

Science & Math

Earth's Systems: What is a biome?

The major recognizable life zones of the continents are called biomes.

Because vegetation is usually the dominant and most apparent feature of the landscape, a biome is characterized by its plant

community. A biome can be defined as a major biological community of plants and animals with similar life forms and environmental conditions. In the Earth system, the biome is the largest biotic geographic unit. The word "biotic" describes anything that is connected to or comes from living things.

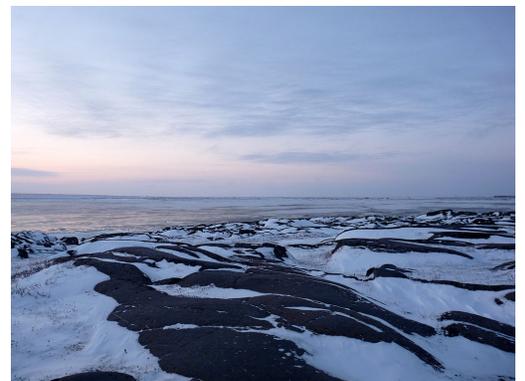


Biomes are named for the dominant type of vegetation they contain. For example, grass is the dominant type of vegetation in grassland biomes. Trees are dominant in forest biomes. Because they are defined by environmental conditions and vegetation, the same type of biome may be found in different parts of the world. For example, desert biomes receive little rainfall (less than 10 inches per year on average). They are found largely in locations between 15° and 35° latitude north and south of the equator.

There are six major biomes. They are tundra, taiga, temperate deciduous forest, tropical rain forest, grassland and savanna, and desert.

Tundra

The tundra biome is found in extreme northern regions. It is the coldest of the six major biomes. The tundra is so cold that a layer of permanently frozen soil, called permafrost, lies under the rocky topsoil. Although the tundra receives little precipitation, bogs and ponds often form because little evaporation and drainage take place.



Tundra is generally situated on level or rolling ground. It is a treeless landscape characterized by low vegetation, particularly mosses, lichens and short grasses. There are two major tundra zones. The arctic tundra is found mostly north of the Arctic Circle. The alpine tundra is located above the timberline on high mountains. Arctic foxes, reindeer and migrating birds are some common tundra animals.

Taiga

The taiga, or boreal forest, covers a broad region of cold, but not permanently frozen, land south of the tundra. It extends in a belt across



North America, Europe and Asia. The taiga is warmer than the tundra. It receives more precipitation, too, mostly in summer.

Coniferous vegetation dominates the taiga biome. This vegetation is composed largely of evergreen trees such as pines, spruces and firs. Animals adapted to the cold, wet conditions of the taiga include squirrels, rabbits, weasels, moose, wolves, reindeer and bears. Migratory birds are plentiful in the summer. Insects also are abundant.

Temperate Deciduous Forest

Temperate deciduous forests are found in regions of the Northern Hemisphere that have moist, warm summers and frosty winters. This is primarily eastern North America, eastern Asia and western Europe. Temperate deciduous forests are dominated by hardwood broad-leaved trees. Most of these lose their leaves each fall and grow new ones each spring. Oaks, beeches, hickories and maples are common.



Sufficient light reaches the forest floor to support the growth of many species of shrubs, herbs and mosses. Flowering plants are abundant in the spring. Animals include squirrels, rabbits, deer, foxes, wolves, bears and many other mammals. Many kinds of birds, such as owls, pigeons and migrating songbirds, live in these forests. So do some reptiles and amphibians.

Toward the polar regions, temperate forests grade into boreal forests. These are dominated by evergreen conifers. Mixed forests containing both deciduous and coniferous trees occupy intermediate areas.

Tropical Rain Forest

Tropical rain forests are situated in the wet, warm areas near the equator. These forests are lush with broad-leaved evergreen trees and diverse plant and animal life. They occupy parts of northern South America, Central America, equatorial Africa, India and Southeast Asia, and northeastern Australia.

