

The Federal Wildland Fire Policy: Opportunities for Wilderness Fire Management

G. Thomas Zimmerman
David L. Bunnell

Abstract—The Federal Wildland Fire Management Policy and Program Review represents the latest stage in the evolution of wildland fire management. This policy directs changes that consolidate past fire management practices into a single direction to achieve multidimensional objectives and creates increased opportunities for wilderness fire management. Objectives previously accomplished through prescribed natural fire are now achieved through application of an appropriate management response to wildland fires. The 1998 fire season provided both a test of the policy and a clear indication of future wildland fire management and benefits to wilderness management.

Throughout the 20th century, fire management capability has continued to develop in response to land and resource management needs, growing knowledge of the natural role of fire, and increased effectiveness of fire suppression. Threats from wildland fires escalate annually as long-term effects from past land use and fire management actions become manifest in natural vegetation communities. Expanding values to be protected in combination with current land use practices also intensify protection concerns. Federal land management agencies' ability to respond to these challenges is rapidly becoming overextended. However, increasing knowledge, understanding and experience have shown that complete fire exclusion does not support a balanced resource management program. In fact, in many situations, this management direction is detrimental to ecosystem health and functioning. Wildland fire management policy and procedures must change to reflect new considerations, capabilities and direction, while being responsive to the increasing complexity of wildland fire management and resource management objectives.

Since 1988, the federal fire program has experienced two policy and program reviews (U.S. Department of Agriculture and U.S. Department of the Interior 1989, U.S. Department of the Interior/U.S. Department of Agriculture 1995) and one General Accounting Office program audit (U.S. General Accounting Office 1990). These reviews have

strengthened long-term accountability of the fire program and promoted more informed decision-making.

Most recently, events of the 1994 fire season, including 34 firefighter fatalities, \$925 million dollars in suppression expenses and significant damage to natural resources and private property, created a renewed awareness and concern among federal land management agencies and constituents about safety, wildland fire impacts and the integration of fire and resource management. As a result of these concerns, the Federal Wildland Fire Management Policy and Program Review was chartered (U.S. Department of the Interior/U.S. Department of Agriculture 1995). Federal agencies are currently involved in implementing the results of this review as the Federal Wildland Fire Management Policy.

Events during the 1998 fire season in the northern Rocky Mountains are indicative of the future of wildland fire management and benefits to wilderness management. During August and September of 1998, lightning ignited numerous wildland fires that were managed for resource benefits consistent with policy implementation procedures and funding authorities. Dozens of wildland fires were successfully managed in national parks and wildernesses. Compared with past policy, constraints and capability, this reflects a significant increase in the number of successfully managed fires. In fact, in previous years, the greatest proportion of these ignitions would probably have been quickly suppressed. This period of fire activity provided an immeasurable opportunity to put the current policy into practice and evaluate its effectiveness.

Since the early 1900s, fire management policy has adapted to meet emerging land and resource management issues, fire suppression needs and expanded understanding of the natural role of fire. This policy provides management direction and procedures that markedly increase opportunities to manage fire in wilderness to accomplish multiple objectives. The success of these recommendations and policy implementation depends on actions and expectations both internal and external to federal agencies. Agencies must ensure that wildland fire management is fully integrated into land management planning. It can no longer be assumed that all wildland fires can and should be controlled and suppressed. Absolute protection is an expectation that is difficult, if not impossible to achieve, and based on federal workforce limitations, fiscal constraints, resource management needs and environmental and fire behavior variables, is unrealistic.

This paper describes the Federal Wildland Fire Management Policy and Program Review recommendations, defines implications of the policy and management opportunities for wilderness fire management, and provides an encapsulation of

In: Cole, David N.; McCool, Stephen F.; Borrie, William T.; O'Loughlin, Jennifer, comps. 2000. Wilderness science in a time of change conference—Volume 5: Wilderness ecosystems, threats, and management; 1999 May 23–27; Missoula, MT. Proceedings RMRS-P-15-VOL-5. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.

G. Thomas Zimmerman is Fire Science and Ecological Applications Program Leader, National Park Service, 3833 South Development Avenue, Boise, ID 83705 U.S.A., e-mail: tom_zimmerman@nps.gov. David L. Bunnell is National Fire Use Program Manager, USDA Forest Service, 3833 South Development Avenue, Boise, ID 83705 U.S.A., e-mail: dbunnell@fs.fed.us

future wilderness fire management activities through a review of the 1998 fire season in the northern Rocky Mountains.

Review of Federal Wildland Fire Management Policy

The Federal Wildland Fire Management Policy currently being implemented represents the latest stage in the evolution of wildland fire management. This policy directs federal agencies to achieve a balance between suppression to protect life, property, and resources, and fire use to regulate fuels and maintain healthy ecosystems. This policy eliminates many of the previous limitations to expanded fire use.

Differences between the previous (prior to 1995) and current (post-1995) federal wildland fire management policy are typified by previous classification of all fires as either wildfires or prescribed fires. This arbitrary classification precluded maximum management effectiveness and strategic implementation. Under the current policy, all fires not ignited by managers for predetermined objectives are considered wildland fires. All wildland fires, then, have the same classification and receive management appropriate to conditions of the fire, fuels, weather and topography to accomplish specific objectives for the area where the fire is burning. These management actions are termed the “appropriate management response” and will vary among individual fires. This type of management permits a dynamic range of tactical options. The federal fire policy now advocates greater application and use of fire for accomplishing resource benefits while maintaining and implementing an effective suppression program.

The 1995 report (U.S. Department of the Interior/U.S. Department of Agriculture 1995) presents nine guiding principles fundamental to the success of the wildland fire management program and implementation of review recommendations. It also recommends a set of 13 wildland fire policies in the areas of: safety, planning, wildland fire, prescribed fire, preparedness, suppression, prevention, protection priorities, interagency cooperation, standardization, economic efficiency, wildland/urban interface, and administration and employee roles (table 1).

