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Benefits of Prescribed Fire[1]

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This publication gives an introductory overview of the role of fire in forest systems, the benefits of using prescribed fire as a part of forest management, and the necessary safety and regulatory precautions that landowners and land managers need to adhere to in using prescribed fire.

History: The Role of Fire in Forests

Fire has been a significant part of southeastern forests for thousands of years. Fires, often ignited by lightning in the spring and early summer fires burned until fuel or weather conditions extinguished them. Native Americans and later European settlers reduced understory vegetation with fire to improve wildlife habitat and hunting opportunities, enhance livestock grazing, and create space for crops. In many places, fire occurred frequently on the landscape, limiting the accumulation of vegetative fuels. For millennia, these natural and human-caused fires maintained a landscape dominated by plant species well adapted to fire, such as longleaf pine (*Pinus palustris*), wiregrass (*Aristida* spp.), and many more. Flowering, seed production, and germination of many plant species is initiated or enhanced when fire occurs in a particular season. (Myers and Ewel 1991). Frequent fire regimes support plant species composition and structure that provide important habitat for many wildlife species.

As human populations grew and the Southeast became increasingly settled, public perception of fire in the forests shifted. Once seen as a benign force that kept forest conditions open and useful, fire came to be seen as threatening and dangerous, killing trees and burning crops and homes. During much of the 20th century, nationwide fire suppression and prevention campaigns reduced the frequency of wildfires but also reduced the use of fire as a land-management tool. The suppression of fire brought about significant changes in forest ecosystem composition, structure, and function. In many southern pine dominated forests, where fire was excluded, hardwood species that were once suppressed by fire became more dominant, and both living and dead vegetation accumulated. Over time, this increase in fuel load increased the risk of high-intensity wildfires in many places.

Prescribed Fire – Why We Burn

These changes in forest ecosystems and the subsequent rise in damaging wildfires prompted the interest in using fire under carefully prescribed weather conditions (e.g. temperature, relative humidity, wind direction, wind speed), to reduce wildfires and restore ecosystems. Prescribed fire is one of the most versatile and cost-effective tools land managers use to reduce hazardous fuels, prevent or control insect pests, improve wildlife and range habitats, and maintain fire-dependent ecosystems. Today Florida landowners and land managers use prescribed fire on over 2.1 million acres annually (Florida Forest Service 2022).

Reduction of Hazardous Fuels

In many pine dominated forest types of Florida, fuels accumulate rapidly. For example, in a sandhill forest it only takes four to six years for living and dead vegetation

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to accumulate to a hazardous level and pose a damaging wildfire risk. Prescribed fire can be used to reduce those fuel loads under conditions that will burn at lower intensity. This is achieved by carefully selecting the timing of the fire, the weather conditions, and the methods used to light the fire. Land managers and wildland firefighters have learned from experience that wildfires burning into areas where fuels have been reduced cause less damage and are much easier to control.

The appropriate interval between prescribed burns for fuel reduction varies with several factors such as vegetation/forest community type, fire history onsite, the values (e.g. structures, young plantations) at risk, and the likelihood of a wildfire starting. Generally a one- to four-year fire interval is adequate after an initial fuel-reduction treatment (Wade et al. 1989).

Controlling Pest Problems

Brown spot needle disease is a fungal infection that can weaken and eventually kill longleaf pine seedlings. Once the seedlings are infected, burning in winter with a fast-moving head fire is the most practical method of control. Burning the infected needles reduces the number of spores available to infect the seedlings.

Annosus root rot is a fungal disease of pine roots. It is less frequent where periodic burns have reduced the accumulated litter. Fire destroys some of the fruiting bodies and cauterizes tree stumps.

Tick and chigger (*Eutrombicula*) populations are reduced with regular intervals of prescribed fire (Gleim et al 2014).

Improve Habitat for Wildlife and Livestock

Regular burning of rangelands and forest understory improves forage quality and quantity for wildlife and livestock. Prescribed burning is highly recommended for wildlife habitat management in many southeastern ecosystems. Periodic fire favors herbaceous and woody species that require more light. A mosaic of burned and unburned areas can enhance the "edge effect," which promotes a diverse wildlife population by providing a range of vegetation structure and composition. Valuable game species like deer, quail, and turkey benefit from prescribed fire. Prescribed fire maintains habitat quality for several threatened and endangered species, including gopher tortoises, indigo snakes, and red cockaded woodpeckers. Fire also stimulates fruit and seed production in many plant species. See "Management of Pine Forests for Selected Wildlife in Florida," at https://edis.ifas.ufl.edu/publication/UW098, for more information.

Restore or Maintain Fire-Dependent Communities

Having been associated with fire for millennia, many plants have special adaptations to fire and grow best with periodic fire. Fire exclusion has led to dramatic decreases in many of these fire-tolerant or fire-dependent species. Many plants currently listed as threatened or endangered, including several orchids, benefit from fire. Fire seasonality and frequency are important factors to consider when restoring or maintaining a fire-dependent plant community.

Know the Rules and Get an Authorization before You Burn

Although the benefits of prescribed burning are clear, there are also notable concerns. Two of the most important are the possibility that fire may spread to adjacent properties and the potential problem of smoke intrusion into populated areas. Good planning and management can reduce these concerns. Fires are generally not permitted by the Florida Forest Service 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.

To help mitigate these concerns and risks, burning in Florida is governed by Chapter 590, Florida Statutes, and Chapter 5I-2, Florida Administrative Code. Your local municipality may also have rules or regulations for burning, so please check with them and your local Florida Forest Service office.

It is always best to burn with an authorization by the Florida Forest Service. If you have never burned in Florida before, see the steps to getting an authorization at https://www.fdacs.gov/Forest-Wildfire/Wildland-Fire/Prescribed-Fire. Also contact your local Florida Forest Service office. Find your local office contact at https://www.fdacs.gov/Forest-Wildfire/Our-Forests/Florida-Forest-Service-Office-Locations.

For more information about mitigating air quality concerns and prescribed burning regulations, see "Where there's Fire, there's Smoke: Air Quality and Prescribed Burning in Florida," at https://edis.ifas.ufl.edu/publication/FR058. For more information about prescribed fire, consider taking a prescribed fire training course from UF/IFAS Extension (https://ifas-cesrxfire.catalog.instructure.com/courses/wildland-fire-training).

Getting Certified

The Florida Forest Service offers a certification program for those who practice prescribed burning. Certified acreage burners are allowed to burn when others cannot and to to burn longer through the day. Certified acreage burners are given liability protection as long as they follow the requirements in the law. See https://www.fdacs.gov/Forest-Wildfire/Wildland-Fire/Prescribed-Fire/Certified-Prescribed-Fire-Acreage for the steps to becoming a Florida Certified Prescribed Burn Manager.

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