

Science & Math

Consume or be consumed: breaking down the structure of a food web



Each living thing is part of many different food chains. A food chain is a path that energy takes throughout a certain ecosystem. Together, all the food chains in an ecosystem make up a food web.

Trophic Levels

Organisms in food webs are grouped into categories. These categories are called trophic levels.

Producers

Organisms in the first trophic level are called producers. A producer is also called an autotroph. Plants are the type of producer we know best, but there are many other kinds. Algae and some types of bacteria are also producers.

Each producer makes its own food and does not depend on any other organism for nutrition. Most producers use photosynthesis. This is a series of chemical reactions in which organisms create food from sunlight, carbon dioxide and water.

Consumers

The next trophic levels are made up of animals that eat producers. These organisms are called consumers.

Primary consumers are herbivores, who eat plants, algae and other producers. In a grassland ecosystem, deer, mice and elephants are herbivores. They eat grasses, shrubs and trees. In a desert ecosystem, a mouse that eats seeds and fruits is a primary consumer. In an ocean ecosystem, many fish and turtles are herbivores.

Secondary consumers eat herbivores. They are at the third trophic level. In a desert ecosystem, a secondary consumer may be a snake that eats a mouse. In underwater kelp forests, sea otters are secondary consumers. They hunt sea urchins as prey.

The next level of consumers eat secondary consumers. In the desert, an owl or eagle may hunt snakes.

Top predators are also called apex predators. They eat other consumers, and no predators eat them. Lions are apex predators in the grassland ecosystem. In the ocean, fish such as the great white shark are apex predators. In the desert, bobcats and mountain lions are top predators.

Consumers can be carnivores or omnivores. Carnivores eat meat, while omnivores eat various organisms, including both meat and plants.

Detritivores And Decomposers

Detritivores and decomposers make up the last part of food chains. Detritivores eat plants and animals that are no longer alive. For instance, vultures eat dead animals.



Image 2. A lappet faced vulture in Grumeti, Tanzania, East Africa. Vultures are a type of detritivore because they eat things that are not alive. Photo by Tim Graham for Getty Images. [Click to enlarge]

Some organisms, like fungi and bacteria, are decomposers. They turn decaying plants into soil. Since this soil is rich in nutrients, autotrophs use it to feed themselves. This way, the food chain is able to continue. As an example, grass produces its own food through photosynthesis. A rabbit eats the grass and then a fox eats the rabbit. When the fox dies, decomposers such as worms and mushrooms break down its body. It returns to the soil where it provides nutrients for plants like grass.