The following guiding principles (U.S. Department of the Interior/U.S. Department of Agriculture 1995) represent the foundation of the Federal Wildland Fire Management Program:

- *Firefighter and public safety is the first priority in every fire management activity.* Every firefighter, fireline supervisor, fire manager and agency administrator will take positive action to ensure compliance with established safe firefighting practices.
- *The role of wildland fire as an essential ecological process and natural change agent will be incorporated into the planning process.* Federal land and resource management plans will recognize and define the natural role of fire and set objectives for the use and desired future conditions of public lands.
- *Fire management plans, programs and activities support land and resource management plans and their importance.* All agencies will develop Fire Management Plans that: use information about fire regimes, current conditions and land management objectives to develop fire management goals and objectives; address

all potential wildland fire occurrences and provide for a full range of actions; use new knowledge and monitoring results to revise goals, objectives and actions; and build and maintain a close link between fire and land and resource management. Wildland and prescribed fire are not ends in themselves, but rather are means to an end. They represent planning and implementation actions done to facilitate protection and the resource management objectives described in the plans.

- *Sound risk management is a foundation for all fire management activities.* Risks and uncertainties associated with fire management activities must be understood, analyzed, communicated and managed as they affect the cost of either doing or not doing an activity. Net public benefits will be an important component of decisions.
- *Fire management programs and activities are economically viable, based on values to be protected, costs and land and resource management objectives.* Federal agency administrators are adjusting and reorganizing programs to reduce costs and increase efficiency. Investments in fire management activities must be evaluated against other agency programs in order to accomplish the overall mission, set short- and long-term priorities and clarify management accountability.
- *Fire management plans must be based on the best available science.* All wildland fire management agencies develop knowledge and experience. An active fire research program combined with interagency collaboration can make this available to all fire managers.
- *Fire management plans and activities incorporate public health and environmental quality considerations.* Fire management plans will address desired objectives but will be balanced with other societal needs, including public health and safety, air quality and other specific concerns.
- *Federal, tribal, state and local interagency coordination and cooperation are essential.* Increasing costs and smaller workforces require public agencies to pool their human resources to deal with the ever-increasing and more complex fire management tasks. Full collaboration among federal agencies and between federal agencies and tribal, state, local and private entities results in a mobile fire management workforce that can respond to the full range of public needs.
- *Standardization of policies and procedures among federal agencies is an ongoing objective.* Consistency of plans and operations provide the fundamental platform upon which federal agencies can cooperate and integrate fire activities across agency boundaries and provide leadership for cooperation with tribal, state and local fire management organizations.

To reduce misinformation and provide correct and consistent direction, the National Wildfire Coordinating Group (NWCG) developed and approved an “umbrella” flow chart which illustrates the broad framework behind policy implementation (fig. 1). This flow chart has become the cornerstone for policy description, illustration and development of implementation procedures. All fires are shown as either wildland or prescribed fires. Wildland fire management can follow one of three pathways, depending on the level of land management planning completed, resource values

Table 1—Federal wildland fire policies.

Policy area	Policy direction
Safety	Firefighter and public safety is the first priority. All Fire Management Plans and activities must reflect this commitment.
Planning	Every area with burnable vegetation must have an approved Fire Management Plan. Fire Management Plans must be consistent with firefighter and public safety, values to be protected and land and resource management plans and must address public health issues. Fire Management Plans must also address all potential wildland fire occurrences and include the full range of fire management actions.
Wildland fire	Fire as a critical natural process will be integrated into land and resource management plans and activities on a landscape scale, across agency boundaries, and will be based upon best available science. All use of fire for resource management requires a formal prescription. Management actions taken on wildland fires will be consistent with approved Fire Management Plans.
Use of fire	Wildland fire will be used to protect, maintain, and enhance resources and as nearly as possible, be allowed to function in its natural ecological role.
Preparedness	Agencies will ensure their capability to provide safe, cost-effective fire management programs in support of land and resource management plans through appropriate planning, staffing, training, and equipment.
Suppression	Fires are suppressed at minimum cost, considering firefighter and public safety, benefits, and values to be protected, consistent with resource objectives.
Prevention	Agencies will work together and with other affected groups and individuals to prevent unauthorized ignition of wildland fires.
Protection priorities	Protection priorities are (1) human life and (2) property and natural/cultural resources. If it becomes necessary to prioritize between property and natural/cultural resources, this is done based on relative values to be protected, commensurate with fire management costs. Once people have been committed to an incident these resources become the highest value to be protected.
Interagency cooperation	Fire management planning, preparedness, suppression, fire use, monitoring, and research will be conducted on an interagency basis with the involvement of all partners.
Standardization	Agencies will use compatible planning processes, funding mechanisms, training and qualification requirements, operational procedures, values-to-be-protected methodologies, and public education programs for all fire management activities
Economic efficiency	Fire management programs and activities will be based on economic analyses that incorporate commodity, non-commodity, and social values
Wildland/urban interface	The operational role of Federal agencies as a partner in the wildland/urban interface is wildland firefighting, hazard fuels reduction, cooperative prevention and education, and technical assistance. Structural fire protection is the responsibility of Tribal, State, and local governments. Federal agencies may assist with exterior structural suppression activities under formal Fire Protection Agreements that specify the mutual responsibilities of the partners, including funding. (Some Federal agencies have full structural protection authority for their facilities on lands they administer and may also enter into formal agreements to assist State and local governments with full structural protection.)
Administrator and employee roles	Employees who are trained and certified will participate in the wildland fire program as the situation demands; employees with operational, administrative, or other skills will support the wildland fire program as needed. Administrators are responsible and will be accountable for making employees available.

affected or fire cause. Fire Management Plans (FMP), prepared by each administrative unit or jointly by multiple units, are prerequisite to operational implementation. Management options are substantially reduced when a Fire Management Plan is lacking, incomplete, or not approved. Without a plan, units may only implement an appropriate management response of initial attack suppression (top pathway, fig. 1). When a Fire Management Plan has been completed and approved, and wildland fires are from natural ignition sources, the full range of appropriate management response options is available (middle pathway, fig. 1).

