

Chapter 12 - The Forests and Fire

Although intensive grazing practices contributed to the deterioration of forest rangelands before the turn of the century, and range management occupied a great portion of the time and attention of the Forest Service in the Southwestern Region, forest fire control and prevention seemed no less critical to the protection and management of the southwestern forests and to the welfare of the region. Early foresters, as did the general public, believed fire to be the preeminent threat to forest resources. Fire was the most sudden, obvious, and radical cause of forest deterioration. The newly created national forests of the Southwest bore mute testimony of the lasting damage or alteration caused by fire. As time passed, fire prevention and control became so effective that the growth and development of southwestern forests became as markedly affected by the *absence* of fire as they had previously been affected by fires of earlier centuries.

Damage from range and forest fires incurred in the times of the Indians and Spanish or Anglo-American settlers and before the establishment of the first forest reserves was in some areas extensive and long-lasting. In other areas, fire damage had been minimal, and ancient fires may have fostered maintenance of the subclimax pine forests. There is evidence that fires that burned in the pre-Columbian, Spanish colonial, and Mexican eras were more widespread and destructive than those of modern times. For example, about 200 years ago, a fire in the region of the San Francisco peaks in northern Arizona burned approximately 18,000 acres. It destroyed a heavily stocked stand of Engelmann spruce and Arizona fir and destroyed 60 percent or more of all vegetation on about 7,000 acres. Similarly, a fire in the 1880's in the mountains above Santa Fe, NM, "ragged for weeks."¹ Many of these early fires had been set intentionally or had expanded when small fires were not put out promptly. Nature also contributed to the fires. Dry lightning storms, annual events in the Southwest, set many fires.

Aspen Comes in After Fire

There is evidence of ancient burns on the Black Range, where growth of quaking aspen had replaced former vegetation and grown so thickly and so rapidly as to crowd out all other species. On the Kaibab National Forest, a survey by Lang and Stewart in 1909 reported extensive early damage from fire. "Vast denuded areas, charred stubs and fallen trunks and the general prevalence of blackened poles seem to indicate their frequency and severity long before this country was explored by the white men," they reported. Observers believed that most of the ancient fires were caused by lightning, but that many had been set by Indians during their hunting forays.² Forest inventories indicated varying evidence of ancient fire damage.

Sixty-six thousand acres of the Grand Canyon Division of the Tusayan National Forest were inventoried in 1910 by J.H. Allison. Allison said that in heavy timber, with trees of 12-inch diameter or more at breast height, there was little evidence of old fire damage and few scars at the bases of trees. But large areas in the Carson National Forest had been burned, he said, and there were extensive areas where the major stands of Douglas-fir had been completely destroyed by fire years ago. There were, he noted, occasional pockets of Douglas-fir or white fir that had escaped fire. Almost all of the burns identified occurred on the Douglas-fir and white fir and subalpine types. In these areas, he said, fires frequently crowned and would kill an entire stand. "But even the largest burns will in all probability be restocked with a coniferous stand in the course of time," he believed³

Damage to mature timber is in some respects less critical than damage to the site, which may reduce its growing capacity. The 1922 management plan for the Mount Graham Division of the Crook National Forest indicated that ground fires were second only to grazing in the destruction of seedlings. Evidence existed of numerous ground fires over the larger portion of the forest. In altitudes above 8,000 feet, where older timber stands had been destroyed, ash had filled in. Fires in the Jemez Division of the Santa Fe National Forest had impaired site values, and the size and quality of timber had been diminished. Once fire had been eliminated or controlled, young growth of the transition type grew in excellent stands.⁴

The management plan for the Mount Graham Division in 1925 suggested that the absence of fire damage in the fir types was due to the heavier precipitation and the late snow. The absence of "areas burned to the point of devastation" before fire protection in the forests began indicated that extra high standards of fire prevention would be unnecessary. But on the lower slopes, the forests dried earlier and conditions were conducive to fire.⁵



Figure 31. Fire burning on the Gila National Forest, 1951.

Fires Follow Cutting

Timber cutting and fire hazard were also related. A 1926 memorandum to the district forester noted that the fire hazard was extreme in the cutover areas of the national forests of the Southwest. The fire hazard was believed to be five times as great on timber sale areas of the Coconino and Tusayan National Forests as on all other lands.⁶ Logging damage from cuts in the late 19th century were substantial and lasting, usually because of the destructive fires that followed cutting. "Some areas were laid to waste, and huge amounts of slash accumulated which led to some disastrous fires.... During the early railroad logging days, large clearcuts covered several townships south and west of Flagstaff, Arizona. All failed to regenerate."⁷

Prior to the time that the Forest Service acquired the reserves, substantial cutting had occurred on some of them in the Southwest. Logging operations had been conducted on an estimated 148,846 acres of the San Francisco Mountain Forest Reserve. Much of the cut took 95 to 100 percent of the timber. Little cutting, however, had occurred on the Black Mesa Forest Reserve, and what was described as "desultory" cutting had been carried on in the Gila River Forest Reserve. But on what became the Manzano National Forest, logging had been very heavy. The forests had been "culled for ties and other railroad construction material," and in some ranges there were insufficient trees left standing to reseed the area. Less than 1,000 acres had been cut in "small and scattered" areas of the Sitgreaves National Forest. Cutting had declined considerably on the Gila National Forest because the mines were "turning to oil for fuel." The Tusayan, however, suffered

from overcutting, and harvest on the Carson National Forest had been heavy in some places, particularly trees "cut in trespass prior to the creation of the Forest "⁸

Grazing Damage Exceeds That of Fire

Aldo Leopold believed that damage from grazing exceeded that from fire. Leopold said that even the severe fires of presettlement days failed to destroy the equilibrium of the watershed:

