



KANSAS PRAIRIES

Overview

After studying the prairie biome, a lesson in environmental education is necessary to show students the interdependence of animal life with their environment. Students will learn about the organisms found on the prairie and identify various food systems that allow them to eat or be eaten.

Objectives

1. Students will identify producers, consumers, and decomposers in an ecosystem.
2. Students will identify herbivores, omnivores, and carnivores in the prairie ecosystem.
3. Students will identify food chains on the prairie.
4. Students will use pictures and arrows to create a food chain for the prairie ecosystem.
5. Students will determine the significance of a group of words, phrases, or sentences.
6. Students will write a poem about the prairie using similes and creative descriptions.

**Suggested
Grade Level:**
4th-6th

Time:
1 hour and 45 minutes

Subjects:
Science
Language Arts
Math

Background Information

The sun is the main source of energy for every living thing on earth. An organism that makes its own food is called a producer. Examples of producers in the prairie are grasses and wildflowers because they use the sun to make their own food through a process called photosynthesis. An organism that depends on others for food is called a consumer. Examples of consumers in the prairie include coyotes, snakes, mice and prairie chickens because they hunt or scavenge for their food. An organism that breaks down materials in dead organisms is called a decomposer. Examples of decomposers in the prairie are worms. Recycling happens in the prairie through decomposition. Recycle means to reuse something once it has died or has been thrown away. Prairie animals can be classified into three categories based upon what they eat. An herbivore is an animal that feed chiefly on plants. A carnivore is an animals the eats meat or flesh. An omnivore is an animal that eats both plants and animal material. Table 1 shows the diets of several prairie organisms and their predators.

In Kansas, cropland (cultivated from former grassland) is the leading use of land, followed by pasture and rangeland, which includes both native grasslands and grass stands that have been reestablished on land that was once cultivated. These uses represent over 90 percent of the state's land area.

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Background Information Continued

Names of the Prairie

French explorers and fur traders in the 1700s have been credited with first calling the middle section of America “la prairie,” the French word for meadow.

The prairie goes by many names. **Rangeland** is land on which the native vegetation is predominantly grasses, grass-like plants, forbs and shrubs. It includes desert, tundra, and forested rangeland. Rangeland is most suitable for grazing. There are limiting factors prohibiting cropland agriculture such as rocks, trees or mountains. Surprising to some, rangeland biomes require human and fossil energy to manage and maintain the grassland for many uses. Without proper management, the prairie moves toward a woody vegetation type. Approximately 47 percent of the earth’s terrain is rangeland.

Grassland is a generic term that refers to an area covered with vegetation types dominated by grasses. It can include tame pasture, rangeland, and other types.

Pasture is a unit of grassland which has a fenced perimeter, and it is a modern term that needed definition only after humans began to contain livestock. Often, biologists consider pasture to be made of one or only a few types of grass versus an area containing a wide variety of plant life like the native grass prairie.

Types of Kansas Prairies

The Kansas grassland biome is divided into tallgrass, mixed-grass, and shortgrass prairies. Areas of sand prairie and sandsage prairie grasslands are found in both the mixed-grass and shortgrass prairie regions of Kansas.

Tallgrass prairie – Before settlement, the tallgrass prairie occupied a north-south strip which encompassed the eastern third of Kansas. The tallgrass prairie exists today since much the land is not tillable due to terrain (slope, rock layers, soil depth, etc.). The grasses can grow in excess of six feet tall during moist years if they reside in deep soils. The annual precipitation in this region exceeds 30 inches. The original tallgrass prairie spanned almost 250 million acres. Today, about four percent remains with the largest areas being the Flint Hills of Kansas and the Osage Hills of Oklahoma. Examples of grasses found in tallgrass prairies include big bluestem, indian grass, switchgrass, and eastern gamagrass.

