

- Abiotic**—Nonliving. The parts of nature composed of physical and chemical components of the environment, including water, sunlight, temperature and soil chemistry. Page 4.
- Adaptation**—A specialized structure or behavior that helps an organism survive in a particular environment. Page 15.
- Additive mortality**—Death that adds to a population's overall mortality. Additive mortality causes a population's size to decrease over time. Compare with compensatory mortality. Page 37.
- Allee effect**—A phenomenon that draws small populations toward extinction by affecting behaviors, such as finding mates, that depend on high population densities. Page 65.
- Anaerobic**—Lacking oxygen. Page 90.
- Aquifer**—An underground pool of water that collects in the pores and crevices of bedrock. Page 93.
- Asexual reproduction**—A form of reproduction in which only one parent is needed to produce offspring. Compare with sexual reproduction. Page 17.
- Atmosphere**—A pool or reservoir composed of all the gases making up the Earth's air. Page 85.
- Atom**—The most basic unit of all matter. Atoms are the smallest portion of a chemical element that maintains the properties of that element. Page 4.
- Background extinction**—Normal extinction that occurs at a relatively slow rate and caused by the failure of species to adapt to gradual environmental changes, predation or competition. Also called natural extinction. Page 58.
- Bag limit**—The number of game animals that can be harvested by a single hunter daily. Page 17.
- Batesian mimicry**—When a harmless organism looks like a dangerous organism to avoid predation. Compare with Mullerian mimicry. Page 51.
- Binary fission**—A type of asexual reproduction in which a single cell divides into two separate cells, each a separate organism. Many single-celled organisms, such as bacteria and protists, reproduce using binary fission. Page 17.
- Biodiversity**—The measure of the variety of species, genes and ecosystems within a particular area. Compare with species richness. Page 101.
- Biodiversity hotspot**—A healthy, functioning natural community that has high biodiversity. Page 105.
- Biological carbon cycle**—The movement of carbon atoms through the living parts of ecosystems. Compare with geological carbon cycle. Page 86.
- Biomolecule**—Large molecules, such as carbohydrates, lipids, proteins and nucleic acids, that form the basic building blocks of cells. Page 85.
- Biosphere**—The regions of Earth in which life exists; all the ecosystems on earth. Page 8 and 85.
- Biotic**—Living. The parts of nature composed of plants, animals, fungi, protists and bacteria. Page 4.
- Brood parasite**—A bird that lays its eggs in another species' nest. The other species often ends up raising the brood parasite's offspring, usually at great cost to the survival of its own offspring. Page 49.

Budding—A form of asexual reproduction in which a mass of cells, called a bud, begins growing on the parent's body. When the bud grows large enough, it breaks off of the parent to form a new organism. Page 17.

Carrying capacity—The number of individuals of a particular population that a given area can support at a given time. Compare with cultural carrying capacity. Page 38.

Cell—The smallest unit of life and the basic building block of all organisms. Some organisms, such as bacteria, consist of one cell; others, such as humans, are made up of trillions of cells. Page 4.

Cellular respiration—The biological process by which organisms use oxygen to release the potential energy stored in glucose. The products of respiration are energy, carbon dioxide and water. Page 71.

Census—A count of every individual in a population. Compare with sample. Page 30.

Climax community—The community that develops at the end of a succession and does not change unless there is a disturbance. Compare with pioneer community. Page 108.

Commensalism—The relationship that exists between organisms when one organism benefits and the other is unaffected by the interaction. Page 52.

Community—A group of different populations that live and interact in the same place at the same time. Page 6 and 98.

Community management—Resource management that focuses on entire biological communities. Compare with featured-species management. Page 105.

Community structure and function—A shorthand way for an ecologist to refer to the number, variety and kinds of species that make up a community and the variety of ways those species interact. Page 98.

Compensatory mortality—Different causes of death that make up for mortality that would naturally occur in a population. Compensatory mortality does not cause a population's size to decrease over time. Compare with additive mortality. Page 37.

Competition—An interaction between organisms in which neither organism benefits; a struggle among organisms to use or consume a limited resource. Page 41.

Competitive exclusion principle—The idea that two species with identical niches cannot coexist over time. Also called Gause's Law. Page 47.

Compound—A molecule that contains at least two different elements. Page 84.

Condensation—The change of state of water from gas to liquid. Page 93.

Conservation opportunity area—A biodiversity hotspot within Missouri that has been identified for community management. Page 105.

Consumer—Organisms that can't transform sunlight into usable energy and must eat other organisms to survive. Page 73.

