# 3. Fire Management

**3.** Fire Management
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Included in this chapter is an overview of the interagency fire management network and an introduction to the history of wildland fire and societal influences. Fostering communication with your audiences requires messages that address human dimensions issues, therefore a section on public perceptions and attitudes is included.

## The National Interagency Fire Center

The National Interagency Fire Center (NIFC) is located in Boise, Idaho, and coordinates and supports operations for managing wildland fire and other natural disasters throughout the United States. The fire center also addresses fuel load management and public education/outreach. The center is located on a 55-acre site administered by the Bureau of Land Management. Operating costs and responsibilities are shared by the cooperating agencies listed below.

For information regarding U.S. fire policy, visit the References section at www.nifc.gov. From this site, you can access the individual agencies' sites for more information.

### Forest Service (USFS), U.S. Department of Agriculture

USFS manages national forests and grasslands. USFS also represents state wildland fire organizations through the U.S. Forest Service's Cooperative State and Private Forest authorities.

### U.S. Fish and Wildlife Service (FWS), U.S. Department of the Interior

FWS manages national wildlife refuges, waterfowl protection areas, and national fish hatcheries. The FWS national Branch of Fire Management is headquartered at NIFC.

### National Park Service (NPS), U.S. Department of the Interior

NPS administers national parks, monuments, historic sites, natural areas, and other federal lands. Its national Branch of Fire and Aviation is located at NIFC.

### Bureau of Land Management (BLM), U.S. Department of the Interior

BLM manages and provides fire protection for millions of acres and is the host agency at NIFC. BLM's National Office of Fire and Aviation is headquartered at NIFC.

### Bureau of Indian Affairs (BIA), U.S. Department of the Interior

BIA provides wildland fire protection for Indian reservations and other trust lands. BIA's National Wildland Fire and Aviation staff is headquartered at NIFC.

### National Association of State Foresters (NASF)

The NASF is a non-profit organization that represents the directors of the State Forestry agencies from all 50 states, eight U.S. territories, and the District of Columbia. A representative of the NASF has a permanent position located at NIFC.

### National Weather Service (NWS), U.S. Department of Commerce

NWS provides vital weather analysis, forecasts, and training to all fire management agencies. During fire seasons, NWS provides daily weather briefings to NIFC.

### Office of Aircraft Services (OAS), U.S. Department of the Interior

OAS provides aircraft, and technical and administrative aviation services to governmental organizations. OAS, part of the Office of the Secretary of the Interior, is located at NIFC.

### U.S. Fire Administration (USFA), U.S. Department of Homeland Security

The U.S. Fire Administration is an entity of the Department of Homeland Security which coordinates with other federal agencies and partners with fire protection and emergency service communities to reduce life and economic losses due to fire and related emergencies. The USFA provides public education, training, technology, and data initiatives.

Because wildland fire does not acknowledge jurisdictional boundaries, no single federal, state, local, tribal, or volunteer agency alone can handle all wildland fires that may occur in its jurisdiction. These groups work together to exchange support, protection responsibilities, information, and training to protect lives, property, and natural resources.

NIFC provides valuable coordination and support for these cooperative firefighting efforts. It also provides assistance and support for other natural disasters at the request of the Department of Homeland Security - Federal Emergency Management Agency (DHS/FEMA) and the Nuclear Regulatory Commission (NRC). In addition, it provides support to Canada through a mutual aid agreement and to other foreign countries through the U.S. Department of State, Office of Foreign Disaster Assistance.

NIFC provides:

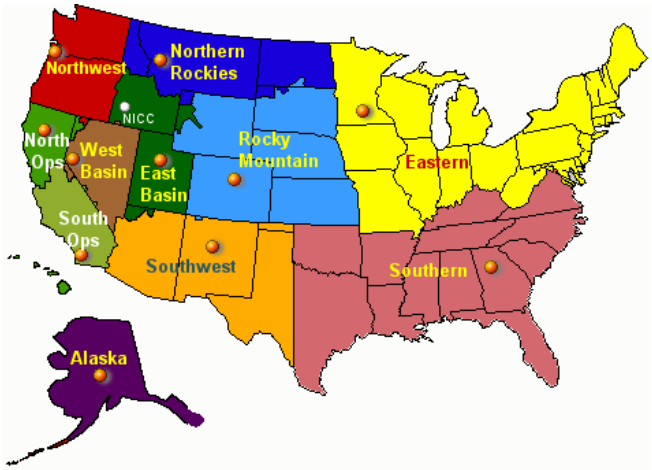
- Aerial imagery
- An air tanker base
- An equipment and supply cache
- Equipment development
- Infrared mapping
- National contracting
- National fire information/news
- National policy and guidelines
- Telecommunications
- Remote automatic weather stations
- Research and education
- A smokejumper base
- Technical and scientific expertise
- Training and consultation
- Transport aircraft for crews and equipment

NIFC also hosts the **National Interagency Coordination Center (NICC)** that is tasked to quickly locate and mobilize emergency personnel, equipment, supplies, and aircraft nationwide.

