

## What is a Food Web?

A food web is a way of showing the connections between living organisms in an ecosystem. Here are some important background concepts to help you understand the parts of a food web.



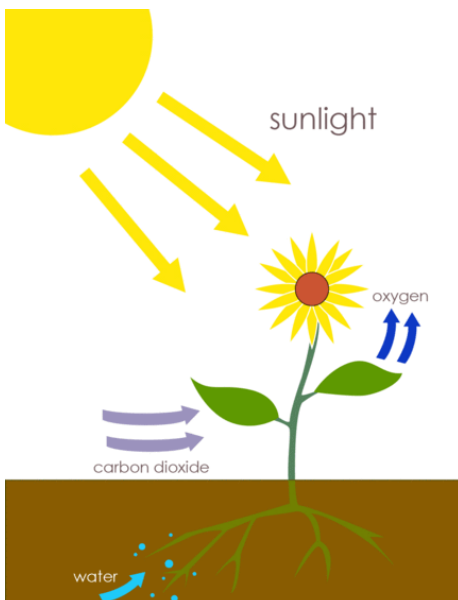
## Ecosystem

“All living things interact with one another and with the non-living things in their environment. The system formed by all of these interactions is called an ecosystem. Ecosystems can be small, like a puddle or a tree. They also can be large, like a forest, a lake, or an entire valley.”

*-B.C Science Probe 5*

The prefix “eco” means home and “system” implies a process that is ongoing. Each ecosystem (wetland, grassland, forest, pond, river, etc.) has specific plants, animals and distinguishing characteristics. The non-living elements in an ecosystem include the air, soil, and water. The entire system is driven by the energy of the sun.

Each living thing in an ecosystem can be grouped according to its “job” or role. The three main roles are **producer**, **consumer** and **decomposer**.



*Far left: Photosynthesis. Middle and above: Examples of local producers include Douglas Fir trees and huckleberries.*

## Producers

Unlike humans and other animals, plants can actually make or “produce” their own food, so we call them producers. Plants take water and minerals from the soil, light energy from the sun, and carbon dioxide from the air and turn it into sugars through a process called photosynthesis.

Through this process plants also release oxygen. We can think of plants as ‘solar-powered’ because it is the sun that provides the energy to make food, grow and change.



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## Some examples of local Primary Consumers:



*Whitetail Deer (eat producers such as weeds, grasses, shoots, twigs and leaves)*



*Red Squirrel (eat producers such as seeds, nuts, berries, leaves and twigs)*

## Some examples of local Secondary Consumers:



*Red-tailed Hawk (eats ground squirrels, red squirrels and hares)*



*Red Fox (eats rodents, frogs, insects as well as berries and seeds)*

## Consumers

Consumers are animals that cannot produce their own food. Their food comes from eating plants directly, or from eating other animals.

**Primary Consumers** get their energy from eating plants. Animals that eat only plants are called herbivores. Some examples include: deer, squirrels and caterpillars.

**Secondary consumers** eat the primary consumers. Animals that get their energy from eating other animals are called carnivores, or meat-eaters. Some secondary consumers eat both meat and plants. We call these kinds of consumers omnivores. This could refer to a bird that eats both seeds (from a plant) and insects (meat), or a bear that eats both plants and other mammals.

**Tertiary consumers** (3rd level consumers) or quaternary consumers (4th level) are also sometimes known as apex (top) predators. They eat primary consumers and secondary consumers. Some apex predators that live in our area are wolves and cougars.

## Example of an Apex Predator:



*Cougar (eats deer, elk, beavers, coyotes, rabbits, rodents and many other animals)*

## Decomposers

Decomposers are like the clean-up crew. The word decompose means to break something down into its parts. The living things in this group break down all the waste and release the nutrients so the producers can use it to make food.

The waste in nature includes fallen leaves, dead wood, animal carcasses and feces (poop).

Without decomposers, waste would just pile up. Decomposers are made up of fungi, bacteria and invertebrates.



