Evolution of Wilderness Fire Policy

BY GREGORY H. APLET

Just as wilderness ecosystems have been shaped by fire (and the condition of those ecosystems has shaped fire behavior), wilderness policy has been affected by fire policy (and vice versa). The Wilderness Act and subsequent wilderness bills have addressed fire, and policy has evolved to recognize the free play of fire as a natural process. Similarly, fire policy has evolved to accommodate the peculiar demands of wilderness.

This co-evolution has its origin in the confluence of ecological thought and wilderness philosophy that occurred in the late 20th century. For most of the century, fire was considered a universal threat to people, resources, and wildlands. Eventually though the observations of foresters like Aldo Leopold (1924) and Elers Koch (Arno and Fiedler 2005) added to the research of scientists such as Harold Weaver (1943) and Herb Stoddard (1935) to force realization of the role of fire in sustaining species and maintaining the character of ecosystems. In 1963 a panel of ecologists responded to the National Park Service's request for a management review with the suggestion that "The goal [of park management] is to maintain or create the mood of wild America" (Leopold et al. 1963). They recommended fire be restored to the national parks.

Passage of the Wilderness Act in 1964 represented the culmination of the "fight for the freedom of the wilderness" begun by John Muir and sworn to by Robert Marshall (1930) and the other founders of The Wilderness Society in 1935. According to the Wilderness Act definition, "Wilderness [retains] its primeval character and *influence* [and] generally appears to have been *affected primarily by the forces of nature*" (emphasis added). It became clear that those "forces of nature" include fire.

The purpose of this article is to briefly review the policy history of wilderness fire, identify some barriers to its increased use, and propose some policy changes that could lead to more harmonious relations among people, fire, and wilderness.

Wilderness Fire Policy

Greg Aplet. Photo by Sander Aplet.

This article is by no means intended to provide a comprehensive review of wilderness fire policy. For such a review, there is the excellent work of Kilgore (1986) and Parsons and Landres (1998), a number of papers presented at the 1999 Wilderness Science Conference (Agee 2000; Parsons 2000; Zimmerman and Bunnell 2000), or, for a more poetic treatment, Pyne's 1995 "Vestal Fires and Virgin Lands." Together, these reviews characterize the history of policy from the advent and growth of wilderness fire management, to the calamity of Yellowstone in 1988, and through rebirth and recovery.

Briefly, wilderness fire policy history began with the fires of 1910, which burned millions of acres in Idaho and Montana, killing 86 people and destroying entire communities. That experience led to a policy of intolerance and all-out suppression of fire throughout most of the 20th century. The accumulation of scientific evidence and societal desire to leave some parts of the country beyond direct human control, however, led to a shift in policy, initiated by the National Park Service in 1968 and followed by the USDA Forest Service in 1978, whereby some natural fires could be allowed to burn in specified locations under previously identified conditions. Over two decades, this prescribed natural fire (PNF) policy spread from its original application in California to national parks and wilderness areas across the country (see figure 1).

Whatever momentum had built up over that period ended abruptly in the summer of 1988 when a succession of fires that were allowed to burn in Yellowstone National Park encountered extreme fire weather and blew up into the

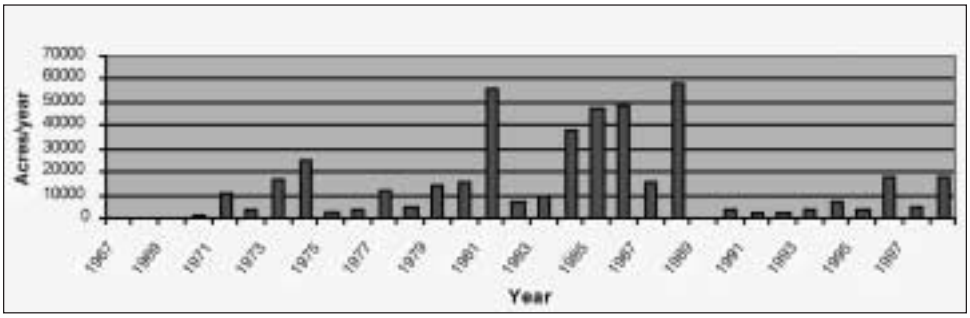

Figure 1—Natural fire acres burned on National Park Service lands, 1967–1998. Data from Parsons (2000).

largest fire event in the United States since that catalyzing year of 1910. Immediately, federal officials suspended the PNF policy, although a review of federal policy immediately after the Yellowstone fires concluded that the objectives of prescribed natural fire programs were sound (Wakimoto 1990).

