Name _____ Class _____ Period _____

## 30–1 What Are Some Parts of a Food Chain and a Food Web?

Plants use light energy of the sun to make food. The food is stored in the cells of the plant. Plants are called producers because they make food. Some of the stored energy in the food that plants make is passed on to the animals that eat the plants. Plant-eating animals are called primary consumers. Some of the energy is passed on to the animals that eat primary consumers. Animals that eat other animals are called secondary consumers.

The pathway that food energy takes through an ecosystem is called a food chain. A food chain shows the movement of energy from plants to plant eaters and then to animal eaters. An example of a food chain can be written as follows:

| (producer) | | (primary consumer) | | (secondary consumer) |
|---|---|---|---|---|
| seeds | → | sparrow | → | hawk |

Some of the food energy in the seeds moves to the sparrow that eats them. Some of the food energy then moves to the hawk that eats the sparrow.

Because a hawk eats animals other than sparrows, you could make a food chain for each animal the hawk eats. If all the food chains were connected, the result is a food web. A food web is a group of connected food chains. A food web shows many energy relationships.

**INTERPRETATION**

**OBJECTIVES**

In this exercise, you will:

a. determine what different animals eat in several food chains.
b. build a food web that could exist in a forest ecosystem.

**KEYWORDS**

Define the following keywords:

consumer _____

food chain _____

food energy _____

food web _____

producer _____

**MATERIALS**

colored pencils  metric ruler

## PROCEDURE

### Part A. Examining Food Chains

1. Read the introduction and examine the food chains given below

| (producer) | (primary consumer) | (secondary consumers) | | |
|---|---|---|---|---|
| plant roots | rabbit | fox | | |
| plant seeds | mouse | fox | | |
| plant leaves | earthworm | robin | snake | |
| plant leaves | rabbit | snake | | |
| plant leaves | cricket | robin | fox | |
| plant stems | earthworm | snake | hawk | fox |
| plant stems | rabbit | hawk | | |
| plant stems | small insects | mouse | owl | |
| plant leaves | rabbit | owl | fox | |
| plant leaves | cricket | mouse | hawk | |
| plant fruits | mouse | snake | owl | |
| plant fruits | small insects | robin | snake | |

2. Answer the questions that follow:

a. List the organisms that you think are producers._____

b. Why are they called producers?_____

c. List the organisms that you think are primary consumers._____

_____

d. Why are they called primary consumers?_____

e. List the organisms that you think are secondary consumers._____

_____

f. Why are they called secondary consumers?_____

g. Herbivores are organisms that eat plants. List the herbivores in the food chains._____

h. How does your list of herbivores compare with your list in question c?_____

_____

i. Carnivores are organisms that eat other animals. List the carnivores in the food chains._____

j. How does your list of carnivores compare with your list in question e?

_____

k. Make two food chains using animals not listed in the above food chains.

