Activity 3.4

Cha, Cha, Changes—A Look at the Oysters Life Cycle

- Grade Level
  3-5
- Subject Areas
  Science
- Duration
  One 30 to 40-minute class session
- Setting
  Classroom
- Skills
  Sequencing, describing
- Vocabulary
  Larvae, trochophore, veliger, pediveliger, spat, plankton
- Correlation with Next Generation Science Standards
  3-LS1-1, MS-LS1-4, MS-LS4-3

Materials:

- ☐ Diagram of oyster life stages
- ☐ Materials to make flip-books, construction paper, scissors, crayons, staplers, and glue sticks

Charting the Course
Students will prepare flip-books depicting the life cycle of the oyster.

Background
Oysters begin their life as free-floating microscopic plankton known as larvae. The larvae arise from the external fertilization of sperm and eggs, which are released into the water column by mature male and female oysters. Mature oysters spawn, release gametes after seasonal water temperatures reach about 75°F. Eggs that come into contact with sperm will become fertilized and initiate cell division. The dividing cells develop into larvae, which swim in the water column for a period of about 2 to 3 weeks. During this time the larvae increase in size and undergo metamorphosis through three main larval forms—trochophore to veliger to pediveliger. The trochophore stage exists during the first 24 to 48 hours and does not feed. The trocophore possesses cilia that help it spin about in the water. The veliger stage is characterized by the presence of an organ known as a velum that helps the larva swim and feed. The pediveliger is characterized by the presence of a foot that enables the larvae to crawl. The pediveliger seeks a suitable habitat and undergoes a dramatic metamorphosis, changing from the free-swimming larvae stage to a form that becomes permanently attached to a hard surface. For the rest of the oyster's life it will remain sessile, not moving from its original place of settlement. Once the oyster has attached to a surface, it is referred to as spat. The spat develops into juvenile and adult forms, which undergo mass spawning in summer, beginning the cycle again.

Objectives / Students will be able to:
1. Demonstrate an understanding of how the oyster changes as it grows.
2. Identify various stages in the life cycle of the oyster.
3. Describe the life cycle of the oyster.

Procedure / Warm Up
Have a class discussion about how living things change as they grow. Describe the oyster's life cycle.

The Activity

1. Distribute life cycle diagrams and materials to students.
2. Have students cut out, color, and sequence oyster life stages.
3. Paste sequenced images into flip-book, and label.
4. Write a descriptive sentence for each stage.
5. Have students hypothesize why each stage of the oyster is different.

Extensions / Obtain oyster or clam larvae from a hatchery (late spring, best time). Observe larvae under a microscope. For a more elaborate design follow larvae through time. Compare the life cycle of the oyster to other marine animals (ie blue fish, blue crabs, eels, whelks, horseshoe crabs).

Participate in **Project PORTS** *oyster restoration project. Students construct shell bags, which are deployed in the bay, supplying a clean hard surface for oyster larvae to settle upon.*

Figure 1.

Life Cycle of an Oyster

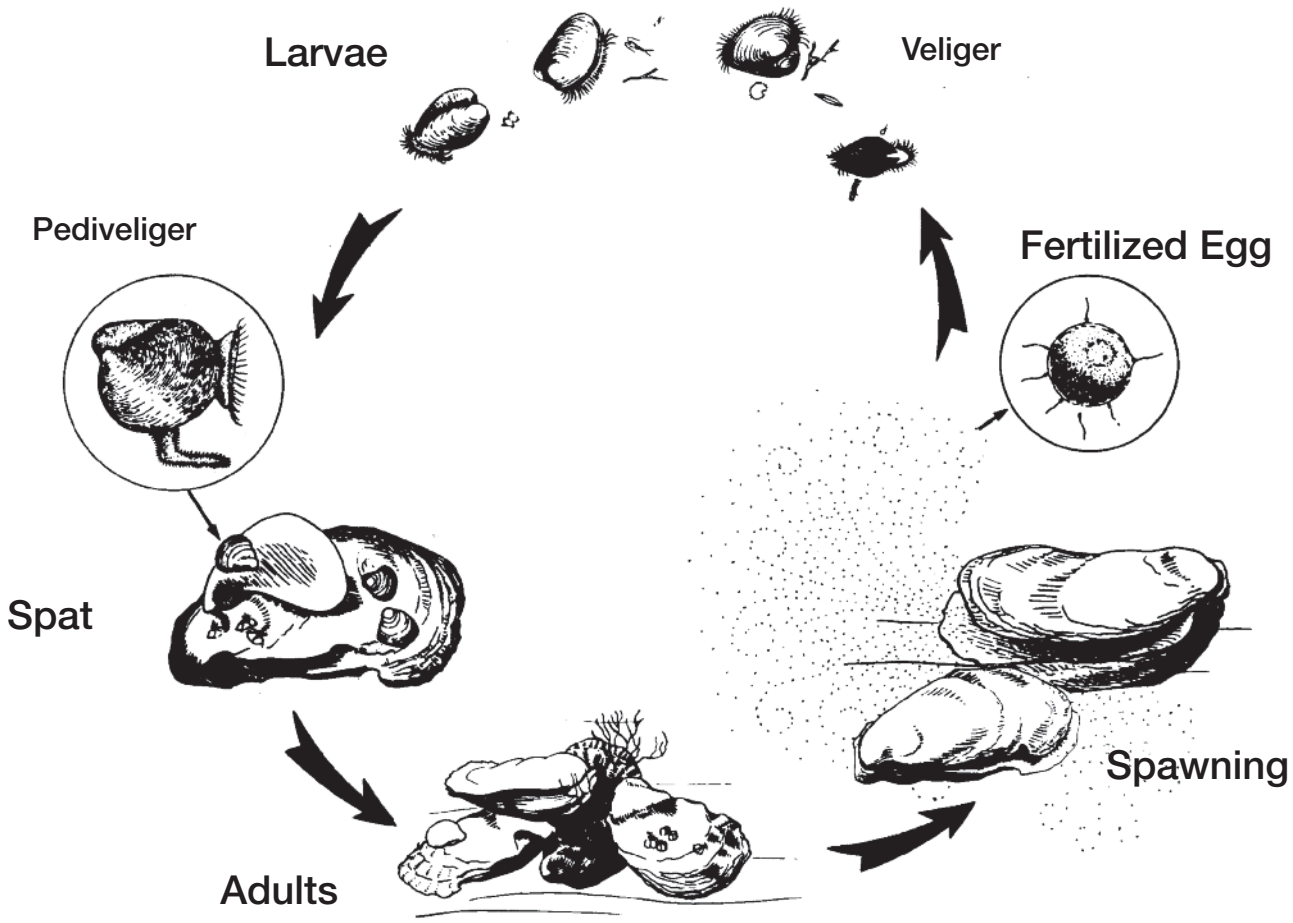

Figure 1. Life Cycle of the oyster. Modified drawing, courtesy of the Virgina Institute of Marine Science.