Heavy local damage to all kinds of resources has taken place since the 16th century, but the country is still there. This does not mean that damage leaves no scars. On the contrary it produces radical changes-the history of three centuries is boldly inscribed in soil and vegetation of the west side above Santa Fe. The point is that *when one equilibrium is upset there is another ready to take its place*. This is the characteristic of resistant countries the world over. They change but do not dissolve. The true Southwest, on the other hand, does change. It is either conserved or in process of dissolution.⁹

Leopold believed that damage from fire was not comparable "to what grazing has done since."¹⁰ It was reported that a flock of 2,000 sheep would destroy 50 to 100 percent of the aspen seedlings in a tract of land through which they ranged, although after young pines had reached the age of 3 or 4 years, the danger of destruction from grazing was small.¹¹

Similar grazing damage was noted on the three other forest reserves in Arizona and New Mexico that had been inventoried by the USDI Geological Survey. It was reported in 1904 that an "animal cannot get a bite for miles around." Roots of the grasses were so thoroughly destroyed that it was doubtful that any reproduction could occur naturally. The lower slopes, below the 7,000-foot contours, had been irreparably damaged by overgrazing. Fully half of a township in New Mexico (T9S, R15W) that had been given over to stock grazing was "a barren desert, [without] a blade of grass being seen and even the roots being entirely destroyed."¹²

On the national forests, grazing damage was severe in many areas, but was lessening under Forest Service control. By 1909, the condition of the range was better. Improvements were attributed to Forest Service management. Overgrazing, however, still occurred near the small Hispanic towns and in the vicinity of ranch houses. The lands in and about the Sitgreaves National Forest, for example, were recognized at one time as one of the "finest summer and winter ranges in the Southwest." The range had been much abused, however, and had degenerated seriously under the drought conditions and overgrazing that prevailed between 1898 and 1906. By 1910, Daniel W. Adams could report that the portion of the grasslands under Forest Service regulation was much improved, but not as much so as the White Mountain Indian Reservation, where sheep grazing had been prohibited. In 1923, Quincy Randles reported that sheep grazing was still the greatest factor contributing to the destruction of yellow [ponderosa] pine reproduction on the Tusayan National Forest. He advised halting sheep grazing "prior to cutting and after cutting until the area is fully stocked with young growth three feet in height "¹³

Fred Croxon suggested at the Tonto Grazing Conference in Phoenix, on November 5, 1926, that not only overgrazing but erosion and site deterioration attributed to overgrazing, as well as excessive cutting and burning, made reforestation and revival virtually impossible. Brush and gravel had replaced grasslands and timber in some areas:

Florence C. Packard, probably the oldest living man to settle in Tonto Basin, came to the Salt River Valley in 1874.... He tells of Blackfoot and Crowfoot Grama grass that touched one's

stirrups when riding through it, where no Grama grass grows at present.... There were perennial grasses on the mesas along Tonto Creek where only brush grows at the present time. Mr. Packard says that Tonto Creek was timbered with the local creek bottom type of timber from bluff to bluff...

E.M. (Chub) Watkins, whose father, Captain K.C. Watkins, settled on Tonto Creek in 1882 ... tells about the same story of early conditions as Mr. Packard. He says Curley Mesquite grass covered the foothills but did not extend to so low an elevation as at present, these lower elevations having been covered by Grama and other grasses now gone.... There were no washes at all in those days, where at present arroyos many feet deep are found and at places cannot be crossed.¹⁴

Thus, fire was a contributing, but not exclusive, factor in the deterioration of the forests. Fire, however, occurred all too frequently.

The Early Efforts at Fire Control

Fires seemed to be frequent and often large, according to old-time rangers such as Richard F. Hanna, an early forest officer on the Santa Fe National Forest. Hanna began his ranger duties in 1899 and moved to Santa Fe on June 30, 1900. He recalled a fire in the summer of 1900 that covered 40,000 acres. Rangers, he said, were hired for the summer during fire season and laid off in October. Fires were "unusually prevalent" and required hundreds of men to fight them.¹⁵



Figure 32. Fighting fire, Gila National Forest, 1951.

Fred S. Breen assumed duties as supervisor of the Black Mesa Forest Reserve early in the century and organized fire control work. Early in his administration (June 6, 1902), Supervisor Breen drew up what he termed "General Instructions to Rangers." Those items in the instructions that pertain to fire control are listed below and offer good insights into early methods of fire control:

3. Rangers are expected to remain strictly upon their own districts unless otherwise ordered by the Supervisor or, in case of fire, on an adjoining district.
4. Rangers are expected to go to a fire at once wherever one is discovered within a reasonable distance of his district...
10. Post fire warnings along all roads, trails, and at springs or other camping places frequented by campers. Nail them up securely and plentifully over all your District. Warn all persons of the penalty of leaving camp fires unextinguished...
12. Report all fires no matter how small that you extinguish, giving location of same, and whether caused by locomotive, sheep-herder, camper, cattleman, or others. Use due diligence in

ascertaining who the guilty ones are, and report all facts in the case, so that he may be punished for his neglect.

Printed blank fire reports are furnished you as a sample, covering all classes of fires and the information concerning each, upon which you are required to report. Keep this and make reports on blank paper covering all points requested in the case.

In case of fire assuming too great proportions to be handled by a ranger, you will communicate with the Supervisor immediately in the quickest manner possible, giving him the locality, extent of fire, and such other information necessary for him to act intelligently upon. Only in exceptional cases of great emergency are rangers to hire help in putting out fires, and then only when they cannot reach the Supervisor for instructions. Rangers are not to guarantee the pay of persons found fighting fire or any other persons who are helping to save their own private property. The Supervisor will pass upon all claims of this kind and decide whether or not they are entitled to compensation...

