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FIRE MANAGEMENT AND FIRE USE IN THE UNITED STATES A SHORT HISTORY

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The management and control of wildland fires has been a major issue for the land management agencies in the United States during the past century. Today we recognize that fires continue to be a significant problem in many portions of the nation, but we understand that the underlying problem is not the fires, but the build-up of fuel that causes the fires to burn more severely. We are embarking on a program that emphasizes an integrated approach of vegetative management, the use of prescribed fire, and yet continues to provide protection to communities, watersheds, and habitats from the destructive effects of wildland fires.

I will provide an overview of the evolution of fire management actions in the United States, some thoughts on where we might be headed in the future, and some lessons based on our experiences in the United States that may be useful in other countries.

Fire Management Program Development in The USDA Forest Service

A brief history of fire management within the US Forest Service will be helpful in understanding the current program. A discussion of the evolution of fire management policy and the forces that shaped it, provide a better understanding of the role of fire management within the current land and resource management program.

The United States, like Brazil, is a large country with a wide range of geographic features. This diverse geography, and the variation in climate and weather patterns, produces a mixture of ecosystems. These range from the hot, humid, almost tropical areas in Florida to the cold, dry Arctic tundra in Alaska. There are deserts in the southwest; grassy prairies in the central states; moist temperate forests in the northwest and northeast; tall, rocky mountain ranges throughout the west; semi-dry, dense brush in parts of California. Each of these areas, and a host of other forest and rangeland ecosystems, has a unique history of wildfire.

In addition to the diversity caused by the geographical influences, the United States has a multitude of agencies, each with some jurisdiction over the forest and rangelands and each with a fire suppression organization. There are five Federal agencies with significant wildland fire suppression responsibilities. Each of the 50 States has a forestry organization with wildland fire suppression responsibilities. Within each State there are hundreds of individual fire protection organizations, most provide structural fire protection for the cities, towns, and rural communities, but many have wildland fire suppression responsibilities. The State of Texas alone has over 2,000 rural fire departments protecting communities with populations of less than 10,000 people.

Every geographic region of the country has a history of large, destructive wildfires. Some are internationally famous, such as the large fires in and around Yellowstone National Park in 1988; the 1991 fire in the hills of Oakland, California that burned over 2,000 homes; and, perhaps, the South Canyon fire near Glenwood Springs, Colorado that claimed the lives of 14 firefighters on July 6, 1994. The most recent example is the fire in 2003 that burned over 700,000 acres, destroyed 2,700 homes, and caused 22 fatalities. Over that past 3 years, 5 states have recorded the largest fire since they began keeping records - California, Oregon, Arizona, New Mexico, and Colorado.

A Brief History of Forest Service Fire Management

[Note: for a complete history of fire in the United States, see FIRE IN AMERICA, A Cultural History of Wildland and Rural Fire, by Stephen J. Pyne; 1982; University of Washington Press; ISBN 02597593X; the source for much of the background in this paper.]

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In the United States, public concern about the threat of wildfires to people and property began with the timber harvest practices on private lands in the Lake States during the late 1800's and early 1900's. These practices resulted in tremendous accumulations of debris left over from the logging operations, known as "slash". This slash was subsequently burned by land clearing operations as people moved westward, settling the land. The burns frequently escaped and sometimes resulted in catastrophic wildfires.

American foresters have their roots in the theory and practice of European forestry. One of those theories was a vision of fireproofed forests. For the European forester, there could be no professional forestry without the control of fire. At the same time fire was being used as a management tool in the South and in California where it was commonly referred to as "light burning". Light burning, or controlled burning in general, became a political controversy because of the popular notion that the control of fire meant the elimination of fire from the forests.

This shift towards fire control and suppression at any cost overshadowed the debate for light burning, and fire prevention and suppression became the underlying principle in the Forest Service fire suppression policy for the next 50 years. In 1923, the Chief of the Forest Service said that the main problem with the Forest was to "stop the fires". Advocates of professional (i.e. European) forestry finally stopped the debate over light burning in 1926 with a new fire suppression policy.

