

## Chapter 4:

### Ecology and the Limits of Suppression

The end of World War II inaugurated a new era for the National Park Service, one of unexpected growth and precipitous change. The enormous increase in the number of travelers and their desire to experience the national parks pulled the NPS from its historic moorings and compelled the Service to envision new ways to manage its holdings. The demands on the park system changed. Postwar prosperity allowed Americans to satisfy their pent-up desire for goods and new experiences. As car ownership became commonplace and leisure time widespread, many sought outdoor adventures. Beneficiaries of a revolution in expectations, access, and affluence, Americans visited the parks to see their country, feel its power, and ultimately to understand themselves and the powerful nation they had become.

Such behavior was part and parcel of a larger transformation of U.S. culture and society. Almost everything about the nation – from race relations to recreation – changed as a result of the war. The victory over fascism carried in its wake a transformation of American society. A new optimism swept the nation; many believed that life would get better for everyone. Indeed, evidence to support this idea appeared everywhere. The position of African-Americans changed dramatically, first in symbolic ways such as the integration of major league baseball in 1947, then in more substantive moves such as the integration of the military in 1948, and later in the law with cases such as the Supreme Court’s 1954 *Brown v. Board of Education* decision, which declared “separate but equal” education facilities illegal. Federal home loan legislation made homeowners out of renters; veteran benefited from the G. I. Bill. Americans bought houses by the thousands in new suburbs such as Levittown on Long Island, N.Y., achieving the American dream of home ownership. Observers at the time noted that everyone in the nation seemed to have raised their aspirations.<sup>1</sup>

These trends contributed to the democratization of American attitudes about nature and the revival of the Progressive-era concept of conservation, albeit in a new form. Conservation had been a prominent social sentiment early in the twentieth century and the New Deal that began in 1933 had enhanced public sentiment that favored the idea, but the role of federal work programs changed the meaning of the concept. Instead of being a reflection of ideas about nature and its protection, conservation became shorthand for available work. During the New Deal, conservation became labor policy, dependent on federal dollars to drive the process. The war brought that model to a halt, consigning the principle of saving for the future to the status of afterthought. By 1945, “conservation” meant one thing, while “conservationist” indicated quite another – the amateur, upper crust tradition of the early twentieth century handed down among American elites. Divorced from politics and policy making, individual conservationists

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<sup>1</sup> Eric Goldman, *The Crucial Decade – and After: America, 1945-1960* (New York: Random House, 1960), 4-5, 12-15; James T. Patterson, *Grand Expectations: The United States, 1945-1974* (New York: Oxford University Press, 1996), 61-65.

had influence but rarely exercised it. Conservation had become a philosophy that belonged mostly to American elites.<sup>2</sup>

The post-war era encouraged greater appreciation of American nature by a broader cross-section of the public. Recreation played a crucial role in this expansion of perception. After World War II, the traveling public expanded in numbers and breadth, and its members' expectations reflected a different ethos. The prosperity generated by the war gave more of the American public an opportunity at the perquisites of the good life, and the constituency for vacation-type travel increased immensely in size. Within a few years of the war's end, many Americans enjoyed greater disposable income and paid vacation time. A combination of affluence, accentuated by heightened demand for leisure after more than a fifteen-year period in which amenities were not available, and new fashions that stressed a wider intellectual and conceptual vision of the world as part of the pleasures of middle class life, heightened the meaning of American nature. Most Americans still defined themselves in terms of the national relationship to the physical world. With the means to consummate that relationship, they ignited a revolution in travel patterns, and in the aftermath of the war, millions of Americans went to see their national parks.<sup>3</sup>

Much of this travel occurred by automobile, the personal conveyance that promised individual freedom and authentic experience. After 1945, automobile ownership, an impossible dream for most during the Depression, evolved into a badge of middle-class status. The demand for recreation in national parks soared so high that the Park Service could not keep pace. Not only were available campsites scarce but existing campgrounds were covered with uncollected garbage, debris from timber illegally cut for firewood, and other eyesores. The National Park Service recognized the prospect for post-war demand even before World War II ended, and Superintendent John White at Sequoia offered a peculiarly poignant observation of the conditions that ensued. "In the national parks, we have always been in the position of engineers compelled to dam a stream without opportunity to divert the flood waters," he observed in his 1947 annual report. "It looks as though we must hope for another depression to help the National Parks. Despite our best efforts, our public camps are run down, our scenic spots improperly protected, our park buildings and all facilities inadequately maintained, and the public neither protected nor advised, nor educated." Others soon echoed White's trenchant sentiments. In response to what he regarded as a landscape destroyed, noted author and iconoclast Bernard DeVoto recommended closing the national parks if they could not be better managed. The rapid increase in automobile ownership and the driving vacation had strained the limits of the park system.<sup>4</sup>

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<sup>2</sup> Stephen Fox, *John Muir and His Legacy: The American Conservation Movement* (Boston, Little, Brown & Co, 1980), 333-57; Adam Rome, *The Bulldozer in the Countryside: Suburban Sprawl and the Rise of American Environmentalism* (Cambridge: Cambridge University Press, 2001), 1-13, 119-24.

<sup>3</sup> Hal K. Rothman, *Devil's Bargains: Tourism in the Twentieth Century American West* (Lawrence: University Press of Kansas, 1998), 202-05.

<sup>4</sup> Superintendent's Annual Report for Sequoia National Park, 1947, Sequoia National Park, Superintendent's Files, 2; Bernard DeVoto, "Let's Close the National Parks," *Harper's Magazine* CCVII (1953), 49-52; David Clary, *Timber and the Forest Service* (Lawrence: University Press of Kansas, 1986); John Jakle, *The Tourist: Travel in Twentieth-Century North America* (Lincoln: University of Nebraska Press, 1985), 185-98

Automobile tourism typically took place between Memorial Day in late May and Labor Day in early September, the classic boundaries of summer, when children were out of school, days were long and warm, and families could spend time together. Two days before Memorial Day weekend, tourist camps and motels sat vacant; two days after Labor Day, the cacophony subsided and they returned to silence. The chaos started so quickly and ended so abruptly that it mirrored the traits of vacationing that emerged in television cartoons such as *Yogi Bear*, the story of a madcap bear who inhabited Jellystone Park and gave both the mythic Ranger Smith and park visitors fits. Auto usage created clear patterns of travel and behavior. Tourists went everywhere and anywhere, purchased enormous quantities of food, gasoline, and other staples, filled motels and hotels, and generally kept moving, staying only an insignificant length of time in all but one or two of their stops. A chaos of auto travel existed, in which tourists traveled the mythic landscapes of the West without seeming rhyme or reason, staying only where they landed at the end of a day.

As they vacationed in growing numbers, exemplified by the new highs for visitation set at Grand Canyon National Park each summer month after August 1945, these new visitors to the nation's parks had an impact on the natural world that soon caused the visitors themselves to take notice. What Americans found in many of their national parks and forests shocked them. Growth in western cities as a result of the war brought millions more people into proximity to the most stunning attributes of American nature, and their demands for vacation homes, electricity, water, and roads made a visible dent in forests and crowded the banks of rivers, lakes, and oceans. Clear-cutting of forests adjacent to highways in particular drew public attention to questions of the management of American nature. Convinced of the efficacy of technological solutions to all problems, Americans began to recognize that their actions in the physical world multiplied by their ever-growing numbers had dire consequences for the land that made the nation special.<sup>5</sup>

New patterns of vacation travel almost perfectly coincided with fire season in western parks, bringing together the catalyst for most fire – the carelessness of visitors – and the season in which fires were most likely to start. The NPS encountered more visitors in more places at a time when resources to manage them remained constant or even diminished. In such circumstances, the Service returns to tried and true methods. In fire management, the situation dictated that suppression would be the sole policy goal and that the Service would do its best to react to fires, preserving the bulk of its limited resources for crisis situations. For people such as NPS fire guru Coffman, with two decades in NPS fire management before 1950 and aspirations for a comprehensive system of preparation, this reality was a severe disappointment.<sup>6</sup> From the aggressive suppression-based posture of the New Deal, the NPS returned to a pattern of making do in its battle against fire.

At the same time, the National Park Service tacitly began to unshackle itself from the Forest Service model that had driven NPS policy since Coffman was hired. The two

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<sup>5</sup> Bernard DeVoto, "The National Parks," *Fortune* XXXV (1947), 120-21; Bernard DeVoto, "Let's Close the National Parks," 49-52; Robert D. Baker, Robert S. Maxwell, Victor H. Treat, and Henry C. Dethloff, *Timeless Heritage: A History of the Forest Service in the Southwest* (Washington, D.C., 1988), 59-68, 131-33; Ronald A. Foresta, *American National Parks and Their Keepers* (Washington, D.C.: Resources for the Future, 1984), 50-55.

<sup>6</sup> John D. Coffman, "Forest Protection in the National Parks," interview by Amelia R. Fry, 1973 (Berkeley: CA: The Bancroft Library, 1973), 75-77.

agencies continued to grapple over land issues, with one of the first fights coming over the proclamation of the Jackson Hole National Monument during World War II, where the state of Wyoming, federal foresters, and their supporters resented the de facto use of the Antiquities Act. One ranger cabin that was turned over to the National Park Service had been stripped of every interior fixture, reflecting the Forest Service's annoyance. Interagency relations remained uneasy into the 1950s. As visitation numbers grew, the NPS was forced to commit more of its resources to the basic processes of managing visitation. The result simultaneously increased the importance of suppression – for investing resources in visitors necessarily meant that less was available for fire protection and response and increased the importance of being able to detect and extinguish fire – at the same time it changed its purpose. The Forest Service maintained strong fealty to the tenets of suppression. Its sponsorship of fire science culminated in the National Fire Danger Rating System, an effort to standardize the categorization of fire by scientific measures that began in the 1950s and culminated in definitions in 1972, the establishment of three USFS laboratories to study fire, the recruitment of new labor such as the Southwest Forest Fire Fighters, the upgrading of fire crews, and especially the transfer of surplus military equipment to civilian fire protection enhanced its role as the lead fire agency. The National Park Service found it could neither keep pace nor embrace the objective with the same wholehearted enthusiasm. In an era of mechanization, the Forest Service focused on fire protection and suppression. The National Park Service looked elsewhere, investing in the prevention of fires through education and supervision of its visitors.<sup>7</sup>

During the immediate post-war era, important changes in the NPS response to fire began. At Yellowstone National Park, Park Engineer Aubrey Haines, who later earned renown as the park's first historian, completed a "Fire Lookout Evaluation Study" in 1946. Following the Forest Service's model, he researched fire records from the previous decade and pinpointed ongoing trouble spots within the park. Haines recommended a fire-danger map for Yellowstone, a base document to enhance park managers' ability to detect fire and respond to it. Haines's efforts were repeated at other parks. The first NPS Interregional Fire Control Training Conference convened at the Grand Canyon in 1949, bringing together fire personnel from throughout the West. Smokejumpers, front-line firefighters dropped as shock troops to control a fire at its inception, were introduced at Glacier in 1946 and at Yellowstone in 1951. Smokejumping had first appeared in the Forest Service in the late 1930s, and in 1945, NPS Regional Forester Frank Childs recommended that the National Park Service introduce smokejumpers to the northern tier parks. By the mid-1950s, new fire detection technologies were under consideration. In one widely circulated instance, the idea that television cameras would replace human lookouts gained credence. While possible, the idea proved impractical. It cost a great deal and was unreliable.<sup>8</sup> The emphasis on labor as the primary way to suppress fires continued.

