

# The Cedar Glades Ecosystems of Middle Tennessee

## You Can Help!

*When visiting cedar glades be careful to stay on trails and dispose of your trash properly. Support the efforts of organizations that are protecting cedar glades. Tell your friends and family about this rare ecosystem of middle Tennessee.*



### What are Cedar Glades?

Cedar glades are grassy openings where the bedrock, most often limestone, is exposed or covered in patches by only a thin layer of soil. Cedar glades are always found within the barrens ecosystems—fire-maintained mosaics of red-cedar/hardwood forests and expanses of perennial grasses and forbs. The shallow soils and harsh conditions of the cedar glades, however, prevent the encroachment into these unique areas of the plant life from the barrens. Though cedar glades are distinct ecosystems, they are so closely tied to the barrens that they are often referred to as the glade/barrens ecosystems. However, not all barrens have glades within them.

Individual cedar glades typically cover only about 1 to 5 acres, and many are less than 1 acre in size. Like desert areas, cedar glades are a severe environment subject to extremes in light, temperature, and moisture. Because there is little or no shade and the bedrock is either fully exposed or covered with no more than 3 or 4 inches of poorly drained soil, glade inhabitants are subject to extremely hot and dry condition in the summer and cold, wet Conditions in the winter.

Cedar glades can be recognized by the gradual transition of plants and soils from the barrens forest to the glade bedrock. The barrens forest, usually a mix of red-cedar, blue ash, hackberry, elm, hickory, and Shumard and chinquapin oak, is dominated by red-cedars at the glade perimeter. Along with the cedars, a dense thicket of shrubs (predominantly glade privet, fragrant sumac, St. Johnswort, and Carolina buckthorn) forms a distinct border around the cedar glade. A common feature of this transition zone is the presence of extensive carpetlike mats of glade moss. Where glades are surrounded by the grassy, open areas of the barrens, they often share the same species, especially in the deeper soils of the glades. Within the glade itself are two zones, known as gravel glades (are exposed or nearly bare) and grass glades (have measurable amounts of soil). The shallow soils tend to be dominated by annual native grasses, while the deeper soils can support the rich array of glade wildflowers and prairie grasses, such as little bluestem and side-oats grama, in the surrounding barrens.

### **Why are Cedar Glades Important?**

The cedar glades of middle Tennessee are globally unique; because they are so rare, they represent some of Tennessee's most prized natural areas. They support a unique plant community of highly specialized species that have adapted to the specific conditions in the glades over thousands of years. Because of this adaptation and the unique soils, geology, and climate here, these species are found in no other place (endemic).

Animals, like deer, turkey, and chipmunks, live in the surrounding woodlands and use the glades to find food and as easy thoroughfare in their travels. Birds that use these open areas include neotropical migratory birds like the indigo bunting and prairie warbler. Also, the dry and rocky clearings of the cedar glades provide habitat for a variety of reptiles, including the fence lizard, racerunner, southeastern five-lined skink, kingsnake, milk snake, and crowned snake.

### **Rare and Unique Species Depend on Cedar Glades**

There are at least 350 different kinds of plants that occur in cedar glades, with 25 of them endemic to glades. Three species—the Tennessee coneflower, Pyne's ground plum and, leafy prairie clover—are listed as federally endangered. The zones within the glades provide habitat for different species. The grassy zone is dominated by a summer annual known as poverty grass and is interspersed with many beautiful plants, such as the Nashville breadroot, glade petunia, agave, and pink verbena. The gravel zone, where Gattinger's prairie clover is dominant, harbors other plants, like the succulent stonecrop and limestone faneflower.

### **Threats to Cedar Glades**

Many people view cedar glades as barren "wastelands." As a result, many glades have been destroyed by urban sprawl agricultural activities and have become a dumping ground for everything from old cars to household waste. Drivers of off-road vehicles use them as a playground, destroying these fragile ecosystems. Nonindigenous invasive pest plants,

like the Japanese honeysuckle and common privet, have also become a problem, invading these areas and taking over the habitat of the native (indigenous) plant species.

### **What's Being Done?**

Fortunately, appreciation and interest are growing. Some landowners are becoming interested in protecting glades on their property; others are protected on state and federal land. Organizations like The Nature Conservancy have been successful in buying more cedar glades, providing permanent protection for these rare places. Efforts are also increasing to restrict access on public land to stop dumping and off-road-vehicle use. As more development is expected, unprotected land needs to be conserved; when these globally unique places are gone, they are gone forever.