The concept of appropriate management response is integral to this policy. Management responses are programmed to accept resource management needs and constraints, reflect a commitment to safety, be cost-effective, and accomplish desired objectives while maintaining the versatility to change intensity as conditions change. Every wildland fire will receive an appropriate management response. The appropriate management response is defined as the specific action taken in response to a wildland fire to implement protection and/or fire use objectives. It allows managers to utilize a full range of responses. It does not lock tactical options to fire type designations. As conditions change, the

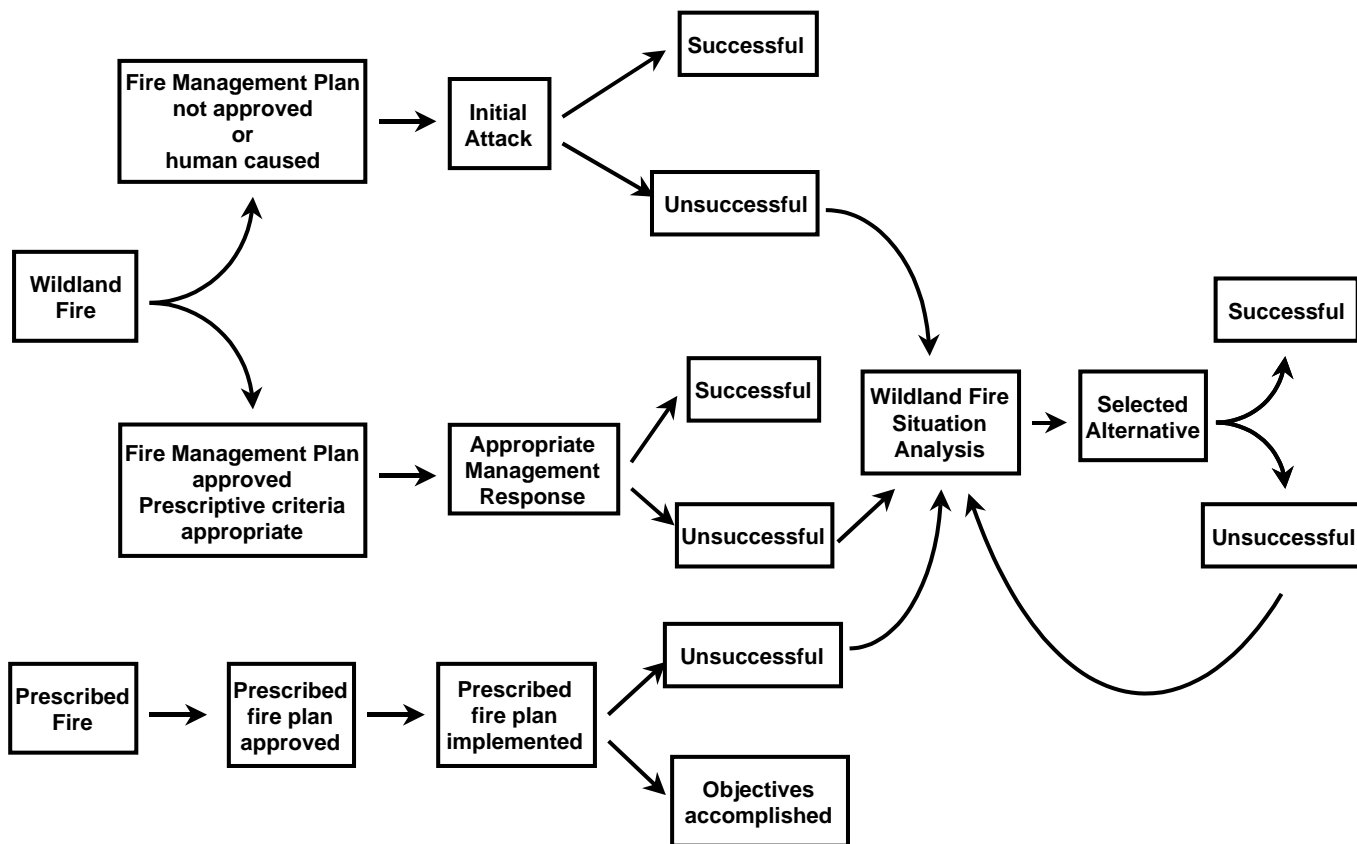


Figure 1—National Wildfire Coordinating Group (NWCG) Wildland Fire Management Policy flow chart (disseminated throughout the five Federal fire management agencies via internal agency communication directives).

particular response can change to accomplish the same objectives.

It is important to note that the appropriate management response *is not* a replacement term for prescribed natural fire, or the suppression strategies of control, contain, confine, limited or modified; but it is a concept that offers managers a full spectrum of responses (Zimmerman and Bunnell 1998). It is based on objectives, environmental and fuel conditions, constraints, safety and ability to accomplish objectives. It includes wildland fire suppression at all levels, including aggressive initial attack. Use of this concept dispels the interpretation that there is only one way to respond to each set of circumstances. Appropriate management responses can be developed along a continuum from monitoring to aggressive suppression. Under this policy, opportunities to combine strategies on individual fires are unlimited, as is implementing a variety of options concurrently, and there is no distinction between fire types or strategic responses. Through its application, managers have the ability to maximize the opportunities presented by every wildland fire situation.

Prescribed fire, as shown in the bottom pathway of the flowchart (fig. 1), differs very little from its management under previous policy. A Fire Management Plan must be completed and approved, and clearly specify the need for prescribed fire. Specific implementation plans (Prescribed Fire Plans) must be developed before a fire can be ignited.

When conditions described in the Prescribed Fire Plan occur and necessary resources are available to implement the prescribed actions, the fire is ignited and the plan implemented.

If the desired objectives cannot be met for either wildland or prescribed fire, a new strategy must be selected through the Wildland Fire Situation Analysis (WFS) process.

Misconceptions Surrounding the Wildland Fire Management Policy

It can be difficult to interpret and understand this policy and its implications to management. Comparison to previous fire management policies does not necessarily offer similarities, direct replacement terms, or defined actions. Recognizing the flexibility and range of opportunities presented by the new policy facilitates its interpretation. Understanding these opportunities and implementation mechanisms is prerequisite to efficient implementation.