In the years since Yellowstone, federal fire policy has been modified many times, with each revision fundamentally endorsing wilderness fire. The most important of these, the 1995 Federal Wildland Fire Management Policy and Program Review, changed the nomenclature of fire management but firmly endorsed Wildland Fire Use for Resource Benefit (WFU) as an appropriate response to natural fire. So strong was the wording of the policy that federal fire managers (Zimmerman and Bunnell 2000) concluded that wilderness fire implementation opportunities and accomplishments would grow as federal agencies implemented the 1995 Federal Wildland Fire Management Policy. Another review and update of the fire policy in 2001 directed "wildland fire will be used…and, as nearly as possible, be allowed to function in its natural ecological role," and the 10-Year Comprehensive Strategy, developed to implement the National Fire Plan in 2002, established a goal to restore, rehabilitate, and maintain "fire-adapted ecosystems."

It seems clear that federal fire management policy strongly supports wilderness fire. Parsons (2000), however, found that, in 1998, less than 15% of wilderness areas outside of Alaska had fire management plans that allowed some natural fires to burn, leading him to conclude skeptically, "The optimism evinced by Zimmerman and Bunnell … is promising but must be more fully evaluated." Although the years leading up to 1998 showed a pattern of increasing Wildland Fire Use, the trend has not continued. The number of acres burned through Wildland Fire Use saw increases in 2003 and 2005, but the number of incidents of WFU has remained relatively stable (see figure 2).

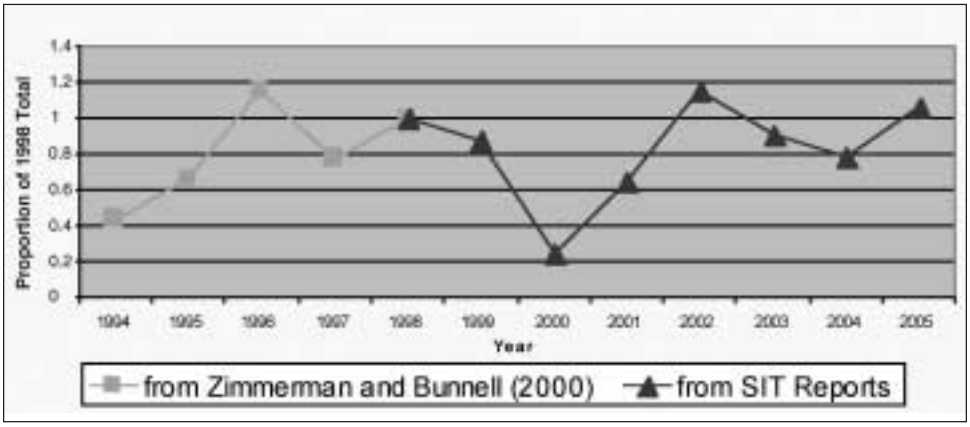

Figure 2—Number of Wildland Fire Use events on National Park Service and USDA Forest Service lands, 1994 through October 2005.

Note: Data from 1994 to 1998 are from Zimmerman and Bunnell (2000); data from 1998 to 2005 are derived from the final Incident Management Situation Report for each year (see http://iys.cidi.org/wildfire/). The two data sets share only 1998 in common, and because the values are different in each data set, the number of WFU events is normalized to a common 1998 value for display.

Barriers to Implementation

For better or worse, environmental policy in the United States largely tends to be written in a way that *allows* for good decisions to be made but does not *require* those decisions to be made. To the extent that WFU is implemented, it is a direct result of the commitment of dedicated professionals who are willing to take risks for the benefit of the land. Managers face a number of impediments, many of which have been discussed in the policy reviews cited above. Here, I classify them into three groups for discussion: attitudinal, institutional, and political barriers.

Attitudinal Barriers

Attitudinal barriers are those impediments to WFU resulting not from policies per se, but from individuals' beliefs. These barriers may apply to wilderness managers themselves, but more often, they apply to their superiors, who are in positions to influence fire use decisions. First and foremost among these barriers is the legacy of "suppression bias" afflicting land management agencies. Most agency personnel are trained in the techniques of fire suppression; they perceive themselves to be suppression professionals whose job it is to put fires out, not to let them burn. The very idea of letting a natural fire burn may be anathema

to them, and this bias can be an impediment to wilderness fire.