The **National Multi-Agency Coordination (NMAC) group** is another program facilitated by NIFC, and includes the fire directors from BLM, FWS, NPS, BIA, USFS, NASF, and USFA. When the national fire situation becomes severe, the NMAC identifies national or interagency issues and sets priorities for allocating resources. When appropriate, representatives from the General Services Administration (GSA), a military liaison, and state foresters may be added to the group.

Responsibilities for mobilizing fire resources are tiered. At the local level, wildland fire is initially managed by the local agency that has fire protection responsibility for that area. Engines, ground crews, smokejumpers, firefighters, helicopters with water buckets, and air tankers carrying retardant may be used for initial suppression. Various local agencies may work together, sharing personnel and equipment, to fight new fires and those that escape initial action.

If a wildland fire grows to the point where local personnel and equipment are not sufficient, the responsible agency contacts the nearest **Geographic Area Coordination Center (GACC)** for help. The GACC locates and dispatches additional firefighters and support personnel, including incident management teams, engines, bulldozers, other aircraft, and supplies. The GACC can also contract for private goods and services if government support is not available.




During busy fire seasons, fighting wildfires may exhaust the supply of state, local, and geographic area personnel and equipment. In these cases the GACC contacts the National Interagency Coordination Center (NICC) at NIFC and relays requests from the fire. NIFC locates and mobilizes the closest available resources throughout the nation.

## National Wildfire Coordinating Group (NWCG)

The National Wildfire Coordinating Group (NWCG) provides a formalized system to agree upon standards of training, equipment, qualifications, and other operational functions. Its goal is to provide more effective execution of each agency's fire management program.

NWCG is made up of the following:

- USDA Forest Service
- Department of the Interior agencies:
  - Bureau of Land Management (BLM)
  - National Park Service (NPS)
  - Bureau of Indian Affairs (BIA)
  - Fish and Wildlife Service (FWS)
- State forestry agencies through the National Association of State Foresters
- U.S. Fire Administration, U.S. Department of Homeland Security
- Intertribal Timber Council

Insight into how the NWCG works as well as a list of working teams and advisory groups involved with the group can be found in the *NWCG Making A Difference* brochure.


This brochure is available for purchase at www.symbols.gov.

**NWCG Creed**

- We believe the goal of effective wildfire management is best served through coordinating the resources of all fire management agencies, irrespective of land jurisdiction.
- We believe in the concepts of full partnership, trust, and mutual assistance among the fire management agencies.
- We strongly support professionalism in all facets of fire management.
- We strive to bring the best talent to bear on vital issues in a timely manner, irrespective of agency affiliation.
- We strive for economy, efficiency, and quality in all activities, and practice concepts of total mobility, closest forces, and shared resources without geographic limitations.
- We constantly search for areas of agreement to further the effectiveness of the wildfire management program.

**Functions**

The people who serve on the NWCG are not line officers, but staff leaders who have much influence on the policy and funding of their respective agency program. Agreed-upon policies, standards, and procedures are implemented directly through regular channels of each participating agency.

**NWCG Working Teams**

The NWCG operates through interagency "working teams" to provide a means for exchanging knowledge about all dimensions of fire management. Individuals or agencies can interface with the NWCG to retrieve information, make recommendations, or raise issues by contacting agency representatives of the parent group and/or the working teams, the group or working team chairpersons, or the executive secretary.

Other organizations also participate on NWCG working teams, such as International Association of Fire Chiefs, National Fire Protection Association, The Nature Conservancy, and others.

