

## Forest Management for Wildlife in Tennessee

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In Tennessee as in many parts of the country, public agencies and private forestland owners interested in managing their land for wildlife have often focused on game species such as deer, turkey, and bear. State and federal landowner assistance programs have supported this direction with technical and financial resources. Then in 2000, the Wildlife Conservation and Restoration Program and the State Wildlife Grants Program began. As a requirement of these programs, Congress asked each state wildlife agency to develop a “comprehensive wildlife conservation strategy”—a *wildlife action plan*—that evaluates wildlife conservation needs and outlines the necessary action steps to keep wildlife from becoming endangered. Since many wildlife species in Tennessee rely on forests for habitat during all or part of their lives, it was clear that sound silviculture and forest management could play an important role in maintaining and restoring wildlife habitat.

As part of developing the TN State Wildlife Action Plan (SWAP), a cooperative effort including the TN Wildlife Resources Agency (TWRA) and other organizations began. Data on wildlife species occurrence and site characteristics were analyzed and mapped using a GIS. Data mapped included soil type, characteristics and diversity of ground and overstory vegetation, proximity to riparian zones, and special features such as caves, seeps, and vernal pools. This mapping and analysis revealed that 70 percent of the state’s species of greatest conservation need (GCN) depend on forests for habitat during at least some of their lives, and enabled planners to identify the key limiting characteristics of each site that determined whether it was suitable habitat for a particular species. Some of these key characteristics include the vertical structure and species composition of the understory, midstory, and overstory canopy layers - all forest characteristics that can be changed through appropriate silvicultural practices.

At about the same time, the TN Division of Forestry (TDF) was developing a Healthy Hardwoods Initiative designed to provide technical assistance to private family landowners in improving the condition of their native hardwood stands through a range of silvicultural options. Poor past management practices and high grading have left many acres of Tennessee forests, particularly hardwood forests, in less than optimal condition for habitat or future sustainable timber production. Representatives of conservation organizations met with the TDF and found that the SWAP analysis which identified key limiting habitat factors for GCN species could be used to provide guidance on developing management goals and objectives for specific tracts of forestland under the care of landowners interested in providing habitat for GCN species. These goals and objectives could often be met through sound silvicultural practices, well aligned with the intent of the Healthy Hardwoods Initiative.

Representatives of cooperating state agencies and organizations then met with Natural Resources Conservation Service state leaders. These representatives demonstrated their shared focus on assisting non-industrial private forestland owners in improving forest habitat conditions for GCN species, and providing landowners with a wide range of silvicultural options to meet current and future forest management goals. Based on these meetings, the Tennessee State Technical Committee approved development of an Environmental Quality Incentive Program (EQIP) component – the Forest Habitat Fund (FHF) - to focus on forests and forestry in the state.

The purposes of the FHF are:

1. Assist forest landowners interested in managing their land to enhance habitat for nongame wildlife and plant species of greatest conservation need. These species are identified in the Tennessee Wildlife Action Plan and in the Tennessee Natural Heritage Database.
2. Offer a wide range of silvicultural options to these interested forest landowners that are compatible with the habitat requirements of species of greatest conservation need, and maintain the landowners' opportunities for current and future sustainable timber production.

To help meet the habitat needs of GCN species and improve native hardwood stands, Forest Habitat Fund objectives are to:

1. Create stands that are developing the characteristics of older forests.
2. Develop forest management recommendations that more closely mimic small-scale natural disturbance regimes.
3. Identify, conserve, and restore forest habitat features important to wildlife and plant species of greatest conservation need, such as wetlands, vernal pools, forested seeps, rock outcrops, caves and sinkholes.
4. Improve implementation of best management practices (BMPs).
5. Improve hardwood forest health, quality and productivity.

Typically in the South, growing wildlife and timber has meant food plots in a forest. The more wildlife desired, the more food plots planted. Silvicultural changes for wildlife are often limited and added on the periphery. This works fine for the limited suite of game species that constitute the definition of wildlife for many, but it doesn't provide the requisite diversity of habitat types and conditions that is necessary for a broader suite of species. That is where the FHF has been invaluable. Silvicultural prescriptions are a means to an end goal of promotion of species of greatest concern. The FHF offers several unique opportunities for landowners.

First, it creates a framework for identification and promotion of unique habitats on individual properties. There are several unique ecotypes, particularly on the Cumberland Plateau, which are routinely passed over for management due to their low forest productivity or inaccessibility. The FHF allows the unique habitat attributes of those areas to be showcased and provides incentives for their protection and enhancement. An example is the Cumberland Sandstone Glades and Barrens ecotype, a xeric very low productivity site that is an important habitat component for twenty different species of greatest concern. This system requires prescribed fire to remain productive. Under the FHF, sites where fire has been excluded can be thinned (non-commercially if necessary) to reduce basal area before fire is reintroduced. While there were no prohibitions on these treatments before, the FHF will now cost share the non-commercial thinning that is a prerequisite to reintroducing fire, and, perhaps more importantly, represents a state-sponsored plan that focuses on the tract at the ecotype level.

Second, the FHF introduces a whole new subset of family forestland owners to the concept of active forest management and provides a new silvicultural baseline for them to enter forest management. The FHF helped several landowners to quantify several of the habitat qualities their forest possessed including marking trees for snag creation and removing a stand of tree of heaven that is threatening to outcompete a young black walnut stand. These are treatments that likely would not have occurred without a program focused on non-game wildlife habitat management.

Timber stand improvement (TSI) thinnings have often been touted as a way to improve degraded hardwood stands across the southeast. On poor sites, however, the cost of treatment will not be recouped due to slow growth. TSI can promote vertical structure in evenly aged or overcrowded stands, which allows more light to reach the forest floor and promotes a whole host of wildlife species that are a focus of the FHF. On the other side of the stand age spectrum is the practice of maintaining relic older age classes throughout the stand to create an uneven aged structure. While old growth is considered essential to many of GCN wildlife species in Tennessee, it has typically been something relegated to Streamside Management Zones. The FHF provides cost share for snag creation allowing managers to add a snag and coarse woody debris component to the rotation. This treatment also has the ancillary benefit of releasing crop trees and reducing competition of regeneration without the requisite volume removal to make a commercial thinning viable.

Third, for landowners well steeped in game management, the FHF provides an opportunity to learn about the non-game species that are impacted by game management, and understand how tweaking accepted game management practices can greatly assist non-game species. For example, thinning and clearcuts are well known for their ability to create browse in a stand to benefit game species. They are typically employed to meet pure silvicultural objectives and their wildlife benefits are ancillary and, with the case of clearcuts are only seen along the periphery. When using these techniques for GCN species, shape, size and juxtaposition become the driving factors in the harvest and can provide all the benefits to game animals while enhancing vertical structure for an additional suite of species. As another example, food plots and seasonal ponds have long been used to attract wildlife to rural lands. The FHF helped one forestland owner realize that these features, when paired with a proximate late successional forest that contains standing snags, can make great forest bat habitat to reduce biting insects on the property. Many landowners are intrigued by the idea that a seasonal pond SHOULD go dry in the summer because of the host of amphibians and reptiles that depend on intermittent dry periods to control their predators.

Landowners began enrolling in the FHF in January 2008. Management plans are being completed with practice implementation to begin in 2009. The FHF has recently been made a part of the more general EQIP Forest Management program, so now family forestland owners will have a broader range of choices among management objectives when they enroll for technical and financial assistance in developing and implementing forest management plans and practices.