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<sup>7</sup> Stephen J. Pyne, *Fire in America: A Cultural History of Rural and Wildland Fire* (Princeton: Princeton University Press, 1982); Robert Righter, *Crucible for Conservation: The Struggle for Grand Teton National Park* (Niwt, CO: Colorado Associated University Press, 1982), 103-26; Hal K. Rothman, *Preserving Different Pasts: The American National Monuments* (Urbana: University of Illinois Press, 1989), 225-49.

<sup>8</sup> Aubrey Haines, "Fire Lookout Evaluation Study," Yellowstone National Park files, N-33, 883-02.1, Yellowstone Archives; Frank Childs to Regional Director, Region II, March 3, 1945; "TV Camera Can

Smokejumpers were simultaneously valuable and glamorous. The idea had begun in the Forest Service with David Godwin, an innovative leader and an advocate of technologically sophisticated response to fire. Under the Aerial Fire Control Project, a direct response to the 10:00 a.m. policy, Godwin attempted to drop chemical retardant on fires from the air in the late 1930s. Soon he replaced the chemicals with people, dropping firefighters by parachute in an effort to attain immediate fire control. Smokejumpers touched a nerve in the American public; like Pony Express riders, they faced the unknown with bravery and aplomb. They heightened the already powerful image of firefighters by creating a new cachet, and giving smokejumpers a distinctive swagger.<sup>9</sup>

By the time the first Yellowstone unit was formed, smokejumpers were lionized figures in the battle against fire. Thirteen had died in the Mann Gulch fire in 1949, their deaths later emblazoned on the national stage first by a 1952 movie, *Red Skies of Montana*, and later by the 1992 publication of Norman Mclean's *Young Men and Fire* and the mystique persisted. Following the placement of the first NPS smokejumper unit at Glacier, Superintendent Edmund Rogers at Yellowstone sought one. Rogers tried to interest national forest supervisors adjacent to the park in a joint unit in 1950. They demurred. "With so small a stake in the proposition," Acting USFS Regional Forester Clarence C. Strong noted, "it does not appear feasible to us." The foresters were willing to help the National Park Service create its own units, but were not prepared to split their own force to accommodate individual park needs.<sup>10</sup>

The desire for smokejumping units stemmed as much from the dramatic image they projected as from their real utility as tools to fight fires. With NPS running smokejumpers only at Glacier National Park amid the growing proliferation of similar entities in the Forest Service, the addition of such crews at Yellowstone fit the NPS vision of its capabilities as a fire-fighting entity. At Yellowstone, Rogers recognized that the NPS had to consistently grapple with peer agencies for preeminence in the public imagination. It did not serve the NPS to have its premier park perceived as lacking any service provided by a mere national forest adjacent to its boundary, even though smokejumper units were expensive and arguably of only marginal advantage in fighting fire.

The Yellowstone unit resulted from a 1949-1950 Fire Review and Fire Control Replanning Study. In 1949, Yellowstone experienced a difficult fire year. Five large fires dogged the park, forcing reconsideration of existing policy. There were too many shortcomings in the existing strategy, NPS Forester Maynard B. Barrows observed. Yellowstone needed a full-time fire dispatcher when fire conditions threatened a major fire. The report suggested reassigning an assistant chief ranger to the task, but this was a mere stopgap solution. Emergency lookouts were planned, with extra workers on blister rust and trail crews to fill the task. Aerial detection patrols were an important addition, but the study concluded that more training was necessary, and additional prevention measures would clearly help. The park's single greatest need, Barrows wrote, was "the

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Spot Fires," *Rocky Mountain News*, July 31, 1955. Haynes trained as a forester, achieving considerable fame for his work as a historian. Despite a lack of formal training, he was the leading historian of Yellowstone National Park throughout his life.

<sup>9</sup> Pyne, *Fire in America*, 371-73.

<sup>10</sup> Clarence Strong to Lawrence C. Merriam, March 8, 1950, Yellowstone Archives, Box Y-232; Norman Mclean, *Young Men and Fire* (Chicago: University of Chicago Press, 1992); Superintendent's Annual Report for Yellowstone, 1950, Yellowstone National Park.

employment of a plane for aerial detection and transportation of smokejumpers based at West Yellowstone for one month of the year.”<sup>11</sup>

With the technical assistance of nearby Forest Service units, Rogers built the second smokejumping unit in the NPS. Agency policy dictated that an aerial fire-fighting response was the most effective and the least intrusive, when compared to truck trail construction and other development strategies. Beginning in 1951, the new NPS smokejumpers were trained by the Forest Service at Missoula, Montana, and transferred to the National Park Service payroll during the fire season. At its inception, the Yellowstone unit consisted of only a five-man crew, but it represented a significant upgrade in response time over the previous Missoula-based USFS unit that had fought fires in the national parks and inspired the desire for a separate NPS unit. Rogers wanted to have his smokejumpers based at West Yellowstone for the most dangerous part of the fire season, typically from mid-July to mid-September, more than Barrows anticipated. The park leased a hangar at the West Yellowstone Airfield and let bids for a plane. Cooperation between the USFS and the NPS led to the first smokejumper deployment in 1951.<sup>12</sup>

Yet smokejumping was a sideline for the National Park Service, an emblematic dimension of a larger transition. Much like the flying aces of World War I, who soared as symbols of the glory of conflict above the real mechanized war between millions of men, the smokejumpers reflected the mechanization of firefighting. Aerial fire control – accomplished through helicopters, airtankers, and the aerial delivery of firefighters and supplies – became the dominant mode. Smokejumpers represented the individualized ideal of response to fire, the heroic mythology of preindustrial society translated into a new time. Smokejumpers were valuable primarily as symbols; firefighting had become an institutional operation and technological advances dwarfed even the most heroic exploits of any firefighter.<sup>13</sup>

Yellowstone remained a problem fire park, and others drew wide attention. In 1948, Yosemite experienced its first major fire in almost a decade. The Rancheria Mountain fire began on September 9, discovered by a three-man trail crew at about 1 p.m. They had no communication equipment and were more than eight miles from the nearest telephone. The crew assumed that lookouts would spot the fire and notify park managers, so they battled it as best they could. Lookouts did not see the fire until the next day, when it was reported to headquarters at 10:15 a.m. Beginning in Tulomne River Canyon about two miles downstream from Pate Canyon, a section that was almost 4,000 feet deep and three and one-half miles wide from rim to rim, the prevailing pattern of wind drove the fire upslope, keeping it from rising high enough to be seen by lookouts. Before it was brought under control twelve days later on September 21, the Rancheria Mountain fire burned more than 11,840 acres of timber.<sup>14</sup>

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<sup>11</sup> Forester to Regional Forester, February 17, 1950, Yellowstone Archives, Box Y-240.

<sup>12</sup> “Superintendent’s Annual Report for 1951, Yellowstone National Park,” Yellowstone National Park, Superintendent’s Files, 16; Edmund Rogers to Supervisor, Targhee National Forest, July 10, 1950, Edmund Rogers to Julius Schoener, May 20, 1953, Yellowstone N-33 “Smokejumpers,” Yellowstone Archives, Box Y-232.

<sup>13</sup> Stephen J. Pyne to Hal Rothman, January 26, 2004.

<sup>14</sup> Board of Review Report, Rancheria Mountain Fire, Yosemite National Park, September 9-21, 1948, 1-3; Yosemite National Park Annual Forestry Report, 1948, 3; Fire Control Plan, January 1949, Yosemite National Park, 1, Fire Records by Year, 1931-1974, Yosemite National Park Archives.

The blaze taxed the park's available workpower. Late in the fire season, it required a response from a quickly assembled force. Park staff already had been reduced to ten temporary rangers, one ranger naturalist, five fire control aides, forty-seven blister rust workers, and seventy maintenance workers. With the small permanent staff, this comprised the park's entire workforce. The National Park Service was able to marshal a combination of seasonal and permanent staff members to fight the fire. Eighteen rangers, three naturalists, three fire control aides, forty-three blister rust workers, and eighty-five members of the maintenance crew manned the fire lines. The Forest Service recruited fifty-five more firefighters in Stockton and brought them to the park. The Yosemite Park Company, Curry Company, state fish hatchery, the U.S. Post Office, city of San Francisco, and the Davis Lumber Company together provided another 153 workers to battle the blaze. On September 16, as the fire began its second week, 220 soldiers from Fort Ord, California, arrived to assist. With the arrival of the military, enough workpower had been accumulated to bring the blaze under control.<sup>15</sup>

While the workpower could be deemed adequate, Yosemite had other weak points in its fire protection strategy. The lack of communication equipment loomed large. The telephone line that stretched from Harden Lake to Pate Valley to Benson Lake was perfectly positioned to report the fire. However, the line was out of commission. In 1942, maintenance on the line stopped as a result of a lack of funds and workpower, a direct consequence of the dismantling of the Civilian Conservation Corps. If the line had worked, news of the fire would have reached headquarters two days earlier, significantly accelerating the response. Radio transmission was irregular in the steep valleys of the Yosemite country, where topography and atmospheric conditions made signals undependable. Insufficient scouting on the fire line contributed to an overall lack of knowledge of the scope and size of the fire, and the perennial need for workpower periodically left crucial gaps in firefighting capability.<sup>16</sup> Yosemite's fire protection system needed an upgrade.

A new fire control plan completed at Yosemite the year after the Rancheria Mountain fire articulated the issues. The post-war NPS placed a premium on devising new fire plans that fit the changing realities of the national park system. Following John D. Coffman and the changing circumstances of the Service, revised fire control plans became essential tools in addressing the impact of increased visitation. The park's goals for fire control remained congruent with the rest of the NPS. The 1949 plan reinforced the 10 a.m. policy that the Park Service had followed since the 1930s, sought to confine all fires to the smallest possible area and rearticulated the objective of eliminating all human-induced fires, which comprised the overwhelming majority at the park. In 1948, seventeen of the twenty fires in Yosemite were the result of human action. Clearly, a combination of prevention and education could eliminate much of the fire problem.<sup>17</sup>

The 1949 Yosemite plan epitomized the NPS vision of the response to fire. In it, as in nearly everything the Service had written since Coffman arrived in the late 1920s, fire was the enemy and the park's job was to put it out as soon as possible. Yosemite's problems almost perfectly mirrored historical trends in NPS fire management. Its greatest

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<sup>15</sup> Board of Review Report, Rancheria Mountain Fire, Yosemite National Park, September 9-21, 1948, 3-4.

<sup>16</sup> *Ibid.*

<sup>17</sup> Fire Control Plan, January 1949, 2-4.

problem was the behavior of its visitors. They started fires by accident and with intent, and park staff scurried to respond. Detection was a crucial piece of park and Service strategy; once fires were discovered, the weight of the intricate fire suppression network could be placed upon them. When they were not or when communications failed, as in the case of the Rancheria Mountain Fire, the fire grew out of proportion to its genesis and became a significant problem. In the 1950s, suppression reigned supreme at Yosemite and throughout the western national parks. It remained the only philosophy the National Park Service embraced.

