

**TEACHING KATE
TEACHING KIDS ABOUT THE ENVIRONMENT**

FOOD CHAINS AND HABITATS

Grade Level: 3-4

Time Required: 5-10 class periods

SC Science Standards

This lesson plan was correlated with only the grade level specified unless otherwise noted.

Grade 3:

- I. A. 2. a, b
- I. A. 4. a
- I. B. 1. a, e
- II. A. 1. b
- II. C. 1. b

Grade 4:

- I. A. 2. a, b
- I. A. 4. a
- I. B. 1. a, e
- II. A. 1. b, c
- II. B. 1. b

*Note: Lesson can be adapted to fit II. C. 2. b.

Purpose

Students will learn to categorize animals as herbivores, carnivores or omnivores according to what they eat. Students will construct a food chain. Students will study where different animals live and how they are adapted to their habitats. Students will construct a habitat.

Skills

Classification, comparison and contrast, description, discussion, evaluation, identification of relationships, interpretation, observation, prediction, research, written and verbal communication.

Concepts

Classification of animals according to what they eat; determination of the proper sequence of animals in a food chain; habitat as a requirement for wildlife; predator/prey relationships. Any break in a food chain breaks the whole chain. Habitat requirements are often very specific for each animal.

Materials Needed

poster board	paper plates
ziplock bags	hole punchers
scissors	pencils
owl pellets	yarn
3 X 5 cards	cloth
cotton balls	craft sticks
construction paper or drawing paper	glue, glue sticks or scotch tape
magic markers, crayons or colored pencils	diagrams/examples of food chains
student journals or paper	research sources - encyclopedias, books, etc.
magazines for cutting out pictures of animals, plants and habitats	

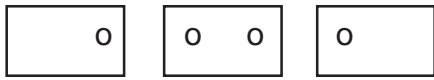
Definition of Terms

<u>Adaptation</u>	The process of making adjustments to the environment.
<u>Animal</u>	A living organism able to move of its own accord.
<u>Biodegradation</u>	The breaking down by organisms of substances so they can be used again in the ecosystem.
<u>Camouflage</u>	Adaptations in shape, patterning, coloration or behavior which allow an organism to escape detection and blend into the background.
<u>Carnivore</u>	An organism that feeds on animals.
<u>Carrying Capacity</u>	The number of animals of a given species that an area can support during the least favorable period of the year.
<u>Consumer</u>	An organism that obtains energy by feeding on other organisms and/or their remains.
<u>Decomposer</u>	A plant or organism that feeds on dead material and causes its mechanical or chemical breakdown.
<u>Ecology</u>	Scientific study of the relationship of living things to one another and their environment.
<u>Ecosystem</u>	All the living and non-living things in a given area functioning as a system.

<u>Eutrophication</u>	The natural addition of nutrients to a body of water resulting in increased productivity.
<u>Food Chain</u>	The transfer of food energy from the source in plants through a series of animals, with repeated consuming and being consumed.
<u>Greenhouse Effect</u>	The trapping of some of the sun's heat rays by reflection from gases in the atmosphere.
<u>Habitat</u>	An area that provides an animal or plant with adequate food, water, shelter and living space in a suitable arrangement.
<u>Herbivore</u>	An organism that feeds on vegetation.
<u>Niche</u>	The location and function/role of an organism in the ecosystem - what it does and where it does it.
<u>Omnivore</u>	An organism that eats both plants and animals.
<u>Predator</u>	An animal that hunts or captures other animals for food.
<u>Prey</u>	Animals that are killed and eaten by other animals.
<u>Primary Producers</u>	An organism that uses solar energy (green plant) or chemical energy (some bacteria) to manufacture the organic compounds it needs as nutrients from simple inorganic compounds it obtained from its environment.
<u>Pyramid of Numbers</u>	A diagram of the number of items in a food chain.
<u>Range</u>	The ecological region throughout which an organism of a specific species normally lives.
<u>Succession</u>	The gradual and continuous replacement of one species of plant or animal by another.

Before the Session

Gather materials for the session. Prepare a poster board for categorizing animals as herbivores, carnivores or omnivores. Prepare a diagram or an example of a food chain with instructions for the construction of a food chain. Have available previously prepared habitats or pictures of them. Cut yarn into 4"-6" pieces. Punch holes in 3 X 5 cards as follows:



(Each child will need one set. Some children might want more middle cards for longer food chains.)

