The Fires and Fire Policy

The drama of the 1988 Yellowstone fires generated a review of national policy

Paul Schullery

The Greater Yellowstone Area (GYA) fires of 1988 were, in the words of National Park Service (NPS) publications, the most significant ecological event in the history of the national parks (NPS 1988). Their political consequences may be as far-reaching as their ecological consequences.

The fires have been characterized in many ways, from natural catastrophe to ecological wonder and from policy blunder to scientific bonanza. They have generated a national dialogue that goes beyond the issue of fire in national parks and forests to more fundamental questions about the management of public lands.

The term *Yellowstone fires* is an unfortunate oversimplification. The fires occurred in the GYA, 4.8 million ha of mostly public land in Wyoming, Montana, and Idaho. The GYA consists of Yellowstone (YNP) and Grand Teton National Parks (GTNP), two national wildlife refuges, and six national forests, as well as state and privately owned land (GYCC 1987).

Fire management history

Ecologists have long recognized that fire was a major factor shaping landscapes in prehistoric America. Fires set by lightning or American Indians controlled plant and animal communities in most North American settings. Fire was a tool for land management among many early European settlers as well, for clearing land and encouraging the growth of preferred plants and animals (Pyne 1982, Wright and Bailey 1982).

It is difficult to separate scientific interest and aesthetic wonder from consternation at the political effects

Early in this century, the course of federal fire management was largely a reaction to some huge and economically disastrous forest fires. For example, in 1910, fires burned 3 million acres in Idaho and Montana, mostly on government land, destroying several towns and killing dozens of fire fighters. Therefore, fire management was regarded simply as fire suppression (Pyne 1982). In the 1940s, however, the US Forest Service (USFS) began to use fire as a silvicultural tool in some southeastern forests (Kilgore 1976). In the 1950s, the NPS started experimenting with controlled burns in Everglades National Park. Similar experimentation was conducted in Sequoia National Park in the early 1960s, and by 1972 there were 12 NPS areas in which some lightning-ignited fires were allowed to burn (Kilgore 1985, Parsons 1981).

For the NPS, allowing natural fires to burn was only part of a broad management redirection. The initial impetus for redirection was the 1963 Leopold Report, named for A. Starker Leopold, chairman of a committee of ecologists appointed by the secretary of the interior to consider wildlife management issues in the parks (Leopold et al. 1963). The committee proposed that the highest goal of the parks was to maintain "biotic associations" that were found in the park area when first visited by Europeans. Where such associations could not be maintained or recreated, a "reasonable illusion of primitive America" could at least be kept in place.

This charge, which became NPS policy in 1968, was fraught with complications. No national park is ecologically isolated from its surroundings; little is known about the precise ecological condition of any park at the time it was first visited by Europeans; maintaining biotic associations requires maintaining dynamic natural systems in which change is unavoidable, thus precluding the maintenance of any specific ecological state; natural systems cannot change without affecting the relative abundance of various elements of the biotic communities; and elements of the pre-European setting, such as American Indians, may no longer be present, nor may their effects be known or replicable. The Leopold Committee and many subsequent observers recognized these complications, but respecting parks for their ecological processes was widely recogized as a

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useful ideal around which management policies have evolved (Houston 1971). YNP has been a pivotal and controversial testing ground for the Leopold Report, and the fires of 1988 may have provided the sternest test of the practicality of maintaining biotic associations.