14. Monthly fire reports should be made out on separate sheets, giving cause of fires, location, extent, etc....

18. Rangers are expected to pile and burn brush in most dangerous places along roads and trails where fires are most liable to get started, to burn fireguards when possible without danger of fire spreading, ... [The Ranger should] find the most exposed places and remove the debris to protect the forest from fires . . .¹⁶

Forest fires had headlines in area newspapers. Other damage to the national forests, except severe floods, did not attract public attention as much as fires did. The July 5, 1907, issue of the *Albuquerque Morning Journal* reported that a large area of timberland was burned over and that flames were still going on the Gila National Forest, with a big force of rangers in the reserve fighting the fire. Three days later, the paper reported that fires in Arizona "started in the upper fork of Montezuma Canyon ... due to carelessness of campers ... blamed on excessive high temperature during the past week."¹⁷

Loggers Had to Pile and Burn Slash

Forests being logged also tended to attract fires. Because of the fire hazard on logged areas, the Forest Service required loggers to pile and burn slash in order to reduce the fire hazard. Assistant District Forester A.O. Waha felt that simply lopping the branches and scattering them would work just as well, especially where soils were thin, and this would help build up the humus on the forest floor. Waha suggested that the proper change in instructions should be made, and in 1909, the district forester approved the suggestions.¹⁸

The October 9, 1907, edition of the *Albuquerque Morning Journal* reported an address by E.S. Gosney before the Wool Growers, in which he questioned the abilities of forest rangers to cover large areas and attacked the policy of preserving nonforest areas. "These forests," he said, "can never be protected by forest rangers." Thousands of fires are started by lightning and campers and in other ways, and extinguished by stockmen, he said. "I have known stockmen to fight fires for days and extinguish them without ever seeing a ranger!" And Gosney was correct. In the fiscal year ending 1907, some rangers had to patrol more than 200,000 acres.¹⁹ Fire control required both organization and more personnel.

The first program for increased forest fire protection for the Southwestern District (Region) was developed by the first district forester, Arthur C. Ringland, in 1908. He wrote to the forest supervisors in the district and advised "a careful study of the conditions of the Forests and the adoption and use of a definite fire plan." Ringland urged that the rangers develop a deep interest in preparing fire plans. He suggested several things: building lookout stations on peaks, constructing telephone lines from the peaks to the ranger's or supervisor's offices, building trails and roads to move firefighters, putting tool boxes in strategic places, and hiring firefighters or organizing volunteers.²⁰

Correspondence on the Datil National Forest in 1909 indicated that the foresters acted on Ringland's suggestions. Supervisor W.F. Goddard asked his foresters to report on their method of handling and extinguishing fires. He wanted to know the types of tools and personnel used and methods of organizing the crews, the supplies requested, and where they were obtained and how they were delivered to the fire areas. Two weeks later, the ranger near Santa Fe responded to Goddard. He said he was getting good support from local stockmen and permittees who were anxious to protect the ranges from fire. He suggested that permittees be used whenever possible on fire protection, in preference to hiring laborers. He also noted that the only equipment needed in his district were axes and shovels.²¹ Ringland required that all national forests have fire plans. In inspection reports the fire plan always seemed to be an item that was either in good order or in bad order; rarely was it deemed average.

Bad Fire Years

In some years, and especially in 1917, 1918, and 1921, fires seemed to be particularly bad. The Arizona Gazette reported on one forest fire that started in Mexico and came across the border into the Coronado National Forest in June 1917. It burned over 4,600 acres before being brought under control. Similarly, the *Carson Fine Cone* reported several fires in 1917 and 1918:

So far as we know, the champion-sized fire that has ever occurred on the Carson came off on the Taos District between November 8th and 14th. All the factors for a large and exceedingly difficult fire to fight were present: extreme dryness, high winds, and almost inaccessible country. The fire was on the high, rough ridges on the east slope of Pueblo Peak, about twelve miles from Taos. Difficulty in securing men for the first two days prevented a successful attack of the fire until the sheriff of the county was appealed to and sent out a large force of men who were practically deputized for the work. Supervisor Barker was in direct charge of the fire and was assisted by Ranger Dwire in directing the work. Approximately 560 acres were burned over and the cost of fighting the fire will be something over \$400.²²

The 1917 fire season began "very badly" on the Carson. There were high winds and an exceedingly dry spring. Forest officers were advised that most of their work should be devoted to fire protection. They were reminded that leaving a campfire without completely extinguishing it constituted trespass and under the Act of June 4, 1897, was punishable by a \$500 fine or 12 months' imprisonment, or both. The Act of March 4, 1909, raised the fine to a possible \$1,000. Forestry personnel were also advised to know the rules of trespass and to follow instructions for brush disposal very carefully.²³

Drought and high winds in 1921 contributed to an extremely bad fire season in Arizona and New Mexico. In 1922, the Agricultural Appropriations Act made the first appropriation specifically for the improvement of public campgrounds in national forests, with special reference to the protection of the public health and prevention of forest fires. A 1923 agreement between the State

land commissioner of New Mexico and the Forest Service provided for forest fire control by the Forest Service on State holdings within the boundaries of the Carson National Forest.²⁴ Although public use of the forests rose markedly in the 1920's, local residents rather than tourists seemed to be most responsible for forest fires.

