

Chapter 11

Burn, Baby, Burn? fire in the wilderness

Saying they didn't know it was a dry year is hogwash. Every farmer in this region knew, yet these so-called naturalists and inflexible bureaucrats went ahead with their “let 'er burn” policy — picking the driest year in 50 years to experiment with a national treasure.

— David Flitner, president, Wyoming
Farm Bureau (1988) {Satchell &
Dworkin 1988: 15}

It's not a fluke, it's not just the drought, and it's not careless smokers. Decades of all-out logging and all-out fire suppression torched Yellowstone in 1988, ignited the fatal Colorado fire last summer, and set the stage for the thousands of fires in between. And this summer, the West will burn again.

— High Country News (1995) {Fires
Next Time 1995}

On June 23, 1988, lightning struck the Yellowstone wilderness near Shoshone Lake, igniting a fire. It had happened every summer for a hundred years, but this fire did not go out. Yellowstone's summer of fire had begun. The summer proved to be the driest on record. Lightning strikes were more than double the normal frequency, and the winds gusted to 80 miles per hour. Eventually more than fifty wildfires burned more than one million acres in and adjacent to Yellowstone National Park {Wuerthner 1988: 5, 17-18}. Americans watched on television as Yellowstone burned. Some sought to understand the cause, others to fix the blame. America's premier treasure appeared to be perishing in flames. Never before, nor since, had America's attention been so focused on wilderness fire.

Introduction

Fire provides a classic example of policy evolution led primarily by advances in science. The wilderness idea came of age in an era when uncontrolled fire was regarded as an unequivocal evil. Such a straight-forward view produced equally unambiguous policy: suppress all fires regardless of source. Over time fire historians and ecologists came to understand that many of the natural areas preserved in the wilderness system had been the product of natural processes that included regular fire. Fire's absence, not its presence, was unnatural. This insight suggested a policy of suppressing only the fires caused by people. More recently still science has come to appreciate that aboriginal peoples also had a role in the fires that produced conditions we have come to view as “natural.”

Fire science is but one constituency among many seeking to influence the management of fire in American wilderness. Even if it were not, many questions would remain. Should wilderness managers be setting fires in an effort to replicate the effects of aboriginal peoples? Should fires be set to correct the damage to natural conditions brought about by decades of fire suppression? Do we know enough to be making these decisions, or are we just kids with matches playing god?

What is the proper relationship between wilderness and fire? Should wilderness fire be managed? If so, how? Science might suggest theoretical answers, but wilderness managers are called upon to balance science and politics. The practical realities of wilderness fire are complex, and the stakes are high. Fire may be an important part of the ecosystem being preserved in wilderness, but the results of fire are rarely popular in the short run. Few Americans regard burned landscapes as beautiful; few would choose them as recreational destinations. The ecological benefits of fire are long-term, the costs to aesthetics and recreation are immediate. The economic contribution of wilderness to the surrounding areas are generally a function of aesthetics and use, not of naturalness. Wilderness areas are likely to contain inholdings, where private owners regard fire as a catastrophe. Throughout America wilderness areas are separated from non-wilderness lands only by lines on a map. Fire is no respecter of legal distinctions, yet on most adjacent lands the expectation of a century is that government will fight fire, not encourage it.

Whereas science increasingly teaches the importance of fire in the maintenance of natural ecosystems, every political consideration works to resist the policy that science would recommend. The well founded fear of being blamed for a politically unpopular result virtually guarantees that wilderness fires will be fewer and farther between than they were in the era before European settlement of North America.

In this chapter we will explore the evolution of scientific thinking about what's natural with respect to fire. We will examine the issues raised for wilderness land managers by an evolving science and how managers have responded. We will return to the fires of 1988, the controversies they fanned, and the continuing questions about what constitutes appropriate fire policy for the American wilderness.

Early History of Wilderness Fire

It is hard to object to Stephen Pyne's observation that, "[m]ost fire regimes are the product, directly or indirectly, of human activities; their fire history cannot be separated from human history" {Pyne 1984: 232}. Clearly, North America was home to fire ignited by lightning long before it was settled by the aboriginal Americans who came here from Asia. But humans have used fire for thousands of years, and aboriginal Americans were no exception. The landscapes viewed by the first European observers were shaped, in varying degrees, by fire, and the origins of that fire were both meteorological and anthropogenic. The resulting landscapes might be regarded as "natural," but they were not unaffected by "the works of man."

It is now widely accepted that the advance of European settlement in North America has resulted in more woody plants and less grass and that this change in the landscape has been the result of reduced burning. This was no accident. Europeans viewed uncontrolled fire as an evil to be avoided where possible and suppressed where it occurred. The first national parks and national forests seemed to call out for protection — especially protection from fire. Indeed, the perceived

need for fire protection was central to the decision to assign the management of Yellowstone to the Army in 1886. Ten years later a committee of the National Academy of Sciences recommended military management of all the national parks and forests. Instead, the national forests were transferred to the Agriculture Department's Bureau of Forestry headed by Gifford Pinchot. The Forest Service view of scientific timber management had no place for wildfire, and the Forest Service quickly became the central agency in a national policy of forest fire suppression {Pyne 1984: 239}.

By 1916 Americans had determined, as a matter of policy, that national parks and national forests would be managed by different agencies for different purposes. The forests were to be devoted to timber culture and watershed protection and -- as time passed -- increasingly to livestock grazing, mining, and other beneficial pursuits. The parks, by contrast were devoted to nature preservation and tourism. Despite these important differences, where fire was concerned suppression was the rule, and it applied everywhere. National park fire specialists James K. Agee and Jan van Wagtenonk have argued that the policy of total fire suppression was implicit in the language of the National Park Service Act, which called for preserving “natural and historic objects and wildlife” rather than preserving natural processes {Agee 1974: 28; van Wagtenonk 1978: 325}. National park historian Richard West Sellars saw early park service fire policy as a reflection of the agency's commitment to scenery and tourism management at the expense of ecological integrity. The park service sought to promote a pastoral scene of natural peace and harmony, and “violent disruptions like raging, destructive forest fires blackening the landscapes, or flesh-eating predators attacking popular wildlife” were inconsistent with the pastoral ideal {Sellars 1997: 70}.

