

MANAGED WILDLAND FIRES

Correlation to Learning Standards

Next Generation Science Standards: MS-LS2-3

GOAL

To explore the use of prescribed fire as a management tool.

HISTORY

Native American oral history is rich with stories about fire and how fire came to humans. European settlers to North America noted indigenous peoples' use of fire for clearing lands, hunting and gathering activities, and in warfare. The eastern migration of bison has been attributed in part to the opening of grazing areas by the burning practices of Native Americans. During his travels in Florida in the 1700s, noted naturalist William Bartram reported fires burning somewhere every day. In addition to human-caused fires, naturally occurring fires are started by lightning or volcanoes. While Native Americans had fire firmly rooted in their way of life, European immigrants in the new world sought a new order which did not embrace fire as a natural process. Suppression became the call.

BACKGROUND

Fire in some form appears in almost all natural environments. Wildland fires typically are classified as either natural or human-caused. In the United States, 80% of all remote wildland fires are ignited by lightning or other natural sources. Some natural fires may be allowed to burn as prescribed fires, which are monitored and managed, or as wildland fires, those that we seek to suppress.

Prescribed fire is used as a management tool in certain ecosystems. These are fires that are ignited by wildland fire managers or lightning and are permitted to burn within a predetermined set of specific guidelines (a "burn plan") that protects people, their property, and highly valued natural and cultural resources. When wildland fire managers prescribe fire, they must consider all potential fire behavior to assure a desirable outcome. Such fires are ignited using a prescription that defines the actions to be taken within a specific set of environmental conditions. The prescription is analogous to what the doctor writes and the pharmacist fills. The likelihood of a prescribed fire getting out of control under those conditions is a possibility. Careful planning, therefore, is required before scheduling a prescribed fire.

Suggested teaching activity:

Project Learning Tree-Activity #81 "Living with Fire" - For more information on how to obtain this information, go to the Project Learning Tree Web site at: <http://www.plt.org/>.

Prescribed fire is a worldwide practice. In Africa one can see rangers burning portions of the Serengeti Plains using prescribed methods. Fire is used extensively to aid agro-forestry in India. In the agricultural industry, prescribed fire is used to clean fields of stubble after harvest of wheat, rice, cane, oats, and straw.

Stephen J. Pyne, in *World Fire: The Culture of Fire on Earth* (1995, University of Washington Press) reports that during the Brezhnev era in the Soviet Union when burning was forbidden; fire ecologists secretly and illegally conducted prescribed burns as a means of effectively managing the forest. So great was the need that these scientists and resource managers risked legal action to practice wise conservation techniques.

Prescribed fires are often carried out during the cooler, moist seasons so that they may be controlled more easily. Daily weather variations are taken into consideration when planning a prescribed fire. Morning hours when dew is still present are conducive to controlling prescribed fires. Managers must also consider smoke management and smoke dispersal to ensure that transportation, agriculture, and human health are not adversely

impacted.

A carefully planned prescribed fire program can provide many benefits that enhance the health of an ecosystem. The most common objective is to reduce and manage the amount of ground fuels, thereby lowering the likelihood of potentially large and unmanageable wildland fires. Fuel reduction can help prevent the possibility of crown fires that burn to the tops of trees at high intensity and are capable of causing unacceptable change. When future wildland fires do occur, these fires will be less intense, will tend to be surface fires, and will be easier to manage. However, it is important that a regular, planned prescribed fire program is followed rather than scheduling a single fire event.

Among the other benefits of prescribed fire are:

- Improved habitat for certain wildlife species
- Disease and pest control
- Removal of undesirable plants
- Addition of nutrients for trees and other vegetation provided by ashes that remain after a fire and as a medium for seed germination
- Removal of undergrowth, thereby allowing sunlight to reach the ground to encourage growth of desirable species
- Clearing of congested vegetation to facilitate planting or natural seed germination

Prescribed fire yields other benefits. For example, a burned tree is not wasted. It can provide nesting sites for birds, homes for small mammals, and a base from which new plants grow. When the dead tree begins to decay, it releases nutrients into the soil, enhancing growth of surrounding plants. The benefits or harm derived from wildland fire can vary greatly from one plant community to another. Therefore, each prescription is different.