If challenged on its strategy, the NPS could point to the success of its suppression programs. Education loomed large: the “remember, only you can prevent forest fires” campaigns of the Forest Service graced the 1950s, and the heavily visited national parks benefited from the wide currency of the notion even more than the larger but less frequented national forests. By 1953, the National Park Service achieved a reduction of almost 50 percent in acres burned, from an average of almost 27,000 acres per annum between 1947 and 1952 to a new recorded low of 14,833 acres in 1953. The trend continued in 1954, with a 4 percent decrease in human-caused fires and a light year for lightning strikes. At the same time, 1953 was among the NPS’s most difficult years for fire fighting. Severe lightning fires in remote areas of Yellowstone and Yosemite, combined with drought-like conditions in the Southwest and California, made vigilance an even more prized commodity. NPS observers noted the importance of the decrease in human-induced fires. Had the previous years’ frequency continued in a year with many lightning strikes, the limited firefighting resources of the NPS would have been stretched thin.<sup>18</sup>

The decrease in human-induced fires in comparison to lightning fires changed one significant dimension of the NPS mode: fire could no longer be explained simply as a people problem. The National Park Service had to confront nature as nature, not as human behavior gone awry. Lightning fires had been consistent, but often beyond the reach of park capabilities. Yet with the success of suppression, lightning fires flourished. Human-induced burning had competed with lightning for fuels, burning areas that might otherwise have combusted naturally. As suppression succeeded, fuel loads increased dramatically, and on a small scale, lightning burned more of that fuel. Better detection, particularly by aircraft, brought more of these fires to the attention of the NPS. With new technology, the National Park Service found more fires that would have gone out on their own if no one had seen them.<sup>19</sup> The NPS seemed to have traded one kind of fire problem for another.

As visitation increased in the 1950s, the strain on fire protection resources grew. Even as education diminished the number of human-induced fires, the immensity of the task of stopping fire stunned NPS officials. So many more people came to the national parks every year that numbers offset much of the gain from prevention and education. Technology and innovative ideas helped with response, but no one believed that the

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<sup>18</sup> National Park Service, Annual Fire Report, January 1-December 31, 1953, 1-6; Acting Regional Director to Region Two Field Areas, February 26, 1954; National Park Service, Annual Fire Report, January 1-December 31, 1954, 1-3; Regional Chief of Operations to Superintendents, Region Two Areas, March 14, 1955, Office of the Superintendent, Grand Teton National Park, Grand Teton National Park Archives.

<sup>19</sup> Stephen J. Pyne to Hal Rothman, January 29, 2004, copy in possession of the author.



status quo would remain for long. Too many variables, especially the inexhaustible public desire to see the national parks, created ferment within the Service. Even as suppression succeeded, NPS officials worried about the future. By 1954, Forester Lawrence F. Cook couched his appreciation of the Service's suppression accomplishments by pointing to the increase in visitation to a record 47,833,913. In 1955, more than 50 million visitors descended on the national parks; in that year, education and prevention decreased the number of human-induced fires from 247 to 173 in the entire system.<sup>20</sup> Cook fairly crowed about the accomplishment. He could be forgiven his palpable pride.

Along with the positive news, a sense of strain simultaneously permeated the annual fire reports. While suppression worked, it continued to attain its goals at the expense of other operational areas at each national park. The annual increases in visitation challenged Service leaders to conceive of other ways to deal with fire. Suppression still reigned over the federal system and the National Park Service. When they looked at longer trends, managers saw the average number of fires per annum gradually increasing, from 356 between 1945 and 1950 to 362 between 1950 and 1955, a trend that pointed to limits in what could be achieved through educating the public. What shocked fire tabulators was that 1956 reported 422 fires, a much larger number than either of the previous clusters. With the decrease in human-induced fires, the only possible cause could be lightning fires. Worse, the continuing increase in visitors suggested that the number of human-induced fires would also increase.<sup>21</sup> Leaders could not be blamed if, under the weight of dramatic increases in visitors, with the increase in lightning fires, and without a concomitant injection of resources, they feared for their future and pined for another way to address the annual crises that fire caused.

A different vision of the role of fire and the Service's response to it existed, but it came from a region of the country that the National Park Service had not associated with forestry. Everglades National Park offered a counter to the suppression model, but the NPS struggled to integrate this park with its historical vision of fire control.<sup>22</sup> Codified in the NPS Fire Control Handbook, a collection of strategies and approaches for administering, finding, and fighting fire, the NPS experience with fire was western in character, shaped in the mountains of California and the inland Northwest at the major fire parks – Glacier, Yellowstone, Sequoia, and others. Despite significant differences in their conditions, they were of a piece. Everglades represented something different, a low-elevation, wet park that biologist Daniel Beard, who became the park's first superintendent in 1947, remarked "burns off twice a year."<sup>23</sup> Everglades became a counterweight to the National Park Service's generalizations about fire, the place that

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<sup>20</sup> National Park Service, Annual Fire Report, January 1-December 31, 1954; Acting Regional Director to Superintendents, Region Two Field Areas, April 10, 1956, Office of the Superintendent, Grand Teton National Park, Grand Teton National Park Archives.

<sup>21</sup> Annual Forest Fire Report of the National Park Service, 1956, 1; Regional Director to Superintendents, Region Two Field Areas, March 22, 1957, Office of the Superintendent, Grand Teton National Park, Grand Teton National Park Archives.

<sup>22</sup> United States Department of the Interior, National Park Service, "Fire Control Handbook," ca. 1958, NPS Technical Information Center, Denver, microfilm.

<sup>23</sup> Daniel Beard, "Wildlife Reconnaissance: Everglades National Park Project," (National Archives, RG 79, Everglades National Park, 0-35, Proposed Park file, A2621, 1.

disproved existing theories of fire management and offered a new look at how the NPS could approach fire.

Although authorized by Congress in 1934, Everglades was not formally designated a national park until December 6, 1947. During the intervening years, the National Park Service acquired land for the park, closely following the parameters that Congress authorized. This acquisition process paid little attention to questions of management, and only when the park finally was dedicated did the NPS begin to discern what it had obtained. Spread out over much of south Florida, the new park presented incredible opportunities and even greater challenges.

Within a very few years, the National Park Service recognized that Everglades, among the first parks established for biological purposes rather than monumental scenery, did not fit the model that the NPS developed for its western parks. According to its organic legislation, Everglades was established to create a “wilderness, (where) no development ... or plan for the entertainment of visitors shall be undertaken which will interfere with the preservation intact of the unique flora and fauna of the essential primitive natural conditions.” This powerful legislative mandate simultaneously differed from and challenged park management standards of the era.<sup>24</sup>

Fire distinguished Everglades from the western national parks. In a different climate and environment, the Florida park experienced endemic fire, but observers believed that fire in the Everglades had a salubrious effect. “Within a few weeks after fire, the glades are green with sawgrass shoots, and the pinelands full of flowering herbs and new grasses,” observed William B. Robertson. Hired as a fire technician, he gravitated to research and conducted a study of fire at the park in 1953. “Even the scars of burned-out hammocks are soon hidden by rank growth of fireweed shrubs and vines,” he said.<sup>25</sup> Robertson’s tone reflected the disconcerting nature of what he saw. Fire in the Everglades had a different impact and even a different function than it did in the western parks. It was undeniable, ever present, more acceptable to the surrounding natural communities, and more complicated by the region’s peculiar hydrology and biology.

By the time the National Park Service arrived in South Florida, the patterns of fire in the Everglades had been long established. Despite newspaper accounts throughout the early twentieth century that sought to dispel the notion that the Everglades continually experienced natural fire, lightning had been a consistent causative factor. The region experienced frequent and widespread lightning fires that typically occurred during the May to October wet season and did little damage. Such fires played a crucial role in maintaining many plant complexes. From such fires, observers after 1947 inferred that fire in general had little impact on the park, an assumption that belied a far more complicated reality. Fires in drier periods of the year, November to April, often caused greater damage, inducing plant succession by destroying the root systems of even fire-resistant plants. Such fire even consumed dried-out organic soils. Typically, large

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<sup>24</sup> Everglades National Park Authorization Act, 16 U.S.C. sec 410 (1988) (enacted 1934); on December 6, 1947, President Harry S Truman dedicated the park with the words: “Not often in these demanding days are we able to lay aside the problems of the time, and turn to a project whose great value lies in the enrichment of the human spirit. Today we make the achievement of another great conservation victory. We have permanently safeguarded an irreplaceable primitive area. We have assembled to dedicate to the use of all people for all time, the Everglades National Park.”

<sup>25</sup> William B. Robertson, *A Survey of the Effects of Fire in Everglades National Park* (Washington, D.C.: National Park Service, 1953), 1.

lightning fires were far from settlements; community interests aggressively squelched closer ones.<sup>26</sup>

Human fire produced an even more pronounced impact. Native peoples had clearly used fire to modify their environment, as they did throughout the Americas and indeed the world. When Euro-American settlers came to the region, their efforts “beggared” their predecessors, Robertson noted. “The frequency of man-made fires probably increased sharply as whites replaced aborigines.” Settlers came from a culture of aggressive use of fire, and on the peripheries of their world, social order diminished and carelessness that led to fires often resulted. In an effort to improve agricultural prospects, Euro-American settlers began to drain the Everglades. The lowered water levels that resulted increased both the frequency and severity of human-induced fires. An arterial canal system begun in 1905 and the completion of a dike at Lake Okeechobee in 1935 exacerbated existing problems. As drainage became more effective, fires increased in severity. The newer desiccation, especially of the lower glades, extended the fire season by months, pressuring the nascent fire response mechanisms of the NPS. When fires occurred, their intensity led to greater destruction of hardwood forest vegetation as well as organic soils. Robertson’s characterization of an “imposing picture of fire occurrence” as a result of the Euro-American presence provided a strong rationale for aggressive NPS action.<sup>27</sup>

Everglades clearly presented an entirely different range of fire problems. In the four years following its establishment, the park experienced extremes of fire. In 1948, only 1,965 acres burned; two years later, in the year of the three fires, 121,370 acres of vegetation went up in flames. Specific problems were already evident. The hammocks on the western half of Long Pine Key were severely damaged. The June 1951 Ironpot Hammock and Shark Valley fires gutted many tree islands and destroyed much of their organic soil, while also burning out remaining muck deposits of sawgrass areas. The situation appeared dire and called for new strategies. The NPS was confronted with a management question it had not considered.<sup>28</sup>

By the early 1950s, the National Park Service had seen enough fire at Everglades to recognize that conditions there challenged its assumptions about fire control. Its first crisis came in 1950, when three large fires, called Tamiami No. 3, Long Pine Key Fire No. 3, and Mowry Fire, required simultaneous suppression. The park lacked the resources to fight three fires at the same time. The “fire emergency merely spotlighted this fact,” Dan Beard wrote in the aftermath of a critique held at park headquarters. Beard believed that the park showed strength in “the spirit of the men and women (permanent, seasonal, and temporary) who tackled the undertaking.” Despite their valiant efforts, he said, their attempts were inadequate. Although the park could take pride in suppressing three fires “each of which experienced fire fighters and ‘glade cats’ said nobody could put out,”

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<sup>26</sup> David McCally, *The Everglades: An Environmental History* (Gainesville: University of Florida, 1999), 18-20.

<sup>27</sup> Robertson, “A Survey of the Effects of Fire in Everglades National Park,” 3-13; Pyne, *Fire in America*, 302-03; McCally, *The Everglades*, 31-57.

<sup>28</sup> Robertson, “A Survey of the Effects of Fire in Everglades National Park,” 167; Pyne, *Fire in America*, 302.

