



Surveying the Diversity of North America



Though Eastern Deciduous Forests range from Eastern Canada to the Southeastern U.S., much local variation in forest types occur.

The rich biodiversity of North America extends to every region. The place you live may contain an intact ecological community or, more likely, just fragments of natural areas. Regardless, there's much to discover close to home. Here's an broad overview of several ecological communities in North America. We encourage you to take a closer look at the place you live and work to enhance, protect, or restore the unique biodiversity of your area.

Eastern Deciduous Forests

Deciduous forests are dominated by trees that lose their leaves during autumn. They experience four notable seasons of about equal length and range from the Maritime Provinces of Canada, west to the Great lakes, and South to Florida. Over 500 species of trees and shrubs occur in the Eastern Deciduous Forest, and many sub-communities exist within this larger forest type. The Alpine forest of Balsam Fir and Black Spruce, the Beech-Maple forests of New England, and the Southern Mixed Pine-Oak forests of the Southern Coastal Plain are all distinct forest communities characterized by different species of plants and wildlife.

Plants

Though large trees dominate the deciduous forest, an understory layer of trees and shrubs, a ground layer of herbaceous plants, and leaf litter are also key components. Each layer supports a myriad of wildlife species including insects, birds, and mammals that are interdependent upon one another for survival.

Wildlife

Numerous species of mammals, including deer, raccoons, skunks, foxes, voles, and mice inhabit forest communities. Numerous amphibians are residents of the leaf litter layer. Large blocks of forest habitat also sustain stable populations of many woodland bird species, including scarlet tanagers, broad-winged hawks, veerys, and pileated woodpeckers.

Status and Restoration

Though very little Eastern Deciduous Forest still exists in its original state, there is more forest today than 100 years ago. As farmland is abandoned, forests throughout the East recover and re-establish themselves. Habitat fragmentation and acid rain are currently the most serious threats to forest health. Many techniques for restoring a forest have been tried and new procedures are being introduced. Most critical is the creation of canopy.

Grasslands

While humid climates support forest and dry ones support desert, grasslands need a moisture level in between. The annual precipitation of grassland regions is enough for grasses to prosper, yet erratic enough to prevent large stands of trees from growing. There are six major grassland regions in North America. Shortgrass, mixed-grass, and tallgrass prairie lie in the center of the continent; the inter-mountain grassland in eastern Oregon and Washington, the desert grassland in the Southwest, and the central valley grassland in California round out the list. Each region supports a mixture of grasses and has its own dominant species.

Plants

Grassland vegetation forms a relatively solid ground cover and consists of a variety of grasses, wildflowers, and a few trees along stream banks and floodplains. Depending on moisture, grasses vary in height from under 2 feet (blue gamma and buffalo grass) to over 5 feet (big bluestem and Indian grass). Wind, fire, and grazing are natural processes that shape prairie plant communities. Wind evaporates water, thereby increasing arid conditions and contributing to the spread of fire. Started by lightning storms, fires kill trees but only burn grasses to ground level. The thick, matted root systems of prairie grasses quickly regenerate the shoots and the prairie again turns green. Similarly, grazing by native wildlife, like buffalo, also sustains the grassland.

Wildlife

A large diversity of mammals rely on grassland habitats. Many of the herbivores (plant eaters), like pronghorns and bison are highly socialized and live in herds. There are also many burrowers. Many small mammals, such as prairie dogs and ground squirrels, live together underground in complex burrows. Even an owl--the burrowing owl--takes up residence underground in burrows abandoned by these mammals. More than half of grassland birds, including meadowlark, horned lark, bobolink, and prairie chicken, nest on the ground.



Creating smaller prairie areas is an important way to conserve and showcase this once vast natural community.

Status and Restoration

Because of their highly fertile soil, most grasslands have been cleared for crops or lost due to over-grazing by cattle and sheep. Fire suppression, introduction of exotic plant species, and habitat fragmentation have also impacted grasslands. Only about 1% of the original tallgrass prairies that once thrived in the Midwestern U.S. and Canada remain. Native grassland birds have declined in the past 25 years more consistently, and across a broader area, than any other bird group. Prairie restoration began in the 1930's and continues today. Fire is a key management technique for maintaining prairie grasses. On large preserves, native grazers such as buffalo are needed to maintain the health of the ecosystem. Prairie restoration projects of 250 acres or greater may be needed to reverse the decline in grassland bird species, since they rely on large blocks of habitat for breeding and survival.



