

# Marine biome

[Science](#), [Biology](#)



A biome, also known as life zones, consists of all plants, animals, and other organisms, as well the physical environment in a particular area. A biome is characterized by its' plant life, climate, and location. The climate and physical features determine the boundaries of a biome. A biome is made up of many different ecosystems.

The ecosystems tend to have the same plants and animals as neighboring biomes around the boundaries. The major biomes are the tundra, taiga, tropical rain forest, temperate forests, desert, grassland, savanna, chaparral, and marine. Each biome has its' own characteristics such as the tundra. The tundra is a biome that is located in the Northern Hemisphere of the world. It circles the North Pole and reaches down to the taiga. The tundra has a very cold and harsh climate, especially in the winters. The average winter temperatures is about -30°F and average summer temperatures is roughly 37-54°F.

The yearly amount of precipitation, which includes melting snow, averages to about 6 to 10 inches. With these conditions it makes for a short growing season of about 50-60 days. In some parts it can be up to 180 days. This is only found in the more southern part of the tundra. Another aspect of the tundra includes the vegetation that is found there and the adaptations that have been made. The tundra is known for its' cold temperatures, but also its' limited plant species. The growth of the vegetation is primarily low to the ground and the biomass of plants is concentrated in the roots.

Here the plants reproduce more likely by division and budding than by flower pollination. Some of that growth forms that you will find in the tundra include

tussock, mats or cushion plants, rosettes, and dwarf shrubs. Other examples of plants include lichens, mosses, sedges, perennial forbs, dwarfed shrubs (heaths, birches, and willows), cotton grass, liverworts, and 400 varieties of flowers. Tundra plants over the years adapted to sweeping winds and disturbances of the soil. Another adaptation is that they are short and cluster together to help endure the cold. Also they can carry out photosynthesis at low temperatures and low light intensities. Plants aren't the only things that have had to adapt to the conditions, animals have had to as well.

Animals of the tundra have had to adapt to the long cold winters and to having to raise their young quickly in the summer. Some other adaptations of animals include thick insulating cover of feathers or fur; large, compact bodies; pelage and plumage that turns white in the winter and brown in the summer; the ability to accumulate thick deposits of fat during the short growing season; hibernation; and migration. Some of the animals that are found living in the tundra are lemmings, voles, caribou, arctic hares, squirrels, arctic foxes, wolves, polar bear, ravens, snow buntings, falcons, loons, ravens, sandpipers, terns, snow birds, mosquitoes, flies, moths, grasshoppers, black flies, arctic bumble bees, cod, flatfish, salmon, and trout. Some of these animals are shared with other neighboring biomes but some are only home to the tundra. The tundra is the simplest biome in terms of species composition and food chain. The neighboring biome of the tundra is the boreal forest (taiga). The taiga is a biome that reaches completely across Canada and into the interior of Alaska.

The climate is like the tundra in the sense that it has long, severe winters that last up to 6 months. The summers on the other hand are rather short. Although compared to the tundra, the growing season is longer and warmer. The mean annual precipitation is 15 to 20 inches. Throughout the year the temperatures range from the lows in the winter to highs in the summer. The taiga is also found to be very humid. The kinds of plants that have adapted to this kind of climate include needle leaf, coniferous trees such as spruce, fir, pine, and larch or tamarack.

These trees are the dominant plant species of the taiga. Some other types are alder, birch, and aspen. Trees of the taiga are typically shallow rooted due to the poor soils, the rocky conditions, and the discontinuous permafrost. The plants living in this biome have had to make adaptations. These adaptations consist of needle-like leaves to prevent water loss, conical shape to help shed snow that may weight down and break the branches, and their evergreen color to help photosynthesis to occur. The other types of life found in the forest are that of animals. Some examples of those are lynx, weasel family, snowshoe varying hare, red squirrel, lemmings, voles, elk or wapiti, moose, beaver, wood warblers, finches, sparrows, and ravens.

These are just a few of the animals found in this biome. Another biome of the world is the chaparral. It's found in only 5 places in the world. They are Southern California, South Africa, Western Australia, Southern Europe, and South America. It has mild rainy winters and hot dry summers. The annual rainfall is about 12-24 inches. In this climate, vegetation such as tall bushes and small trees with dark green leaves exist.

Most plants have small, hard leaves that do not fall off in the winter. The leaves are covered with a hard waxy covering, which helps them to burn in hot fire more easily. An adaptation that many plants have in the chaparral is they have an adaptation to fire, which means they actually need fire as a part of their lives. When a forest fire occurs it may kill off more branches but new sprouts and plants grow from the burnt forest. The varieties of the flora are California Lilacs, Scrub Oak, Toyon or Christmas Holly, Mountain Mahogany, Bush Poppy, Holly-leaved Cherry, Redberry, and Sugarbush. This is just some of the vegetation. Some of the animals consist of squirrels, rabbits, coyotes, mule deer, opossums, raccoons, skunks, foxes, bobcats, rattlesnakes, lizards, frogs, vultures, hawks, golden eagles, peregrine falcons, and condors.

Each of these has made unique adaptations to live in this biome. An additional main biome is the tropical rainforest. The tropical rain forest is one of the earth's most distinctive biomes. There are 3 types are subtropical, monsoon, and equatorial. The climate has mostly warm, humid temperatures. The annual rainfall is approximately 20-30 inches. Depending on the time of year the temperatures vary.

Summer temperatures are about 95-100° F and winter temperatures are about 70-80° F. Most tropical rain forests are located between 10 degree N and 10 degrees S latitude. This makes the climates for that vegetation found there suitable. If you were to explore the entire rainforests you'd find approximately 1500 species of flowering plants and 750 species of trees. The rain forest contains over 50% of worlds population in plants and animals. It

covers roughly 5 billion acres of land. There are 3 layers of trees that can be found there.