The Advent of Fire Ecology

At the turn of the century science and politics were of one mind about forest fire, but the consensus would not last. It was destined to be undermined — not by politics — but by science. As early as 1924, wilderness luminary Aldo Leopold was thinking about the role of fire in the natural environment and questioning the proposition that it was necessarily unhealthy. Writing about the Southern Arizona foothills in the *Journal of Forestry*, he hypothesized that “Previous to the settlement of the country, fires started by lightning and Indians kept the brush thin, kept the juniper and other woodland species decimated, and gave the grass the upper hand with respect to the possession of the soil” {Leopold 1924: 2-3}. Ever the keen observer, Leopold continued:

We have learned that during the pre-settlement period of no grazing and severe fires, erosion was not abnormally active. We have learned that during the post-settlement period of no fires and severe grazing, erosion became exceedingly active. . . . Until very recently we have administered the southern Arizona Forests on the assumption that while overgrazing was bad for erosion, fire was worse. . . . In making this assumption we have accepted the traditional theory as to the place of fire and forests in erosion, and rejected the plain story written on the face of Nature {Leopold 1924: 5-6}.

Leopold was not alone in questioning the anti-fire orthodoxy, and he was not first. In the South a

group of fire scientists known as the Dixie Pioneers demonstrated that prescribed burning could be beneficial to species as diverse as long-leaf pine, cattle, and quail. Near mid-century researchers working in the West concluded that frequently low-intensity fires were a natural component of ponderosa pine forests, and their absence posed a serious hazard. After World War II the research of William B. Robertson, Jr., in the Florida everglades and Miron Heinselman in the lake country of northern Minnesota contributed new insights regarding the centrality of fire in these ecosystems {Kilgore & Heinselman 1990: 300}.

Professional bureaucracies always resist policy change. It's uncomfortable to admit that long-standing decisions might have been wrong, and by the 1960s the policy of total fire suppression in national parks and national forests was half a century old. Nevertheless, the cumulative effect of increasingly widespread fire research could not be ignored indefinitely, especially when the nation was becoming increasingly concerned about environmental protection. The Wilderness Act itself was a manifestation of that concern, but there is scant evidence that it had any measurable effect on fire management. Indeed, the Wilderness Act's only mention of fire clearly accepted — even if it did not explicitly endorse — the policy of total suppression: “such measures may be taken as may be necessary in the control of fire. . .” (Section 4(d)(1)).

Change came to the Park Service first, and it came grudgingly. The Park Service was unequipped to do serious science and found it an unwelcome intrusion in an organization that had flourished by putting engineering and law enforcement to work in the service of tourism. Most sources within the Park Service trace the beginning of the change to the *Leopold Report*.

In the spring of 1962 Interior Secretary Stuart Udall commissioned a study of wildlife management in the national parks, mostly in response to concern about booming ungulate populations (see Chapter XX). The advisory board had a high profile. Collectively, its four members had directed the fish and wildlife services of Arizona, Colorado, and the United States; presided over the National Parks Association, the National Wildlife Federation, the World Wildlife Fund, and the Wildlife Management Institute; and held numerous prestigious academic posts. The board was chaired by A. Starker Leopold, professor of zoology at the University of California at Berkeley, president of the California Academy of Sciences, and son of the legendary Aldo Leopold. Reflecting the cutting edge of wildlife science, the advisory board presented its recommendations for wildlife management in the context of broad recommendations for ecological management of the national parks based on serious science. Later the same year, a report by the National Academy of Sciences also concluded that the ecological sciences should play a greater role in the management of the parks {Sellars 1997: 215}. These reports posed a serious challenge to standard operating procedure in the parks, and they had implications for fire as well as for wildlife.

The Leopold Report's central recommendation — “that the biotic associations within each park be maintained, or where necessary recreated, as nearly as possible in the condition that prevailed when the area was first visited by the white man” — implied a rejection of simple-minded fire suppression. The advisory board quoted with approval a 1962 report, “Management of National

Parks and Equivalent Areas,” issued by the First World Conference on National Parks, which had concluded that “fire is an essential management tool to maintain East African open savanna or American prairie” {Leopold, et al. 1963: II}. The report criticized “unnatural protection from lightning fires” and the “dog-hair thickets” that result from fire suppression and threaten the big-tree forests of Lassen, Yosemite, Sequoia, and Kings Canyon national parks {Leopold, et al. 1963: II-III}. “Of the various methods of manipulating vegetation,” the report noted, “the controlled use of fire is the most 'natural' and much the cheapest and easiest to apply” {Leopold, et al. 1963: IV}. Everglades National Park was commended for its experimental use of controlled burning “to maintain the open glades and piney woods” {Leopold, et al. 1963: II}.

The report drew serious attention in the conservation community. *National Parks Magazine* praised the report and published the complete text as an insert in its April 1963 issue. *American Forests* also reprinted the full report {Leopold, et al. 1963a}. The reception within the National Park Service was less enthusiastic. Richard Sellars has noted that, although the Leopold and NAS reports were publicly embraced by park service leadership, their recommendations were not particularly welcome. Serious implementation of the recommendations would have vastly increased the power of scientists in park management. Any such change presented a direct threat to the historic power of the park superintendents and the ranger corps {Sellars 1997: 217-219}.

“Natural” Fire Restored to Wilderness

Official policy changed in 1968, when the Park Service abandoned its policy of suppressing all fires. The new policy declared:

The presence or absence of natural fire within a given habitat is recognized as one of the ecological factors contributing to the perpetuation of plants and animals native to the habitat.

Fires in vegetation resulting from natural causes are recognized as natural phenomena and may be allowed to run their course when such burning can be contained within predetermined fire management units and when such burning will contribute to the accomplishment of approved vegetation and/or wildlife management objectives.

Prescribed burning to achieve approved vegetation and/or wildlife management objectives may be employed as a substitute for natural fire {USDI-National Park Service 1968}.

Implementation of the new policy was both spotty and controversial. Important early changes took place in the mountain parks of California, where fire ecology studies had been going on for some time. Fire specialists including Bruce M. Kilgore, James K. Agee, David J. Parsons, David M. Graber, and Jan W. van Wagtenonk compiled fire histories, studied vegetational succession, and eventually crafted fire management plans that allowed lightning-ignited fires to burn in some areas and prescribed management ignitions in other areas to reduce fuel loadings. The first

natural fire zone was established at Sequoia-Kings Canyon in 1968. Yosemite followed in 1972. At Everglades National Park, where experimental burning had taken place since the 1950s, some natural fire fires were allowed to burn beginning in 1968. By 1974 policies other than total suppression were in effect at Carlsbad Caverns, Grand Tetons, Guadalupe Mountains, North Cascades, Rocky Mountain, and Yellowstone national parks, and Saguaro National Monument {van Wagendonk 1978}.

