Food Chains – African Savannah

for students in 2nd grade

Food Chains – African Savannah is a thematic program that begins with a PowerPoint presentation in which students follow the movement of energy through African Savannah food chains and learn to identify a variety of morphological, physiological, and behavioral adaptations that help animals survive in their environment.

This is followed by a hands-on examination of live animals and animal skulls as students learn how to determine what an animal eats and what might eat it. This activity challenges the students' observation skills, verbal expression, and ability to make comparisons and deductions. Emphasis is placed on teeth and position of eyes.

This 60-minute program can be presented at the Zoo or in the school classroom, but **NOT in the school cafeteria** because of the live animals. Since we are showing slides, please try to schedule school programs in a room that can be darkened. Also, if we are repeating the program, our docents really appreciate it if they do not have to pack everything up and move from one classroom to another.

"Food Chains – African Savannah" is aligned to 2nd grade Life Sciences Standards 1 and 2.

1. Organisms depend on their habitat's nonliving parts to satisfy their needs.

2. Each plant or animal has different structures or behaviors that serve different functions.

To schedule this program, or for more information, call 561-1452, ext. 125.

Vocabulary introduced in *Food Chain -- Africa*

Adaptation:	An alteration or adjustment in structure or habits by which a species or individual improves its condition in relationship to its environment.
Camouflage:	Colors or structures that allow an animal to blend with its surroundings to avoid detection.
Canines:	The pointed teeth on each side of the mouth between the incisors and the premolars, used for catching and killing prey, and for tearing flesh.
Carnivore:	An animal whose diet consists primarily of meat.
Carrion:	The bodies of dead animals, usually found in nature in the process of decay.
Cold-blooded:	Ectothermic. Having a body temperature that is largely dependent on the temperature of the air or water in which it lives.
Consumer:	Organisms that do not make their own food but must get it from other things.
Crepuscular:	Active at dawn and dusk.
Decomposer:	An organism that feeds on dead organic matter, returning nutrients to the soil.
Diurnal:	Active by daylight (opp. of nocturnal).
Ecosystem:	A community of living things and the environment with which they interact.
Endangered:	A species that is in danger of extinction throughout all or a significant portion of its range.
Energy flow:	The movement of energy from the sun through food chains to top carnivores.
Extinct:	Gone from existence.
Food chain:	A chain that represents a series of events in which energy is transferred from on organisms to another in an ecosystem.
Food web:	Consists of many related food chains.
Habitat:	The arrangement of food, water, shelter or cover, and space suitable to an animal's needs.
Herbivore:	An animal whose diet consists primarily of plants (leaves, grass, fruits, etc.); gets its energy from producers.
Incisors:	Sharp teeth at the front of the mouth, used for biting or nibbling.
Molars:	The broad, flat teeth at the back of the mouth used for grinding food.
Nocturnal:	Active by night (opp. of diurnal).

Nutrient:	A substance an organism requires to live.
Omnivore:	An animal whose diet consists of a variety of plants and animals.
Organism:	A living thing, such as a plant, animal, or fungus.
Parasite:	An organism that lives in or on other living organisms and, in doing this, causes them harm.
Photosynthesis:	The process by which green plants use carbon dioxide and water in the presence of sunlight and chlorophyll to produce food and oxygen.
Predator:	An animal that kills and eats other animals.
Prey:	An animal that is killed and eaten by other animals.
Producer:	Autotroph. An organism that makes its own food using the sun's energy.
Rodent:	A gnawing mammal.
Savannah: (Savanna)	A flat, grassy plain with few or no trees; found in tropical areas.
Scavenger:	An organism that habitually feeds on refuse or carrion.
Warm-blooded:	Endothermic. Having a body temperature that remains approximately the same, whatever the temperature of the surroundings.
Wildlife:	A collective term for non-domesticated plants and animals.

Pre-Zoo Activity

Dissecting Owl Pellets

This is great activity, well worth the effort required to plan it!

Objective: Students will examine owl pellets and what their diet consisted of, specifically rodents. This will further their understanding of simple food chains as well as bone structure and identification.

Materials:

- Owl pellets: can be ordered from many teacher resource organizations, such as: **Project Wild, P.O. Box 59, Portland, OR 97207**
- Paper plates
- Egg cartons to hold discoveries
- Sharp dissecting tools
- Tweezers
- Latex gloves
- Dust masks
- Pencil and paper
- Diagram of a rodent skeletal system, photocopied for every student

Method:

1. Hand out owl pellets and place on paper plates.
2. Ask students to examine their owl pellet. What do they notice?
3. Ask students to carefully pull apart owl pellets with their hands, then separate the bones and other fragments with tweezers. Place separated items in egg cartons.
4. Using the diagram of the rodent skeleton, students should then try to identify the bones. Ask them to record all bones found. Which student has the most bones?
5. Ask students to identify all the other items found in the pellet and record them.
6. Share the discoveries with the class by having every student walk around and examine each other's work area.
7. Pool all of the bones that the students found and try to assemble a complete rodent skeleton.
8. ***OR*** ask the students to arrange the bones into some imaginary creature and name their creation. This can be a great Halloween time activity because the created creatures are always SCARY!
   (This idea was contributed by Thane Worm, teacher)

