



RANGER ACTIVITIES INFORMATION EXCHANGE

Volume 4, Number 6

November, 1988

Chief Ranger's Comments

This issue of Exchange is devoted to coverage of this year's fire season and to the Yellowstone fires in particular. Whether you were directly involved on the fireline, or working in overhead, staff or support capacities, or only indirectly affected by this year's fire activity, we hope that this material will help provide a good general picture of the Yellowstone fires.

This fire season was unprecedented for the NPS in a number of ways - more acreage burned, a greater number of firefighters mobilized, broader and more intense media coverage, greater public and political interest and scrutiny, and a greater disruption of normal operations at all levels than ever before. I imagine that this season's effect on our office was fairly similar to yours. As of mid-summer, we basically shelved our work plan and concentrated on fire. Walt and the BIFC staff spent about 150% of their time on fire activities. Several members of our staff were dispatched to Yellowstone; the rest of us dropped everything (including the September and October editions of this newsletter) in support of efforts to control the "Potomac Fire", reacting only to emergency situations in our other program areas. When we came up short, we received very welcome help from staff members from other offices. Our abilities and patience were tested regularly, but in the end we all survived.

Our fire management policy received a great deal of attention this summer and will undergo very careful review this fall and winter. We welcome this oversight and feel confident that the policy will continue to receive strong professional, scientific, public and political support. Much of the credit for this support goes to all of you who made the extra effort with members of the public and the media to interpret the policy and defend it when it was challenged.

The Yellowstone staff obviously deserves an enormous amount of credit and admiration for its efforts this summer. So do all of you for your hard work, the long hours you put in, and the disruptions to your personal lives that many of you experienced. We all shared in different ways an experience that will be unique in our respective careers and one that I hope you will remember with pride. The challenges for all of us now are to get back to normal, learn from our experiences this summer, catch up on overdue projects, and crank out a new work plan for 1989.

The report that follows is based primarily on two sources, both of which deserve credit. Most of the overview was derived from a briefing prepared by John Gingles and others in the Washington Office based on information transmitted from Yellowstone, and the fire histories come from a September report prepared by the Greater Yellowstone Area Command.

- Andy Ringgold, Chief, Branch of Resource and Visitor Protection

The Yellowstone Fires: An Overview

Fire as a natural force has been operating in Yellowstone ecosystems for at least the last 12,000 years. European man and his fire suppression efforts, together with moderate weather conditions, effectively stopped fires almost totally in the Yellowstone area for many years, however, and scientists now estimate that the last major burns in the greater Yellowstone area prior to last summer occurred in 1850.

Almost 50 years of a total fire suppression policy in Yellowstone (1920's-1970's) led to accumulations of down and dead trees, as well as a particularly old growth forest, thereby increasing fuel levels and the potential for runaway wildfire. When the prescribed fire policy was implemented in 1972, the park began allowing some lightning-caused fires to burn themselves out under prescribed conditions while being monitored.

These fires burned under a fire management program that had three basic goals:

- To permit as many lightning-caused fires as possible to burn themselves out under natural conditions.
- To prevent wildfire from destroying human life, property, historic and cultural sites, special natural features or endangered species.
- To suppress wildfire in as safe, cost-effective and environmentally sensitive ways as possible.

During the past 16 years, the park has been guided by these goals and much has been learned from the experience. It was discovered, for example, that tens of thousands of lightning strikes fizzle out and burn no significant acreage at all. Eighty percent of such fire starts go out by themselves and burn less than an acre. Of the hundreds of fires which have occurred in Yellowstone since 1972, only 140 have burned more than one acre; together, they burned approximately 35,000 acres. These fires had minimal adverse impacts - no human lives were lost, no significant human injuries occurred, and no park structures or special features were lost. Fire has created, not destroyed, habitat for threatened or endangered species.

