

What is ecology?	The study of interactions between organisms and their environment.	
	Organismal	The physiology of organisms, as well as animal behavior.
	Population	How environment and other factors affect population size.
	Community	Interactions between members of a community and community structure.
	Ecosystem	Energy flow through an ecosystem.
	Landscape	The structure of an ecosystem—different parts, abiotic factors, and exchanges of matter and energy.
	Behavioral	Animal behavior (everything an animal does, and how): how it develops, evolves, and contributes to survival and reproductive success.
What is biotic?	Living. An organism's environment is in part made up of the <i>biota</i> —living things—around it and that compete it, are its prey, prey upon it, or affect their shared environment physically or chemically.	
What is abiotic?	Nonliving. These chemical and physical factors also make up an organism's environment: temperature, water, light, nutrients, and others.	
What is dispersal?	Individual movement away from population centers/origins, which expands the range of a species. This is important for a species, because living in a very densely populated area would increase competition between members of the population.	
What is distribution?	The geographic range of a species.	
What factors affect the distribution of a species?	<ul style="list-style-type: none"> • Dispersal (the area is inaccessible; the species has not had time to expand sufficiently) • Behavior/habitat selection (species will only reproduce in specific habitats) • Biotic factors (other species—competition, predation, disease, parasitism, or the lack of a species upon which they rely) • Abiotic factors (chemical: water, oxygen, salinity, pH, nutrients; physical: temperature, light, soil structure, humidity, fire) 	
What are nutrients?	Phosphates and nitrogen. They are needed by autotrophs to make organic materials.	
What is a lake?	A body of standing water. <ul style="list-style-type: none"> • Oligotrophic lakes have cold, clear water and are near mountains. They are nutrient poor and oxygen rich; this is because the cold water is able to contain much oxygen. There is a small amount of algae (because it is nutrient poor) that produces oxygen. These lakes tend to have less surface 	

	<p>area relative to depth than eutrophic lakes.</p> <ul style="list-style-type: none"> • Eutrophic lakes are nutrient rich and oxygen poor. This is because the high nutrient levels allow huge populations of algae. This should make the lake oxygen rich, but bacteria that live at the bottom of the lake and eat dead algae deplete the oxygen stores. More photosynthesis takes place in these lakes than in oligotrophic lakes. <p>Lakes are divided into two zones: the <i>littoral zone</i>, where rooted and floating aquatic plants live in the shallow, well-lit waters close to shore. Phytoplankton, zooplankton, and cyanobacteria live in the the deeper <i>limnetic zone</i>.</p>
What is a wetland?	<p>Land that is covered with water (constantly, or long enough to sustain aquatic plant life); this occurs on <i>fringes</i> of lakes and seas; in shallow <i>basins</i>; and in <i>ravines</i>, shallow banks that periodically flood.</p> <p>Wetlands are among the most productive biomes when it comes to photosynthetic organisms and are extremely favorable habitats for plants. Large populations of invertebrates and large populations of birds inhabit wetlands; so do varied herbivores and carnivores.</p>
What are streams and rivers?	<p>The most important thing about these aquatic biomes is the current. They are narrow, cold, clear, swift, and turbulent at the headwaters (beginning) while warmer, cloudy (the river picks up sediment), wider, and slower downstream. They are usually oxygen rich, except when nutrients have been added (either by humans or naturally). These contain a great diversity of fishes and invertebrates; organic material comes from algae or aquatic plants (when the river flows through grasslands or deserts), vegetation on the ground, and stuff carried by the river.</p>
What is an estuary?	<p>The transition area between river and sea, characterized by complex flow patterns and variations in salinity involving the saltwater moving up and down stream with the tides. This water, more dense than river water, often forms a bottom layer. Nutrients brought by the river make these highly productive biomes for photosynthetic organisms; estuaries also support worms, oysters, crabs, and fishes. They are breeding or migration grounds for marine organisms and feeding grounds for waterfowl.</p>
What is the intertidal zone?	<p>The area that is sometimes submerged and sometimes exposed, depending on the tides. Organisms in this area must face changes in temperature and salinity, as well as the force of the waves.</p> <p>Oxygen and nutrients, high and often renewed by the tides, support diversity of algae (in protected areas); worms, clams, and crustaceans (buried in mud); and sea sponges, anemones, molluscs, echinoderms (starfish, sea urchins, sea cucumbers); and small fish.</p>
What is the oceanic-pelagic zone?	<p>The open ocean, whose waters are mixed by currents/wind. The photic zone is deep because the water is clear. Oxygen levels are usually high, while nutrient levels are lower than at the coast (depending on the area—turnover seasonally renews nutrients in temperate and high-latitude areas, but not tropics).</p> <p>Phytoplankton and photosynthetic bacteria live in the pelagic zone, as well as zooplankton, jellyfish, krill, worms, fish, squids, turtles, and marine mammals.</p>
What is a coral reef?	<p>A large calcium carbonate skeleton of coral that resides in the photic zone of a tropical area (temperate 18/20-30°C). They require high levels of oxygen and low</p>

