HARDWOOD Forests & Fire

By Brian Bradley, Alabama Registered Forester

Imagine you're attending a forestry conference and a speaker's topic is "Burning Hardwood Forests." Many folks in attendance may question why anyone would deliberately introduce fire into a stand of hardwood trees. As Lynn [Washington, in the previous article] and others correctly point out, the naturally thin bark of hardwood trees is a poor insulator for the cambium layer just under the bark. Once damaged by the fire's heat, butt scars can develop, possibly leading to heart rot and degrading the most valuable lumber in the hardwood tree, the butt log.

We probably all agree fires can pose a significant hazard to hardwood trees, especially those being grown for sawtimber. But, I'd suggest that in some instances fire plays a legitimate role in managing one's deciduous forest – it depends on a variety of factors, but I'll touch only on three: the owner's objectives, size of ownership, and hardwood tree species and age.

Let's look at objectives. If managing for whitetail deer is your primary goal and the tree tops in your forest are all touching one another, i.e., a closed canopy, fire might be your friend. Why? A wildlife biologist would say the shade from the dense canopy is preventing natural deer food such as bushes and herbaceous plants from becoming established on the forest floor. Growing this natural chow requires some kind of overstory disturbance, such as patch clearcuts, selective thinning, or individual tree removals. Prescribed fire can reduce the leaf layer, and coupled with increased sunlight from the opened canopy, plant seeds will germinate. Soon landowners will see deer feasting on a smorgasbord of new vegetation. Likewise, in hardwood forests with existing undergrowth, burning 'top kills' low-growing plants, which stimulates tender new shoots that sprout from the root stock, resulting in more deer food.

Another variable is ownership size. A landowner with 350 acres has more latitude than one with only 40 acres. Even if timber production is the primary objective, the larger acreage allows the owner the option of sacrificing timber growth on selected areas, such as poor quality sites. Burning these specific areas could create a mosaic of different ground vegetation, thus enhancing wildlife and recreational opportunities. Forgoing some potential timber production would not be a terrible loss for the larger landowner, especially if it was balanced with quality timber growing on more productive sites.

A third variable is tree age and species. Most young hardwood trees have thinner bark than their older grandparents, making the youngsters more susceptible to fire damage. So generally, the older trees with thicker bark can better withstand the damaging effects of fire. For example, mature chestnut oaks are thick-skinned, and repeated winter season fires would clear out some of the understory with minimal tree damage. One could speed up the process by using herbicides to kill the mid-level trees and then using fire to maintain the open oak woodland. Keep in mind that some species such as water oak, even at older ages, are relatively thin-skinned, so the tree species mix would certainly influence the decision to burn or not burn.

In conclusion, is controlled fire in hardwood forests a good thing, or are proponents simply blowing smoke? I suggest that there are circumstances where burning is an entirely appropriate way to meet a landowner's objective – it depends on the situation. Like spokes on a bicycle all leading to the hub, there are different management techniques to reach your goals. Controlled fire in hardwood forests may be a route to consider.

A good website dealing with fire and hardwoods is: **http://www.appalachianfire.org.** Another good fire resource publication is the US Forest Service's "*Introduction to Prescribed Fire in Southern Ecosystems*," available online at: **http://www.srs.fs.usda.gov/pubs/su/su_srs054.pdf.** Below are a few excerpts:

"Prescribed burning is also useful for regeneration of hardwood forests." (page 6)

"In upland hardwood stands, a predominantly woody understory and midstory often prevent adequate herbaceous groundcover to meet wildlife management objectives. In the Ridge and Valley of Tennessee, thinning has been shown to reduce canopy closure to approximately 60 percent. Low intensity prescribed burning is then implemented during the early growing-season on a 2- to 3-year fire return interval to stimulate herbaceous understory growth and soft mast production, while controlling woody regeneration." (pages 7-8)

"However, there is growing evidence that prescribed fire can be used in mature hardwood stands to control the composition of advanced regeneration, particularly to favor oak." (page 8)

"In more open hardwood woodlands a 3- to 4-year fire return interval will maintain suitable habitat for northern flicker, red-headed woodpecker, prairie warbler, indigo bunting, eastern towhee, fox sparrow, chipping sparrow, and chestnut-sided warbler." (page 15)

"However, in recent years prescribed burning has been used in hardwood stands for site preparation, to favor establishment of oaks, enhance conditions for wildlife, and to restore stand structure to historical conditions." (page 16)