Beard insisted, “I am determined that the park staff will not be called upon to undergo any repeat performances.”<sup>29</sup>

These fires clearly showed that the park’s technical capabilities were inadequate. The combination of information and mechanization that characterized the era had not yet reached Everglades, a relatively new park far from the main focus of the NPS. The park had not yet developed a fire management plan. Park maps were old and outdated, without roads, trails, and in some cases, terrain and plant distribution. Firefighters started with inaccurate information about the geographic features they encountered and the fuel types and loads they battled. The park’s communication systems also fell short of optimal. Dependent on walkie-talkies as a result of the absence of telephone lines, the park simply did not have enough sets for its firefighters. The park did not own enough radio sets to assure constant communication and their range was insufficient. The park’s dispatchers lacked training for fire management, park vehicles did not possess sirens, and the park’s safety mechanisms were undeveloped. Contingency plans for hiring temporary fire fighters did not exist; no one had thought to develop a ready supply of potential workers before fire season. From an infrastructural perspective, the park fell far short in almost every respect, an endemic problem especially for eastern national parks during the early 1950s.<sup>30</sup>

Robertson recognized the combination of employee strain and inadequate fire-fighting resources as a severe obstacle to managing fires. Five years of fire fighting had “absorbed much of the productive energy” of the Everglades staff, he noted, but the results “inspired no feeling more robust than a very reserved optimism.” The problems seemed beyond the reach of park staff, a sentiment with which Beard concurred in the aftermath of the 1950 fires. Despite learning a great deal about the park and its fires and developing and implementing a comprehensive fire-fighting program, the NPS could do little about the real problem – the diminishing amount of water available in the Everglades. The U.S. Army Corps of Engineers planned an enormous flood control project for central and southern Florida. The NPS viewed this project with considerable trepidation. Less water than the already diminished supply was not even conceivable from the NPS view. Without more water, “the best efforts of fire detection and suppression,” Beard insisted, “are likely to provide only local victories in a lost war.”<sup>31</sup> This tacit admission of the impossibility of implementing policy was a first in the National Park Service and led to the embrace of a different vision of fire in the Everglades.

A move to formalize the use of prescribed fire in Everglades National Park ensued. The park’s specific conditions made suppression a dangerous strategy. Officials long had recognized that suppressing fire in rockland areas led to rapid domination of the landscape by hammock vegetation. Early NPS suppression efforts had succeeded, allowing broad-leafed hammock vegetation to spread, especially along rock pinnacles,

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<sup>29</sup> Fire Critique, Everglades National Park, May 16, 1950, Records of Key Officials, Box 7, File 19, E-Fees, Everglades National Park, Everglades National Park Archives.

<sup>30</sup> *Ibid.*, 3-4.

<sup>31</sup> Robertson, “A Survey of the Effects of Fire in Everglades National Park,” 169; Fire Critique, Everglades National Park, May 16, 1950; Thomas J. Allen to District Engineer, Jacksonville District, U.S. Army Corps of Engineers, August 5, 1949; Devereux Butcher to Newton B. Drury, February 24, 1948; Newton B. Drury to Devereux Butcher, February 27, 1949, Records of Key Officials, Box 7, File 19, E-Fees, Everglades National Park, Everglades National Park Archives.

northerly facing sections, and in the wettest areas. In some places, the plants reached twenty feet in height. In all areas, they created a dense understory, the predicate of a “calamitous” fire, Daniel Beard wrote in 1956, “perhaps killing pine as well as understory.”<sup>32</sup>

Beard quickly turned into an advocate of the use of fire. In 1956, he argued that its absence promoted the expansion of hardwoods, which in turn would lead to the extinction of the southern Florida slash pine and other pineland plants. Committed to protecting Long Pine Key and other park areas as pineland, Beard regarded fire suppression as the chief obstacle to his natural resource management goals. Beard’s memorandum catalyzed support for controlled burning at the Everglades. Regional Director Elbert Cox sought NPS Director Conrad L. Wirth’s approval for this controversial plan. Wirth authorized a specific management plan for the project, with the caveat that he see the plan and approve it before it was introduced and that the conservation community be given a look as well. In June 1957, a completed plan reached the Washington office of the NPS. After much deliberation and a thorough review of the differences between Everglades and the rest of the park system, in October 1957 Conrad Wirth approved the first controlled burning plan within the national park system in more than thirty years.<sup>33</sup>

The plan was elaborate and persuasive, showing the impact of almost a decade of research in South Florida. The initial proposal called for one round of burning, with careful evaluation before any additional burns took place. It outlined eleven burning blocks, lettered A through K, with initial plans to fire nine of the eleven. D and K, which later was redefined as blocks K through Y, were to be left for the future. NPS managers planned to burn backfires into the wind, only lighting headfires sufficient to immolate advanced hardwood succession. The park built twenty miles of roads on Long Pine Key to accommodate the fire plan. By spring 1958, Everglades stood ready to implement its plan.<sup>34</sup>

When park rangers lit fires in Block B on Long Pine Key on April 21, 1958, they inaugurated the first long-term prescribed fire plan in the national park system. Between 1958 and 1973, forty-nine prescribed fires were set in Blocks A through Y. Fifty-two more were begun between 1973 and 1979, comprising the vast majority of NPS prescribed burning in that era. Burning during the summer was less frequent; only thirteen of the 101 fires in this era were started between June and September. The period between October and January became the favored season. In 1976, time-of-year restrictions were finally removed.<sup>35</sup>

Everglades presented a fire scheme unfamiliar to the National Park Service. The first generation of fire managers had all learned their skills in the West, influenced by the Forest Service and the legacy of the 1910 fires. Everglades was different. The NPS had

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<sup>32</sup> Daniel Beard, Memorandum to Regional Director, July 11, 1956, Everglades National Park, 883.01; William B. Robertson, “Fire and Vegetation in the Everglades,” in E.V. Komarek, ed., *Tall Timbers Fire Ecology Proceedings* (Tallahassee, FL: Tall Timbers Research Station, 1962) No.1, 67-80.

<sup>33</sup> Dale L. Taylor, “Fire History and Fire Records for Everglades National Park, 1948-1979,” Report T-619 (Homestead, FL: South Florida Research Center, 1981), 14-16.

<sup>34</sup> Superintendent to Regional Director, June 21, 1957; Memorandum from the Director, October 9, 1957; Superintendent to Regional Director, January 6, 1958, Everglades National Park, 883.01.

<sup>35</sup> Taylor, “Fire History and Fire Records for Everglades National Park, 1948-1979,” Report T-619, 16-17.

no experience with local residents who said: “This country has always burned and always will, and anyway fires don’t hurt anything here,” as Robertson was told repeatedly. Yet, officials could identify a pattern that threatened the NPS’s long-term ability to protect park values. As the Everglades became drier, sustaining the ecological and scenic status quo became progressively more resource intensive and expensive. The park lacked the time, resources, and manpower to reverse the effects of the human-induced drying of the area. The fires that resulted did real damage, destroying the very attributes that made the Everglades ecologically important.

The situation presented a dilemma. The National Park Service remained devoted to the principles of suppression, but local conditions did not support the implementation of such a strategy. Residents did not react to fire with the outrage common in the West. It seemed to them inevitable and not much of a problem. Nowhere had the National Park Service encountered a situation where it regarded fire as a more severe threat than did its neighbors. The specter of prescribed burning had been buried by Albright and Coffman in the 1930s, and even the Forest Service’s wartime recognition of the value of the practice did not sway the NPS toward a broader conceptualization of the role of fire.<sup>36</sup> Inside the Service, no one advocated a shift in policy.

Still, Everglades was not the first or the only park to experiment with prescribed burns. As early as 1950, Superintendent Eivind T. Scoyen of Sequoia National Park, a venerated NPS leader and a man of considerable vision, supported the designation of the Kaweah Basin in the upper Kern River drainage as a research area that would not be subjected to fire suppression. Even as he advocated the conceptual change in fire management, Scoyen asked to retain authority to intervene if fire there threatened other areas of Sequoia.<sup>37</sup> The National Park Service accepted the principle that fire should not be instantly suppressed in some parts of the park system even before the controlled burn program at Everglades began.

The decision at Kaweah Basin hardly represented a nationwide policy change. Regional Director Owen A. Tomlinson took great pains to establish that the Kaweah Basin presented a unique situation, telling NPS Director Newton B. Drury that the area was “so completely isolated, with unique values that depend completely on its being left alone, that such a special designation would establish no precedent.” Kaweah Basin was more than 11,000 feet in elevation. Its lightning fires could not be easily seen from lookout posts, but with the advent of aerial fire reconnaissance, fires were spotted inside the basin more easily. When Lowell Sumner, a veteran NPS biologist who assessed parks throughout the West, urged that Sequoia managers allow the basin to remain in “a natural state, free from any human interference,” he argued for a piece of wild nature that had little implication for other forms of park management.<sup>38</sup> By succeeding with an argument about the unique attributes of the basin, Sumner, Scoyen, and Tillotson achieved a small

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<sup>36</sup> Bruce M. Kilgore, “Fire Management in the National Parks: An Overview,” *Tall Timbers Fire Ecology Conference Proceedings*, No. 14, 45-58.

<sup>37</sup> E. Lowell Sumner, “The Kaweah Basin Research Reserve: An Untouched Area for the Future;” Regional Director to Director, February 6, 1950, Sequoia National Park, FR 1950, 1970-1976, Ma-U, Box 327, F317, Sequoia National Park Archives.

<sup>38</sup> Sumner, “The Kaweah Basin Research Reserve: An Untouched Area for the Future,” 6; Regional Director, Memorandum of August 24, 1949, Sequoia National Park, FR 1950, 1970-1976, Ma-U, Box 327, F317, Sequoia National Park Archives.

objective: they protected the prerogative of a research area. They did not intend nor did they make a claim for a larger use of fire in national parks.

Other instances of variance with policy with official sanction followed during the 1950s. At Pipestone National Monument, Superintendent Lyle K. Linch experimented with controlled burning of grasslands inside the park. Recognizing that the scene around the famed Hiawatha quarry no longer resembled historic descriptions of the area because the absence of fire created a more heavily wooded vista than had existed before, Linch sought support for burns that would recreate historic conditions. Photographic evidence from the 1920s bolstered his case; even the grasslands of that era had become heavily wooded in the ensuing thirty years. At the regional office in Omaha, Linch found archaeologists and other cultural resource professionals supportive. In 1950, as the summer travel season began, with the help of the Pipestone community, Linch burned grasslands inside the park. The community found nothing unusual in this practice. Farmers and ranchers in the region had long burned their lands at the end of the summer as well.<sup>39</sup>

The Pipestone experiment was unusual, but it characterized a strategy that circumvented the restrictive NPS suppression policy. Into the 1950s, many park superintendents retained considerable autonomy, with some still able to operate more or less as free agents. Countless idiosyncratic practices were common, especially at remote or less significant parks that had strong ties to local cultures. The emergence of prescribed burnings at Pipestone and other isolated parks reflected the lack of centralized authority, an historic point of pride for the National Park Service. It also suggested that compelling the proliferating number of parks to hew to the overall NPS line on fire was more difficult than the NPS Division of Forestry anticipated. Linch was an exception. He told his superiors about the upcoming burns, couching them in terms of a debate about the authenticity of the cultural resources setting at the park. Posed this way, the use of fire was not a challenge to the status quo. It stemmed from the kind of zealous professional rectitude that marked Linch's career. Viewed as an eccentric by his superiors, Linch created leeway for the use of fire, although it hardly qualified as precedent. Although the regional office eventually curtailed the practice, Linch was neither sanctioned nor removed from his office because of this violation of policy. Tolerance might not describe the NPS view of such activity, but times had changed since the days when Albright, Coffman, and others weighed heavily on any advocates of fire's practical use.