Advocates of these programs argued that fire reintroduction was essential to reduce fuels, prevent catastrophic conflagrations, and restore natural conditions in fire-dependent ecosystems. Parsons and others associated with fire management in California parks advocated a policy of natural regulation: the “principal aim of National Park Service resource management in natural areas should be the unimpeded interaction of native ecosystem processes and structural elements” {Parsons, et al. 1986: ?}. It was to this end that natural fire and prescribed fire zones had been established in the California parks. To the contrary, argued forestry professors Thomas M. Bonnicksen and Edward C. Stone: without clear, quantitative standards of naturalness, the park service cannot know whether its liberalized fire policy is a success or a failure. Establishing those standards requires exceptionally careful study of the existing forests. Rather than study the forests, said Bonnicksen and Stone, the park service was burning the evidence {Bonnicksen & Stone 1982; Bonnicksen & Stone 1985}.

The Forest Service soon followed the lead of the Park Service, modifying its historic commitment to total suppression for wilderness areas under its management. In the early 1970s the Forest Service permitted some lightning ignitions to burn in wilderness. In 1978 fire management programs replaced fire control programs, and the authority to approve wilderness fire management plans was delegated to regional foresters. A revision of policy in 1985 allowed for management ignitions as well {USDA & USDI 1989: 25663; Kilgore & Heinselman 1990: 306}. The *Forest Service Manual* declared that “the objectives of fire management in wilderness are to:

1. Permit lightning caused fires to play, as nearly as possible, their natural ecological role within wilderness.
2. Reduce, to an acceptable level, the risks and consequences of wildfire within wilderness or escaping from wilderness” {USDA-Forest Service 1986: §2324.21}.

The Forest Service propensity toward a light touch in wilderness management was manifested in its new fire regulations. Its policy differed significantly from that of the Park Service. In national forest wilderness prescribed fire was permitted only in service of naturalness and safety; it was not to be used “to benefit wildlife, maintain vegetative types, improve forage, or enhance other resource values.” Management ignitions were not to be used where objectives could be achieved by natural ignition {USDA-Forest Service 1986: §2324.22}.

The first fire management area in national forest wilderness was the White Cap, 100 square miles of the Selway-Bitterroot Wilderness in Idaho. Studies began in 1970, and the fire management zone was approved in 1972. Shortly thereafter a 33,000 acre fire management area was established in the Forest Services oldest wilderness, the Gila in New Mexico {van Wagendonk

1978: 332}.

The early experiences with more natural fire regimes were regarded as successful in both the Park Service and the Forest Service. In 1985 Bruce Kilgore reported to the National Wilderness Research Conference that “lightning-caused fires are allowed to burn on 7 million designated acres in 16 areas managed by the National Park Service and on 9 million designated acres in 18 National Forest Wildernesses” {Kilgore 1985: 86}. By 1987-1988 more than 2,400 natural ignitions and 1,100 human ignitions had been allowed to burn. Most of the natural ignitions and nearly all of the human ignitions were in the national parks {USDA & USDI 1989: 25669}. The largest reported by Kilgore was the 16,300-acre Independence Fire, which burned for approximately three months in 1979, in the Selway-Bitterroot Wilderness of Idaho. According to Kilgore fire-management success stories included Sequoia-Kings Canyon, Yosemite, and Everglades national parks and the Selway-Bitterroot Wilderness Area. Of particular interest was the interagency cooperation going on in the Greater Yellowstone ecosystem {Kilgore 1985: 86-87}.

Greater Yellowstone is one of many places where national forest and national park wilderness are separated only by a line on the map, and fire is notoriously lax in its respect for such distinctions. With both agencies moving toward greater use of fire as a wilderness management tool, interagency coordination of wilderness fire policy was sensible but hardly inevitable. Agency sensibilities were placated, and a cooperative natural-fire plan was approved in 1982 for areas totaling more than 4 million acres in Yellowstone and Grand Teton national parks and the adjacent Teton, Washakie, North Absaroka, and Absaroka-Beartooth wilderness areas. In 1985 Kilgore presciently observed that “while there has not yet been a test of how this interagency fire management concept will work, such opportunities will present themselves in the future” {Kilgore 1985: 87}.

Although the changing fire regime was considered a success, its spread was uneven. Both agencies required approval of detailed, site specific fire management plans without which total suppression remained the rule. In national forest wilderness prescribed management fires remained very rare. As enthusiastic as some fire ecologists were about the natural and proper role of fire in wilderness, they understood that when you play with fire, you can get burned. As long as the national policy was suppression, fire catastrophes were acts of god. With the advent of management fire, all that changed. If a prescribed burn were to get out of control, the results might be catastrophic for lives and property and for any fire policy other than total suppression. The 1973 Fitz Creek Fire in the Selway-Bitterroot had burned beyond the prescribed natural fire zone. It was suppressed where it exceed the boundaries but allowed to burn elsewhere to general satisfaction {Kilgore 1985: 87}.

Elsewhere there had been reminders of fire's inherent danger. On July 30, 1976, lightning ignited the Walsh Ditch Fire within a wilderness portion of the Seney National Wildlife Refuge in Michigan's Upper Peninsula. Although there was no formal plan in place for prescribed fire on the refuge and there were no fire experts on the scene to manage the fire, refuge officials

expected it would burn out and treated it as a prescribed natural fire. In three weeks the fire had spread to 1,800 acres. One week later the fire had grown to more than 20,000 acres. On August 22 the leading edge of the fire moved six to eight miles, burning beyond the refuge onto state and private lands. By the time it was eventually contained in September, the Walsh Ditch Fire had a perimeter of 88 miles and had affected an area of 72,500 acres, nearly three times the size of the Seney Wilderness. Stephen Pyne reports several other examples of prescribed natural fire gone bad in the final chapter of his *Introduction to Wildland Fire* {Pyne 1984: 428-433}.

The Firestorm of 1988: Yellowstone & Washington, D.C.

Still nothing had prepared wilderness fire managers for the fires of 1988. There were wildfires across the West, but the fires in and around Yellowstone National Park galvanized the attention of Americans in an unprecedented way. As a natural calamity, the fires seemed comparable to the eruption of Mount Saint Helens or to Hurricane Hugo. But there were two pivotal differences. First, the major damage done by Helen and Hugo was inflicted in a matter of days. The fires of Yellowstone blazed for months -- long enough to capture and hold public attention. Second, Helen and Hugo were generally viewed as acts of god. As such, they created victims but not villains. The Yellowstone fires captured public attention only after they had become uncontrollable. When attention came, it was critical. Americans — whose views of wilderness fire had been shaped by Walt Disney's Bambi and the Forest Service's Smokey Bear — heard that the park's stewards had adopted a policy of “let burn.” America's best loved real estate was burning up, and someone was surely to blame.

