

# Wildlife Express!

Volume 23/Issue 7

Food Chains

March 2010

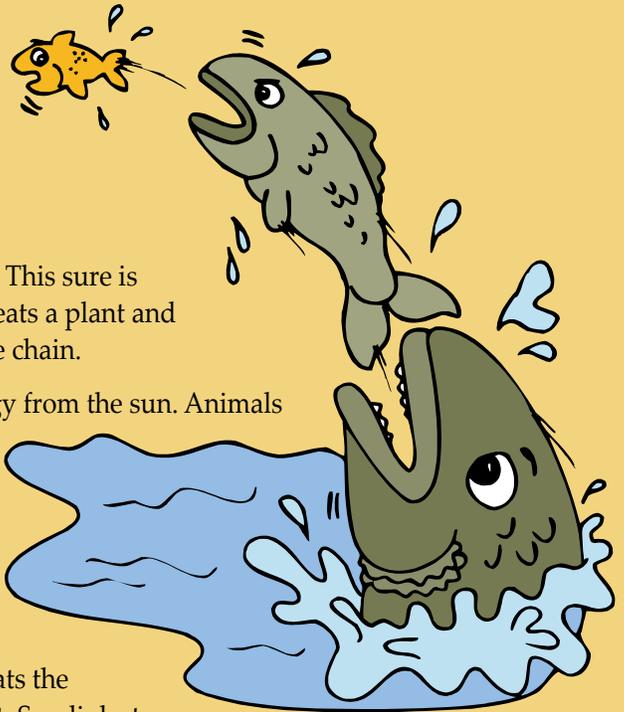
## Fantastic Food Chains



Photo courtesy Jennifer Miller



# Let's Look at Food Chains!



Have you ever heard the saying, “one thing leads to another?” This sure is true with food chains. Food chains are formed when one animal eats a plant and then another animal eats it. Each plant or animal is one link in the chain.

Living things need energy in order to survive. Plants get energy from the sun. Animals get energy by eating plants or other animals. Energy is passed along as animals eat. A food chain is the order of who eats who to get the energy and nutrition needed to survive.

Some links are easy to see. Almost all food chains start with the sun. Plants, like sagebrush, use energy from the sun to make the sugar and food needed to grow. A pygmy rabbit eats the sagebrush and uses the energy stored in the leaf. A bobcat then eats the pygmy rabbit, and the energy in the rabbit is passed to the bobcat. Sun links to sagebrush, which links to pygmy rabbit, which links to bobcat.

Other links may be more difficult to see. Do you think there could be a food chain in a mud puddle? Sure! Seeds blow into a puddle and grow into tiny plants. A mosquito lays eggs in the puddle that hatch into larvae. They eat the tiny plants. Sun links to plant which links to mosquito larvae; this is a food chain.

You may be familiar with the names that we give the animals that eat and are eaten along a food chain. In the example above, the pygmy rabbit is an herbivore. Herbivores eat plants. The rabbit is also called prey, because it is eaten by another animal - the bobcat. The bobcat is a carnivore and a predator, because it eats meat and catches other animals for food. Have you ever heard someone call an animal an omnivore? An omnivore is an animal that eats both plants and meat. A skunk would be an example of an omnivore. An animal could be a predator one day and prey the next. A skunk may eat some insects; this makes it a predator. Then the skunk may be eaten by a great horned owl making it prey.

Sometimes things other than just energy and nutrients pass from one animal to the next. Chemicals used to kill certain plants have been found in birds. How did the poison get into their bodies when they didn't eat the plants the poison was sprayed on? The answer can be found by following the food chain. Mice swallowed the poison when eating the plants. The poison does not leave the bodies of the mice. When the birds ate the mice, they also ate the poison that was in the mice.

Have you ever heard of a food web? Food webs are made up of food chains that are linked together. Food webs help show us how plants and animals are connected in nature. No matter how different and separate plants and animals may seem, their food chains connect them in some way. Would you think that a salamander would be connected to a wolf? It may be hard to see this connection, but it is there. Wolves eat moose, and moose eat cattails. Salamanders eat aquatic insects that eat cattails. Salamanders and wolves are connected in the food web by cattails. If the cattails around a pond are removed, both the wolves and salamanders might be affected.

Everything in nature is connected in some way. Food chains and webs help us see those connections. Do you think you might be connected to salamanders? Think of different food chains and webs to see if you can find a connection.