Common misconceptions have developed about the policy. The Wildland and Prescribed Fire Management Policy, Implementation Procedures Reference Guide (Zimmerman and Bunnell 1998) was prepared to present a set of implementation procedures and to define what the policy is and isn't. To understand what can be accomplished, it must be realized that this policy:

- *Is not a less safe way of managing wildland fires.* The new policy is formulated on a solid basis incorporating safety; this commitment is continually reinforced. Federal agencies will develop, thorough planning processes, and implement management procedures that accomplish objectives while always maintaining a firm commitment to safety. The guiding principles, fundamental to the success of the policy implementation, describe the commitment to safety in the very first principle. One of the key points stated in the Federal Wildland Fire Management Policy and Program Review recommendation report is, "Protection of human life is reaffirmed as the first priority in wildland fire management. Property and natural/cultural resources jointly become the second priority, with protection decisions based on values to be protected and other considerations." The report further affirms the commitment to safety by stating, "Once people are committed to an incident, those resources become the highest value to be protected and receive the highest management considerations."
- *Is not a significant change in what we do.* The wildland fire management program strives to accomplish objectives designed to maintain, enhance, protect, and preserve natural and cultural resources. Fire management programs will continue to provide safe, ecologically sound and economically efficient actions in support of land and resource management plans through planning, staffing, training and equipment readiness.
- *Is not a wholesale shift to "let burn" actions.* Federal wildland fire management programs have never included "let burn" activities. The implication of this term—that fires do not receive appropriate levels of management scrutiny and attention—is not correct. In fact, wildland and prescribed fires have received and will continue to receive significant attention during management planning, implementation and evaluation. A wholesale shift to one management strategy over another is undesirable, unrealistic and inconsistent with policy goals, and it will not occur. The aggregate strategies available to implement the fire management program will achieve a better balance of protection and land and resource management objectives.

Agencies will utilize the full spectrum of fire management actions—from prompt suppression of unwanted fires to managing naturally ignited fires to accomplish specific resource management objectives. The majority of wildland fires will continue to receive a suppression-oriented response. Suppression capabilities will continue to expand and grow in sophistication and capacity to meet increasing demands such as the rapid expansion of wildland/urban interfaces.

- *Is not a less efficient way of doing business.* The policy promotes application of fire management actions along a "sliding scale," ranging from minimal on-the-ground actions to prompt, aggressive actions to fully extinguish the fire. Use of this spectrum allows agencies more flexibility to design responses closely allied with objectives and fuel, weather and topographic conditions. In the past, responses were driven by fire type as well as other considerations. Responses will be appropriate for individual conditions and the objectives associated with

that ignition; they will not be related to a fire type or classification. This will permit federal agencies to achieve effectiveness and efficiency in operations.

What the policy actually represents is:

- *A more cohesive way of approaching wildland fire management.* Management actions on wildland fires will no longer be driven by fire type designation. Fires will no longer be extinguished under a default response but will be suppressed for specific reasons. Fires managed for resource benefits will have specific rationale for such management identified in the Fire Management Plan.
- *A foundation to facilitate more efficient operations.* Classification of all fires into a single category of wildland fires will allow managers to respond to each and every fire in a manner appropriate for the objectives, constraints and conditions associated with that fire. Managers will not be forced to adopt a strategy due to fire classification. There will be more attention to ecological concerns, and each fire will have a greater probability of accomplishing desired objectives.
- *A program of action that promotes concurrent use of available management strategies.* Through the appropriate management response, managers can respond to different fires in different ways, using different strategies to accomplish different objectives. Nothing precludes this from happening concurrently. In fact, the most efficient management will make simultaneous use of fire management strategies. Different strategies may also be employed on various portions of individual fires, thus reducing costs and utilization of scarce resources. Fire Policy Review Recommendation goals support the concurrent utilization of available management strategies by stating for protection capabilities, "Federal Agencies will maintain sufficient fire suppression and support capability." They further state, for reintroduction of fire, "Based upon sound scientific information and land, resource and fire management objectives, wildland fire is used to restore and maintain healthy ecosystems and to minimize undesirable fire effects. Fire management practices are consistent for areas with similar management objectives, regardless of jurisdiction."
- *A program of action that does not automatically place priority on one strategy over another without analysis of specific information.* No wildland fire will automatically be categorized as having a lower priority than others. All wildland fires will compete for resources on the basis of objectives, values-to-be-protected, safety, risk, complexity and other specific considerations. During periods of resource shortages, fires determined to be in greater need will receive priority for resource allocation. Policy Review action items for values to be protected and preparedness planning state, "Federal agencies will define values to be protected, working in cooperation with Tribal, State, and local governments; permittees; and public users. Criteria will include environmental, commodity, social, economic, political, public-health, and other values." As part of the standardization goals, the report states that agencies will use compatible methodologies to determine values-to-be-protected. Common priority-setting standards to facilitate allocation of scarce resources will be developed.

The National Wildfire Coordinating Group has completed a report on allocation of resources for this purpose (Williams and others 1998).

- *A common planning process for all agencies, resulting in one plan.* The Fire Policy Review Recommendation for planning states, “Fire management goals and objectives, including the reintroduction of fire, are incorporated into land management planning to restore and maintain sustainable ecosystems. Planning is a collaborative effort, with all interested partners working together to develop and implement management objectives that cross jurisdictional boundaries.” Recommendations stated in the Policy Review include, “the use, by Federal Agencies, of a compatible fire management planning system that recognizes both fire use and fire protection as inherent parts of natural resource management; this system will ensure adequate fire suppression capabilities and support fire reintroduction efforts.” The Policy Review further states that federal agencies will “continue ongoing efforts to jointly develop compatible, ecosystem-based, multiple-scale, interagency land management plans that involve all interested parties and facilitate adaptive management.”
- *A process based on uniform budget and fiscal procedures.* Agency standardization and development of common procedures will reduce administrative barriers. Action items to achieve this include: develop consistent language to be included in budget appropriations, enabling the full spectrum of fire management actions on wildland fires; seek authority to eliminate internal barriers to the transfer and use of funds for prescribed fire on non-federal lands and among federal agencies; seek authority or provide administrative direction to eliminate barriers to carrying over, from one year to the next, all funds designated for prescribed fire; work with the Office of Personnel Management to acquire authority for hazard pay to compensate employees exposed to hazards while engaged in prescribed burning activities; jointly develop simple, consistent hiring and contracting procedures for prescribed fire activities; jointly develop programs to plan, fund and implement an expanded program of prescribed fire in fire-dependent ecosystems.

