THE EVOLUTION OF NATIONAL PARK SERVICE FIRE POLICY

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Abstract—National Park Service policies concerning fire have changed over the years from no policy at all in the early years, through years of absolute fire suppression, to a period of experimentation and refinement with a full spectrum of integrated fire management strategies. During much of this time, the Service was influenced by other agencies and organizations but is now emerging as a leader in the fire community.

Fire policies in the National Parks have evolved from no management at all, through the full suppression of all fires, to the sophisticated application of scientifically based fire management strategies. When Yosemite was set aside as a State reserve in 1864 and Yellowstone as a national park in 1872, there were no efforts to control fires. An era of full fire suppression began when management of Yellowstone passed to the U.S. Army in 1886 and to the National Park Service in 1916. Experimental prescribed burning was first conducted in Everglades National Park in 1951. The Leopold Report (1963) influenced the Park Service to reevaluate its fire policies. Revisions to the policies completed in 1968 permitted the use of fire as a management tool and led to the creation of the first wilderness fire management program, in Sequoia and Kings Canyon National Parks. To data, more than 2,000 lightning fires have been allowed to burn under carefully monitored conditions in 46 parks, and more than 1,000 prescribed burns have been set in 58 parks to meet management objectives. The Yellowstone fires in 1988 led to an examination of Service fire policy which affirmed current policy but recommended refinements in implementation.

THE ERA OF FIRE SUPPRESSION

In 1864, President Lincoln set aside Yosemite Valley and the Mariposa Grove of sequoias as a State reserve. This was the first federal government action specifically designating an area for preservation and is considered by many to mark the beginning of the national park idea. Although the native Americans who occupied the Yosemite region had at least 4,000 years (Riley 1987) used fire for many cultural purposes, it is doubtful that they practiced any fire suppression. Early Euro-American settlers in the Yosemite region used fire to clear land and to improve grazing for sheep and cattle. Their only fire suppression efforts were directed toward protecting structures. The State reserve employed only one guardian, who had little time to fight fires.

Yellowstone and Yosemite were designated as national parks in 1872 and 1890.However, no agency was assigned responsibility for their administration and their new status did not result in the implementation of fire management. Although there no fire management policies or activities during these early years, the stage was set for the beginnings of fire suppression.

The Army Years

The United States Army was assigned the responsibility for managing Yellowstone in 1886 and Yosemite and Sequoia in 1891. The policy of suppressing all fires began in Yellowstone in 1886 (Agee 1974) and was soon followed by similar policies in the other two parks. The Army built extensive trail systems to facilitate patrolling the new parks for sheep and timber trespass and for wildfires. As new parks were established, the Army assumed control and dispatched the troops to extinguish all fires. Although there are few records of the Army's efforts, fire scars were formed less frequently during this period (Kilgore and Taylor 1979). This could be interpreted to mean either that there were very few fires or that the Army was very successful in extinguishing those that did occur.

The Years of Forest Service Influence

When the National Park Service was established in the U. S. Department of the Interior in 1916, administration of the parks passed into civilian hands. Many of the personnel who had previously served in the Army switched uniforms and became the first park rangers. Although they carried with them the lessons and experience of fire suppression, they had little formal training. Professional guidance of the fire program came from the Forest Service in the U. S. Department of Agriculture (Pyne 1982). Established as a separate agency in 1901, the Forest Service had developed both a theoretical basis for systematic fire protection and considerable expertise in executing that theory. The suppression of all fires became the official policy of the new National Park Service.

Since many of the parks established during this period were originally parts of national forests, the Park Service inherited an infrastructure of fire control facilities and equipment. Fire stations, lookouts, and trails were already in place. In addition, many of the new park rangers came from the Forest Service and had forestry and fire backgrounds (Pyne 1982). The Forest Service and the Park Service joined together to form the Forest Protection Board, which advised agencies on fire policy and standards.

Although the Park Service developed a separate fire control organization, it relied heavily on the Forest Service for expertise, personnel, and equipment. Mutual-aid agreements allowed the two agencies to respond to fires across boundaries

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and to share training and dispatching facilities. In most cases, however, the exchange was in the direction of the fledgling Park Service.