*Invertebrate*



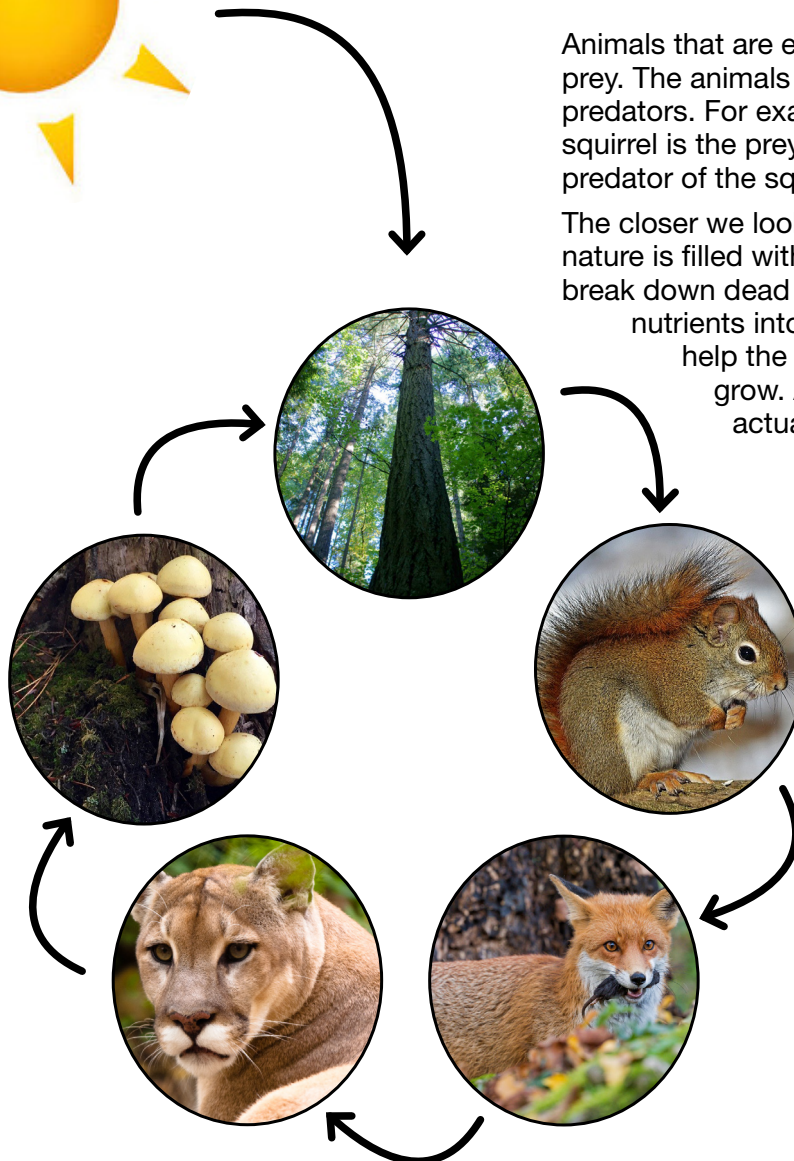
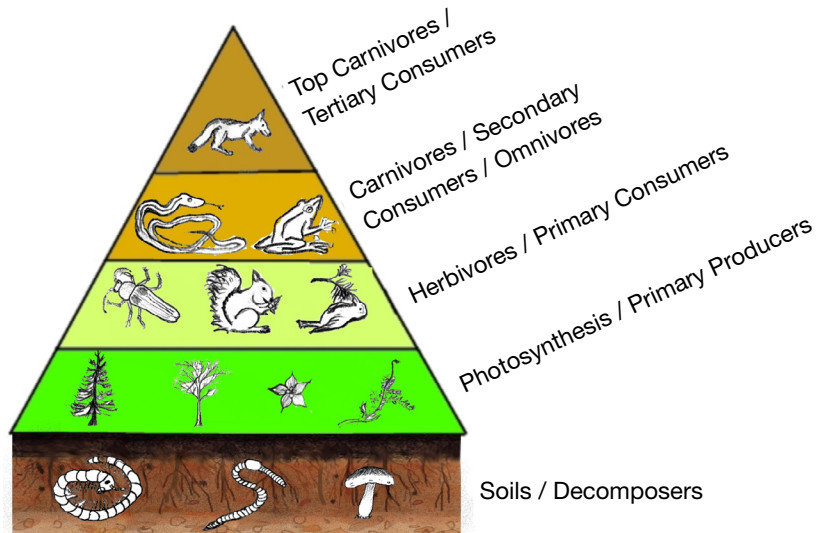
*Fungi*



## Food Chain

A food chain follows the flow of energy and nutrients through an ecosystem in an order of what eats what. It is a way of showing how the sun's energy moves through the different living things in an ecosystem. A food chain always starts with a producer (plant). The sun's energy is turned into food by the plant, and then is taken in by consumers when they eat producers and lower-level consumers.

Here is an example of a simple food chain, using the living things on the previous page:



Animals that are eaten by others are called prey. The animals that eat them are called their predators. For example, in this food chain, the squirrel is the prey of the fox. The fox is the predator of the squirrel.

The closer we look, the more we see how nature is filled with cycles. The decomposers break down dead plants and animals, releasing nutrients into the soil. These nutrients help the trees and other plants to grow. And so our food chain is actually a cycle.



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## What is a food web?

A food web shows many interconnected food chains in an ecosystem. If we look at the example on the previous page, we can imagine that each of the plants and/or animals eats, or is eaten by, more than one kind of living thing. There may be many more animals that eat Douglas Fir cones, for example. And squirrels eat a variety of other things that come from other plants and trees. Squirrels would have other predators, besides foxes. Foxes would eat other prey. Cougars would also have more than one kind of prey. A food web tries to represent many of these kinds of interactions, rather than a simple food chain.

See the below for an example of a food web in a wetland. It gives an idea of some of the complex food connections. What would a food web in the forest look like?