Implications of the Fire Policy to Wilderness Fire Management

Wilderness heritage in the United States has a long and storied history. In the late 1800s, John Muir, America’s most famous and influential naturalist and conservationist, explored California’s wilderness and was instrumental in the formation of numerous national parks (Yosemite—1890, Mt. Rainier—1899, Grand Canyon—1908). In 1919, Arthur Carhart, a young Forest Service landscape architect, recommended that Trappers Lake in Colorado’s White River National Forest be removed from development, even for recreational purposes. In 1924, Aldo Leopold, deputy regional forester in Region 3, had the satisfaction of seeing his efforts achieved when the Forest Service designated 574,000 acres of the Gila National Forest, New Mexico, as a wilderness reserve. In 1939, Bob Marshall, Chief of Division of

Recreation and Lands in the Forest Service, led establishment of the U Regulations, creating and tightening protection for wilderness, wild and roadless areas, immediate forerunners of today’s National Wilderness Preservation System.

The National Wilderness Preservation System has grown from 9 to 104 million acres since passage of the Wilderness Act in 1964. Today’s wilderness (104 million acres) collectively comprises a little more than the area of the state of Montana (94 million acres). Wilderness is important to the environment and society. It provides clean water and air, naturalness, critical habitats for endangered and non-endangered plants and animals, solitude, scenic beauty and economic benefits to communities through tourism and recreation. Wilderness condition is a barometer for measuring ecologic integrity.

This year, 1999, marks the 75th anniversary of the establishment of the Gila Wilderness and the 50th anniversary of *A Sand County Almanac*, written by Leopold in 1949, arguably America’s most read and influential book on ecologic principles and social values. These noteworthy anniversaries, combined with the 1995 Interagency Wilderness Strategic Plan, emerging Natural Resource Program management efforts and the implementation of the Federal Fire Policy prepares us to look at the future of fire management in wilderness with an eye on our past and debts to be paid to Muir, Carhart, Marshall and Leopold.

The Federal Wildland Fire Management Policy has much to offer to wilderness management objectives. The dissolution of funding mechanisms that influenced the Prescribed Natural Fire (PNF) program, primarily in Forest Service wilderness areas, from 1972-1998 is a significantly positive step toward increased use of fire in wilderness. Limited funding bases for the previous PNF program severely constrained full implementation. Consequently, many fires were suppressed due to a lack of appropriated funds for management. Other fire actions were financed by “bootleg” operations that attached funding to other fires or program elements. These aggressive and sometimes heroic financial actions clearly placed managing fire in wilderness in a “second class” position. These actions were largely viewed as problematic and a threat to traditional management efforts.

Funding authority for appropriate management response to wildland fire occurrence in wilderness has dramatically increased flexibility. This will promote both the use of fire in wilderness and support from wilderness management for critical fire implementation. Particularly critical is proper financing of under-financed wilderness field staff combined with full funding for fire management resources required to successfully manage fires. It will increase implementation action safety and internal/external coordination, as well as provide better long-range fire planning while reducing overall risk.

Increased management application of wildland fires in wilderness will build the confidence of wilderness and fire management staff. Past programmatic success (1970-1998), has produced growing advocacy at both the public and interagency management levels. Two important cultural elements have been influenced by this change. First, fire suppression as the primary fire management response to fire occurrence in wilderness has been softened in some areas. Subsequently, where adequate planning has been

completed, new fire starts may be equally considered for use or suppression. Second, wilderness management has recognized that substantial program increases will require the full integration of wilderness and fire management personnel in both the decision-making process and implementation on the wildland fires selected to meet resource benefits in wilderness.

The application of prescribed fire in wilderness areas has had consistent and substantial success in the National Park System. Combinations of Wilderness Act interpretation, administrative restrictions, and complex NEPA requirements in the planning process have severely limited the use of prescribed fire in Forest Service wilderness areas. The current policy offers no change in requirements or application from the previous policy. Subsequently, the Park Service should continue to increase accomplishments. Two major administrative changes may also allow the Forest Service to increase wilderness acres treated by prescribed fire. Forest Service Manual 2320 section is under revision and will promote increased use of prescribed fire in wilderness, both to reduce risk of escape through boundary treatments and to promote the use of wildland fire for resource benefits. This addresses an important issue identified by Parsons and Landres (1998). It is now accepted by management that prescribed fire application is a viable treatment for maintaining or restoring historic vegetative components in wilderness areas physically smaller than the historic size of fires that shaped and textured vegetation components in those ecosystems. This applies specifically to relatively small areas with fire-adapted ecosystems identified as high fire frequency nonlethal fire regimes. The net effect of this approach is a potential for increased application of wildland and prescribed fire in all areas. But, more important, it will be possible to manage more small wilderness areas with the best available management practice of prescribed fire application. The key to success of this effort will be integrated decisions, with wilderness management assuming a leadership role in promulgating direct management actions.

Putting the Federal Wildland Fire Policy Into Practice

During early August 1998, thunderstorm activity was responsible for igniting more than 200 wildland fires in the northern Rocky Mountains (in two geographic areas: Great Basin and Northern Rockies). These fires were located throughout northern Idaho and western Montana on national forests and national parks. Appropriate management responses, consistent with the federal fire policy, were developed for all fires. Evaluations of each fire and its specific set of circumstances, including land management objectives, values-to-be-protected, primary land use, external influences and other information pertinent to the fire location and situation were completed. Results indicated that many of the fires needed an immediate management response of suppression to accomplish protection objectives (46% of the fires in the Northern Rockies Area for 3696 acres). Other fires, actually a greater number than were suppressed, did not need immediate suppression responses and were, in fact, candidates for accomplishing resource benefits. These fires were evaluated with processes identified in the

implementation procedures reference guide (Zimmerman and Bunnell 1998) and received appropriate management responses to accomplish resource benefits; firefighter safety was also minimized because of reduced exposure, and the response was also cost effective (54% of the fires in the Northern Rockies Area for 26,385 acres).

