

Deciduous Forest

- relatively warm summers and relatively cold winters; 75 to 250 cm precipitation per year spread throughout the year
- rich topsoil composed of decomposing organic material and decomposing organisms
- vegetation – hardwood trees that drop their leaves to conserve water in the winter months
- animals and adaptations – small mammals feed on nuts, fruits, mushrooms and insects; larger mammals feed on the smaller mammals; hoofed herbivores browse on shrubs and seedlings
- exists in North America, Europe, Australia, and eastern Asia



Ocean



- three-quarters of the earth's surface; average depth of 3 kilometers; less than 40% of the sunlight reaches a depth of one meter, and less than 1% of the sunlight that reaches the surface penetrates below 50 meters; mostly cold and dark
- A. Coral Reef – most diverse of all marine communities; formed by colonial organisms called coelenterates; rich in carbon, oxygen and dissolved minerals; movement of waves causes constant flow of water; provides food and shelter to other marine organisms; well-lighted and warm, temperatures seldom fall below 21°C
- B. Seashore – heavy in nutrients washed from the land; more life than in open seas; animals living there are adapted to the type of bottom: rocky, sandy, or muddy; generally rock dwellers have specially adapted appendages to help them hold on during tides and waves, sand dwellers do not reside on the bottom because of the instability of the shifting sands, and mud dwellers burrow down into the mud to live
- C. Open Ocean – upper, better-illuminated waters of the ocean; warm with light; relatively calm waters; top 300 meters
- D. Deep Ocean – lower 300 meters; no light, very cold

Freshwater



- freshwater lakes cover 1.8% of earth's surface and running freshwater covers 0.3% of earth's surface; significant runoff of organic and inorganic material from terrestrial areas nearby; temperatures vary with location; the deeper the body of water, the colder the temperature
- A. Lakes and Ponds (standing water) – edge of a lake is most richly inhabited; plants root at the lake shore and grow up out of the water, other plants float on the surface; animals include insects, snails and other mollusks, amphibians and reptiles, fish, waterfowl, and small and medium mammals; the middle of a lake has small, floating algae and larger, deep swimming fish; the bottom of the lake is very cold and has little or no light, mostly bacteria and fungi live there
- B. Rivers and Streams (running water) – characterized by the swiftness of the current, abundance of oxygen and nutrients; insects and fish requiring cold temperatures and a lot of oxygen are its principal inhabitants

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Desert



- less than 25 cm of rainfall per year, but highly variable each year; occur between 20° to 30° north and south latitude; warm days but cold nights
- vegetation – mostly annuals that can go from seed to flower in the short period of time when water is present; perennials are adapted for water storage with no leaves or leaves that fall off during drought, or leaves that are small and leathery; all have extensive root systems that can trap water during periods when it is available
- animals and adaptations – reptiles and insects have waterproof outer coverings and water-conserving excretions; mammals are nocturnal with the ability to extract water from plants
- exists in the interiors of continents, especially Africa, Eurasia, and Australia

Tropical Rain Forest



- richest biomes in terms of numbers of species it is estimated that they contain at least half of the world's land organisms; rainfall of 200 to 450 centimeters per year, with little difference throughout the year; length of the day varies by less than one hour
- the soil is quite infertile because the nutrients from any fallen organic matter are quickly extracted by the roots of vegetation that are spread out in the top-most layer of soil
- vegetation - tall trees with smooth bark and no underbranches form high canopy of large, leathery leaves; inconspicuous flowers; trees have large, thick bases to anchor themselves; long, woody vines appear in any open spaces; epiphytes, plants that grow on other plants, are abundant, getting their water and minerals from the humid air; other plants are ferns, orchids, mosses, and bromeliads adapted to grow at low light intensities
- animals and adaptations – large numbers of insects and tree-living vertebrates including birds, primates, large and small mammals and reptiles
- exists in South America in and around the Amazon Basin, in West Africa and in Southeast Asia, and equatorial regions

Savanna

- area of reduced annual precipitation; transition between tropical rain forest and desert; 90-150 cm of rainfall each year; wide fluctuation in temperature; seasonal drought; fine, sandy soil
- vegetation – mostly grasses with dense root systems that can withstand extensive dry periods, few trees that die during drought
- animals and adaptations – mammals are herbivores or carnivores; herbivores must have sophisticated digestive systems capable of extracting nutrients from the cellulose-rich grasses, but they must eat all the time, and they need the ability to be warned of and flee from predators; carnivores need adaptations to allow them to catch herbivores efficiently
- exists in Central Africa and South America



Grassland



- rich agricultural lands; periodic droughts, hot-cold seasons, rolling flat terrain, 10 to 60 cm of rain per year, warm and wet spring followed by scorching, dry summers, cold and snowy winters
- vegetation – mostly sod-forming grasses mixed with legumes and various annuals
- animals and adaptations – small, seed-eating rodents, large herbivores, and carnivores
- exists in North America (plains and prairies), Russia (steppes), South Africa (veldt), and Argentina (pampas)

Chaparral

Chaparral

- mild, rainy winters and long, hot, and dry summers
- vegetation – small trees and spiny shrubs with broad, thick evergreen leaves
- animals and adaptations – large herbivores move into the chaparral in the spring and out to cooler areas in the summer; animals that stay are usually small and dull colored
- exists mostly in western North America and the Mediterranean



Taiga



- also called coniferous forest; long, severe winters; short and warm summers: limited precipitation (20 to 60 cm) mostly in summer; short days in winter and long days in summer
- ground is covered with a thick layer of needles and dead twigs, matted together by fungus
- vegetation – evergreen trees with small, compact leaves protected by a thick covering to prevent water loss; no annual plants
- animals and adaptations – large and small mammals must have adaptations to survive during the winter; heavy fur coats and/or hibernation are common
- exists mostly in northern North America and northern Eurasia

Tundra



- covers a fifth of the earth's land surface, little precipitation (less than 25 cm per year), less than one meter down the ground is permanently frozen (permafrost)
- boggy in summer when ground thaws; bitterly cold most of the year; long winter, short summer
- period of time when there is no sunlight and corresponding period when there is no night; drying winter winds
- vegetation – virtually treeless, dominated by herbaceous plants, mosses and lichens, all of which grow close to the ground to help them survive icy winds
- animals and adaptations – large hoofed mammals, small rodents, and some predators, during 2 months of summer migratory birds
- exists in a continuous belt across northern North America, Europe, and Asia and at the top of mountains