

LESSON 3

Getting Food

Grades 4 - 7

Objectives

- To describe how intertidal creatures collect or capture food.
- To identify animals as grazers, predators, filter feeders or scavengers.
- To describe and draw feeding structures.

Materials

Seashore cards, pictures of sea creatures, worksheet from *Beside the Sea* page 43, yarn to connect to other animals in different groups, sieve, whale photo, whale baleen

Concepts

- Filter feeders strain plankton from seawater
- Grazers feed on seaweed and diatoms on rocky surfaces
- Predators capture and kill animals for food
- Scavengers eat almost any food they can find
- Some animals can feed in more than one way. For example, they can be both a predator and scavenger

Activities

1. How tides affect feeding in the intertidal.

A. When is it dinnertime at the seashore? High tide, low tide or all the time?

A: High tide because food is available then and creatures don't have to worry about drying out. At low tide, they are exposed and can dry out.

B. What do intertidal creatures do at low tide?

A: Hide from the sun and shore predators such as seagulls, shorebirds, eagles and river otters.

C. How does intertidal habitat change when the tide comes in?

A: Water covers the creatures and brings in food as it comes in.

D. Does the tide always come in at the same time?

A: No. Where we live, there are two high tides each day. Everyday, the tide moves ahead by about an hour.

2. Filter feeders

A. What is a filter feeder?

A. They are creatures that filter food from seawater, such as plankton and small fish. They can be as small as barnacles and as big as whales!

B. How do filter feeders catch plankton?

A. They sieve plankton from the water. Different creatures have different structures to filter plankton from the water.

C. Examples of filter feeders.

Clams inhale seawater through one part of their siphon (neck), filter plankton food out of the water to eat, then send the filtered water back out the other part of the siphon.

Barnacles have 6 feather-like legs they use to kick plankton food into their mouths.

Herring strain through the water with their mouths open, sifting out plankton to eat.

Baleen whales strain water through their baleen and eat the food that is caught behind (like straining spaghetti).

Pass around some whale baleen and show a photo of a grey whale. Grey whales scoop up mouthfuls of mud and sand from the bottom of the ocean and sift food out using their baleen. Show pictures of clams and barnacles, showing how food is captured by each.

3. Grazers

A. What are grazers?

A. Creatures that eat plants. On land, they eat grass, small vegetation and leaves. In the sea, they eat sea grasses, diatoms and seaweeds.

B. Name some land animals who are grazers.

A: cow, elephant, deer, elk, rabbits, etc

C. Name some sea animals who are grazers.

A. Limpets, chitons, turban snails, abalone, sea urchins, etc

D. How do grazers in the sea eat?

A. Many have a file-like tongue called a radula that they use to scrape diatoms and small algae from rock surfaces. Others have jaw parts that allow them to scrape or bite seaweed.

E. How can you tell if there are diatoms on the beach?

A. Although each single diatom is microscopic and cannot be seen with the naked eye, when there are lots of diatoms growing, they create a thin green to brown layer that covers rocks and seaweed at the seashore. That's why rocks are sometimes very slippery. Diatoms provide food for many sea grazers.

F. Examples of grazers.

Limpets, chitons, turban snails and abalone are grazers that can often be found at low tide. They are all marine snails that have a radula to allow them to scrape algae off rocky surfaces.

Sea urchins are grazers that feed mainly on seaweed. They have 5 movable teeth on their underside that come together like a powerful scraper. Their jaws, called an Aristotle's lantern, are star shaped so when they graze on kelp, they can leave behind star-shaped bites! *Show photo of urchin jaw and bites, and of other grazers and their radula.*

4. Predators

A. What is a predator?

A: A creature that captures other animals to eat. They eat other living animals and are also called meat eaters or carnivores.

B. What are animals that predators eat called?

A: They are the hunted, or prey, of the predator.

C. Examples of Predators

Crabs use their claws as can openers to

capture and open barnacle, clams and mussels.

Sea stars eat clams by using their tube feet to pry clams open (like a tug of war) and then they take their stomachs out to lunch, digesting the clam from the inside!

Octopus use many suckered arms to catch prey like crabs, clams and abalone, then eat them with their sharp parrot beak-like jaws.

Anemones open like flowers and use poisonous darts in their tentacles to sting and paralyse prey such as plankton, snails, small shrimps and fish. Their tentacles fold over the prey and curl in, and then the anemone closes up like a drawstring bag, bringing its prey close to be digested.

Moon Snail and Wrinkled Whelk use their special tongue called a radula and produce acid, to drill holes in mussels, clams and oysters.

Spring and coho salmon use swimming speed and toothed jaws to catch prey such as sand lance and herring.

Sculpins gobble up barnacles, tiny crabs, and snails with their powerful jaws.

Seagulls pry mussels, clams, and snails off the rocks, fly with them in the air, then drop them to the ground, smashing them open to eat.

5. Scavengers

A. What are scavengers?

A. They are creatures that eat dead or dying plants and animals. They are part of the clean up crew.

B. Examples of scavengers.

Beachhoppers eat decaying seaweed.

Hagfish find dead animals at the bottom of the sea, such as whale carcasses, and eat them from the inside out.

Shrimp eat dead animals and plants that are found at the bottom of the sea.

Crabs are part time scavengers that sometimes feed on dead fish.

Eagles and Seagulls are also part time scavengers that feed on dead and dying creatures such as salmon, herring, sea stars, etc

Show pictures of different scavengers.

6. Some animals are both predators and scavengers.

A. Why would an animal want to be both a predator and scavenger?

A: They will eat dead animals because it is less work than having to kill something, but when there are no dead animals to be found, they can also kill a live animal to eat.

B. Can you name some animals that are both predator and scavenger?

A. Crabs, bald eagles, seagulls, sculpins, etc

7. Getting Food

A. Dramatize each animal and how it gets food. Give students cards and have them group themselves into the 4 types of feeders: filter feeders, grazers, predators and scavengers. Ask them what they would like to eat today. Plankton soup? Fresh live crab?

B. Give each student a square piece of paper. Have students fold the square in half and then in half again so that the paper is divided into four. Label each square: Square 1 is predator, Square 2 is scavenger, Square 3 is grazer, and Square 4 is filter feeder. Students will write the name of matching creatures in the appropriate square and, if there is time, draw a picture of their favourite one. For students in kindergarten and grade 1, have them draw a matching creature in each square. They may also want to act out each creature.

Conclusion

Review what creatures from each group eat and how they eat.

Students can complete the [Beside the Sea](#) Worksheet from page 43.

Go over the answers together.

Extension

Give each student a creature card and connect the creatures that eat each other together with yarn to lead into the food chains.

Examples of food chains are:

- Seagull – limpet – seaweed
- Octopus – crab – moon snail – clam – phytoplankton – sunlight
- Anemone – small fish – zooplankton – phytoplankton – sunlight
- Sea star – abalone – algae – sunlight
- Orca – seal – salmon – herring – plankton
- Sea otter – sea urchin – algae - sunlight

Adapted with permission from: *Beside the Sea*, by K. Francis and G.S. Jamieson.