Pre-Zoo Activity

Food Web Game

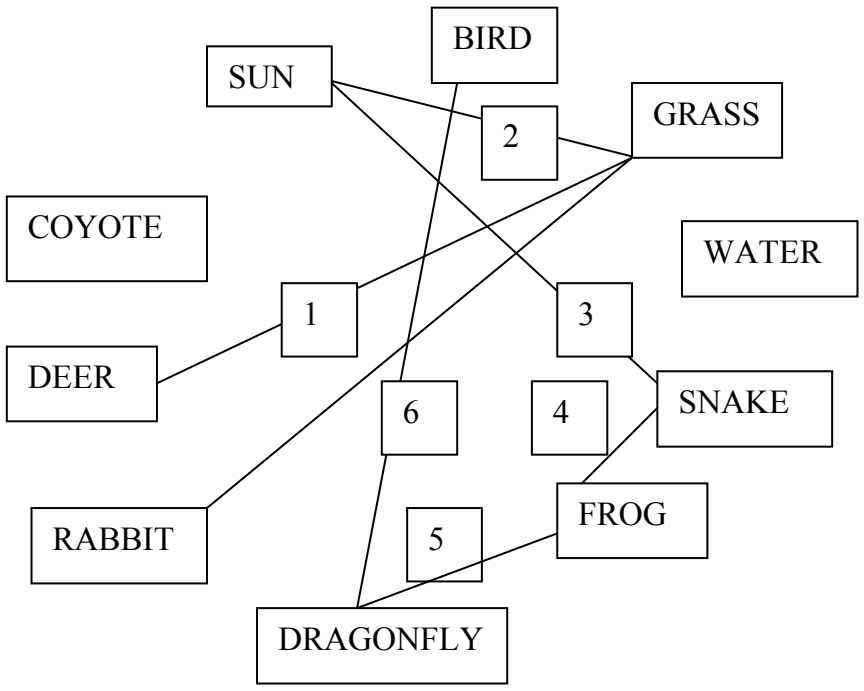
Objective:
To show interdependence of all living things.

Materials:
Hat or nametags for each of the following living and nonliving things:
- Nonliving: water, sunlight, air, soil
- Plants: leaves, grass, flowers, …..
- Herbivores: grasshopper, dove, deer, rabbit,…..
- Carnivores: frog, snake, coyote, mountain lion,….

Big ball of string or yarn.

Procedure:
Each student draws a nametag from a hat and puts it on.
Students stand in a big circle.
Give the ball of twine to a student, e.g., deer.
"Deer" keeps hold of one end of the twine, then passes the ball to the another student, naming the relationship. Example: Deer eats grass (1).
"Grass" then keeps hold of his twine, and passes the ball to another student, again naming the relationship. Example: Grass needs sun (2); sun warms snake (3); snake eats frog (4); frog eats dragonfly (5); dragonfly is eaten by bird (6) etc.
Continue until a web is created.

Then, remove one item. Let that student drop the twine. Observe the effect on the web.



Post-Zoo Activity

That's a Mouthful!

Objective:
Review mammalian teeth: types and functions

Materials:
1 copy/student of Ranger Rick's NatureScope Copycat Page, That's a Mouthful!

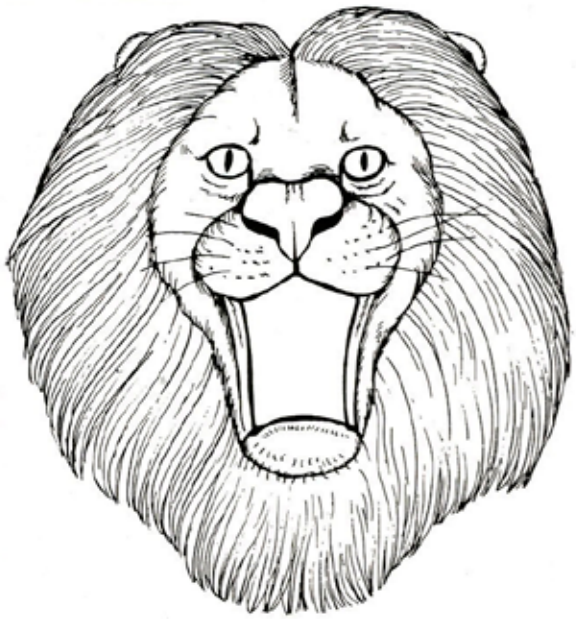
Procedure:
Ask students to:

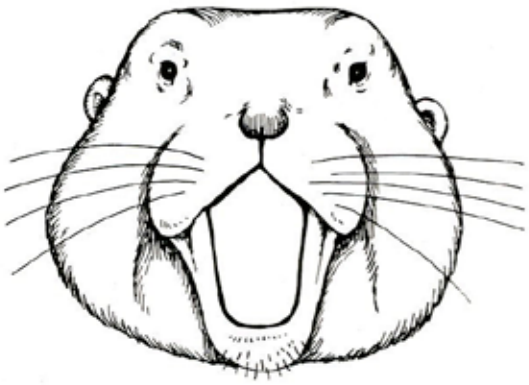
1. Cut out each head and paste it onto a separate piece of paper.
2. Cut out the mouths on the right side of the page and paste them onto the corresponding animal's head.
3. Label the different types of teeth (either on each mouth, or picking the best examples); incisors, canines, molars.

