

OIMB GK12 CURRICULUM

3rd Grade

45 minutes

OYSTER BED ECOLOGY – VIRTUAL EXPERIMENT

Oregon Science Content Standards:

- 3.1 Structure and Function: Living and non-living things vary in their characteristics and properties.
- 3.1L.1 Compare and contrast the characteristics of offspring and parents.
- 3.2 Interaction and Change: Living and non-living things interact with energy and forces.
- 3.2L.1 Compare and contrast the life cycles of plants and animals.
- 3.3 Scientific Inquiry: Scientific inquiry is a process used to explore the natural world using evidence from observations and investigations.
- 3.3S.1 Plan a simple investigation based on a testable question, match measuring tools to their uses, and collect and record data from a scientific investigation.
- 3.3S.2 Use the data collected from a scientific investigation to explain the results and draw conclusions.

Ocean Literacy Principles:

1. The Earth has one big ocean with many features.
5. The ocean supports a great diversity of life and ecosystems.
6. The ocean and humans are inextricably interconnected.

Goals:

- For students to practice collecting and graphing data to answer a question.
- To review or introduce the mathematical concepts of median, mode, and range.

Concepts:

- Many people make a living by growing and collecting animals that live in the sea.
- Animals may grow better in some habitats than others.
- Science experiments can be used to help manage resource use.
- Oysters are benthic filter feeders that provide structure in an estuary.

Materials:

- 25 Oyster shell pairs (5 very big, 5 big, 5 medium, 5 small, 5 very small)
- 5 Large Ziploc-type bags
- Masking tape (or labels)
- Rubber bands to hold pairs of oyster shells together
- Worksheets for each student

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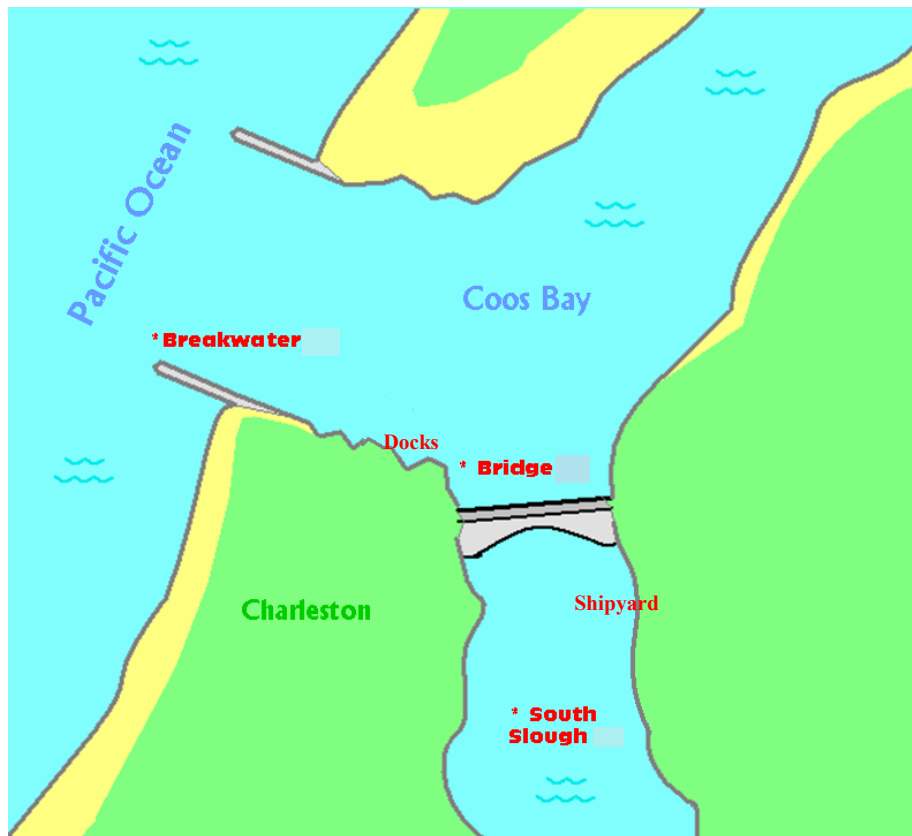
- Lesson Map of Coos Bay
- Overheads or projections of map and worksheets

Prep:

Combine oyster shells in five bags so you have a bag of five very big shells (1), five big shells (2), five medium shells (3), five small shells (4) and five very small shells (5). It is okay (good, in fact) to have a few off-sized shells in each bag—it's the most common size that matters. Label the bags Breakwater, Dock, Bridge, Shipyard, and South Slough, respectively.

