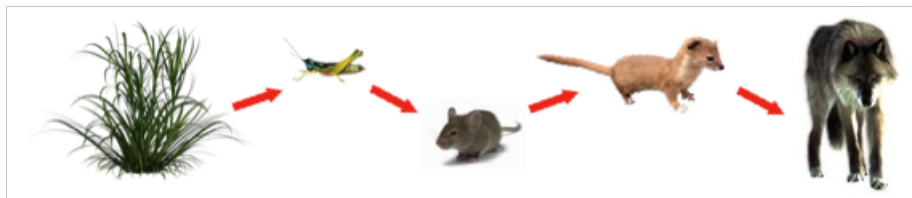


# Life Science

## Energy Flow in Ecosystems

Remember that food chains are used to represent the flow of energy between organisms. The arrows in a food chain show the direction of energy flow.



The organisms in a food chain can be producers, consumers, or decomposers.

**Producers** are green plants capable of making their own food using energy from the sun in a process called photosynthesis.

**Consumers** are animals that cannot make their own food. They get their energy from other plants and animals. A food chain can have as many as three to four consumers.

**Decomposers** are unable to make their own food. They break down waste products and dead organisms for food.

There can be many levels of consumers who rely on each other as a food source.

**First level consumers** feed directly on producers. An example of this would be a grasshopper.

**Second level consumers** feed on first level consumers. An example of this would be a mouse that eats the grasshopper.

**Third level consumers** feed on second level consumers. An example of this would be a weasel eating the mouse.

**Top consumers** (also called **top carnivores** or **top predators**) are typically at the top of the food chain without predators of their own. They may be carnivores or omnivores. An example of this would be a wolf eating the weasel.

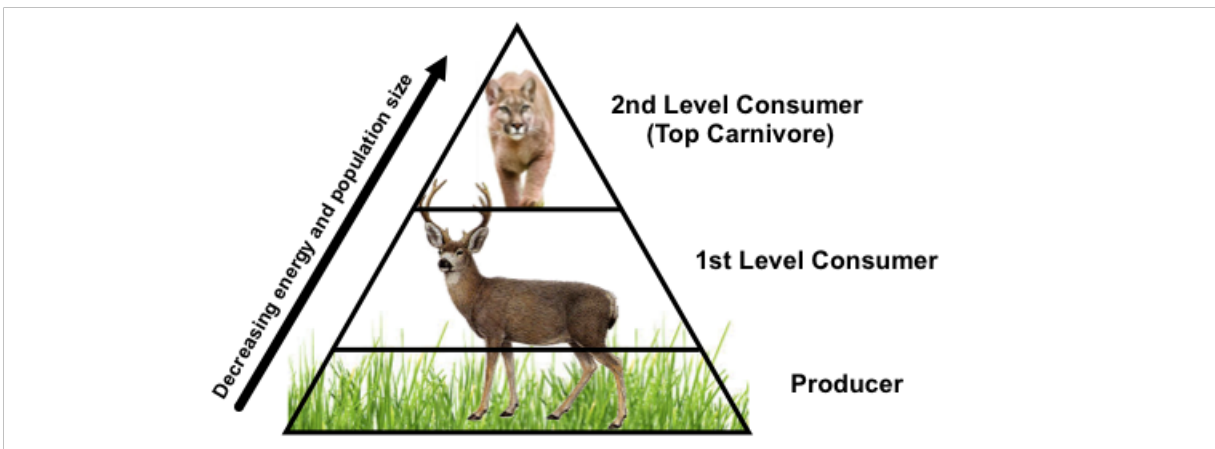
**Predation** is an interaction between organisms in which one organism, the **predator**, kills and eats another organism, the **prey**, to obtain the energy and nutrients from the body of the prey for growth, maintenance, or reproduction. An example of a predator would be a mountain lion. An example of prey for a mountain lion is a deer.

**Scavengers** are animals or other organisms that feed on dead or decaying matter. An example of this would be ravens

scavenging a wolf kill.



The amount of energy available decreases at each successive step of a food chain. Approximately 90% of the energy available to the organisms at each step of a food chain is used for growth, maintenance, and reproduction, and is released as heat. Therefore, it takes a lot of producers to support a few top consumers. The energy pyramid below illustrates this.



If there were 100 units of energy at the producer level, the first level consumers would receive 10 units of energy, and the secondary consumers would receive 1 unit of energy. An energy pyramid helps demonstrate the loss of energy from one level of the food chain to the next.

Decomposers are also unable to make their own food. Bacteria and fungi are decomposers. They break down waste products and dead organisms for food. Some of the broken down materials are returned to the soil to be recycled and used by plants again. An example of this would be bears bread growing on decaying wood in the forest. Although decomposers are very important to ecosystems, they are usually not shown on the food chain.