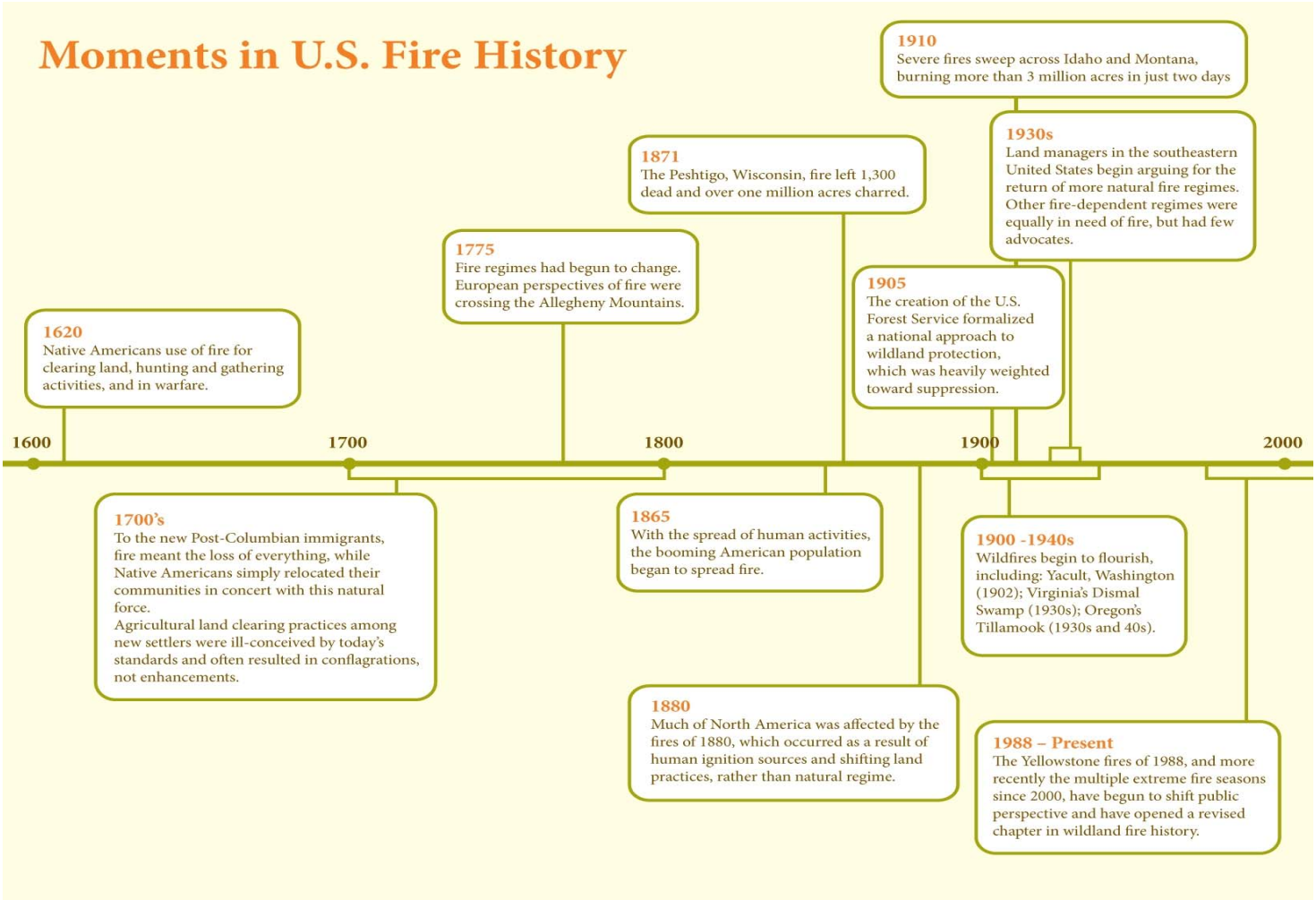
Visit www.nwcg.gov for a list of current working teams and to determine your agency representative.

## History of Humans and Fire

The agencies above recognize that ecosystem health and sustainability are based largely on natural fire regimes. They use prescribed fire to maintain or restore fire-adapted ecosystems, control invasive species, rejuvenate and manage habitats, and reduce hazardous fuels. However, this approach has not always been the case in North America.

Consult Chapter 10 for recommended reading on more detailed fire history.

North American wildland fire history is sometimes interpreted as events, mostly large wildfires. Though it is not all-inclusive, the following timeline highlights several factors that have shaped our current fire management landscape.



## Historical Perspective

Long before humans arrived in North America, there was fire. It came with the first lightning strike and will remain forever as a natural disturbance force affecting and defining ecosystems. Human activities also influence ecosystem change. The oral history of Native Americans is rich with stories about fire and how fire came to humans and their drawings depict the use of fire for clearing land, hunting and gathering activities, and in warfare. European settlers suppressed fire to protect their agricultural crops and communities. Land management activities such as clearing land and leaving behind logging slash, combined with suppression, often resulted in large conflagrations under drought conditions.