Tropical rain forests receive the most rainfall of any terrestrial biome. They have warm temperatures year-round. The canopy, or upper layer of trees, is so dense in some places that daylight barely penetrates to the ground level. Many animals live in the canopy and rarely leave. Epiphytes, or air plants, live on tree trunks or branches. These plants never



touch the ground during their life cycle. Among them are numerous species of orchids, ferns and bromeliads. Lianas (woody vines) almost completely cover many of the trees.

Many species found in rain forests are not found anywhere else on Earth. Among these are mammals such as gorillas, orangutans and most monkeys. Birds such as toucans and many parrots live in rain forests. So do numerous types of reptiles and amphibians and countless species of insects.

Grassland And Savanna

In temperate or tropical regions where precipitation is sparse or erratic, grasses are the dominant plants. Trees and shrubs are rare or absent in temperate grasslands. These lands cover large tracts of central North America, central and eastern Asia, eastern Europe, southern Africa and southern South America. They have dry, warm to hot summers and damp, cold winters. Prairies, steppes and pampas are all types of temperate grasslands.



Tropical grasslands, or savannas, have scattered drought-resistant trees. Savannas are found in northern Australia, southern India, part of Southeast Asia and northern South America. They are also found in more than half of sub-Saharan Africa. Savannas are warm year-round, with distinct wet and dry seasons.

Both savannas and grasslands exist as vast plains. Common animals include small burrowing mammals, large grazing mammals and the mammals that prey on them. Animals range from the lions, hyenas, baboons, zebras, gazelles, giraffes, warthogs, vultures and ostriches of Africa's Serengeti Plain to the coyotes, skunks, badgers and songbirds of the North American prairies.

Desert

Deserts are characterized by their extreme dryness. A desert typically receives less than 10 inches of rain annually. The vegetation is normally very sparse. Both plants and animals are specially adapted to withstand low moisture levels.



Many people associate deserts with extreme heat. However, there are both hot and cold deserts. In hot deserts, it can be extremely hot during the day but cool at night. These deserts are found near the latitudes 30° N and 30° S. The Sahara of northern Africa is an example of a hot desert. Typical plants found in hot deserts include cacti and other succulents, plants that store water in their leaves or stems. Various types of brush and grasses live in deserts as well.

Cold, or temperate, deserts lie at higher latitudes. Much of Antarctica is considered a desert. Other large cold deserts include the Taklimakan in northwestern China, the Gobi in Mongolia, the Great Basin in the western United States and the Atacama Desert in Chile. Cold deserts have cold winters but may have fairly warm summers. Scattered small bush vegetation is common.

Animals in the various deserts include many lizards and snakes, plus burrowing rodents such as gerbils, mice and gophers. There are also jackrabbits, gazelles, coyotes, foxes, owls, vultures and hawks. Many animals in hot deserts are active at night. This strategy allows them to avoid the daytime heat.

Quiz

1. Read the section "Desert." Underline the paragraph from the section that shows HOW desert life has adjusted to the extremely high temperatures.

2. Read the paragraph from the section "Temperate Deciduous Forest."

Toward the polar regions, temperate forests grade into boreal forests. These are dominated by evergreen conifers. Mixed forests containing both deciduous and coniferous trees occupy intermediate areas.

What conclusion is BEST supported by the paragraph above?

- (A) Boreal forests and temperate forests usually exist in very separate parts of the world.
- (B) The polar regions are the only places on Earth that have two different types of forests.
- (C) Temperate forests are defined by having a mixture of deciduous and coniferous trees.
- (D) Biomes can overlap with each other and create areas with plants from both biomes.

3. Which sentence from the article would be MOST important to include in a summary of the article?

- (A) Because they are defined by environmental conditions and vegetation, the same type of biome may be found in different parts of the world.
- (B) Animals that adapted to the cold, wet conditions of the taiga include squirrels, rabbits, weasels, moose, wolves, reindeer and bears.
- (C) Temperate deciduous forests are found in regions of the Northern Hemisphere that have moist, warm summers and frosty winters.
- (D) They occupy parts of northern South America, Central America, equatorial Africa, India and Southeast Asia, and northeastern Australia.