Background Information

Plant-eating animals are called herbivores and include deer, cows, zebras and antelope. Herbivores generally have flat teeth for chewing and grinding tough plant materials such as grasses, herbaceous plants, leaves and twigs. Their eyes are located toward the sides of their heads. Meat-eating animals are carnivores, which include bobcats, snakes, wolves and dragonflies. Carnivores generally have sharp teeth for tearing meat, while some snakes have fangs. The eyes of carnivores are usually located at the front of the head. Omnivores eat both plants and animals. They include raccoons, brown bears, mice and humans. They generally have a combination of teeth for tearing and grinding. Birds, which do not have teeth, have different shaped beaks to help them gather food.

To obtain food, animals may hunt and chase, or use camouflage to lie in wait for something to come along. Thus, each animal acts as a predator, but then serves as prey for another animal in the food chain.

The places where animals live and find food and shelter are known as habitats. Some animals can survive in more than one kind of habitat. Other, more specialized animals would not survive if moved to another place. An example of a specialized animal is the manatee. The manatee lives in warm coastal waters. They eat aquatic vegetation and so are found in relatively shallow waters. Their requirement for shallow, warm water greatly restricts their range. Rabbits, however, easily adapt to different habitats. They have adapted to living near humans. When imported into Australia they reproduced and spread so fast that they became a major ecological nuisance.

Suggested Lesson Plan

Some students may be concerned by the idea of animals killing and eating other animals. Discuss that, generally, animals kill only what they need to survive. Without food, they would die. Share the Native American viewpoint that humans are cousins to animals and that the life that must be taken is honored.

Activity 1 - Classification of Animals by What They Eat

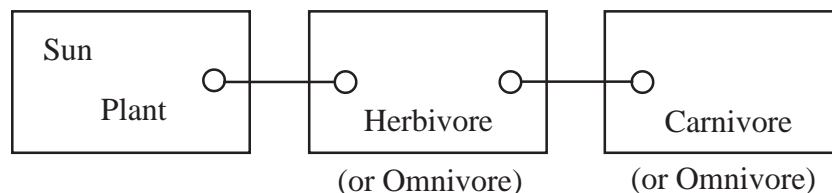
1. Introduce the terms herbivore, carnivore and omnivore and their meanings.
2. Display the categorizing poster. Using the animals listed in the background information, the students will determine where to list each animal.

Herbivores	Carnivores	Omnivores
<i>Antelope</i>	<i>Bobcat</i>	<i>Brown Bear</i>
<i>Cow</i>	<i>Dragonfly</i>	<i>Human</i>
<i>Deer</i>	<i>Snake</i>	<i>Mouse</i>
<i>Zebra</i>	<i>Wolf</i>	<i>Raccoon</i>

3. Students will use the research sources to construct their own categorizing chart on construction paper. The animals listed on the display poster cannot be used. Three to five animals should be listed under each heading. Display their charts.

Activity 2 - Food Chains; Predator/Prey

1. Introduce the term food chain and its meaning. Discuss meaning of predator and prey.
2. Distribute “Food Chain Activity” sheets, glue sticks and scissors to each child. Students will construct their food chains. Discuss the correct order.
3. Using *Critters*, 1989 Aims Education Foundation, pp. 134-138, students will review the meaning of food chains and play a tag game to experience the relationships between predators and their prey in a food chain.
4. Using *Project Wild* pp.144-145 and owl pellets, students will be able to construct a simple food chain.
5. Provide magazines, scissors, glue stick, construction paper, pencils, markers, 3x5 cards, yarn and research sources. Students will construct a food chain by either drawing or cutting out animals (from magazines or construction paper) for each of the 3 X 5 cards in the food chain.



Display their food chains.

6. Related activities found in *Project Learning Tree* pp. 72-74, 75-76 and 77-78.

Activity 3 - Habitats

1. Read the poem “The Apartment House Tree” by Bette Killan to the students.
2. Introduce the term habitat and its meaning.
3. Choose an activity from *Project Wild*- “Habitat Lap Sit” pp. 34-35, “Habittracks” pp. 36-37 or “What’s That Habitat?” pp. 38-39 to identify the components of a habitat.
4. Students compare and contrast animals that live in the woods and the desert. The woods and desert are vastly different habitats and animals who live in these areas have special adaptations that enable them to survive in their habitats. Woodlands may have hot summers and cold winters. They may often have rain or snow. Animals living in these areas must be adapted to finding food and shelter they need to survive despite the weather. Animals living in woodlands include bears, squirrels, raccoons, deer, foxes, opossums, and newts. Desert weather is hot or cold and dry. Rain is rare. Animals found in desert areas must also be adapted to finding food and shelter within their environment. Some examples of these animals are jack rabbits, gila monsters, badgers, desert tortoises, species of snakes and species of mice.
5. Using paper plates or drawing paper, students will draw a habitat. Students can either draw their animals on the habitat or make animals out of cloth, craft sticks, cotton balls, paper, etc. and attach them to the habitat. Display their habitat pictures.
6. Introduce the term carrying capacity and its meaning. Use either pp. 134-137, “How Many Bears Can Live in This Forest?” or pp. 146-147, “Oh Deer!” from *Project Wild* to review the major components of a habitat and introduce the meaning of carrying capacity.
7. Using *Critters*, 1989 AIMS Education Foundation, pp. 4-7 activities, students will match animals to their homes and complete a creative writing activity.
8. Students will have a couple of weeks to create an animal habitat. Display the animal habitats and invite younger students to view them. (This may be an annual habitats fair.)
9. Related activities found in *Critters*, pp. 142-149, “Who’s Home in the Biome?” and *Project Learning Tree*, pp. 70-71, “Trees as Habitats” and pp. 151-152, “School Yard Safari.”

