

# PRESCRIBED BURNING IN SOUTHERN PINE FORESTS:

## Fire Ecology, Techniques, and Uses for Wildlife Management



*Across the South, lightning causes wildfires and humans purposefully burn forests. Some plants and animals are generalists and can survive under a wide variety of conditions, and others have very site-specific needs. Prescribed burning is an important wildlife management tool used in our southern pine forests. With an understanding of fire ecology, landowners can effectively apply techniques to improve wildlife habitat using the controlled application of fire.*



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### FIRE ECOLOGY

The southern pines have a thick, insulating bark and can withstand a properly executed prescribed burn. Vegetation in the longleaf pine ecosystem historically burned at one- to three-year intervals, generally during summer months. These areas were dominated by pure stands of longleaf pine, other pyric (fire system) plants, and a diverse array of animals. Native Americans used fire regularly during different seasons to aid in traveling, farming, managing game, and improving hunting conditions. Initially, European settlers cleared and burned small patches of forest, ultimately clearing most forest land by the 1920s. By the 1930s, these lands were being reforested and protected from wildfire. From the 1950s through the early 1980s, agencies and citizens used fire liberally in pine forests; its use has since decreased. Smaller landowner tract size, increased concerns about smoke, and new pine management techniques have contributed to this decrease.



### BENEFITS TO WILDLIFE

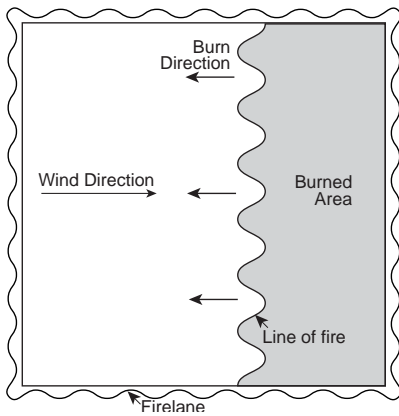
If used properly, fire is one of the most beneficial and cost-effective wildlife habitat management tools available. For example, annual burning maintains early stages of plant succession that bobwhites require. Fire reduces leaves/needles (litter) on the forest floor and exposes soil so bobwhites can easily find seeds. It creates open foraging and travel areas for hens with young chicks, and it encourages plants that provide food (insects and seeds) and cover for bobwhite. Fire also produces a fertilization effect by removing vegetation and litter, returning many nutrients to the soil. For bobwhites, patchy burns are best. Some "ring-arounds" (circular areas plowed around and protected from burns) provide nesting and escape cover across burned areas. It is generally best to burn in late winter before the onset of the bobwhite nesting season in April.

The wild turkey enjoys many of the same benefits from fire that bobwhites do. Burn before April to avoid nesting season, but burn less frequently (every two to four years). Fire produces nesting cover and maintains forest openings in quality brood-rearing habitat.

Burning every three to five years increases white-tailed deer forage production and quality. It also maintains forage close to the ground, well within a deer's reach. Burning top-kills hardwood brush and promotes sprouting of browse species. Winter burns are normally best for deer management.

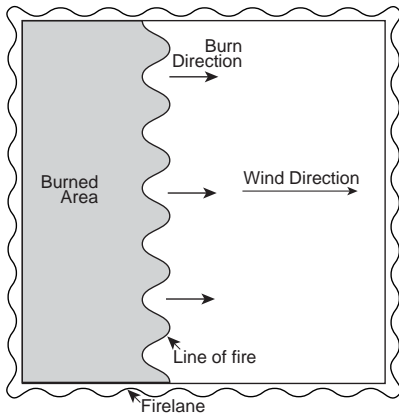
A partial list of species suffering from the declining use of fire includes the bobwhite, wild turkey, white-tailed deer, gopher tortoise, and red-cockaded woodpecker. Populations of other birds, mammals, reptiles, and amphibians also have declined in the absence of fire.

