It's the circle of life: Every organism is a meal for another organism

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Image 1. An American alligator chows down on a blue crab. Photo by: Gareth Rasberry/Wikimedia Commons

Living things cannot survive without food.

The food chain describes what eats what in the wild. Each food chain is a possible pathway that energy and nutrients can follow through the ecosystem. An ecosystem is the network of all of the living and nonliving things in an area.

Here's an example of a food chain. First, grass produces its own food using sunlight, water, air and nutrients in the soil. Next, a rabbit munches on the grass. Then, a fox sees the rabbit and eats it. One day, the fox dies. When this happens, tiny bacteria will break down its body. The fox's broken-down body will eventually return to the soil. There, it will provide nutrients for plants like grass.

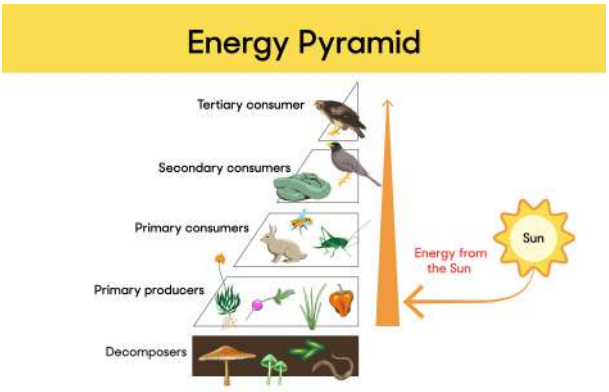
Trophic Levels Of Food Chains

Organisms in food chains are grouped into categories. These categories are called trophic levels. Roughly speaking, these levels are divided into three groups. First, there are producers, or the first

trophic level. Then there are consumers, which make up the second, third and fourth trophic levels. Finally, there are decomposers.

Producers are also known as autotrophs. They make their own food. Because of this, they make up the first level of every food chain. A very common autotroph is a plant.

Nearly all autotrophs create food from sunlight, air, soil and water. They do this from a process called photosynthesis. It produces glucose, a type of nutrient.



There are many other kinds of autotrophs. Algae, whose larger forms are known as seaweed, are autotrophic. Phytoplankton, tiny organisms that live in the ocean, are also autotrophs. Some types of bacteria are autotrophs. For example, bacteria living in active volcanoes use compounds of the chemical sulfur to produce their own food. This process is called chemosynthesis.

The second trophic level consists of organisms that eat the producers. These are called primary consumers, or herbivores. They eat plants or other autotrophs. Deer, turtles and many types of birds are herbivores. Secondary consumers eat the herbivores. Tertiary consumers eat the secondary consumers. There may be more levels of consumers before a chain finally reaches its top predator. Top predators, also called apex predators, eat other consumers.

Consumers can be carnivores (animals that eat other animals) or omnivores (animals that eat both plants and animals). Omnivores, like people, consume many types of foods. People eat plants, such as vegetables and fruits. We also eat animals and animal products, such as meat, milk and eggs. We eat fungi, such as mushrooms. We also eat algae, in edible seaweeds like nori, which is used to wrap sushi rolls.

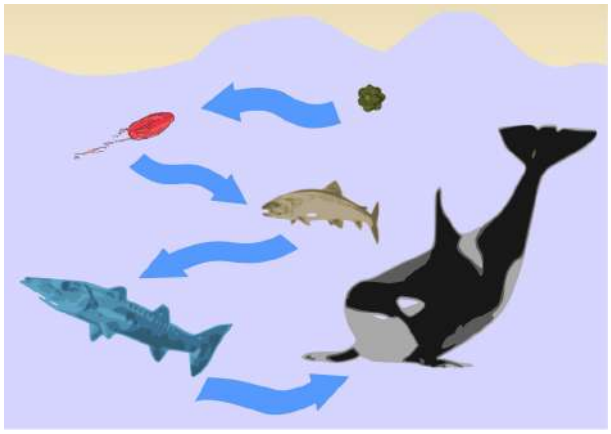
Detritivores and decomposers are the final part of food chains. Detritivores are organisms that eat nonliving plant and animal remains. For example, scavengers such as vultures eat dead animals. Dung beetles eat animal poop.

Decomposers like fungi and bacteria complete the food chain. They turn organic wastes, such as decaying plants, into inorganic materials, such as nutrient-rich soil. Decomposers complete the cycle of life. They return nutrients to the soil or oceans for use by autotrophs. This starts a whole new food chain.

Ecosystems Support The Food Web

Different habitats and ecosystems provide many possible food chains. Altogether, these chains make up a food web.

In one undersea food chain, single-celled organisms called phytoplankton provide food for tiny shrimp called krill. Krill provide the main food source for the blue whale. The whale is on the third trophic level.



In a grassland ecosystem, a grasshopper might eat grass, a producer. The grasshopper might get eaten by a rat. The rat is then swallowed by a snake. Finally, a hawk — an apex predator — swoops down and snatches up the snake.

In a pond, the autotroph might be algae. A mosquito larva eats the algae. Then, perhaps a dragonfly larva eats the young mosquito. The dragonfly larva becomes food for a fish. This provides a tasty meal for a raccoon.

Quiz

1 What process in a food chain requires sunlight, water, and air?

(A) decomposition

(B) photosynthesis

(C) chemosynthesis

(D) consumerism

2 What does Image 3 show?

(A) a pond food chain

(B) a land food chain

(C) a grassland food chain

(D) an undersea food chain

3 How are herbivores and omnivores different?

(A) Herbivores eat only plants, while omnivores eat plants and other animals.

(B) Omnivores eat only animals and herbivores eat only plants.

(C) Herbivores are found only in land food chains while omnivores are found only in ocean food chains.

(D) Herbivores can make their own food while omnivores cannot.

4 Examine Image 1.

How does this image help the reader understand the trophic levels of food chains?

(A) It shows a consumer eating an autotroph.

(B) It shows a predator eating a consumer.

(C) It shows an herbivore eating a producer.

(D) It shows a scavenger eating a dead herbivore.

5 What would happen to the primary consumers if all of the producers in an ecosystem died out?

(A) They would have to eat the secondary consumers.

(B) They would make their own food through photosynthesis.

(C) They would probably become decomposers.

(D) With nothing to eat, they would die out too.

6 How are decomposers involved in the food chain?

(A) They complete the food chain by returning nutrients for autotrophs to use.

(B) The begin the food chain by turning sunlight, air, soil or water into food.

(C) They eat the producers in the first level of the food chain.

(D) They eat the herbivores in the second level of the food chain.

7 What role do decomposers play in a food chain?

(A) They return nutrients to the soil or the ocean for producers to use again.

(B) They use photosynthesis to make their own food.

(C) They are producers that live in the ocean.

(D) They create the air for plants to make their own food.

8 How do tertiary consumers primarily get their energy?

(A) They eat secondary consumers that eat primary consumers.

(B) They eat autotrophs that produce their own food.

(C) They eat omnivores that eat top predators.

(D) They eat primary consumers that eat producers.