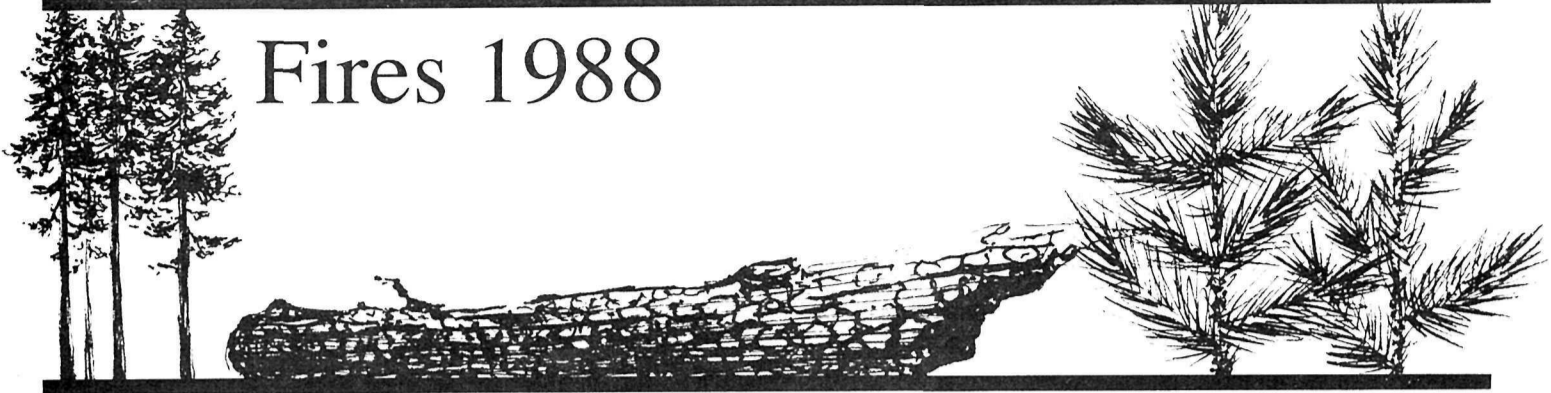


# Yellowstone

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## Fires 1988

### Fire: A Natural Force

Fire helped create the Yellowstone setting that visitors have enjoyed for more than a century. For thousands of years, lightning-caused fires (and possibly some caused by native Americans as well) have swept across this region, sometimes burning

small patches, sometimes burning huge areas; these fires created the various meadows, sagelands, forests, and other habitat types encountered by the first European explorers of the region. When the park was established in 1872, managers began a gradually more successful

campaign to suppress any fires, natural or man-caused. Though managers were able to suppress many fires on the northern grasslands of the park, the park's extensive forests were not consistently protected from fires until the 1940s, when aerial firefighting equipment became available.

### The Yellowstone Fire Management Plan

By 1972, Yellowstone was one of several parks adopting programs to monitor, rather than suppress, all natural fires. Ecological research had shown that fire was essential to the maintenance of vegetative types so important to wildlife diversity. The suppression of natural fires stagnated the dynamic processes by which Yellowstone renewed itself.

The Yellowstone Fire Management Plan, approved by the National Park Service,

other Department of Interior agencies, and the U.S. Forest Service, has four goals:

1. To permit as many lightning-caused fires as possible to burn under natural conditions.
2. To prevent wildfire from destroying human life, property, historic and cultural sites, specific natural features, or endangered species.
3. To suppress wildfire in as safe, cost-effective, and environmentally sensitive ways as possible.
4. To resort to prescribed burning when and where necessary to reduce hazardous fuels (primarily dead and down trees).

Between 1972 and 1987, the park was guided by these objectives, and much was learned about fires in wilderness. Tens of thousands of lightning strikes fizzled out without burning any significant acreage. Only 140 fires developed in that 16-year period, most of which burned a few acres or less. Eighty percent of the lightning strikes that started fires burned out on their own. The largest fire burned 7,400 acres, and the total acreage burned was 34,175 acres. No human lives or structures were lost, and millions of visitors were able to see a crucial element of the Yellowstone scene restored to its functioning place.

### 1988 Fire Conditions

Because the fall and winter of 1987 and 1988 were dry, Park Service fire experts began monitoring numerous fire danger indices early in April of 1988. Precipitation

was well above average in April and May, and of 20 natural fires that occurred in late May and June, 11 went out on their own, and the rest behaved as had fires in previous years. But June was extraordinarily dry, and though the park had

experienced an average of 200 percent of normal precipitation the six previous Julys, virtually no rain fell in either July or August. On July 21, the natural fire program was suspended; at that time the total acreage burned was less than 17,000 acres.

### Fighting the Fires

Over the next two months, a huge inter-agency firefighting effort was mounted, eventually involving more than 9,500 firefighters at one time, more than 100 fire trucks, dozens of helicopters, and massive logistical aid. The total cost was in excess of \$100 million, and on November 1 some fires were still burning.

