Forest Management Notes

Athens-Clarke County Community Tree Program

Using Prescribed Fire

Introduction

Prescribed fire is a land management tool that helps to restore and maintain fire-dependent ecosystems. Prescribed fire is typically used to clear land and debris, maintain early-successional ecosystems, improve wildlife habitat, manage invasive exotic plants, and to reduce the risk of catastrophic wildfire. This tool must be applied in a knowledgeable manner to achieve a management objective under specific weather conditions. Precautions must be taken to manage and contain prescribed fire so it does not exceed its intended objective and risk becoming a wildfire.

Prescribed fire is one of the best tools to keep land in an early state of succession.

History of Prescribed Fire

Originally, fire-dependent ecosystems were maintained by naturally ignited wildfires. Eventually surrounding inhabitants noticed that terrain was easier to navigate and game was more plentiful in the years following a wildfire. Almost all cultures throughout history have managed land using prescribe fire. The native people of North America were perhaps the best and most frequent users of this tool.

Countless people have wondered how early explorers were able to navigate through coastal Georgia during their adventures. If you were to look at the land in this area today, this would be a very important question. This land is currently covered with nearly impenetrable brush and hostile plants like saw palmetto. Costal Georgia was a very different ecosystem during the early settlement years. Native Americans frequently burned thousands upon thousands of acres of land in a single season. This activity maintained longleaf pine savannahs that supported a tremendous amount of wildlife and were much easier to navigate.

Prescribed fire has always been a favored tool of natural resource managers.

As the population of Georgia has increased and our society has moved from a hunter/gatherer society, to an agrarian society, to a suburban population, our methods of implementing prescribed fire have shifted to meet our changing management objectives. Overtime, prescribe fires have decreased in size and duration and more emphasis has been placed on controlling the fire and smoke generated by the activity. Today, the average prescribed fire is less than two hundred acres and weeks of planning may be needed to implement a successful burn.

Tools of the Trade

Never ignite a prescribe fire in an area that does not have established fire breaks. Firebreaks are natural or manmade features that create a break in canopy and ground fuels. Streams, roads, and manmade lines are commonly used as fire breaks. The Georgia Forestry Commission can create or maintain breaks on your property for a small fee. They charge by the hour and there is a 25 hour limit for a single season.

Rakes, shovels, chainsaws, and a variety of different water pumps should be on hand to manage the fire during the burn. These tools are typically used to remove ground fuels from firebreaks and around standing dead trees. Larger fires should have truck-mounted water pumps and fire suppression foam.

Personnel implementing the prescribed fire should have adequate protective clothing. Leather boots that do not have steel toes or synthetic materials are mandatory. Clothing containing the fire resistant material Nomex© is needed to prevent smoldering materials from burning participants. Leather work gloves, a hard hat, and a good water bottle are also needed.

Fire it typically started using a drip torch. A drip torch allows a mixture of kerosene and diesel to flow over a lit wick and onto the ground. This tool poses very little risk to the user and can be easily extinguished. Larger fires may be initiated using a helicopter mounted with a gelled fuel torch or a sphere dispensing machine that drops fire onto the target area. Wildfire suppression crews commonly carry flares to start a small fire used to eliminate fuels from an area before the wildfire gets there. These flares are used because they are light and easy to pack into remote locations. These flares are more difficult to extinguish and they are not recommended for use on a prescribed fire.

A drip torch being used to start a prescribed fire.

Fire Weather

Weather and fuel loads are the two most important ingredients to managing a prescribed fire. If it is too windy and dry, the fire may act aggressively and be difficult to control. If it is too calm and wet, the fire may generate smoke that does not dissipate and impacts populated areas. Always check with your local forestry office before initiating a prescribed burn.

Preferred Fire Weather

Temperature - below 60° F
Wind (ground level) - 3-5 MPH
Humidity – 30-55%
Fine Fuel Moisture - 10-20%**
Soil Moisture - damp

** - As determined by fire weather maps

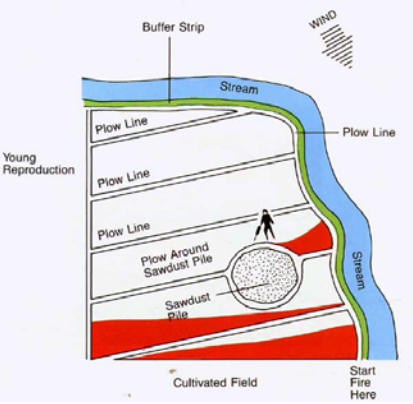
Regulations

In Georgia, a burn permit from the Georgia Forestry Commission is required before you burn. This permit notifies the state that you are burning and can decrease the number of false alarm responses generated to reports of smoke in the area. Liability associated with the burn is greatly reduced when these burn permits are combined with a well written fire plan.