Photo courtesy Lada Stransky

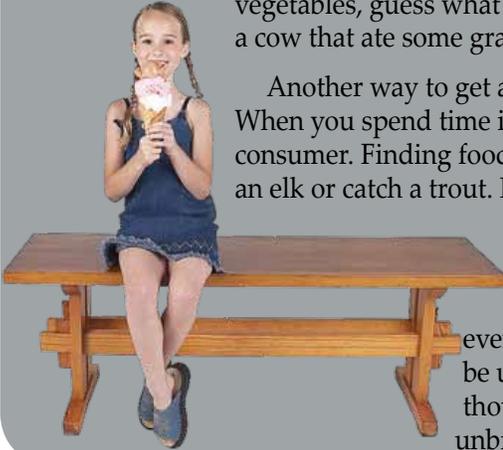


# The Food Chain

# & You!

Are you a part of the food chain? You bet! While humans are usually not eaten by other consumers, we are a part of the food chain. We eat both producers and consumers. But wait, you say, "My food comes from the grocery store!" The grocery store is just a place where you can buy food. That food has to come from somewhere. It is grown so we can eat.

Gardening is an easy way to get a close-up look at the food chain. If your family likes to garden, you are raising producers. You and your family plant seeds in the soil of your garden. The seeds sprout and grow using the nutrients in the garden soil. They become carrots, beans, tomatoes, squash, lettuce or other vegetables. When you eat those vegetables for dinner you become a primary consumer, a part of the food chain. If you had a burger with those vegetables, guess what? You are also a secondary consumer by eating the hamburger that came from a cow that ate some grass.



Another way to get an up-close look at your part in the food chain is to go hunting or fishing. When you spend time in the field to find your food, you have a better understanding of the life of a consumer. Finding food is not always easy and it sometimes takes a lot of time and effort to harvest an elk or catch a trout. Many hunters and fishermen say that a big reason why they hunt and fish is that they like the feeling of truly being a part of the natural world.

Human beings are also part of the food chain at the end of our lives. While our bodies probably won't be used by scavengers, decomposers will eventually play a role in helping break down our bodies so the nutrients can be used again by other living things. For some people, this is not a pleasant thought. But it is nature's way of making sure that the food chain remains unbroken, allowing life to go on.

## Looking for Links



You can observe food chains just about anywhere, including your own backyard. Spend some time looking for parts of the food chain in your yard. Observe a spider web for several days and write down what you see. What kinds of insects does the spider catch? How often does the spider eat? Does something else eat the spider? Make drawings of your observations. How many spider webs can you find? You might be surprised.

A really interesting, but kind of gross project is to watch something decompose. First, talk to your parents to make sure they are willing to let you try this experiment. Then you need to find something dead. If you or your parents are hunters or fishermen, you can use part of an animal that was harvested or a dead fish. A small animal that has been killed by a car will also work. Be sure to use gloves when you handle anything dead. Wash your hands well afterwards, too.

Place the dead animal in a part of your yard that is out-of-the-way but still out in the open. Use chicken wire to make a cage and put it over the dead animal. This will prevent scavengers from carrying it away. Now, watch to see what happens. Use a digital camera to take a picture once a week to chart the progress of decomposition. Keep track of the kinds of small scavengers you see. Observe what parts of the animal disappear first and what lasts the longest.

Learning about decomposition might sound weird, but it can be very valuable. Police detectives have been able to solve murder cases based on the kinds of scavengers and decomposers they find on a victim. Some scavengers and decomposers only show up at very specific times in the decomposition process. Others are only found in certain places. By looking at these organisms, police can often tell how long a victim has been dead and even where they died. Some tiny creatures have helped solve some pretty big cases!

# 1) Energy

All food chains have to start with a source of energy. The energy that begins most food chains comes from the sun. In the ocean, there is another energy source – boiling-hot deep sea vents. Sunlight cannot reach the ocean floor, so bacteria use minerals and chemicals from hot vents to make energy and start food chains deep in the ocean.

The arrows in a food chain show the flow of energy. The position an organism holds in the food chain is called its trophic level. Follow this food chain to see the flow of energy through the different trophic levels.



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## 2) Primary Producers

Primary producers use energy to make their own food. Plants use the sun to make food in a process called photosynthesis. Examples of primary producers are grass, trees, algae or phytoplankton. Phytoplankton are tiny plants that live in the ocean. A microscope is needed to see them.



## 3) Consumers

Consumers may be as tiny as an insect or as large as a grizzly bear. There are different levels of consumers depending upon what they eat. Many consumers will fit in more than one category. It all depends upon the meal they are eating at the time.

### *Primary Consumers*

Primary consumers eat the plants. They are the first animal link in a food chain. They are herbivores. Primary consumers include deer, elk, rabbits, beavers, some insects, and zooplankton in the ocean.