Fires From Carelessness

Assistant District Forester Hugh G. Calkins said in 1926 that only 26 of 202 fires during 1925 were caused by tourists. He blamed the "home folks" for carelessness. By 1927, the incidence of fire on the Coconino National Forest was rising. Over the period 1913-26, inclusive, the number of fires each year varied from 74 to 350, and the acreage burned from 393 to 9,346 acres. The number of class C fires-those covering 10.00 to 99.99 acres-varied annually from a low of 3 to a high of 82. Fires in western yellow [ponderosa] pine forests seemed to occur more often in areas where timber cutting was taking place. Timber sale contracts included fire protection requirements, including the necessity to pile and burn brush in cutover areas.²⁵ Fire prevention, fire planning, and fire fighting demanded an enormous amount of administrative and physical energy. The excitement of fighting a forest fire, as well as the fact that such work produced sizable overtime wages or seasonal bonuses, generated a broad-based enthusiasm for fire protection work. Fire fighting is what many of the old timers remember best.

Fire Towers

The first Forest Service fire towers were simple platforms on high ground with an open view of the surrounding forest, or trees cleared of their limbs and topped with a crude platform. The platform might eventually be covered, and about 1915, the first wooden tower was constructed. In the 1920's and 1930's, wood continued to be used for most fire towers, but the structures were more elaborate.²⁶ Steel began to be used in a few towers before World War II, but construction was so expensive that few were built. After the war, greater dependence on air surveillance reduced the need for fire towers. All but a relatively small number of towers have now been removed, and those remaining seem to be permanent fixtures in the fire control operations of the Southwestern Region.²⁷

There is a stereotype picture from the past of the "lonely ranger," living an isolated existence in a rustic log cabin, perhaps with his family, climbing the tall ladder to enter the tower, and peering patiently across the endless forests for signs of smoke. This is largely a thing of the past. In the early years, most of these posts were operated on a seasonal basis, and often by temporary employees. As early as 1909, lookouts were connected to ranger district offices by telephone, and today telephones and radios relay fire messages from airplanes and watchtowers to fire control crews.²⁸

The Southwestern Region now operates 82 permanent lookouts in New Mexico and Arizona rather than the several hundred that existed before 1940. There are 50 permanent lookout towers in Arizona, with 11 of these on the Coconino National Forest. They are strategically placed to afford a maximum surveillance. Towers on the Coconino tend to run in a northerly direction, while those on the Sitgreaves are aligned in a westerly line along the Mogollon Rim. Most of the towers are reached over dirt or primitive roads. The tower with perhaps the most difficult access is the Escudilla Tower on the Apache National Forest, which can be reached by hiking in from a

primitive road. Bill Williams Tower, on the Kaibab, can be reached by an isolated dirt road with innumerable switchbacks.

New Mexico has 32 permanent lookouts in operation. Some lie along major highways; others in isolated areas of the Sierra Blanca on the Lincoln National Forest. One of the most difficult to reach, on the San Mateo Peak in the San Mateo Mountains, requires a 5-mile trail hike from a primitive road. The Gila National Forest operates 12 towers, more than any other of the national forests in the region.

Fire Fighting Reminiscences

The Southwestern Region, as all the Forest Service regions in the Western United States, has a long and noteworthy history of forest fire protection and control. Since tales of fire fighting are more interesting and colorful than tales of timber inventory, timber sale appraisal, road and trail construction, and posting changes to the Forest Service Manual, it is only natural that fire fighting and range work are the best documented of the lore of the early days in the Southwestern Region. A few synopses of fire recollections recapture the human drama associated with forest fires in the Southwestern Region.

Tom Stewart started his assignment on the Pecos Reserve in 1903. The day he started, he saw smoke from two sources from the top of the mountains where he had ridden. On the first fire, he was assisted by ranchers who were gathering their tools when he found them. After putting out the first, he obtained the assistance of 15 to 20 men from the village of Agua Negra to deal with the second fire, and in so doing he made friends with the *alcalde* (mayor), who from then on cooperated with the Forest Service.

Roscoe Willson told about seeing Halley's Comet in 1910 while on a fire under the Mogollon Rim upslope from Roosevelt, AZ.

Ed Oldham, ranger on the Flagstaff District, had organized the settlers into fire crews. These people would head for a fire without having to be notified--the smoke was their beacon.

Henry Woodrow was assigned as fire guard in 1909. "All the instruction I had was to go up there and look out for fires--and put them out." On one fire, when he reached the scene, an old-timer--prospector--had already started to fight the fire.

Ed Ancona remembered a time when he was on the Crown King Ranger District of the Prescott National Forest. Just when he was ready to eat ice cream he had made from collected cream and a shipment of ice, a fire was reported to him. According to his story, "The call to duty was stronger than that of the ice cream."

Paul Roberts, better known for his books on range aspects of the Southwestern Region, remembered the time in the Pinedale District when a fellow smoked out some bees but let the fire get away. He later admitted that he was responsible, but also said, "There ain't no law against lyin' a little to keep out of trouble, is there?"²⁹

Fires sometimes involved lawlessness and violence. Stephen J. Pyne, in his book *Fire in America*, recites the following:

During 1927 in Lincoln County, New Mexico, the scene of bitter frontier range wars in the nineteenth century, incendiary fires were constantly being set around a certain ranch.... When

firefighters were indeed met with rifle shots, the sheriff and local forest supervisor set out after the unrepentant incendiary. In the ensuing shootout an innocent Forest Service clerk, commandeered as a driver, was killed along with the rancher.³⁰

Tucker and Fitzpatrick go into considerably more detail with the story, indicating that the man shot was an executive assistant, who had been a former ranger and had been threatened several times by the incendiary while serving in this position.