As of early last summer, there were no special indications that the fire situation would be particularly unusual. Although the snow pack in the Yellowstone region was below average following the winter of 1987-1988, this did not cause particular concern - most winters in the past decade were also below normal, yet were followed by cool moist summers. In the spring, Yellowstone rains were as much as 200 percent above average in some locations. And in early summer the Weather Service's 30- and 90-day forecasts for the region predicted near normal precipitation, including the onset of a normal rainy season in late summer.

In the early summer of 1988, monitored fires in Yellowstone behaved for a number of weeks much as they had in previous years. Of some 20 lightning-caused fires started in the early summer, 11 died out on their own, confirming at the time that fire behavior was similar to that experienced in the past. But, in mid-summer, weather and fire conditions changed dramatically throughout the entire Pacific Northwest and Northern Rocky Mountain regions.

New forecasts in July predicted below average moisture for the park. By the third week of July, lightning-caused fires that exhibited extreme fire behavior were reclassified as wildfires and suppression efforts were undertaken. Full suppression efforts were also underway on several other fires started by both humans and lightning that began encroaching upon the park from adjoining national forest lands.

Continuing through August, the Yellowstone area experienced a severe drought along with high daytime temperatures, low humidity, and strong, gusty winds. Fuel moisture levels, normally around 25 percent for that time of year, reached an unusual low of only two percent. This is drier than kiln-dried lumber for sale in lumber yards, which averages 12 percent moisture content.

The extreme conditions which prevailed in Yellowstone caused fires to grow and burn very rapidly and actively, making them virtually impossible to extinguish and extremely difficult to contain or suppress in the rugged, remote terrain where many of them burned. Fires under such conditions may be manipulated or guided, but the fact is that without help from the weather (rain or snow), there was no human power or technology that could extinguish the fires once they reached the proportions they attained in the environment described above.

A total of 49 fires were ignited in Yellowstone this season. Of these, 43 were started by lightning (natural starts) inside the park. All but a few of these either went out on their own or were contained or suppressed early in the season. Full containment or suppression efforts were applied to those still burning beginning in mid-July.