### *Secondary Consumers*

Secondary consumers eat the primary consumers. They are carnivores and omnivores. Animals here would include bobcats, bats, shrews, wolves, dragonflies and fish.

### *Tertiary Consumers*

Tertiary consumers eat secondary consumers. They can be carnivores and omnivores. At this link we might find snakes, fish, seals, owls or<sup>o</sup> hawks.

### *Quaternary Consumers*

Quaternary consumers eat tertiary consumers. They are almost always carnivores. Food chains “end” with top predators that have little or no animals that eat them. A white shark, raccoon, bald eagle, or mountain lion fit this category.

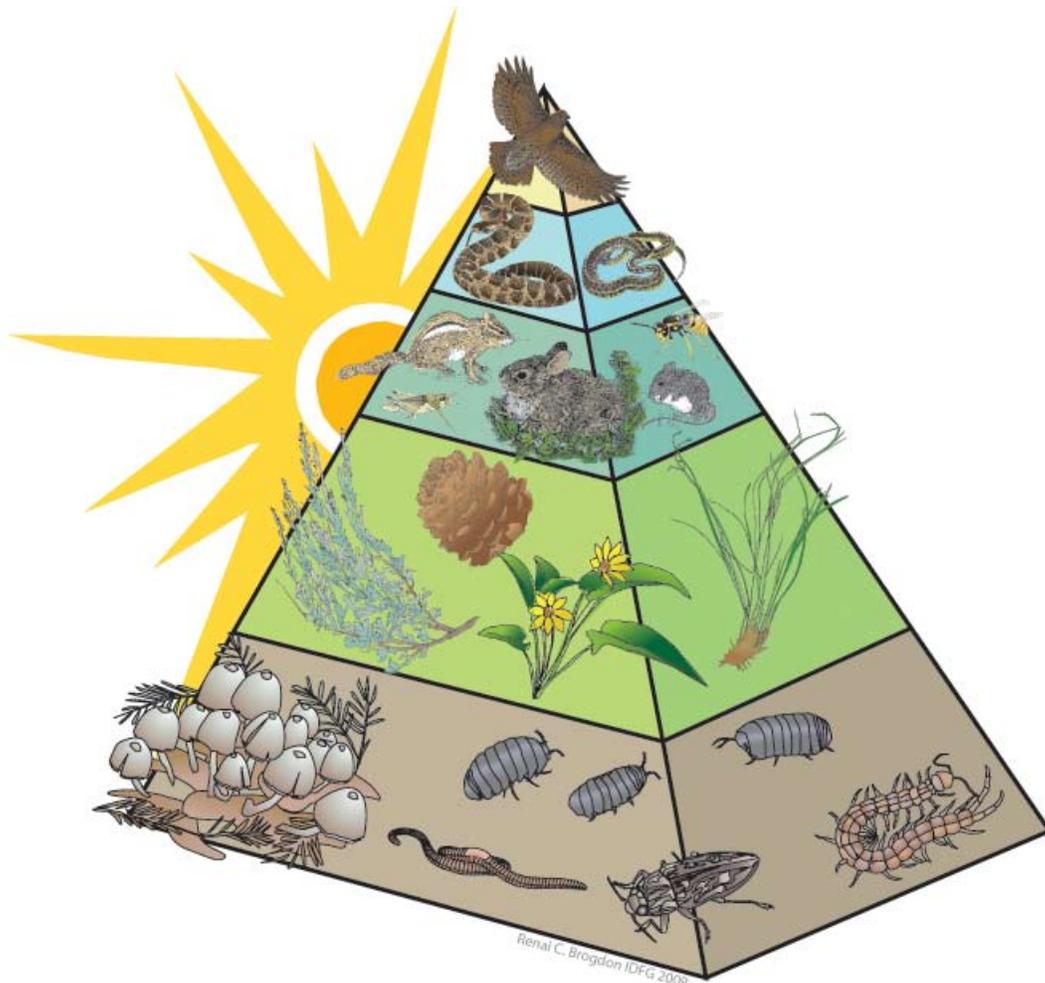
## 4) Scavengers

Scavengers are the first shift of nature's clean-up crew, getting their energy by eating dead animals. Before you say "GROSS!," remember that finding food in the wild can be difficult and sometimes dangerous. Prey animals bite, kick, and scratch. For many kinds of wildlife, a dead animal can be like a buffet: lots of food in one easy place! Scavengers can be large like bears, wolves, and coyotes or small like insects and rodents. Large scavengers can tear apart a dead animal. This lets the smaller scavengers have access to a meal. Scavengers are a very important part of the food chain. Without them, just think about all the dead animals that would be left lying around----yuck!