Although federal agencies are in the process of actively implementing this policy and have been since its inception, not all agencies have enough direction to completely implement new procedures. Newly updated agency manuals had not been officially approved for the USDA Forest Service in 1998. As a result, it was not possible to implement the policy using all new terminology, although fiscal allowances, management coding and management responses were in place, permitting consistency with policy direction. Wildland fires on National Forest lands managed for resource benefits were described as prescribed natural fires. This situation had little influence on the eventual outcome, but it did cause some limited confusion in regard to terminology.

The 1998 fire season accomplishments can be differentiated from previous years by the numbers of fires managed for resource benefits. In past years, fixed budgets for prescribed natural fire implementation severely curtailed the scale of accomplishments. Natural fire management budgets for both the Forest Service and Park Service limited the numbers of and, often, the duration of prescribed natural fires. Once these budgets were exhausted or fully committed to potentially long-duration fires, all other new ignitions were forced into a wildfire designation and received an initial attack suppression response. Confinement responses were implemented only if large resource commitments were not warranted. Budget limitations often restricted prescribed natural fires to large, undeveloped areas that presented little risk of fire leaving the area or threatening boundaries, developments, etc. This situation did not promote efficient use of natural fire management or a balanced program. Since 1970, nearly 4,000 prescribed natural fires have occurred; since 1980, almost an additional 2,000 fires have been managed through confine, contain, limited, or modified strategies in all 50 states (table 2). Fire data from lands managed by the Bureau of Land Management in Alaska are not available and not included in table 2. However, the best available information suggests that several million acres were treated under modified suppression, producing similar landscape scale effects during the same time period.

The numbers of wildland fires managed for resource benefits over the last five years does not show well-defined trends. These data indicate a gradual increase, then slight drop-off, reflecting seasonal severity and total numbers of ignitions (table 3). The total number of fires managed for resource benefits in 1998 was not the highest on record (table 3). However, this total is comprised of fires almost exclusively concentrated in the northern Rocky Mountains rather than throughout the western United States. More than 60 wildland fires were managed for resource benefits in the Bob Marshall, Selway-Bitterroot, Sawtooth and Frank Church-River of No Return Wilderness Areas and in Glacier National Park (fig. 2). Managing this number of fires for this purpose is clearly significant when during previous years, as many as 90 percent of these fires would probably have been suppressed through aggressive initial

Table 2—Wildland fire program summary (includes all 50 states).

strategies ^b Agency Area burned	Number of fires (acres)	Prescribed	natural fires ^a	Confine-contain-modified	
		Area	burned	(acres)	Number of fires
National Park Service	2,596	329,860	760	704,857	
U.S. Forest Service	1,360	533,215	590	951,557	
U.S. Fish and Wildlife Service	—	—	68	5,004	
Bureau of Indian Affairs	—	—	372	3,765	
Bureau of Land Management	—	—	NA ^d	NA ^d	
Other	21	3,100	—	—	
Total	3,977	866,175	1,956	1,685,183	

^aData for 1970 to 1998, source U.S. Forest Service and National Park Service files at National Interagency Fire Center.

^bData for 1980 to 1998, source U.S. Forest Service and National Park Service files at National Interagency Fire Center.

^cU.S. Fish and Wildlife Service, Bureau of Indian Affairs and Bureau of Land Management did not manage fires under prescribed natural fire strategies during this time period.

^dBureau of Land Management data not available for Alaska.

Table 3—Wildland fires managed for resource benefits by the USDA Forest Service and USDI National Park Service, 1994-1998.

Agency 1998	Number of wildland fire use actions ^a				
	1994	1995	1996	1997	1998
Forest Service USFS	26	91	164	70	113
National Park Service (NPS)	68	51	83	96	101
Total number of wildland fire use actions	94	142	247	166	214

^aSource:USFS and NPS file data, National Interagency Fire Center.

attack or extended attack and would have never contributed to resource benefits. The shift in management response to wilderness fires prompted by the current policy is resulting in more fires being managed for resource benefits. This is clear when reviewing the proportion of fires managed for resource benefits, suppressed through control strategies, and managed through a confinement strategy during 1998 (fig. 3). The largest proportion of fires during

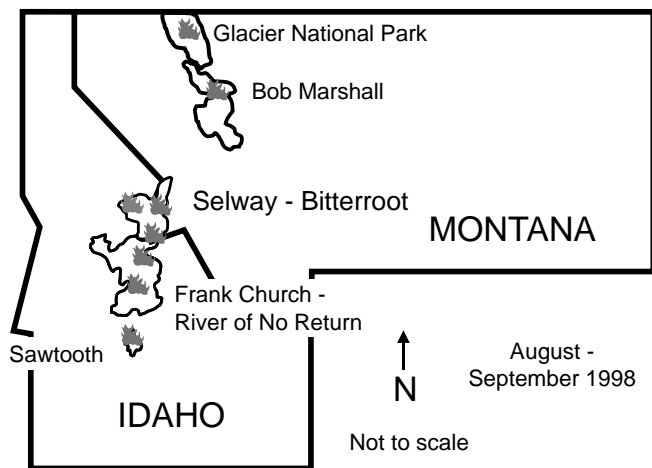


Figure 2—Wilderness and National Park wildland fire activity in Idaho and Montana from August to September 1998 (names are wilderness areas only, not specific fires).

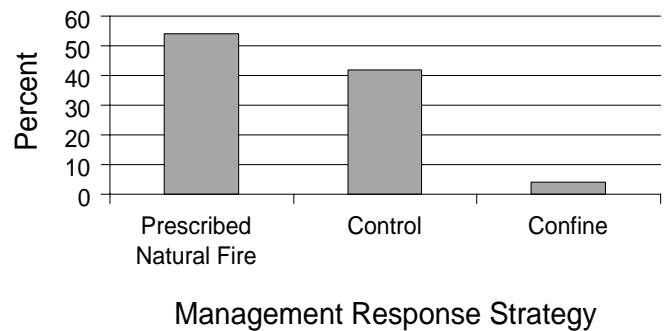


Figure 3—Proportion of wilderness fires in management response strategies of prescribed natural fire, control, and confinement during 1998 in the Northern Rocky Mountains.

the August to September period in the northern Rocky Mountains was managed through a prescribed natural fire strategy to accomplish resource benefits, while the control and confinement strategies were used considerably less. This raises speculation concerning how many fires shown in table 2 as confine-contain-modified strategies would have been wholly managed for resource benefits under the federal fire policy.