Lesson Plan:

1. Begin a discussion with the class about where adult oysters live (on rocks and pilings underwater) and what they eat (plankton). Explain that other organisms (e.g. barnacles) sometimes grow on the oyster shells—animals growing on animals. Remind the students that baby oysters are larvae in the water column.
2. Have students make oysters with their hands (*cup hands together*) and ask them what oysters do when the tide goes out (*seal hands tightly shut*) and when the tide comes in (*open hands slightly—oysters feed by taking in water and filtering tiny particles of food (plankton) out of it, and then expelling the filtered water: filter feeders*)



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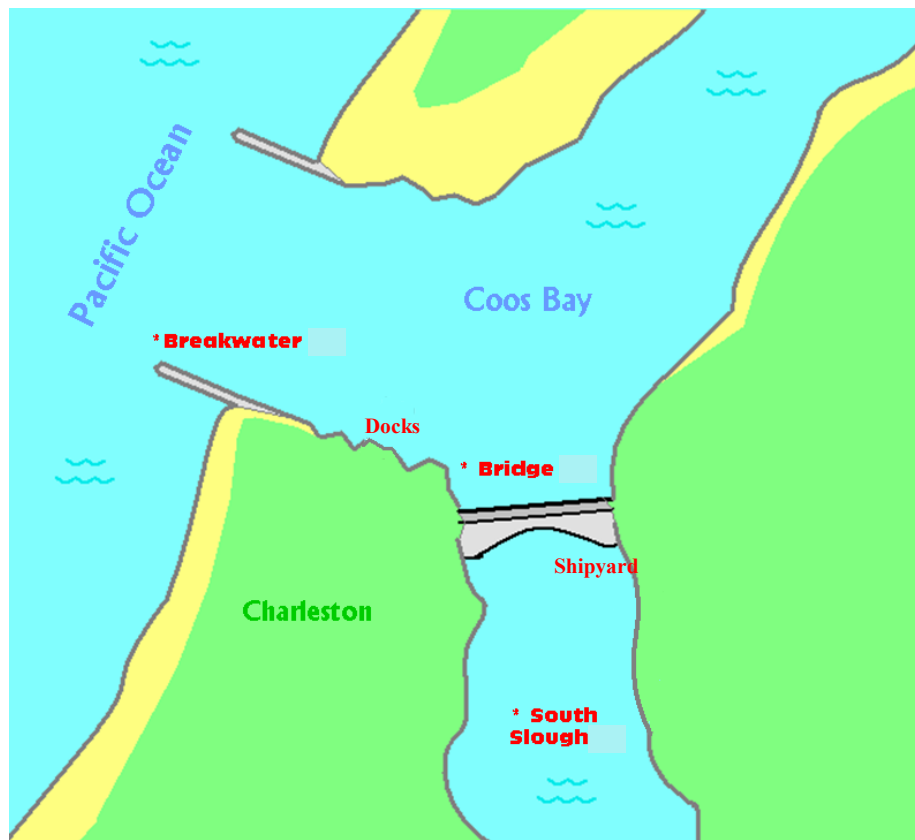
3. Show students the map of Coos Bay, and ask where they think the biggest oysters will grow, and why. Oyster farmers in Coos Bay want to know this too! The students can now be scientists and set up an experiment that will help the farmers answer this question. Explain that last year, “virtual” scientists placed baby oysters at five places in Coos Bay, and now the class must measure the adult oysters to see which grew the most.
4. Explain the worksheet and that students should use a ruler (in cm) to measure the oysters in their group by placing the pointy end at the zero mark and measuring to the farthest end of their oyster. Demonstrate.
5. Divide class into 5 groups and hand out one bag of oysters per group (there should be five oysters in every bag). Help groups measure all of the oysters in their bag and write these measurements down on their worksheet from smallest to largest.
6. Explain Mean, Mode, and Range one at a time and help each group figure out their values.
7. Once the first page of the worksheet is done, explain to the class that they will draw a picture to represent their observations in the form of a bar graph.
8. The students will create a sideways bar graph on the second page of the worksheet. Have the students add a title, and have each group share their mean oyster length and add these to the graph.
9. Results: discuss with the class which sites had the highest growth and which had the lowest (highest by the breakwater, lowest by South Slough). Can the students find a trend between the locations? (The closer the site is to the Pacific Ocean, the larger the oysters.) Can anyone guess why? (There is more plankton nearer the ocean.) Therefore, the best place to harvest oysters is close to the sea (the triangle in Winchester Bay, for instance).
10. Discuss with the class why we use bar graphs (an easy way to visualize data and patterns). Add a mystery set of oysters onto your graph and see if they can figure out just by looking at the graph where those oysters might come from.

Assessment: Discussion and adding the mystery sample to the graph.

GK12 Fellows: Ben Grupe, Tracey Smart, Erin Morgan and Greg Gavelis

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Coos Bay, Oregon



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BREAKWATER																				
DOCK																				
BRIDGE																				
SHIP YARD																				
SOUTH SLOUGH																				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17			
Median Oyster Length (cm)																				