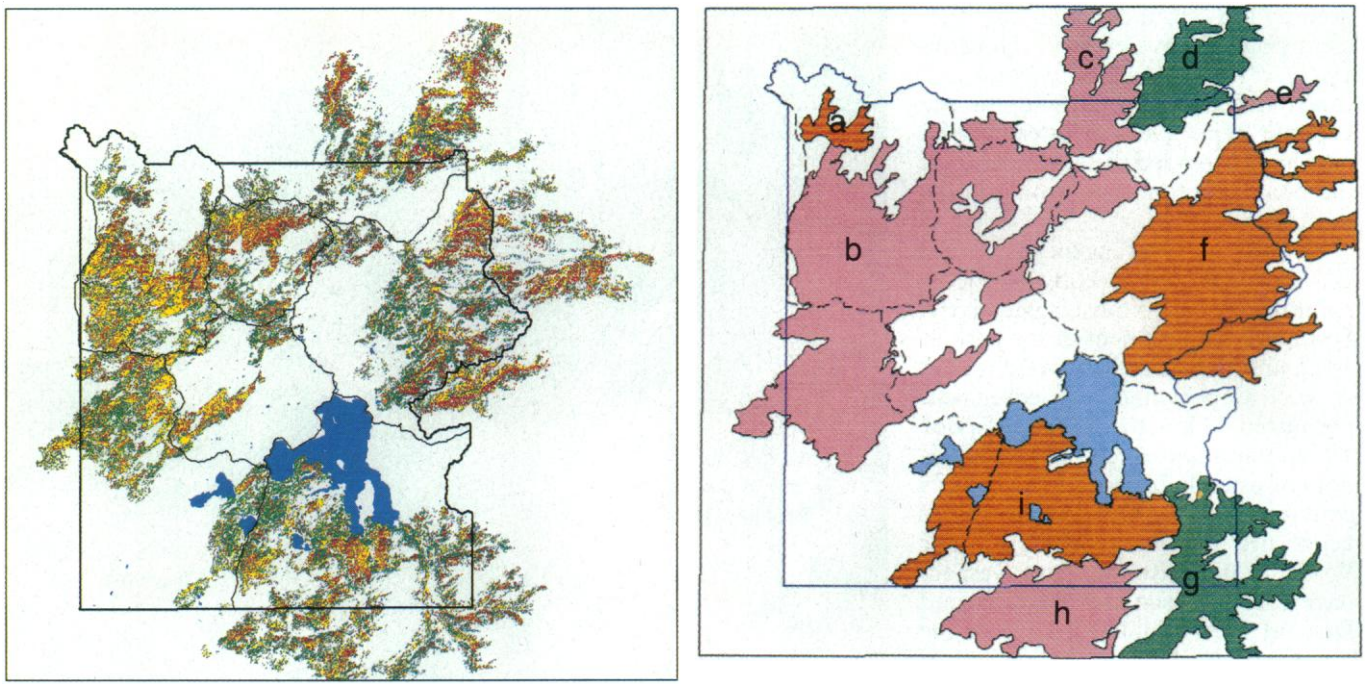
Of management agencies in the GYA, the NPS has recently pursued a natural fire policy most aggressively. From the establishment of the park in 1872 until 1971, all fires were fought as well as personnel and equipment permitted (Houston 1973, Taylor 1974). Fire suppression, however, was not consistently effective in the park's extensive forests until the arrival of aerial fire fighting technology after World War II (Romme and Despain page 695 this issue and Schullery and Despain 1989). In 1972, 15% of the acreage of YNP (136,000 ha), all in backcountry areas, were designated as natural fire zones. Any lightning-caused fires starting there were to be allowed to burn, if they did not threaten human life, property, cultural sites, or specific natural features of unusual value, such as threatened or endangered species (Despain and Sellers 1977, NPS 1987). Although the policy also allowed park managers to intentionally ignite fires, a procedure used freely in some other parks, it was not considered useful by Yellowstone managers because climate, rather than available ignition sources, seems to be the driving force behind fire's effect on the Yellowstone landscape (Romme and Despain page 695 this issue). During the next several years, most of the park was added to the natural fire zones (NPS 1987). GTNP initiated a similar plan in 1972.

The national forests surrounding Yellowstone Park also developed natural fire management plans, and cooperative agreements that were in place by 1988 allowed managers in a park or forest to "accept" a fire that was approaching their boundary from another unit (USDA/USDI 1988). There were substantial differences in the plans of the parks and forests, especially in their arbitrarily prescribed limits on the size to which a fire might be allowed to grow; NPS plans accomodated large fires, whereas USFS plans were more restrictive because those areas are being managed to meet a different mandate.

Scenes like this one were common on the TV evening news. The fire is part of a back burn set just inside the northeast corner of Yellowstone National Park as part of the fire suppression efforts on the Storm Creek Fire, Labor Day weekend, 1988. NPS photo by Jim Peaco.

Newcomers to the fire dialogues may find the language puzzling. In fire management, a *prescribed fire* is one that, whether it was set by humans or lightning, is burning within the prescriptions set by managers for fires that will be allowed to burn, sometimes for months. In YNP, virtually all prescribed fires are lightning-caused. A *wildfire* is a fire that does not meet the agency's prescriptions. A prescribed fire can behave in such a manner that it is reclassified as a wildfire. But a wildfire is not necessarily one that is out of control; it is merely a fire that must be suppressed. Thus, almost counterintuitively, a wildfire is often a human-set fire and a prescribed fire is generally caused by lightning.

