

Lesson 5: Clam Identification

Subject

Clam Identification

Objectives

The students will:

- Recognize patterns in order to identify clam species.

Materials

- Clam ID kits (one per table group)
 - Each kit contains 3 of each species (Horse Clam, Eastern Softshell, Cockle, Manila, Native Littleneck, Butter Clam, Macoma)
- Calipers (at least one per table group)
- Clam ID guides (one per student)
- [Clam ID powerpoint](#) (and projector)

Size/setting/duration

Full class in table groups/indoors/45 minutes

Background

This lesson is a key way to introduce the students to clam identification before their clam survey at Birch Bay State Park.

Procedure

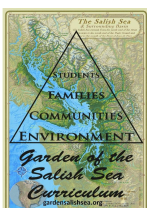
- Initial shell sort (10 minutes)
 - In groups of about 5 have students observe the sets of shells. Begin by having the groups work together to sort the shells by ones they think are similar.
 - Walk around with the groups and ask students what they are sorting the shells by and suggest some of the other ideas for how to organize the shells.
- Ask students how they sorted the shells (5 minutes)
- Once the whole class has organized the shells display this [powerpoint](#) on the screen and discuss the anatomy of shells. With each shell pattern, ask students to hold up one shell that has this characteristic.
- Shell Sort 2



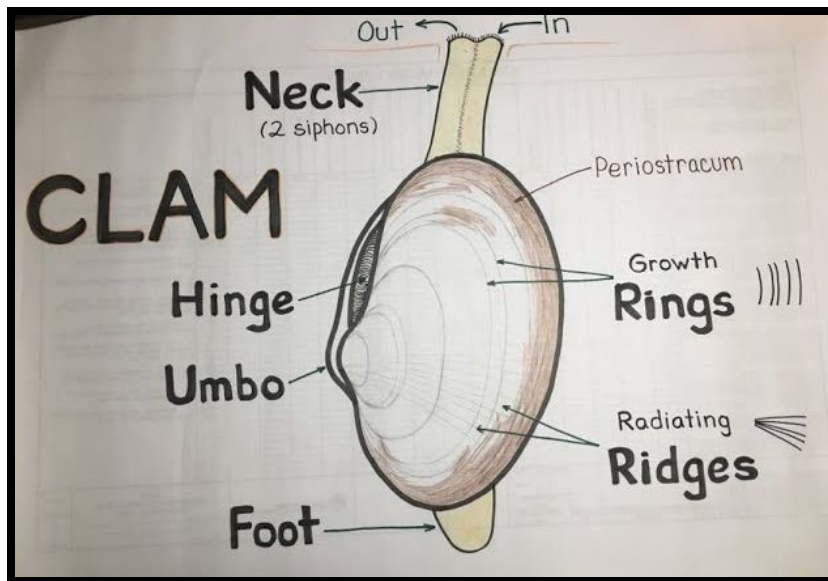
- After discussing the different shell characteristics, give students a chance to reorganize the shells using these patterns and use this time to point out to individual groups if there are any of the characteristics that they may be missing in their sorting.
- Shell ID
 - Once the class feels confident in their shell pattern recognition have each student choose one shell to observe and identify and handout the Shell ID worksheet.
 - Using the shellfish ID cards have students try to identify their shells, diagram them and label the dimensions of the shells.
 - Explain to students that these shells that they have been working with are the exoskeletons of the shellfish that are essential for them to continue living. What would happen if they didn't have their skeleton?
- Shellfish are sensitive indicator populations which are affected by multiple stressors and they need a balanced system to thrive. There are many things that can upset the balance such as:
 - Overharvesting is when we collect something faster than it can grow so the population decreases. This has happened with our native oysters, the [olympia oyster](#).
 - Ocean acidification affects shellfish ability to make and grow their shells. Today we measured shell thickness. Shellfish with thick strong shells are less likely to be damaged or eaten. When the ocean chemistry is out of balance it can leave the shellfish vulnerable.
 - Fecal coliform

