

WORK LIST FOR Lesson 10 "Clam: It's a Shore Thing"

Session 2

Use as many of these terms as you have mastered so far when you "teach" your teacher.

Objectives/goals: After the completion of the activities, the students will:

- identify the main parts of a clam
- recognize the parts of a clam's shell
- have an understanding of the life cycle of a clam
- observe how a clam uses its foot to move
- observe how a clam uses its siphons
- become familiar with the clam's habitat

Keywords:

- Session 1 - External Anatomy: anterior end, excurrent siphon, foot, growth rings, hinge ligament, incurrent siphon, left valve (shell), posterior end, stress ring, umbo
- Session 2 – Life Cycle: adult clam, egg, fertilization, juvenile clam, late pediveliger, spat, sperm, trocophore, early veliger
- Session 3 - Internal Anatomy and Digestive System: anterior adductor muscle, anus, crystalline style, digestive gland, digestive system, esophagus, excretory pore, excurrent siphon, foot (pedal), gill, gonad, heart, incurrent siphon, labial palp (s), intestine, mantle, mouth, nephridia (excretory gland), posterior adductor muscle, rectum, shell, stomach, style sac, visceral mass
- Additional general terms: anterior adductor muscle scar, anterior scar elongate, bivalve, chondrophore, dorsal, hinge line adductor scars, muscle scar, pallial line, periostracum, plankton, posterior adductor muscle scar, straiæ, spatulali, umbones, ventral

Key Questions

What does the clam do when it is placed in the sand? in the water?

What parts of the clam can you see? Can you see the foot? the siphons?

What is the purpose of the incurrent siphon? excurrent siphon?

How does the clam use its foot to move?

How many clam parts can you name?

What happens when you touch the clam?

Additional information

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Explain that there are two siphons in a clam that act like straws.

One siphon called the incurrent siphon draws water containing food into the clam's body. Explain that the water has plankton in it, which is very small microscopic plant life that clams eat.

The other siphon called the excurrent siphon expels waste and during spawning when the temperature rises to approximately 10° Celsius (50° F), expels eggs or sperm. Explain that there are male and female clams, and that the fertilization of an egg occurs outside of the clam's body. Tell them that the natural spawning for clams in Maine occurs usually in May.

The clam may attempt to burrow into the sand using its foot, which is light colored. The foot changes shape as it attempts to burrow into the sand. The clam will press its foot into the sand, then blood enters the foot and causes it to swell and form a hatchet shaped anchor. The foot muscles will then contract and pull the clam down into the sand. This is the way it moves into the sand.

As water covers the clam, it may extend its black siphon up into the salt water.

- Important Life Cycle stages:

Sperm and **eggs** are released from the male and female clams (see life cycle diagram). Once sperm and eggs are released, they float around in the water. If they are able to come in contact with each other, fertilization occurs and cell division starts. The **trocophore** develops within 6 to 12 hours. Discuss the parts seen in the diagram. Within the next 24 to 36 hours, the **veliger larva** develops. In this stage, the larvae floats through the water and feeds on phytoplankton. In the wild, **veligers** are eaten by many fish species at this time. The length of this stage varies in the research from 10 days to 6 weeks, depending on the water temperature. Clams growing in a hatchery have controlled water temperatures, and their growth is more constant. As the **veliger** stage progresses, a foot is developed which the clam will use for burrowing. The **byssal gland**, which secretes a sticky thread called the **byssus** is used by the clam to anchor itself to the sand. The young clam can move from place to place attaching itself by the byssus, and testing the sand with its foot, until it finds a location that seems suitable. Then it will use its foot to burrow into the sand where it usually remains.

When it becomes an adult, in 1 to 2 years, the cycle of sperm and egg will begin again.

(Abraham, Barbara J., and Perian L. Dillon. "Species Profiles: Life Histories and Environmental Requirements of Coastal Fishes and Invertebrates (Mid-Atlantic)". Fish and Wildlife Service U.S. Department of the Interior. (1986) 3-5.Print.