Just over one month after the first ignition near Shoshone Lake, the fires became news. In a two month period during the height of the fire season Yellowstone National Park staff assisted more than 3,000 media representatives {Greater Yellowstone Coordinating Committee 1989: 145}. From the beginning some headlines were apocalyptic. On July 26 the *Christian Science Monitor* trumpeted, “Western fires destroy 40,000 acres of forest in Yellowstone” {Associated Press 1988.} The *New York Times* was generally more dispassionate, but on August 22, it reported “the worst day of fires in the park's history” {Robbins 1988}. Three days later, the *Des Moines Register* warned, “scenic falls threatened by fire” {Associated Press 1988a}. The finger pointing started in July. By September 5 it had reached the headlines as *Time Magazine* titled its coverage with a fire fighter's complaint: “We could have stopped this” {Zuckerman 1988}. The same day *Newsweek* proclaimed, “Yellowstone: up in smoke” {Lerner 1988}. On September 9, newspapers across the country reported that Yellowstone was closed. On the 10th the *Times* headlined, “park and forest chiefs assailed on fire policy” {Shabecoff 1988}. That same day, Interior Secretary Hodel provided ammunition to those critical of park policy, proclaiming the Yellowstone fires “devastating” and “a disaster” {Robbins 1988a}. On the 18th, Alston Chase, the most famous critic of Yellowstone park management, weighed in condemning both fire suppression and the park's prescribed natural fire policy {Chase 1988} and the *Rocky Mountain News Sunday Magazine's* cover story was titled “A Legacy in Ashes: Yellowstone” {Legacy in Ashes 1988}. That week *Time Magazine* reported as a matter of fact that “The fires have ruined 1.2 million acres of Yellowstone and adjoining national forests” {Yellowstone: A Hot 1988}.

Long before the fires were out, politicians from Montana and Wyoming had called for the resignation of parks director William Penn Mott, Jr., and the mass media were voicing concern with fire policy: “Burn baby burn! Stop baby Stop!” {Satchell & Dworkin 1988}; “Did the Park Service fiddle while Yellowstone burned?” {Symonds & Cahan 1988}; “The worst fires in 300 years scorch America's park” {Worst Fires in 1988}. I worried publicly that the political damage to the parks would exceed any damage the fires might have done {Allin 1988}.

The reality of the Yellowstone fires was more complicated. Fire has been a regular feature of the Yellowstone region for a very long period of time. George Gruell's fire histories for the park and surrounding region indicate major fires in 1765, 1840, and 1865 and many fires between 1878 and 1885. Yellowstone's petrified trees contain fossilized fire rings attesting to fire's presence in prehistory. Fire suppression began in 1886 with the arrival of the Army. Indeed the Army's attempt to control the Bunsen Peak fire that year is thought to be the federal government's first effort at fire suppression. It was unsuccessful. Major fires burned in the park in 1919, 1931, and 1940. All were aggressively suppressed at considerable expense. In the period between 1972, when Yellowstone adopted its policy of prescribed natural fire, and 1987 there were 369 recorded fires resulting from lightning strikes of which 136 were suppressed. Most burned less than one acre; collectively they burned 36,000 acres {Wuerthner 1988: 7-13}.

The fires of 1988 were a result of policy and weather. As the 1988 fire season approached, it was apparent to the park's managers — and to most scientists — there had been too little fire in the recent history of the Yellowstone ecosystem. Park managers were committed to a policy of natural regulation, so they declined to set fires themselves. Without any management fires, each natural ignition was a precious opportunity to advance the park's natural management goals. Fire was welcomed, and policies that would have worked to limit its effects were not rigorously enforced. According to one of the participants, the interagency fire policy review team — convened in response to the fires of 1988 — found fire management plans in conformity with current policies except in the Park Service, where some “plans contained no criteria or written prescriptions” {Wakimoto 1989: 38}. Ronald Wakimoto, a technical adviser to the review team, reported that “[t]he Yellowstone National Park plan stood out as a particularly bad example of this tendency” {Wakimoto 1989: 38}. He also noted that many of Yellowstone's fire managers had taken classroom instruction but lacked appropriate fire experience {Wakimoto 1989: 39}.

Despite the celebration in 1982 of a coordinated fire management plan for national parks and national forest wilderness in the Greater Yellowstone area, the degree of coordination was clearly limited. Different rules applied in different areas. Grand Teton and the national forest wilderness areas had clear fire prescriptions, which Yellowstone lacked. Management behavior reflected those differences. In the 1988 fire season Bridger-Teton and Custer national forests and Grand Teton National Park permitted only 3 of 60 ignitions to burn under prescription. Yellowstone National park allowed 28 of 51 ignitions to burn, only to see 16 of them later declared to be wildfires {Wakimoto 1989: 38}.

A second factor was weather. 1988 was destined to be a major fire year, and it was. Drought

conditions prevailed in much of the West. By the end of July major wildfires were burning in Alaska, Arizona, California, Oregon, Washington, Idaho, Montana, Colorado, South Dakota, and Utah, as well as elsewhere in Wyoming. Portions of Rapid City were being evacuated. A month later the *New York Times* reported that there had been 66,895 forest and brush fires so far, “the worst fire season since 1919” {Wilson 1988}. In Yellowstone 1988 proved to be the driest year in recorded history. Winds sometimes reached hurricane force, and lightning strikes were more than double the normal frequency {Wuerthner 1988: 18}.

Still Yellowstone's season of fire began innocuously enough. May 24 a tree in the Lamar Valley was struck by lightning, burst into flame, and burned for several hours before being extinguished by rain. June 14 lightning ignited the Storm Creek Fire in Custer National Forest, followed in late June and early July by the Shoshone, Fan Creek, Red, Mist, Clover, and Falls fires in Yellowstone and the Mink Creek Fire in the Teton Wilderness. All were lightning ignitions, and the total acreage burned was 8,600 — about 1/5 of one percent of the four-million acre fire management area. Nevertheless, on July 15 the forest service began suppression of the Mink Creek fire for exceeding a 1,000 acre prescription, and the Park Service decided to suppress all new fires. One day later suppression began on the Falls fire. July 22 a wood cutter on the Targhee National Forest flipped a cigarette igniting the North Fork Fire; suppression efforts began immediately. Strong winds fanned the flames and hindered the hundreds of firefighters now battling the blazes.

