

Forests on the Ground

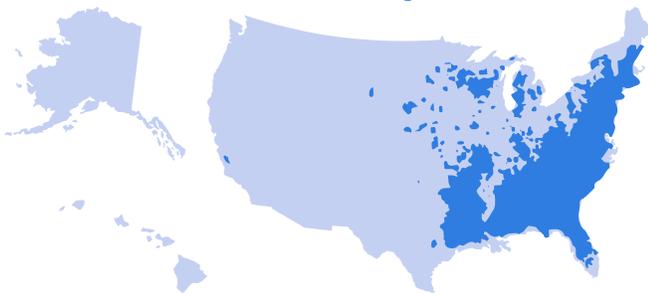
Ecozone: Subtropical Humid Forest

Mild winters and hot, humid summers characterize this ecozone. Average annual temperature is 15°C to 21°C (59°F to 70°F). Annual precipitation ranges from around 1000 to 1500 mm (39 to 59 inches) and is relatively evenly distributed throughout the year.

On-the-Ground Forest Example: Oak–Pine

The oak–pine forest contains a mixture of deciduous hardwoods and conifer trees. It has mild winters and hot, humid summers. Annual precipitation is evenly distributed, but a brief period of drought can often occur in mid- to late-summer.

Oak–Pine Range



Climate

The climate is quite uniform throughout the oak–pine forest. Precipitation is relatively high, averaging around 1000 to 1500 mm (39 to 59 inches) annually, and most of it comes in late autumn and spring. Summers are dry. The average annual values for temperature and precipitation are the same as for the ecozone as a whole, and the average frost-free period is 180 to 220 days.

Plants

This forest type is usually made up of 50 percent or more upland oaks and 25–49 percent southern pines, mainly shortleaf pine. Other common plants include sweetgum, hickory, and yellow poplar trees.

Animals

Important animals in this forest type include the white-tailed deer, black bear, bobcat, gray fox, raccoon, gray squirrel, fox squirrel, eastern chipmunk, white-footed mouse, pine vole, short-tailed shrew, and cotton mouse. Bird populations are large and varied and include the mourning dove, bobwhite, and turkey.

Land Use

About 60 percent of the area is forested, mostly in small plots owned by farmers or other small landowners. Twenty percent is cropland, much of which is for cash crops to be sold. Less than 10 percent is pasture, mainly used for rearing livestock on the home farm.



SOURCES Food and Agriculture Organization (FAO) of the United Nations. Global and Ecological Zones of North and Central America; Global and Ecological Zones of Oceania. <http://www.fao.org/docrep/006/ad652e/ad652e17.htm>

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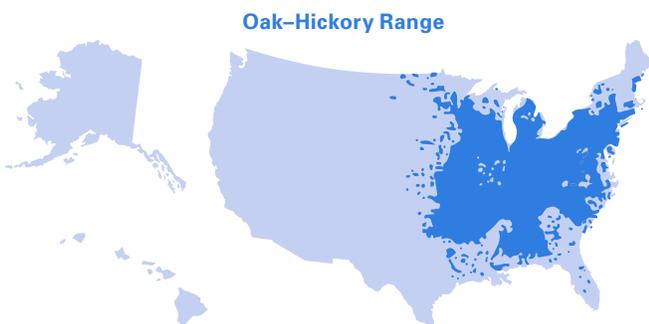
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Ecozone: Temperate Continental

The Temperate Continental ecozone is marked by warm summers and cool winters. The weather is highly changeable, as the zone falls along one of the major storm tracks of North America. Average annual temperatures range from 2°C to 10°C (36°F to 50°F). The average summer temperature ranges from 16°C to 18°C (60°F to 64°F) with average winter temperatures ranging from -2.5°C to -7°C (28°F to 19°F). Average annual precipitation over much of the zone ranges from 720 mm to 1000 mm (28 inches to 39 inches).

On-the-Ground Forest Example: Oak–Hickory

The oak–hickory forest type is found in areas of the eastern United States, reaching from southern Maine to Lake Huron and to southern Texas, and in the Appalachian Highlands. One of the largest areas is in the Ozark Plateaus.



