A food chain is a model that shows a sequence of feeding relationships.

As you have read, energy flows through an ecosystem from producers to consumers. A simple way to represent this flow of energy is with a food chain. A **food chain** shows the feeding relationships for a single chain of producers and consumers.

Grasses are producers. They get energy through photosynthesis. Rabbits are consumers. They eat producers, such as grasses. Hawks are also consumers. They eat other consumers, such as rabbits.

**Types of Consumers**

As you can see in the food chain above, not all consumers are alike. Different types of consumers have different food sources.

- **Herbivores**, such as the rabbit above, are organisms that eat only plants.
- **Carnivores**, such as the hawk above, are organisms that eat only animals.
- **Omnivores** are organisms that eat both plants and animals. Most humans are omnivores.
- **Detritivores** (dih-TRY-tuh-voHRZ) are organisms that eat dead plant and animal matter. Earthworms, for example, are detritivores.
- ** Decomposers** are detritivores that break down plant and animal matter into simpler compounds. Fungi, for example, are decomposers. Decomposers return nutrients to the ecosystem.
Some organisms eat only one or a few specific types of organisms. For example, a bird called the Florida snail kite eats mostly one particular type of snail. Organisms that have a very selective diet are called specialists. Because specialists eat only one or a few particular organisms, they are very sensitive to changes in the populations of organisms they eat. For example, if the snail population drops, the Florida snail kite does not have another main food source.

Other organisms, called generalists, eat a variety of different organisms. For example, the grey wolf eats many different animals, including elk, moose, deer, beavers, and mice.

**Trophic Levels**

The figure on page 228 shows a food chain of grasses (producers)—rabbit (herbivore)—hawk (carnivore). You can think of each link in a food chain as a level of feeding, or a trophic level. Energy flows up the food chain from the lowest trophic level to the highest.

- Producers are the first, or bottom, trophic level.
- The next trophic level is made of primary consumers—herbivores that eat producers.
- The next trophic level is made of secondary consumers—carnivores that eat herbivores.
- Continuing up the food chain, tertiary consumers are carnivores that eat secondary consumers.

Omnivores, such as most humans, can be listed at different trophic levels in different food chains. A person is at the level of primary consumer when eating vegetables. A person is at the level of secondary consumer when eating beef or chicken.

**VOCABULARY**

- Primary means first in order.
- Secondary means second in order.
- Tertiary means third in order.

At what trophic level are herbivores found?

**A food web shows a complex network of feeding relationships.**

A food chain shows a simple sequence of feeding relationships. But most feeding relationships are not very simple. For example, a generalist such as the grey wolf may be a part of several food chains that involve elk, deer, mice, and other organisms. This complex network of feeding relationships and the related flow of energy can be represented by a food web.
The stability of a food web depends on producers. Notice that the feeding chains of all organisms can be traced back to producers. In the food web above, a variety of prairie plants are the base of the food web.

Also notice that some organisms can be involved with the food web at different trophic levels, depending on what they eat. When the hawk eats a mouse, it is a secondary consumer. But when it eats a snake—that ate a beetle that ate plants—it is a tertiary consumer. At each link in a food web, some energy is stored within an organism but most energy is lost to the environment as heat.

**In the food web shown above, at what trophic level does the spider feed?**
1. What is the difference between a food chain and a food web?

2. What is the difference between a specialist and a generalist?

3. What is the difference between a detritivore and a decomposer?

4. Fill in the chart below to describe your place in the food web.

<table>
<thead>
<tr>
<th>LIST THE LAST THREE TYPES OF FOOD THAT YOU ATE.</th>
<th>WHAT TYPE OF CONSUMER WERE YOU?</th>
<th>AT WHAT TROPHIC LEVEL DID YOU EAT?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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</tbody>
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