In the early days in the district, the rangers were directed to go wherever they were needed to put out fires, or to other districts to help with fire camp organization on very large fires. When called to a fire, rangers came from remote distances, as far away as the Rockies.³¹ One forester, called to fire duty from the Kaibab, rode his horse overnight to his home in Fredonia, got food and fresh horses, and then rode for another day to catch a train that could get him to the fire location.³²

Fire Innovation In the Southwestern Region

The region had a log of firsts when it came to fire fighting, but was slow in some areas, such as in adapting to the use of the radio. Perhaps one of the most interesting innovations of the early days was the placing of cast iron "fire finders" in the forests for public use. "When a traveler spotted a fire, he could take a reading on it from one of the fire finders mounted at lookout or vista points along various roads, and phone the reading to the forest ranger."³³

"The Vermont State Forestry Department first used the radio to report forest fires in June 1909. The first use of radio (or "wireless" as it was first called) in fire control within the Forest Service was on the Apache National Forest, when Ranger William R. Warner successfully used a radio on November 26, 1916. The Southwestern District requested either telephone or wireless on the Prescott National Forest in 1923, but the USDA Forest Service Chief of Operations vetoed both ideas, principally because of cost factors. Until World War II, the region did little innovative work with radio. Foresters there were just gathering to witness radio communication demonstrations in late 1937."³⁴

Automobiles were first introduced on the Coronado in 1916. The completion of the Control Road from Oracle in 1920 greatly improved fire protection abilities. Men, supplies, and equipment could be transported swiftly to a fire. The first aerial fire patrol flew over the Catalinas in 1921. Forest Supervisor Hugh Calkins flew fire patrol in an army plane during the big Alder Canyon-Summerhaven fire of that year. Crawler tractors-were used on the national forests of the Southwestern Region as early as 1928 to build a fireline. Two or more fair-sized logs were hooked to the tractor and pulled along the route of the fireline on less sloping land, and the tractors without the logs whipped from side to side on steeper slopes.³⁵ Perhaps one of the most interesting innovations or adaptations was the Hula Dozer.

The Hula Dozer

Henry Mullin, Regional Equipment Engineer, who worked in the Southwestern Region from 1932 to 1964, developed the Hula Dozer, a bulldozer equipped with teeth on the blade, for ripping. Mullin described its use on the Gila:

[On] a major fire in the wilderness area on the Gila National Forest several years ago... men walked 15 or more miles into the fire camp area as there were no roads.... Management

recognized the need to construct a mountain road in order to make it possible to haul the remaining supplies and men out of the area after the fire was controlled.... A D8 cat which ... attempted to penetrate the sandstone resulted only in a mere scratch.... Marshall Wright, the road construction foreman, sent ... an old D7 with a hula dozer ... to be driven to where the new road started. The D7 arrived late that evening and the next morning started constructing the road where the D8 scratched the sandstone. That evening a suitable road was completed.³⁶

Smokey Bear

The Southwest made a memorable contribution to the public's national image of the Forest Service. The National Advertising Council, an outgrowth of the War Advertising Council, developed and supported "Smokey Bear" as a symbol for forest fire protection, beginning in 1945. In 1950, the Ad Council suggested that a real bear would be an asset to the program.³⁷ "That summer, following a large fire on the Lincoln National Forest in New Mexico, an orphaned bear cub was discovered on the burn."³⁸ Fred H. Miller, who received his first Forest Service appointment on the Santa Fe National Forest in 1916, and who had spent many years in the Southwestern Region, remembers Smokey's reception in Washington, DC. He was in Washington when Smokey Bear was brought by air from Santa Fe. He remembered that "a group of us from the Chief's Office went out to the Zoo in Rock Creek Park to welcome the little cub. [Chief] Lyle Watts was there, and Senator Chavez was also there, so that bear was quite a sight, and one of the attractions at the Zoo." Miller credited Kay Flock, Supervisor of the Santa Fe National Forest, with the idea of sending the cub to Washington, DC. William D. Hurst mentioned that Elliott Barker and Ray Bell of the New Mexico Game and Fish Department should be given credit for initiating and pushing the program to completion.³⁹ In time, Smokey Bear became synonymous with forest fire protection.



Figure 33. Smokey Bear as a young cub with his adopted sister, Judy Bell. Smokey was rescued after being badly burned in a forest fire on the Lincoln National Forest in 1950. (Forest Service Collection, National Agriculture Library)

Benefits of Fire

The Southwestern Region in the early years devoted every effort to control wild fires as soon as possible. The role that fire had played in the maintenance of the pine forests, its use to control brush, and the other presently recognized beneficial aspects of fire as a management tool to control fuels buildup received little attention until recent decades:⁴⁰ Aldo Leopold, however, was one of those who realized the often critical role of fire in the development of forests. He wrote in 1924:

The removal of the grass relieved the brush species of root competition and of fire damage and therefore caused them to spread and "take the country." The removal of grass-root competition and of fire damage brought in the reproduction. In brief, the climax type is and always has been woodland. The thick grass and thin brush of pre-settlement days represents a

temporary type. The substitution of grazing for fire brought on a transition of thin grass and thick brush. This transition type is now reverting to the climax type--woodland.⁴¹

In 1921, Inspector Emanuel Kelly reviewed fire control improvements in District 3. He discussed such hazards as the natural condition of forest cover and the type of forest. His report reviewed two forest types: the yellow [ponderosa] pine type and the composite type. For the ponderosa pine type, he noted that areas "covered with a heavy growth of coarse bunch grass, interspersed with scattered stands of reproduction" had high fire hazard, while "open park-like areas practically devoid of grasses and weeds and supporting but little reproduction" had low hazard. He disagreed with the accepted wisdom that the hazard in the composite type was high because of evidence of many previous fires. He believed that the composite-type forest was not unusually flammable, but that low-grade fires had smoldered for weeks before growing large. The scars were the result of neglected fires, he believed.⁴²