In its first 16 years (1972–1987), the Yellowstone Fire Management Plan was widely considered a success within the agency and among conservation groups. In that period, 235



Left. What burned in the Greater Yellowstone Area. Key to map: red, crown fire in dense forest; green, mixed dense vegetation; orange, crown fire in medium-density forest; turquoise, mixed medium-density vegetation; yellow, crown fire in sparse forest; light green, mixed sparse vegetation; dark green, nontimber burn. **Right.** Major GYA fires by ignition source. Key to map: pink, human-caused; green, originating on US Forest Service land (natural); orange, originating on National Park Service land (natural); blue, lakes. **a.** Fan Fire. **b.** North Fork Fire. **c.** Hellroaring Fire. **d.** Storm Creek Fire. **e.** Human-caused burn, set as part of Storm Creek Fire control efforts. **f.** Clover Mist Fire. **g.** Mink Fire. **h.** Huck Fire. **i.** Snake River Complex Fire. Maps produced by the Geographic Information Systems Division, Yellowstone National Park. Data gathered and analyzed by Don Despain, NPS.

fires were permitted to burn a total of 13,662 ha (NPS 1987). Only 15 of the fires exceeded 40 ha, and all the fires extinguished naturally. The largest single fire burned 2960 ha. Public education programs by the NPS stressed the values of restoring fire to its place in wilderness processes, and public acceptance of the program was perceived as high.

The small size of most fires indicated that in a typical summer, though there will be hundreds of lightning strikes, few will result in fires of any size. The lodgepole pine (*Pinus contorta*) forests that dominate much of the GYA (and constitute 77% of YNP forests) do not burn easily and have little undergrowth until old age (Brown and Bevins 1986, Romme and Despain page 695 this issue). Only the oldest forests—those with substantial fuel in downed trees and undergrowth—burn readily. During 1972–1987, fires were regularly observed to skip over, pass around, or stop at the edge of young forests.[1]

[1]Don Despain, 1989, personal communication. Research Division, National Park Service, Yellowstone National Park, WY.

Dendrochronological research suggested that the process by which Yellowstone's mosaic of vegetation types was maintained did not operate consistently, year by year. Instead, GYA forests appeared to alternate between short periods—a year or a few years—of large fires and long intervals (200 to 400 years) of relatively small fires each year (Romme 1982). By 1988, it was clear that the GYA had in the past experienced very large fires and also that extensive areas of the park were entering their most burnable stage. Roughly one-third of the park's forests were 250 to 350 years old (Romme and Despain page 695 this issue). The advanced age of many forests seems to have been a much more significant factor in the accumulated fuel loads than any effects of human fire suppression since the establishment of YNP in 1872 (Schullery and Despain 1989).

The 1988 fire season

The GYA entered a mild drought late in 1987 and was considered to be in a severe drought by mid-May (USDA/USDI 1988). The GYA climate is typified by dry summers; most precipitation falls as snow (Dirks and Martner 1982). But in the period from 1982 to 1987, the GYA experienced an average of about 200% of normal precipitation in July (NPS 1988). Although much of the west suffered a serious drought in those years, naturally caused fires burned less than 400 ha in the park during those six years. Fire managers began to anticipate the continuation of wet summers, and April and May of 1988 seemed to herald yet another wet season.