During 1998, Wildland Fire Implementation Plans (WFIP) were used to define appropriate management responses for each fire or for groups of fires when resource benefits were the primary objective. This includes all fires managed under the old terminology of prescribed natural fire. When protection objectives and/or external influences indicated a dominant need for a suppression-oriented response, either an initial attack response was originated or a Wildland Fire Situation Analysis (WFSA) was used to formulate the preferred alternative. This included all fires managed under the strategies of control and confine. It is important to remember that all fires are considered wildland fires under the current policy and receive a management response appropriate for the specific set of circumstances.

After reviewing the various appropriate management responses applied to fires in the northern Rockies in 1998, these responses can be categorized in tactical groups, as described by Zimmerman (in press). These include monitoring from a distance, monitoring on-site, confinement, monitoring plus

contingency actions, monitoring plus mitigation actions, initial attack, large fire suppression with multiple strategies, and control and extinguishment. These appropriate management response groups are defined as:

- Monitoring from a distance—fire situations where inactive behavior and low threats required only periodic monitoring from a nearby high point, lookout or aircraft.
- Monitoring on-site—fires where circumstances required the physical placement of monitors on the fire site to track movement and growth.
- Confinement—actions taken when wildland fires were not viable candidates for resource benefits, and an analysis of strategic alternatives indicated threats from the fire did not require costly deployment of large numbers of resources for mitigation or suppression. These fires were managed with little or no on-the-ground activity, and fire movement remained confined within a predetermined area bounded by natural barriers or fuel changes.
- Monitoring plus contingency actions—monitoring was carried out on fires managed for resource benefits, but circumstances necessitated preparation of contingency actions to satisfy external influences and ensure adequate preparation for possible undesirable developments.
- Monitoring plus mitigation actions—actions on fires managed for resource benefits that either posed real, but not necessarily immediate, threats or did not have a totally naturally defensible boundary. These fires were monitored, but operational actions were developed and implemented to delay, direct or check fire spread, to contain the fire to a defined area, and/or to ensure public safety (through signing, information and trail and area closures).

- Initial attack—situations where an initial response was taken to suppress wildland fires, consistent with firefighter and public safety and values to be protected.
- Large fire suppression with multiple strategies—fires where a combination of tactics such as direct attack, indirect attack and confinement by natural barriers were used to accomplish protection objectives as directed in a WFSA.
- Control and extinguishment—actions taken on fires when a WFSA alternative indicated that a control strategy using direct attack was preferred. Sufficient resources were assigned to achieve control of the fire with minimum burned area.

The purpose of aggregating fires into these groups is not to create discrete types of appropriate management responses or a new classification. It is strictly an effort to further exemplify the dynamic, full range of appropriate management responses presented by the current policy. These groups do not necessarily represent all possibilities and may not be applicable to all wildland fires. They do, however, provide a useful description of the range of appropriate management responses implemented in the wilderness areas and national parks during the wildland fire activity from August to September 1998 in the northern Rocky Mountains.

Describing groups of like responses is useful because it provides more concise, understandable information such as summaries of fire information, objectives and management actions for each appropriate management response group, reduces redundancy and offers a clear image of the fire situations and subsequent management activities (fig. 4). As land use changes from wilderness to nonwilderness and multiple use, objectives for fire management also generally

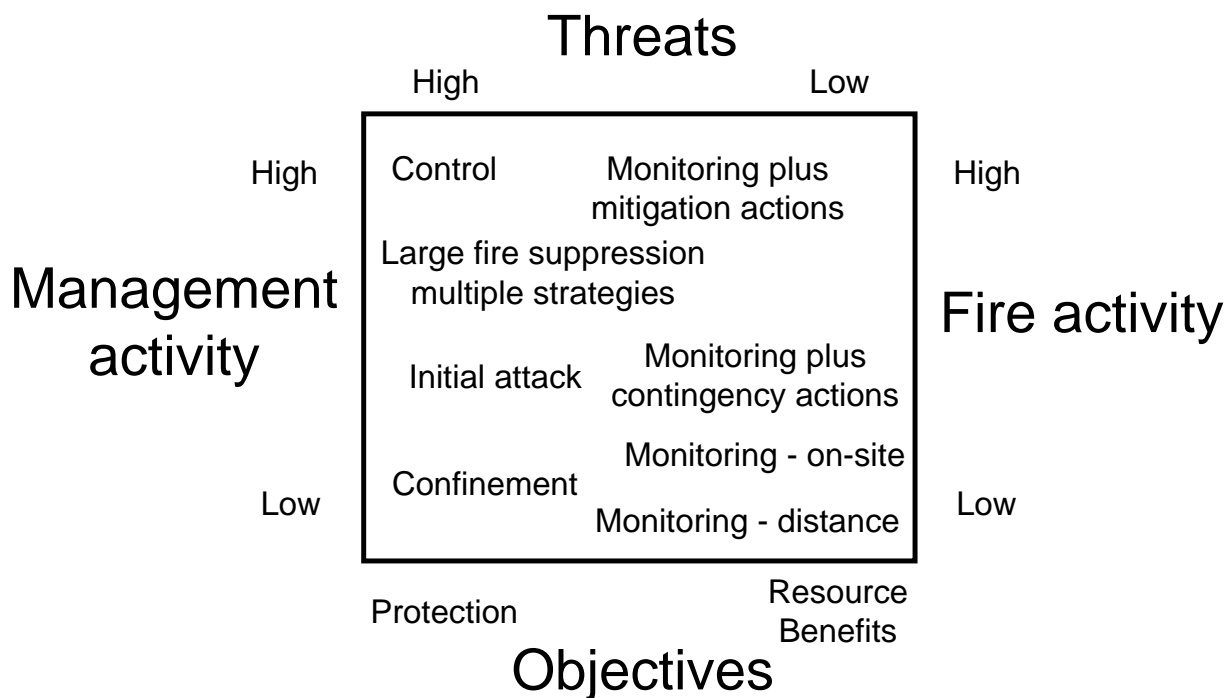


Figure 4—Appropriate management response groups applied in 1998 shown along a spectrum based on criteria of threats, fire activity, management activity, and objectives.

