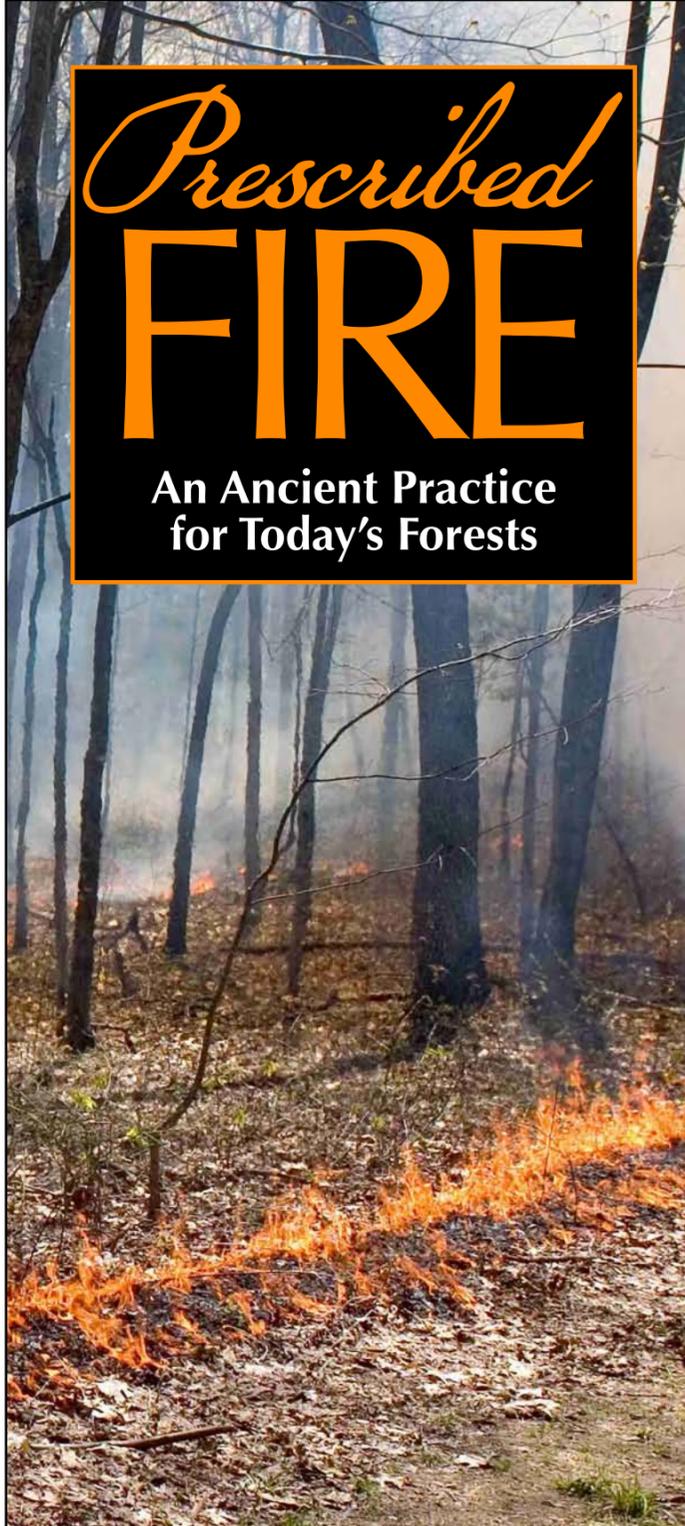




An open forest with grassy understory promotes forage for wildlife. appeared in the forest understory, improving became more abundant after a fire. Grasses Fruit-bearing shrubs, such as wild blueberry, to sunlight, which enhanced plant cultivation. thin dense forest growth and to open the ground importance of fire on the land. They used fire to present use. Native Americans knew long ago the The land today is a reflection of such past and our environment and interacted with the land. for ages. We have always manipulated an's relationship with fire has existed

FLAMES OF THE PAST

The Daniel Boone National Forest is using one of the oldest land management tools known to mankind – prescribed fire. A prescribed fire is a controlled fire that is set with specific management goals in mind. Forest managers continue to learn about the benefits of prescribed fire, recognizing the negative impact that many years of fire suppression has had on forest vegetation and wildlife. Our goal is to return fire to the landscape to maintain the current forest diversity that is diminishing with fire suppression and the lack of other disturbances.



lash fires often followed early logging, especially during periods of drought. The sparks from steam engines pulling railroad cars loaded with logs often started the slash fires. These uncontrolled fires were often intense, with damaging impacts on vegetation. Without sufficient vegetation to stabilize the soils on steep slopes, impacts of erosion quickly became evident.

he early European settlers to North America continued the use of fire across the landscape. They expanded the open areas for grazing livestock and for agricultural development. Logging furthered the expansion of open land, and much of the openness was maintained by increased settlement and expanded land use. By the early 1900s, much of the Appalachian forests had been harvested, and fire was replaced by mechanized equipment to clear vast acres for development.