Wetlands are extremely valuable. They serve as wildlife habitat, fish propagation and nursery areas, flood storage, groundwater recharge, and filters that prevent sediment and chemicals from entering streams.

Wetlands

Wetlands are primarily defined by hydrology, soils, and vegetation. They have a high water table with saturated soil or shallow, standing water during all or a significant part of the growing season. Since at certain times of the year some wetlands may have no visible water, they are further recognized by their soil moisture and types of plants. Wetlands are among the most biologically productive ecosystems in the world. They serve as wildlife habitat, fish propagation and nursery areas, flood storage, groundwater recharge, and filters that prevent sediment and chemicals from entering streams. Wetlands are found throughout North America and include such diverse habitats as riparian forests, swamps, bogs, wet meadows, and prairie potholes.

Plants

Because of the moisture in wetland soils, only plants with a high tolerance for flooded conditions survive. Trees like red maple, willows, black ash and American elm predominate in many forested wetlands, while cattails and pickerel weed are common emergent plants. Some wetland plants and organisms are capable of processing toxic heavy metals and chemical compounds into harmless elements.

Wildlife

More animals depend on wetlands than any other natural habitat except the ocean. The reason is simple: All life needs water. Numerous species of birds, mammals, amphibians and insects spend all or part of their lives in wetlands. Up to 43% of the threatened or endangered species rely directly or indirectly on wetlands for survival.

Status and Restoration

The U.S. has lost over half of its original wetlands due to development and agriculture. In recent years, government regulations and wetland education programs have helped to turn the tide. These critical measures need support to be effective. The chance for restoration is greater if the site once was wetland. If site hydrology has been destroyed, it must be restored for the wetland to survive. Increasingly, natural wetlands are being incorporated into site design to increase habitat diversity and decrease costly mitigation measures.

Deserts

Deserts are characterized by their perennial lack of water. Evaporation exceeds precipitation, which is less than 10 inches a year. Desert communities share a distinctive landscape where earth, wind, and sky meet in vast open spaces. In the United States, deserts predominate throughout the southwest, bounded by the Sierra Nevada and Rocky Mountains. Though most people think of deserts as hot, sandy wastelands, there are many types, each with fascinating plants, wildlife, and topography. The Great Basin Desert of northeastern California, Nevada, and western Utah is a *cold desert* because much of its precipitation falls as snow. Our *hot deserts* include the Sonoran, Chihuahuan, and Mojave deserts. Each has its own plants and wildlife, depending on weather, geology, soils, and elevation.

Audubon Cooperative Sanctuary Program Member, TPC at the Canyon in Nevada incorporates native desert habitat as an integral part of the golf course setting.



Plants

Plants in the desert are specially adapted to cope with scarce water supplies. Succulent plants, such as cacti, store water in their thick stems. Their leaves are reduced to spines to minimize water loss. Other drought-resistant plants, such as mesquite and cottonwood trees, have a long tap root that draws water from great depths. Conversely, many desert plants have extensive root systems to gather maximum rainwater from the soil surface. Ephemeral flowers of the desert complete their life cycle in a single, short season and come alive after rainstorms, blanketing the desert with brilliant color.

Wildlife

Many animals in the desert have adaptations similar to plants. Frogs and toads are activated by rainfall, mammals have hairy coats that help keep body temperature at a tolerable level, and lizards have a thick outer covering to minimize water loss. To survive the intense daytime heat, most desert wildlife is nocturnal. Animals like the kit fox spend the day in underground burrows and emerge only at night to forage.

Status and Restoration

In the last decade population growth in the desert southwest has been one of the highest in the country. Changes in the landscape have been dramatic: native desert habitat is being lost to human disturbance and livestock grazing. Imposing the aesthetics of a lush green landscape on the desert also contributes to loss of native desert species, when plants with much higher water demands replace them. Slow plant growth, low species diversity, and shortages of water make desert restoration efforts especially challenging. More sensitive development and new ordinances that promote xeriscaping (using drought-tolerant plants) and desert landscaping are helping to preserve the integrity of the desert environment.

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