Another attitudinal barrier is the fact that wilderness managers often do not perceive tremendous support within their agencies. In some agencies, such as the Forest Service and Bureau of Land Management, wilderness management was traditionally relegated to "lesser" subdivisions of the bureaucracy, such as recreation or cultural resources, and not considered by some senior managers as part of the core mission of the agency. As a result, wilderness management, and maintaining wilderness fire in particular, was considered "somebody else's job" and consequently was not supported by superiors responsible for making WFU decisions.

One especially challenging attitudinal barrier results from the sheer difficulty of managing wilderness fire. Whether the perceptions are of altered ecosystems resulting from fuel buildups, threats of invasive plants, presence of threatened or endangered species, or of fragmented ownership and the proliferation of the wildland–urban interface, many managers perceive the job of fire restoration as prohibitively difficult.

Institutional Barriers

Although attitudes can prevent some managers from considering WFU, the dedicated manager, who understands WFU as part of the job, can still run into impediments and disincentives. Institutional barriers result from procedural requirements of WFU itself and from other forces external to wilderness fire. An example of the former is the additional *process* required by WFU. A WFU decision requires that a sound fire management plan (FMP) has been developed that provides for WFU. While FMPs exist for most federal administrative units, many are out-of-date and do not allow for WFU. Bringing an FMP into compliance with fire policy represents extra work for the managers. Similarly, implementation of WFU requires the preparation of a Wildland Fire Implementation Plan (WFIP) during the fire event, which some managers may see as "more trouble than it's worth." Often, risk aversion in advance of a fire has led to such small "burn windows" (i.e., the envelope of fuel, weather, and topographic conditions inside of which WFU could be allowed) that it is difficult even to produce an implementable WFIP.

Another procedural barrier to implementing WFU is the requirement to arrange for emergency suppression personnel and equipment to be on hand, should conditions change and the fire exceed prescription. Also, certain types of experts, such as long-term fire analysts and fire behavior analysts, which are not typically staffed on site, must be brought in to help manage a WFU event.

Another type of institutional barrier is disincentives (or, often, simply the absence of incentives) to make the WFU decision. For example, under the National Fire Plan, agency managers are under tremendous pressure to show that they have addressed hazardous fuel conditions through fuel treatments such as prescribed fire and thinning. The "acres treated" are reported back up through the agency and serve as a basis for determining future budgets. Historically, WFU acres were considered fuel treatments and counted toward the hazard reduction goal; however, a change in policy in 2003 prevented wildland fire use events from being counted as "acres treated," thus removing a powerful incentive to implement WFU (Gregory 2005). Similarly, WFU events, because they are managed for resource benefit, are not eligible for postfire emergency stabilization funds. Therefore, a manager who otherwise wants to restore fire, but who is concerned about possible undesirable effects, is less inclined to choose WFU because funds will not be available to mitigate damage.

There are many excellent managers distributed around the federal agencies who support wilderness fire, but they struggle against a culture of suppression.

As powerful as these disincentives are, none is as powerful as individual exposure to liability. A fire manager who selects the option of WFU is exposing him/herself to tremendous personal and professional risk. No one has ever been faulted for making the decision to suppress fire, but careers have ended as a result of decisions to allow fire. Until line officers are provided some limitation from liability—and provided a formal incentive to support wilderness fire—fear of professional exposure will continue to affect fire use decision making.

Political Barriers

Even if a manager has a positive attitude toward wilderness fire and can overcome institutional barriers, external political influences can hinder WFU. Although the benefits of fire have been well-known to the scientific community for years, the public has been slow to embrace them. People, understandably, remain

Figure 3—Smoke from a wilderness fire. Because of the way air quality laws are written, natural fire is often subordinated to these interests, and many WFU events have been extinguished to make room in the airshed for other sources of pollution.

concerned for their safety in the event of fire, and sensationalist media coverage has not helped to educate them on the nuances of fire ecology. Recent public opinion polling has shown that public acceptance of fire has increased, but managers' perceptions of public fear can dissuade the fire use decision. Similarly, public concerns about smoke, whether for nuisance or health reasons, can translate into political pressure to extinguish WFU events or avoid them altogether. This pressure can be especially strong from communities that depend on tourism for their economic base.