Climate

Temperatures vary considerably in the oak–hickory forest type. Annual precipitation ranges from less than 762 mm to more than 1270 mm (30 to 50 inches), averaging 889 mm to 1143 mm (35 to 45 inches). More than half of the

precipitation falls in the warmest months. The frost-free season is about 120 days in the northern portion and almost 300 days in southern Texas. In most of the area, the frost-free season ranges from 160 to 200 days.

Plants

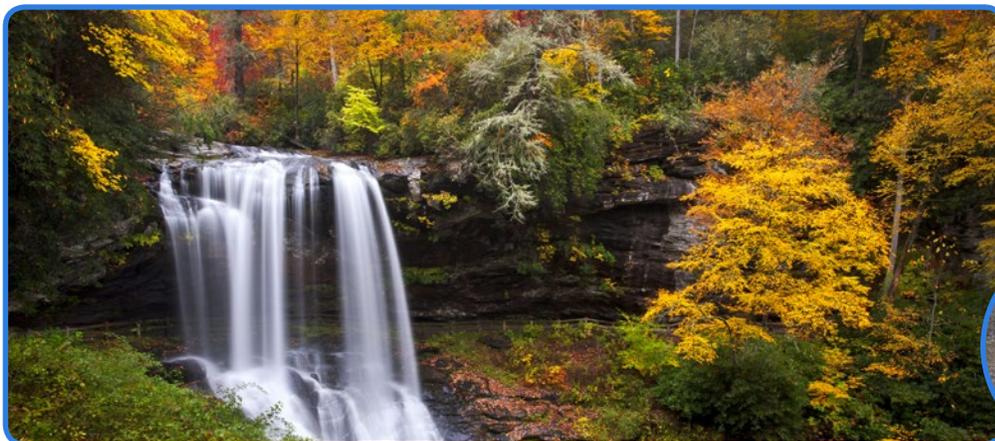
The oak-hickory forest type is made up of at least 50 percent oak, hickory, or both. Other trees may include sweetgum and red cedar in Alabama and Mississippi, and maple, elm, yellow poplar, and black walnut in the eastern and northern parts of the oak–hickory forest range. Common shrubs are blueberry, dogwood, rhododendron, and sumac. Vines include woodbine, grape, poison ivy, and blackberry.

Animals

Important animals in the oak–hickory forest include white-tailed deer, black bear, bobcat, gray fox, raccoon, gray squirrel, fox squirrel, eastern chipmunk, white-footed mouse, and short-tailed shrew. Birds include turkey, ruffed grouse, bobwhite, and mourning dove, as well as cardinal, wood thrush, hooded warbler, and Carolina wren. The box turtle, common garter snake, and timber rattlesnake are characteristic reptiles.

Land Use

Small farms characterize much of the area, but there are also large dairy and livestock farms. Tobacco is a major cash crop in the east and cotton is important in the west. The steeper slopes, accounting for almost half the area, are covered in forest, which is used for both recreation and timber production. A large part of the nation's coal is mined in the oak-hickory forest area.



SOURCES Food and Agriculture Organization (FAO) of the United Nations. Global and Ecological Zones of North and Central America; Global and Ecological Zones of Oceania. <http://www.fao.org/docrep/006/ad652e/ad652e17.htm>

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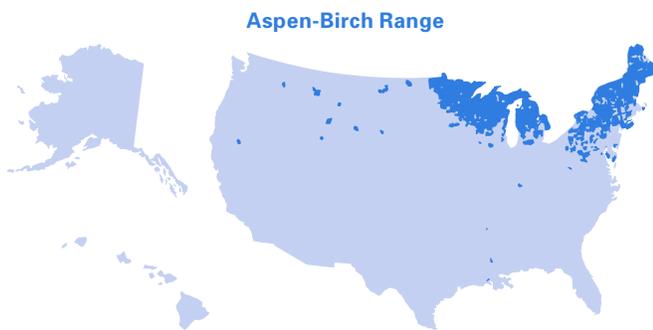
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Ecozone: Temperate Steppe

The climate of the Temperate Steppe ecozone is influenced by its location in the heart of the continent. The Rocky Mountains to the west block moisture-bearing winds from the Pacific Ocean, keeping the zone dry. This zone is characterized by low precipitation and high evaporation. While much of the zone is covered by grasslands, forested areas are found at higher elevations, where precipitation is also higher.