Aldo Leopold, in the position of Assistant District Forester, inspected the national forests in the Southwestern District during 1919 to 1923. All of his inspections contained a section of detailed comments concerning fire control organization and activities. Leopold found the fire organization good and personnel adequate to good on most national forests. He expressed some concern for guards who might tend to incendiarism for "wages" or other reasons and recommended that they should be identified and not hired on the suppression force. A few fire plans had shortcomings, Leopold said. Fire fighting equipment was found to be in good shape, but its distribution was spotty. Leopold recommended that tools be placed where the firefighters were. Most lookout towers were in good condition, but he questioned the need for all of them. Plans for evaluating their location were lacking. Phone lines were in good condition, although on several forests there was at least one line in need of repair. Agreements with outside organizations for fire protection assistance were noted in several of the inspection reports. Leopold stressed the need for active prosecution of fire trespass on several of the forests. Educational work concerning fire prevention was deficient on the national forests he inspected. A few had done some work with the schools, had held a few public meetings, but most, he said, had done nothing but put up fire prevention posters.⁴³

CCC Aids Fire Control

Although the region's fire control work appeared adequate in the 1920's, impressive gains were made in the 1930's. The financial disasters of the depression era resulted in the Forest Service having an abundance of personnel for fire protection work, mostly the men in the Civilian Conservation Corps (CCC). Fire control was in good hands during the era of the CCC. Most national forests had the situation well in hand, but the Flagstaff Working Circle of the Coconino National Forest had a poor fire record. But in the decade 1933-42, managers of the forest resources generally succeeded in getting fire losses under control.⁴⁴ On the Black River Working Circle of the Apache-Sitgreaves National Forest in 1937, the fire situation was clearly in control. "The present protective system during the past decade has held fire losses to an extremely low point" in the Black River Working Circle.⁴⁵ This seemed to be true elsewhere in the Southwestern Region. In 1938, for instance, the region reported 1,529 fires, but only 42 of them exceeded 10 acres. In 1939, of the 2,011 fires reported, only 54 exceeded 10 acres.⁴⁶

The insightful Loveridge-Cliff General Integrating Inspection (GII) report (1945) devoted just over two pages to fire control (as opposed to nearly nine for range management). The reason was simple. The record of fire control in the Southwestern Region ". . . is a fine record; so much so

that it is commented on in more detail in the *Journal of Forestry*.⁴⁷ The low rates charged for fire protection on cooperator lands were favorably reported. Two negative observations were mentioned: the condition of the lookout equipment was lower than in most regions and, in general, fire danger meters were being used unskillfully. The 1948 McCutchen-McDuff GII report on the Santa Fe National Forest devoted six pages to fire control. Inspectors commented on the need for an "aggressive fire prevention campaign." They found the maintenance of lookout towers "a discredit to the Forest Service.... There is only one satisfactory pair of binoculars on the forest." In the "haven't-we-heard-this-before department," the inspectors found the 328 miles of telephone lines in need of overhauling. Good points were cited in training, transportation and fire-fighting equipment, cooperative fire agreements under the Clark-McNary Act, and successful slash handling after cutting to minimize fire hazard. During 1938-47, the annual fire record fluctuated widely. One year, over 2,000 acres burned; in another, over 1,000 acres burned; and in yet another, only 14.23 acres burned.⁴⁸

The McCutchen-Darby Gil report of the Kaibab National Forest (1953) devoted five pages to fire control. The forestwide and district fire plans seemed to be complete. The need for a better job in fire prevention was cited, because approximately one of every four fires during the previous 10-year period was caused by humans. The inspectors noted an apparent difference of opinion of how much piling and burning of logging slash should take place; the actual area was to be only along the rights-of-way of important roads. The fire control organization seemed to be adequate. Fire tool caches were deemed adequate. Five lookouts that were inspected were in good condition except for deficiencies in safety precautions.⁴⁹ Fire prevention in the forests proved so effective that in the post-World War II era, the absence of forest fires had begun to affect the equilibrium and appearance of the forests.

Some foresters, such as Aldo Leopold and C.K. Collins, began to recognize the contribution of fire in the maintenance of grass and pine forests in the Southwest and were aware of the positive results of the burning habits of the Indians, which had contributed to the evolution of the high-quality forests that the Anglo-Americans found. In their reports, both Leopold and Collins mentioned the importance of fire in the silvicultural system used by nature.⁵⁰



Figure 34. Native American firefighters putting out a stump blaze, Sitgreaves National Forest, 1956.

Indians Become Fire Fighters

How ironic it was, then, when the Southwestern Indians, who had used fire so effectively, became fighters of forest fires. The Forest Service, shortly after World War II, turned outside the bureau for some of its forest fire fighters. In some respects, the efforts paid handsome dividends.

In 1948 the Bureau of Indian Affairs organized a 25-man crew of Mescalero Apaches in New Mexico. The next year the crew assisted the Forest Service on a fire on the Lincoln National Forest. The Forest Service was impressed and decided to supervise a larger program of crews manned from local reservations. Thus was born the Southwest Forest Fire Fighters (SWFFF) program. Originally restricted to the Indian tribes of the Southwest, the program expanded in 1953 to include Hispanic crews from northern New Mexico. ... The 215-man SWFFF crews were specially trained and in strong demand throughout the West.⁵¹

C. William Harrison, in *Forest Fire Fighters and What They Do*, devoted considerable attention, and attached great significance, to the work of the Tribal Council and the Indians of the Mescalero Apache Reservation. Harrison noted that modern Indians were peerless fighters of forest fires. Since the introduction of Indian fire crews in the Southwest, he said, there has been an ever-increasing demand for their services "from Montana to Southern California." Crews were being organized each year after 1949 among the Zuni, Hopi, Taos, Cochiti, Santo Domingo, Navajo, and Mescalero Apache tribes.⁵²