Another source of external pressure comes from commercial interests that oppose fire. Particularly powerful among them are other "airshed consumers," such as agriculture or electric power, that depend on their ability to pollute, and see natural fire as competing with their interests. Because of the way air quality laws are written, natural fire is subordinated to these interests, and many WFU events have been extinguished to make room in the airshed for other sources of pollution (see figure 3).

Policy Solutions

Although many of these challenges have no easy solutions, there are some changes that could be made relatively quickly to improve prospects for wilderness fire. One of the most important is to establish a supportive culture within agencies. There are many excellent managers distributed around the federal agencies who support wilderness fire, but they struggle against a culture of suppression. Strong statements of support from agency leaders, matched by supportive budgets, would send a loud signal that "It *is* your job!" Directions could begin with notification that revised Land and Resource Management Plans should be developed to maximize the use of fire as a management tool, and fire management plans should be developed to maximize the conditions under which WFU may be implemented. Most important, though, is for managers to know that their WFU decisions will be supported at the top levels. Therefore, establishment of policies limiting personal liability if the proper decision-making process is followed is likely to have a greater effect than any other single change.

A complementary policy change that is likely to have far-reaching effects would be to provide incentives for WFU, such as the institution of formal performance measures that encourage WFU decisions. An obvious example is to restore the counting of WFU events as "acres treated" under the National Fire Plan. Another would be to track the proportion of planning areas in which WFU may be considered or the number of candidate ignitions that are classified as WFU events. Of course, decisions to implement WFU must be supported by adequate resources for the development of good FMPs, resources (both personnel and budgets) to manage WFU events, and access to emergency stabilization money, should damage occur during WFU events.

Another important way in which policy can support WFU is to fund research to solve the difficult challenges of fire management. Questions remain about appropriate "burn windows," effects on invasive species, quantifying benefits, and mitigating risk to communities. Fire managers need good tools for analyzing where and when WFU is appropriate (see figure 4). Recent research combining fire behavior analysis and GIS/remote sensing has dramatically improved our ability to model various real-world scenarios. Continued funding of wilderness fire

Figure 4—Firefighters from the Kings Peak Fire Use Module monitoring weather on a WFU event. WFU depends on managers who are willing to take risks for the good of the land. Photo by Northern Arizona Type 2 Incident Management Team.

research will help address the uncertainties and resulting fears that currently prevent managers and the public from taking full advantage of WFU.

Policies should also support public education about the benefits of fire to wilderness ecosystems and to people. Smokey Bear and other fire prevention programs have proven the effectiveness of public education. Similar efforts aimed at increasing public knowledge about fire, particularly efforts aimed at changing sensationalist media coverage, could also mitigate public fear and produce a society supportive of wilderness fire. A better understanding of fire ecology will be necessary among the public, but especially among air quality regulators, before policies can be developed that simultaneously address human health effects of smoke and sustain healthy wildland ecosystems.

Finally, perhaps the most important policy step that can be taken is to address public fear through necessary fuel treatment work in and around communities to lower fire danger. Only when people begin to feel safe in their homes will they warm to the idea of expanded wilderness fire. Resources are urgently needed to support planning and implementation of fuel treatment on private lands where the community protection challenge is most acute. **IJW**

REFERENCES

Agee, J. K. 2000. Wilderness fire science: A state-of-knowledge review. In *Wilderness Science in a Time of Change Conference, Volume 5: Wilderness Ecosystems, Threats, and Management*, comp. S. F. McCool, D. N. Cole, W. T. Borrie, J. O'Loughlin, 5–22. May 22–26, 1999, Missoula, MT. Proceedings RMRS-P-15-VOL-5. Ogden, UT: USDA Forest Service, Rocky Mountain Research Station.

Arno, S. F., and C. E. Fiedler. 2005. *Mimicking Nature's Fire: Restoring Fire-prone Forests in the West.* Washington, DC: Island Press.

Gregory, L. 2005. Following the Money: National Fire Plan Funding and Implementation. Washington, DC: The Wilderness Society.

Kilgore, B. M. 1986. The role of fire in wilderness: a state-of-knowledge review. In *Proceedings: National Wilderness Research Conference: Issues, State of Knowledge, Future Directions*, , 70–103, ed. R. C. Lucas. July 23–26, 1985, Fort Collins, CO. Gen. Tech. Rep. INT-220. Ogden, UT: USDA Forest Service, Intermountain Research Station.

