

Students will discover food chains of the swamps and saltmarshes of South Carolina.

## OBJECTIVES

- Students will be able to define the terms food chain, producer, consumer and decomposer.
- Students will be able to create food chains to describe the flow of energy in an ecosystem.
- Students will be able to identify plants and animals as producers, consumers and decomposers.
- Students will be able to describe which animals are predators and which are prey.
- Students will be able to explain what would happen if parts of a food chain were missing.

## SOUTH CAROLINA SCIENCE STANDARDS

5.L.4B.1, 4.L.4B.2, 4.L.4B.3, 4.L.4B.4

## MATERIALS IN BIN

- Copy of "Food Chains" activity
- Aquarium map (with exhibits circled)
- Large magnetic dry-erase board
- Swamp food chain magnets
- Food chain arrows and labels (energy, producer, consumer, decomposer)
- Trash (water bottle, fork, straw, plastic bag)

## BACKGROUND

A food chain is a series of organisms that show the transfer of energy from one to the next. Most food chains on earth get their energy from the sun. The process in which plants make their own food is called photosynthesis.

Photosynthesis is the process of a plant taking in carbon dioxide and water and creating oxygen and sugars. The sugars are the plant's "food," giving it energy to survive. Photosynthesis takes place in the cells of a green plant; the energy to make this happen comes from sunlight soaking into the plant's leaves. Plants use the sun's energy to make their own food and are called producers in the food chain.

Animals eat other organisms to get energy and are called consumers in the food chain. They consume, or eat, to get energy. Consumers that eat only plants are called herbivores. Consumers that eat only other animals are called carnivores. Consumers that eat both plants and animals are omnivores.

A decomposer is a special type of consumer that gets its energy from consuming dead plants and animals. There are many decomposers in the world that help remove dead matter from ecosystems. Fungi eat dead trees. Bacteria eat dead plants and animals. Many invertebrate animals such as crabs, flies and worms help break down dead plants and animals as well. Without the clean-up crew, our world would be a stinky mess.

In a food chain, a predator is an animal that hunts its prey. Prey is the organism being hunted as food. For survival, plants and animals must find a way to get energy, avoid predators and live long enough to reproduce. To have a healthy ecosystem, there must be many different plants and animals. All the living things in an

ecosystem make up a food web, which is a series of food chains all connecting together. If too many parts of a food web are damaged or destroyed, it can affect the whole ecosystem.

One way humans have negatively altered food chains and ecosystems is through pollution. Trash, gas, oil and other types of pollution affect living things by damaging their habitats, releasing harmful chemicals and making animals sick. It our job to keep our ecosystems clean by picking up after ourselves and respecting wildlife.

## PROCEDURES

Pick up an exhibit activity bin and dry-erase board from the Information Desk. Go to the Blackwater Swamp exhibit in the Coastal Plain Gallery or the Saltmarsh Aviary to begin the lesson. For this activity you can build a swamp food chain, a saltmarsh food chain or both depending on how much time you have.

- 1) Review the following with you students:
  - a. What is a food chain?
  - b. What is the energy source for most food chains on earth?
  - c. What is a producer?
  - d. What is a consumer?
  - e. What is a decomposer?
- 2) Show them the magnets from either the swamp or the saltmarsh bag depending at which exhibit you are located. You can put the magnets around the frame of the board.
- 3) Have the students build a food chain on the large board using the magnetic pictures and arrows. (Be sure the arrows are showing the flow of energy.) It's unimportant that the food chain is built correctly based on what the animals eat, but instead that it makes sense to the students.
- 4) Have students identify which organisms are predators and which are prey. (Keep in mind that some animals are both.)
- 5) Next, have them label each step of the food chain using the word magnets (energy, producer, consumer, decomposer).
- 6) Take away one of the picture magnets and ask what would happen if all the \_\_\_\_ were gone from this ecosystem. (You can repeat this with different steps of the food chain as reinforcement.)
  - a. The step before the blank wouldn't have anything to eat and would die out. The step after the blank wouldn't have any predators and would start to over populate and in turn eat all of its prey until they were gone.
  - b. You can then explain a food web. Emphasize the concept that animals eat many different types of food items, and that is why it's so important to have many different plants and animals on earth.
- 7) Now introduce trash to the ecosystem and ask how it affects the plants and animals in a food chain. Talk about using reusable water bottles, decreasing single-use plastic and using canvas bags.
- 8) Allow students to look for the plants and animals from the activity within the exhibit (Coastal Plain Gallery for swamp food chain and Saltmarsh Aviary for saltmarsh food chain). Hint — only these will be found:
  - Coastal Plain Gallery
  - Chicken turtle – Swamp Snakes exhibit
  - Sunfish – Brownwater Swamp exhibit
  - Alligator – Blackwater Swamp or Freshwater Marsh exhibits
  - Frog – Carolina Bay exhibit

- Duckweed – Carolina Bay exhibit
- b. Saltmarsh Aviary
- Atlantic stingray
  - Diamondback terrapin
  - Great blue heron
  - Oysters (synthetic)
- 9) Repeat steps 2–6 at the other exhibit if time allows.
- 10) When you're done, put all of the magnets back in the correct bags inside the bin. Drop off the bin and board at the Information Desk.

\*Supplemental material: Have your students read “A Day in the Salt Marsh” and/or “A Day in a Forested Wetland” and create a food chain from the animals mentioned throughout the book. Books can be purchased at Ardordale Publishing in Mount Pleasant, South Carolina or online.