In a letter dated July 29, 1968, from Don R. Webb to Lynn Biddison, relating to suppression, the following tribes are listed as having had crews in the period before 1953: Zuni, Taos, Jemez, Santo Domingo, Zia, Navajo, Hopi, and Mescalero Apache. In 1953, the Hispanic-Americans on the Carson National Forest had a crew. In 1962, the Papago Indians organized a crew on the Coronado National Forest, and in 1968, the Jicarilla-Apaches established a crew. The Utes in the Four-Corners area also formed a fire crew in 1968. Webb stated that some of the crews had no real organizational structure but were a body of volunteers, whereas others, such as the crew of the Santo Domingo Pueblo, were well-organized. Between 40 and 45 Southwest fire fighting crews in 1968 were maintained in cooperation with the USDI Bureau of Land Management, the USDI National Park Service, the New Mexico Department of State Forests, and the USDA Forest Service.⁵³ Fire prevention and suppression continued to have the highest priority in the Southwestern Region into the 1970's, when a perceptible change in fire policy and attitude became apparent.

More Houses on National Forests

Fire plans during the 1950's, such as that of the Kaibab National Forest, called for "prompt and aggressive suppression of all fires.... Fire suppression takes priority over all other work." The rising number of visitors to the Kaibab, and indeed to all the national forests, would seem to more than justify the region's constant vigilance and devotion to fire suppression. The buildup in housing density on private (patented) lands within national forest boundaries presented a growing fire hazard. The Lincoln National Forest, for example, contained 184,000 acres of patented lands and had become very attractive for vacation home builders and permanent residents. In the Santa Rita Mountains, public access had become heavy, and burned areas seemed to be growing larger. Inspectors advised establishing fixed and permanent detection stations. On the Santa Fe National Forest, on the other hand, the more rugged or "blind" terrain made fire detection from fixed locations more difficult. Mobile fire patrol networks were advised, and foresters began to learn to rely upon air patrols and reports from local aircraft. State and local authorities were also involved in cooperative fire suppression arrangements with the USDA Forest Service.⁵⁴ Nevertheless, for a time, fires once again appeared to be getting out of hand as they had in the earliest decades of Forest Service administration in the Southwest.

The regional policy concerning fire prevention and suppression was succinctly presented in the *Multiple Use Management Guide*, released in 1967. The need to control wildfire as basic to the protection of nearly all national forest resources was reiterated. Increasing fuel hazards were recognized. High fire danger was noted in the chaparral, timber, and grass regions and in areas with concentrations of logging slash. The expanding transportation system was credited with making fire control easier. Air operations were listed as the primary support activity to fire protection. Assumptions and management objectives in fire control and management were listed. A shift in emphasis toward damage prevention rather than controlling minimum burned acres had developed. However, the first management objective was to keep a 1,500-acre minimum on fires in commercial timber stands in the Southwestern Region. Another objective was to be even more aggressive in fire prevention and suppression activities.⁵⁵

Prescribed Fire

In some respects, 1967 marked a watershed in the region's fire policy. Fire suppression began to be replaced by fire control as a major policy objective. The change from the view of fire being only an enemy to fire being both an enemy (wildfire) and a friend (prescribed fire) was slow to take hold within the Forest Service and within the Southwestern region. The shift took place slowly, perhaps only over the last 20 to 30 years. C.K. Collins, in 1967, blessed with hindsight, questioned existing fire suppression policy when he wrote:

Forest plans, records and maps, dating back to 1911, show some of the trends toward complete fire protection, which has us in trouble today.... The 1911-1920 yearly average of fires in the Southwestern Region of the Forest Service was 1,479 fires, of which 1,220 were caused by lightning and 259 were man-caused. This is in contrast to the yearly average of 2,253 fires for the period 1957-1966. Of this number, 1,938 were caused by lightning and 315 were man-caused.... Fire played a major role in the silviculture system used by nature.⁵⁶

Collins and others had discovered that the great achievements in fire suppression since the 1930's had begun to make the national forests a veritable tinderbox. The absence of fire had also begun to change the character of forest vegetation as well as the beauty of the forests.

Even as these conditions began to be recognized, fire policy began to change. In 1967, the regions *Multiple Use Management Guide* included a policy of management use of fire:

Under atmospheric conditions favoring smoke dispersal, fire is often the only feasible tool available to help Forest officers meet land management objectives. Fire is applied by prescription to convert or modify vegetative types, to break up large fuel concentrations, to reduce fire hazards, and to enhance natural beauty. Adequate safeguards to protect other resources are essential in preparing and executing prescribed fire projects.

The Tonto National Forest has demonstrated that chaparral types can be burned successfully during portions of the year under narrowly defined conditions.⁵⁷

From its preoccupation with immediate control of all fires, the region and indeed the Forest Service have come to a more reasonable approach toward fire. A broadened concept of the role of fire in the management of vegetation in the national forests of the Southwest has been accepted. The 1985 *Proposed Lincoln National Forest Plan* divided the forest into five fire suppression zones, with a policy for each zone:

- A. suppress all fires at 10 acres or less where there is a threat to life or property in developed areas.
- B. analyze the probabilities of fire spreading and select a suppression tactic that is cost effective and has the least impact on the land.
- C. analyze the probabilities of fire spread and manage as prescribed fire when flame height is less than two feet, but keep to less than 1,000 acres.
- D. same as C, except keep to 10 acres or less.
- E. same as C, but apply in wilderness areas if flame height of three feet or less, and minimize impact on other resources.⁵⁸

Mechanized fire-fighting equipment, including airplanes, helicopters, and chemical dispensers of various kinds, has reduced the drama and danger of the old firefighting techniques. New information and ideas about fire have changed the emphasis from absolute fire prevention to fire control. This has been accomplished even though the risk of resource loss through wildfire remains high. Finally, the public has been educated, thanks in good measure to Smokey Bear, of the need to safeguard the Nation's forest resources from fire, as well as from other natural and human deprecations.