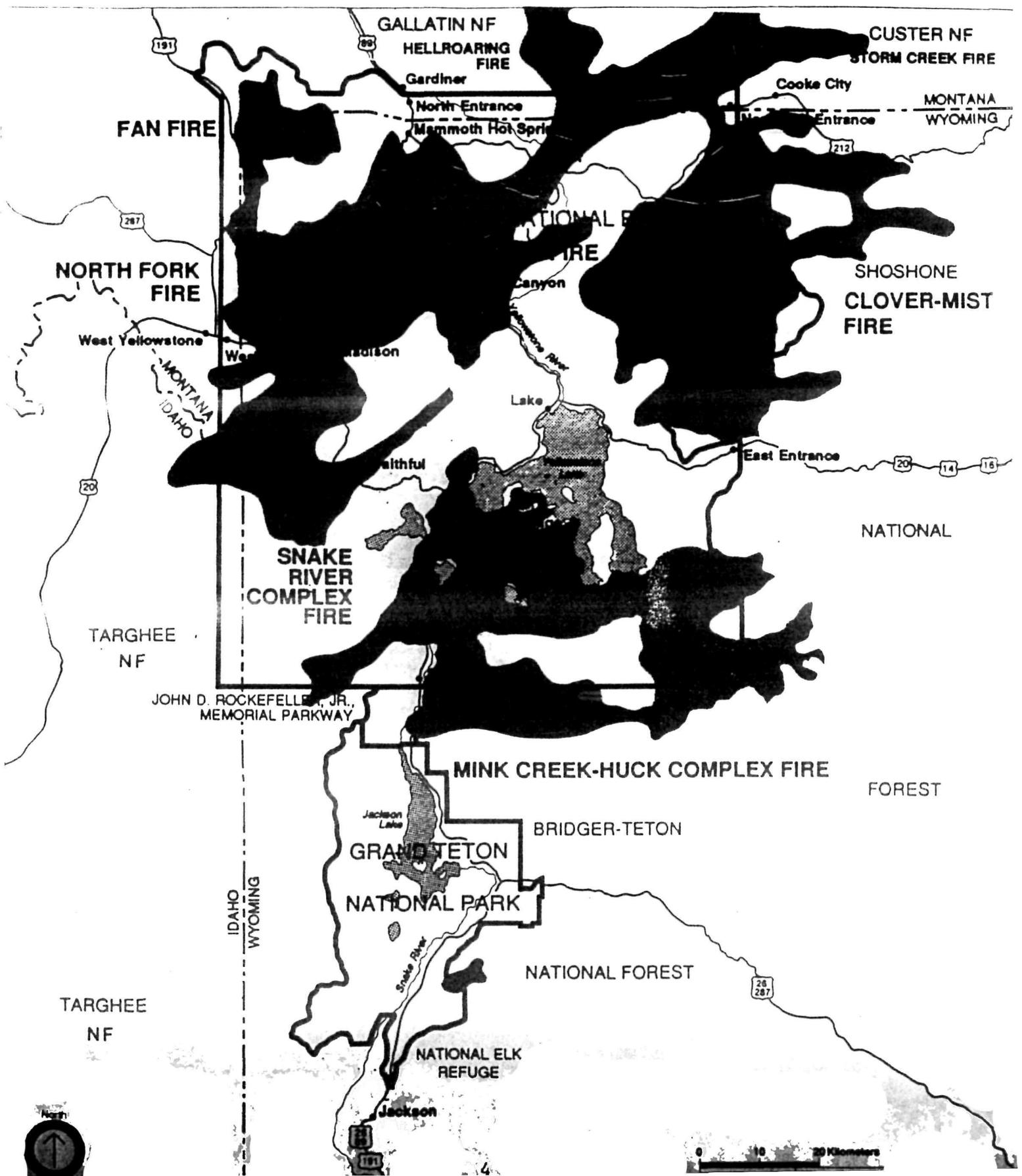
Five fires burned into the park from adjacent national forest lands. Two of the five were lightning caused, two were started by humans, and one was ignited when high winds blew a tree across a powerline. Two of these fires - the Mink and Storm Creek Fires - were initially managed as prescribed natural fires, but were subject to containment and suppression efforts by mid-July. The other three - the Huck, Hellroaring and North Fork Fires - were actively fought from their inception, using the best available professional fire management judgment and all available equipment and technology, but firefighters were unable to contain or suppress them and they burned into the park. Everything humanly possible was done to control them, but little progress was made, except in protecting developed areas and towns, until changes in the weather occurred beginning September 11th.

By mid-July, there were more than 2,000 firefighters in the Yellowstone area. By early September, a total of 9,500 firefighters, including six U.S. Army battalions and two Marine battalions, were actively working to suppress fires in the Yellowstone area. At the peak of the firefighting activity, equipment committed to Yellowstone included 439 fire engines, 77 helicopters, and 72 bulldozers.

By mid-October, a combination of significant suppression efforts, cooler temperatures, higher humidity and increased precipitation levels resulted in all of the Yellowstone area fires being contained.

Sept. 16, 1988

Greater Yellowstone Fires



The National Situation

Before examining the fires which burned in Yellowstone, it's important to put the overall fire situation into perspective. As most of you know, Yellowstone was not alone in experiencing such abnormal and explosive burning conditions. The entire West experienced one of the most severe fire seasons in its recorded history. Extremely dry conditions combined with strong, gusting winds to create more severe fire conditions than at any other time since the drought years of the 1930's. As of early September of this year, there had been more than 68,000 wildfires in the United States. This contrasts with 49,000 fires as of that date in 1987.

The widespread fires required a major commitment of resources. Total manpower assigned to fires in the U.S. in early September exceeded 30,000 firefighters and overhead personnel; about 25,000 of these were Federal forces, with the remainder from 39 different states. An unprecedented number of NPS firefighters and overhead personnel were in the field as well. The Service's commitment peaked at 1,416 people on September 11th, which exceeded the previous single day maximum of 1,118 personnel set in September of 1987.