	<p>levels of fresh water and nutrients. Unicellular algae (dinoflagellates) live within the coral tissue—a symbiotic relationship that provides the coral with organic molecules—and multicellular algae live around it. Besides for corals, vastly diverse communities of fish and invertebrates live on reefs as well.</p>
What is the benthic zone?	<p>The seafloor, below the <i>neritic zone</i> (the coastal area) and the pelagic zone. Most of this does not receive sunlight because of its depth; also, as depth increases, temperature declines and pressure increases. The <i>abyssal zone</i>, the deepest sea floor, is only about 3°C.</p> <p>The benthic zone is mostly covered in soft sediment, but some rocky regions exist. Usually, oxygen is present in a life-sustaining quantity.</p> <p>Photosynthetic organisms (seaweed, algae) live only in the neritic zone. Deep-sea hydrothermal vents support chemoautotrophs, arthropods, echinoderms, and giant worms in dark, hot, oxygen-deficient environments. Benthic communities in the neritic zone include many invertebrates and fishes.</p>
What is the tropical forest?	<p>Near the equator and warm year-round, these are characterized by constant and high rainfall in tropical rainforests and seasonal cycles of rain and dry in tropical dry forests.</p> <ul style="list-style-type: none"> • Rainforests contain intense competition for light in the tree strata: the highest emergent trees, the canopy trees, sub canopy trees, and shrub/herb layers. Trees are usually broadleaf evergreens, shrubs are orchids and bromeliads (short stems, stiff leaves). These forests are characterized by incredible animal diversity of all types. • Dry forests are less stratified and contain trees that drop leaves during the dry season, as well as thorny shrubs and succulents (store water).
What is the desert?	<p>Located in the interior of continents and at 30° N and S. Precipitation is highly low (less than 30cm per year); temperature varies by season and by time of day. Vegetation is low and scattered, mostly succulents; animals are snakes and lizards, scorpions, ants, beetles, birds, and seed-eating rodents. All life adapts to the lack of water.</p>
What is the savanna?	<p>Located near and below the equator; rainfall is seasonal (precipitation 30-50 cm per year, dry season 8-9 months); warm year-round (about 24-29°C, with some seasonality). Grasses and forbs (herbaceous plants, not grass), as well as scattered thorny, low-leaf trees live in this area. All plants are tolerant of fires, which happen often during the dry season. Large herbivores graze in the savannah, and they are prey to a number of animals. The dominant herbivores are actually insects, especially termites.</p>
What is the chaparral?	<p>Located on the coasts of many continents, these experience cold (10-12°C), rainy winters (precipitation 30-50 cm per year) and long, dry summers (30-40°C). Shrubs and short trees, as well as grasses and herbs—in great diversity—are adapted to drought and fire (some seeds germinate in fire only). Browser mammals (deer, goats), amphibians, reptiles, insects, and birds live in chaparrals.</p>
What is the temperate grassland?	<p>Cold (-10°C), dry winters; wet (precipitation between 30 and 100 cm yearly, periodic drought) and hot (30°C) summers. Dominant plants are grasses and forbs, adapted to periodic droughts and able to re-sprout shortly after fire. Large grazing mammals prevent woody shrubs or trees from growing. Besides the grazers, temperate grasslands are populated by burrowing mammals.</p>

<p>What is a coniferous forest (taiga)?</p>	<p>Located fairly far north, across the globe, these forests receive 30-70 cm of rain yearly (some temperate rain forests in the Pacific Northwest receive up to 300 cm). Winters are cold and long, summers can be hot. These are populated by cone-bearing trees (fir, pine, spruce, hemlock), with conical shapes to prevent snow from accumulating on them and breaking their branches. The animal community is made up of mammals such as moose, brown bears, and Siberian tigers as well as many migratory birds.</p>
<p>What is a temperate forest?</p>	<p>Located in the northern hemisphere, at middle altitudes, as well as in New Zealand and Australia. These forests receive precipitation year round, in the form of rain or snow; this can be from 70 to 200 cm yearly. Winters are cold, around 0°C, while summers near 30°C. These forests are populated by deciduous trees, which drop their leaves before winter (when photosynthesis, as well as water uptake from frozen soil, is difficult). Australia/New Zealand's temperate forests are dominated by eucalyptus. Temperate forests are highly diverse, with closed canopy, one or two strata of understory trees, shrub layers, and a herbaceous layer. In the northern hemisphere, animals include mammals, birds, and insects; mammals hibernate and birds migrate away in the winter.</p>
<p>What is a tundra?</p>	<p>Located in the arctic and on mountaintops globally (these are <i>alpine tundra</i>) the tundra receives 20-60 cm of yearly precipitation (over 100 for alpine tundra) and experience cold, long winters (-30°C) with short, cool summers (10°C). Vegetation consists of herbaceous plants, lichens, mosses, grasses, and forbs, as well as dwarf shrubs and trees. The ground is perpetually covered by permafrost, a permanently frozen layer of soil which prevents water from entering the soil. Animal life in the tundra includes resident musk ox and migratory caribou and reindeer as grazers; bears, wolves, and foxes as predators; and birds which nest on the tundra during the summer.</p>
<p>What is an introduced species, and what problems can it cause?</p>	<p>A species that is transplanted into an area to which it is not native. It may grow exponentially when introduced because it lacks predators, parasites, competition, or other natural controls. It may destroy native species as it propagates, reducing diversity.</p>