Reference Notes

- ¹ Whether the type is climax or subclimax is debatable. Brown and Davis state "Ponderosa Pine, though an intolerant species, forms a stable type over a large part of its range in western North America.... The role of fire in maintaining the type is important, but not all interrelationships have yet become clearly established.... A part of the pure type and the mixed type may be classed as subclimax, but relationships can best be examined separately for each of these categories." Arthur A. Brown and Kenneth P. Davis, *Forest Fire Control and Use*, 2nd ed. (New York: McGraw-Hill Book Company, 1973), p. 32; John B. Leiberger, Theodore F. Rixon, and Arthur Dodwell, *Forest Conditions in the San Francisco Mountains Forest Reserve, Arizona*, Prof. Pap. 22 (Series H, Forestry 7) (Washington, DC: USDI Geological Survey, 1904), pp. 26-27; Edwin A. Tucker and George Fitzpatrick, *Men Who Matched the Mountains: The Forest Service in the Southwest* (Washington, DC: USDA Forest Service, 1973), p. 49.
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- ⁶ E.E. Carter, "Memorandum for District Forester Pooler," June 11, 1926, p.12, Federal Records Center, Denver, 095-61A0504, Box 14.

- ⁷ Gilbert H. Schubert, *Silviculture of Southwestern Ponderosa Pine: The Status of Our Knowledge*, Res. Pap. RM-123 (Fort Collins, CO: USDA Forest Service, Rocky Mountain Forest and Range Experiment Station, 1974), pp. 2-3.
- ⁸ Krauch, *Management of Douglas fir Timberland in the Southwest*, p. 5; Leiberg, Rixon, and Dodwell, *Forest Conditions in the San Francisco Mountains Forest Reserve, Arizona*, p. 24; F.G. Plummer, *Forest Conditions in the Black Mesa Forest Reserve, Arizona*, Prof. Pap. 23 (Series H, Forestry 8) (Washington, DC: USDI Geological Survey, 1904), p. 14; Rixon, *Forest Conditions in the Gila River Forest Reserve*, p.15; George Philip Bard, "The Working Plan Report for the Manzano National Forest," 1909, p. 5, Federal Records Center, Denver, 095 57AOI79, Box 6; Adams, "Twenty-Five Year Working Plan," p.16; Moore, "A Working Plan for the Mogollon Division of the Gila National Forest," pp. 13, 23; Quincy Randles, "Management Plan Report for the Saw Timber Type on the Tusayan National Forest," 1923, p. 8; Loveridge, "Policy for Handling Timber, Carson," pp. 7,11.
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- ¹⁶ *Ibid.*, pp. 208-212.
- ¹⁷ *Albuquerque Morning Journal* (July 5,1907), p. 8; Tucker, manuscript, p.187.
- ¹⁸ Tucker, manuscript, pp. 141-142,186-187.
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- ³⁶ Henry A. Mullin, "What I Learned in 31 Years About Controlling Forest and Brush Fires" (Albuquerque, NM: 1962), pp. 2-3.
- ³⁷ Brown and Davis, *Forest Fire Control and Use*, p. 290.
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- ³⁹ *Ibid.*, p. 770; Brown and Davis, *Forest Fire Control and Use*, p. 290; William D. Hurst, letter to Henry C. Dethloff, December 21, 1985, p. 2.
- ⁴⁰ Stephen J. Pyne refers to this subject in section 2 of his book *Fire in America*, titled "Paiute Forestry: A History of the Light-Burning Controversy." It is an interesting commentary on two schools of thought: absolute control of all wildfire and cumulative effects of light burning. Two sentences of his book summarize the situation quite well: "In the early years the consensus among foresters was that forests would suffer if surface fires were tolerated. By the 1970's it was asserted with equal conviction that forestry and land management would be impossible if prescribed surface fires were excluded." Pyne, *Fire in America*, p.121.
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- ⁵³ Don R. Webb to Lynn Biddison, July 29, 1968; and see Federal Records Center, Denver, 095-59A0040.
- ⁵⁴ USDA Forest Service, Southwestern Region, Kaibab National Forest, Fire Man, 1956, p.1 (in the files of the Kaibab National Forest); Morgan J. Smith and Ernest H. Taylor, "General Integrating Inspection Report, Coronado National Forest, April 13-24, 1964," p. 8; M.C. Galbraith, Assistant Regional Forester, Division of Timber Management, and J.A. Hundley, Budget Officer, Division of Operation, "General Integrating Inspection Report, Santa Fe National Forest, October-December 1964," n.p., 1965, pp. 18-19; Orlo M. Jackson, Assistant Regional Forester, and Chandler P. St. John, Assistant Chief, Division of I&E, "General Integrating Inspection Report, Lincoln National Forest, March 29--April 2, 1965," n.p., 1965, pp. 12-13, in Federal Records Center, Fort Worth, 095-74A0044.
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- ⁵⁶ Collins, "Fire and Forest Management in the Southwest," p. 8, and see pp. 1-52; and see C.K. Collins, Inspector, "Report of General Functional Inspection Fire Control, Apache National Forest, June 26-30, 1967," Albuquerque, NM, 1967, pp. 1-9; William D. Hurst, Regional Forester, Memorandum to Forest Supervisor, Apache National Forest, "Inspection (GFI, C.K. Collins, 6/26-30/67)," Albuquerque, NM, October 19, 1967, 2 pp., in Federal Records Center, Fort Worth, 095-74A0044.
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