By this time, scientific thinking about fire had begun to change. University-trained scientists had already revolutionized their approach. At the University of California, Berkeley, Harold Biswell arrived in 1947 to teach range management. Although he had been advised to avoid precisely this controversy, Biswell promptly committed what was at the time a heretical act: he advocated controlled burning in California. Biswell had learned the practice during a stint in the South and had the good fortune to make his suggestion just as a reversal in California state policy allowed the use of controlled fires to improve rangelands. He jumped into the debate at a fortuitous moment – the first time that the use of fire as a tool to shape landscape had been seriously

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<sup>39</sup> Superintendent, Pipestone National Monument to Regional Director, March 21, 1950, Pipestone 701, National Archives and Records Administration, Central Plains Region, Kansas City, MO; Hal K. Rothman, *Managing the Sacred and the Secular: An Administrative History of Pipestone National Monument* (Omaha: National Park Service, 1992), 177-79.

discussed in almost 50 years. Biswell “was a wonderful guy, and completely unabashed in his enthusiasm for fire, and its role,” Robert Barbee, who first encountered the professor during the 1960s, remembered. “We worked well together because he was a showman. He got it done; he would have done well on Madison Avenue. We had little press conferences, and we would go out and have little seminars for people where we had the media there, and that sort of thing.”<sup>40</sup> Although the array of forces in California allied against the practice remained powerful and prominent, Biswell’s program reflected a vision for a different future of fire management.

The idea of “light burning,” as controlled burning had been known, had never really died, but it had been eliminated from the world view of federal agencies. Western in their orientation toward fire, federal land managers largely accepted the paradigms of the forestry profession as implemented by the Forest Service, which determined to eliminate the practice. The Forest Service’s control of fire management through the Forest Protection Board and other mechanisms exiled anyone who thought of using fire as a tool to manage land to the far peripheries of fire management. Those who thought about using fire were denied access to USFS resources, the largest available source of funding for fire. Advocating controlled burning and accessing federal fire protection and response resources became an impossible combination. With no other real sources of support for fire available, most land managers accepted suppression and did not publicly challenge its tenets.

Biswell became the pivotal figure in bringing ideas about prescribed fire to federal agencies. A native of the Midwest, he learned his craft in both the West and the South. After completing a Ph.D. in botany and forest ecology at the University of Nebraska, he was hired in 1930 to work at the USFS forest experiment station on the University of California campus at Berkeley. In the decade Biswell spent there, he studied mountain meadows and woodland-grass ranges. In 1940, he transferred to the Forest Service Southeastern Experiment Station in North Carolina, bringing the western forester’s vision of fire as the enemy. There he witnessed the Forest Service’s experiments with burning in the southern pineries in 1943, a revolutionary decision for that agency. The seven years Biswell spent in North Carolina changed his understanding of the role of fire in natural communities.<sup>41</sup>

When he returned to Berkeley in 1947, Biswell carried with him to the hostile intellectual climate of the American West a generation of knowledge gleaned elsewhere. The South had changed him and his views, although not for the better in the view of his Forest Service mentors. Even after he was gently cautioned by his USFS mentor, Edward I. Kotok, in 1947 chief of research for the Forest Service, to stick to range management when he reached California, Biswell soon returned to studying the impact of fire on range management. He found that fire improved range land in the woodlands of the Sierra foothills and developed a method of burning upslope without firelines in chaparral. And

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<sup>40</sup> Jan W. van Wagtenonk, “Dr. Biswell’s Influence on the Development of Prescribed Burning in California,” *The Biswell Symposium: Fire Issues and Solutions in Urban Interface and Wildland Ecosystems* (USDA Forest Service, General Technical Rep., PSW-GTR-159, 1995), 11-14; Robert Barbee, interview by Hal Rothman, Part I, November 12, 2004; Pyne, *Fire in America*, 119; David Carle, *Burning Questions: America’s Fight with Nature’s Fire* (Westport, CT: Praeger, 2002), 58-60.

<sup>41</sup> van Wagtenonk, “Dr. Biswell’s Influence on the Development of Prescribed Burning in California,” 12; Carle, *Burning Questions*, 57-58.



he began to burn ponderosa pine – the most prevalent tree in California, covering almost 4 million acres – in 1951.<sup>42</sup>

Biswell's return to California precipitated a revolution in the way federal agencies approached fire. Federal fire response had been shaped in the voluminous fires of the Northern Rockies and the Sierras. In a distant mirror of the westward motion of southerners after the Civil War, the ideology of southern fire management moved west through the person of Harold Biswell. Southern practices offered a counter, even a rebuke, to existing thinking; at Biswell's urging, the scientific community increasingly seemed willing to consider such ideas. Only the diehards, the federal agencies that depended on the Forest Service for leadership and funding, retained full-fledged commitment to suppression.

A considerable body of scientific literature argued that fire could be a useful instrument of resource management. Forester H. H. Chapman led the way; after him others developed situation-specific research that advanced the idea of controlled burning. One influential piece, forester Harold Weaver's 1943 *Journal of Forestry* article titled "Fire as an Ecological Factor in the Ponderosa Pine Region of the Pacific Slope," attracted Biswell's attention. Weaver's later writings were also worthy of note. Working for the Bureau of Indian Affairs, Weaver implemented a controlled burning program on the Fort Apache Reservation in 1950, burning more than 50,000 acres of ponderosa pine. In the subsequent two years, wildfires were reduced by more than 90 percent on the burned acreage, a rate less than one-ninth that on land that had not been burned.<sup>43</sup> Clearly, in certain circumstances, planned fire could be used to obviate wildfire.

Despite the experience of the Everglades and the growing consensus among scientists that there was a role for fire in ecological settings, the National Park Service was slow to assess the possibilities of the new strategy. Visitation, not fire, was at the forefront of Service concern in the early 1950s, and the efforts at Everglades were anomalies. During the post-war era, visitation grew from a low of 6,838,000 in 1943 to 31,735,000 in 1949 and 46,225,000 in 1953. Both 1941, before the war, and 1946, after it ended, had been in the 21 million-visitor range. By 1949, that number had increased by more than fifty percent. No dimension of the NPS – not visitor services, not the ranger division, and certainly not fire protection – could keep pace. Inundated and overwhelmed best described the national parks; addressing the onslaught took all the limited resources at NPS disposal. Director Conrad L. Wirth encapsulated the problem for *Reader's Digest*. The Service could not "provide essential services. Visitor concentration points can't be kept in sanitary condition. Comfort stations can't be kept clean and serviced. Water, sewer, and electrical systems are taxed to the utmost. Protective services to safeguard the public and preserve park values are far short of requirements. Physical facilities are deteriorating or are inadequate to meet public needs. Some of the camps are approaching rural slums. We actually get scared when we think of the bad health conditions."<sup>44</sup>

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<sup>42</sup> van Wagtenonk, "Dr. Biswell's Influence on the Development of Prescribed Burning in California," 12; Carle, *Burning Questions*, 57-58.

<sup>43</sup> Carle, *Burning Questions*, 62-63.

<sup>44</sup> National Park Service, "Public Use of National Parks: A Statistical Report, 1941-1953"; National Park Service, "Public Use of National Parks: A Statistical Report, 1954-1964"; Charles Stevenson, "The Shocking Truth About Our National Parks," *Reader's Digest* January 1955; Conrad L. Wirth, *Parks, Politics, and the People* (Norman: University of Oklahoma Press, 1980), 237-38.

This problem was not confined to national parks, it permeated public land management throughout the 1950s. Campers left campfires to burn out without supervision and drivers tossed the ubiquitous cigarette butt out the car window and onto dry terrain, where it smoldered in brush until all too often it started a forest fire. Despite an extensive fire awareness campaign, education ran up against the fundamental recalcitrance of the public. As long as suppression remained the model, the solution to the woes of heavier use and increased carelessness could only be the application of an ever-greater quantity of resources to the problem of fire.<sup>45</sup>

One answer for the National Park Service came from an unexpected source. In 1956, MISSION 66, a ten-year program to upgrade facilities and staffing in advance of the fiftieth anniversary of the 1916 founding of the National Park Service, provided the park system with its second comprehensive development program. In the decade-long program, Congress poured more than \$1 billion into the parks, which translated into an enormous impact on every dimension of the National Park System. MISSION 66 financed countless visitor centers and other structures, improved employee housing opportunities at most parks, paid for road construction, built campgrounds and other visitor facilities, and helped end the public cries to close the national parks if they could not be properly maintained. MISSION 66 had as transformative an impact on the park system as did the New Deal.<sup>46</sup>

Although MISSION 66 was not specifically designed to achieve fire suppression goals, many of its activities supported a new emphasis on this objective. Suppression had succeeded when resources were available to support it. World War II had pushed the NPS away from efforts to suppress fire everywhere in the parks, restricting its activities to easily accessible places. The post-war era compelled a fundamentally reactive posture. With important exceptions – such as the Everglades, Kaweah Basin in Sequoia National Park, and Pipestone National Monument – most parks simply responded to fires and sought to put them out as quickly as possible. Major fires were the most threatening crisis any park faced and the most difficult to anticipate.

Among MISSION 66's primary activities, building roads and trails offered advantages for fire control as a result of the improved access they created. Roads and trails made it easier to get the firefighters' vehicles and heavy equipment on which fire control increasingly depended to the places where fires raged. Parks such as Olympic National Park routinely used the elaborate trail systems inherited from the Forest Service as the basis of their fire response strategy. MISSION 66 funds lessened the strain of upkeep, making these pathways even better tools of access for fire suppression, while they still supported other purposes.<sup>47</sup>

In fire management, MISSION 66 first exacerbated the problems of the post-war era, and then began to provide a remedy for them. In fire protection, as in so many other areas, MISSION 66 functioned as a more comprehensive version of the New Deal. It provided an injection of federal resources that allowed the National Park Service to

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<sup>45</sup>Baker, Maxwell, Treat, and Dethloff, *Timeless Heritage*, 131-33; Hal K. Rothman, *Saving the Planet: The American Response to the Environment in the Twentieth Century* (Chicago: Ivan R. Dee, 2000), 129-30.

<sup>46</sup>Roy E. Appleman, "A History of the National Park Service Mission 66 Program," January 1958, 1-22, NPS Technical Information Center, Denver, microfilm.

<sup>47</sup>Guy Fringer, *Olympic National Park: An Administrative History* (Port Angeles, WA: National Park Service, 1991), 102-3, 105-6, 131-32.

respond to the changes in visitation patterns and to increased use of national park lands. The inclusion of fire protection in what was essentially a capital development program took a number of years. MISSION 66 began in 1956, and its impact on the system was almost immediate. By 1960, Acting NPS Director Eivind T. Scoyen, who had considerable experience with fire as a result of his superintendencies at Glacier, Sequoia, and other parks, recognized the implications of MISSION 66 on the fire management program. “The MISSION 66 Program to date [has] altered the patterns of use by park visitors,” he informed the regional directors “Operating programs have changed and many other factors indicate the need to restudy the forest protection program for each park.”<sup>48</sup>

Scoyen recognized that MISSION 66 efforts made the parks’ fire situation worse. Capital development allowed more people to visit places that previously had been out of reach, increasing the danger of human-induced fire in many new places even as lightning fires were simultaneously on the rise due to the increased fuel load that resulted from successful suppression. An old pattern had repeated. As the National Park Service pulled back from its New Deal-era commitment to fight fire everywhere, people brought fire to new places because of development. The Service had to galvanize MISSION 66 for fire protection as well as development.

