# Jump-starting old growth: Foundation sets stage for unique woodland ecosystem

The Edward Lowe Foundation is trying to accelerate development of old-growth forest, a disappearing ecosystem that plays a critical role in biodiversity.

"Although some universities and state lands have old-growth stands, these woodlands are generally managed in a hands-off manner with little human intervention," explains Mike McCuistion, the foundation's vice president of physical resources. "In contrast, we're taking a proactive approach by creating conditions that mimic old growth."

## Understanding old growth

As its name suggests, old-growth forests have numerous large, mature trees that stand 130 feet or higher. Yet there are also trees of all ages and sizes, creating a multilayered canopy. Other hallmarks include open, well-lit areas due to trees that either have died or been blown over by wind, large craters resulting from these fallen trees, and a considerable amount of large, decaying logs.

Due to its unique environmental characteristics, old growth is a haven for many plants and animals. The ecosystem is also thought to have a positive impact on climate change due to the amount of carbon dioxide absorbed by trees and root systems.

Yet more research is needed to quantify specific benefits, says George Parker, professor emeritus of forest ecology at Purdue University and an expert on the topic.

"There are no species we know of that absolutely must have old-growth forests to survive, however, many species do better in this ecosystem," Parker observes. And though researchers are still debating old growth's impact on climate change, "having an old-growth component in the forest landscape is one more safety net until we fully understand what's going on with carbon sequestration and species needs," he adds.

In the eastern U.S. region (which includes southern Michigan) Parker estimates that less than 1 percent of original forests could be considered old growth today.

Parker gives the foundation's approach a thumbs-up. "One of the problems with a hands-off management of old growth is that species change," he explains. "For example, in today's central region old-growth forests, prevailing species tend to be beech and sugar maple, which don't provide as good a base food chain as oak or hickory. If you want to maintain an oak component on the landscape, you can't do it without some disturbance."


*Forester Chris Egolf with a fallen tree that has been left on the woodland floor to contribute to down woody material.*

## Old growth at BRV

The foundation began its old-growth initiative in 2000 as part of the land stewardship efforts at Big Rock Valley (BRV), the 2,000 acres of woodland, wetland and prairie in southwest Michigan that serve as the organization's headquarters.

"The initiative aligns with our overall goal to promote biodiversity, which is important from a number of

*At Big Rock Valley, about 100 acres of woodland are being managed for old growth.*

perspectives," says Dan Wyant, the foundation's president. "For one thing, a loss of biodiversity weakens ecosystems, making them more vulnerable to events like droughts and floods."

"By actively managing for old growth, we also hope to provide a site for researchers to better understand this ecosystem's importance to imperiled species and how old growth reacts in different climates and changing environmental circumstances," Wyant adds.

For example, he points out, old-growth forests in the Pacific Northwest can encompass several hundred contiguous acres while stands in the central United States are generally far smaller and are typically located in isolated pockets and surrounded by farm fields.

Of the 700 acres of woodland at BRV, about 100 acres are now being managed for old growth.

"Essentially, we're trying to jump-start this ecosystem," explains Jay Suseland, manager of grounds maintenance at the foundation. "In designated areas, we're taking the thought process of what old growth should look like and setting the stage accordingly."

The majority of trees in these plots are relatively young — about 100 years old, compared to conventional old-growth forests where trees are 300 to 800 years old. Thus, a key component of the foundation's old-growth initiative is to encourage larger, older trees.

To do so, trees that are competing with larger, healthy ones are selectively thinned.

## Measuring results

Although most of the thinning is achieved by felling trees, some trees are girdled to promote snags — standing dead trees that are favored as a nesting spot and food source by many birds, such as kestrels and woodpeckers.

After thinning, trees are left lying in the old-growth stands to contribute to down woody material. "Large, decaying logs are one of the most important components of an old-growth forest," McCuistion says. "They create a sponge effect and keep the area moist even in dry periods, as well as slowing down the wind and evaporation along the soil surface."

The coarse, woody debris also creates the right conditions for many species of fungi, lichens, mosses, and insects that are important for proper functioning of ecosystems.

Thinning of targeted trees is done in stages, spread over a 12-year period. "We don't want to drop all the trees at once," Suseland explains. "A large-diameter tree can take 20 or more years to rot, and we're trying to promote different stages of down woody material."

To compare forest management styles and to gather research data, the foundation's environmental team has created demonstration plots. Ranging from 10 to 15 acres in size, these plots represent the four woodland management practices at BRV: old growth, environmental diversity, no management and high timber production. Within these demo plots, a forester has marked trees and measured for volume, woodlot density, basal area, canopy cover and species diversity.

## Patience required

Although the stands managed for old growth at BRV can't officially claim old-growth status for a century or two, the foundation's environmental team has seen some differences between these areas and other woodlands. Species inventories indicate that certain birds, such as the pileated woodpecker and the cerulean warbler, can be found using the foundation's property but not nearby woodlands with comparable acreage.

When it comes to old-growth management, patience is a virtue. "We're basing our approach on science and logic, but there are a lot of unknowns," says McCuistion.

And because of the very nature of the project, dramatic progress is hard to gauge, Suseland points out: "We've only been at this eight years — which equates to about a second in forestry time."

*To learn more about the Edward Lowe Foundation, its entrepreneurship progams and land management practices, visit www.edwardlowe.org or call 800-232-5693.*