The Fires

In order to understand the chronologies of the fires in the Yellowstone area, it's necessary to understand how they were affected by "wind events" (winds associated with the passage of dry cold fronts) which gusted up to 60 to 70 mph and dramatically affected the spread of most fires. The last six such events had the most impact on the fires, and they occurred on August 1st, 6th, 15th, 20th and 30th and September 6th. The frontal passage on the 20th alone caused an overall 24-hour increase of 165,000 acres for fires in the Yellowstone area.

- North Fork Fire - The North Fork began as a human-caused wildfire in the Targhee National Forest on July 22nd, and escaped initial attack. The west flank was contained, but strong winds spread it rapidly into the park. By night, it was estimated at 340 acres. By the 23rd, it had run four miles into the park, and was turned over to a Type I team. Protection of structures at Old Faithful Village was initiated the next day, and a containment strategy was employed on the west and northwest flanks. The fire made major runs on August 11th and 12th, causing a growth of 34,120 acres. By August 15th, the fire had crossed Madison Junction, but no buildings were lost in either the campground or housing area. Norris campground was evacuated on the 17th. The fire reached 69,000 acres the next day, and 72,410 acres the day after. On the 20th, it made a major northeasterly run, splitting into two heads which passed to the north and south of Norris Junction. Management of one lobe was turned over to a new IC as the Wolf Lake Fire (below). Old Faithful was again threatened over the last few days of the month, and the western flank burned downslope toward West Yellowstone. Bulldozers and handcrews constructed firelines and fuel breaks to protect the town. Large capacity sprinkler systems were installed on the south and east sides of town and at Old Faithful Village. Winds picked up fire activity on the north and southeast flanks on September 6th and continued into the 7th. Old Faithful Village was evacuated on the 7th; no injuries occurred, but the firestorm which swept through the area burned 19 cabins, two dorm rooms, three storage/shop buildings, a restroom, five vehicles, a water tank and a television transmitter station. On the 10th, the northwest flank of the fire burned into the Fan Fire.

- Wolf Lake Fire - Due to the large size of the North Fork Fire - 40 miles long and 104,000 acres as of August 25th - the fire was divided into two incident commands on that date, and the new blaze, which was on the northeast sector of North Fork, was dubbed the Wolf Lake Fire. Initial efforts were focused on protecting Canyon Village. The winds of September 8th and 9th pushed the north flank of the fire across the Yellowstone River and toward the Tower Junction development. Structural protection on the night of the 9th was effective and no buildings were lost. The fire burned up to the YACC camp just south of Mammoth Hot Springs that same day; although it spotted to within a quarter mile of Mammoth, the fire never reached the developed area. Cooler temperatures, precipitation and higher humidities finally checked fire activity.

- Clover/Mist Fire - The Clover/Mist Fire was so designated on July 23rd, and was comprised of the Clover and Mist Fires and a number of smaller blazes:

* Clover Fire - The Clover was ignited by lightning on July 11th and was monitored as a prescribed natural fire. It made its first major run on the 14th, prompting emergency protection of backcountry cabins. Firefighters deployed shelters at the Calfee Creek patrol cabin; there were no injuries, and this cabin and others were saved. The Clover joined the Mist Fire on the 22nd.

* Mist Fire - The fire was started by lightning and was monitored as a prescribed natural fire until suppression was ordered on July 21st. The south flank generated the greatest concern due to its movement toward wilderness lands in the Shoshone National Forest; despite efforts to control its advance, the fire ran into the forest and joined with the Clover Fire on the 22nd.