### **Seeing is Believing!**

Tennessee has two state parks where you can see and learn about cedar glades - Cedars of the Lebanon State Park and Long Hunter State Park. Use the *Tennessee Wildlife Viewing Guide* to locate the park near you.

# Tennessee Coneflower

(*Echinacea tennesseensis*)

## You Can Help!

*Tell a friend about the Tennessee coneflower. Avoid picking wildflowers. Remember to stay on trails to avoid trampling unique plants. Learn about fire's important role in ecosystem function. Take pride in Tennessee's wildflowers!*

## Status

The Tennessee coneflower was listed as endangered on June 6, 1979.

## Description

The Tennessee coneflower is a daisylike plant. The purple flowers are supported by 8- to 12-inch-tall leafy stems. The fuzzy, narrow, lance-shaped leaves are about 7 inches long. The structure we call a flower actually consists of a large number of small flowers grouped together. The purple petals are tiny "ray" flowers. They surround the darker-colored "disk" flowers. The Tennessee coneflower is supported by a stout fibrous taproot. This rare plant produces a limited number of relatively large seeds that are not easily dispersed by wind and water nor are they spread by animals.

## Habitat

There are currently five known populations of the Tennessee coneflower. All are located within 14 miles of each other in a small area of middle Tennessee's central basin in Wilson, Davidson, and Rutherford Counties. The Tennessee coneflower is found only in open cedar glades. Tennessee coneflowers will not grow in heavily shaded areas.

## Role in the Ecosystem

Plants in the genus *Echinacea* are said to have many medicinal values. Native Americans are said to have used *Echinacea* for snakebites, spider bites, cancers, toothaches, burns, hard-to-heal sores and wounds, flu, and colds. *Echinacea purpurea*, the purple coneflower, is widely used and produced for medicinal purposes today. It is a component of many pharmaceutical drugs and is considered an immune system stimulant.

## Threats

The Tennessee coneflower is threatened primarily by habitat destruction. Residential development has reduced already small



populations. This plant is so well adapted to its cedar glade ecosystem that it probably would not survive in other areas. Wildflower picking and harvesting for the medicinal herb trade also poses a threat. Historically it is thought that cedar glades were naturally maintained by fire. Fire suppression has allowed the spread and succession of other plants into its habitat, further threatening the Tennessee coneflower.

## Recovery

Recovery goals include improving levels of management and protection for existing populations of the Tennessee coneflower. Other measures include searching for new populations, propagating coneflowers, and establishing new populations in natural cedar glades that can be protected.

# Pyne's Ground Plum

(*Astragalus bibullatus*)

## You Can Help!

*Tell a friend about Pyne's ground plum. Avoid picking wildflowers. Dispose of trash properly. Remember to stay on trails to avoid trampling unique plants. Learn about fire's important role in ecosystem function. Take pride in Tennessee's wildflowers!*



### Status

Pyne's ground plum was listed as endangered on September 26, 1991.

### Description

Pyne's ground plum is a rare member of the pea family. The plant arises from a hardy taproot. Short stems each support 5 to 10 leaves. Each leaf is 2 to 4 inches long and is made up of about 24 small leaflets. Stems support clusters of small purple flowers that bloom in April and May. Fruits, in the form of fleshy pods, develop after flowering. These fruits are red above and yellow below, and they mature in May and June.

### Habitat

Pyne's ground plum lives in the cedar glade ecosystems of middle Tennessee. The species grows within the area of the glade that has deeper soil and partial shade. Soil depth varies between 2 and 8 inches. Cedar glades are typically wet in the spring and winter and are dry and very hot in the summer and fall.

### Role in the Ecosystem

It is an important component of the biodiversity of the cedar glade ecosystem. The greater the diversity of species in an ecosystem the healthier the ecosystem. In addition, this species is a member of the pea family and a legume. All legumes help fix nitrogen in the soil which all plants need for healthy growth.

### Threats

Pyne's ground plum is threatened by the destruction of the cedar glade ecosystems. Three known naturally occurring populations of Pyne's ground plum are located near the growing Tennessee city of Murfreesboro. Direct destruction of habitat for commercial, residential, and industrial development; intensive right-of-way maintenance activities; off-road-vehicle traffic; and trash dumping are the most significant threats to this species at this time. Historically it is thought that cedar glades were naturally maintained by fire. Further habitat loss has occurred because fire suppression allows the spread and succession of other plants into its habitat.

### Recovery

Management and recovery goals for Pyne's ground plum include providing habitat protection, protecting the species from collection, and cultivating and protecting its genetic material in seed banks.