Next Generation Science Standards

Performance Expectations		
Scientific and Engineering Practices	Disciplinary Core Ideas	Cross-cutting Concepts
Constructing explanations and designing solutions Developing and using models Engaging in argument from evidence	LS1.A: Structure and Function LS1.D: Information Processing ET S1.B: Developing possible solutions	Patterns Structure and Function Influence of Engineering, Technology, and Science on Society and the Natural World System and System Models



Graphics & Worksheet



Clam Identification Key

Adapted from King County Beach Assessment program

Anatomy Terms

- Umbo
- Hinge
- Siphon
- Periostracum

Things to Note:

Shape:

Round vs Oval/Elliptical vs Triangular

Patterns:

Concentric Rings vs Radiating Ridges

Color

Can you see a leathery hinge connecting the shells? (Beside the Umbo, the leathery hinge is visible outside of the live clam or closed clam shell.)

If no, go on to “A”

If yes, skip to “B”



A. No leathery hinge visible:



(hinge is hidden inside)

1. Outlines of both shells are mirror images of each other, flaps are present on the tips of siphons. It is a **Horse Clam**.



[two horse clam species: “Horseneck” (*Tresus nuttallii*) or “Fat Gaper” (*Tresus capax*). They are often *misnamed* “geoduck” when large, but these are *not* geoducks!]

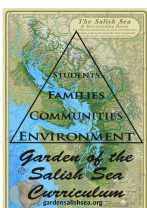
2. Shells are not mirror images, one shell overlaps onto the other at the top; no flaps are present on the tips of siphons. The shell has elliptical shape. It is an **Eastern Softshell Clam**.



Both Eastern softshell and horse clams often have a brown-black papery skin (periostracum), on outer (newer) edge of shell, wearing off over time. When small, the shells may seem thin and fragile, when large (as large as an adult’s hand!) the shells can get thick and robust.

B. Yes, leathery hinge visible on outside of shell **(next page)**
(clam key continued, page 2)

B. Yes, leathery hinge visible on outside of shell



1. Shell is half circular, half like triangle, pointed on one end. Often has brown or black skin-like periostracum, which may flake off older parts of shell.
 - a. Has a more blunt point. Reddish-brown periostracum may cover whole shell or where flaking off, shell may look purplish-white. It is a **varnish clam** (or “purple varnish clam”, “savory clam”)
 - b. Triangular edge often more pointed, sometimes tip is curved up. Grayish Periostracum may be worn off or with just a little around edge... It is a **Macoma** (includes many species: “bent-nose”, “pointed”/“polluted”, sand, and Baltic macomas)



2. Shell is **mostly circular or oval, rather thick and strong**. Rings or ribs are easily seen on the shells. No periostracum

- a. Shell has **heavy ribs**, shell is heart-shaped when viewed from on end. It is a **Cockle**. (aka. “heart-cockle”)
- b. **Rings and ribs** are equally visible. Shells may have patterns of color



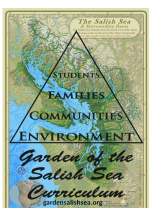
- (1) Shell is elongated, oddly oval. there is a smooth, flattish groove where shells meet near the umbo (non-hinged side of umbo). It is a **Manila clam**. (also called “Japanese littleneck”)



- (2) Shell is rounded, there is no pit near the umbo – more of a ridge that continues all the way to umbo. It is a **native littleneck clam**



3. thick oval shell, rounded on both ends, has faint rings. Plain chalky white or stained gray from mud. Live clams have a noticeably strong leathery hinge. It is a **butter clam**.



Classroom Clam Shell Sort

Sort out the shells given to your group. Divide them up by common characteristics. In the space below, for each clam, record the attributes, and write a brief description with a diagram of the clam. Be sure to label any identifying features.

Description:	Drawing of Shell
Color: _____ Shape: _____ Markings: _____ Length: _____ Width: _____ Type of Clam: _____ _____	
Color: _____ Shape: _____ Markings: _____ Length: _____ Width: _____ Type of Clam: _____ _____	