The CCC Years

Professional fire protection began in the Park Service with the establishment of the Civilian Conservation Corps in 1933. A massive influx of personnel made it possible to expand firefighting facilities and deploy suppression forces throughout the parks. During the first 10 years, the program went from a single national fire officer, a special crew at Glacier National Park, and a fire guard at Sequoia to an organization of some 650 camps with over 7,000 employees (Pyne 1982).

The Park Service's fire policy was still identical with that of the Forest Service, which in 1935 adopted a policy of extinguishing any fire during the first burning period or, if that were not possible, by 10:00 a. m. the following day. Strict adherence to this policy required quick response time and numerous crews. Efforts were also directed toward developing better access to further reduce response times.

During this period, the Park Service greatly professionalized its approach to fire protection. Vegetation and fuel hazard maps were prepared from field surveys and response zones were delineated. Complete fire records were kept; each fire's cause and behavior were described, and the measures necessary to control each fire were detailed. These records did describe occasional large fires that might have exceeded the capabilities of the suppression forces.

The War and Postwar Years

World War II caused a decline in fire protection throughout the nation. Skeleton crews were kept on to protect resources necessary for the war effort. Park Service crews were practically nonexistent, although the fire records show that fires were still being suppressed successfully.

Demobilization after the war brought a new and different kind of influx to the fire fighting agencies. Although the Forest Service had used bulldozers and smokejumpers before the war, airplanes, helicopters, tanks, and parachutes were products that the war had refined that were now available to fight the war against fire. Retardant drops, heliattack crews, bulldozers, and smokejumpers became the new tools of choice (USDA Forest Service 1960). The Park Service relied heavily on the Forest Service for this new technology, and shared support of aircraft and a smokejumper base at Yellowstone (Pyne 1982). The resulting fire-fighting force was very effective in continuing the policy of full fire suppression.

THE ERA OF FIRE MANAGEMENT

The effectiveness of fire protection was partly responsible for the beginnings of a shift in policy from fire control to fire management. As had long been recognized in the South, the absence of fire from an ecosystem that has evolved with fire can lead to unexpected, and often undesirable, results. Specifically, researchers found that periodic fires reduced accumulations of woody and brushy fuels and thinned thick understories of shade-tolerant species. Without fire, species composition shifted and fuel accumulations increased.

The Years of Revelation

Although the National Park Service's first experiments with the use of fire occurred in Everglades National Park in 1951 (Robertson 1962), impetus for a change in policy came later from outside researchers in California. As early as 1959, Dr. Harold H. Biswell, of the University of California at Berkeley, advocated the use of prescribed fires to reduce the accumulation of debris underneath ponderosa pine stands in the Sierra Nevada of California (Biswell 1959). His work was expanded upon by Dr. Richard Hartesvelt, from San Jose State University, who concluded that the greatest threat to the giant sequoia groves was not trampling by humans, but was catastrophic fire burning through understory thickets and unnaturally high accumulations of (Hartesvelt 1962).

In 1962, the Secretary of the Interior asked a committee to look into wildlife management concerns in the national parks. This committee, named after its chair, Dr. A. Starker Leopold, did not confine its report to wildlife, but took a broader ecological view that parks should be managed as ecosystems (Leopold and others 1963). They recommended that the biotic associations within a park be maintained or recreated as nearly as possible in the condition that prevailed when first visited by Euro-Americans. The report stated in an often quoted passage:

> When the forty-niners poured over the Sierra Nevada into California, those that kept diaries spoke almost to a man of the wide-spaced columns of mature trees that grew on the lower western slope in gigantic magnificence. The ground was a grass parkland, in springtime carpeted with wildflowers. Deer and bears were abundant. Today much of the west slope is a dog-hair thicket of young pines, white fir, incense cedar, and mature brush - a direct function of overprotection from natural ground fires. Within the four national parks - Lassen, Yosemite, Sequoia, and Kings Canyon - the thickets are even more impenetrable than elsewhere. Not only is this accumulation of fuel dangerous to the giant sequoias and other mature trees but the animal life is meager, wildflowers are sparse, and to some at least the vegetation tangle is depressing, not uplifting. Is it possible that the primitive open forest could be restored, at least on a local scale? And if so, how? (Leopold and others 1963)