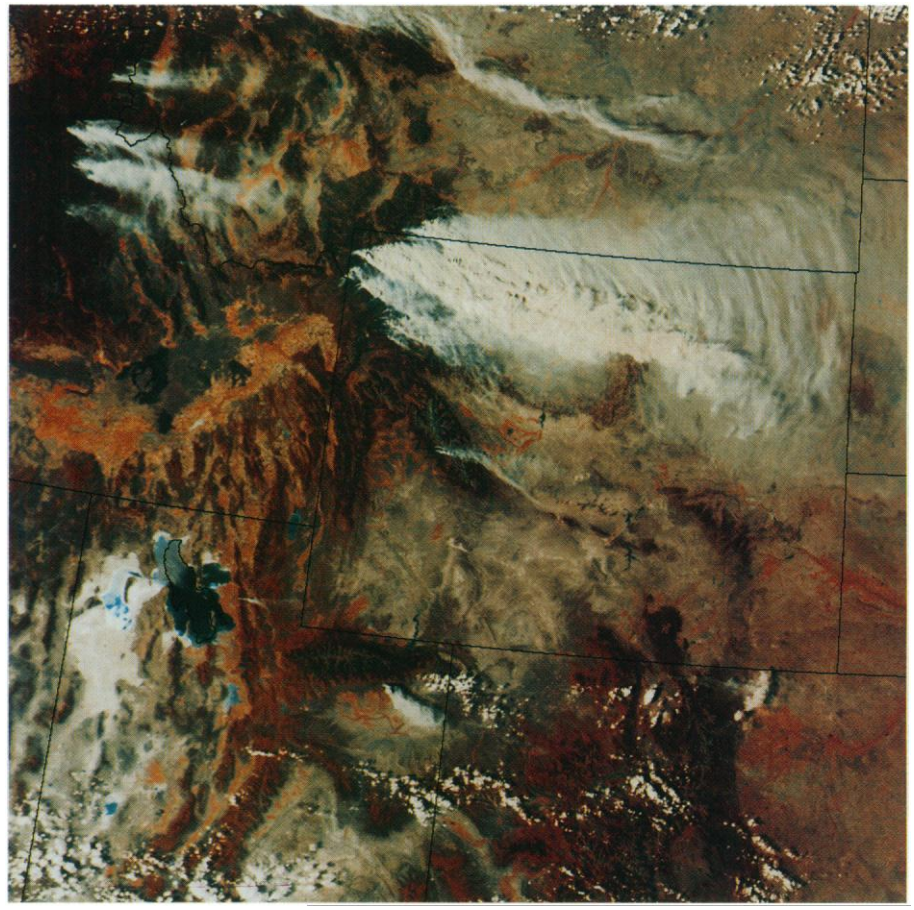
But in the spring, a high-pressure zone formed and settled over the northern Rockies as the jet stream sent incoming storms north into Canada. Fuel grew progressively drier, and frequent thunderstorms provided lightning but no rain. The summer was the driest in the park's recorded history. In August and September, a series of six dry cold fronts crossed the GYA, bringing winds that routinely gusted 60–100 km/hr (USDA/USDI 1988). Within this extraordinary climatic context, the GYA fires ignited and grew.

By the standards of the previous 16 years, the 1988 fire season began routinely. In late May and early June, 11 of 20 early season fires extinguished naturally, and the rest exhibited no unusual behavior. NPS and USFS fire specialists monitored the fires and a variety of recognized danger indices, including moisture content of fuels, lightning- and man-caused fire risks, energy release component (the heat given off by a fire dictates how it will be fought and what equipment must be on hand), and spread component (a computation of probable speed of a fire's movement based on conditions).

The first three weeks of July are the critical period in the early stages of the fire season. Managers watched fire conditions with growing concern, then alarm, even though the fires were not yet especially large. On 15 July, for example, only approximately 3440 ha had been burned in the entire GYA. On 21 July, when NPS personnel decided to declare all fires wildfires and suppress them, 6800 ha had burned. By then the fires were national news, and on 27 July the secretary of the interior visited the park and reaffirmed the decision to fight all current and new fires there (Figure 1).

But by then continued dry weather and high winds had pushed the park across the threshhold for large fires. Within a week of the decision to suppress all fires, the perimeter acreage of YNP fires exceeded 40,000 ha. By 15 August, the perimeter total was approximately 100,000 ha. By 1 September, the GYA total was 340,800 ha, with 220,000 of that in the park. These preliminary estimates were often based solely on helicopter overflights; detailed mapping of burn areas is still under way. All burn area figures that follow in this article are based on aerial mapping with a resolution of 80 ha; later-generation maps are expected to reduce most burn area figures as the burn mosaics are plotted more precisely.

There were 248 recorded fire starts in the GYA in 1988, 31 of which were allowed to burn as prescribed fires. Twenty-eight of the 31 were in YNP. Seven fires were responsible for more than 95% of the area burned (Maps, page 688). Five of those seven originated outside YNP, and three of those five, including the largest fire of all (the North Fork Fire, 201,610 ha), were human-caused wildfires fought from the start (Figure 2).



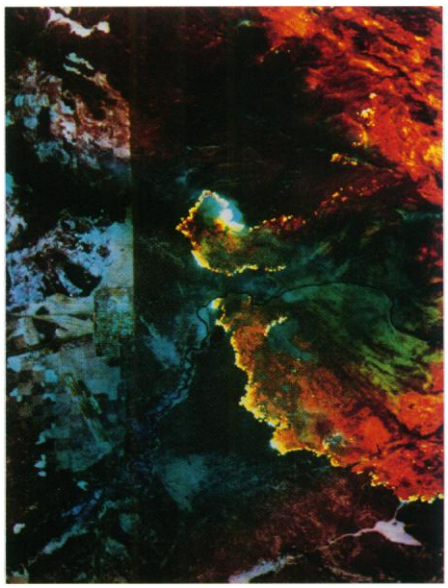
Satellite image of Wyoming-Montana-Idaho-Utah-Colorado area on 7 September 1988 shows major smoke plumes from Greater Yellowstone Area fires spreading across Wyoming, while smaller fires burned in Montana, Idaho, and Utah. Photo: NASA/ Ames Research Center.