A Type I team was brought in on the Clover/Mist on July 23rd. Strong winds and extreme weather increased the size of the fire to 46,825 acres on the 26th and 68,035 acres two days later. On August 20th, the fire made an 11-mile run, burning an additional 46,500 acres and causing fires to spot across eastern passes in Shoshone NF. Frontal winds with gusts of up to 70 mph on September 8th and 9th developed into terrain-channeled downslope winds that affected fires burning in five drainages and destroyed structures around Crandall, including 13 trailers, three residences, six outbuildings, a store, three vehicles and two boats. Four to six inches of snow fell on higher elevations between September 9th and 13th, which led to a reduction in fire activity. The only death associated with fires in the park occurred during mop-up operations, as a firefighter was killed outside the park by a falling snag.

- Fan Fire - Lightning started this blaze in the park on June 25th. It was declared a prescribed natural fire and was monitored by ground and air. When erratic winds caused spotting across the Fan Creek line on July 25th, it was declared a wildfire and a Type II team was ordered. Strong, erratic winds between July 29th and August 2nd caused the fire to increase in size by almost 16,000 acres, and the patrol cabin at Sportsman Lake was lost on the 2nd. Strong suppression efforts held the fire within the north boundary of the park.

- Snake River Complex - The Snake River Complex was so designated on July 21st to cover a number of fires burning in the same area south of Yellowstone Lake. These fires, all of which were lightning caused, included the following:

* Shoshone Fire - The fire began on the west side of Lewis River on June 23rd and burned with low activity for several weeks. It was initially declared a prescribed natural fire and monitored by air and ground reconnaissance. It was declared a wildfire on July 21st. It grew from 160 to 1,000 acres on the 22nd, then from 1,000 to 4,500 acres the following day. Grant Village was evacuated on the 23rd. The fire doubled in size on the 25th, and made a run on Grant Village and West Thumb the next day. The developments there were successfully protected. The Shoshone merged with the Red Fire on August 8th, then with the Continental and Ridge Fires on the 21st.

* Red Fire - The Red started as a prescribed natural fire on the southwest side of Lewis Lake on July 1st. It was monitored by air and ground and grew to 1,000 acres over the next 20 days. It was declared a wildfire when it threatened the Lewis Lake Campground on the 21st. On the 23rd, winds pushed the fire east and forced the evacuation of the campground. Suppression efforts focused on keeping the fire in the park and in protecting life and property. The fire made a major northeast run of nearly 7,000 acres on the 25th, advancing four miles in four hours. It blew up to 10,600 acres to 20,300 acres on August 7th, and burned into the Shoshone Fire the next day.

* Falls Fire - The fire began on July 12th one mile north of the park's south boundary with the Bridger-Teton National Forest. It was declared a prescribed fire. Northwest winds pushed it south on the 14th. Suppression was ordered on the south flank on the 17th to keep it in the park; the entire fire was declared a wildfire on the 21st. Strong winds pushed the fire from 385 to 2,200 acres on the 23rd and 24th. A hail storm cooled the fire on August 13th, but the north flank continued to expand until it merged with the Snake River Complex on the 25th.

A Type I team was assigned to the complex on July 23rd. Great effort was made to protect developed areas through fuel modifications and burnouts. On August 25th, the strategy changed to preventing spread to the north with a control line between West Thumb and Shoshone Lake. The objective was to prevent the complex from threatening Old Faithful and joining the North Fork Fire. On September 1st, the Snake River complex burned south into the Huck Fire.

- Huck Fire - A tree across a power line started the Huck Fire on August 20th along the Rockefeller Parkway. The fire threatened the Flagg Ranch and burned 4,000 acres in two hours. The ranch and a nearby campground were secured, and subsequent efforts focused on keeping the fire west of the highway. The fire burned east and northeast over the next several days. It had consumed 21,500 acres by the 25th, and spotting up to 3/4 mile ahead led to the evacuation of a spike camp the next day. The fire made major runs on the 30th, growing by 10,200 acres in 24 hours; one head ran northeast into the park and across the Snake River. Winds again blew it up on September 6th and 7th, and the fire joined the Red-Shoshone on the 8th. A light rain on the 10th and snow on the 11th began a cooling period that lasted through the 15th; heavy snow three days later further helped to retard the fire's growth.

