



## Benefits of Prescribed Burning<sup>1</sup>

Alan J. Long<sup>2</sup>

### History of Fire in Florida

Fire has been a frequent visitor to Florida's forests for thousands of years. During spring and fall dry seasons, and even during periods of summer rain, fires ignited in grass, dry leaves, and brush at the base of lightning-struck trees. Native Americans also set fires to reduce vegetation, improve wildlife or grazing habitat, and create space for crops. Across much of historic Florida, these natural and human-caused fires maintained open park-like landscapes dominated by longleaf and other pines. Wildlife were nourished by the diversity of plants that thrived in these regular fire regimes. The short intervals between fires undoubtedly kept most fires far less intense than those of the 1998 fire season.

During much of the 20th century, intensified fire suppression and prevention activities decreased the frequency of wildfires and the area they covered. This brought about changes in forest ecosystems. Understory brush and hardwoods became more dense and both live and dead vegetation accumulated, increasing the risk of large and damaging wildfires.

In the last 40 to 50 years these changes in Florida's forests have prompted a return to using fire,

under carefully controlled conditions, to accomplish many of the same benefits that were historically provided by natural fires. Today, approximately 1.5 to 2 million acres are prescribed burned each year for forest management, agriculture, grazing, and ecological restoration. At the same time, problems associated with smoke in populated areas and on highways have become more prominent. For the continued use of prescribed fire, landowners and the public alike must understand the value of fire for accomplishing various management goals as well as the constraints that limit its use.

### Reasons We Burn

Just as with natural and human-ignited fires in the past, prescribed burning today accomplishes many important ecological functions and landowner objectives.

#### *Reduction of Hazardous Fuels*

Prescribed burning removes accumulated fuels and therefore the risk of intense fires. Arson, human carelessness, and lightning will inevitably ignite fires in Florida. The rate of spread and damage caused by the resulting fires are directly related to fuel types and volumes. Fire intensity is much lower in grasses and

1. This document is FOR 70, one of a series of the School of Forest Resources and Conservation, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. First published November 1999. Minor Revision: April 2002. Please visit the EDIS Web site at <http://edis.ifas.ufl.edu>.

2. Alan J. Long is Associate Professor, School of Forest Resources and Conservation, Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, 32611. This publication was produced by the University of Florida with assistance from a grant from the Advisory Council on Environmental Education of the Florida Fish and Wildlife Conservation Commission.

small shrubs than in a 10-year-old growth of saw palmetto and wax myrtle. Fuel reduction would not have significantly decreased the number of fires in Florida in 1998, but would have reduced their severity. Prescribed burning must be repeated at regular intervals to maintain the protective effect of reduced vegetative fuels. In the long growing seasons of the Southeast, it takes only four to five years for fuels to return to hazardous levels.

### ***Altering Vegetative Communities***

Many public agencies and some private landowners conduct prescribed burns to restore or improve natural forest conditions. Longleaf pine forests are commonly burned, but so are ecosystems as diverse as sandhill scrub and wet sawgrass or pondcypress prairies. Fire intensities vary by plant community in temperature, from very low to extremely hot, and in frequency, from one to 40 years. In these natural forests, burning promotes seed germination, flowering, or resprouting of fire-adapted native plants and generally improves wildlife habitat.

Prescribed burning also changes the composition and density of existing vegetation. In forestry operations, fire at three- to five-year intervals reduces competing vegetation under forest stands over 10 years old. In pasture and range systems, fire is used at two- to three-year intervals to reduce encroachment of shrubs and invasive exotic weeds.

### ***Improving Wildlife and Livestock Habitat***

Regular burning of rangelands and understory plants improves forage quality and quantity for wildlife and livestock. New shrub, herb, and grass sprouts capture the quick flush of nutrients into the soil after a fire and are often more nutritious and palatable than older plants. Fires promote flower, seed, and fruit production, thus increasing available nuts and fruits for wildlife. Insects also increase rapidly after most fires. Burning different areas at different intervals and in different seasons produces a diversity of landscapes, animal food, and cover sources. Prescribed fire intervals of two to four years are generally used to promote this diversity.

### ***Controlling Pest Problems***

Prescribed burning has been used to control several different pest problems:

- needle disease on longleaf pine seedlings;
- bark beetles in infested trees that are cut and piled;
- root rot fungi;
- spittle bugs in pastures; and
- ticks and red bugs (chiggers).

### ***Improving Access***

By reducing dead fuels, harvest residues, and dense understory shrubs, prescribed fires can increase:

- openings for tree planting or natural regeneration;
- visibility within a stand for recreation or hunting;
- openings for wildlife feeding, travel, and display;
- access for hiking and other recreational activities.

### **Concerns about Prescribed Burning**

Although the benefits of prescribed burning are clear, there are also notable concerns. Two of the most important are the possibilities of fire spreading to adjacent properties and smoke intrusions in populated areas. Good management can reduce these concerns. Fires are generally not permitted by the Division of Forestry when hot, dry weather conditions or high fuel loads increase the likelihood that the fire could spread to other property. Similarly, fires should be ignited only when wind directions are predicted to carry smoke away from nearby smoke sensitive areas.

These restrictions may limit the opportunities to burn to just a few days each year. Given these limitations, many forest landowners do not have the staff or capability to burn all their land; they rely on

other management tools to reduce dense shrub and understory vegetation. Proper herbicide applications may require less frequent retreatment than would be necessary with fire. Mowers, choppers, chain saws, and grazing are also used to reduce dense brush and grasses, especially on small land ownerships. However, shrubs grow back quickly after these mechanical treatments.

Another concern with prescribed burning, especially in plantations grown for timber production, is the potential for mortality or growth loss in trees. Even with older longleaf pines, long-term studies have demonstrated that repeated fires will reduce stand volume. The reductions are the result of individual trees killed by fires as well as productivity and growth losses due to needle scorch.

Fire may also negatively affect individual animals. For example, slow moving animals may not be able to escape even low intensity fire fronts. Although ground nests may be lost in certain seasons, adult birds usually reneest and benefit from the abundance of insects that follow a fire. Small animals that find cover in burrows or under logs, plants, or stumps may be much easier prey for predators, who truly benefit from fires.

## **Conclusion**

Vegetation management in Florida is critical to retain desired native ecosystems, to reduce the threat of wildfire, and to meet other management objectives. Strategies for effective management may include fire, chemical, mechanical, or grazing technologies. Each method has benefits and problems associated with it. Carefully applied prescribed burning maintains or restores important ecosystem functions and structures, and is a cost effective method to fulfill a variety of landowner objectives. When burning conditions and risks are appropriate, it is usually the preferred strategy in forest management plans.