The scale of the fires shocked many people. On the much-publicized "Black Saturday," 20 August, wind-driven flames burned 64,000 ha. Smoke and particles from the GYA fires traveled east across North America, sometimes obscuring the sun for hundreds of kilometers. Some of the fires deliberately set by fire fighters to deprive an oncoming fire of fuel were larger than most natural fires of the previous 16 years.

Fighting the fires

On 23 July, GYA managers created the Greater Yellowstone Area Command, located in West Yellowstone, Montana, to coordinate fire-fighting operations in the GYA. As the fires grew, resources from other agencies and regions were drawn into the effort. Approximately 25,000 fire fighters participated during the course of the fire season, as many as 9500 at one time. On many occasions, there were not enough fire fighters or equipment to attack all fires fully. Fire fighters from land management agencies were aided by personnel from the Wyoming National Guard and the Air National Guard and the US Army, Air Force, Marine Corps, and Navy. More than 100 aircraft and 100 fire trucks from several states also were used. The total cost was approximately $120 million.

Fire behavior was characterized as "unprecedented" by many sources, but it would be more precise to say that fire in the GYA had never been experienced on such a grand scale. Previous fires in North America had burned as much or more acreage and had behaved as spectacularly, but not in the presence of what was probably the largest single fire suppression effort in American history or in the face



Satellite image of the North Fork fire approaching the town of West Yellowstone, MT, on 2 September 1988 (top is north). Note numerous spot fires appearing along the leading edge of the westbound fire. The river is the Madison, which leaves the park just north of West Yellowstone and eventually becomes one of three rivers that join at Three Forks, MT, to form the Missouri River. Notice that the west boundary of Yellowstone National Park is clearly delineated south of West Yellowstone. Clearcuts in Targhee National Forest show differences of land use directions among various elements of the Greater Yellowstone Area. Photo: NASA/Ames Research Center.

of such advanced knowledge of fire behavior.

Fires advanced as much as 16 km in a day. Wind-driven flames routinely jumped formidable barriers, such as the Grand Canyon of the Yellowstone River, park roads, and even the broad expanse of the Upper Geyser Basin. When winds carried embers ahead of the fire's front, spot fires were created as much as 2.5 km in advance of the main fire. These spot fires complicated efforts to fight fires head-on; fire fighters were in danger of becoming trapped between the main fire and its outlying spot fires.

Fast-moving fires were impossible to stop with conventional hand- or bulldozer-dug trenches (fire lines). Fire jumped most of the hundreds of kilometers of fire lines that it approached. Because of the extreme volatility of fuels and low relative humidity, fires did not stop moving at night as they often do; fire fighters could make no more progress at night than in the day (USDA/USDI 1988). Attempts to project maximal possible size of a given fire were repeatedly foiled.[2]

Yellowstone attractions added unusual hazards. All fire camps had to be kept clean to avoid conflicts with grizzly bears (*Ursos arctos*) and other scavengers, and some fire fighters were injured when they inhaled fumes from burning mineral deposits near hot springs. Fire fighting focused most effectively on protection of developed areas. Although the fire-fighting effort may not have significantly reduced the total acreage burned by the large fires, fire fighters were successful in protecting buildings. In a series of dramatic stands, several park developments and surrounding communities were saved by such techniques as intensive fuel reduction along their edges and the soaking of buildings with water and fire retardant (Figure 3).

The most famous episode was the Old Faithful fire storm of 7 September, when the eastbound North Fork fire, driven by winds in excess of 100 km/hr, jumped over the entire 400-structure development, the Firehole River, and the Upper Geyser Basin. Twenty-two small buildings, mostly cabins, were destroyed, and several others were damaged; these losses were considered light under the circumstances. A total of 67 structures were destroyed in the GYA, and another 12 were damaged.

There were numerous, mostly minor, injuries to fire fighters. However, one fire fighter was killed by a falling snag in October operations on the Clover-Mist fire in Shoshone National Forest, and a pilot was killed when his light plane crashed near Jackson, Wyoming.

Fire-suppression impact

The impact of the fire-suppression efforts will be visible for many years. Dozens of camps and helicopter landing sites were scattered through the GYA. Approximately 1071 km of hand-dug fire lines and 220 km of bulldozer lines were also constructed. After September, precipitation quieted the fires, and fire crews worked to minimize the effects of these disturbances. However, the turning of the soil may result in increased erosion, heightened hospitality to nonnative plants, or simply an enduring scar. Removal of trees creates an artificial corridor that will remain apparent indefinitely (Figure 4).

