

The food chain: who eats who in the wild

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

The food chain describes who eats whom in the wild. Every living thing — from one-celled algae to giant blue whales — needs food to survive. Each food chain is a possible pathway that energy and nutrients can follow through the ecosystem.

For example, grass produces its own food from sunlight. A rabbit eats the grass, then a fox eats the rabbit. When the fox dies, bacteria break down its body, returning it to the soil where it provides nutrients for plants, like grass.

Of course, many different animals eat grass, and rabbits can eat other plants besides grass. Foxes, in turn, can eat many types of animals and plants. Each of these living things can be a part of multiple food chains. All of the interconnected and overlapping food chains in an ecosystem make up a food web.

Trophic Levels

Organisms in food chains are grouped into categories called trophic levels. Roughly speaking, these levels are divided into producers (first trophic level), consumers (second, third and fourth

trophic levels) and decomposers.

Producers, also known as autotrophs, make their own food. They make up the first level of every food chain. Autotrophs are usually plants or one-celled organisms. Nearly all autotrophs use a process called photosynthesis to create "food" (a nutrient called glucose) from sunlight, carbon dioxide and water.

Plants are the most familiar type of autotroph, but there are many other kinds. 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 sulfur compounds 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. 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 (used to wrap sushi rolls) and sea lettuce (used in salads).

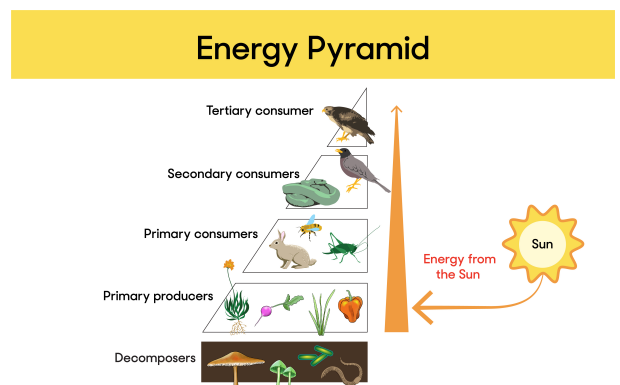
Detritivores and decomposers are the final part of food chains. Detritivores are organisms that eat nonliving plant and animal remains. For example, scavengers, such as vultures, eat dead animals. Dung beetles eat animal feces.

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, returning nutrients to the soil or oceans for use by autotrophs. This starts a whole new food chain.

Food Chains

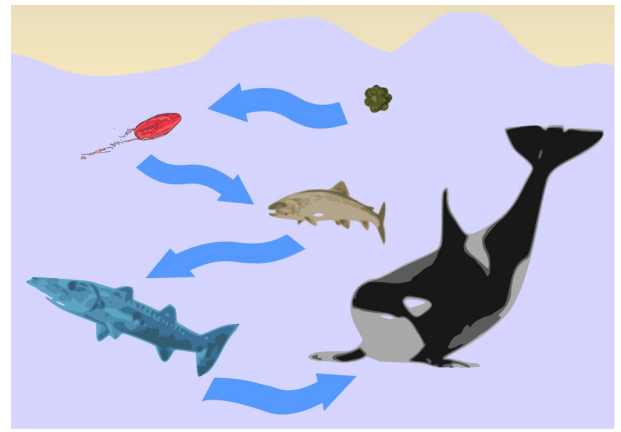
Different habitats and ecosystems provide many possible food chains that make up a food web.

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



In a grassland ecosystem, a grasshopper might eat grass, a producer. The grasshopper might get eaten by a rat, which in turn is consumed 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, and then perhaps a dragonfly larva eats the young mosquito. The dragonfly larva becomes food for a fish, which provides a tasty meal for a raccoon.



Quiz

- 1 Which BEST describes why autotrophs begin every food chain?
- (A) There are more of them than primary consumers.
 - (B) They are the only trophic level that can use the sun's energy to create glucose.
 - (C) They get their nutrients from detritivores and decomposers.
 - (D) They can reproduce faster than consumers.
- 2 Which paragraph from the article is BEST illustrated by Image 2?
- (A) For example, grass produces its own food from sunlight. A rabbit eats the grass, then a fox eats the rabbit. When the fox dies, bacteria break down its body, returning it to the soil where it provides nutrients for plants, like grass.
 - (B) In one marine food chain, single-celled organisms called phytoplankton provide food for tiny shrimp called krill. Krill provide the main food source for the blue whale, an animal on the third trophic level.
 - (C) In a grassland ecosystem, a grasshopper might eat grass, a producer. The grasshopper might get eaten by a rat, which in turn is consumed by a snake. Finally, a hawk — an apex predator — swoops down and snatches up the snake.
 - (D) In a pond, the autotroph might be algae. A mosquito larva eats the algae, and then perhaps a dragonfly larva eats the young mosquito. The dragonfly larva becomes food for a fish, which provides a tasty meal for a raccoon.
- 3 Which animal in a pond food chain would be on the same trophic level as a snake in a grassland ecosystem?
- (A) algae
 - (B) mosquito larva
 - (C) fish
 - (D) raccoon
- 4 How does Image 1 develop an understanding of trophic levels?
- (A) It shows a detritivore consuming animal remains.
 - (B) It shows a consumer eating a producer.
 - (C) It shows a producer making its own food.
 - (D) It shows a carnivore eating a consumer.
- 5 Which is an example of an apex predator?
- (A) lion
 - (B) giraffe
 - (C) mouse
 - (D) fox

- 6 How does the author build an understanding of food chains?
- (A) by describing the categories of organisms found within food chains and then giving examples of food chains
 - (B) by describing how individual food chains work and then giving examples of complex food webs within ecosystems
 - (C) by showing the reader how each trophic level in a food chain works, starting with the "top" of the food chain
 - (D) by showing the reader how food webs can be disrupted if food chains do not work properly
- 7 How are food webs more complex than food chains?
- (A) Food webs are found in more ecosystems than food chains.
 - (B) Food webs are made of many food chains.
 - (C) Decomposers are only found in food webs, not in food chains.
 - (D) Food chains are made of many food webs.
- 8 Which sentence from the introduction [paragraphs 1-3] introduces a primary consumer to the reader?
- (A) Every living thing — from one-celled algae to giant blue whales — needs food to survive.
 - (B) For example, grass produces its own food from sunlight.
 - (C) A rabbit eats the grass, then a fox eats the rabbit.
 - (D) When the fox dies, bacteria break down its body, returning it to the soil where it provides nutrients for plants, like grass.