For many years, fire was aggressively excluded to protect both public and private investments and to prevent what was considered the destruction of forests, savannahs, shrublands, and grasslands. While the destructive, potentially deadly side of fire was obvious and immediate, changes and risks resulting from these fire exclusion efforts were difficult to recognize and mounted slowly and inconspicuously over many decades.

Some fire managers advocated the use of prescribed fire in the 1930's, but it wasn't until the rise of the environmental movement in the 1960s and 1970s that the public became aware that total wildland fire suppression may be harmful to ecosystems. During this same time, researchers found that people preferred naturalness in wildlands, including naturally occurring woody debris, but disliked woody debris created by commercial logging activity (Shelby and Speaker, 1990). To remedy this, scientists in the late 1970s recommended prescribed fire as a method of protecting, maintaining, and enhancing forest resources while reducing unsightly logging debris. As a result, the benefits of re-introducing fire to ecosystems where it had been suppressed became more widely accepted.

### Impact of Fire Exclusion


The landscape in the left is typical of landscapes throughout the West. Much of the diversity (patchiness, structure, and composition) is affected by the exclusion of fire. The picture on the right illustrates the affect of mountain pine beetle. Bark beetles through out the country (spruce bark beetle in Alaska, mountain pine beetle in the Rockies, and in the Southwest states of Arizona, New Mexico, and Colorado) are reaching pandemic levels. Bark beetles are a natural process, but vegetation and composition resulting from fire exclusion has expanded their impact from a small (patch size) scale to landscape levels.

The impact of fire exclusion on vegetation structure and composition and bark beetles leads to fuels that when ignited, burn hotter, spread faster, last longer, and cover more area than they did under more natural conditions.

There is growing recognition that past land use practices, combined with the effects of fire exclusion, has resulted in heavy accumulations of dead vegetation, altered fuel arrangement, and changes in vegetative structure and composition. When dead fallen material (including tree boles, tree and shrub branches, leaves, and decaying organic matter) accumulates on the ground, it increases fuel quantity and creates a continuous arrangement of fuel. When this occurs, surface fires may ignite more quickly, burn with greater intensity, and spread more rapidly and extensively than in the past. On the other hand, uses such as grazing can sometimes reduce fine fuels, precluding periodic surface fires that would typically burn these areas. Without fire, encroachment of woody species may occur in some savannah and grassland ecosystems.

Fires in areas of altered vegetation and fuels can adversely affect other important forces within an ecosystem, such as insects and disease, wildlife populations, hydrological processes, soil structure and mineralogy, and nutrient cycling. Any of these components, if altered greatly by usually severe fire, can seriously diminish the long-term sustainability of the land. In addition, effective protection from, and control of these large fire events will likely be much more difficult.

## Today's Societal Influence

Fire is a unique tool that land managers can use to complement agency missions and land management objectives. In order to successfully integrate fire into natural resource management and apply it on an ecosystem-scale, managers, partners, and the public must have an understanding of historic fire regimes, as well as knowledge of the current conditions of each system. Then all parties must work together in the land management planning and implementation process according to agreed-upon goals for the public welfare and the health of the land.

Although the basic concept of restoring fire to ecosystems has gained broader acceptance, several factors hinder the reintroduction of wildland fire on an ecologically significant scale. The public is slow to accept fire as a legitimate wildland fire management tool, largely due to past programs emphasizing complete fire suppression over ecosystem management. In addition, sometimes it takes years to reach agreement about appropriate treatments and to take action. In some ecosystems, little or no information is available about disturbance regimes, historical fire patterns, response to past management actions, and likely future responses.

Another constraint is that fire management plans are not in place in all areas, thus precluding managers from using wildland fire use as a management tool. An additional contributing factor is that our landscape is interspersed with fixed human settlements so that fire management agencies cannot accommodate fire under a completely natural regime. Prescribed fire and wildland fire use may benefit ecosystems, but these fires and the smoke generated by them may compromise public health and safety. This is especially true in the wildland/urban interface (WUI) where communities meet wildlands and a substantial human presence coexists uneasily with areas of fire-prone forest, brush, and grassland vegetation. Therefore, today's land management agencies are committed to balancing fire risks, including the risk of escaped fires, to communities with the benefits of fire.

**Only YOU...**
Among the most successful public awareness icons in history, Smokey Bear is a valuable tool for fire communicators. Contrary to common misconceptions that Smokey's message is one of fire exclusion or suppression. His message is simply *preventing unwanted, human caused wildfires* – an extremely important one at that.