Fire-fighting activities can displace wildlife (as when a camp is built in a meadow where animals graze) or attract it (as when food is brought into bear country). Collisions with fire-fighting vehicles killed 108 large mammals, but such collision mortality is typical of YNP in other summers. Fire trucks and other vehicles often drove off roadways, some as far as three miles; these scars may last 30 or more years. Aircraft logged more than 18,000 hours of flight time in YNP alone (Figure 6). The noise of the aircraft, especially at helicopter landing strips, displaced animals, but no formal monitoring was undertaken due to the emergency situation.

Approximately 5.3 million liters of fire retardant were dropped on fires in YNP. This retardant may have short-term fertilizing effects on vegetation; but at least two small fish kills, approximately 100 fish each, resulted from retardant drops in streams. Thirty-eight million liters of water were dipped or pumped from various GYA streams and lakes for dumping on fires, drawing down some ponds and disturbing natural processes in many others (Figure 5).

Assessing ecological impacts

Aerial mapping of GYA fires was completed in September 1989 (GYP-FRAC-BAST 1988). According to this preliminary coarse-resolution mapping, fires affected more than 560,000 ha—395,570 ha of which were in YNP (Table 1). Fires burned with varying intensity and effect. In the GYA, 61% of the burned area experienced canopy burn (trunk, limbs, and needles or leaves of trees burned), and 34% experienced surface burn (fire crept along the ground and did not burn the canopy, leaving many trees partly or completely unburned). An additional 32,000 ha of meadows and sage grasslands were burned

[2]Richard Rothermel, 1989, personal communication. Intermountain Research Station, USDA Forest Service, Missoula, MT.