On-the-Ground Forest Example: Aspen–Birch

The aspen–birch forest type lies mainly within the Great Lakes section east of the Mississippi River and extends from western Minnesota to Lake Erie. Elevations vary from 183 to 457 meters (600 to 1,500 feet), and summers are hot and humid. Annual precipitation is evenly distributed, but a brief period of drought can often occur in mid-to late-summer.



Climate

The aspen–birch forest type has a generally cool climate. The frost-free period varies from 100 to 140 days. Average annual temperatures are 1.5°C to 8°C (35°F to 47°F). Annual precipitation is 762 to 889 mm (30 to 35 inches), of which 40–66 percent falls during the warmest months.

Plants

This aspen–birch forest type contains 50 percent or more aspen, balsam poplar, paper birch, or gray birch. Other common trees include maple and balsam fir. In the Great Lakes area, bigtooth and quaking aspen are most common. Balsam poplar is found along streams and the margins of swamps.

Animals

White-tailed deer and black bear are common in the aspen–birch forest type. The coyote, bobcat, great horned owl, and other predators feed on a variety of small mammals. Birds include ruffed grouse, tufted titmouse, blue jay, woodpecker, goldfinch, and catbird.

Land Use

More than 80 percent of the area is forested. Lumbering, recreation, and mining are major industries.



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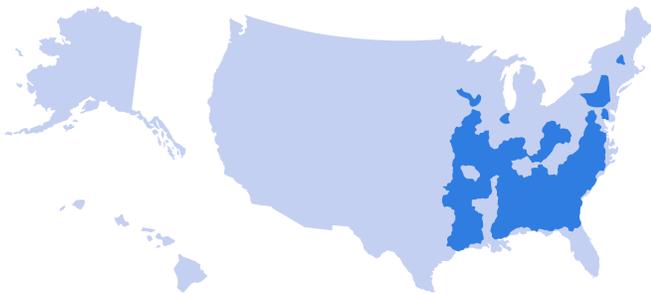
Ecozone: Temperate Mountain

The climate of this ecozone is extremely varied. Average annual temperatures range from below 10°C (50°F) in the north to about 18°C (64°F) at the south end of the highlands. Average annual precipitation varies from 900 mm (35 inches) in the valleys to 2000 mm (79 inches) on the highest peaks, the highest in the eastern United States. A considerable amount of precipitation falls as snow.

On-the-Ground Forest Example: Maple–Beech–Birch

The maple–beech–birch forest is mostly found in the New England states. Typically, it occurs on open high hills and low mountains. About 20–30 percent of the area is gently sloping. Ridges rise 153–915 meters (500 to 3,000 feet) above the broad valleys. Farther west, in the Great Lake states, maple–beech–birch forests occur on irregular plains and tablelands.

Maple-Beech-Birch Range



Climate

Average annual precipitation ranges from 1016 to 1219 mm (40 to 48 inches). The average annual snowfall of

1829 mm (72 inches) covers the ground for about 87 days each year. The number of frost-free days ranges from 120 to 150 per year. The average daily maximum temperature is -4°C to 2°C (24°F to 36°F) in January and 23°C to 27°C (74°F to 80°F) in July. The corresponding minimum temperatures are -15.5°C to -8°C (4°F to 18°F) and 11°C to 15.5°C (52°F to 60°F).

Plants

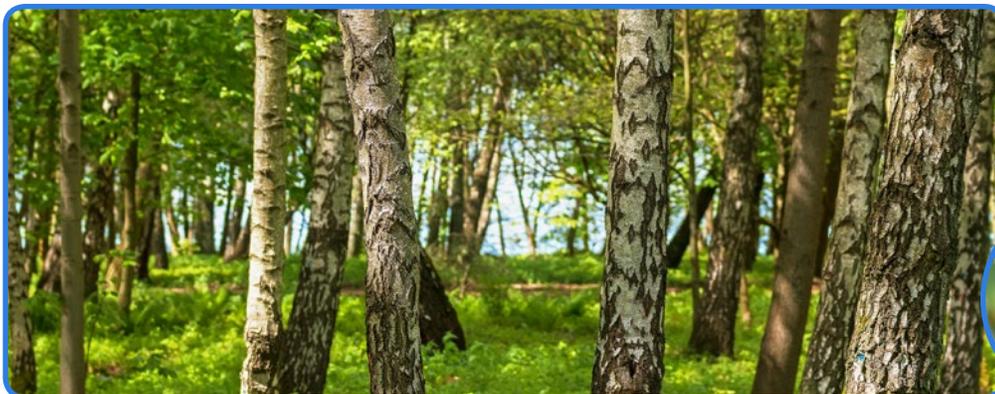
This forest type is made up of 50 percent or more of either maple, beech, or yellow birch trees, or a combination of them. Other common plants include hemlock, elm, basswood, and white pine trees.