Mixed-grass prairie – The mixed-grass or mid-grass prairie runs through the middle portion of the state. The grasses here often grow to be two to three feet tall. Typically, this region receives 15 to 25 inches of precipitation per year. The primary factors which create mixed-grass prairie in Kansas are precipitation and soil depth. Examples of grasses found in mixed-grass prairies include little bluestem, western wheatgrass and sideoats grama grass

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Shortgrass prairie – The shortgrass prairie lies mainly in the western portion of the middle of the United States, east of the Rocky Mountains. The grasses here are usually less than two feet tall. The westernmost areas receive, at maximum, 15 inches of precipitation per year. Examples of grasses found in shortgrass prairies include blue grama grass and buffalograss.

The Great Plains

The Great Plains is a major ecological region found in the central part of the continent of North America, occupying nearly 1.4 million square miles. The area extends from the Canadian provinces of Alberta, Saskatchewan and Manitoba south into northeastern Mexico and from western Indiana to the foothills of the Rocky Mountains. Approximately 34 million people live in the Great Plains, including 32 million in the U.S. portion of the region.

Across the Great Plains, rainfall decreases from east to west – defining different types of native prairies. While there are grassland and forest combinations along the eastern edges of the Great Plains, few native trees occur across other areas of the region. The Great Plains is one of the largest farming and ranching regions of the world and agriculture is the most important economic activity of the Great Plains.

Vocabulary

Producer: An organism that makes its own food.

Consumer: An organism that depends on others for food.

Decomposer: An organism that breaks down materials in dead organisms.

Recycle: To reuse something once it has died or been thrown away.

Herbivore: An animal that feed chiefly on plants.

Carnivore: An animal that eats meat or flesh.

Omnivore: An animal that eats both plants and animal material.

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Activity 1 - Prairie Food Chains & Webs

Worksheets

- Vocabulary worksheet
- Food Chain worksheet

Activity 2 - Kansas Prairies, What's It All About?

Worksheets

- Kansas Prairies, What's It All About? - Match the Main Ideas

Student Worksheet Answer Key

1. C
2. E
3. B
4. A
5. D
6. F

Activity 3 - Kansas Prairies

Worksheets

- The Comparison Poem

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Table 1

| Organism | Diet | Predator(s) |
|----------------------------|---|-------------------------------------|
| Bison - Consumer | Herbivore: grasses | Man, coyotes, bobcats, rattlesnakes |
| Wheat-Producer | Sun, soil, water, nutrients | Man, insects (especially aphids) |
| Cattle - Consumer | Herbivore: grasses | Man, coyotes, bobcats, rattlesnakes |
| Coyote - Consumer | Carnivore (mainly): rabbits, insects, fruit | Man, disease |
| Grass - Producer | Sun, soil, water, nutrients | Bison, cattle, rabbits, mice, birds |
| Grasshopper - Consumer | Herbivore: plants | Birds, beetles, mice, snakes |
| Meadowlark - Consumer | Omnivore: insect, worms, spiders, snails, seeds | Owls, hawks, skunks, foxes |
| Mouse and Shrew - Consumer | Omnivore: seeds, grasses, worms, fruits, roots | Birds, snakes, skunks |
| Prairie Chicken - Consumer | Omnivore: Grain, weeds, seeds, insects | Coyotes, hawks, bobcats, skunks |
| Rabbit - Consumer | Herbivore: grasses, leaves, bark, twigs | Coyotes, hawks, bobcats, foxes |
| Skunk - Consumer | Omnivore: insects, rodents, reptiles, eggs, berries, roots, grasses | Birds of prey, mountain lions |
| Snake - Consumer | Carnivore: mice, gophers, rabbits, eggs | Hawks, eagles |
| Spider - Consumer | Carnivore: insects and animals in some cases (insectivore) | Frogs, birds, shrews, beetles |
| Wildflower - Producer | Sun, soil, water, nutrients | Grasshoppers, spiders, birds |
| Worm - Decomposer | Omnivore: dead plant and animal material | Birds |

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Vocabulary Worksheet

Name: _____

Draw a line between two circles to match words with their definitions.