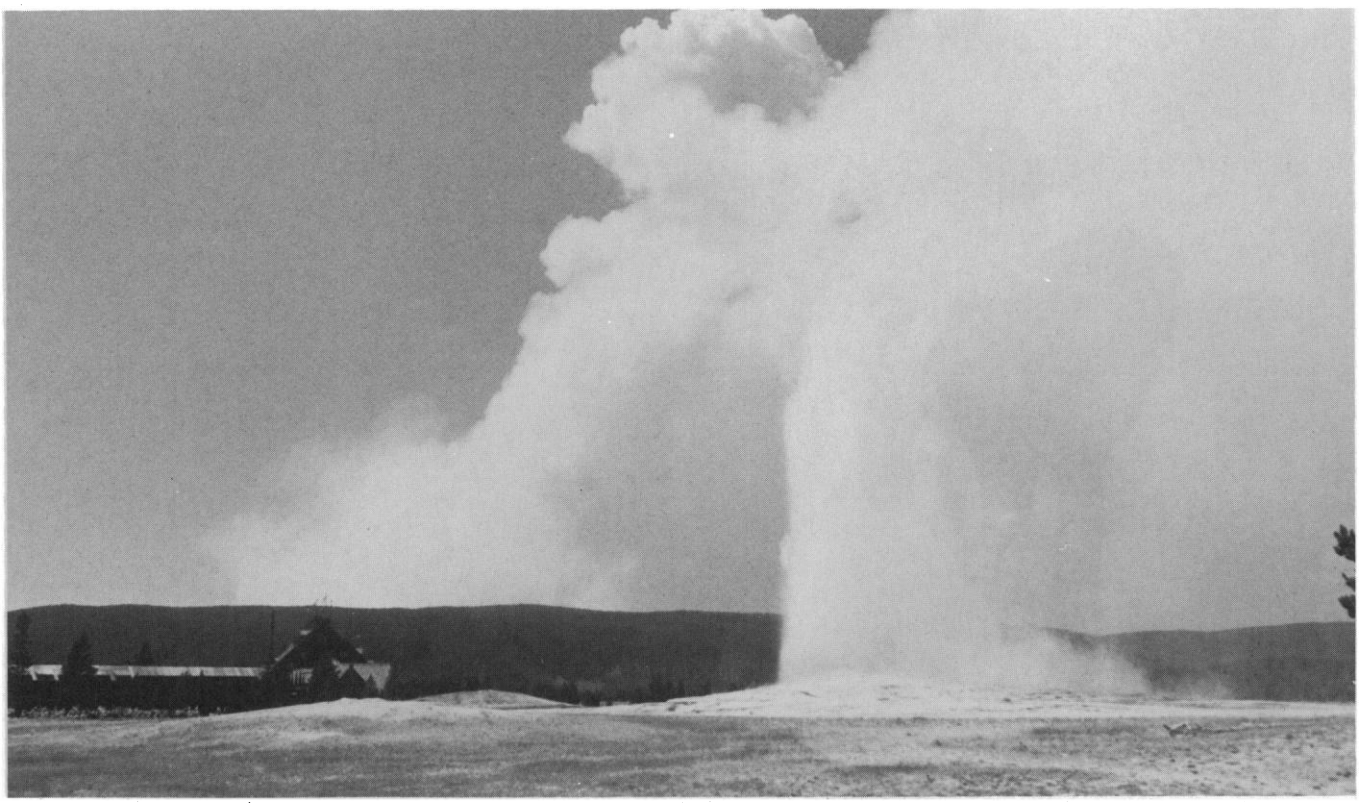


Figure 1. The North Fork Fire's smoke was visible at Old Faithful on 25 July 1988. Photo: Jim Peaco, National Park Service.

(GYPFRAC-BAST 1988).

The result of the varying burns is a mosaic of burned, unburned, and partially burned areas. There is little uniformity of pattern or scale across the mosaic; fires were influenced by many factors, including wind, slope, fuel availability and condition, and humidity, so that in some areas the mosaic is quite fine (with burned and unburned patches only a few feet or yards across), whereas in other areas it is coarse (with all the vegetation for dozens of square hectares uniformly burned).

The ability of Yellowstone's large mammals to survive the fires surprised those of us conditioned by Smokey the Bear and Bambi. Contrary to "common knowledge" about the destructiveness of fires, relatively few large mammals died (Singer et al. page 716 this issue). Most large-mammal mortality was the result of smoke inhalation, though many of the carcasses were burned afterward. Large mammals were frequently observed grazing or bedded down in meadows near burning forests; actual flight was rare, and only necessary on days when fires made major runs (Singer et al. page 716 this issue, Singer and Schullery 1989, Mills 1989).

Immediate effects on threatened and endangered animals were light. No peregrine falcons (*Falco peregrinus*), currently the subject of reintroduction work in Yellowstone Park, were known killed by the fires. Five bald eagle (*Haligeetus leucocephalus*) nests were destroyed, but no eagles were known lost (McEneaney 1989). Two grizzly bears are also thought to have perished in the fires.[3]

[3]R. Knight, 1989, personal communication. Interagency Grizzly Bear Study Team, Forestry Sciences Laboratory, Montana State University, Bozeman, MT.

Table 1. Greater Yellowstone areas burned by major fires (in ha).*

Fire	Grand Teton National Park	Yellowstone National Park	Bridger-Teton National Forest	Custer National Forest	Gallatin National Forest	Shoshone National Forest	Targhee National Forest	Total
Clover-Mist		80,310				47,520		127,830
Fan		8360						8360
Hellroaring		7850			18,840			26,690
Huck	1080	10,250	33,150					44,480
Mink Creek		16,620	29,910					46,530
North Fork		196,090			1000		4520	201,610
Snake River		68,810						68,810
Storm Creek		7280		12,280	18,440			38,000
Total	1080	395,570	63,060	12,280	38,280	47,520	4520	562,310

*All figures are preliminary, based on coarse resolution (finest unit of measurement 80 ha) aerial mapping. Figures from GYPFRAC-BAST 1988. A few minor and peripheral fires are not included in totals.

Figure 2. The North Fork Fire moving along the Madison River in Yellowstone National Park in August 1988. Photo: Jeff Henry, National Park Service.

Many small animals died in the fire or attendant smoke (Mills 1989). The fires will result in shifts of relative abundance of various species of birds, mammals, and insects, but there is no evidence to suggest that any individual species will be in danger of extinction because of the fires.[4] Predators took advantage of the loss of cover after the fires to harvest many small mammals. McEneaney (1989) observed more than 40 ferruginous hawks (*Buteo regalis*), a species uncommon in YNP, hunting openly near Hayden Valley, and he proposed that they had followed smoke columns from outside the park to the good hunting grounds.