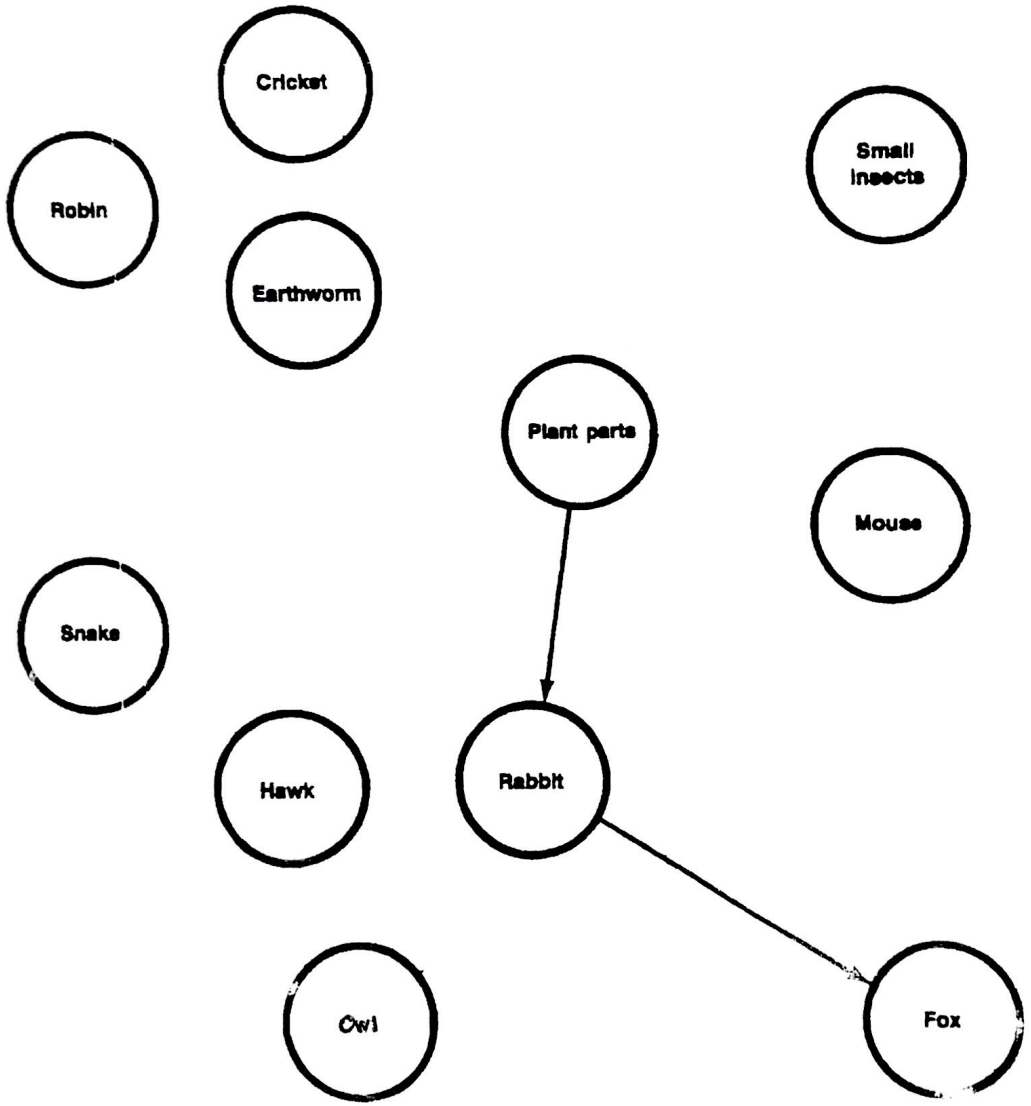
_____

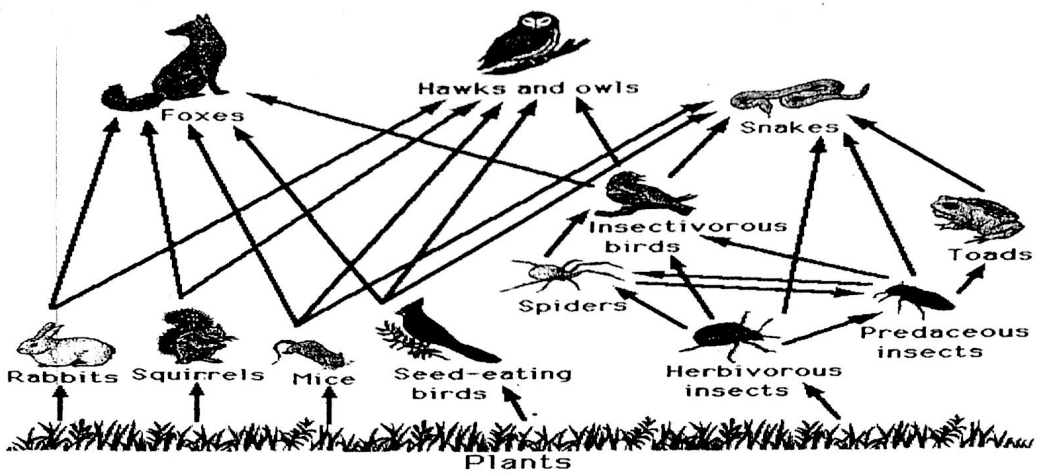
_____

**Part B. Making a Food Web**

1. Use the information in Part A on the previous page to complete Figure 1.
2. Draw lines from each organism to other organisms that eat it.
3. Show which organism gets the energy by making an arrow pointing in the direction of energy flow from producers to primary consumers, to secondary consumers. One food chain has already been done for you.
4. Draw your lines with different colored pencils for different food chains. To make it easier to read when finished, do not draw through the circles.

**FIGURE 1.** A food web in a forest ecosystem






**<u>Part 1:</u> Use terms below to classify the organisms in the food web above.**
**Use as many terms as apply.**

| | | | |
|---|---|---|---|
| Autotroph | Heterotroph | Herbivore | Carnivore Producer |
| Omnivore | Primary Consumer | Secondary Consumer | Tertiary Consumer |

1. Mice

2. Fox

3. Snake

4. Plants

5. Spiders

**<u>Part Two:</u> Use the food web above the answer the following questions.**

6. Draw a food chain from the food web above that has 5 links or organisms.

7. Draw an ecological pyramid from the food web above that has 3 levels. If the plant level has obtained 3000 calories of energy from the sun, how much would be available to the next two levels? Label the energy values to the right of each level in your pyramid.