By July 27 88,000 acres had burned. Interior Secretary Hodel visited the park and reaffirmed the ecological value of the fire. As if in response to the encouragement, the Clover-Mist fire complex grew by more than 20,000 acres overnight. August 1 the Fan Creek Fire threatened to burn out of the park onto land owned by the Church Universal and Triumphant, and the church threatened to sue. By August 10, 195,000 acres had burned in the park. On August 20, “Black Saturday,” 80 mile per hour winds doubled the size of the fires overnight. The Yellowstone fires made headlines across the nation. By September 1 more than 9,000 firefighters were at work including the first army troops to fight fire in Yellowstone since 1918. September 7, Old Faithful Inn barely escaped being consumed by the North Fork fire, while residents of Cooke City were evacuated. Just four days later -- and about a month behind schedule -- snow fell, the fires cooled, the park reopened, and the emergency was over {Wuerthner 1988: 62-63}.

Attitudes and Ashes: a Philosophy of Wilderness Fire

A decade later, fire policy remains controversial, and almost any assertion about the fires of 1988 will be challenged. Getting to the bottom of the matter — even attempting to do so — requires that we disentangle some of the elements.

First, let's recognize the importance of context. A one-acre fire in a wooded wilderness is one element among many in a dynamic natural system. A one-acre fire in a city is a catastrophe. Whatever else it does, rational fire policy must be sensitive to context. Modern fire policy has been. As fire ecologists have become more convinced that fire is a required element in many natural ecosystems, policy has continued to call for total suppression when fire threatened life,

health, private property, or federal lands managed for purposes requiring suppression. Unfortunately, a single fire may be both boon and bane. Yellowstone's managers saw lightning-ignited fires in June and July as natural and healthy for the park's ecosystem, which was dominated by mature lodgepole pine, a fire-dependent conifer. But no one, including the park's managers, wanted to see the Old Faithful Inn, a national historic landmark, destroyed by fire. And no one -- at least publicly -- wished for the destruction of gateway communities like West Yellowstone, Silver Gate, and Cooke City. Yet the fires that may have benefitted the wilderness ecosystem were the same fires that eventually threatened lives, property, and historic preservation. A utilitarian view would require that we maximize the benefits of fire in contexts where fire is appropriate while minimizing the costs of fire in contexts where it is inappropriate. This requires knowledge of the benefits and costs and a sophisticated understanding of fire behavior.

Second, let's consider fire science. In 1988 fire science was a relatively new discipline. From the beginning fire research had been dominated by the Forest Service and devoted almost entirely to questions of fire suppression. By the late 1960s, however, Forest Service hegemony had been broken. Total suppression was hugely expensive and -- according to fire ecologists at the private Tall Timbers Research Station and in the National Park Service -- often inappropriate. Even the Forest Service reoriented its research program toward biology, ecology, and fire management rather than fire suppression {Pyne 1984: 326-331}. Nevertheless, predicting fire behavior remained an inexact science at best. It necessarily required detailed information about fuel types, fuel loads, and fuel moisture, as well as a command of relevant meteorological factors: temperature, humidity, wind speed and direction. It should not be surprising if scientific fire research that had been based on data acquired from small fires would be less effective in predicting the development and effects of larger fires.

Finally, let's focus in the specific question of wilderness fire. Clearly, the Wilderness Act allows fires to be suppressed, but it also calls upon wilderness managers to maintain natural conditions. The statute leaves lots of administrative latitude. Agency rule-making eventually fills some of the gaps, but individual managers must often fall back on their own training and values. Managers come to various conclusions, sometimes unarticulated, about what wilderness is and why it is to be protected.

In 1983 I interviewed dozens of wilderness managers across the West. I was struck by the absence of any uniform view of their responsibilities under the Wilderness Act. Rather than one view, I encountered four rather distinct philosophies wilderness management: ecological, historical, legalistic, and utilitarian. Each distinct philosophy produced a unique approach to the questions raised by wilderness fire {Allin 1985}.

The ecological view, widespread in the Park Service and among wilderness specialists in the Forest Service, gave primacy to preserving natural processes. The much-debated policy of "natural regulation" as practiced in Yellowstone National Park is a clear example. Under the ecological view natural fires ought to be allowed to burn to the maximum extent. No matter how

intense, such fires are part of nature, and nature itself is the object of protection in wilderness areas. By contrast a fire started by a camper or a cigarette from a passing car is unnatural and must be suppressed even if its biological effect appears to be identical to that of a natural fire. There is an element of humility in this view. Nature knows best; we can only screw it up.

The beauty of this approach is that it appears to embody the Wilderness Act's goal of natural forces "untrammelled by man." Its weakness is that it only appears to do so. Decades of fire suppression have altered fire-prone landscapes, guaranteeing that fires allowed to burn now will behave unnaturally.¹ Furthermore, even the nation's most aggressive natural fire program, in Yellowstone National Park prior to 1988, permitted only about half the natural ignitions to burn at all. Even assuming that a natural fire regime unaffected by human ignitions is the correct goal, no wilderness area in the contiguous forty-eight states is large enough to be let alone where fire is concerned. Fires will be suppressed for a multitude of reasons, and each suppression will reduce naturalness.

A second view was historical. It was rare in other agencies but common in the Park Service, perhaps because of its close association with the recommendation of the Leopold Report that "the biotic associations within each park be maintained, or where necessary recreated, as nearly as possible in the condition that prevailed when the area was first visited by the white man. A national park should represent a vignette of primitive America" {Leopold, et al. 1963: II}. Wilderness protects a particular landscape as it was at a particular historical time, generally when first encountered by Europeans. Wilderness is a historical snapshot, a kind of landscape museum. Being historically oriented, this view recognized that the landscapes encountered by the first Europeans had been modified by human action for millennia. Fire was undoubtedly the most potent tool used by North America's aboriginal peoples. A historical view of wilderness preservation compels a fire management policy that would seek to replicate the historic fire regime of a particular wilderness, taking into account both natural fire and anthropogenic fire. The primary question to be asked about any fire, regardless of origin, is whether it helps or hinders reestablishing the historic balance wilderness is meant to preserve.

