

Upland Hardwoods

Intermediate and Senior Contestants should study the following description to prepare for Ecosystem Quiz station in the Florida 4-H Annual Forest Ecology Contest.



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Overview and History

Upland hardwood forests are characterized by a distinct overstory of shade-tolerant, deciduous trees with an understory of wood shrubs and herbaceous groundcover plants. Occasionally some species of pines and evergreen hardwoods are mixed in with the deciduous species. Upland hardwoods are generally located on elevated, rolling terrain such as slopes and bluffs and frequently have a layer of limestone bedrock underneath deep, sandy, well-drained soil. The upper layers of



Figure 1: The top layer of this soil is coarse sand, just beneath there is the finer-texture of sand and clay.

soil have a coarse texture with finer-textured sand below (See Figure 1). The coarse upper layer helps to trap moisture and nutrients while still allowing drainage of excess water. While these higher elevation forests are most often considered xeric, some upland hardwood forests are located on mid-level slopes and may be mesic, depending on the steepness of the slope and the availability of water.

Upland hardwood stands are often located near flatwoods or sandhill ecosystems.

The hardwoods may have replaced earlier successional species in these adjacent ecosystems in areas where fire was suppressed.

The soil in upland forests is mainly sand, however, there may be deposits of clay and loam in the more northerly locations. These deposits are remnants of the Piedmont soils of Georgia and the Carolina. As you go farther south along the peninsula less clay is found in the soil. Because these forests are located on higher elevation slopes the water tables is deeper under surface. Trees in this ecosystem tend to have deeper foot systems in order to obtain water.

The overstory trees in upland hardwood forests are usually oaks such as post oak, white oak, bluejack oak, and live oak. The understory may have a variety of hardwoods like black cherry, persimmon, and magnolia along with woody shrubs and flowering plants. Upland forests are known for their beautiful wildflower displays in the spring and summer months.

Upland hardwood forests are mainly located in north Florida and along the high ridges of the peninsula. The northern forests gradually blend into the Piedmont and Appalachian Mountains while the southern forests blend into tropical hardwood hammocks. The Tallahassee-Red Hills region of the Panhandle is home to the most extensive upland hardwood forests in Florida. Many of the species found in the northern are common to the warmer, more southerly area of the state. American beech trees are a core species in many North Florida forests but can't survive in Central or South Florida forests.

While upland hardwood forests all have some overstory and understory layers of vegetation, the forests in the north have clearer distinction between the layers. The three canopies are more closed so very little sunlight reaches the forest floor. This results in sparse groundcover. Hardwood forests that grow farther south along the peninsula have less distinct layering and more open canopy so more light can filter down and produce a dense



Figure 2: Spanish moss typically grows in very humid areas.

groundcover of grasses and forbs. Light-loving air plants (epiphytes), orchids, and resurrection ferns may be seen growing along the branches of the large oaks. One of the most familiar air plants is Spanish moss which hangs from the trees and gives them an almost eerie look. Large oak trees, draped in Spanish moss are one of the most characteristic sights in the deep South (Figure 2).

Environmental Factors and Benefits of Upland Hardwood Forests

Upland hardwood forests are not fire-dependent. Natural lightning fires are rare in these habitats where the thick layers of leaf litter are able to trap moisture and retard high-intensity burning. The plants in these habitats also have fewer volatile oils than those found in flatwoods plants so they are less flammable. However, if a large fire does break out it may be devastating to the forest. These plants are not adapted to fire and would have difficulty re-establishing after a serious burn. Faster-growing pioneer species such as pines would be able to move in, replace the hardwoods, and alter the composition of the ecosystem.

High winds are generally a more frequent fact in upland forests than fire. The winds cull the trees of dead branches which fall to the ground and may pile up into brush piles. These often serve as refuge and nesting are for wildlife. Heavy rains sometimes saturate the Spanish moss that hangs from trees. The added weight of the wet moss may cause branches to break and fall to the ground.