Control group—The parts of an experiment that are not manipulated. Compare with experimental group. Page 9.

Cultural carrying capacity—The population size for a given area that humans will tolerate. Compare with carrying capacity. Page 39.

Decomposer—An organism that breaks biomolecules found in the tissues of dead organisms into simpler molecules that can be used by producers during photosynthesis. Page 75.

Denitrification—The process in which nitrogen is removed from the biosphere, geosphere, and hydrosphere and returned to the atmosphere. Page 90.

Density-dependent factor—A limiting factor that affects a population in ways related to how crowded the population is. Compare with density-independent factor. Page 36.

Density-independent factor—A limiting factor that affects a population regardless of how crowded the population is. Compare with density-dependent factor. Page 36.

Dependent variable—The part of an experiment that is not manipulated, but that reacts to changes made to the independent variable. Compare with independent variable. Page 9.

Detritivore—An organism that gets energy by feeding on dead organisms. Page 75.

Differential reproduction—When some individuals in a population survive and reproduce at higher rates than other individuals in the same population. Page 22.

Dispersion—The spacing of individuals in a population in relation to each other. Page 28.

Disturbance—A departure from the typical environmental conditions of a community. Page 108.

Diversity index—A method used by ecologists to quantify species richness and abundance within a community. Ecologists use diversity indices to compare the biodiversity of one community to another. Page 100.

Early successional community—See pioneer community.

Ecosystem—A community along with the abiotic parts of the environment. Page 7.

Element—A particular kind of atom based on the number of protons found in the atom's nucleus. Carbon, oxygen and nitrogen are elements. Page 84.

Element cycling—The process by which atoms move through ecosystems over and over again. Page 83.

Emigration—Movement of individuals out of an area. Emigration subtracts from population size. Compare with immigration. Page 32.

Endangered—A species that is at risk of going extinct in the near future. Page 60.

Energy—The ability to do work or produce change. Organisms need energy to carry out processes necessary for growth, survival and reproduction. See also kinetic energy and potential energy. Page 70.

Energy flow—The transfer of energy from one organism to another. Page 73.

Energy pyramid—A diagram in the shape of a pyramid that depicts how much energy is available at each trophic level. Page 79.

Equilibrium model of island biogeography—The idea that species richness is a balance between immigration of new species into a community and extirpation of existing species from a community. Page 106.

Equilibrium point—The point in the equilibrium model of island biogeography at which the rate of immigration is balance by the rate of extirpation. The number of different species an island or block of habitat can support. Page 107.

Eutrophication—The build-up of nitrogen and phosphorus in rivers, lakes and oceans. Eutrophication stimulates the growth of large amounts of algae, aquatic plants and other producers. When these organisms die, decomposition removes oxygen from the water, causing other aquatic organisms to die. Page 93.

Evaporation—The movement of water from the geosphere and hydrosphere to the atmosphere. Page 93.

Exotic species—See non-native species.

Experimental group—The parts of an experiment that are manipulated or changed in some way. Compare with control group. Page 9.

Exploitation—An interaction between organisms in which one organism benefits and the other is harmed. Predation, herbivory and parasitism are examples of exploitation. Page 41.

Exponential growth—A period of growth during which a population increases by multiplication rather than addition; when a population increases in proportion to its size. Page 33.

Extinction—When an entire species disappears completely from Earth. Compare with extirpation. Page 57.

Extirpation—When a species disappears from one location but survives in another. Compare with extinction. Page 58.

Featured-species management—Resource management that focuses on a specific species—often a game animal or economically important species. Compare with community management. Page 105.

Food chain—An illustration of how energy is transferred from a producer through various consumers. Page 73.

Food web—A complex illustration that shows all the possible pathways energy could take as it is transferred from producers through consumers in a community; a summary of energy flow in a community. Page 75.

Fragmentation—The carving of large blocks of habitat into smaller, scattered pieces. Page 60.

Fundamental niche—All the environmental conditions a species can tolerate and all the resources it is capable of using under ideal conditions. Compare with realized niche. Page 45.

Gene—Sections of DNA that give instructions to create specific traits. Page 18.

Generalist—A species that can survive in a broad range of habitats and environmental conditions. Compare with specialist. Page 65.

Genetic bottleneck—When a population loses so much genetic diversity it cannot adapt to drastic environmental changes. Page 23.

Genetic homogeneity—When all the members of a population have similar genetic blueprints. Page 21.