Animals

The maple–beech–birch forest and the openings and farms within it provide food and cover for diverse species. The black bear is present in many areas. The wolf is no longer common, but the red fox and gray fox are rather widespread, as is the bobcat. Several species of squirrels live in the forest, and a number of smaller rodents inhabit the forest floor. The white-tailed deer and ruffed grouse occurs throughout. Songbirds include the ovenbird, red-eyed vireo, hermit thrush, scarlet tanager, blue jay, black-capped chickadee, wood pewee, and magnolia warbler.

Land Use

Much of the area is farmlands. The principal crops are feed grains and forage for dairy cattle, and some areas grow potatoes. The steeper land is mainly forested, produces significant amounts of timber, and is important for skiing and other forms of recreation.



Bobcat



Scarlet Tanager



Black-Capped Chickadee

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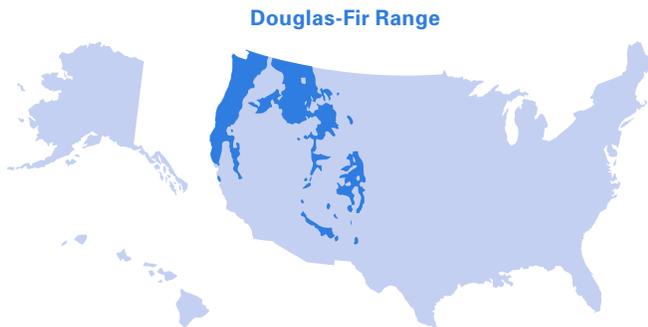
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Ecozone: Temperate Oceanic

The nearness of the Pacific Ocean profoundly moderates the climate in the Temperate Oceanic ecozone. Annual temperatures average 9° to 13°C (48°–55°F). Most of the rain falls in winter, while summers tend to be dry. Fog partially compensates for the summer drought.

On-the-Ground Forest Example: Douglas-Fir

The Douglas-fir forest is one of the larger forest types in the Pacific Northwest. It spans much of the mountains in western Oregon and western Washington and extends well south into the northern California coast ranges. Douglas-fir forest is also scattered in the Rocky Mountains in Idaho and Montana and in the Blue Mountains of eastern Oregon. The elevation ranges from 500 feet up into the high mountains.



Climate

The average annual precipitation in the Douglas-fir forest area varies—from 1016–2032 mm (40 to 80 inches) in the extreme west and 508 to 762 mm (20 to 30 inches) in the interior portion. In the extreme west, 50–60

percent of the total precipitation occurs during the period December to March. In the rest of Douglas-fir forest, only 25–40 percent of the precipitation occurs in the coldest months. The length of the frost-free season is 200 days in western coastal areas and 160 days in the rest of western Oregon and Washington. In the rest of the area covered by this type of forest, the frost-free season is about 80 to 120 days.

Plants

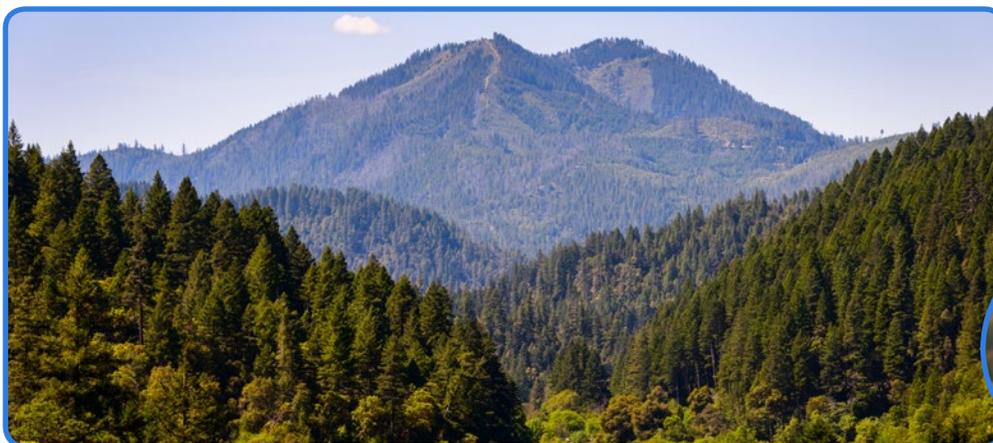
Douglas-fir forests are usually made up of 50 percent or more Douglas-fir trees. Common shrubs in these forests include maple, filbert, blueberry, snowberry, currant, blackberry, and rose. Grasses are also common, especially in the scattered stands in Idaho and Montana.

