

ECOSYSTEMS OF THE UNITED STATES AND CANADA

ABOUT THE MAP

Ecosystems—complex, interacting groups of organisms and their natural environments—provide habitat for species and support important services such as the provisioning of food, purification of air and water, recycling of nutrients, and regulation of climate. The more biologically diverse ecosystems are, the more resilient they are. NatureServe uses the International Vegetation Classification (IVC) to describe the diversity of terrestrial ecosystems across North America and to facilitate their management and conservation.

Terrestrial, or land-based, ecosystems support the majority (85 percent) of species biodiversity in North America. Our continent contains a vast array of terrestrial ecosystems, including deserts, grasslands, forests, and wetlands. These ecosystems are important intrinsically, ecologically, and economically. However, human-caused disturbances such as the conversion and degradation of land, the introduction of invasive plants and animals, and climate change threaten ecosystem integrity. NatureServe’s recent report, *Biodiversity in Focus: United States Edition*, revealed that 41 percent of terrestrial ecosystems in the United States are currently at risk of range-wide collapse. By defining, mapping, and evaluating threats to natural ecosystems, NatureServe and the NatureServe Network provide information needed to support conservation efforts and to build a sustainable future.

Network programs in the United States and Canada collect data on terrestrial ecosystems by using ground-based field surveys, drones, aerial photography, satellite imagery, and other methods. Our understanding of the function and health of each ecosystem is guided by observed patterns of vegetation, including information on plant species, vegetation structure, and natural disturbances such as fires, floods, and droughts.

From this information, ecosystem patterns at global, regional, and local scales can be described using an eight-level hierarchy that follows the IVC typology. NatureServe has collaboratively developed the IVC with partners of the U.S. National Vegetation Classification (USNVC) and Canadian National Vegetation Classification (CNVC), including government agencies, the Ecological Society of America, and the NatureServe Network. The highest levels of the IVC capture continental patterns of biodiversity by using broad ecosystem categories such as boreal forests, warm deserts, and alpine tundra. Lower levels of the classification system illustrate the finer details of ecosystem structure and composition. See the ‘[Dive into the Data](#)’ section of the annual report for more information about NatureServe’s ecosystem classification hierarchy.

The map on the left illustrates the current distribution of ecosystems across the United States and Canada at the subclass level, one of the higher levels of the IVC hierarchy. It shows distinct areas of intact natural vegetation and areas in which natural vegetation has been converted for agriculture or development. The map shown here was made possible through NatureServe’s partnership with U.S. LANDFIRE. In Canada, classification and mapping based on the CNVC is still in active development, with support from Environment Climate Change Canada. These maps can help guide land management decisions that conserve biodiversity, benefiting both ecosystems and the species they support.



Polar & Alpine Tundra

Tundra occurs where conditions reach such extreme cold that neither trees nor tall shrubs can persist. These areas include mountainous regions and the Arctic. Tundra ecosystems are dominated by low-lying shrubs, herbs, mosses, and lichens adapted to the short growing season. Despite limited vegetation in the Arctic tundra, vast herds of caribou thrive there. Climate change mitigation practices are critical to conserving tundra ecosystems.



Denali National Park and Preserve
Western boreal alpine tundra
Photo by Kent Miller, National Park Service

Grassland & Shrubland

Grasslands and shrublands are comprised of deep-rooted grasses and a colorful mix of wildflowers that depend on fire and grazing animals to thrive. These ecosystems are most expansive in the Central Great Plains. Patches also exist in mountainous meadows in the West and in open areas with shallower soils in the East. Threats such as land conversion can be mitigated by land protection and sustainable land-use practices.



Chihuahuan creosotebush-mixed desert scrub
NatureServe Global Status: Apparently Secure (G4)
Photo by Esteban Muldavin, Natural Heritage New Mexico, University of New Mexico

Warm Desert

In the United States, warm deserts mainly occur in the Southwest. Plants and animals have a variety of adaptations to live in these drought-prone ecosystems. For example, some plants grow thorns as protection from predators, and those thorns also help reduce water loss. Conservation areas on publicly managed lands, land trust protections, and rangeland health guidelines help mitigate threats such as climate change, land development, and heavy grazing.