Ask them to include the following information on each animal:

1. Name of animal
2. What it eats.
3. Carnivore, herbivore, or omnivore?
4. How are its teeth suited to its diet?

THAT'S A MOUTHFUL!





What's for Dinner?

Objective

Students will generalize that all animals, including people, depend on plants as a food source, either directly or indirectly.

Method

Students list and analyze the sources of foods.

Materials

Writing materials; chalk board; OPTIONAL: poster board and drawing materials

Background

NOTE: The concepts in this activity are reinforced using pictures and verbal language skills and may be utilized effectively with English language learners.

Food webs are just one of nature's many cycles. In a food web, omnivores, herbivores and carnivores comprise the organisms in an ecological community that ensure the continuation of food energy from one organism to another. These webs are made up of individual food chains. In a grazing web, materials typically pass from plants to herbivores (plant eaters) to carnivores (flesh eaters). The food web can be viewed not only as a network of chains but also as a series of trophic (nutritional) levels. Green plants, primary producers of food, belong to the first level. Herbivores, consumers of green plants, belong to the second trophic level. Carnivores, predators feeding upon the herbivores, belong to the third. Omnivores, consumers of both plants and animals, belong to the second and third. Secondary carnivores, which are predators that feed on predators, belong to the fourth trophic level.

Every animal, including people, either consumes plants directly or depends upon other species that in turn depend upon plants.

Grade Level: 5-8

Subject Areas: Science, Language Arts, Environmental Education

Duration: one 20-minute session or longer

Group Size: any

Setting: indoors

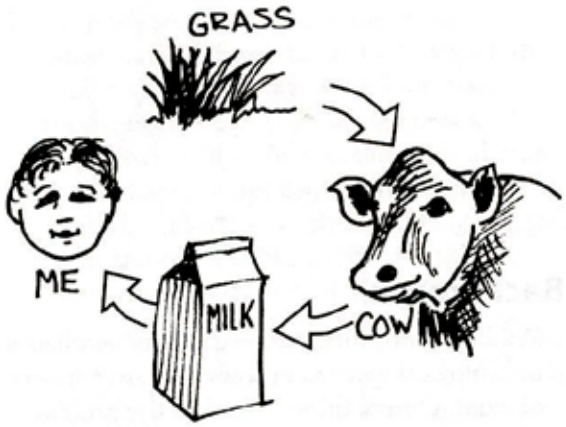
Conceptual Framework Topic Reference: IDIA, IDIB, IDIIB2

Key Terms: food chain, plants, animals

Appendices: Local Resources

Procedure

1. Ask students to make a list of everything that they had for dinner on a particular evening or ask them to invent a dinner menu of their choice.
2. Ask the students to work alone or in groups to analyze where their food comes from. Every item from their dinner menu should be traced back to a plant. As each item on a menu is examined, ask the students to create a flow diagram or chain that shows the major sources of each food, from the product they eat all the way back to the plant origin. For example: milk, cow, grass. Some chains will be short while others will be long. Sometimes the students may not be sure what particular animals eat for food, so they will want do some research.



3. Discuss with the students some of the things they learned from this activity. After the students have described things they have learned, encourage them to make two generalizations about plants and animals. These generalizations may include that all animals, including people and wildlife, need food; and all animals, including people and wildlife, depend upon plants for food.

Extensions

1. Create posters of the menus created at the beginning of this activity, showing the food chains involved in each. Add soil, water, sun and air, since these are necessary to plants, people and all animals too.
2. Create a master list of all the plants that were identified during the activity. Are there some plants that we are more dependent upon than others? Ask the student to research people who live in other parts of the world and to develop a list of plants upon which they depend.
3. Did you know that everything you ate for breakfast (lunch, dinner or a snack) started somewhere with a rock? Trace plants to soil and soil to its parent matter, which includes rocks.

Aquatic Extensions

1. See the Project WILD Aquatic activity "Water We Eating?."
2. Create at least two food chains that involve people, aquatic wildlife and plants.

Evaluation

1. Construct at least three food chains using the following organisms: people, rabbits, grass, lettuce, mountain lions, robins, earthworms, hawks, mice, insects, wheat, cows, corn, pigs, deer and acorns.
2. Which of these animals do not need food: horse, snake, frog, person, robin?
3. All of the food eaten by animals must first come from _____? (Although the objective of this activity stressed that animals rely on plants, please accept any reasonable response, like soil or sunlight, if the students reasonably explain their theory.)