Animals

Common large mammals include elk, deer, black bear, mountain lions, and bobcats. Grizzly bear and moose are also found in the northern Rockies. Small mammals include mice, squirrels, marten, chipmunks, and bushy-tailed wood rats. Some of the more common birds are hawks, owls, grouses, chestnut-backed chickadee, red-breasted nuthatch, gray jay, and Steller's jay.

Land Use

About 75 percent of the land area is forested, and lumber is a major industry. Less than 20 percent of the land is devoted to cropland or pasture. Fruit, vegetables, and grain are the major crops. Forage and feed grains occupy large areas.



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Ecozone: Subtropical Desert

South of the Arizona-New Mexico mountains are the North American subtropical deserts, which have a dry climate. Summers are long and hot, and winters are short but may include brief periods when temperatures fall below freezing. Average annual precipitation ranges from 50 mm to 500 mm (2 inches to 20 inches) locally. Grasslands and small shrubs are most common in this zone, but forest stands can be found in some areas.

On-the-Ground Forest Example: Pinyon–Juniper

The pinyon–juniper forest is dominated by low, bushy, evergreen junipers and pinyon pines. It may consist of pure stands of pinyon pine or pure stands of juniper. This forest type is found in New Mexico, Arizona, California, Nevada, and Colorado and at higher elevations of the Mojave Desert.

Pinyon-Juniper Range



Climate

The climate in the pinyon–juniper forest is dry. Annual precipitation is 254 mm (10 inches), nearly half of which occurs during the warmest months. The normal length of the frost free season is 120 days.

Plants

The name “pygmy forest” characterizes the pinyon–juniper forest type. It includes dense, open, and savanna woodlands. Trees may grow to a height of 9 meters (30 feet) but are generally less than 4.5 meters (15 feet) tall. They are bushy, being almost as wide as they are tall.

Animals

Common animals include mule deer, mountain lion, coyote, and bobcat, as well as wood rat, white-footed mouse, jackrabbit, rock squirrel, porcupine, and gray fox. Common birds include western red-tailed hawk, golden eagle, pinyon jay, rock wren, mountain bluebird, western robin, and long-crested jay. Turkeys are locally abundant during the winter. Among the reptiles are the horned lizard, sagebrush swift, collared lizard, and Great Basin rattlesnake.

Land Use

The pinyon–juniper cover type is used principally for grazing and yields a limited amount of timber products, mainly pinyon Christmas trees, pine nuts, and juniper fence posts.



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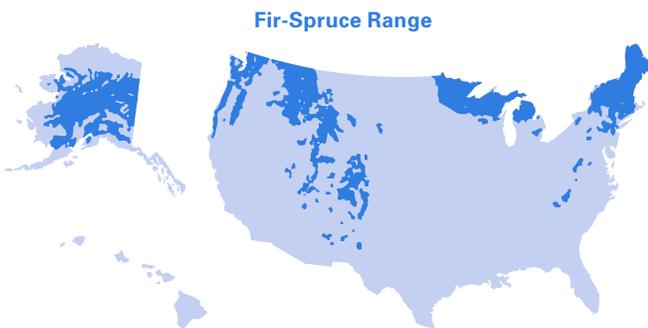
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Ecozone: Boreal Mountain System

The climate in this ecozone is marked by long, cold winters and short, warm summers. Average annual temperatures range from -10°C (14°F) in the north to 5°C (41°F) in the south. Average annual precipitation is lowest in valleys, at less than 300 mm (12 inches), and increases in the interior ranges to up to 1500 mm (59 inches) at higher elevations.

