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FishOn! Lesson Plan

Food Webs

Overview:
Students will be introduced to the concept of food webs in aquatic ecosystems and participate in a hands-on food web construction activity to deepen understanding.

Students will be able to:

- Define key terms related to aquatic food webs.
- Explain the concept of interdependence and energy transfer within an aquatic ecosystem.
- Construct a simple aquatic food web and describe the relationship between organisms.

Next Generation Science Standards

Practices

- Constructing Explanations

Core Ideas

- LS2: Ecosystems: Interactions, Energy, and Dynamics
- ESS2: Earth's Systems

Crosscutting Concepts

- Energy and Matter: Flows, Cycles, and Conservation

Procedure:

Step 1: Ask students for examples of what an ecosystem is before introducing the following question.

  - How are living things connected in an ecosystem?

Briefly explain the concept of a **food chain**, highlighting the linear sequence of who eats whom in a particular ecosystem. Use simple examples like a grasshopper eating plants, a frog eating the grasshopper, and so on.

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Think-Pair-Share: Have students work in pairs or small group to come up with their own example of a food chain that has at least four organisms. Allow students to share with the class.

Step 2: Scientists use specific labels for organisms in an ecosystem to tell us how that organism gets its energy. Define the following key terms for the class:

Producer: Producers are organisms that are able to make their own food for energy by using sunlight, air, and water. Plants are producers.

Consumer: Consumers must eat something else, like plants or other animals, to get energy.

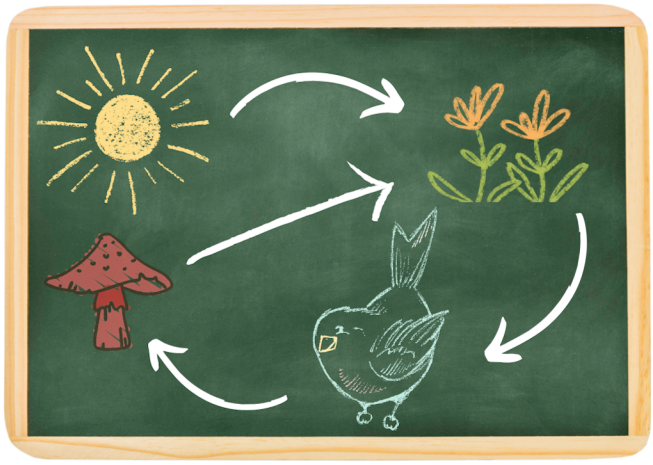
Decomposer: Decomposers act like nature's clean up crew and get their energy from decaying matter. They break down natural materials into nutrients that producers can use.

Herbivore: A type of consumer with a diet of plants.

Carnivore: A type of consumer with a diet of meat.

Omnivore: A type of consumer with a diet of both plants and meat.

Check for understanding: Which labels could be applied to human beings?



Explain that all things in an ecosystem are connected by the flow of energy. The sun provides energy to producers. Producers provide energy to consumers. Decaying matter provides energy to decomposers. Decomposers allow producers to access more nutrients. Then the cycle starts again!