The appeal of this approach owes much to its recognition that national parks and wilderness areas have been set aside not merely because they were wild, but also because they were special. There is obvious merit in preserving the particular features of a landscape that warranted preservation in the first place. Problem with this approach is that it requires very active wilderness management. That seems inappropriate, even oxymoronic. Can wilderness really be preserved by gardening? Early efforts at active management, like fire suppression and predator

¹ The departure from naturalness due to fire suppression is less marked in the lodgepole pine forests of Yellowstone than elsewhere in the West. In ecosystems with a history of frequent fire, fire suppression causes a rapid departure from natural conditions. Lodgepole pine forests support major conflagrations only after reaching maturity, a process that takes 200 to 300 years. In this context it takes a long time for fire suppression to change natural conditions significantly.

extermination, are now viewed as tragic errors. How can we be sure we are not making new mistakes? The well publicized difficulties of Biosphere II suggest that we lack the science to determine what is natural and replicate it. Still, advocates of this approach argue that failure to act is degrading the wilderness resource. We must do what we can.

The third view I found was utilitarian, generally regarding wilderness as having value primarily in terms of recreation. This view was widespread in the Forest Service in the 1980s and was probably dominant in the Park Service in an earlier era. It calls for a fire policy that will maximize visitor enjoyment. Such a policy will support both natural and management ignitions, so long as the consequences of fire are desirable. Usually that means so long as fires are small and the benefits in terms of wildlife and wild flowers outweigh the costs in terms of visitor aesthetics or visitor inconvenience. Many national forest wilderness areas got their heaviest recreational use during hunting season, and wilderness managers of the utilitarian school were likely to evaluate fires in terms of their impact on game species. As noted above, the 1985 revision of national forest wilderness fire policy officially rejected this approach.

Whereas the ecological and historical approaches might be regarded as variants of biocentrism, the utilitarian school is clearly anthropocentric. Its strength is likely to be political. In a democracy, public officials are rarely condemned for pleasing the public. Putting users first, however, it manages without great regard for wilderness values. In the worst case, it combines the aggressive gardening of the historical approach without the historical approach's biocentric focus.

The final view I described as legalistic. It might also be called minimalist. It regards wilderness not as a value to be preserved but as an impediment to the task at hand. The Wilderness Act is ignored or read narrowly so as to minimize the constraint on official action. From this perspective managers have a free hand with fire. The choices they make will reflect professional biases unrelated to wilderness management. Old-school foresters, loyal to Smokey Bear, will suppress all fires because that is their inclination, and the Wilderness Act does not forbid their acting on it. A wildlife manager whose professional judgment determines a particular habitat requires regular burning to maximize its value as habitat will burn, not because doing so is natural but because it is good for the game. This view appears to have been prevalent in both the Interior and Agriculture departments at the time the Wilderness Act was passed. It seems to have had its longest life in the Fish and Wildlife Service, where agency practice and tradition called for manipulation of habitats for game conservation rather than naturalness.

These latter two approaches may prove to be transitional, especially with respect to fire.

[there should be some good treatment of the life cycle of a policy issue]

Out of the Ashes: Post-Fire Policy

The Yellowstone fires provide a classic example of the proposition that big news disrupts the normal policy process. The natural fire policy had evolved for national parks and wilderness

areas in the normal way — that is in relative obscurity. There had been no national debate. Political campaigns had not been won or lost over its merits. Instead, scientists and land management professionals from universities and government agencies had conducted research, experimented, reached new understandings, proposed policies in tune with those new understandings, and gradually seen those policies accepted and implemented. Policy change had originated with experts in the field. Change came quietly and from the bottom up. Relatively few Americans knew there had been a policy change on wilderness fire.

The Yellowstone Fires changed all that. Fire was big news, and it was not long before fire policy was big news. Big news has very predictable results. The level of attention to a policy increases. New voices are heard. The arena of conflict expands, and decision-making moves up the political food chain. Policies that had previously been made largely by field-level experts are now challenged by elected officials responding to political pressure from constituents and the public at large. These new players have the benefit of hind-sight, and they are generally not burdened by the detailed knowledge of the field-level experts. They are free to criticize, and criticize they do. Often the event is hijacked for unrelated partisan or political advantage. Often expanding the arena of conflict changes the balance of forces and results in a new policy.

How one reacts to this process is almost entirely a matter of whose ox is getting gored. Environmentalists might well hope to keep wilderness fire policy in the hands of field-level experts, fearing that directives by Congress or the President might well be too solicitous of a pyrophobic public. The very same environmentalists might prefer to expand the arena of conflict over timber sales and grazing policy, believing that widespread public attention to current practices would surely undermine corporate welfare and promote conservation.

Members of Congress play the ombudsman role in American government. It is to them that constituents turn with their concerns. In 1988 those concerns came earliest and loudest from business owners in nearby communities who saw Yellowstone burning and feared for livelihoods dependent on tourism. Members of Congress were quick in their defense. Senator Malcolm Wallop, Republican of Wyoming, described the sixteen-year-old policy as absurd and scientifically indefensible. He joined with fellow Wyoming Republican, Alan Simpson, in calling for the resignation of park service director Mott. Consistent with long-standing practice in times of crisis, Democratic Senator John Melcher of Montana announced congressional hearings on fire management and announced the results in advance: “From now on the policy will be putting the fire out when they see the flames” {Shabecoff 1988}.

Damage control was at work in the executive branch as well. President Reagan demonstrated his concern by ordering an inquiry into government fire fighting practices and dispatching the interior and agriculture secretaries to Yellowstone in the company of a deputy secretary of defense. Interior Secretary Hodel, who had expressed support for the park service on July 27, appeared on ABC's *Nightline* to condemn “this let-it-burn-policy” as “a disaster” before departing on his fact-finding trip to Yellowstone {Shabecoff 1988}. President Reagan was reported to have called the natural fire policy “a cockamamie idea” {Satchell & Dworkin 1988:

14}. In the park, officials were hunkering down, waiting for the political firestorm to pass. Park spokesperson Joan Anzelmo reported that park employees had been ordered not to talk about the natural fire policy, and superintendent Robert Barbee opined that “There is this incredible myth that somehow the Park Service and the Forest Service are standing by, gleeful over what is a major catastrophe, because we have a policy that recognizes the role of fire in natural systems” {Shabecoff 1988; Robbins 1988a}.