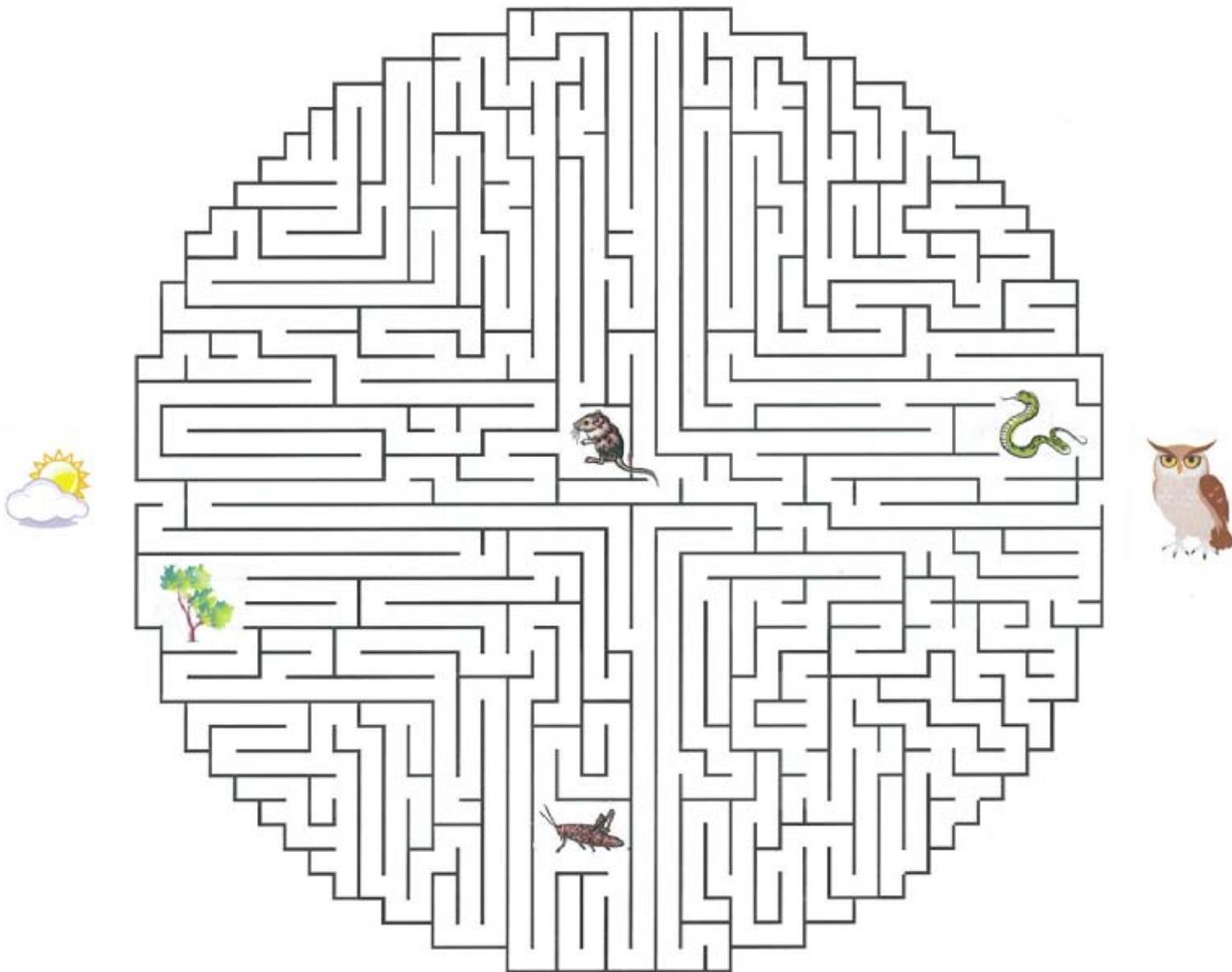


## 5) Decomposers

The smell of a dead, rotting animal tells you that decomposers are at work. Decomposers break down and feed on the tiny elements and nutrients that make up an animal or plant. Decomposers return these basic nutrients back to the soil where they become available to plants and, in turn, the animals that eat plants. Decomposers are very small. Some of them, like bacteria, are microscopic. Others, like some fungi are larger. Have you ever found a moldy orange? That mold is a colony of decomposers. Without decomposers, the food chain would come to a halt. Nutrients could not be cycled back to other organisms. Depending on how you look at it, decomposition can be the beginning or the end of a food chain.



# Food Chains Maze



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