Suggested teaching activity:

Project Learning Tree-Activity #80 "Nothing Succeeds like Succession" - For more information on how to obtain this information, go to the Project Learning Tree Web site at: <http://www.plt.org/>.

The benefits of a properly prescribed fire outweigh the potential negatives. Modern fire policy permits some natural fires to burn and recognizes the use of prescribed fire as a management tool. Unmanaged wildland fires which threaten life and property, however, are fought vigorously in developed areas where high fuel levels create a potential for intense (extreme) fire capable of destroying the natural (plant and animal) communities, houses and other buildings, and cultural resources.

Writing the Correct Prescription

Wildland fire managers are called on to write very detailed prescriptions or burn plans. A poorly written prescription can be very dangerous, just as receiving the incorrect medicine can endanger your health. Incorrectly prescribed fires can cause damage such as soil destruction, loss of nutrients, water and air pollution, and removal of litter needed to protect seedlings.

The wildland fire manager's task is to provide guidelines detailing where and when to burn, under what conditions, the benefits to be gained, the acceptable level of negative impacts, the chain of command (authority), and how impacts will be measured (evaluation).

For each prescribed fire, the manager must address the following:

- How to work cooperatively across ownership boundaries to coordinate activities and protect others' rights and property
- Approval to burn and lines of authority to ensure safety and effectiveness

- Public concerns and issues
- Clear measurable objectives
- Public safety
- Smoke management
- A step-by-step burn action plan
- Contingency plans/fire control strategies
- Availability of background information (e.g., maps, ecological data, site's fire history), equipment, and personnel
- Ability to protect against potential negative impacts to human habitation, archaeological sites, recreation areas, and sensitive plant and animal communities
- Strategy for making the burn or no-burn decision on the day of the burn
- Research, monitoring, and evaluation with restoration plans if necessary
- Community relations to advise of the outcome of the prescribed fire

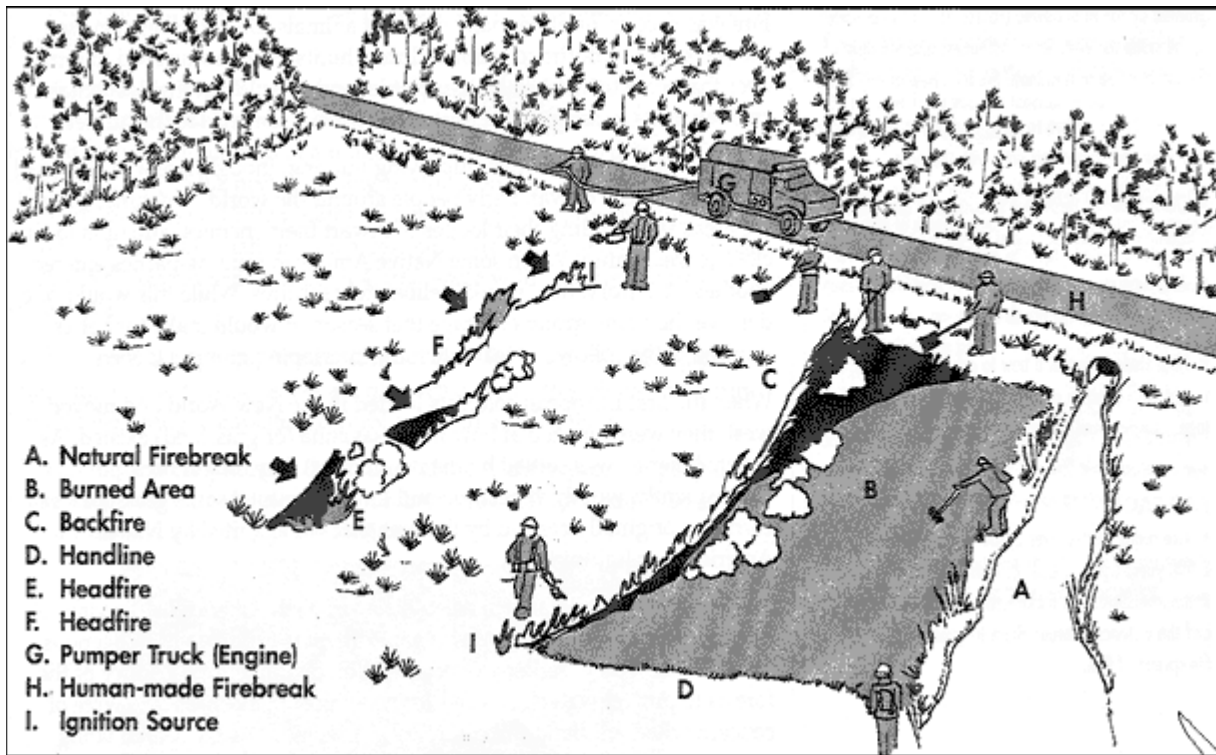
In essence, the manager must plan and forecast the event in order to achieve the desired ecological effects and prevent potential negative impacts. With proper study and preparation, the wildland fire manager can provide the "correct prescription" and restore ecological health.