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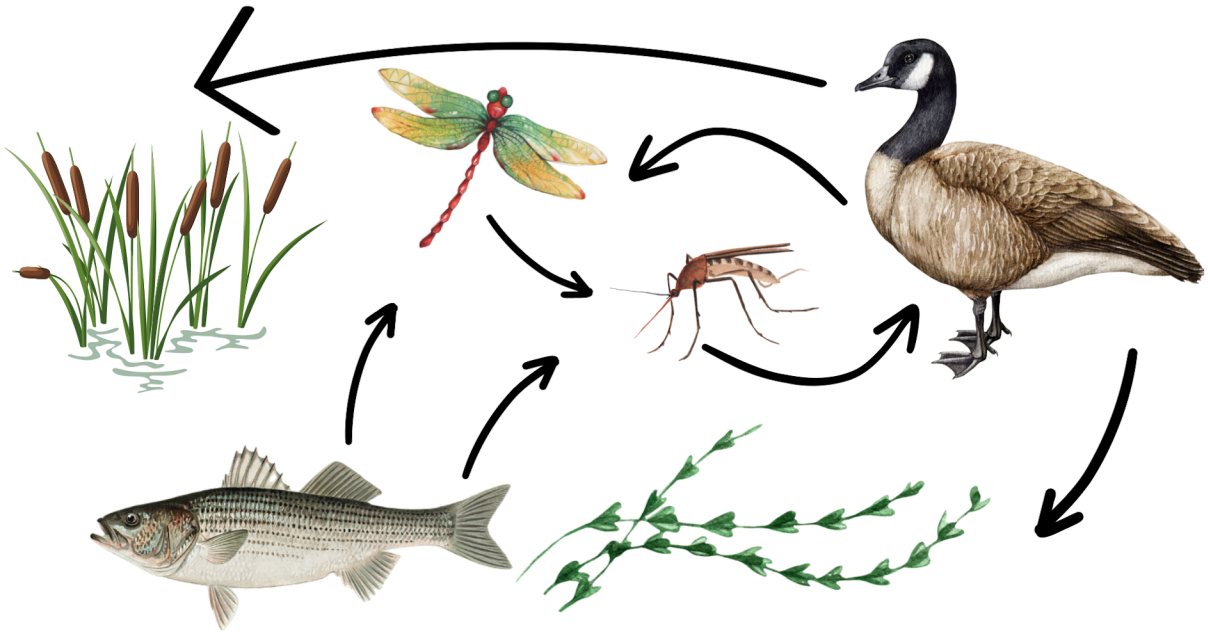
Have students return to the food chains they created in step one. Ask students to work in their small groups to label each organism in their chain as a producer, consumer, or decomposer, then to label the consumers as carnivores, herbivores, or omnivores. Allow students to share with the class.

Step 3: Let students know that for the rest of the lesson you will be focusing on aquatic ecosystems and their **food webs**. A **food web** is a combination of multiple **food chains** in an ecosystem. Food webs show the **interdependence** of organisms. Changes to one species can affect other species.

Emphasize that aquatic ecosystems include oceans, rivers, lakes, and ponds, and they play a crucial role in supporting a vast array of life.

Ask students to come up with examples of producers, consumers, and decomposers in an aquatic habitat. Encourage students to think not only about what is in the water, but also what is directly around it. For example, geese, dragonflies, and cattails should be considered part of a pond's ecosystem.



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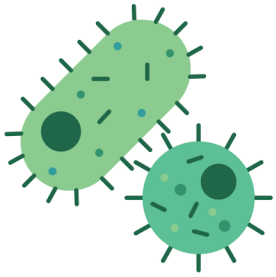
FishOn! Curriculum

Food Webs

Step 4: Split the class into small groups. Assign each group **lake, river,** or **ocean.** There can be multiple groups assigned to the same ecosystem. Hand out one set of student activity cards per group. Have the students work together to construct an appropriate food web by cutting out and arranging the cards on a larger piece of paper or poster board, then using pencil to draw lines between species that are interdependent. Once students are satisfied with their food web, they can paste down the cards. Have students label each organism as a producer, consumer, or decomposer.

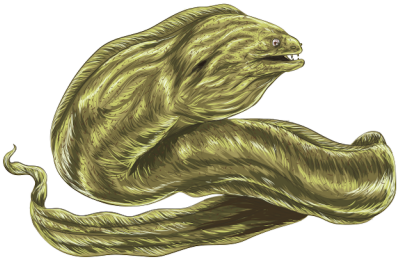
To wrap up, have students answer the questions on the student worksheet alone or in groups. Groups may also present their food webs to the class.

Ocean Cards



Bacteria Eats decaying organic matter

Parrotfish Eats algae

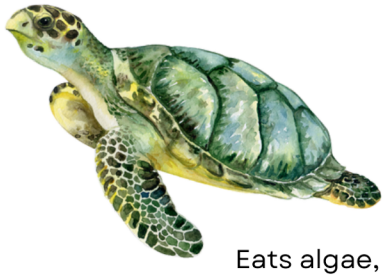


Moray Eel Eats fish, crab, shrimp, and squid

Tuna Eats fish, squid, crustaceans

Nurse Shark Eats lobster, octopi, and stingrays

Lobster Eats algae, mussels, and starfish



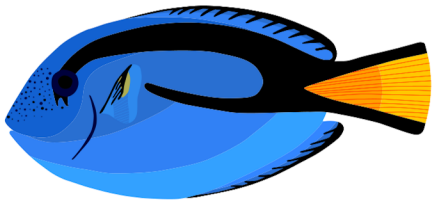
Sea Turtle Eats algae, seaweed, and jellyfish