It was not a coincidence that Dr. Leopold's office was just across the street from Dr. Biswell's office. In fact, these gentlemen often discussed the ecological ramifications of fire exclusion over lunch and during seminars. Nor is it

surprising that their graduate students would pursue fire-related Ph.D. dissertation topics and become Park Service scientists (Kilgore 1968; van Wagtendonk 1972; Agee 1973; Graber 1981). The intellectual atmosphere at Berkeley invited students to challenge conventional approaches and practices.

The Turning Point

Only in 1968, after several false starts was the Leopold Committee report incorporated into policy. First the Secretary of the Interior had to find out whether or not the report's findings were acceptable to the public. A department underling was sent to the meeting where the report was being presented and found it to be overwhelmingly supported. The Park Service was then directed to incorporate the report into its management policies. The entire report was included as an appendix and the section on fire management revised to reflect the new thinking (USDI National Park Service 1968). For the first time since 1916, the Park Service viewed fire as a natural process rather than as a menace:

> The presence or absence of natural fire within a given habitat is recognized as one of the ecological factors contributing to the perpetuation of plants and animals to that habitat.
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> Fires in vegetation resulting from natural causes are recognized as natural phenomena and may be allowed to run their course when such burning can be contained within predetermined fire management units and when such burning will contribute to the accomplishment of approved vegetation and/or wildland management objectives.
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> Prescribed burning to achieve approved vegetation and/or wildland objectives may be employed as a substitute for natural fire (USDI National Park Service 1968).

The Years of Experimentation

As is often the case with the National Park Service, a policy change led to experimentation. A prescribed natural fire program was initiated in Sequoia and Kings Canyon National Parks in 1968 (Kilgore and Briggs 1972), as were concurrent research studies of prescribed burns (Kilgore 1971; Parsons 1976). At Yosemite National Park a similar prescribed natural fire program was started in 1972 (van Wagtendonk 1978), and research concentrated on refining techniques for prescribed burning (van Wagtendonk 1974; van Wagtendonk and Botti 1982). Experimental burns were ignited in several parks, and Yellowstone and a few other parks established prescribed natural fire zones (Romme and Despain 1989).

The Years of Policy Refinement

As experience with both prescribed burning and prescribed natural fire programs increased, interim guidelines were issued. Research also continued to contribute to the growing body of knowledge on both fire ecology and fire use.

Contrary to Pyne's (1982) assertion, the National Park Service was a leader in the development of prescribed natural fire techniques. Although National Park Service personnel cooperated with Forest Service managers and researchers in the same field, they did not need to look to the Forest Service for leadership.

The first revision of the 1968 fire policy came out in 1978 when all management policies for the National Park Service were rewritten (USDI National Park Service 1978). The policy stated:

> Fire is a powerful phenomenon with the potential to drastically alter the vegetative cover of any park.
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> The presence or absence of natural fires within a given ecosystem is recognized as a potent factor stimulating, retarding or eliminating various components of the ecosystem. Most natural fires are lightning-caused and are recognized as natural phenomena which must be permitted to continue to influence the ecosystem if truly natural systems are to be perpetuated.
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> Management fires, including both prescribed natural fires and prescribed burns, are those which contribute to the attainment of the management objectives of the park through execution of predetermined prescriptions defined in detail in the Fire Management Plan, a portion of the approved Natural Resources Management Plan.
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> All fires not classed as management fires are "wildfires" and will be suppressed. (USDI National Park Service 1978)

The policy further described the conditions under which fire could be used and specified that any management fire would be suppressed if it posed a threat to human life, cultural resources, physical facilities, or threatened or endangered species or if it threatened to escape from predetermined zones, or to exceed the prescription.