- Mink Fire - Lightning started the Mink Fire on July 11th in the Teton Wilderness Area of the Bridger-Teton National Forest. Since the fire was within the forest's fire management guidelines, it was monitored but not manned. On July 14th, the fire was declared a wildfire because of its behavior and the extremely dry conditions which had developed; a Type I team was

assigned the next day. The fire began to spread rapidly to the north and northeast, and was estimated at over 14,000 acres by the 18th. Containment efforts were focused on the fire's southern flank. On the 24th, the fire entered Yellowstone. By the 29th, the fire was ruled to be 100% confined and contained, but it soon escaped and continued to spread south of the containment line on the east side of the Yellowstone River. The Thorofare patrol cabin was successfully protected. Area priorities dictated that containment efforts be directed at other fires, so the Mink was minimally manned for the next few weeks and continued to burn in the park. It joined with the Red-Shoshone Fire of the Snake Complex on August 29th, then joined the Huck on September 12th.

- Storm Creek Fire - Lightning started the fire in the Custer National Forest in the Storm Creek drainage on June 14th. It was managed as a prescribed fire and grew slowly to 125 acres over the next two weeks. On July 2nd, it made a major run and grew to 2,400 acres, and a Type I team was brought in on the 4th. After six days of suppression efforts, they turned the fire back over to the forest, and the fire was patrolled on an "as needed" basis. The windstorm of August 20th blew the fire eight to ten miles upcanyon in four hours, though, and another Type I team came in to manage the fire on the 23rd. Preliminary plans were made for the evacuation of Silver Gate and Cooke City, which were threatened by this fire and the Hellroaring Fire. The fire got into the Lost Creek drainage on the 31st, and ran down Slough Creek. The two towns were evacuated on September 4th, and a burnout operation from a dozer line to the west of Silver Gate was begun. High winds pushed this burnout fire close to Cooke City on the 7th; 10 residences, 13 sheds and a television transmitter station were lost. An inversion slowed the rate of spread over the next few days, and rain on the 10th and 11th led to eventual demobilization.

- Hellroaring Fire - This human-caused fire began near an outfitter's camp in the Gallatin National Forest on August 15th. Immediate suppression action was taken, but the wildfire burned 120 acres by the end of the day and eluded efforts to contain it. It continued to grow, burning 5,700 acres on the 19th alone. An even larger run occurred the next day, as winds up to 60 mph created a 27,000-foot-high convection column and caused the fire to burn 14,000 acres in a 24-hour period. The fire entered the park on August 26th. Torching and sustained crowning on September 7th forced crews to abandon firelines they had constructed over the previous several days, and an aerial burnout operation increased the fire size by another 20,000 acres. Snow began falling on September 11th, and the fire was officially declared contained that evening.

Impacts on the Park

All told, 1.6 million acres of park, forest and private land were encompassed by the perimeters of the fires in the greater Yellowstone area. Of this total, 1.1 million acres were within the park. Less than 600,000 acres of the 1.6 million total were burned by fires which originated in the park.

These numerical totals do not paint a true picture of the amount of park land burned by fires. Although it appeared to the untutored eye that much of Yellowstone was consumed and devastated by fires, less than half of the acreage within fire perimeters was actually impacted due to the fires' spotty nature. Further, of the half million acres affected by fire, much was either lightly or moderately burned.

With the exception of elk, it appears that the fires did not destroy significant numbers of any species resident in the park. To date, the bodies of about 200 elk have been discovered throughout Yellowstone. Bear experts believe the fires and smoke had little effect on bear activity. Because bears are very mobile, it is thought that few bears were caught in the fires. In fact, the fires will have a positive effect on bear habitat by opening the canopy and allowing for new plant growth. Bears generally are attracted to fresh burns because of the new vegetation and increased rodent populations, both of which are excellent food sources.

