



LESSON 4

Food Chains and Food Webs

Kindergarten to Grade 3

Objectives

- To describe intertidal organisms in terms of their roles as part of food chains and food webs.
- To describe ways in which species interact with each other.

Materials

Sun card, animal and plant cards, arrow cards, yarn

Concepts

- The sun is the source of energy. Plankton is the base of marine food chains and webs.
- If an element of a food web is disturbed, it affects the rest of the food web.
- Food energy flows from one living creature to another in a series of steps called a food chain.
- The difference between a food chain and a food web. Few animals rely on a single source of food so food chains form food webs. Food webs are part of every ecosystem.

Activities

1. Read introductory book

Read *The Sea that Feeds Us*, by R. Baldwin and Don Dyer.

Discuss what food chains and food webs are. Discuss why phytoplankton is so important to marine food chains.

2. Review what some intertidal creatures eat and how they eat.

A. Show pictures and review examples of filter feeders, grazers, predators and scavengers.

B. Review the concept of predator and prey with examples, drawing an arrow from the prey to the predator to show the transfer of food energy.

Examples include: seagulls eating clams, sea urchins eating kelp, salmon eating herring, orcas eating seals, sea stars eating abalone, etc.

C. Does the way an animal looks give you a hint about what it eats? Examples:

- Crabs have strong claws for capturing and breaking into prey with hard shells like clams and snails.
- Clams have a siphon to allow them to inhale and exhale water, filtering plankton from the water.
- Sea anemones have tentacles with “harpoons” to allow them to capture prey.
- Limpets, abalone and chitons have a radula to help them scrape algae of rocky surfaces.
- Shrimp do not have claw or pinchers to catch prey so they must eat things that are already dead and cannot move away.
- Barnacles and mussels are stuck on rocks so they must be able to get food without moving (filter feed).

3. Extension activity from Lesson 3 to introduce food chains.

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

Examples of food chains are:

- Seaweed – limpet – seagull
- Sunlight – phytoplankton – clam – moon snail – crab - octopus
- Sunlight – algae – abalone- sea star
- Sunlight - phytoplankton – zooplankton – small fish – anemone
- Plankton– herring – salmon – seal - orca
- Sunlight -algae - sea urchin - sea otter

4. Introduce types of animals based on their role in food chains.

- **Producers** are living things that can make their own food. Plants are the most important producers in the marine food web, trapping energy from the sun and storing it in the form of sugars.

Phytoplankton and seaweed are producers.

- **Consumers** are living things that get energy by eating other living things (plants and animals). Filter feeders, grazers, predators and scavengers are all consumers.
- **Decomposers** are consumers that eat dead plants and animals, turning them into food energy (nutrients) back into the ocean bottom and the water. Bacteria and fungi are decomposers.

5. Food Webs

Students sit in a circle with an animal card in front of them. Animal cards can be made with a picture of an animal on one side and its habitat, type of food it eats, etc on the other side. Seashore animal cards can also be purchased from: www.kingfisherpress.ca

One student represents the sun and a food web is created with each student being a part of it. Yarn is given to the student representing the sun. It is then tossed to the person with the phytoplankton card. More different coloured balls of yarn are used if one animal is connected to more than another. Students continue to hold onto the yarn so that the yarn makes a colourful web.

A. Ask students why some students have more strands of yarn than others.

B. Have one person gently tug on the yarn and see how many others feel it.

C. What happens if one person lets go of the yarn?

6. The Food Chain Song

Sing to the tune of ‘Farmer in the Dell’. The song can be sung while students are making the web or afterwards. (For kindergarten, grade 1 and 2)

*The sun shines down. (repeat)
Sun gives energy to phytoplankton and
phytoplankton makes food.*

*Zooplankton eats it. (repeat)
Zooplankton eats the phytoplankton.
Yes they do.*

*A grey whale comes along. (repeat)
He eats the zooplankton when he comes along.*

*Nobody eats the whale. (repeat)
He’s at the top of the food chain so no one eats
the whale.*

*When the whale dies (repeat)
He gives nutrients back to the sea.*

*Plants and animals absorb the whale. (repeat)
So the whale feeds a lot of things after he’s
dead.*

*It starts with the sun. (repeat)
The food chain always starts, starts with the
sun.*

Food chains make food webs (repeat)

Conclusion

- Review food webs by having students draw their own food chains and webs.
- Refer to animal cards and reference books to clarify what animals eat.