With the end of the fire season, the political firestorm did pass. The environmental organizations most associated with park and wilderness values remained firm in support of the natural fire policy {Associated Press 1988c; Cutler 1988}. Mott remained park service director, and Robert Barbee remained superintendent of Yellowstone. Various committees and task forces were appointed to study the fires and to evaluate the nation's fire policy for national parks and wilderness areas. Within months the results came in. Natural fire was vindicated in theory but limited in practice. For the most part, park policy survived.

The Post-Fire Ecological Assessment Committee, chaired by Duke University botanist Norman L. Christensen recommended against revegetation, reforestation, and supplemental feeding {Reid 1989}. The Greater Yellowstone Coordinating Committee (GYCC)² assembled fifteen interagency teams to collect and evaluate data. The committee's report, published in March 1989, concluded that despite a burn area of 1.4 million acres, there had been relatively little damage to water resource, soils, wildlife or fisheries. Fire effects were described in positive terms for forest and grassland ecosystems. Indeed, the GYCC found fire suppression activities to be more detrimental than the fires themselves, noting that “in many instances fire-suppression activities left human-made scars on the landscape that will endure for decades.” “Most notable and detrimental are firelines, particularly those dug in once undisturbed wild areas” {Greater Yellowstone Coordinating Committee 1989: vii}. Fewer than 300 large animals perished, and more than 40 percent of the fatalities involved collision with fire vehicles {Fuller 1991: 9}. Visitation to Yellowstone National Park was 9 percent lower than its five-year average, and visitor travel plans had been disrupted. However, in the view of the GYCC, “The 1988 fires will provide numerous educational opportunities and may prove to be a significant visitor attraction in the following years” {Greater Yellowstone Coordinating Committee 1989: ix}. That prediction has been realized: visitation to Yellowstone was up in 1989 and has continued to grow { }.

The most important assessment came from the Fire Management Policy Review Team (FMPTR). This group of park and forest service officials, assisted by technical experts from outside the federal government, was appointed September 28 by the Interior and Agriculture secretaries and ordered to report its findings by December 15. Secretary Hodel had first supported, then -- when

² Formed in the early 1960s, the Greater Yellowstone Coordinating Committee consists of the regional foresters of Forest Service Northern, Intermountain, and Rocky Mountain regions, the regional director of the Park Service Rocky Mountain Region, the superintendents of Yellowstone and Grand Teton national parks, and the forest supervisors of Beaverhead, Custer, Gallatin, Shoshone, Targhee, and Bridger-Teton national forests.

the heat was really on -- condemned the natural fire policy. Reagan had called the policy "cockamamie." In the end the administration dropped this political hot potato on the FMPTR. Its charge was "to determine the appropriate fire policies for national parks and wildernesses which addresses the concerns expressed by citizens and public officials about the management of fires on those lands as a result of the Yellowstone fire situation" {USDA & USDI 1989: 25661}.

The committee's response was cautious, and its report succeeded in finding middle ground in a debate which had become extremely polarized. It supported prescribed natural fire in principle, but found that "in some cases this policy has been interpreted to allow managers to manage prescribed natural fires with essentially no prescriptions" {USDA & USDI 1989: 25664}. Writing in *Western Wildlands*, Ronald Wakimoto, one of the FMPTR's consulting academicians, reported that all the deficient fire plans were in the Park Service, and that Yellowstone's fire management was particularly deficient {Wakimoto 1989: 38}. In the end, the review team recommended that the agencies return to prescribed natural fire regimes, but only after fire management prescriptions had been tightened to limit the number of acres burned and the number of fires burning at once. Agencies were also directed to consider a number of social and organizational factors including impact on visitors and nearby communities, and the availability of firefighting resources {USDA & USDI 1989: 25666}. Although the report never explicitly compared Park and Forest Service policies, it seems to have concluded that the Forest Service's far more restrictive wilderness fire policy was acceptable. The Park Service's more laissez-faire policy was not.

The official studies sidestepped direct answers to the most interesting questions. Was the conflagration of 1988 a result of the natural fire policy? Was it the result of fire suppression? Was it a natural event? Could it have been averted? And should it have been? The consensus of the experts is that the fires were not a result of the natural fire policy. True, land managers let 31 early fires burn, but there were 248 ignitions. And yes, even after the order went out to suppress all fires, the Park Service resisted the use of some fire fighting techniques in the belief -- almost certainly correct -- that they would do more to damage park resources than the fires. Still, fire suppression began when only a relatively trivial acreage had been burned. Almost all the burn happened after suppression had begun. Some fires, including the largest one, were started by humans and targeted for suppression from the beginning. Those fires, too escaped control. So did some of the back fires set as a part of the suppression effort. Yellowstone was ready to burn. There is not much evidence that Yellowstone's 1988 fire season would have been dramatically different under the old regime of total suppression. Over a two month period beginning in late July 10,000 fire fighters and \$120 million were mobilized to fight the flames. The effect was marginal. Rain and snow eventually accomplished what thousands of fire fighters and millions of dollars could not. {Schullery 1989; Weurthner 1988}

If the Yellowstone Fires were not the result of the park's natural fire policy, were they the result of the previous policy of suppression? Fire suppression may well be to blame for many of the large fires in the American West, but it probably had little to do with the burning of Yellowstone.

The natural role of fire differs dramatically from one ecosystem to another. In tropical rainforests, there is no natural fire. Redwood and Ponderosa pine forests seem to have evolved in a regime of frequent, low-intensity ground fires. In these ecosystems fire suppression has allowed for the growth of highly flammable under-story that is unnatural and threatens the survival of these ancient forests. In and around Yellowstone the dominant forest species is Lodgepole pine. Lodgepole forests appear susceptible to huge fires at long intervals. William H. Romme and Don G. Despain concluded: "Past human action, mainly fire suppression, had some influence on the size and behavior of the fires in 1988, but these large fires were the result primarily of drought and wind conditions, as well as of normal successional dynamics following the last major fires approximately 280 years ago" {Romme & Despain 1989: 699}. Lodgepole forests tend to grow up in large even-age stands following major fires. With the maturity of those stands comes increasing probability of fire. Although total suppression was the rule in Yellowstone from 1886 until 1972, it was not an accomplished fact until after World War II, when aircraft achieved effective suppression in remote areas. In an ecosystem that takes centuries to get ready for a big burn, it's unlikely that a few decades of effective fire suppression made much difference.