Logging during early settlement caused hillside erosion due to lack of vegetation.



INFORMATION



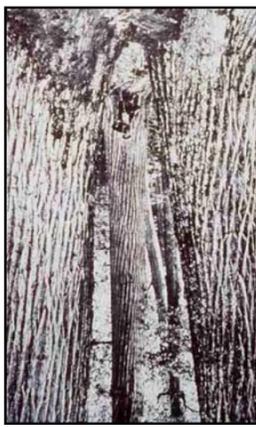
USDA Forest Service
Daniel Boone National Forest
1700 Bypass Road
Winchester, KY 40391
859-745-3100
www.fs.fed.us/r8/boone

USDA NON DISCRIMINATION STATEMENT
The U.S. Department of Agriculture Forest Service prohibits discrimination in all its programs and activities on the basis of race, color, national origin, sex, religion, age, disability, political beliefs, sexual orientation, and marital or family status (not all prohibited bases apply to all programs). Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotope, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination write: USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Ave, SW, Washington, DC 20250-9410 or call (202) 720-5964 (voice or TDD). USDA Forest Service is an equal opportunity provider and employer.

with fire suppression successfully implemented, our forests began to change. Tree species intolerant of fire became increasingly abundant within the forest, and the wildlife that once depended on fire-associated vegetation for forage was affected by the loss of fire. Wildlife was further impacted by the loss of the American chestnut tree, a significant mast-producing species lost to an infectious blight that invaded our eastern forests in the 1940s.



hese destructive fires coincided with the advent of forestry, contributing to growing sentiment that fire had no place in the management of America's forests. State and federal agencies were created and organized to promote fire suppression.



Fire suppression efforts are organized during the early 20th century.



ngoing research is being conducted on the Daniel Boone National Forest to determine the effects of prescribed fire on the forest. With fire alone, restoration of the forest structure and species composition is expected to be a long-term process. It may be years before the effects of prescribed burning can be fully understood. Forest managers may then determine how prescribed fire contributes to forest health and wildlife habitat. They can weigh the benefits against the damages and determine how best to use prescribed fire in conjunction with other tools, such as careful thinning, in forest management. How often should we burn to promote oak regeneration? What species will benefit most from fire? These are some of the questions that research hopes to answer.

THE FUTURE OF FIRE

In many ways, we have come full circle from the beginning of the Forest Service in 1905, when all fire was rejected and considered bad for the forest. Today, we believe that most forests are adapted and dependent on fire for survival. The Daniel Boone National Forest will continue to support ongoing research to test these assumptions. Maintaining the health of our forests and sustaining the diversity of species requires that we determine the right answers.

These destructive fires coincided with the advent of forestry, contributing to growing sentiment that fire had no place in the management of America's forests. State and federal agencies were created and organized to promote fire suppression.



WHY ARE WE BURNING?



Oak seedling sprouts new growth following a prescribed fire.

The structure and species composition of the forest has changed since fire suppression was put into place. Most producing trees important to wildlife struggle to reproduce. With fire suppression over many years, our forests have shifted from an open mix of oaks and yellow pines to increasing dominance by maples, white pines, hemlock, and other fire-sensitive species. A dense midstory and understory of vegetation in the forest canopy has developed, preventing the regeneration of oaks. Oak seedlings need sunlight to survive, and prescribed fire offers a key tool for creating the open forest conditions necessary for their growth.

Scientific research has rediscovered the ecological value of fire, along with the economic advantage of fire over machine on a landscape scale. The return of prescribed fire into the forest is expected to help meet the “desired future conditions” of particular woodland areas. The reasons for prescribing fire today are the same as thousands of years ago.

PRESCRIBED FIRE MAY BE USED TO...

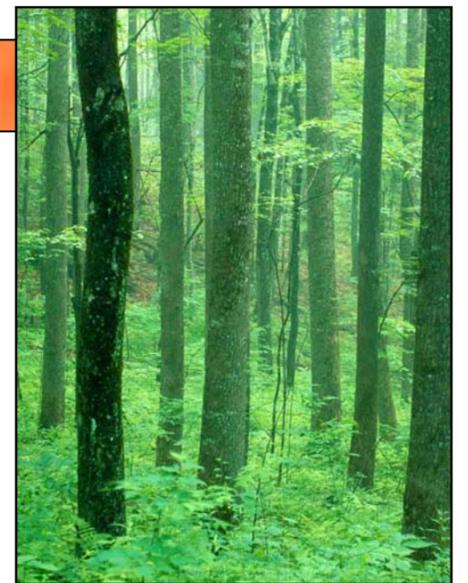
Improve FOREST HEALTH

The early European settlers to North America continued the use of fire across the landscape. They expanded the open areas for grazing livestock and for agricultural development. Logging furthered the expansion of open land, and much of the openness was maintained by increased settlement and expanded land use. By the early 1900s, much of the Appalachian forests had been harvested, and fire was replaced by mechanized equipment to clear vast acres for development.

