

**phytoplankton:** Microscopic photosynthetic algae, protists, and cyanobacteria that drift near the surface of water bodies and generally form the first trophic level in aquatic food chains.

**zooplankton:** Tiny aquatic animals that feed on phytoplankton and generally constitute the second trophic level in an aquatic food chain.

**competitive exclusion:** An outcome of interspecific competition in which one species excludes another species from resource use entirely.

**species coexistence:** An outcomes of interspecific competition in which no competing species fully excludes others and the species continue to live side by side.

**fundamental niche:** The full niche of a species.

**realized niche:** The portion of the fundamental niche that is fully realized (used) by a species)

**resource partitioning:** The process by which species adapt to competition by evolving to use slightly different resources, or to use their shared resources in different ways, thus minimizing interference with one another.

**character displacement:** A phenomenon resulting from competition among species in which competing species evolve characteristics that better adapt them to specialize on the portion of the resource they use. The species essentially becomes more different from one another, reducing their competition.

**predation:** The process in which one species searches for, captures, and ultimately kills its prey.

**parasitism:** A relationship in which one organism, the parasite, depends on another, the host, for nourishment or some other benefit while simultaneously doing the host harm.

**pathogens:** A parasite that causes disease in its host.

**coevolution:** The process by which two or more species evolve in response to one another.

**herbivory:** The consumption of plants by animals.

**mutualism:** A relationship in which all participating organisms benefit from their interaction.

**symbiosis:** A relationship between different species of organisms that live in close physical proximity.

**pollination:** A plant-animal interaction in which one organism (for example, a bee or hummingbird) transfers pollen (containing male sex cells) from flower to flower, fertilizing ovaries (containing female sex cells) that grown into fruits with seeds.

**community:** In ecology, an assemblage of populations of interacting organisms that live in the same area at the same time.

**trophic level:** Rank in the feeding hierarchy of a food chain.

**producers:** An organism that uses energy from sunlight to produce its own food. Includes green plants, algae, and cyanobacteria.

**primary consumers:** An organism that consumes producers and feeds at the second trophic level.

**secondary consumers:** An organism that consumes primary consumers and feeds at the third trophic level.

**tertiary consumers:** An organism that consumes secondary consumers and feeds at the fourth trophic level.

**detritivores:** an organism, such as a millipede or soil insect, that scavenges the waste products or dead bodies of other community members.

**decomposers:** An organism, such as a fungus or bacterium, that breaks down leaf litter and other nonliving matter into simpler constituents that can be taken up and used by plants.

**biomass:** (1) In ecology, organic material that makes up living organisms; the collective mass of living matter in a given place and time. (2) In energy, organic material derived from living or recently living organisms, containing chemical energy that originated with photosynthesis.

**food chain:** A linear series of feeding relationships. As organisms feed on one another, energy is transferred from lower to higher trophic levels.

**food web:** A visual representation of feeding interactions within an ecological community that shows an array of relationships between organisms at different trophic levels.

**keystone species:** A species that has an especially far-reaching effect on a community.

**trophic cascade:** A series of changes in the population sizes of organisms at different trophic levels in a food chain, occurring when predators at high trophic levels indirectly promote populations of organisms at low trophic levels by keeping species at intermediate trophic levels in check.

**disturbance:** An event that affects environmental conditions rapidly and drastically, resulting in changes to the community and ecosystem.

**resistance:** The ability of an ecological community to remain stable in the presence of a disturbance.

**resilience:** The ability of an ecological community to change in response to disturbance but later return to its original state.

**succession:** A stereotypical series of changes in the composition and structure of an ecological community through time.

**primary succession:** A stereotypical series of changes as an ecological community develops over time, beginning with a lifeless substrate.

**secondary succession:** A stereotypical series of changes as an ecological community develops over time, beginning when some disturbance disrupts or dramatically alters an existing community.

**pioneer species:** A species that arrives earliest, beginning the ecological process of succession in a terrestrial or aquatic community.

**climax community:** In the traditional view of ecological succession, a community that remains in place with little modification until disturbance restarts the successional process.

**regime shift:** A fundamental shift in the overall character of an ecological community, generally occurring after some extreme disturbance and after which the community may not return to its original state.

**no-analog community:** An ecological community composed of a novel mixture of organisms with no current analog or historical precedent.

**introduced species:** A species introduced by human beings from one place to another (whether intentionally or by accident).

**invasive species:** A species that spreads widely and rapidly becomes dominant in a community, interfering with the community's normal functioning.

**restoration ecology:** The study of the historical conditions of ecological communities as they existed before humans altered them.

**ecological restoration:** Efforts to reverse the effects of human disruption of ecological systems and to restore communities to their condition before the disruption.

**biome:** A major regional complex of similar plant communities; a large ecological unit defined by its dominant plant type and vegetation structure.

**rainshadow:** A region on one side of a mountain or mountain range that experiences arid climate

**climate diagram:** A visual representation of a region's average monthly temperature and precipitation. Also known as a climatograph.

**temperate deciduous forest:** A biome consisting of midlatitude forest characterized by broad-leafed trees that lose their leaves each fall and remain dormant during winter. These forests occur in areas where precipitation is spread relatively evenly throughout the year; much of Europe, eastern China, and eastern North America.

**temperate grasslands:** A biome whose vegetation is dominated by grasses and features more extreme temperature difference between winter and summer and less precipitation than temperate deciduous forests. Also known as a steppe or prairie.

**temperate rainforest:** A biome consisting of tall coniferous trees; cooler and less species-rich than tropical rainforest and milder and wetter than temperate deciduous forest.

**tropical rainforest:** A biome characterized by year-round rain and uniformly warm temperatures. Found in Central America, South America, Southeast Asia, West Africa, and other tropical regions. They have dark, damp interiors, lush vegetation; and highly diverse biotic communities.

**tropical dry forest:** A biome that consists of deciduous trees and occurs at tropical and subtropical latitudes where wet and dry seasons each span about half the year. Widespread in India, Africa, South America, and northern Australia. Also known as a tropical deciduous forest.

**savanna:** A biome characterized by grassland interspersed with clusters of acacias and other trees. It is found across parts of Africa (where it was the ancestral home of our species), South America, Australia, India, and other dry tropical regions.

**desert:** The driest biome on Earth, with annual precipitation of less than 25 cm. Because deserts have relatively little vegetation to insulate them from temperature extremes, sunlight readily heats them in the daytime, but daytime heat is quickly lost at night, so temperature varies widely from day to night and in different seasons.

**tundra:** A biome that is nearly as dry as desert but is located at very high latitudes along the northern edges of Russia, Canada, and Scandinavia. Extremely cold winters with little daylight and moderately cool summers with lengthy days characterize this landscape of lichens and low, scrubby vegetation.

**boreal forest:** A biome of northern coniferous forest that stretches in a broad band across much of Canada, Alaska, Russia, and Scandinavia. Also known as taiga, this forest consists of a limited number of species of evergreen trees, such as black spruce, that dominate large regions of forests interspersed with occasional bogs and lakes.

**chaparral:** A biome consisting mostly of densely thicketed evergreen shrubs occurring in limited small patches. Its “Mediterranean” climate of mild, wet winters and warm, dry summers is induced by oceanic influences. In addition to ringing the Mediterranean Sea, this biome occurs along the coasts of California, Chile, and southern Australia.