8. If the squirrel was run over by a car and the hawk came to feed on the carcass of the squirrel, what would the hawk be classified as?

9. If the snake dies and bacteria begin the break down the body tissues into nutrients to be recycled, what would the bacteria be classified as?

10. If a disease killed all of the foxes in the ecosystem, how would the rabbits be affected?

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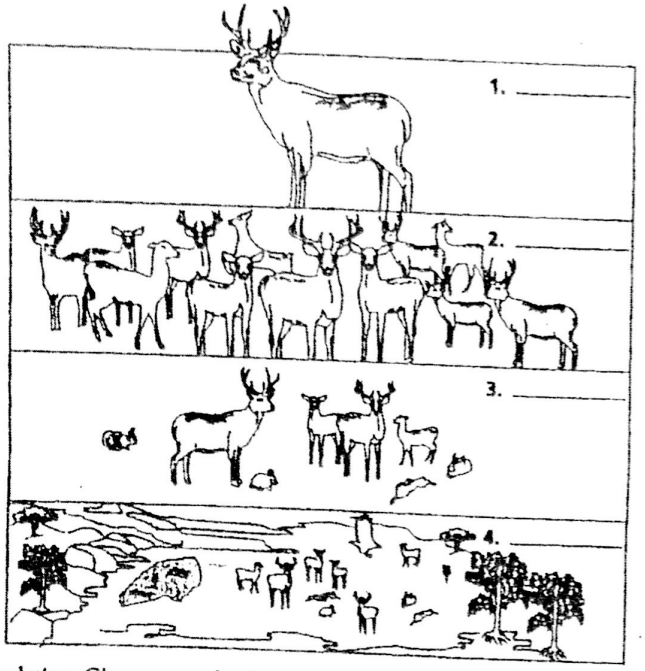
## Study the Pictures

**Label each drawing with one of these words: community, ecosystem, organism, population.**




1. Define a **population**. Give an example of a population of animals from the drawings above.

_____

_____

2. Define a **community**. Give an example of a community from the drawings above.

_____

_____

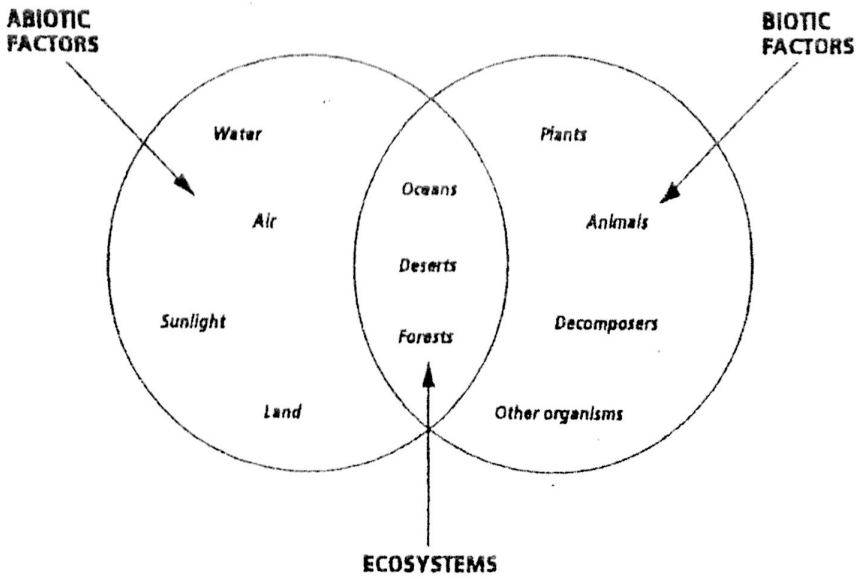
3. Define an **ecosystem**. Give an example of an ecosystem from the drawings above.

_____

_____

_____

## Get the Big Picture




Ecology is the study of interactions between the biotic factors and abiotic factors on Earth. Biotic factors are all living things. Abiotic factors are all nonliving things. An ecosystem is all the interactions between the biotic factors and abiotic factors in a certain place.

**Use the diagram to answer the following questions.**

1. What things make up the biotic factors on Earth? Give examples.

2. What things make up the abiotic factors on Earth? Give examples.

3. What is an ecosystem? Give examples.

4. During the carbon cycle, plants take in carbon dioxide gas from the air and use it to make food. So the carbon cycle involves the air and plants. Where on the diagram does the carbon cycle belong?