change from managing for resource benefits to more protection. This strongly influences appropriate management response dynamics. However, responses are not limited to one particular kind because of land use. For example, wildland fires in wilderness are not only subject to monitoring for resource benefits; they can also receive suppression responses to achieve control when necessary. In addition, within specific primary land uses, increasing threats drive appropriate management responses to include greater on-the-ground activity, both in the form of overhead and line fire management resources (fig. 4). Fire size and activity also have a major influence on the appropriate management response. Using the seven tactical management response groups identified above, it is possible to see how the appropriate management response concept presents a range of possible actions and how this was applied during August to September 1998 (fig. 4). This range indicates the flexibility available to managers under the current policy.

Summary

Wilderness and fire policies continue to be dynamic. Program management changes only after lengthy negotiation and careful deliberation following the occurrence of some significant event. The multiple deaths among people fighting fires in 1994 and lack of significant maintenance of forest and range health over large landscapes of the West have recently been noteworthy examples. This has placed management in a reactive posture. A proactive position that responds to projected needs by incorporating analysis of scientific data and social/political vagaries will place wilderness fire management on a more steady and effective course.

This course must have adequate flexibility to accommodate future uncertainty. Much of what needs to be done in wilderness fire management still lies ahead of us. Our knowledge of wilderness management needs, actions to fulfill these needs, and fire accomplishment data are lacking or seriously inadequate at best (Parsons and Landres 1998). There continues to be no interagency reporting process or database for wilderness fire occurrence or prescribed fire treatments. The nearly 2.5 million acres of wilderness that has experienced fire since 1970 seems an impressive figure, but the reality is that the bulk of the acreage comes from far too few centers of excellence such as Sequoia-Kings Canyon and Yosemite National Parks and the Selway-Bitterroot, Gila, Bob Marshall and Frank Church-River of No Return Wilderness Complexes.

Wilderness fire implementation opportunities and accomplishments will grow as federal agencies implement the 1995 Federal Wildland Fire Management. Applying an appropriate management response to all fires, rather than regulating responses by fire types, will enhance efficiency. Along with this efficiency will be more attention to ecological concerns, better responsiveness to resource management objectives, ability to better accommodate evolving objectives, more effective assignment and use of limited resources, and the most efficient expenditure of funds.

The Federal Fire Policy provides increased emphasis on consistent implementation of program elements across agency boundaries. This reduces barriers to accomplishment when joint planning efforts take full advantage of this direction. Noteworthy examples include the current effort underway consolidating a management plan for the Flathead National

Forest and Glacier National Park and the potential for a joint Yellowstone National Park and Gallatin National Forest plan.

This policy also directs changes in funding that clearly will enhance wilderness fire management and promote increased allocations in prescribed fire programs. It will require a significant increase in the combination of wildland fire use and prescribed fire application to restore many fire-dependent ecosystem components to maintenance levels.

Perhaps the most significant long-term effect of implementing the policy can be found in increased interagency cooperation, acceptance and trust. The final approval by federal agencies of the implementation procedures reference guide (Zimmerman and Bunnell 1998) heralds a major step forward and potentially ensures that increased use of fire will become a reality when the next revision/amendment of land and resource management plans is completed.

Wilderness managers have a unique opportunity to capitalize on a fire management policy and program change that provides far greater flexibility than ever before. This policy allows for better balance in management responses to fires and can meet many wilderness goals and objectives. There are no meaningful elements more pervasive in wilderness than natural processes, including fire. Complete implementation of the fire policy will require wilderness managers to redeem their management responsibility to both plan for and implement full use of fire in wilderness and facilitate growth and advances in program management.

Acknowledgments

We would like to Chris Ryan, Arthur Carhart National Wilderness Training Center, for her help in obtaining wilderness maps and documentation.

References

- Parsons, David, J., and Peter B. Landres. 1998. Restoring natural fire to wilderness: how are we doing? Pages 366-373 in Teresa L. Pruden and Leonard A. Brennan (eds.). *Fire in ecosystem management: shifting the paradigm from suppression to prescription*. Tall Timbers Fire Ecology Conference Proceedings, No. 20. Tall Timbers Research Station, Tallahassee, FL.
- U.S. Department of Agriculture and U.S. Department of the Interior. 1989. *Final Report on Fire Management Policy*. Washington, D.C. 20 p.
- U. S. Department of the Interior/U. S. Department of Agriculture. 1995. *Federal wildland fire management policy and program review*. Final Report. Boise, ID: National Interagency Fire Center; 45 p.
- U.S. General Accounting Office. 1990. *Report to the Chairman, Environment, Energy, and Natural Resources Subcommittee on Government Operations, House of Representatives. Federal Fire Management, Limited Progress in Restarting the Prescribed Fire Program*. GAO/RCED-91-42. Washington, D.C. 15 p.
- Williams, J.T., L. Bradshaw, G. Day, C. Denton, R. Dunton, R. Gale, S. Haglund, N. Hitchcock, P. Keller, M. Long, G. Schmidt, C. Seely, and L. Wright. 1998. *Implementation of the Federal Wildland Fire Management Policy, Allocation of Resources*. Final Report to National Wildfire Coordinating Group. 29 p.
- Zimmerman, G. Thomas, and David L. Bunnell. 1998. *Wildland and Prescribed Fire Management Policy, Implementation Procedures Reference Guide*. National Park Service, USDA Forest Service, Bureau of Indian Affairs, U.S. Fish and Wildlife Service, and Bureau of Land Management, Boise, ID. 154 p.
- Zimmerman, G. Thomas. In press. *Appropriate Management Responses to Wildland Fire: Options and Costs*. Symposium on Fire Economics, Planning, and Policy, Bottom Lines, Proc. Riverside, CA. U.S. Department of Agriculture, Forest Service, Pacific Southwest Experiment Station.