The fortunes of wildlife in the fires exemplify the complications of public perspectives on the fires. Many observers have spoken reassuringly about the fires as "beneficial" to wildlife, and "good" for the forests and other plant communities. It is true that the fires will in some ways benefit some animals, but there are rhetorical traps in such pronouncements. If the goal of the park is to protect biotic associations and processes rather than promote growth of favored animals, then terms like "good" and "beneficial" are of limited value. The park's ecological processes will, over the course of the next 200–400 years, present various plants and animals with opportunities that will never be the same from year to year. A species advantaged now may be disadvantaged in 40 years. Recent paleoecological research indicates that very nearly the same mammalian fauna

Figure 3. Fire-retardant foam was used on buildings, in this case a residence at Mammoth Hot Springs, 10 September 1988. Most buildings were adequately protected by such techniques. Photo: Jim Peaco, National Park Service.

[4]R. Renkin, 1989, personal communication. Research Division, National Park Service, Yellowstone National Park, WY.

Figure 4. Bulldozers were used to cut fire lines, in this case in Gallatin National Forest near the northeast entrance to Yellowstone National Park and to Cooke City, MT. Fire fighters are moving through a bulldozer-cleared area where all trees have been removed for a width of at least 8 bulldozer blades. Bulldozer lines proved no more effective than hand-dug lines at holding fast-moving fires and left scars that will remain indefinitely. Photo: Jim Peaco, National Park Service.

occurred in Yellowstone 1700 years ago as today,[5] since which time the GYA has probably experienced several major fire events. This continuity of species presence suggests that the 1988 fires should not significantly affect mammalian diversity.

Responses to the fires

The GYA fires may have closely replicated a natural event (Christensen et al. page 678 and Romme and Despain page 695 this issue), but they replicated it in a day when such natural events are extremely inconvenient for society. They were, in many respects, a hardship to the people who live, work, or visit the region, as well as to the local commerce. They were the source of considerable outrage and more than a little tragedy. It has proven difficult for the public to separate the scientific interest and aesthetic wonder of their ecological effects from the consternation of their political and economic effects.

The largest fires were subjected to formal operational reviews by interagency teams, in keeping with established postfire procedures. These evaluations dealt with many aspects of each fire's suppression effort, including bureaucratic procedures, decision making, and actual mechanical implementation of decisions. During the fire season, many controversial decisions were made, and the review process brought out various operational shortcomings. In the long run, the enduring legacy of these review teams may not be in their findings on any specific procedural issue but in the broader view—the fires as a GYA phenomenon, needing improved coordination on an ecosystem-wide level (GYCC 1989).

On 28 September 1988, the secretaries of agriculture and interior created a Fire Management Policy Review Team to evaluate the fire policies of the NPS and the USFS wilderness areas. This interagency team included representatives of the NPS, the USFS, the US Fish and Wildlife Service, the Bureau of Land Management, the Bureau of Indian Affairs, and the National Association of State Foresters. While reaffirming the principles and fundamental importance of allowing fire a role in these public lands, it recommended that fire management plans of various parks and forests must be "strengthened" in some ways aimed at better control of fires (USDA/USDI 1989). Because this process could not be completed in time for the 1989 fire season, Secretary of the Interior Manuel Lujan and Secretary of Agriculture Clayton Yeutter directed their managers to suppress all fires in 1989.

Ecological effects and research opportunities were also examined and projected (Christensen et al. page xxx this issue, Mills 1989, MSU 1988). The scientific community has recognized a unique opportunity to study the effects of ecosystem-wide fires in a relatively pristine setting, but funding problems may cause much of the opportunity to be lost.

The public response will be hardest to measure. Although the principles behind NPS and USFS fire policies were and still may be fairly well received in the specialized scientific and

Figure 5. Helicopters routinely dipped water from Greater Yellowstone Area streams and ponds to use in fire fighting. Shown here is the North Fork fire along the Madison River, Yellowstone National Park, August 1988. Photo: Jeff Henry, National Park Service.

[5]E. Hadly, 1989, personal communication. Research Division, National Park Service, Yellowstone National Park, WY.

Mountain ranges are blanketed by smoke from the Mink Creek fire in the Absaroka Mountains, southern Greater Yellowstone Area, 19 August 1988. Photo: Jim Peaco, National Park Service.

conservation communities, they were unknown to the public in the summer of 1988. Even President Reagan professed ignorance of the policies.

Many GYA managers and residents feared that media coverage of the fires gave a sensationalist view of the fires and convinced the public that YNP was destroyed, and analysis of media coverage of the fires has suggested that reporters did misrepresent the situation (Smith 1989a,b). The multiple filters of agency public affairs offices, regional chambers of commerce, and print and electronic media seem in some cases to have stood between the public and an accurate picture of the fires and their ecological significance. The impact of the GYA fires on public consciousness about wildland management and the ecology of fire appears to be considerable, and thereby the 1988 fires may have continued effects on the formulation of public land fire policies for many years.

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