

**Illustration**  
**MEDIA SPOTLIGHT**

## Coral Reef Food Web

Journey Through the Trophic Levels of a Food Web

For the complete illustrations with media resources, visit:  
<http://education.nationalgeographic.com/media/coral-reef-food-web/>

A **food web** consists of all the food chains in a single **ecosystem**. Each living thing in an ecosystem is part of multiple food chains. Each **food chain** is one possible path that **energy** and nutrients may take as they move through the ecosystem. Not all energy is transferred from one trophic level to another. Energy is used by organisms at each trophic level, meaning that only part of the energy available at one trophic level is passed on to the next level. All of the interconnected and overlapping food chains in an ecosystem make up a food web. Similarly, a single organism can serve more than one role in a food web. For example, a queen conch can be both a **consumer** and a detritivore, or **decomposer**.

Food webs consist of different organism groupings called trophic levels. In this example of a coral reef, there are producers, consumers, and decomposers.

- Producers make up the first **trophic level**. A **producer**, or autotroph, is an organism that can produce its own energy and nutrients, usually through photosynthesis or chemosynthesis.
- Consumers are organisms that depend on producers or other consumers to get their food, energy, and nutrition. There are many different types of consumers. First-order consumers, or primary consumers, are usually herbivores. They eat producers. Secondary consumers prey on primary-consumers. They are usually carnivores, but can be omnivores as well. Tertiary-consumers are carnivores that mostly eat other carnivores. They prey on secondary consumers. These **predator-prey** relationships make up the food web. Different predators eat different kinds of prey until a **top predator** is reached. Top predators are at the top of the food chain and have no predators of their own.
- Detritivores and decomposers complete the cycling of energy through the food web. Detritivores are organisms that consume dead organic material. Decomposers are organisms that break down dead organic material and return nutrients to the sediment. These nutrients are used by the producers during photosynthesis to create energy, thus completing the cycle.

### QUESTIONS

- What are the primary producers in the coral reef food web illustration?  
The primary producers are **blue-green algae, phytoplankton, zooxanthelle, seagrass, and brown algae**.
- What are the primary consumers in the coral reef food web illustration?  
The primary consumers are **zooplankton, corals, sponges, Atlantic blue tang, and queen conch**.
- What are the intermediate consumers in the coral reef food web illustration?  
The intermediate consumers are the **sergeant major, flaming tongue snail, bar jack, grouper, Caribbean lobster, bicolor damselfish, polychaete worm, cushion sea star, and southern stingray**.
- Identify the top predator in the coral reef food web illustration.

The top predator in the coral reef food web is a **blacktip reef shark**.

- What are the decomposers in the coral reef food web illustration?

The decomposers are the **polychaete worm and the queen conch**.

- How is energy transferred through a food web?

Energy is transferred through the consumption of organisms.

## VOCABULARY

Term	Part of Speech	Definition
<b>carnivore</b>	<i>noun</i>	organism that eats meat.
<b>consumer</b>	<i>noun</i>	organism on the food chain that depends on autotrophs (producers) or other consumers for food, nutrition, and energy.
<b>decomposer</b>	<i>noun</i>	organism that breaks down dead organic material.
<b>ecology</b>	<i>noun</i>	branch of biology that studies the relationship between living organisms and their environment.
<b>ecosystem</b>	<i>noun</i>	community and interactions of living and nonliving things in an area.
<b>energy</b>	<i>noun</i>	capacity to do work.
<b>food chain</b>	<i>noun</i>	group of organisms linked in order of the food they eat, from producers to consumers, and from prey, predators, scavengers, and decomposers.
<b>food web</b>	<i>noun</i>	all related food chains in an ecosystem. Also called a food cycle.
<b>herbivore</b>	<i>noun</i>	organism that eats mainly plants.
<b>intermediate predator</b>	<i>noun</i>	in a food chain or food web, an organism that eats (preys on) herbivores or other first-order consumers, but is preyed upon by top predators.
<b>marine biology</b>	<i>noun</i>	study of life in the ocean.
<b>nutrient</b>	<i>noun</i>	substance an organism needs for energy, growth, and life.
<b>ocean</b>	<i>noun</i>	large body of salt water that covers most of the Earth.
<b>omnivore</b>	<i>noun</i>	organism that eats a variety of organisms, including plants, animals, and fungi.
<b>predator</b>	<i>noun</i>	animal that hunts other animals for food.
<b>prey</b>	<i>noun</i>	animal that is hunted and eaten by other animals.
<b>primary producer</b>	<i>noun</i>	organism that can produce its own food and nutrients from chemicals in the atmosphere, usually through photosynthesis or chemosynthesis. Also called an autotroph.
<b>producer</b>	<i>noun</i>	organism on the food chain that can produce its own energy and nutrients. Also called an autotroph.
<b>top predator</b>	<i>noun</i>	species at the top of the food chain, with no predators of its own. Also called an alpha predator or apex predator.
<b>trophic level</b>	<i>noun</i>	one of three positions on the food chain: autotrophs (first), herbivores (second), and carnivores and omnivores (third).