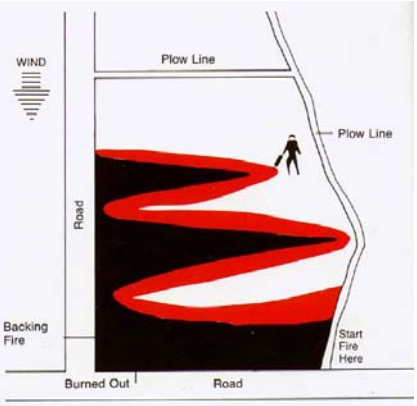
Athens-Clarke County has a ban on open burning that limits the use of prescribe fire for forest management purposes only. Limbs, trees, and other debris may not be openly burned. Essentially, prescribed fire must be under a forest canopy in order to qualify as a forest management activity. It is recommended that you notify the Athens-Clarke County Emergency Management staff before you begin your burn. Other counties in Georgia may limit the use of prescribed fire to a specific time of year, or for specific forest management activities.

Firing Techniques

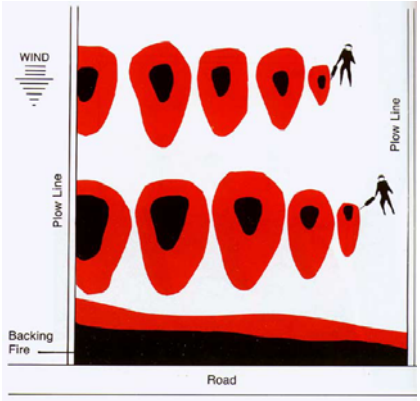
Backing Fire – A backing fire is started along a road, firebreak or other barrier and allowed to move into the wind. As long as winds are steady, backing fire is the safest technique to use because it is slow-burning and less likely to damage surrounding trees. Backing fire can be particularly useful when land managers are trying to introduce fire into an area the first time. Backing fires are not always preferred because they take longer to implement, generate a lot of smoke, and are less likely to kill competing woody vegetation.



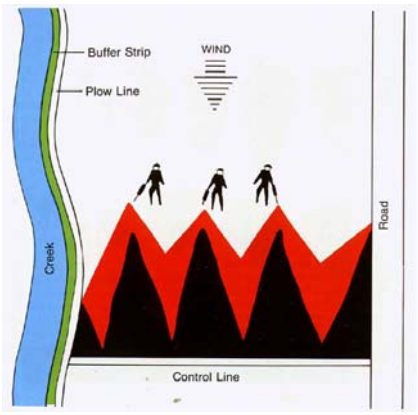
Strip Head Fire – Strip head fire (strip fire) is set in a series of lines that are progressively upwind from an established firebreak. The intensity of the fire is regulated by spacing out the distanced between the strips. As the distance between the strips increases, the fire has more time gain momentum with the wind and it burns hotter as it approaches the previous line. Strip fires are preferred because they are efficient and can burn hot enough to kill competing woody vegetation. Strip head fires are not always used because they can be very volatile if the wind changes direction and they have an even affect on the landscape.



Spot Fire – Spot fire is set in a series of rows that are progressively upwind from an established firebreak. Instead of using a continuous line of fire like is used in a strip fire, spot fires "drop" fire every few feet along the line. The intensity of a spot fire increases as the distance between the rows and between the spots increases. Spot fires are used when land managers want to have a more randomized effect on the landscape. Spot fires burn with variable intensities, so they leave a mosaic of original understory and newly revealed bare ground. Properly used spot fires can have the most positive impact on wildlife habitat. Spot fires are not always used because they can be difficult to control in shifting winds and they do not completely eliminate competing vegetation.



Flanking Fire – Flanking fire is set with a series of lines set directly into the wind. This method creates a variable fire that acts like a backing fire near the point of origin and a strip head fire near the end of the line. This type of fire can efficiently burn large areas in a single day. Flanking fires are typically used when large areas that cannot sustain the intensity of a strip head fire need to be burned. Flanking fires can be the most volatile type of fire if surface level winds are not steady throughout the day. Flanking fires are capable of quickly turning on the people implementing them.



Implementing a Prescribed Burn

Experience is necessary to successfully implementing a prescribed burn. Fire behavior is dependant on fuel loads and atmospheric conditions and it takes a lot of experience to understand fire behavior. It is never recommended that an inexperienced landowner attempt to implement their own prescribed burn. The Georgia Forestry Commission has a Prescribed Burner (Rx Burner) certification process to document individuals who have demonstrated their competence around prescribed fire. Many of these individuals can write a fire plan and implement a prescribed fire on a property for a fee. The Georgia Forestry Commission also offers prescribed burning assistance to local property owners. The commission will send staff to your property that can help set and manage a fire. These individuals are paid by the day and can never initiate the fire for the owner.

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For more information, contact the Athens-Clarke County Community Forestry Coordinator at (762) 400-7519 voice, (706)613-3566 fax, or by e-mail at Mateo.Fennell@accgov.com.