Leopold, A. 1924. Grass, brush, timber, and fire in southern Arizona. *Journal of Forestry* 22(6): 1–10):

Leopold, A. S., S. A. Cain, C. H. Cottam, I. N. Gabrielson, and T. L. Kimball. 1963. Wildlife management in the national parks. *American Forests* 69(4): 32–35, 61–63.

Marshall, R. 1930. The problem of the wilderness. *Scientific Monthly* 30: 141–48.

Parsons, D. J. 2000. The challenge of restoring natural fire to wilderness. I*n Wilderness Science in a Time of Change Conference, Volume 5: Wilderness Ecosystems, Threats, and Management*, comp. S. F. McCool, D. N. Cole, W. T. Borrie, J. O'Loughlin, 276–82. May 22–26, 1999, Missoula, MT. Proceedings RMRS-P-15-VOL-5. Ogden, UT: USDA Forest Service, Rocky Mountain Research Station.

Parsons, D. J., and P. Landres. 1998. Restoring fire to wilderness: how are we doing? *In Fire in Ecosystem Management: Shifting the Paradigm from Suppression to Prescription*, ed. T. L. Pruden and L. A. Brennan, 366–73. Proceedings of the Tall Timbers Fire Ecology Conference, no. 20.

Pyne, S. J. 1995. Vestal fires and virgin lands. In *World Fire: The Culture of Fire on Earth*, 238–55. New York: Henry Holt.

Stoddard, H. L. 1935. Use of controlled fire in southeastern upland game management. *Journal of Forestry* 33: 346–51.

Wakimoto, R. H. 1990. National Fire Management Policy. *Journal of Forestry* 88(10): 22–26.

Weaver, Harold. 1943. Fire as an ecological and silvicultural factor in the ponderosa pine region of the pacific slope. *Journal of Forestry* 41:7-15.

Zimmerman, T., and D. Bunnell, 2000. The Federal Wildland Fire Policy: Opportunities for wilderness fire management. In *Wilderness Science in a Time of Change Conference, Volume 5: Wilderness Ecosystems, Threats, and Management, comp. S. F. McCool, D. N. Cole, W. T. Borrie, J. O'Loughlin*, 288–97. May 22–26, 1999, Missoula, MT. Proceedings RMRS-P-15-VOL-5. Ogden, UT: USDA Forest Service, Rocky Mountain Research Station.

GREGORY H. APLET is senior forest scientist in The Wilderness Society's Denver office, at 1660 Wynkoop Street, Suite 850, Denver, CO 80202, USA. greg_aplet@tws.org.

From WILDERNESS FIRE MANAGEMENT on page 21

ume 5: Wilderness Ecosystems, Threats, and Management, comp. D. N. Cole, S .F. McCool, W. T. Borrie, and J. O'Laughlin, 276–82. Proceedings RMRS–P-15-Vol-5. Fort Collins, CO: USDA Forest Service, Rocky Mountain Research Station.

Parsons, D. J., and P. B. Landres. 1998. Restoring natural fire to wilderness: How are we doing? Proceedings of the Tall Timbers Fire Ecology Conference, No. 20, 366–73.

Radeloff, V. C., R. B. Hammer, S. I. Stewart, J. S. Fried, S. S. Holcomb, and J. F. McKeefry. 2005. The wildland-urban interface in the United States. *Ecological Applications* 15:799–805.

USDA and USDI 2001. *Review and Update of the 1995 Federal Wildland Fire Management Policy*. Washington, DC: United States Department of Agriculture and United States Department of the Interior.

USDA and USDI. 2003. *Interagency Strategy for the Implementation of Federal Wildland Fire Management Policy*. June 20. Washington, DC: United States Department of Agriculture and United States Department of the Interior.

USDA and USDI 2005a. *Wildand Fire Use Implementation Procedures Reference Guide*. May. Washington, DC: United States Department of Agriculture and United States Department of the Interior.

USDA and USDI 2005b. Interagency standards for fire and fire aviation operations. In *Fire Management Planning*, ch. 8. Washington, DC: United States Department of Agriculture and United States Department of the Interior. http://www.fire.blm.gov/Standards/Redbk/Chapter08.pdf.

USDA and USDI 2005c. Quadrennial fire and fuel review report. Final content draft for comment. May 20.

CAROL MILLER is a research ecologist, studying how to steward fire as a process in wilderness, at the Aldo Leopold Wilderness Research Institute in Missoula, Montana. She can be reached at cmiller@fs.fed.us.