Could the Yellowstone fires have been averted? Short of removing much of the forest, probably not. Can a reoccurrence be prevented? To avert an eventual reoccurrence the park service would probably have to change the ecosystem in fundamental ways, breaking the huge tracts of even-age Lodgepole into a mosaic of successional stages, a process that would take about 300 years and would necessarily involve aggressive human efforts to "tame" natural forces. This could be accomplished with massive clear cutting, but we would have sacrificed the very essence of wilderness. The same result might be achieved with fire, but it would take an unprecedented amount of burning. Furthermore, the burning would have to be done at times when it could be controlled. That means burning the forest when it does not want to burn, bombing it with napalm from the air. If it comes to this, what we may be saying as a culture is that even in wilderness natural processes must give way to anthropocentric goals. Certain processes of nature — like huge, high intensity fires in Lodgepole pine forests — simply produce intolerable results. As a people, we cherish the familiar Yellowstone more than the natural Yellowstone. "To this day," reports park ranger Nancy Procter, some people are "absolutely outraged, demanding to know how we could have let this happen" {Kesselheim 1998: 45-46}.

Wilderness Fire in the Post-Yellowstone Era

There has been no comparable wilderness fire story since 1988, and wilderness fire managers have returned to the natural fire practices that prevailed prior to 1988 but with even greater caution. As a result of the 1988 fires and the inquiries that followed, the fire prescriptions are more restrictive and more compulsively followed. Careful management ignitions were generally commended in the post-fire studies, but budgets for them remain small and the fear of consequences makes land managers timid. In short, wilderness fire management has not been fundamentally transformed. Wilderness prescribed fire was always a narrow exception to the general rule of total suppression. It remains a narrow exception. The political firestorm that accompanied the fires of '88, slowed the evolution of a natural fire policy failed to kill it.

Indeed criticisms of Yellowstone's natural fire policy cooled quickly in the context of two subsequent developments. First, visitation to Yellowstone National Park bounced back immediately, and with it the economic health of the gateway communities from which much of the criticism of park policy had come.³ Second, in the decade that followed the Yellowstone fires, it became increasingly apparent that suppression didn't work in the long run.

The fires of 1988 proved to be the beginning of a very fiery period in the history of the American West. To the consequences of logging, livestock grazing, and fire suppression, nature added continuing drought over much of the West. Bad fire seasons seemed to arise year after year rather than occasionally.

The 1994 fire season was extraordinary. Millions of acres were burned. A billion dollars was spent on fire fighting, and 34 firefighters lost their lives. Fourteen deaths came in a single day, when shifting winds trapped firefighters on Storm King Mountain near Glenwood Springs, Colorado. Like the Yellowstone fires six years earlier, the tragedy at Storm King⁴ resulted in a number of investigations. It generated two notices of violation from the Occupational Safety and Health Administration, multiple reviews of fire safety procedure, and ultimately a reconsideration of federal fire policy {USDA-USDI. Interagency Management Review Team 1995; Knudson 1995}.

The Federal Wildland Fire Management Policy and Program Review (FWFMPPR) had the broadest mandate. It issued a preliminary report in June of 1995, which was reflected in an article by Interior Secretary Babbitt which appeared at about the same time. Writing in *American Forests*, Babbitt recalled Storm King, blamed fire suppression for the “increasing ferocity” of western wildfires, and called publicly for a restoration of fire in western forests. Babbitt declared that “the vast majority of western public lands — including rangelands, chaparral, and ponderosa forests — burned historically every 10 to 50 years” and concluded that “[p]rescribed burning should approach that historic level.” He called for federal agencies to elevate the status of prescribed fire in their land use planning, for increased funding, and for a new federal/state partnership to introduce “fire into the landscape as a routine management tool” {Babbitt 1995: 18, 59}.

The final report of the FWFMPPR completed in December 1995 found: “Catastrophic wildfire now threatens millions of wildland acres, particularly where vegetation patterns have been

³ Conrad Smith, professor of journalism at Ohio State University, found that local residents outnumbered scientists three to one as sources for the frenzied news coverage that was so typical of the summer of fire (Elfring 1989: 671).

⁴ The Storm King fire is called the South Canyon fire in the official reports. I was ignited by lightning on July 2. Because other fires were given higher priority, it was not fought until July 5. The following day the wind shifted. Fourteen fire fighters failed to elude the flames and were killed.

altered by past land-use practices and a century of fire suppression. Serious and potentially permanent ecological deterioration is possible where fuel loads exceed historical conditions. Enormous public and private values are at high risk, and our nation's capability to respond to this threat is becoming overextended" {Philpot & Schechter 1995}. The final report called for uniform policy across agencies, more inter-agency cooperation, and much more active use of fire as a management tool on federal lands. In accepting the report's recommendation, Agriculture Secretary Glickman and Interior Secretary Babbitt wrote, "We strongly support the integration of wildland fire into our land management planning and implementation activities. Managers must learn to use fire as one of the basic tools for accomplishing their resource management objectives" {Glickman & Babbitt 1995}. A review and revision published in 2001 left the 1995 recommendation in tact {USDI 2001}.

Along with the fire ecologists, national park and wilderness managers had been in the vanguard in rejecting total suppression. Now, with the battle won — at least on paper — the special role of wilderness seemed to be forgotten. By ignoring the issue of wilderness fire, the new policy could be read as suggesting that wilderness ought not to be treated differently from other lands for purposes of fire management.

At the beginning of the 21st century, federal fire managers -- and perhaps even high governmental officials -- seem to have discovered what aboriginal peoples knew all along: fire is a tool that improves habitat for humans. By happy coincidence for wilderness preservation, it may be that regular fire serves biocentric and anthropocentric values at once. Biocentrism is served because in most wilderness areas fire is more natural than its absence. In principle naturalness should be the first priority in wilderness management. In practice, as the Yellowstone fires demonstrated, anthropocentric values cannot be ignored. For most Americans safety and beauty are more valued than naturalness, even in wilderness. If fire suppression actually kept us safe in the long term, it would be very difficult for wilderness managers to adopt any other policy. It may be a natural event, but most Americans see nothing redemptive in a spruce budworm infestation. Aesthetically we prefer the tall-grass prairie to brush and scrub. We prefer the park-like asbestos forests of ponderosa pine, douglas fir, and giant redwood to the impenetrable dog-hair thickets that come with fire suppression. It now appears that fire can restore the landscapes we love while actually reducing the risks of conflagration. Despite Smokey and Bambi, fire is achieving a degree of public acceptance {Freeman 1996}.

This happy observation does not answer all the hard questions about wilderness fire, but it's a good place to start: "Burn, baby; burn carefully!"