The first and most top layer is the emergent, which are widely spaced trees 100-120 ft tall with canopies above the general canopy of the forest. The second, middle layer is a closed canopy of 80-foot trees. Here light is available to this layer, but blocks out the light of lower layers. The third layer is a closed canopy of 60-foot trees. This is where little air movement occurs and there is high humidity. Another lower layer is the shrub/sapling layer. In this place of the forest less than 3% of light reaches here.

Then there is the ground layer where there is sparse plant growth that receives around 1% of light reaches. Some of the characteristics of the tropical trees involve Buttresses (woody flanges at the base of the trunk), large leaves (that help to intercept light), drip tips on the leaves (helps drainage of precipitation of the leaf), thin bark (often 1-2 mm thick), and development of fruits and flowers from the base of the tree. One kind of flora that has adapted to the rain forests is epiphytes. It grows up the branches of tall canopy trees to reach light. The animals adaptations of the rain forest are that they are highly diverse, have arboreal adaptations for climbing in the tree, they have bright colors and sharp patterns, loud vocalizations, diet heavy on fruits, and have camouflage. The types of animals found there are primates, snakes, lizards, birds, insects, and cats. These are just some characteristics of the rain forest.

The next biome is the temperate forests. These are to be found in eastern North America, northeastern Asia, and western and central Europe. Here the

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seasons are very well defined. The growing seasons last usually from about 140-200 days, much longer than most other biomes. The yearly average rainfall is about 75-150 cm depending on the area you are in. Here the temperatures change according to the seasons. Since this climate has such a long growing season you will find many plants.

In temperate forests there are about 3-4 tree species per square kilometer. Trees are distinguished by broad leaves that are lost annually. Examples of these are oak, hickory, beech, hemlock, maple, basswood, cottonwood, elm, willow, spring-flowering herbs, shrubs, and mosses. Here the soil is rich in organics, which is great for the vegetation. Just like the rain forest the temperate forest has a canopy. The canopy is moderately dense and allows light to penetrate through. Most of the current forests are probably not the original forest because many forests were logged off and replanted.

Additional biomes are the savannas and grasslands. They are located in Russia, central US, Africa, South America, and Australia. They have a continental climate, which means that they have the climate of the interior of the continent. Here there is about 10-20 inches of precipitation a year. It's usually warm to hot in the summer. In the tropical savanna the mean monthly temperatures are at or above 64° F. In both biomes they have similar vegetation.

They have continuous cover of perennial grasses and some woody vegetation. They may also have a canopy of drought-resistant, fire-resistant, or browse-resistant trees. These are some of the vegetation's adaptations. Some of the animals found in these regions are ground squirrels, prairie

dogs, zebra, rhinos, giraffes, elephants, warthogs, buffalo, coyote, and badgers. The temperate grasslands are lower in diversity of animals compared to tropical grasslands and savannas. Most of the herbivorous mammals of open savannas are herd animals. Also termites are abundant in tropical savannas.

The next and driest biome is the desert. The desert is located in US, Northern Africa, Australia, and southwestern Asia. It gets less than 10 inches of rain per year. The potential evaporation exceeds precipitation in the annual water budget causing a problem of drought in some areas. The rainfall is highly localized in the desert. Temperatures often exceed 100° F in summer. At night the temperatures dip by about 20-30 degrees making the desert nights "cold".

The desert is full of adaptive plants. The plants found in the desert are primarily shrubs as the growthform of deserts. There may be evergreen or deciduous trees in certain areas. It's typical for the plants to have small leaves. Frequently the vegetation has spines or thorns as an adaptation from animals such as the cactus. Most vegetation of the desert has shallow but extensive root systems. They are used to absorb rainwater out past the canopy of the plant.

Between shrubs the ground is bare because the roots release toxins to keep away competition for growth. Plants are able to store water and to adapt to long periods without much precipitation. Just like the plants, the animals are some of the most adaptive. Some animal adaptations are nocturnal feeding; morphological adaptations, which is the ability to radiate body heat and



colors that are able to reflect sunlight; and physiological adaptations, which is the absence of sweat glands, dormancy during summer, concentration of urine. Examples of desert animals are many reptile, snakes, lizards, toads, and birds. The last biome is the Marine zone. This includes all salt and freshwater aquatic areas.

The ocean takes up about 70% of the world's area. Lakes and other fresh water areas are found covering the globe. Ocean stays relatively the same temperature due to the large area it covers. Aquatic zones affect the climates of other zones. Since the climate is fairly limited the growth of vegetation is as well. The flora involves cattails, algae, lily pads, grasses, sedges, and seaweed. Other surround vegetation that maybe found in bogs, marshes or ponds include grasses, trees, mosses, and shrubs.

Plants are more greatly found in marches and other wetlands. Animals are a very large part of the marine zone. A few of the saltwater animals include sharks, fish, eels, clams, worms, crabs, whales, dolphins, many invertebrates, sea stars, and mussels. Some freshwater animals are trout, bluegills, sunfish, snakes, turtles, frogs, insects, and snails. The different zones with in the ocean are intertidal, peliagic, abyssal, benthic, coral reef, and estuaries. Some freshwater habitats include marches, lakes, rivers, ponds, wetlands, and bogs. All the biomes of the world have climates, plants, and animals all their own.

Traveling through each zone you can pick out the similar adaptations of each plant and animal. Biomes are unique to their location, each one of great importance to the world.