Application

In the natural world, plants and animals all have their purpose in helping living things survive. By understanding this process, we are better able to deal with our own daily needs- food, shelter and clothing- without too much impact on other living things. After many years of abusing their environment humans have finally come to realize that the environment must be cared for and managed. By managing areas for the benefit of plant and wildlife populations, we can use an area in a way which will not be detrimental to the area or the animal populations and in most cases will actually create a healthier environment (conservation- wise use of resources). This could lead into discussions/studies of endangered animals or the rain forest devastation.

Extension

1. Students can make a pictograph to classify the animals as herbivores, carnivores or omnivores.
2. Students can create a picture file of plants and animals and habitats.
3. Using large pieces of cardboard, turn areas of the classroom into different habitats.
4. Share with students several poems about animals, such as “Feather or Fur” by John Becker or “Desert Tortoise” by Byrd Baylor found in *The Random House Book of Poetry for Children* by Jack Prelutsky. Then students can select a favorite animal and make up either a poem or a riddle about it.
5. Plan a field trip to Riverbanks Zoo to see how they have placed animals in enclosures built to simulate their native habitats.

Resources Available

Critters. 1989. Maureen Murphy Allen. AIMS Education Foundation. ISBN-1-881431-23-1.

Destinations in Science. 1995. David C. Brummett. Addison-Wesley, Menlo Park, CA. ISBN.-0-201-45021-6.

Elements of Ecology, 3rd edition. 1992. Robert L. Smith. Harper Collins Publishers Inc., New York, N.Y.

Native American Animal Stories. 1992. Fulcrum Publishing, Golden, CO. ISBN-1-55591-127-7.

Project Learning Tree. 1994. American Forest Foundation, 1111 19th St. NW, Washington, D.C. 20036.

Project Wild. 1992. Western Regional Environmental Education Council, Bethesda, MD.

The Random House Book of Poetry for Children. 1983. Jack Prelutsky, comp. Random House, NY. ISBN-0-394-85010-6.

Who Lives Here? 1980. Dot and Sy Barlowe. Random House, NY. ISBN-0-394-83740-1.

Wildlife Reference Books and Encyclopedias

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FOOD CHAIN ACTIVITY

Tiny plants are eaten
by tiny animals.



Tiny animals are eaten
by small fish.



Small fish are eaten by larger
fish and animals.



Living things die and become chemicals,
which are eaten by tiny plants.



Food Chain Activity - Cut out each of these strips. Decide which one goes first and create a closed loop. Then attach the next loop to form a food chain with two loops. Then add the other two loops in the correct order to form a 4 link food chain.

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**THE APARTMENT HOUSE TREE
by Betty Killan**

In a plump, tall tree
at the edge of the woods,
many families live hidden away.

On the first floor,
a bushy-tailed squirrel and his wife
crack nuts with their sharp pointed teeth.

Around the corner,
a prickly porcupine finds a vacant apartment
and decides she and her baby
will move right in.

In the basement
the mole has tunneled
quiet, dark rooms among the roots.

High on the tree trunk,
a red-headed woodpecker is busy
with his long, sturdy beak,
carving a room of his own.

Upstairs,
snuggled into its nest on a leafy branch,
lives a family of hummingbirds.

Higher still, in a small, round hole,
the ruffle-feathered owl is tucked away,
sleeping the day through.

An orange and green tree frog
clasps his long toes around a branch,
his sleepy eyes blinking.

Under the humped, rough bark,
beetle and aphid families creep.

On the backs of leaves,
there are cocoon beds,
and butterflies just coming
out of their cocoons.

A skink
clings to his branch home
with five sticky, padded toes.

High up, inside the trunk of the tree,
is the home of the sly, masked, ring-tailed
raccoons.

And in the very tip top
of the grand, tall hideaway
apartment house tree,
there is a place
just for me.