Slash fires often followed early logging, especially during periods of drought. The sparks from steam engines pulling railroad cars loaded with logs often started the slash fires. These uncontrolled fires were often intense, with damaging impacts on vegetation.

Without sufficient vegetation to stabilize the soils on steep slopes, impacts of erosion quickly became evident. Forest managers are taking these threats seriously. Prescribed fire is one of the tools that may be used to decrease tree density and control the spread of destructive insect invasions.

A recent southern pine beetle epidemic killed the majority of yellow pines on the Daniel Boone National Forest, primarily because of existing dense forest conditions. By restoring an open forest condition, pine seedling growth may be encouraged where pine trees survived. The planting of pine trees will be required where there are no survivors.



The seedlings in the understory of this dense forest struggle for sunlight and survival.



Red maple stump sprouts are set back after a prescribed fire is repeated in this area.

Restore RIDGETOP ECOSYSTEMS

On dry ridgetop sites, species such as oaks and yellow pines are losing ground to fire-sensitive species such as red maple and eastern white pine. Studies of forest history show that fire-sensitive species were once uncommon on ridgetops prior to fire suppression.

Prescribed fire may be used to reduce forest density and open the forest floor to increased sunlight.

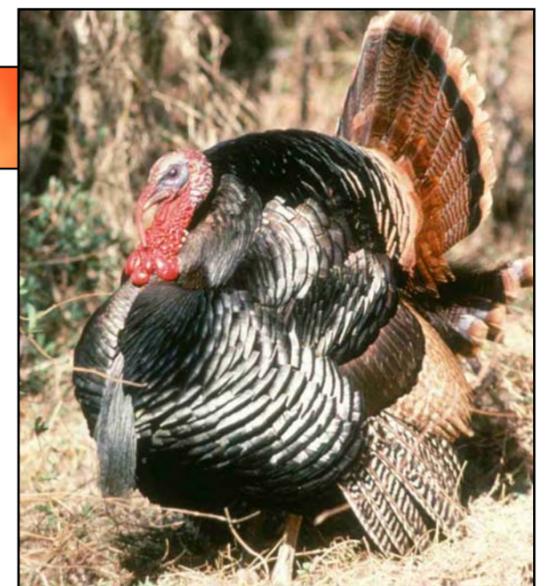
An open forest promotes species diversity through the reproduction and healthy growth of shade intolerant tree species such as oaks. Prescribed fire may reduce the density of fire-sensitive species such as red maple and white pine. These species tend to sprout back after burning, so additional methods may be needed to maintain an open forest structure.

Maintain WILDLIFE HABITAT

Within the guidelines of the Daniel Boone National Forest Land and Resource Management Plan, a number of habitat types will be created across the forest landscape. By using prescribed fire, most of these habitat types will resemble pre-European conditions with fewer trees in the overstory and an increased amount of warm season grasses on the ground.

Some areas may feature dense brush in the undergrowth. Oaks and yellow pines are expected to once again dominate the forest canopy, with plenty of seedlings for regeneration. Fire sensitive species will be restricted to wetter areas where fires occur less often. These varying conditions will benefit a wide array of rare, sensitive flora and fauna and nearly all game species.

A grassy understory in the upland forest will likely decrease the need to develop wildlife openings for forage. Such habitat types will be maintained by repeating the use of prescribed fires on the landscape.



Wild turkey habitat is improved with prescribed fire.



A drip torch is used to ignite a prescribed fire.

Reduce FOREST FUELS

Leaf litter and woody debris on the forest floor serves as fuel for uncontrolled wildfires. Late winter fires may consume the leaf litter and small woody debris, but the following autumn soon replaces these fuels on the ground.

In the dry climates of the western United States, woody fuels decompose very slowly and, in the absence of fire, may accumulate and eventually lead to destructive wildfires over vast acres.

Such wildfires do not typically occur in the eastern region where woody fuels decompose more quickly due to moisture.

Some disturbances, however, can cause expansive forest mortality in a short period of time and result in large amounts of woody fuels on the forest floor. Damaging winds, ice storms, and insect infestations have impacted much of the Daniel Boone National Forest within the past decade. The resulting woody debris presents a danger for unplanned and uncontrolled wildfires to occur.