The Forest Service was also revising its fire policy to embrace fire management rather than fire control (DeBruin 1974). In 1978 it abandoned the 10:00 a. m. policy in favor of a new one that encouraged the use of fire by prescription. The Forest Service's policy was also preceded by experimentation and research.

Thus, after a period of 10 years, policies of both the National Park Service and the Forest Service recognized the ecological role of fire and provided for its use. Pyne (1982) states, "Guided by the dazzling philosophy of the Leopold Report, the Park Service had advanced a policy too far ahead of its knowledge and technical skills; the Forest Service, with expertise and information in abundance, lagged in policy." While not entirely correct, his statement does point out the distinctive and synergistic roles the two agencies play.

In 1986, the Wildland Fire Management Guideline (NPS-18) was issued. It outlined in detail the procedures and standards to be used to manage wildfires, prescribed natural fires, and prescribed burns (USDI National Park Service 1986). With regard to prescribed natural fires, the new guideline specified that the condition limits under which naturally ignited fires would be permited to burn must be clearly stated. In addition, the ultimate size and boundaries of the fires must be preplanned and stated. Parks were also required to monitor each fire and to assess each burning day whether or not the fire should be allowed to continue to burn unimpeded.

Although there were no apparent problems with the Park Service's fire policies, they were revised again in March of 1988 as part of a 10-year comprehensive review of the management policies (USDI National Park Service 1988). The new policy emphasizes management objectives and plans:

> Fire is a powerful phenomenon with the potential to drastically alter the vegetative cover of any park. Fire may contribute to or hinder the achievement of park objectives. Park fire management programs will be designed around resource management objectives and the various management zones of the park. Fire-related management objectives will be clearly stated in a fire management plan, which is prepared for each park with vegetation capable of burning, to guide a fire management program that is responsive to park needs.
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> All fires in parks are classified as either prescribed fires or wildfires. Prescribed fires include fires deliberately set by managers (prescribed burns) or fires of natural origins permitted to burn under prescribed conditions (prescribed natural fires) to achieve predetermined resource management objectives. To ensure that these objectives are met, each prescribed fire will be conducted according to a written prescription. All fires that do not meet the criteria for prescribed fires are wildfires and will be suppressed. (USDI National Park Service 1988)

THE POST-YELLOWSTONE ERA

The fires of the Greater Yellowstone Area during the summer of 1988 brought fire policies of the National Park Service and the Forest Service under close scrutiny. The Secretary of Agriculture and the Secretary of the Interior appointed an interagency fire management policy review team to investigate the adequacy of national policies and their application for fire management actions in national parks and wilderness and to recommend actions to address the problems experienced during the 1988 fire season. With regard to policy, the review team recommended that:

> Prescribed fire policies be reaffirmed and strengthened.
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> Fire management plans be reviewed to assure that current policy requirements are met and expanded to include interagency planning, stronger prescriptions, and additional decision criteria. (USDA and USDI 1989)

A moratorium was placed on all prescribed natural fire programs until the agencies had complied with the recommendations of the review team. Although the National Park Service policies were determined to be adequate, implementation guidelines and fire management plans were found to be in need of revision.

A task force was convened to rewrite NPS-18, the fire management guideline. The guideline was completely rewritten and addressed all of the operational recommendations of the review team report (USDI National Park Service 1990). Specifically, it requires approved fire management plans, established contingency plans, quantified prescriptions, monitoring procedures, fire situation analyses, and daily certification by the line manager that resources are available to manage the fire within the prescription. In addition, the prescription must include at least one indicator of drought and at least one definition of the maximum prescribed extent of the fire.

All the existing fire management plans were reviewed by teams of fire specialists from throughout the Park Service for compliance with the review team report and for adequacy of environmental documentation and public participation. Plans were sent back to the parks for revision. To date, three fire management plans have been approved. Prescribed natural fire programs will be in effect in 1990 for Yosemite, Voyagers, and Sequoia and Kings Canyon National Parks.

National Park Service fire policies have evolved in a pattern of leaps forward followed by experimentation and refinement. The decentralized nature of the agency allows it to take advantage of new philosophical ideas and translate them into policy. The experience and expertise within the Service assures that it will continue to play that role.

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