Fire fighting experts and fire behavior authorities from around the country were recruited to the cause. They witnessed fire behavior on a scale and of a type most had never before seen. Fire line construction, routinely used to stop fires, became not only ineffective but hazardous, as high winds and dry conditions allowed fires to

send burning embers more than a mile ahead of the fire. Such conditions made it impossible to fight fires head-on because firefighters might find themselves caught between the main fire and its outlying "spot" fires. Fires commonly made daily runs of five to ten miles, then refused to "lie down" at night because humidity remained low. Fires jumped such major topographic barriers as the Grand Canyon of the Yellowstone River and the Madison River.

The firefighting efforts probably did not result in a major reduction of the acreage of forest burned, but they were almost totally successful in protecting human life and property in efforts that can only be called heroic. Though debates continue, it is the consensus of the fire managers that

only winter weather could stop and extinguish fires of this size and power.

Enormous public confusion resulted from hasty reports in the media. All fires were ascribed to the Park Service's natural fire program, when half the acreage was burned by natural or man-caused fires that started in surrounding national forests and were fought from the beginning (see maps on page 2). Media reports continued to suggest that the natural fire program was still in effect when it had been suspended early in the fire season. Though Forest Service and Park Service daily reports stated that much of the acreage within fire perimeters was not burned, media almost always used the largest fire perimeter acreage estimated, thus overstating the actual burn magnitudes.

# The Burn and Beyond

Aerial mapping indicates that about 1.38 million acres in the Greater Yellowstone Area received some type of burning. Within Yellowstone Park, mapping indicates that a maximum of 995,000 acres experienced some kind of burning. Of that, 573,000 acres was "canopy burn," meaning that the forest was blackened. Another 367,000 acres was "surface burn," meaning that only the forest understory burned, and most trees will not die. Burned meadow and sage-grassland totalled 55,000 acres.

While many people saw the fires as a catastrophe, scientists from many disciplines immediately recognized that Yellowstone had been the site of a remarkable and enormously significant event. Recent research had proven that similarly large fires have burned over the park area every few hundred years, and that the park has always revegetated itself in good order. The fires, when viewed from the air, suggest not a blasted moonscape but a complex jigsaw puzzle of vegetative types, a mosaic of burns and green trees, of scorched grasslands and still-untouched meadows. Many wildlife types, including elk, bison, deer and grizzly bears, will benefit from these changes. Some birds,

including mountain bluebirds and three-toed woodpeckers, will probably experience a population boom. In many ways the fires have created a new order, and a new set of balances by which Yellowstone shall support its natural inhabitants.

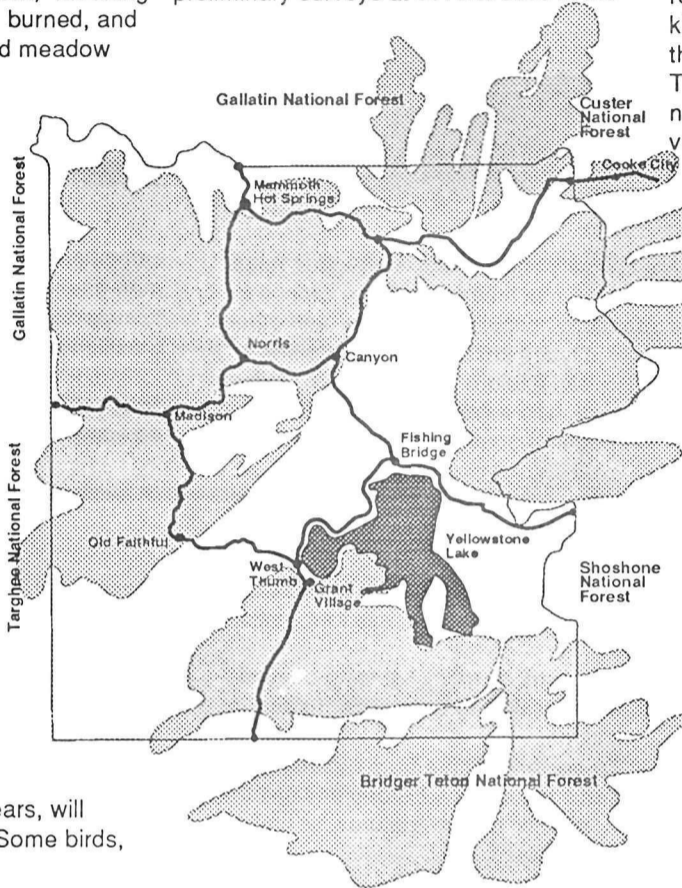
The park's vast forest of lodgepole pine trees are fire-tolerant. Fires caused many cones to open and release their seeds; preliminary surveys at several sites in the

park revealed that within a few days after the fire, densities of new seeds on the ground ranged from 50,000 to 1 million per acre (which equals one to 20 seeds per square foot). Yellowstone's forests have regenerated countless times following fires, and are well on their way to doing so again.