Upland hardwood forests are valuable for watershed protection and erosion control. The deep root systems of the trees help to stabilize the soil and prevent excessive run-off of water and nutrients. Not only does much wildlife depend on upland hardwoods, including many threatened or endangered species, but the herbaceous groundcover is sometimes used as high-quality forage for livestock. These beautiful forests are also a source of durable saw timber. However, the small size of most hardwood stands makes them of limited commercial timber value.

Wildlife and the Upland Forests

Upland hardwood forests represent a diverse natural community that is known for its rich species diversity. These forests are able to support numerous animals by providing year-round food resources and shelter. Pollinating insects are attached to the many flowering plants and trees which produce a variety of food choices including black cherries, persimmons, acorns, mistletoe berries, and numerous grains and seeds. Since the forest have overstory and understory plants some animals and birds use the upper branches of the trees while others live and forage in the shrubs and groundcover plants. Cavity-nesting birds like owls and woodpeckers make use of the large trees while ground-nesters live among the underbrush. This allows more animals to benefit from the resources without competing against one another.

Many species of songbirds frequent upland hardwood trees and shrubs. Some are year-round residents while others use the forests during spring and fall migration. Resident birds are bluejays, bluebirds, mockingbirds, cardinals, wrens, and woodpeckers. Cedar waxwings, great-crested flycatchers, and numerous warblers may be



Figure 3: Eastern diamond back rattle snack in upland hardwood.

seen in the forest as they migrate during the spring and fall. Ground birds that use upland hardwood forests include bob-white quail and wild turkey. Reptiles that may be found in these habitats include several varieties of non-poisonous snakes as well as the highly poisonous Eastern diamondback rattlesnake (Figure 3). Numerous lizards, skinks, and tree frogs live in the upland forests along with gopher tortoises, a threatened species.

Some of the wildlife in upland hardwood forests is considered species of special concern because of their dwindling numbers. The indigo snake, which often lives in gopher tortoise burrows within the forest, is an endangered species, as is the Florida panther. Black bears, like the gopher tortoises are considered a threatened species. Care must be taken to protect and preserve upland forest habitat in order to provide habitat for these animals.

Human Impacts on Upland Hardwoods

One way that human have impacted upland hardwood forests is by cutting down trees to build homes. Since upland forests are found on well-drained land and offer beautiful trees with shade and shelter from winds, these locations are popular as home sites. Many thousands of acres of hardwood forest have already been cut to make room for housing. Other areas have been cleared and used for agricultural purposes. Much land has been converted to commercial pine plantations or rangeland for livestock. Only fragmented hammocks of hardwoods still exist throughout Florida today.

Currently there is a market for lumber from upland hardwood trees such as black cherry, white oak, southern red oak, and walnut. However, since upland hardwoods are usually found in relatively small stands in Florida, the forests are not able to produce large quantities for commercial purposes. The value of these upland forests to wildlife is greater than their value for commercial timber production.

Summary

Some of the most beautiful land in Florida is found in the upland hardwood forests. The picturesque moss-draped oak trees and gently rolling terrain offer a classic view of the original Florida. Wildlife thrive on the abundant fruits, nuts, seeds, and vegetation that grow year-round in upland hardwood habitats. In addition to befitting wildlife, these forests help to protect the watershed and minimize erosion of along slopes.

There is much variety between upland hardwood forests. The species of trees that grow in these habitats is different as one travels from north to south along the Florida peninsula. Some of the



most serene parks and recreation areas in Florida are located in upland hardwood forests where visitors can enjoy pleasant walks along wooded trails and view the many species of trees, flowering plants, birds, and other wildlife that are found there. Many state recreation areas feature upland hardwood forests including Florida Caverns State Park, Deak Lakes State Recreation Area, Mikes Roess Goldhead Branch State Park, Torreya State Park, Tosohatchee State Reserve, Faver-Dykes State Park, Silver River State Park, San Falasco Perserve State Park, Falling Waters State Recreation Area, Wakulla Springs State Park, and Highland Hammock State Park.