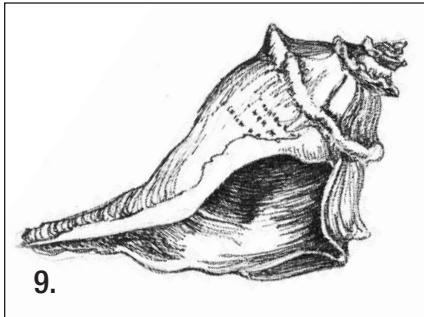
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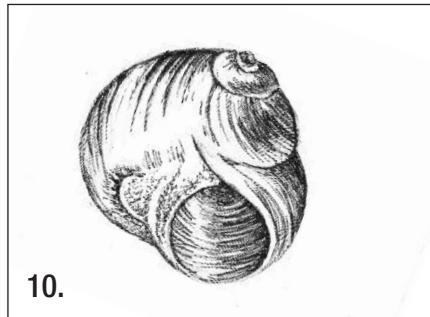
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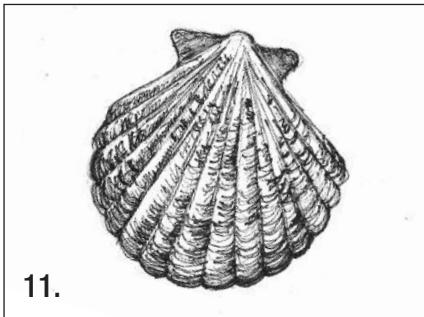
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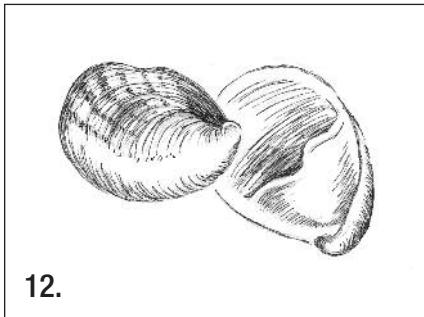
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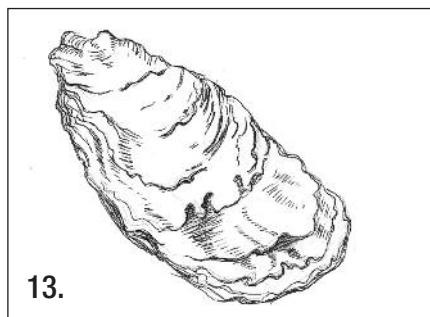
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11.



12.



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Common Shells of the Mid-Atlantic

1. Soft-shelled Clam	7. Jingle Shell
2. Common Razor Clam	8. Channeled Whelk
3. Hard Clam	9. Knobbed Whelk
4. Atlantic Surf Clam	10. Atlantic Moon Snail
5. Common Blue Mussel	11. Bay Scallop
6. Atlantic Ribbed Mussel	12. Common Slipper Shell
13. Eastern Oyster	