The fault, Scoyen believed, was that existing funding schedules for fire did not accurately reflect the situation in the national parks. Requests for Forest and Fire Control reserve money far exceeded the available funding, a circumstance Scoyen believed stemmed from poor planning, but in fact was a historic problem in the NPS. Resources to fight fires had never been sufficient – except as a result of extraordinary programs such as the New Deal. Scoyen sought an overall review of fire control as the NPS practiced it, looking for both an assessment of infrastructure and of practice. He asked the regional directors to assess the methods of detection, the operational phase of fire control, and to document estimated increases in revenues.<sup>49</sup>

Suppression had become increasingly untenable, a fiction that the National Park Service told itself. The vast resources that poured in through MISSION 66 masked the increasing difficulty of the 1950s with a characteristic salve – the application of enormous amounts of dollars to the system’s problems. It provided a second instance in a thirty-year period during which the NPS had enough resources to meet every whim a superintendent or a regional director might ponder. Cleared trails had the same influence on fire-fighting in the 1960s as they had in the 1930s. So did thinning of underbrush, clearing of danger spots, and an array of other practices that the Service engaged in as a reflex. MISSION 66 promoted the possibility that suppression could remain viable – if only enough resources were devoted to it on a regular basis.

At the same time, a new heady era began for the National Park Service in 1956. MISSION 66 had finally given the Service the facilities to accommodate the tremendous growth in travel that followed World War II. Because of a divergent series of forces in post-war American society, the National Park Service began to move in new management directions. Two significant changes – the G.I. Bill that trained so many scientific

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<sup>48</sup> Memorandum: Forest Protection Planning, Acting Director to Regional Directors, Regions One, Two, Three, Four, and Five, July 21, 1960, Yellowstone Archives, Yellowstone Box Y-239.

<sup>49</sup> Memorandum: Forest Protection Planning, Acting Director to Regional Directors, Regions One, Two, Three, Four, and Five, July 21, 1960, Yellowstone Archives, Yellowstone Box Y-239.

specialists at the college level, and two reports, the A. Starker Leopold Committee's *Report on Wildlife Management in the National Parks* and the National Academy of Sciences' *A Report by the Advisory Committee to the National Park Service on Research*, known as the Robbins Report after its lead author – compelled a new vision of National Park Service management.<sup>50</sup> In a way never before tenable, the Service embraced science as a guiding administrative force, its people focusing with renewed vigor on resource management as a core mission. Fire management became a significant component of that obligation.

Fire science continued to move forward, largely apart from the National Park Service. Tall Timbers, a Florida research station created in 1958 to study long-term fire ecology, became the conduit for some of the most exciting research on the use of fire. Developed by a wealthy landowner and a well-known wildlife biologist who operated a wildlife experiment station, Tall Timbers set a high standard. Beginning with the publication of its first conference proceedings in 1962, Tall Timbers became the center of innovation in fire ecology and directly contradicted the Forest Service model. Under Edward V. Komarek, the visionary scientist who pioneered the use of fire during the twenty-five years he worked in the region prior to the founding of Tall Timbers, the research station became the most innovative place in the world of fire study. The most original and even heretical ideas about fire usually could get a hearing at the annual Tall Timbers conferences, and the open inviting climate created healthy discussion about the role of fire in the natural world.<sup>51</sup>

This type of intellectual innovation was new to the NPS. The Service had been a tight-knit cadre since its inception, with tremendous loyalty to the values of leadership across generations of employees. There were “greenblood” families, second- and by the 1960s, third-generation members of families serving in the NPS. The presence of Horace M. Albright, more than thirty years past his directorship but still a vital and influential force, added to the reverence for historical practices. Despite the efforts of the first head of the NPS Wildlife Division George M. Wright, whose life had been cut short by an automobile accident outside of Deming, New Mexico, in 1936, science had rarely been a particularly strong dimension of the NPS culture.<sup>52</sup>

In this context, the Leopold and Robbins reports set a higher standard for science in the national park system and greatly influenced the Service's natural resource management policies. Written by a group of noted wildlife scientists, the Leopold report transformed a report on the condition of wildlife in the national parks into a powerful argument for a new approach to management of national park areas. The report

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<sup>50</sup> Richard West Sellars, *Preserving Nature in the National Parks: A History* (New Haven: Yale University Press, 1999), 212-22; A. Starker Leopold, et al., “Wildlife Management in the National Parks,” in James B. Trerethren, *Transactions of the Twenty-Eighth North American Wildlife and Natural Resources Conference* (Washington, D.C.: Wildlife Management Institute, 1963); National Academy of Sciences, National Research Council, “A Report by the Advisory Committee to the National Park Service on Research,” typescript, Aug. 1, 1963; for more on the larger changes of the era, see Patterson, *Grand Expectations*, 174-75, 277-78, 313-20 and David Halberstam, *The Fifties* (New York: Villard, 1993), 286-94, 495-96, 623-25.

<sup>51</sup> Carle, *Burning Questions*, 43, 94, 117-19; Pyne, *Fire in America*, 293, 302.

<sup>52</sup> Donald Swain, *Wilderness Defender: Horace M. Albright and Conservation* (Chicago: University of Chicago Press, 1970), 311-16; Richard Sellars, “The Significance of George Wright,” *George Wright Forum* 17:4 (2000), 46-50.

recommended maintaining or recreating the original ecology of a park as a “reasonable illusion of primitive America,” a goal much at odds with the manipulated nature of many parks. Believing that natural conditions should prevail, the authors suggested removing all non-native species from parks, putting biologists rather than interpreters in charge of managing wildlife, and emphasizing the role of fire in forest regeneration, among other management practices. The Robbins report focused on the National Park Service’s research needs. Everglades was among the parks the committee visited, and it paid close attention to that park’s experiments with fire. The report concluded that the NPS should preserve national parks primarily for the aesthetic, spiritual, scientific, and educational values they offered the public. The Service’s research agenda, in the committee’s view, should directly support those goals. Fire was included in the mix of components the report thought valuable to the park system.<sup>53</sup>

The Leopold Report specifically addressed the role of fire in national parks and argued for a change in direction. With its primary focus on wildlife and habitat, the report saw fire as a tool for shaping the park environment. Pointing to the experience of the East African grasslands, where humans used fire to shape their environment for centuries, the report argued for fire as a strategy for habitat management. Controlled fire was “the most ‘natural’ and much the easiest and cheapest to apply,” the report averred. It acknowledged that fire suppression created conditions that had to be modified before any systematic plan of controlled burning could take place. Conversely, suppression had created a need for aggressive management before controlled fire could be introduced.<sup>54</sup>

The two influential reports challenged existing National Park Service practices, powerfully arguing for a stronger ecological basis for park management. Influential, they combined with an internal Service transformation to create an ecological strain in NPS thinking. Among the thousands of veterans who went to college, some saw careers in government as a viable extension of their military service. A small number became biologists, wildlife specialists, and other natural resource-oriented researchers. Some of these joined the NPS, many hired with funds provided by MISSION 66. Trained as scientists in the era that saw the Soviets put a spacecraft in outer space, they seemed representative of the new. Before their arrival, most NPS staff members had been generalists, but these new employees brought a specialized perspective to park management. By the early 1960s, they comprised a constituency that favored precisely the sort of recommendations that the Leopold and Robbins reports offered, albeit one that had yet to dramatically influence NPS policy.<sup>55</sup>

The twin reports began to create a position for scientific management in the NPS, giving science, in particular the discipline of ecology, much greater visibility in making policy. By the mid-1960s, the National Park Service committed itself to professional management of natural resources and for the first time since the era of George Wright, appeared to listen to its scientists. Wildlife biologists and other scientists in the NPS looked for a way to push a science-based management agenda forward. The scientists brought a different vision. Where the first two generations of the National Park Service

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<sup>53</sup> A.S. Leopold, S.A. Cain, C.M. Cottam, I.N. Gabrielson, and T.L. Kimball, *Wildlife Management in the National Parks: The Leopold Report* (Unpublished, 1963), 10; Ethan Carr, *Wilderness By Design: Landscape Architecture and the National Parks* (Lincoln: University of Nebraska Press, 1998).

<sup>54</sup> Leopold, *Wildlife Management in the National Parks*, 14.

<sup>55</sup> Sellars, *Preserving Nature in the National Parks*, 214-32, 242-45.

hated fire and treated it as an enemy, these newly trained arrivals regarded it in a much more dispassionate manner. Fire was a tool they could use, they believed, and the growing body of research, much of it stemming from Tall Timbers and from Harold Biswell and his students, supported their vision. Their very presence in the Service helped spur the move toward a different kind of strategy to manage fire.<sup>56</sup>

Leopold and Biswell's relationship greatly contributed to both the ideas in the Leopold Report and the implementation of its goals. Both men taught at the University of California, Berkeley, with their offices just across the street from one another. An innovative pair, they collaborated on research, profoundly influencing one another's thinking about fire. The two lunched together and jointly taught seminars for graduate students. A group of students and faculty interested in the same topics grew around them, for at a time when the University of California was acclaimed as the best public university in the nation, the opportunity to study with a pair of such natural resource luminaries could not be matched anywhere in the country. Their labs became crucibles for a new generation of fire scientists. A number of their graduate students pursued the ramifications of fire as dissertation topics. Four – Bruce Kilgore, who matriculated in 1968, Jan van Wagtendonk (1972), James Agee (1973), and David Graber (1981) – became National Park Service scientists who influenced fire policy during the subsequent generation.<sup>57</sup> In the long run, Biswell's impact, in concert with that of the Leopold Report, extended well beyond high-level discussions; it created a generation of scholar/practitioners who carried his ideas forward.

The idea of using fire as a tool spread in the aftermath of the Leopold Report, the most influential and controversial scientific report the NPS had yet commissioned. Tied to the historic models of the Forest Service and dependent on funding that stemmed from that agency, senior NPS officials remained wary of the shift away from suppression. Obstacles certainly remained, but at the grassroots, managers began to look at the environment around them and the consequences of fire and see real advantages in controlled burning. With more than twenty years in fire parks, Superintendent Scoyen served as a counter to older views of fire in the Service's highest echelons. He helped soften resistance to the new ideas. When the appreciation of the use of fire migrated from anomalous parks such as Pipestone to the parks the public knew best, Scoyen helped counter the skepticism at the top.

Implementation exploded on the NPS landscape. In 1965, Yellowstone National Park began to experiment with controlled burning. As it had been elsewhere in the system, the introduction of induced fires was couched in terms of another management goal: the development of resource management. As part of the park's Elk and Habitat Management Plan, Yellowstone undertook an aspen restoration program that relied on the controlled use of fire to achieve its goals. The program had two objectives: to ascertain if the burning of a former stand of aspen, taken over by conifers, would cause the area to revert to aspen, and to see if burning would enhance the "number and vigor of Aspen sprouts in a decadent stand," as Park Biologist Robert E. Howe described it. The park planned a large burn, but the summer remained too wet to sustain sufficient fire. Scaling

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<sup>56</sup> Sellars, *Preserving Nature In the National Parks*, 214-16; Foresta, *America's National Parks*, 133-36, 148-62; Carr, *Wilderness by Design*, 1-14.

