

**Student Laboratory Packet****Food Webs and Food Chains****A Laboratory Activity for the Living Environment**

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.

**GOALS**

In this exercise, you will:

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

**KEYWORDS**

Define the following keywords:

consumer \_\_\_\_\_

food chain \_\_\_\_\_

food energy \_\_\_\_\_

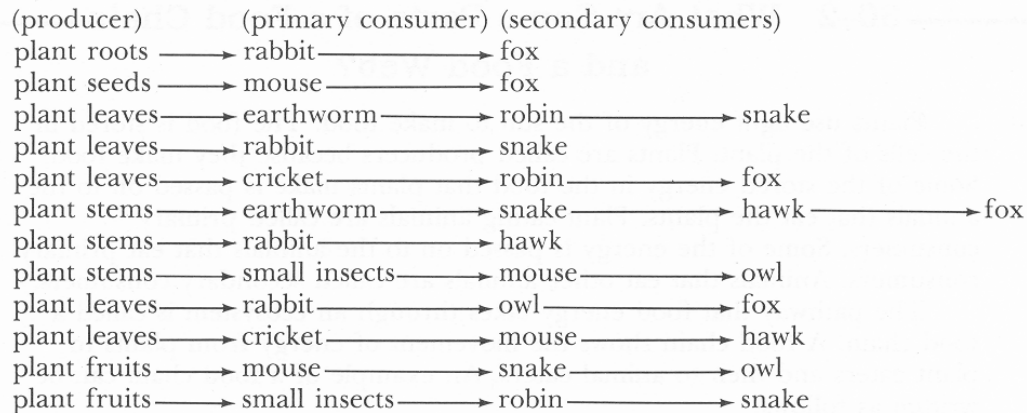
food web \_\_\_\_\_

producer \_\_\_\_\_

## PROCEDURE

### Part A. Examining Food Chains

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



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. \_\_\_\_\_

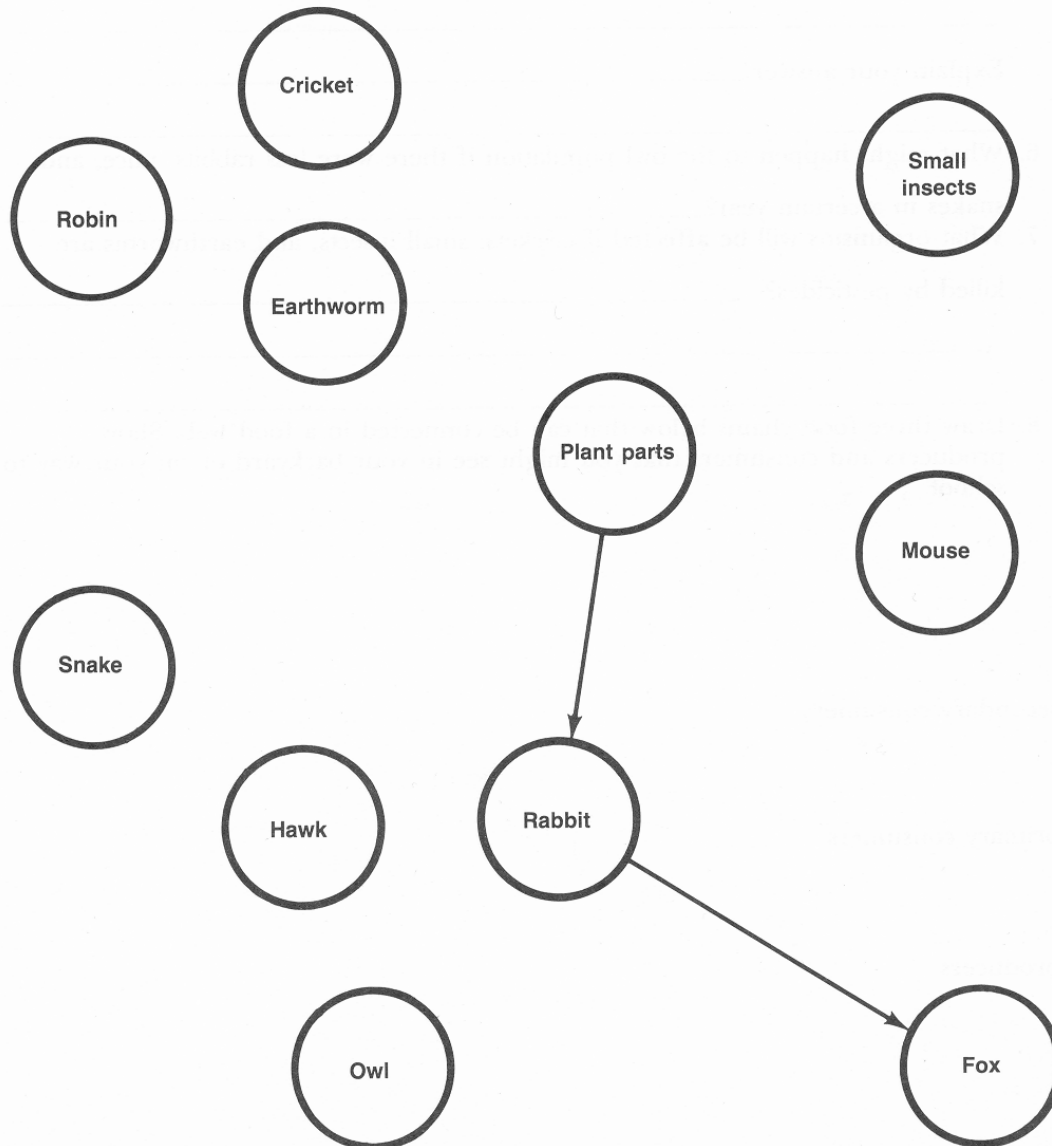
j. How does your list of carnivores compare with your list in question e? \_\_\_\_\_

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



## QUESTIONS

1. How many of the food chains you made in Figure 1 include the following animals?  
hawk \_\_\_\_\_ earthworm \_\_\_\_\_ fox \_\_\_\_\_  
small insects \_\_\_\_\_ owl \_\_\_\_\_ snake \_\_\_\_\_
2. How many of the food chains include plant parts? \_\_\_\_\_
3. Give the names of the producers that are in the food web. \_\_\_\_\_
4. Give the names of the consumers that eat both plants and animals.  
\_\_\_\_\_
5. What would happen to the food web if all the plants were removed?  
\_\_\_\_\_  
\_\_\_\_\_  
Explain your answer. \_\_\_\_\_  
\_\_\_\_\_
6. What might happen to the owl population if there were less rabbits, mice, and snakes in a certain year? \_\_\_\_\_
7. What organisms will be affected if crickets, small insects, and earthworms are killed by pesticides? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
8. Draw three food chains below that can be connected in a food web. Show producers and consumers that you might see in your backyard or on your way to school.

secondary consumers

primary consumers

producers