The 1926 policy had two key components; the 10-acre control objective, and the economic philosophy of minimizing suppression cost plus the loss of resource value. The 10-acre control objective stated that all fires should be controlled at 10 acres or less in size. The economic principle of minimizing cost plus loss was used to justify the 10-acre policy. Due to the increasing value of the resources within the National Forests, it was assumed that minimizing the size of the fire would minimize both the cost of suppressing the fires and the loss of natural resources. The economics were not seriously questioned until the 1980's when an economic analysis began to show that controlling all fires at 10-acres or less did not minimize the total cost of suppression plus loss of the resource.

In 1935, the Forest Service added the 10:00 a.m. policy to the 10-acre policy for fire suppression. This meant that fires were to either be controlled at no larger than 10 acres in size or plans made, and fire fighting resources ordered, to control the fire by 10:00 a.m. the next day. This aggressive suppression policy was still considered to be economically effective; in other words, it was less expensive to provide firefighters and equipment and put fires out while they were small, than to allow them to escape. Of course, this policy did not take into account fire's natural or historic role in the ecosystem.

By 1978 it was obvious that the policy was not only ineffective, it was costing the agency more each year. The Forest Service fire policy was revised in 1978 to provide for the integration of both fire protection and fire use. The objective of wildfire suppression was changed from one of prompt control of all wildfires by 10:00 a.m. to one of minimizing fire suppression costs and damage to resources. An analysis was to be prepared whenever a wildfire escaped the initial suppression action in order to determine the most cost effective suppression action. At the same time, prescribed fire became recognized as a valuable tool in reducing the size and cost of wildfires.

The Yellowstone Fires of 1988, attracted extensive media and public attention. The focus at first was the terrible devastation that was occurring in one of our most cherished National Parks. Later, as the trees and vegetation began to return, much was written on the benefits from the fires and their natural role in the forest. Wildland fire was became a topic of both public and political debate and the result was an elevated awareness of both the problems encountered in wildland fire suppression and the need to reintroduce fire into ecosystems that are dependent on frequent disturbance to remain in good health.

On 6 July 1994 the tragic loss of 14 lives on the South Canyon Fire near Glenwood Springs, Colorado, shook the federal wildland fire management community. This emotionally significant event was part of a fire season during which there was extensive resource damage in the American west. Again, wildland fire became an important resource management issue for federal land managers.

But things did not improve. In 2000, 2002, and 2003 large, costly, damaging fires burned throughout the country. Many internal reviews followed as we reviewed our policy favoring suppression over restoring the health of the forests, and we began to realize that the risk was

increasing. This change in thinking challenged all federal wildland fire managers to prioritize public and firefighter safety. It also provided additional impetus for all wildland managers to review their fire management practices and look for new approaches to address the fire management issues, on both a local and national basis.

The Use of Prescribed Fire

Throughout North American history, fire has been used to meet a variety of objectives. Native Americans used fire to sustain or improve a natural resource. The early European settlers focused on the need to clear vegetation and debris from the land. Today we are emphasizing the need to introduce fire back into the ecosystem in order to restore and maintain ecosystems that evolved under the influence of fire.

Many early explorers and settlers recorded the use of fire by Native Americans for a variety of purposes, generally to provide food. The purpose of the first prescribed burns was to sustain a natural resource that could be harvested or exploited. Many plants thrive under a cycle of periodic fires. These plants were sometimes a source of food, or provided forage for the animals that provided food. The periodic nature of this type of burning had the additional result of maintaining the health of fire-adapted ecosystems, although this may not have been the primary objective.

When the European settlers established colonies, they learned the techniques of applying fire from the original inhabitants and began to adapt these techniques to meet other objectives. Much of the burning conducted by the settlers was for land clearing instead of subsistence. The land was cleared, and as farms, villages, and towns became established, the amount of burning decreased or stopped altogether.