Northern tallgrass prairie
NatureServe Global Status: Imperiled (G2)
Photo by Marielena Kowalczyk

Cool Semi-desert

Cool semi-deserts are found between the Rocky Mountains and the Pacific coast in the western United States. Warm days, chilly nights, extended droughts, and occasional fires influence the plants and animals of these ecosystems. Short shrubs with small, leathery leaves dominate, though grasses are common in colder and wetter environments. Conservation efforts focus on invasive plant management, sustainable grazing efforts, and appropriate wildfire management.



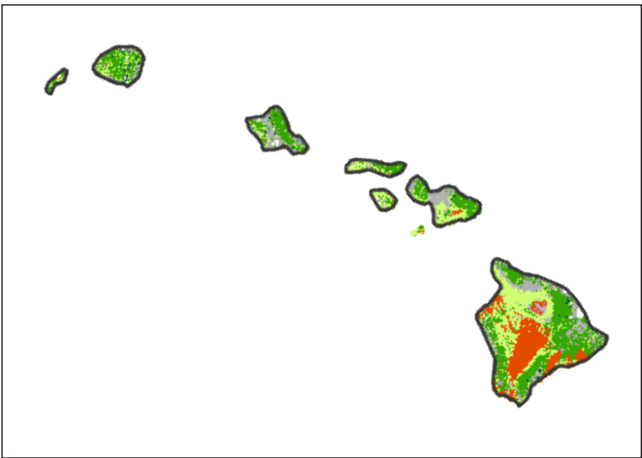
Chihuahuan sandy plains semi-desert grassland
NatureServe Global Status: Imperiled (G2)
Photo by Curtis Monger, New Mexico State University

Tropical Ecosystems

Tropical ecosystems in the United States contain a diverse set of ecosystem types, including coastal and lowland grasslands, dry forests, rainforests, high-elevation cloud forests, and bogs. All of these ecosystems are found on the islands of Hawai'i. Tropical dry forests also occur in South Florida. Government, state, and NGO-led programs are collaborating to conserve these biologically diverse ecosystems and reduce threats from invasive species, land development, grazing, and climate change.



Waimea Canyon
Hawaiian lowland shrubland, grassland, and savanna
Photo by Maria Luisa Lopez Estivill



Forest & Woodland

The variety of trees that comprise forests in the United States and Canada include evergreens, such as spruce and fir in high mountain and northern regions, and deciduous trees, such as maples and oaks in the East. Although an increasing number of forests are sustainably managed, these ecosystems are still threatened by climate change, fire suppression, repeated logging, and invasive species.



North-central oak hickory forest and woodland
NatureServe Global Status: Vulnerable (G3)
Photo by Kathy Faber-Langendoen

Wetland

Freshwater wetlands, including forest swamps and open marshes, are found throughout the United States and Canada. Peatlands, including bogs and fens, are a prominent feature of the northern boreal forest. Coastal wetlands include tidal salt marshes and mangroves. Legislation such as the North American Wetlands Conservation Act set aside areas for conservation to help protect wetlands from agricultural pollution and development.



Pond-cypress basin swamp
NatureServe Global Status: Vulnerable (G3)
Photo by Galynda Andruszka

Forest and Woodland

- Temperate and Boreal Forest and Woodland
- Tropical Forest

Grassland, Savanna, and Shrubland

- Temperate Grassland, Boreal Grassland, and Shrubland
- Tropical Savanna, Grassland, and Shrubland

Desert and Semi-desert

- Warm Desert
- Cool Semi-desert

Alpine and Polar Tundra

- Temperate Alpine and Polar Tundra
- Perennial Snow and Ice

Wetland

- Forest Wetland
- Shrub and Herb Wetland
- Peatland
- Salt Marsh

Other

- Open Rock Vegetation
- Developed



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