## IMPORTANT PRESCRIBED BURN TECHNIQUES



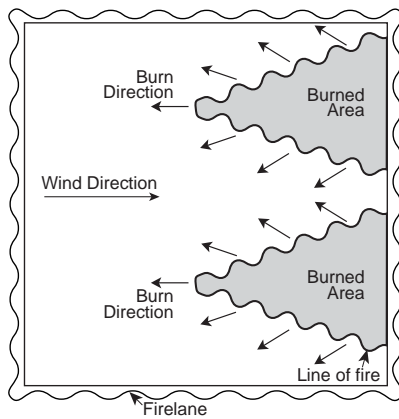
### Backfire

A backfire is set at a 90-degree angle to the wind direction so the fire burns directly against the wind. This is one of the safest methods of prescribed burning and is recommended for beginning wildlife managers or where fire hazards exist, such as adjacent lands with high danger fuels. Wind speed should be no more than 6-10 mph. At night, backfires normally move at about 1 chain (66 feet) per hour. If the wind velocity is 20 miles/hour, the fire will back twice as fast (132 feet/hour).



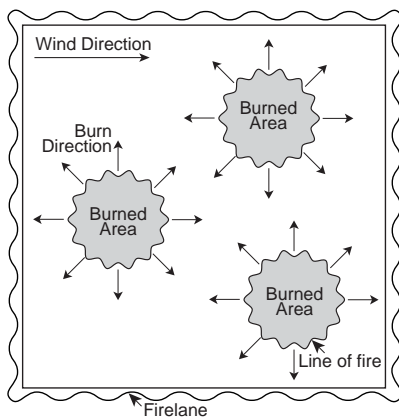
### Head fire

Head fires are set with the wind direction and should only be used by experienced professionals under ideal fuel conditions. Often set after a rain, head fires are the most economical and the most dangerous type of prescribed fire. Head fires burn quickly, have a taller flame, and can kill even large pines if used improperly. If used properly, they are very effective at maintaining early successional wildlife habitat.



### Flank fire

Flank fires are often used when the fuel is relatively light. These fires are set by an individual or individuals walking into the wind and are relatively safe.



### Spot fire

Ideally, spot fires are set at equidistant locations throughout the forest. These fires gradually expand until they join.



## EXPENSE AND EQUIPMENT

Prescribed fire is one of the most economical wildlife management tools available. Burning costs vary with tract size, application method, manpower needed, equipment used, and timber/fuel conditions.

Never burn without either a bulldozer equipped with a fire plow, or a tractor and disk. Other required equipment includes drip torches, fuel (a 3:1 mix of diesel and gasoline), fire rakes, flappers, and water. Costs range from \$5 to \$25 per acre. Consulting foresters and the Mississippi Forestry Commission (MFC) will conduct burns for a fee.

## BURN PERMITS AND APPLICATOR CERTIFICATION

Currently, the Mississippi Forestry Commission (MFC) requires a permit be obtained prior to burning. Contact your county MFC office for permit information. If unfavorable conditions exist, the burn permit will not be granted. Additionally, burn applicators should be certified by the MFC. You also can be certified by completing the prescribed burning short course conducted by Mississippi State University's Continuing Education program, located in the College of Forest Resources. Under the current Mississippi Prescribed Burning Law, those satisfactorily completing the course will have reduced liability.

## STEPS TO CONDUCTING A PRESCRIBED BURN:

- Obtain burn applicator certification.
- Map and develop a plan for the area to be burned. Have the plan notarized at least ten days prior to the burning date.
- Arrange for equipment and personnel.
- Construct firelanes around the tract within one month of the burn.
- Determine wind speed and direction, humidity, temperature, and firing technique.
- Notify neighbors of your plan.
- Recheck firelanes and recondition them if necessary.
- On the burn day, obtain a permit from the MFC.
- Conduct the burn.
- After the burn, check all boundaries for "breakovers" (escaped fire).



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**Publication 2283**

Extension Service of Mississippi State University, cooperating with U.S. Department of Agriculture. Published in furtherance of Acts of Congress, May 8 and June 30, 1914. RONALD A. BROWN, Director (500-6-01)