The explorers and settlers turned next toward the west. As they moved into new territory, their diaries recorded an even greater incidence of fire, much of it due to lightning. Lightning storms are very common occurrences in the western part of the country. The storms in the west tend to be "dry" as compared to the “wet" storms in the east. A dry lightning storm is accompanied by very little rain, which allows fires to start and eventually spread. In many areas the combination of natural and prescribed fire resulted in ecosystems that depended on fire to maintain them. Fire-adapted ecosystems tend to be protected from catastrophic fires as long as the frequent occurrence of fires is allowed to reduce the amount of live and dead vegetation. Removing this fuel reduces the possibility of a damaging wildfire and results in an ecosystem with a greater variety of species that are adapted to this disturbance cycle.

Social Aspects

The social and political forces that shaped national policies on prescribed fires and burns are the same ones that produced the Forest Service's 10 acre, 10:00 a.m. fire suppression policy. One of the tools in the war on wildfires was the introduction of a mascot that symbolized the fire prevention program. In 1950, a bear cub that was severely burned in a wildfire was nursed back to health. The cub was given the name Smokey and became the symbol of a vigorous, national campaign to prevent forest fires. Smokey Bear, and his famous saying, "Only you can prevent forest fires" built on the philosophy that fires needed to be eliminated from the forest. Carelessness by forest visitors, accidental ignitions from equipment used in the forests, and arson fires were the targets of this campaign. The message was effective because it was simple and direct. But this same simplicity ignored the benefits of fire in the forest and implied that all fires were bad.

Today we are beginning to overcome the restrictions of the past. Many people are demanding that fire regain its natural role in managing and protecting the land. Unfortunately, times have changed and even though there is a renewed interest in prescribed fire, hosts of new pressures are holding us back.

As populations increased, people began moving away from the cities and into the forest and brush lands. Many forests, brush, and grasslands prone to periodic fire are now towns, suburbs, and places where people live, work and play. Fire cannot be allowed to follow the natural cycles because homes, property, and lives are threatened.

Many ecosystems have progressed to a condition where prescribed fire cannot be used without destructive results. Other vegetative management activities can be used to reduce the threat of catastrophic wildfires and restore these areas to a condition where prescribed fire can again be used. Trees can be selectively harvested to remove diseased individuals or dead fuel that increases the intensity of future burns. Heavy equipment can crush, pile, or remove excess live and dead vegetation. The piles can be burned during wet conditions when intense fires will not develop.

The National Fire Plan

Today the Congress and the public are beginning to recognize the need to increase the amount of prescribed burning. The 2000 fire season was the worst in 50 years and the most expensive ever for the United States. Over 90,000 fires burned more than 7,300,000 acres. After over 70 years of aggressive and successful fire suppression, the build up of forest fuels has produced conditions that mean many fires are becoming increasingly difficult to suppress and are causing more and more damage to the forests.

During the height of the 2000 fire season, the President traveled to the western United States to meet with the firefighters and discuss options to address the situation. The result is the National Fire Plan, a balanced program that will increase fire protection, address the buildup of fuels in the forests, protect communities, and restore lands damaged by fires.

The NFP emphasizes increasing our ability to suppress wildland fires. We hired new firefighters to the federal agencies. Many of these employees staff our initial attack units in an effort to limit the size of these fires before they can cause much damage. Others became part of our specialized firefighting units, such as the 20-person interagency hotshot crews, that are primarily utilized once a fire has escaped initial attack.

While the reintroduction of fire is a key part of the NFP, we cannot stop suppressing fires. An effective initial attack organization is the most cost effective short-term solution. In many areas, fires can be allowed to burn and managed to replicate the historic role. But in areas where the forests have deteriorated to an extreme level and where communities are built in these areas, we have no choice but to suppress fires while at the same time treating the fuels and using prescribed fire when possible.

