**Food Chains and Food Webs**

All living things need food for energy. **The ultimate source of all this food starts with the Sun.** Green plants take the energy of the sun to make food. This process is called **photosynthesis.** Along with the sun’s energy, plants use air, water and soil to make their food. Because they produce their own food, green plants are called **producers.** Animals will eat these plants and, therefore, are called **consumers.** This process of passing food energy from one living thing to another is called a food chain. So, a food chain consists of a series of animals that eat plants and other animals. A plant is eaten by another animal, which in turn is eaten by yet another animal, and so on.

Living things that depend upon only green plants for food are called **primary consumers** (i.e., grasshoppers, mice, rabbits, etc.). These primary consumers are called **herbivores** (plant eating animals). Herbivores can be as small as a caterpillar or as large as an elephant.

Meat-eating animals are called **carnivores** (i.e., hawks, snakes, etc.). These animals are called **secondary consumers.** Animals that eat both green plants and animals are called **omnivores.** Omnivores are also considered secondary consumers. Humans and bears are examples of omnivores. Higher level consumers are dependent on animals that eat plants or other animals.

A **food chain** is a simplified way of showing the food relationships between plants and animals. For example, [Grass ↔ cow ↔ human] is a food chain. When drawing a food chain, the arrows point in the direction the food energy is moving. Usually, food chains show the living elements. However, some food chains can also show the non-living elements like sun, air, water and soil, since they are used by plants to make their own food.

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Sun, Air, Water, Soil

Grass (Plants)       Cow       Human
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Another way of showing a food chain is by using a food pyramid. The energy of the primary consumer is passed on to the secondary consumer, thus forming a food chain. Each member of a food chain depends on the member below it for energy. An energy pyramid shows the energy transfer from prey to predator. Animals at the top of the pyramid are fewer in number and need to eat many smaller animals to get enough energy to survive. The number of living things near the base of the pyramid is the largest. The primary consumers are much more numerous than the secondary consumers. On the following page is a food pyramid that illustrates the same food chain. Also found on the following page, is another food pyramid that shows the number of living things found at each level of the pyramid.
In a well-balanced ecosystem, the producers and consumers at each level of the pyramid have numbers that are large enough to allow them to survive without using up their food supply. The illustration below shows several food chains or pyramids. Look at this illustration. Several food pyramids are possible with the sun as the basis of the energy flow. The pyramid starts with plants because they take energy directly from the sun. Animals at the top of the food pyramid may feed on animals that are on lower levels of the pyramid.

**Food Pyramids**

A food chain is a simplified way to look at the energy that passes from producers to consumers. A **food web** is a more realistic way of looking at the relationships of plants and animals in an environment. A **food web illustrates the interrelationships between several food chains or pyramids**. A food web is created when several food chains are linked together. A food web shows how all the living things in a community get their energy. Predators eat a variety of prey. It is quite likely that a predator from one chain would be linked to prey from a different chain.
All living things are **interdependent**. Interdependence is evident in food chains, in which consumers depend not only on one another, but also on producers (plants). All living things depend on **habitats**, places where they are suited to live. A living thing in its habitat is part of a **community** of interdependent organisms. Because organisms depend on one another, a change involving one organism can have huge effects on an entire community. For example, removal or addition of one member may affect all members by upsetting the balance within the community.

Chemicals, such as pesticides, can also affect a food chain. Pesticides travel through food chains when herbivores eat treated plants. The concentration of these pesticides gets higher as they are transferred from one consumer to another along the food chain.

Many changes in communities have taken place because humans have not realized that what affects one organism may affect all, including people. After all, humans are also a part of natural communities.

**Decomposers**

Dead plants and animals are also a source of food for bacteria and fungi. Both bacteria and fungi help to **decompose** dead plants and animals by breaking them down to chemicals. This is why bacteria and fungi are called **decomposers**. When these chemicals return to soil, water, and air, they can be recycled and used again by living things, especially plants. Decomposers can occur at anywhere in the food chain. This is why decomposers are considered an important link in nearly all food chains.

Answer the questions on the next page.
Grade 4, Unit 2, Reading in the Content Area

Name _________________________________________________  Date ______________________

1. Explain why the sun is considered “the ultimate source of all food” on the Earth?
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2. What is the difference between a food chain and a food web?
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3. Create a food chain in the boxes below using the following: pig, human, corn, sun.
   
   ![Food chain diagram](image)

4. What is the role of decomposers in a food chain?
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