The actual prescribed fire involves a well-executed set of technical steps. Fires are ignited in specific patterns to control their rate of spread (speed), direction, and intensity. A "burn boss" oversees the fire, maintaining constant radio communication and support units (e.g., local fire and police departments) to ensure personal safety, protection of surrounding lands and human habitation, and to direct burn activities within the prescription guidelines. Wind speed and direction, humidity, fuel moisture, slope of the terrain, and air temperature are all calculated prior to, and are monitored during the fire event to ensure conditions remain with the prescription guidelines.

LESSON PLAN

A Prescribed Burn Model

Wildland fire managers identify natural firebreaks, such as a creek (A), or a roadway (H) or create one by plowing or scraping a handline (D) prior to the prescribed fire. Handlines may be as simple as a narrow strip created with handtools or as a large expanse pushed open with bulldozers. Along these firebreaks, a downwind backing fire is ignited (C). These slow moving fires widen the firebreak line by depriving fuel. This creates a burned area (B) at which headfires will stop. Headfires are ignited in strips at (E) and (F) in such a manner that the wind carries the main fire towards the backfire (C). A fire engine (G) and other special equipment stand by for safety.



List of questions for this unit.

- Q1: Who should manage prescribed fire?
 Q2: Why should we have prescribed fire (positive benefits)?
 Q3: What are the negatives of prescribed fire?
 Q4: Where should we have prescribed fire?
 Q5: When should we have prescribed fire?
 Q6: Why complete a burn plan?

Prescribed/Managed Burns

Some fires are good for the forest. Today, areas are burned under carefully controlled conditions. These burns are called Prescribed or Managed Burns.

Before a prescribed burn is executed, the following must be done:

1. Write a burn plan.
2. Check weather conditions.
3. Put in fire lines to keep the fire within the burn area.
4. Personnel performing the burn are properly trained and equipped.
5. Inform local fire departments and residents in the surrounding area about the burn.

Prescribed burns are done to:

- Prepare the site for new trees to grow
- Control insects and tree disease
- Improve and develop wildlife habitat
- Maintain areas of native vegetation and prairie grass
- Fuel reduction

Federal, state and local agencies have been legislated to protect the forest to make sure it stays healthy and is used wisely. This is done to insure us of enough forested land for recreation, enough wood to provide us with building material and supplies, and to protect the jobs of those people who depend on the forest or forest products for their work. Some states have professional foresters who patrol and protect the forest from wildfires on state and federal lands. There are foresters who are also available to assist homeowners with information on how to manage space around their homes to keep it safe from wildfires.

This publication is a product of the United State Forest Service and may be accessed online at http://www.na.fs.fed.us/fire_poster/managed.htm.