

## The Cumberland Plateau's Significance in Today's World

By LinnAnn Welch



*"Grand Canyon of Tennessee" Photo by George Hornal.*

In recent years, there has been much written about the Cumberland Plateau and the dangers threatening it. The vast woods covering this region of Tennessee is quickly diminishing due to building, logging practices and other disturbances such as the introduction of non-native species. However, the plateau is extremely biodiverse and with large tracts of wild land remaining, it is well worth the fight to conserve the forests and features so unique to it.

The Cumberland Plateau is a strip of land running southwest through eastern Kentucky and passes through Tennessee into Alabama. It extends also into parts of Virginia and Georgia. The geological features of the plateau include extremely deep gorges, or gulfs, mountains, waterfalls, and stone arches. Forest composition varies from mixed mesophytic dominated by American Beech, Sugar Maple, Tulip Poplar, and ash to hardwoods mixed with pine or vast stands of pure hemlock with rhododendrons beneath. Many areas also have stands of oaks and other species.

Having lived in the rolling hills of the Western Highland Rim all my life with family ties going back to the same parcels of woods for five generations, I've often wondered why more emphasis seems to be placed on saving the Cumberland Plateau than conserving vast tracts of Highland Rim forests. The expansion of Nashville is having devastating effects on natural features in all counties surrounding the city. I experience pain on a daily basis traveling from place to place as I see hundreds of species die as lot after lot is bulldozed for suburbia. Yet more research into Cumberland Plateau issues shows that therein lies the answer to the push to conserve the plateau. There is still hope for it. It is far enough away from Nashville to not suffer from its growing pains. Crossville and Chattanooga are located on the edges of it and are not tearing it apart from within. Thousands of acres are still in a wild state, with many of the deep gorges containing old growth trees, and many families still feel a connection to the land.

Native species biodiversity is disappearing across the globe at an alarming rate. The Cumberland Plateau is one of the most biodiverse areas in the country. It has an amazing number of common and rare plant species. Animals are abundant with even predators such as Black Bear having ample room to live in remote areas without too many threats from humans. Examples of rare or endangered species include Cumberland Sandwort, lady slippers, white cedar (at Fall Creek Falls), Cumberland Dusky Salamander, and the lampshade spider. Some of these species such as the lampshade spider live only

in areas on the plateau and nowhere else in the world.

Perhaps the most endearing aspect of the Cumberland Plateau and its gorges are the Eastern Hemlock stands that surround the watersheds and provide specialized habitats and symbiotic relationships for hundreds of species of plants, animals, lichens, fungi, and other life forms. The biotic web of the hemlock forest is so complex that the loss of one species, especially a large number of the hemlocks themselves, can have devastating effects on all the other species.

Eastern Hemlocks with their thick canopy of flattened needles and dense stands of close-growing trees create a shaded forest floor that is somewhat cooler than other surrounding areas. Seedling hemlocks can mature in this shade where other species cannot thrive due to lack of sunlight. Many species of birds use the trees as safe nesting areas that also repel water off of little backs. Since hemlocks can live as long as over 900 years, the maturing older trees provide homes for woodpeckers, insects, and cavity nesting mammals. The trees can also survive winter storms on the sides of gorges that introduced pines or other species would be more likely to succumb. Hemlocks filter rainfall in the watershed and the fallen needles that land in streams are necessary to keep stream habitats and water conditions in the age-old balance that nature has devised.

Cryptozoa, or soil animals, play an important role in hemlock stands as they make up the leaf litter-soil food web. Shed hemlock needles provide unique habitats with a particular pH that has its own combination of these soil dwelling animals. Bacteria and fungi form the base of the food chain with invertebrates such as springtails, ants, and protozoans in turn feeding on them. Other springtails and invertebrates such as some millipedes feed directly on the decaying organic material in the soil. Predatory animals such as spiders and beetles consume the springtails and many other insects. All of these creatures provide food for salamanders such as the Eastern Red Spotted Newt eft that is abundant in the hemlock stands. Although all forest types have similar interwoven components, hemlock stands have unique and rare species that can only survive if the delicate balance remains in place.

The introduction of the Hemlock Woolly Adelgid, (see related story, this issue) an insect related to aphids from Asia, threatens to destroy most hemlock forests in the Cumberland Plateau and Great Smoky Mountains. Although this invasive pest has yet to reach most parts of the plateau, it has spread over the past few decades from its introduction in the northeast to the Smokies and Roan Mountain in East Tennessee. This adelgid feeds on the base of hemlock needles and causes them to fall off. The trees cannot produce enough food to live and in several years will die, basically from starvation. A task force of state agencies - including Tennessee Division of Forestry, Tennessee Wildlife Resources Agency, Division of Natural Heritage, and Tennessee State Parks - are devising a plan to prioritize hemlock stands on state lands and treat them with appropriate means such as an injection of pesticide to ward off the little foreign invaders and keep hemlock stands from disappearing like the American Chestnut in the early part of the last century.

Other threats to the Cumberland Plateau include clear cutting of native stands, their replacement with rows of Loblolly Pine, and all sorts of development. Selective cutting allows trees to be used by the public, but keeps the natural balance somewhat intact. Replacement of all the natives with one species eliminates biodiversity and the chemicals used to spray between the trees harm life forms. A monoculture of pines can easily be destroyed by pine beetles or storm damage. Many tracts of land that are cleared are converted to new homes sites and businesses as human populations everywhere spread from the cities.

The National Resource Defense Council (NRDC) lists the Cumberland Plateau in the top 12 most endangered natural areas in the Western Hemisphere. Many private landowners each year donate tracts of land to the state or other entities for preservation. The NRDC often works with these landowners or the timber companies to stop clear cutting and pine plantations. Other organizations and agencies such as the Tennessee Chapter of The Nature Conservancy, The Land Trust for Tennessee, the state of Tennessee, and the South Cumberland Regional Land Trust are involved in securing and preserving

portions of the plateau.

With the help of caring land owners and many interested groups involved, the future of the Cumberland Plateau and its rich forests have a chance. Many areas are already preserved by state and national parks such as Fall Creek Falls, South Cumberland, Cumberland Mountain State Park, Big South Fork National River and Recreation Area, Pickett State Park, and Ozone Falls State Natural Area just to name a few. Several large timber companies and corporations have donated tracts of land to help conservation issues. It is not just a modern preoccupation with the Cumberland Plateau. Early naturalists such as John Muir traveled through the plateau and realized its intrinsic value. With such great efforts taking place to protect the Cumberland Plateau today, hopefully future naturalists will enjoy even older growth forests that are representative of part of Tennessee's natural heritage.

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