We are also expanding our fire prevention involvement. We will continue to promote the Smokey Bear program and work with our partner agencies on the FIREWISE program. This initiative promotes wildland fire safety in the communities at risk and fosters an attitude of community-based responsibility for fire protection.

All these actions are focused on improving our preparedness to deal with wildland fires we know will occur. Our hope is that these actions will reduce the trend of increasing costs and losses until our fuels management program has treated enough area to reduce the destructive effect of the fires.

A well-planned fuels management program, emphasizing the protection of communities, will be a key component of this initiative. In those areas where past management practices have resulted in an increase in the density of the forest, and forest debris, treatment activities will be focused on the reduction of this accumulation. In some areas this will be accomplished through the use of machinery and either utilizing the material or disposing of it off site. In other situations onsite disposal by chipping or burning will be the appropriate treatment.

Increasing the amount of prescribed burning will not be easy and it will be very expensive. For the Forest Service alone the cost will be $244 million in the year 2004 and we are estimating annual costs could exceed $800 million if the program were to be fully funded. It may not be easy to accomplish, but the necessity of utilizing prescribed fire to protect and maintain ecosystems is being recognized and accepted and will become a management practice more extensively utilized in the forest and rangelands of the United States.

To be effective this program must be a primary emphasis over the next several years. After that, the need to maintain conditions where there is lowered risk of high intensity fires is anticipated. This will take require long term planning and the ability to continue to focus our management practices on not allowing the fuel build up to occur again.

The National Fire Plan acknowledges the responsibility of our state and local governments to provide for the protection of the citizens within their jurisdiction. The federal government can assist in this effort through providing both economic and technical assistance to these agencies. This has been a long-standing role of the Forest Service. Over the past seven decades the cooperative fire protection program has been utilized to assist the states in developing their fire suppression capability. In addition, the NFP is utilizing the volunteer fire assistance to help over 3000 smaller communities to develop their fire programs. It is through a combination of all these efforts that preparedness will be improved at the federal, state, and local level.

Future of Wildland Fire Management in the United States

Changes in the demographic and cultural composition of the population of the United States will result in changes in the ways in which the wildland resources are valued, utilized, and protected. Communities will continue to be developed in areas prone to wildland fires. These communities will be of high value and that will influence our approach to fire suppression.

As the fires become mixed in the forest and the subdivisions, the differences between urban and wildland fire agencies will continue to disappear. The use of fire as a resource management tool will increase but will be constrained by smoke management concerns. The concept of defensible space around improvements will increase and help fire managers protect communities and individual structures when fires threaten these improvements. Homeowner responsibility will become more and more important. The Australians are working with a concept of "Leave Early or Stay". While many people believe that technology will mean that technically proficient professionals will be the key. I believe that fire suppression technology cannot keep up with the increasing fire workload and increasing fire severity. The individual homeowner must accept a greater role in protecting homes and communities from fires.

During the past century we have learned that short-term success can lead to long-term failure if the dynamics of ecosystem disturbance are not considered and integrated into the management policies of all land management agencies. Our efforts to suppress wildland fires from about 1910 through the early 1980s were successful enough to allow significant changes to occur in many ecosystems through out the nation. In some areas forest density increased and in others there was a significant accumulation of dead vegetation. These changes were not obvious immediately and other management actions, such as extensive grazing and timber harvest, tended to modify or mask the results. Year after year, fires were suppressed, pine needles accumulated, healthy trees became snags and we are now dealing with fuel accumulations that must be abated to avoid large, high intensity, fires.

So, I will share with you again. If fire has always been a part of the ecosystem, then fire exclusion is not an option! I ask you not to replicate our actions but rather to pursue an appropriate course of your own. Develop appropriate planning processes that consider fire protection that includes the integration of structures and communities as a part the ecosystem. Include fire as a necessary disturbance process in the ecosystem. We have to support and develop professional fire managers, who are ready to suppress fires when necessary, but who also understand the role of fire and can integrate fire use into the management of the forests.