

Tangled in the Food Web

Subject

The interdependence of the Intertidal Food Web

Materials/Teacher Preparation

- Plankton tow and sample
- Dropper
- Microscope with camera and computer
- Slides and slide covers
- Printed and laminated organism cards (included in graphics)
- Ball of yarn or string

Size/setting/duration

Half of class/indoors/30 minutes

Background

The intertidal and marine environment has a complex food chain which creates interdependent relationships. Impacts on one species can have widespread effects on the rest of the ecosystem.

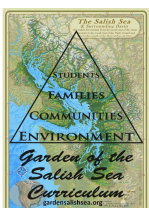
Overview

Students will:

- Use a model to understand the interdependent relationships in the natural world and how energy transfers through the food chain.

Procedure

- Show the class a sample of water from a plankton tow in a clear cup. Ask students what they think might be in it. Show students the plankton tow, explaining how the very fine mesh catches organisms that are often too small to see with our eyes.
- Use the dropper to take a small sample from the plankton tow and prepare a slide for the microscope. Using the microscope with a camera and computer, show students the microscopic organisms within the seawater.
 - Either in the sample or using laminated photographs, show students examples of phytoplankton. Explain that these are some more examples of microscopic organisms that are often found in seawater. Phytoplankton are green because, just like plants, they create their own food from sunlight.



Phytoplankton are also on the bottom of the food chain like plants. Students can use the worksheet to draw phytoplankton.

- Gather the students into a circle and give each student an organism card. Hand the string to the student holding the phytoplankton card and ask them what they might be eaten by and repeat with the next student until the string is connected to all students. Run students through the following scenarios to see the impacts on the food web, shuffle the organism cards, and repeat.
 - Ocean Acidification: Remind students about the life cycle lesson and how ocean acidification makes it hard for oysters to build their shells. This imbalance in water chemistry can affect species survival. Have the student holding the oyster drop their card. All organisms that are connected to the web after the oyster also drop their card.
 - Sea Star Wasting Syndrome: Recently in the Pacific Northwest, many sea stars have gotten sick from infections from microscopic organisms like viruses and died. This is becoming more of a problem as the ecosystem is warming since viruses grow faster in warmer water. Have the student holding the sea star drop their card. All organisms that are connected to the web after the sea star also drop their card.

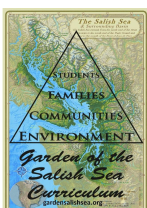
Next Generation Science Standards

Performance Expectations		
5-LS2-1: Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.		
Scientific and Engineering Practices	Disciplinary Core Ideas	Cross-cutting Concepts
Developing and Using Models Science models, laws, mechanisms, and theories explain natural phenomena	LS2.A Interdependent Relationships in Ecosystems LS2.B Cycles of Matter and Energy Transfer in Ecosystems	Systems and System Models Science Addresses Questions About the Natural and Material World

Other Standards

Standard 1: Ecological, Social, and Economic Systems

Standard 2: The Natural and Built Environment



Graphics

[Eat or Be Eaten Cards](#)

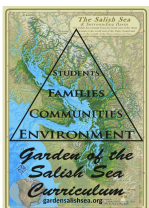
Vocabulary

- Microscopic
- Plankton
- Phytoplankton
- Zooplankton

Extension

- Have students collect a plankton tow
- Have students use microscopes and draw organisms
- Have students do a close reading about [ocean acidification effects on oysters](#) or [sea star wasting syndrome](#).

Worksheet

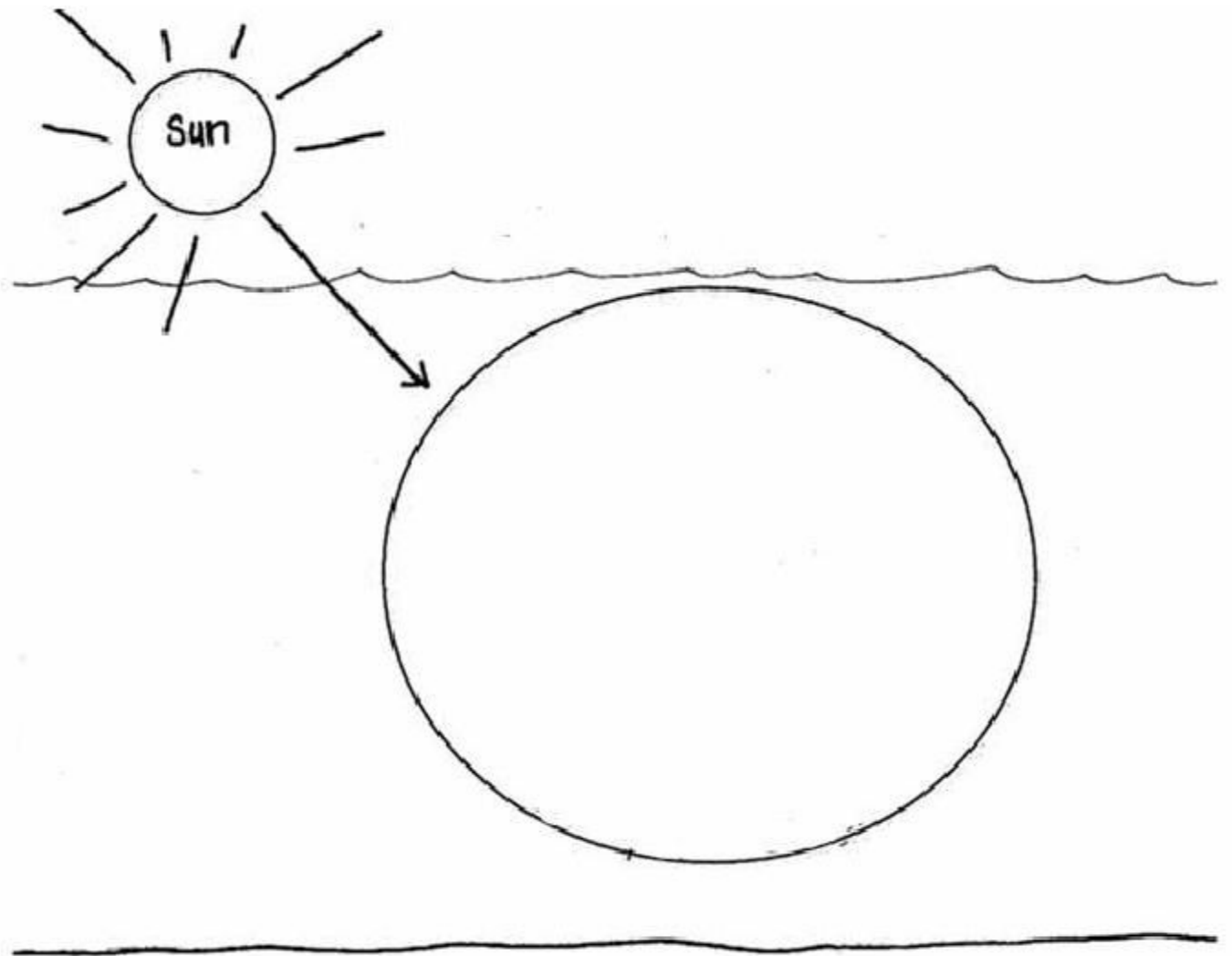


Food Web Foundations

Look through the microscope and at the pictures of microscopic organisms at your station.

What do you see? _____

Make a scientific drawing of your microscopic plankton below.



Microscopic Plankton Enlarged

Connection: What microscopic organisms might an oyster eat? _____