This message is as true today as it was when Smokey first appeared in 1944. It is important for everyone in the fire community to understand that Smokey's message *does not conflict* with land managers' parallel need for prescribed fire and other fire management tactics.

Due to concerns over fire risk and smoke management and its impact on human health, transportation, agriculture, atmospheric carbon loading, and global warming, managers may choose to use alternate methods to restore ecosystems and reduce hazardous fuels in the WUI, including biological (e.g., grazing animals), mechanical (cutting or mowing), or chemical (herbicides) treatment of vegetation.

**WUI Defined**
The wildland/urban interface refers to a set of conditions under which a wildland fire reaches beyond natural fuels (such as trees and brush) to homes and their immediate surroundings. Chapter 9 of this *Guide* addresses the WUI in detail.

While other techniques may be used, they cannot always replace the ecological role that fire plays. Fire not only reduces the buildup of dead and downed fuel; it performs many other critical ecosystem functions. Fire can recycle nutrients that might otherwise be trapped for long periods of time in the dead organic matter that exists in many environments with slow rates of decay. It can also stimulate the production of nutrients and improve the specific conditions, including seed release, soil, light, and nutrients, that are critical for the reproduction of fire-dependent species.

Smoke is perceived as a factor that may affect land managers' ability to use larger and more frequent wildland fire for restoration and maintenance of fire-dependent ecosystems. Several federal air quality programs under the Clean Air Act (CAA) regulate wildland fire emissions. The Environmental Protection Agency (EPA) is required to set air quality standards for pollutants that affect public health. States are then required to submit plans to ensure measures will be taken to meet those air quality standards. Local areas may also develop plans that may be more (but not less) restrictive than state and national standards.

Educate your audiences that the use of prescribed fire can ultimately help reduce impact of smoke from wildfires.

In areas where air quality standards are violated, measures must be taken to reduce emissions. Emission control measures for fires that are used to meet management objectives include smoke management techniques that minimize and disperse smoke away from smoke-sensitive areas. Smoke from fires may also cause standards to be exceeded in communities miles away from the source. Currently, prescribed fires are not considered to be a significant cause of non-attainment. But with increased burning to reduce fuels and restore or maintain ecosystem health, this may change. In many areas, fire managers and local air quality authorities have successfully worked together to accomplish fire and land management objectives, resolve conflicts with smoke emissions, and avoid violation of air quality standards. With guidance from the national level to provide consistent interpretation, further cooperation at the local level will help to achieve a balance of air quality and other ecosystem goals.

## Public Perceptions and Attitudes toward Wildland Fire

The history of humans and fire in North America illustrates the importance of public perceptions and attitudes in managing wildland fire. Because successful fire management programs depend on public support and collaboration, you need to develop communication products and education programs that reinforce people's values and perceptions. To do this, demonstrate that an issue impacts them before attempting to educate them or convince them of a different perspective. Once you've caught their attention and they are more receptive to your message, they will be more likely to respond to new ideas and be more willing to participate in supporting needed change.

Citizens must be partners in wildland fire management. To do that, you need to understand their perceptions and attitudes in order to develop communication products that convey the information you want them to have by building on the values they hold dear and the perceptions they believe to be true.

Public attitudes and perceptions tend to shift with events. To be an effective educator, you must be aware of your audience and their perceptions and attitudes before communicating your message. Otherwise, your message may be outdated or even unnecessary.

Finally, your messages will change, as they have for fire suppression. It's important to be upfront regarding the reasons for changes – and what it means for people in the community.

### Motivation and Education

You want to encourage the public to take action on the issue you are advocating – whether it's creating defensible space around their homes, knowing what to do if fire approaches, calling for more prescribed burning and other fuels reduction around their communities, or supporting research, management, education, and employment opportunities in the wildland fire management arena.

People are generally not motivated by lectures on why they ought to do something. They are more apt to change behavior if they come to a conclusion themselves. Therefore, communicating relevancy should be your first course of action. Engage people with compelling stories, told by compelling storytellers. These may not be agency personnel. Research and experience tells us that people often are most influenced by their peers. Major events such as destructive fires in neighboring communities can also be motivating factors. Adapt and customize information to your specific audience and be inventive by using many different forms of communication. The following chapters provide you with the tools to do this.

The USFS North Central Research Station has been conducting social science research in the area of fuels management. Visit the Web site below for information. Fact sheets also are provided in the appendix of this guide. www.ncrs.fs.fed.us/4803/focus/fire/fuels_mgt/