On-the-Ground Forest Example: Fir–Spruce

The fir–spruce forest type occurs from central Alaska into the Rocky Mountains. It is normally the highest forest zone in the mountain ranges, but its altitude varies from as low as 460 meters (1,500 feet) in Alaska to as high as 3600 m (12,000 feet) in the southern Rocky Mountains.



Climate

The fir–spruce forest is characterized by open to dense areas of needle-leaved evergreen trees and patches of shrubby plants growing underneath. It experiences a large annual temperature range, severely cold winters, and short, hot summers. Average snowfall ranges from 1,200 to 2,500 cm (47 to 98 inches).

Plants

Fifty percent or more of the forest is fir or spruce trees. White spruce prefers dry, upland sites and slopes, while black spruce prefers floodplains and rolling hills with poorly drained soils. Herbs such as twinflower, feathermosses, and lichens are widespread underneath the forest trees.

Animals

Millions of birds migrate to the Alaskan forests during the short but intense summer. Multiple species of warblers, thrushes, hawks, and waterfowl can be found nesting, raising young, and building up their fat supplies during the summer weeks before flying south again. Great horned owls, boreal chickadees, and white-winged crossbills stay year-round. The fir–spruce forest is also home to bears, wolverine, moose, elk, and caribou, which can survive due to their large body size. Other species include porcupine beaver, snowshoe rabbit, flying squirrels, chipmunks, various species of mice, and other small mammals.

Land Use

Heavy forests cover much of the fir–spruce forest area, and they are used as wildlife habitats and watersheds and for recreation and lumbering. There is virtually no cropland. Much of the area is owned by the Federal Government.



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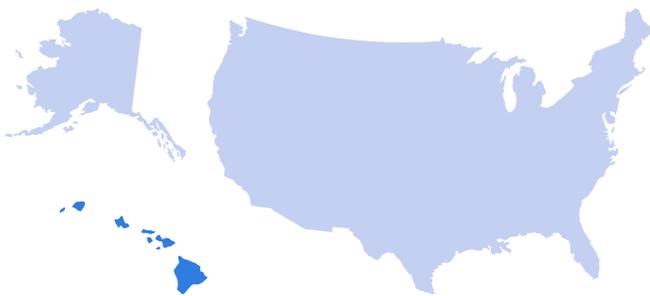
Ecozone: Tropical Rainforest

The tropical rainforest ecozone has warm temperatures year-round and lots of rainfall. In the Pacific Islands, the climate is dominated by the trade winds, which pick up moisture over the ocean and release it on the islands. The average annual precipitation in this ecozone generally varies from 1500 mm to 4000 mm (59 inches to 157 inches). In places where there is a dry season, it is not severe.

On-the-Ground Forest Example: Hawaiian Rainforest

The Hawaiian rainforests are lush forests growing on the windward side of each island and in the mountain regions. They are characterized by broad-leaved trees and a diversity of plant and animal species. This forest type includes one of the world's wettest places, the slopes of Mount Wai'ale'ale, which average 12000 mm (460 inches) of rainfall a year.

Hawaiian Rainforest Range



Climate

The surrounding ocean and almost constant northeast trade winds maintain an almost uniform climate

throughout the year. Average temperatures at sea level range from about 21°C (70°F) in January to about 24°C (75°F) in July. On the highest peaks, however, snow may fall in any month of the year. Precipitation is heaviest on the windward side of all the islands; the opposite sides are fairly dry.

Plants

The Hawaiian rainforests have a wide diversity of plants, many of which are unique to the islands. Lowland forests contain a tree called the ohia, as well as treelike ferns. In the lush, moist forests high in the mountains, trees are draped with vines, orchids, ferns, and mosses.

Animals

Because of their isolation, the Hawaiian Islands feature a small but unique selection of species. Introduced mammals include the axis deer, Hawaiian wild boar, feral sheep, and goats. Native land birds include hawks, owls, crows, warblers, and thrushes. Several species, including the crested honeycreeper, are near extinction. There are no native snakes and few other reptiles.

Land Use

Since humans first arrived on the Hawaiian Islands have lost almost half of their native forest cover to agriculture, grazing, logging, and building. Today, the remaining forests are threatened by invasive plants and animals, including feral cattle, pigs, goats, rats, and invasive insects. Hawaii's forests are an important source of timber and also contain culturally significant plants.



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