The circles contain the following text:

- Producer**
- A. To reuse something once it has died or has been thrown away.**
- Consumer**
- Decomposer**
- B. The main source of energy for everything living on earth.**
- E. An organism that makes its own food.**
- The Sun**
- D. An organism that depends on others for food.**
- C. An organism that breaks down materials in dead organisms.**
- Recycle**

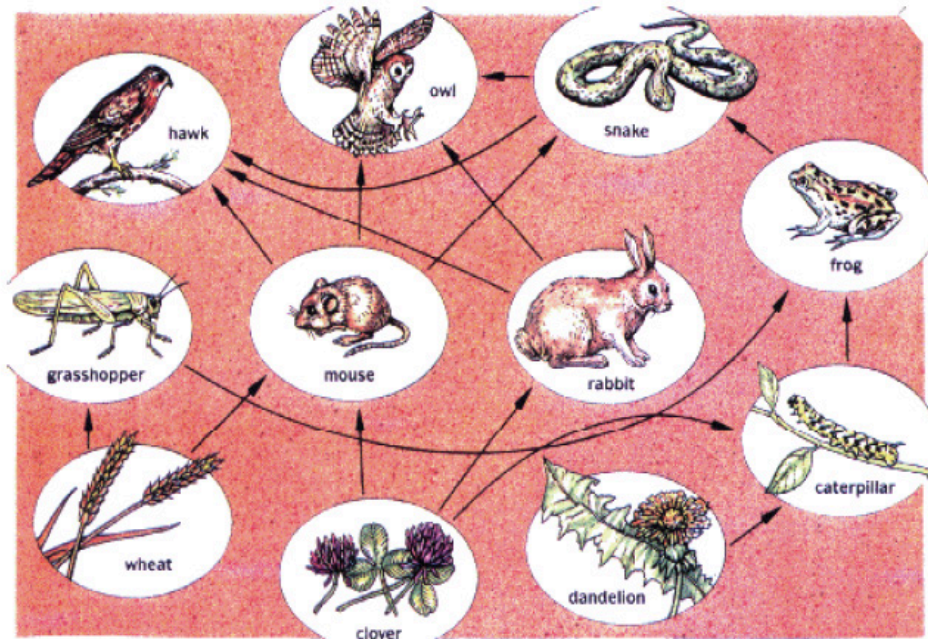
1. What is the difference between a producer, a consumer and a decomposer?
2. Name a producer found on the prairie Kansas grassland.
3. Name a consumer found on the prairie or Kansas grassland.
4. Name a decomposer found on the prairie or Kansas Grassland.

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Food Chain Worksheet

Name: _____

Use the prairie food web below to answer the following questions.



5. Identify the organism(s) that are producers.

6. Identify the organism(s) that are consumers.

7. List one food chain on this prairie food web by writing each organism's name and connecting each organism with a line.

8. Name a prairie animal that fits into the following categories:

Herbivore: _____ Carnivore: _____ Omnivore: _____

Make your own food chain. You pick which organisms you will use in your prairie food chain. The prairie food chain starts with energy from the sun. Draw arrows in the direction that the energy flows in your food chain. Get creative and draw pictures!

The Sun



Producer



Consumer



Consumer



Decomposer



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Kansas Prairies, What's It All About? - Match the Main Ideas

Name: _____

Match the each main idea listed below with the appropriate box of words or phrases.

Main Ideas

- A. Types of Kansas prairies
- B. Great Plains
- C. Names for prairies
- D. Range plants
- E. Surface area of Kansas
- F. Burning the prairie

1. _____

2. _____

3. _____

Rangeland
Grassland
Pastures

Pastureland and Rangeland
Cropland
Forest land

Central part of North America
Large farming and ranching area
All of Kansas

4. _____

5. _____

6. _____

Tallgrass
Mixed-grass
Shortgrass

Grass
Forbs
Woody plants
Wildflowers

Prescribed in spring
Improved prairie
American Indians

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The Comparison Poem

Name: _____

Create a comparison poem using similes and creative descriptions.

The Prairie Is...

Yellow like _____

Quiet as _____

Blue like _____

Soft as _____

Red like _____

Big as _____

Green like _____

Loud when _____

Alive with _____

Wet when _____

Beautiful when _____

Shaped like _____

Threatened when _____