<sup>57</sup> Jan van Wagtendonk, "The Evolution of National Park Service Fire Policy," 329-330; James Agee, interview by Hal Rothman, June 10, 2004.

down his expectations, Howe carefully selected a location, a five-acre patch on a north-facing slope just south of the old Tower Fall road. Conifers had taken over a stand of mature aspen. Surrounded by grasslands, it provided an excellent opportunity for an experiment in controlled burning.<sup>58</sup>

Finding optimal conditions proved difficult. By the end of September, the chance to burn seemed to have passed. In early October, Howe tried to set up the burn, only to be thwarted by a six-inch snowfall. Undaunted, the biologist kept trying. At 1:45 p.m. on October 28, in gusting winds of up to eighteen miles per hour and with a relative humidity of 50 percent, a crew under the supervision of District Ranger Bohlin began to intentionally burn timber inside Yellowstone National Park. The men sprayed the conifers with diesel oil and ignited them. The fire went up into the crowns and burned about ten trees closely clumped together. As the gusty winds died down, the fire followed, and despite efforts to reignite it, the crew recorded little success. After three hours and 200 gallons of diesel fuel, they decided that the conditions “weren’t going to be favorable this year for a burn,” Howe told his superiors.<sup>59</sup>

Despite the failure to truly burn anything of significance, the very act of attempting to burn in Yellowstone represented a major step toward the idea of controlled burning. Yellowstone remained the signal park in the national park system, the barometer of the status and meaning of national parks. The idea that the National Park Service would throw over the historic practices of fire suppression – even under the guise of an elk management plan – was revolutionary. The importance of even indirect implementation at the nation’s most important park without a sound from the powerful advocates of suppression throughout the Service spoke volumes about the imminence of a formal change in policy.

Even more stunning, the regional office encouraged the continuation of the experiment. In December, Acting Regional Director George Baggley visited the plot with Howe and Superintendent John S. McLaughlin, and pronounced that he was pleased with the experiment. “The lack of complete success should not deter you from going ahead with the program,” he told McLaughlin. Baggley knew the literature on controlled fire and suggested that the very lack of fuel load that attracted Howe to the location might have made the experiment go awry. “You have a situation at Yellowstone which does not fit the book, so far as controlled burning is concerned,” he continued. “Keep it up though because I certainly think the results will be worthwhile.”<sup>60</sup>

If not quite an attack on existing policy, the Yellowstone experiment reflected the importance of the newest studies of fire emanating from Biswell’s program at the University of California. Much of that work focused on California, where sequoias had always posed an intellectual problem for fire suppression. The big trees seemed impervious to burning, and ancient as they were, they forced a different calculus. Suppression was new, but the trees were very old. Asserting that the absence of fire had a positive impact on the big trees was an exercise in futility. Biswell began research in 1965 on stand modification and fuel reduction among the giant sequoia. In 1967, another

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<sup>58</sup> Park Management Biologist to Chief Park Ranger, Memorandum: Prescribed Burn Experiment, November 18, 1965, Yellowstone National Park, N16,

<sup>59</sup> *Ibid.*, 2.

<sup>60</sup> Acting Regional Director to Superintendent, Yellowstone, December 20, 1965, N-1427 MWR, Yellowstone National Park Archives.

fire researcher, Richard J. Hartsveldt of the University of California published “The Fire Ecology of Sequoia Regeneration” in the 1967 *Tall Timbers Forest Ecology Conference Proceedings*. Immediately preceding his article was Biswell’s “Forest Fire in Perspective,” an assessment of fuel loads and fire hazards in the Sequoia region. Together, the two papers clearly articulated a strategy of prescribed burning among the sequoias.<sup>61</sup>

This new intellectual regard for fire led to serious strategic rifts in the NPS. No matter how hard they tried, many of the more senior professionals in the Service could not swallow their distaste for the idea of intentionally burning vegetation. Their careers had been built around stopping fire in any way possible. Most had lost friends to fire; all had witnessed destruction of the parks – blackened forests and burned ranches, homesteads, and lodges. Many could intellectually understand the way in which prescribed fire could prevent greater calamity, but in their hearts, they believed – and everything they had ever seen taught them – that fire was too dangerous to be intentionally let loose. Just because the Leopold Report said the NPS should burn did not mean that generations of park professionals were simply going to go along.<sup>62</sup>

For a number of years, the National Park Service’s fire control structure did its best to ignore the ideas developed in the Leopold and Robbins reports. Although assessing fire increasingly involved scientific analysis, fire prevention still dominated the NPS perspective. By the middle of the 1960s, the Service attempted to quantify the environmental conditions that influenced annual fire levels. Comparative levels of moisture began to be a feature of the annual fire report at individual parks, with the comparison of types, numbers, and distribution of fires increasingly linked to the patterns of rain and snowfall. Yet, throughout the middle 1960s, fire management goals remained the same and suppression remained atop the list of NPS objectives when it came to fire. When Glacier National Park offered a new fire control plan in 1965, it reiterated the long-standing vision of suppression so crucial to the Service’s formulation of its obligations: “Every fire when discovered shall be reached and extinguished as quickly as possible,” the report insisted, “whether caused by man or lightning, and whether originating in a developed section or in a wilderness area.”<sup>63</sup>

The NPS finally had to face the implications of the Leopold Report. Resistance in the ranks was stiff. In response to the new mandate, Director Conrad Wirth averred that less intense suppression merited consideration, but he did not contemplate an immediate change in policy. Lawrence Cook, Coffman’s successor and a longtime devotee of suppression, manipulated information to support his beliefs. For months, Hartsveldt’s study of fire ecology in Sequoia and Kings Canyon National Parks, a document that threatened the viability of suppression as a strategy, lay in a pile of papers on Cook’s desk. Without support from the highest echelons of the NPS, a change in suppression policy seemed unlikely. Lacking a catalyst to compel a change in their views, the Service

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<sup>61</sup> Harold H. Biswell, “Forest Fire in Perspective,” 43-64; R. J. Hartsveldt and H. T. Harvey, “The Fire Ecology of Sequoia Regeneration,” 65-78, in Edward V. Komarek, Sr., ed. *Tall Timbers Fire Ecology Conference Proceedings*, No 7. (Tall Timbers, FL: Tall Timbers Research Station, 1967); Pyne, *Fire in America*, 302.

<sup>62</sup> Sellars, *Preserving Nature in the National Parks*, 255; Art White, interview by Richard McCaslin, November 15, 1990, copy possession of the author.

<sup>63</sup> “Glacier National Park, Forest Fire Control Plan, March 1965,” Glacier National Park, Fire Cache Records, 1910-1990, Box 2; NPS Fire Control Handbook, 1965.



leadership seemed content to maintain the status quo no matter what the Leopold Report advocated.<sup>64</sup>

The National Park Service faced two large-scale problems with suppression. The fragmentary constitution of the national park system raised the issue of scale repeatedly. Even at its largest parks, the NPS could not maintain a fire program sufficient to meet the demands of an exceptional year. Parks were constantly overstaffed if fire did not come, but dangerously understaffed if major fires occurred. Even more, fire defied any and all strategy; it was not a bureaucratic category that submitted to administrative solutions. Fighting fire was not at all like repaving roads or maintaining clean restrooms. It worked by its own impenetrable logic.

As had become common for the National Park Service by the 1960s, the impetus for change came from outside the Service – from its friends and supporters, energized by the environmental revolution and increasingly wary of even this most benign of federal agencies. The research supporting light burning was overwhelming. The sequoia remained the focus of most of the study, and for more than one hundred years, the big trees had their own constituency. As the NPS recognized how closely its fate was tied to public opinion, officials finally looked for accommodation with the enthusiastic advocates of parks and the environment who emerged in the 1960s.<sup>65</sup>

Even suppression's most avid proponents acknowledged that it had been a dangerous strategy. More than thirty years of application showed that it worked best when money and manpower were abundant. The New Deal and MISSION 66 made suppression viable, but only temporarily. And it continually created problems. High levels of fuel loads, first noticed by Colonel John White in the 1920s, resulted from suppression and the results of the fuel-driven blazes could be catastrophic. Some agencies could live with the consequences of such overwhelming fires, but the National Park Service could not. The iconography of the parks was so significant in the mid-century United States that large swaths of apparent destruction inside their boundaries seemed a rebuke of democracy. Even more, out-of-control fires threatened people and damaged valuable resorts, hotels, and other commercial property as well as NPS facilities. After the Leopold Report, a change in strategy became hard to resist but suppression persisted.

Yosemite, moving toward the center of intellectual revolution that Biswell spawned, maintained the existing method of fire suppression even as the Berkeley professor's students engaged in the research that revolutionized the field. Yosemite emphasized education; it trained 1,181 children in fire safety in its junior ranger program in 1966 alone. That year, the number of human-induced fires in Yosemite grew remarkably, from thirteen in 1965 to forty-one. The decade-long average had been sixteen. Attributing the increase to a greater number of fires started by cigarette smokers in heavily trafficked areas, the park stepped up its prevention programs, added new patrols, and increased the number of fire prevention posters and "high fire hazard" posters and signs throughout the heavily trafficked areas of the park. Signs along roads

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<sup>64</sup> Bob Linn, email to Hal Rothman, February 11, 2004, copy possession of the author; Sellars, *Preserving Nature in the National Parks*, 255-56; Kilgore interview, February 16, 2004; Agee interview, June 10, 2004.

<sup>65</sup> Lary M. Dilsaver and William C. Tweed, *Challenge of the Big Trees: A Resource History of Sequoia and Kings Canyon National Parks* (Three Rivers, CA: Sequoia Natural History Association, 1900), 263-65; Sellars, *Natural Resource Management in the National Parks*, 257; Foresta, *America's National Parks and Their Keepers*, 68-74.

and trails that exclaimed “no smoking while traveling” provided another warning.<sup>66</sup> At this most pivotal of national parks, suppression remained the dominant policy a full three years after the Leopold Report was issued.

The annual fire season always brought suppression advocates to the fore, and the Northern Rockies usually provided the most dramatic test case. The region had been quiescent since the end of the New Deal, in no small part as the result of the application of federally funded fire-fighting resources. Infrastructural developments contributed as well. The Forest Service’s Remount Depot supplied the countless pack mules essential to fire control, and the widespread use of aircraft, which not only allowed cargo to be dropped in remote mountain valleys, but also allowed smokejumpers to be dropped onto the perimeter of any fire, provided powerful examples. Airplanes also were used in experiments with dropping chemical agents on fire, offering another approach to fire control.<sup>67</sup> If fire could truly be tamed, it would have to be in the Northern Rockies, as only the conquest of this dramatic center of American fire would thoroughly prove the ongoing viability of suppression as a strategy.

In 1967, the Northern Rockies experienced a brutal fire season that reminded the NPS that the region was dangerous fire country. Beginning in July, fire broke out throughout the Northern Rockies and the Inland Empire, as the intermountain area in Idaho and Montana was called. More than 5,000 fires were reported, and more than thirty exceeded 1,000 acres in size. On July 12, 131 fires burned until they were doused by rain; on August 9, 167 started; on September 6, ninety-seven more began, and on September 21, another 167 were recorded. Before the rains came in late September, lightning alone ignited more than 1,400 fires.

When the Northern Rockies burned, Glacier National Park always was a critical concern. During the spring, fire was far from the minds of park staff and regional officials. Instead, they worried about a repeat of the dramatic floods of 1964. At 5,000 feet elevation in early May, the snow pack was 152 percent of normal. Even that late in the year, flooding seemed a more realistic threat to Glacier National Park than the prospect of fire. Precipitation up to the 3,000-foot elevation level had been about normal, and prolonged dry spells had not plagued the park. However, the snow melted slowly and the rains first diminished and then ended by mid-July. Through May and June, south slopes lost their snow mantle and began to dry. By mid-June, Glacier officials could see a crisis in the making. The situation only became worse. July, August, and September 1967 became the driest months that had occurred at West Glacier since the advent of record-keeping fifty-three years earlier. The precipitation of .98 of an inch was barely one-fifth of average.<sup>68</sup>

Few parks were as well prepared for fire as Glacier, one of the most heavily burned places in the system. Coffman wrote his first fire plan for Glacier and the park’s fire-fighting preeminence had continued. Glacier also was one of the most heavily planned parks when it came to fire response. If the NPS wanted to demonstrate the viability of suppression once again, Glacier was as good a location as any.