Geological carbon cycle—The movement of carbon atoms through the geosphere, atmosphere and hydrosphere. Compare with biological carbon cycle. Page 86.

Geosphere—A pool or reservoir composed of all the rocks and minerals making up the Earth's land. Page 85.

Greenhouse gases—Carbon-based gases, such as carbon dioxide and methane. They allow sunlight to pass through but trap heat. Page 94.

Herbivore—An organism that gets energy by eating plants. Page 48.

Host—The organism a parasite feeds upon or exploits. Page 48.

Hydrosphere—A pool or reservoir composed of all the water in the Earth’s oceans, rivers and lakes. Page 85.

Hypothesis—A best guess, based on observations, to answer a specific scientific question. Page 9.

Immigration—Movement of individuals into an area. Immigration adds to population size. Compare with emigration. Page 32.

Inbreeding—Mating among closely related individuals that results in populations with low genetic variation. Page 23.

Independent variable—The part of an experiment that is changed or manipulated in some way. Compare with dependent variable. Page 9.

Indirect competition—Competition caused by organisms trying to gather as much as they can of a shared resource before it runs out. Page 42.

Interaction—A relationship between two or more organisms that affects the growth, survival or reproduction of the participants. Page 41.

Interspecific competition—Competition among different species. Compare with intraspecific competition. Page 42.

Intraspecific competition—Competition among members of the same species. Compare with interspecific competition. Page 42.

Introduced species—A non-native species that humans introduced into an environment in which it previously did not exist. Page 62.

Invasive species—A non-native species that spreads rapidly and harms native organisms. Page 62.

Keystone species—A species that, despite its often low abundance, has a dramatic effect on a community. Page 76.

Kinetic energy—Energy in motion or energy that creates change. Compare with potential energy. Page 70.

Law of conservation of matter—Matter cannot be created or destroyed. Page 86.

Life table—A spreadsheet that helps an ecologist predict how populations will change over time. Page 34.

Limiting factor—A part of an ecosystem that slows or prevents population growth. Page 35.

Lincoln-Peterson estimate—A simple method of mark-recapture sampling. Page 29.

Mark-recapture—A sampling method used to estimate population size in which individuals are caught, marked in some way, and released back into the population. After time has passed, another group of individuals is caught and checked for marks. Page 29.

Mass extinction—The dying off of a large number of species in a relatively short span of time. Page 58.

Mimic—A harmless organism that looks like a dangerous one to avoid predation. Compare with model. Page 51.

Model—A dangerous organism that a mimic resembles. Compare with mimic. Page 51.

Molecule—A combination of two or more atoms. Page 84.

Müllerian mimicry—When dangerous or distasteful species resemble each other. Compare with Batesian mimicry. Page 51.

Mutation—A mistake made when DNA is copied during cell division. This results in a genetic blueprint different from the original. Page 21.

Mutualism—The relationship that exists between organisms when both organisms benefit from the interaction. Page 41.

Mycelia—Tiny, thread-like organs of fungi that gather water and nutrients. Page 89.

Mycorrhizae—A mutualistic relationship between plants and fungi. Plants provide fungi with carbohydrates. In return, fungi gather phosphates and other nutrients for use by plants. Page 89.

Natural extinction—See background extinction.

Natural resource manager—A trained professional who works to protect, maintain and restore healthy ecosystems. Page 10.

Natural selection—The process through which organisms become adapted to their environment over time. Page 24.

Niche—An organism's way of life and role in its environment. Everything that affects a particular organism's existence, including the range of environmental conditions the organism can tolerate, what the organism needs to survive, and the organism's interaction with the biotic and abiotic parts of its environment. Page 45.

Nitrification—The process that converts ammonia into nitrates. Page 90.

Nitrogen fixation—The process that converts nitrogen gas into ammonia. In most instances, nitrogen must be fixed before living things can use it. Page 90.

Non-native species—An organism that has recently—within the past 200 years—moved into an area in which it previously did not exist. Page 62.

Organ—A group of tissues working together to perform a specific function. Page 4.

Organelle—Microscopic structures in a cell that perform specific functions. Page 4.

Organism—A single living thing. Page 5.

Parasite—An organism that gets energy by feeding on the blood, intestinal fluids or tissues of another organism. Page 48.

Parthenogenesis—A form of asexual reproduction in which eggs from a female develop into offspring without being fertilized by a male. Page 17.

Per capita rate of growth—Population change expressed on an individual-by-individual basis; the amount a single individual contributes to population growth or decline. Page 34.