The Sun

Fungi Eats decaying organic matter

Algae Requires sunlight to live

Christmas Tree Worm Eats decaying organic matter



Surgeonfish Eats algae

Angelfish Eats algae, worms, and small crustaceans

Seaweed Requires sunlight to live

Manatee Eats seaweed and aquatic plants

Lake Cards

Frog Eats small insects, snails, and worms

Freshwater Snail Eats decaying organic matter

Larvae Eats algae and other microorganisms

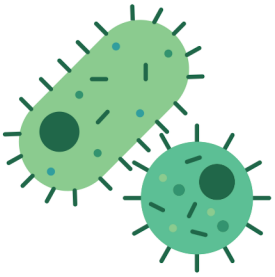
Mosquito Eats blood and plant nectar

Bluegill Eats aquatic plants, insects, and fish eggs

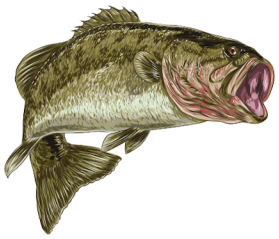
Turtle Eats aquatic plants, and small fish

Pondweed Requires sunlight to live

The Sun



Bacteria Eats decaying organic matter

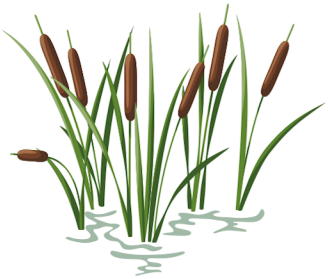


Largemouth Bass Eats other fish, frogs, insects, and small animals

Dragonfly Eats other insects

Canada Goose Eats cattails, stems, and grasses

Fungi Eats decaying organic matter



Cattail Requires sunlight to live

Muskrat Eats cattails, roots, stems, and leaves

River Cards

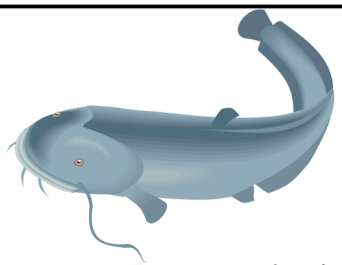
Brook Trout Eats insects and small fish

Fungi Eats decaying organic matter

Duckweed Requires sunlight to live

Dragonfly Eats other insects

River Otter Eats fish, frogs, and crayfish

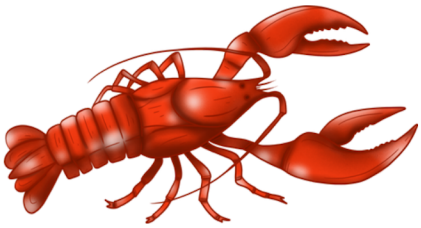


Channel Catfish Eats aquatic plants, insect larvae, and crayfish

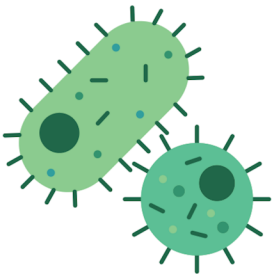
Algae Requires sunlight to live

The Sun

Bald Eagle Eats fish and dead animals

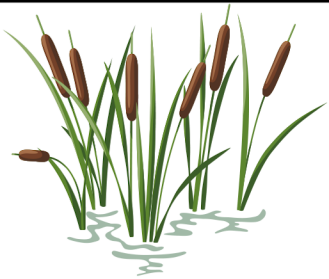


Crayfish Eats plants and insect larvae



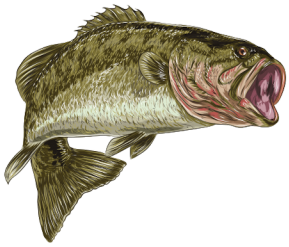
Bacteria Eats decaying organic matter

Larvae Eats algae and other microorganisms



Cattail Requires sunlight to live

Mallard Duck Eats seeds. plants, and insects



Largemouth Bass Eats other fish, frogs, insects, and small animals

Student Worksheet

Food Webs Reflection

Name: _____

Where do producers get their energy?

_____

Where do consumers get their energy?

_____

Where do decomposers get their energy?

_____

Which ecosystem did your group explore?

_____

Sort the consumers from your food web into herbivores, carnivores, or omnivores. Make lists using the boxes below.

Herbivores	Carnivores	Omnivores

What is another organism you could add to your food web? Draw it in the box to the right. Use the lines below to explain where on the food web it would go - is it a producer, consumer, or decomposer?

_____

_____

_____

_____