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<sup>66</sup> Forest Fire Control, 1966, 1-3, Yosemite National Park.

<sup>67</sup> Pyne, *Fire in America*, 256-57.

<sup>68</sup> “Glacier Fire Film, 1967, Glacier National Park, 1910-1984 Collection, 309-5; Glacier National Park Forest Fire Review, November 30-December 1, 1967” Glacier National Park, 1910-1984 Collection, 309-22.

During the evening of August 11, 1967, dry lightning that crossed the Continental Divide and continued in the early morning hours of August 12 inaugurated Glacier National Park's fire season. Fire spotters counted more than 100 ground strikes, the first at 6:25 p.m., with the first new fire reported at 7:05 p.m. The sparks started twenty new fires, burning in total more than 12,000 acres of timber. One of the most aggressive fires, the Flathead Fire, was discovered about halfway up the Apgar and Huckleberry mountains. The fuels of this fire were lodgepole-larch reproduction with heavy snags, the result of the major 1926 fire in the region. By early afternoon on August 17, the fire had spread to 650 acres. It doubled in size in the next seven hours, with a strong convection column angled up the slope. A cold front changed the direction of the wind, and by 10:30 p.m. on August 18, the fire had jumped the North Fork of the Flathead River, reaching the Flathead National Forest. It continued to spread downhill until August 20, when the center portion of the fire burned out and created two smaller fires, one on the northwest part of a ridge and the other on the southeast. By August 22, more the 4,645 acres of timber had burned.<sup>69</sup>

The situation turned worse on August 23. The Weather Bureau issued a red flag weather alert, predicting that a weak Pacific frontal system passing through the area would bring high winds and dry lightning storms during the subsequent twenty-four hours. In response, the park tried to tie in bulldozer and hand-dug fire lines before the winds arrived. By 3:00 p.m., before the lines could be joined, the winds accelerated to between forty and sixty miles per hour. Firefighters were forced to retreat as the fire rapidly spread. Individual fires could be found as much as a half-mile in front of the main fire, with embers thrown ahead by the force of the wind. By the end of the day, another 3,500 acres of vegetation had burned.<sup>70</sup>

Fires continued for another month, a result of the dry conditions, and when they came to an end, suppression advocates pointed to their successes. Throughout the Northern Rockies, fires had been controlled and a comparison with the terrible fires of 1910 highlighted a stunning contrast. Instead of the roughly 3 million acres of timber that burned in 1910, the 1967 fires only covered a total of 90,000 acres. Fatalities dropped from seventy-eight to three, with one resulting from a heart attack. Technology played an enormous role in this success. Aerial infrared scanners, oblivious to the smoke plumes that obscured vision, mapped fire perimeters. Fires that would have burned for days in 1910 were detected early and control efforts began within hours. Radio, telephone, and teletype networks provided instantaneous communications, allowing for immediate knowledge of new fires and coordinated responses. A national infrastructure also contributed to the 1967 success. The region was declared a national disaster area, and the federal Office of Emergency Preparedness joined in suppression efforts. Full closure of the national forests, a status akin to martial law, was enacted, keeping visitors away and limiting the chance of additional accidental fire. The response was impressive; the damage – with the exception of the 56,000-acre Sundance Fire in northern Idaho – was minimal. Suppression, most observers agreed, worked.<sup>71</sup>

However, a tone of exhaustion and impending doom permeated the accounts. Suppression advocates no longer trumpeted their successes with a vision that they were

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<sup>69</sup> Glacier Fire Film, 1967, 3-6.

<sup>70</sup> Glacier Fire Film, 1967, 8-10.

<sup>71</sup> Pyne, *Fire in America*, 257-59.

winning the fight. Instead, the fires of 1967 were another episode in a never-ending war against an opponent that could not be vanquished. The National Park Service finally recognized a hard reality: Fire would not go away; nor could it ever truly be suppressed. As long as the existing policies remained, the NPS would continue to invest ever-greater resources in an irresolvable conflict. Every year, it would have to scrounge for dollars and firefighters. Each successive season, the Service would recount the damages, savor any victories, lick its individual and collective wounds, and prepare for the next year.

The 1967 Glacier fires also subjected the National Park Service to severe criticism. Led by former U.S. Senator Burton Wheeler, D-Mt., a long-time nemesis of the Service, inholders charged that the NPS botched the management of one fire. It was a simple matter to put it out, some averred, and pointed to NPS mismanagement as the source of their losses. Such recriminations were typical in the aftermath of most fires, but Wheeler's status gave this set of attacks more serious ramifications.irate complainants ignored the other thirty-five fires in the park that summer as well as two bear maulings, but the criticism still stung. Even when the NPS provided suppression, it could still be chastised by an ungrateful public. The situation offered one more reason to break the cycle, and to consider new approaches to fire.

The vision of a new strategy was already extant. By 1967, the general tenor of scientific thinking about fire truly had changed. Fire had come to be seen as a natural force in an age that valued the concept of nature. To scientists such as Harold Biswell, suppression seemed outdated. MISSION 66 had provided a reprieve for the National Park Service; its injection of resources breathed new life into the strategy, but the program could not counteract the problem of the eternal struggles, and throwing resources at fire did not take into account the change in the general direction of thinking. Changes in the Service and in science combined to demand a new approach. Even as the Northern Rockies grappled with 1967 fire season, the end of the era of suppression was at hand.



**Figure 1: Ranger Cecil Metcalf and Superintendent John R. White confer as an unidentified man looks on during an early National Park Service controlled burn at Sequoia National Park during the 1920s. Courtesy National Archives, Washington, D.C.**



**Figure 2: Superintendent John R. White monitoring a backfire on the Cold Springs Trail in Sequoia National Park during a 1920s experiment in prescribed burning. Courtesy National Archives, Washington, D.C.**



**Figure 3: Commissary for 200 men set up near the scene of an August 1928 fire at Merced Grove, Yosemite National Park. Courtesy, National Park Service, Yosemite National Park.**



**Figure 4: Mack Fire Truck, with Half Dome in the background. Sept. 1, 1931. Courtesy, National Park Service, Yosemite National Park.**



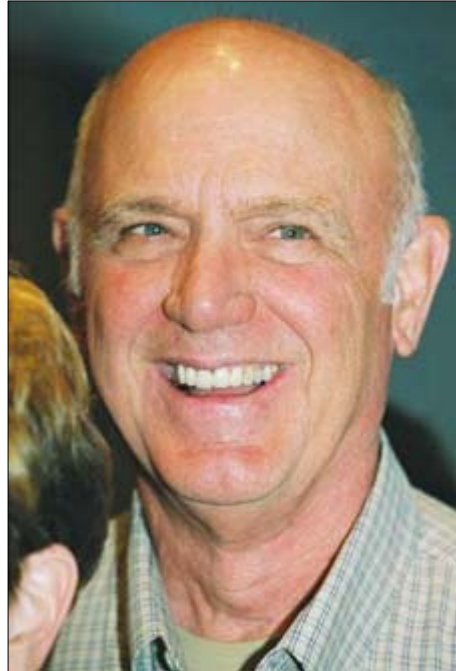
**Figure 5: Portable fire pump, 1925. Courtesy, National Park Service, Yosemite National Park.**



**Figure 6: Ranger and fire equipment. Courtesy, National Park Service, Yosemite National Park.**



**Figure 7: (L) William Colony.**  
Courtesy National Park Service,  
Glacier National Park photo archives.



**Figure 8: (R) Dr. Jan van Wagtenonk**  
Courtesy Jan van Wagtenonk



**Figure 9: Dr. Jan van Wagtenonk and NPS Fire Ecologist Caroline Nobel on a wilderness burn in Yosemite National Park.** Courtesy Jan van Wagtenonk.





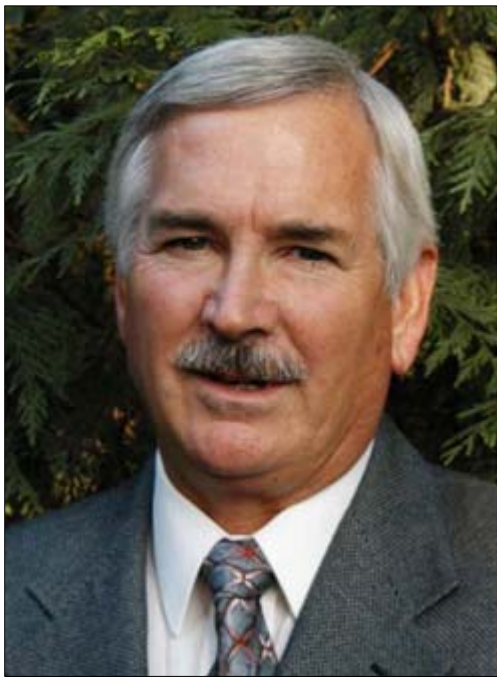
**Figure 10: Jim Cook. Courtesy of Jim Cook.**



**Figure 11: Jan van Wagtendonk and Dr. Harold Biswell during the first prescribed burn in Yosemite National Park. Courtesy Jan van Wagtendonk.**



**Figure 12: Dr. Harold Biswell. Courtesy Jan van Wagtenonk**



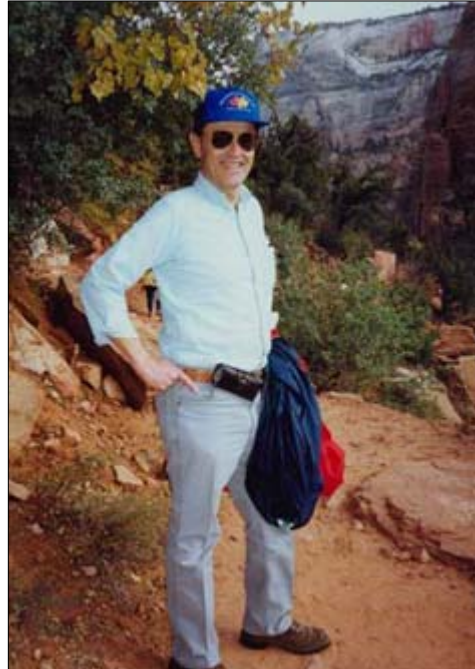
**Figure 13: Jim Agee. Courtesy Jim Agee.**



**Figure 14: Lawrence Cook. Courtesy National Park Service, Harpers Ferry Center Historic Photo Collection.**



**Figure 15: John Coffman. Courtesy National Park Service, Harpers Ferry Center, Historic Photo Collection.**



**Figure 16: Bruce Kilgore, Zion National Park, 1991. Courtesy Bruce Kilgore.**



**Figure 17: Bruce Kilgore in 1968, studying fire scars on Ponderosa Pine after Harold Weaver prepared wedge in tree using an older, higher impact technique. Picture by Harold Weaver. Courtesy Bruce Kilgore.**



**Figure 18: Elaine and Bruce Kilgore, Pocatello, Idaho, 2002. Courtesy Bruce Kilgore.**



**Figure 19: Meeting at Whitaker’s Forest, UC Berkeley Experimental Forest, adjacent to Sequoia National Park, July 24, 2003. From left, Jim Agee, University of Washington – Forestry; Scott Stephens, UC Berkeley – Forestry; Nate Stephenson, former scientist at SEKI; Jan van Wagtendonk, USGS Yosemite National Park; Hayle Buchanan, Weber State University; Bruce Kilgore, retired NPS; Frieder Schorr, UC Berkeley. Courtesy Bruce Kilgore.**