Photosynthesis—A process used by plants, algae and some bacteria to transform the kinetic energy of sunlight into the potential energy of glucose. In the process, six molecules of carbon dioxide and six molecules of water are transformed into one molecule of glucose and six molecules of oxygen. Page 71.

Pioneer community—The first species that show up after a disturbance. Compare with climax community. Page 108.

Pool—A place where atoms collect for a short length of time, from a few hours to a few years. Page 85.

Population—A group of the same kind of organisms living together in the same place at the same time. Page 6.

Population density—The number of individuals in a population per unit of area. Page 28.

Population sink—An ecosystem in which a particular population's deaths exceed births causing its size to decrease. Page 64.

Population size—The number of individual organisms that make up a population (N). Page 6.

Potential energy—Stored energy. Compare with kinetic energy. Page 70.

Precipitation—The process by which water vapor condenses on microscopic particles in the atmosphere and then falls from the sky. Page 93.

Predator—An organism that gets energy by catching, killing and eating prey. Page 48.

Predator-prey cycle—A series of peaks and valleys in the population sizes of predator and prey species. This results from the fact that prey and predator populations are linked and a change in the size of one population causes change in the other population. Page 55.

Primary production—The process and resulting tissues of plants and other photosynthetic organisms formed when they combine glucose with other molecules. Page 71.

Primary succession—Succession that begins on areas without soil, such as bare rocks, lava flows, and areas scraped lifeless by retreating glaciers. Page 108.

Producer—A plant or other photosynthetic organism that uses sunlight to produce glucose, a form of energy that can be used by most organisms. Page 71.

Realized niche—The portion of a species' fundamental niche that it can use in the presence of other species. Compare with fundamental niche. Page 45.

Recombination—When homologous chromosomes trade genetic information with each other during the formation of eggs and sperm. This causes each egg or sperm to have a genetic blueprint different from the genetic blueprint of its parent cell. Page 21.

Relative abundance—The measure of how abundant one species is compared to all others in a community. Also called species evenness. Page 99.

Reproduction—The process by which new organisms are produced from existing organisms. Page 16.

Reservoir—A place where atoms reside for long periods of time, from decades to millions of years. Page 85.

Resource partitioning—The process by which species with similar niches avoid competitive exclusion by using resources in slightly different ways. Page 47.

Runoff—When precipitation falls to the ground faster than it can soak in and is pulled toward the ocean by gravity. Page 93.

Sample—A count of a small portion of the individuals in a population. Samples are used to estimate the total number of individuals in a population. Compare with census. Page 30.

Secondary succession—A type of succession that occurs when the preceding community is destroyed, but the soil is not. Page 108.

Self-incompatible—A type of plant that cannot pollinate itself. Page 20.

Sexual reproduction—A form of reproduction in which two parents are needed to produce offspring. Compare with asexual reproduction. Page 17.

Slot length limit—A harvest tool in which fish shorter and longer than a certain length range can be harvested, but fish that fall within the length range, or slot, have to be returned to the water unharmed. Page 74.

Specialist—A species that requires specific habitat and a narrow range of environmental conditions to survive. Compare with generalist. Page 65.

Species-area rule—The general idea that large areas harbor more species than small areas. Page 104.

Species diversity—The variety of different species within a community. Page 101.

Species evenness—See relative abundance.

Species richness—The number of different species a community contains. Page 98.

Stand—A segment of a forest. Page 44.

Succession—A sequence in which biological communities are replaced by other biological communities over time. Page 108.

Symbiosis—A close relationship between two organisms in which one organism could not survive without the other. Page 54.

Timber stand improvement—A management technique used by foresters to improve the health and quality of surviving trees by removing unwanted or low-value trees. Page 44.

Tissue—A group of cells that function together to perform a specific task. Page 4.

Transect—A straight line of a known length used to sample a population. Page 30.

Translocation—Taking individuals from thriving populations and releasing them into struggling populations. Page 23.

Transpiration—The process by which plants release excess water into the atmosphere. Page 93.

Trophic level—The position (producer, primary consumer, etc.) an organism occupies in a food chain. Page 78.

Vegetative reproduction—A form of asexual reproduction in which part of a plant—such as its leaves, roots or stem—breaks off and begins growing into a separate plant. Page 17.

Warning coloration—Bold patterns and bright coloration used by organisms to advertise hazardous traits that help them avoid predation. Page 50.

Water cycle—The movement of water through the biosphere, geosphere, hydrosphere and atmosphere. Page 92.