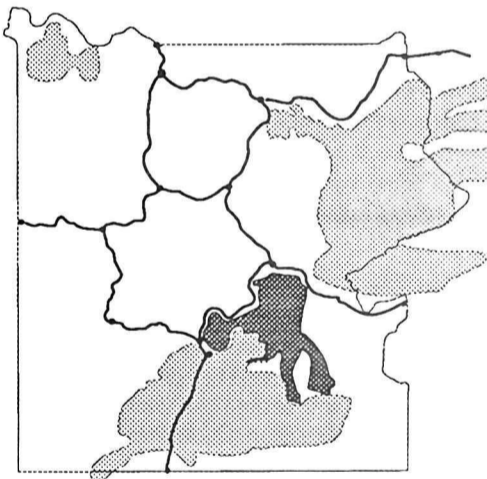
Soil surveys have shown that no more than one tenth of one percent of the park received severe enough burn intensity to kill the roots, rhizomes, bulbs, and seeds that lie a few inches under the surface. The meadows that were burned will sprout next spring, and the great diversity of vegetative types will restore itself throughout the park. Fire released nutrients that will enrich the soils, further promoting growth.

The park's large mammal populations sustained only small losses. As of

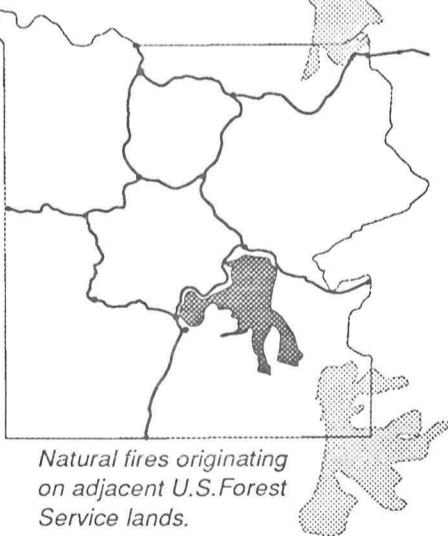
November 1, surveys had revealed 243 elk (less than one percent of the park's summering population of 32,000), five bison, four deer, two moose, and various smaller animals. Losses were similarly light on surrounding national forests. The large mammals proved able to stay out of the fire's way almost all of the time. No threatened or endangered animals have been reported lost. Effects of the fire on available range and other food sources for wildlife are being assessed at this time, and special independent panels have been assembled to evaluate possible management options.



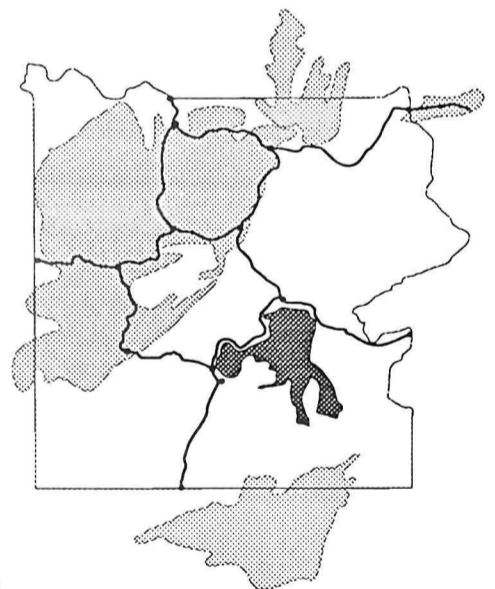
Above: Composite map of natural and man-caused fires that burned in the Greater Yellowstone Area in 1988.



Natural fires originating in Yellowstone National Park.



Natural fires originating on adjacent U.S. Forest Service lands.



Man-caused fires originating outside of the park.

Maps show burn perimeters only. Not all vegetation within perimeters are burned. More detailed maps will be available later.

## The New Yellowstone

Yellowstone after the fires provides this generation of Americans with a unique opportunity. What is being called the single largest firefighting effort in history is also being called the most significant ecological event in the history of National Parks. Those of us who are fortunate enough to witness the regeneration of life after the fires will be seeing nature operating on a

grand scale, a scale rarely observed in the world today. This isn't just a show for ecologists and researchers; it's for everybody, a once-in-several-centuries chance. Just as past visitors have been able to observe forests of many ages, all the result of past fires, today's children can follow the process of forest regrowth through their lives, remembering how the new Yellowstone was created in the fires of 1988.

Once the meadows have resprouted next

spring, and once the newly-opened forest floors have begun to sprout as well, most of Yellowstone will be green, so that visitors will still be able to enjoy green scenic vistas as well as view the effects of the fires. The wildlife, the thousands of thermal features, trout streams, and the grand mountain scenery are still in place, and the fires of 1988 have added one more attraction to the park's list.

**Fire creates new kinds of hazards. Check with rangers before venturing into the backcountry to learn about areas closed or restricted because of falling tree risk.**

This publication was produced on a Macintosh Plus computer and an Apple Laserwriter II printer 