Fire also increases the diversity of vegetation species as much as four fold and changes spatial distribution. Grasses and smaller bushes respond immediately after a fire. Small rodents, and larger ungulates such as elk, bison, deer and moose inhabit these areas as soon as new growth appears. Nutritional content of the new vegetation is enhanced as fire recycles and adds nutrients such as potash, calcium, iron and magnesium to the soil. As these increased levels of nutrients enter watersheds, fish populations proliferate.

Rehabilitation and Mitigation Efforts

On September 13th, the White House announced an extensive initiative to provide emergency relief and assistance to the Western states affected by fire and to develop a Federal post-fire recovery strategy. While recognizing that putting out the fires was a main priority, various agencies began work on post-fire recovery plans at an early stage.

In Yellowstone, the NPS has already started rehabilitation of fire lines, clean-up activities and removal of potentially hazardous trees in and around developed areas and along road corridors. The park and its facilities will be kept open to the extent possible to accommodate the influx of tourists and visitors who will be drawn to Yellowstone by the publicity surrounding the wildfires. Visitation to the park in October broke all previous records for that month, and it's expected that this trend will continue.

As much clean up and hazardous tree removal as possible will be accomplished before winter closes in on the park and will be continued throughout the winter months, particularly in developed areas (such as Mammoth and Old Faithful), as weather conditions permit. Immediate erosion control steps were conducted routinely by crews on firelines as they were pulled out, and further efforts are being conducted in these areas as necessary. NPS scientists are currently assessing the need for any possible riparian zone erosion control measures along streams and rivers in the park. Wildlife herds will be monitored this fall and winter to detect any significant changes in their winter migration and feeding patterns. Any impacts from the fires to threatened or endangered species, vegetation and vegetation patterns will also be investigated.

An interdisciplinary team has been named by the NPS to develop, recommend and coordinate implementation of a comprehensive park rehabilitation plan of both short and long term mitigative actions.

The Future

Contrary to some of the published reports which focused only on the perceived, short-term "destruction" and "devastation," the 1988 season's fires in Yellowstone will in broader perspective constitute a rebirth, a renewal, of the park's ecosystems. They mark the end of one important life cycle but assure the beginning of the next.

Research and past experience has shown that in the segments within burn areas where trees are killed by fire, open areas will develop; in those places seeds will germinate more readily, low growth will spring up within a very brief time, new and more varied shrubs and trees will emerge, and wildlife will return in even greater numbers than before. Many younger, healthier groves survive the fire. This produces the natural forest mosaic so characteristic of Yellowstone, and so rare in our modern world.

Yellowstone's current vegetative mosaic was created by numerous fires and provides a varied habitat for the wide diversity of wildlife that abounds in the park. Elk, deer and grizzly bears are expected to greatly benefit from the results of the current fires. Bird populations generally considered to be in decline, such as mountain bluebirds and three-toed woodpeckers, should experience something of a population boom.

The growth of the new biotic community begins immediately following the burn. Some insects begin to use the new food source provided by freshly killed trees. Root stalks of many plant species such as aspen and willow begin to resprout. By the fourth growing season the forest floor is essentially a mat of grasses, flowers and shrubs. Seedlings of future forests (fir, spruce and pine) become established. Plant growth is lush and vigorous because of abundant mineral nutrients available from the ashes and because of increased light levels. In fact, many of these plant species actually need fire to enhance their survival in the vegetative community.

The Service intends to initiate an extensive research effort to capitalize on this opportunity to study and interpret the successive stages of rejuvenation and reforestation of the burned areas. Over the next few decades, research opportunities for the scientific and academic communities will abound in the park, similar to those provided by the Mount St. Helens natural phenomenon in the State of Washington.

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The Ranger Activities Information Exchange is produced by the Washington Division of Ranger Activities. Walt Dabney, Chief Ranger. Address letters, comments and inquiries to: Bill Halainen, Ranger Activities (650), Stop 3310, National Park Service, Box 37127, Washington, D.C. 20013-7127; FTS 343-4874 or (202) 343-4874.