

For an agency that had staked its reputation—even at one point its existence—on fire suppression, the idea of allowing a fire to burn was thought heretical by most in the U.S. Forest Service. But the Wilderness Act helped spur revolutionary thought in a hidebound agency.

FROM RESEARCH TO POLICY

THE WHITE CAP WILDERNESS FIRE STUDY

On August 18, 1972, an aerial patrol reported a snag burning deep in the Selway-Bitterroot Wilderness in Idaho. Bob Mutch, then a young research forester, traveled to the site the following day for an on-the-ground assessment. It was, Mutch later recalled, a little “nothing fire” that posed no

threat. And he was right. Growing to only 24 feet by 24 feet, the lightning-started blaze burned itself out after four days, covering less than a quarter-acre. The Bad Luck Creek fire proved to be good luck for Mutch and his colleagues, who the day before it started had received written permission from the chief of the Forest Service to allow some fires to burn in a newly defined wilderness fire management area.

The fires that ignited nearby the following year did not promise to be as benign, at least not initially. On August 10, 1973, a fire was detected on Fitz Creek, south of the Bad Luck fire. It too was allowed to burn, with the project team on the ground watching it move slowly through grass and brush. But 1973 was an unusually dry year, and the fire soon spread outside the approved area, leaving firefighters in the unprecedented situation of attempting to suppress a blaze on one side of a watershed drainage while allowing the same fire on the opposite side to burn.

Looking back from the perspective of more than 40 years, it is hard to imagine the intense interest and controversy those wilderness blazes ignited in the Forest Service and the public. Even though the National Park Service had started testing the idea of allowing some fires to burn in Sequoia and Kings Canyon national parks in 1968, the USDA Forest Service staunchly defended its commitment to suppressing all fires. This blanket policy originated with the agency’s founding in 1905, when Chief Gifford Pinchot emphasized the critical importance of fighting all fires on the nation’s forest reserves. The first edition of the agency’s employee manual, known as the *Use Book*, states that forest rangers “have no duty more important than protecting the reserves from forest fires. During dry and dangerous periods all other work should be subordinate.” In fact, the *Use Book* required all foresters to “go to and fight every fire he sees or hears of at once, unless he clearly can not reach it, or is already fighting

BY DIANE SMITH



FOREST HISTORY SOCIETY PHOTO COLLECTION FHS3762; USFS NEGATIVE 479488

This staged photo from 1955 on the Shasta-Trinity National Forest in California captured the Forest Service’s “10 a.m. policy” in one image—use any and all means available to control and suppress fire as quickly as possible.

another fire.” The *Use Book* explicitly directed rangers to stay at the scene of a fire until it was extinguished or they were forced to leave the area to protect their own lives.¹

During these formative years, Pinchot promoted the belief that only the Forest Service had the manpower and resources needed to manage and protect the nation’s vast forest reserves. But in 1910, a fire of historic proportions swept through the American West, shaking the foundational beliefs of the relatively new agency and directly challenging its ability to suppress all wildland fires. The Big Blowup, as it became known, burned more than three million acres in Idaho and Montana and killed 85 people—most of them firefighters. The public outcry made the Forest Service more determined than ever to suppress all fires on public lands, whenever and wherever they started. The fledgling agency, now under the leadership of Pinchot protégé Henry Graves, called for “fire protection plans” to identify those forests most at risk

and to develop plans to protect them. With congressional support, the Forest Service also began investing in roads, communication networks, and lookouts to ensure a more timely response to all wildfires.²

And yet forests continued to burn, particularly in the fire-prone wildlands of the West. After winds swept fire through nearly one-quarter million acres in Oregon in 1933, the Forest Service doubled down on its commitment to locate and suppress all wildland fires. The agency increased patrols, employed additional fire lookouts, and in 1935 instituted a “quick-action strategy” that called for control of all wildland fires by 10 a.m. the day after they were detected.³ Forest Service firefighters soon found that not all blazes, particularly those burning deep in wilderness areas, could be reached and suppressed in such a timely fashion by men on the ground. In 1940, therefore, the agency upped its response yet again and began deploying smokejumpers, firefighters who para-

chuted into an area close to a fire to bring it under control by 10 a.m. the following day.

By 1970, when Region 1 (which includes Montana and northern Idaho) of the Forest Service began to explore policies to allow some lightning-caused fires to play a more natural role in wilderness areas, early fire detection and aggressive suppression had been embedded in the agency's culture and public identity for decades. It is no wonder that suggesting that some fires be allowed to burn without even attempting to fight them appeared heretical to many both inside and outside the agency.

As America celebrates the 50th anniversary of the Wilderness Act, it is worth exploring how a small team of foresters and administrators, working in what was then known as the Northern Forest Fire Laboratory (now the Missoula Fire Sciences Laboratory), the Bitterroot National Forest, and Region 1 of the Forest Service, challenged this long-standing wildland fire control policy and collected the data and on-the-ground experience needed to persuade policymakers to change it. Taking a multidisciplinary approach, this research-management partnership developed methods to collect data on past fire activity and predict future fire potential. The partners documented the relationships between fire and representative wilderness ecosystems within the study area and illustrated the historical role fire has played for millennia in many of the wildlands of the West. Their research opened the door to new management strategies that allowed at least some lightning-caused fires to burn freely in the nation's wildlands and helped contribute to the long-term health and sustainability of wilderness areas in the region and beyond.

INTERPRETING THE WILDERNESS ACT

The Wilderness Act, passed in 1964, called for select federal lands to be managed in such a way as to "leave them unimpaired for future use and enjoyment as wilderness" and to protect "their wilderness character." The law defined wilderness as undeveloped federal land where "the earth and its community of life are untrammelled by man," land that retains "its primeval character and influence." Perhaps most significantly, the Wilderness Act required that wilderness be protected and managed so that it appeared to be "affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable."⁴

The Wilderness Act also called on the secretaries of the Interior and Agriculture to review and recommend public lands suitable for wilderness designation. As the Forest Service began identifying potential wilderness areas, some in the agency debated how best to manage designated lands to maintain their wilderness character. The Wilderness Act made exceptions for the control of fire, insects, and diseases, giving land managers flexibility when responding to wildland fires and other natural disturbances. This exception also allowed the existing Forest Service fire control policy to meet the letter of the law.

However, a few individuals began to suspect that this policy conflicted with the act's intent. They pointed out that firefighting efforts on wilderness lands left behind a highly visible "imprint of man's work." Some foresters, such as William "Bud" Moore, who had lived his entire life in western Montana and knew the region's forests from years of hunting and trapping, had noticed that decades of fire suppression resulted in unnaturally high buildups of flammable fuels, and that the exclusion of fire seemed to have altered the structure and composition of ecosystems that had evolved with fire over millennia. Moore called for "ecologically

enlightened change" in how the Forest Service managed fires, supported by a better understanding of "fire's role in ecosystem function."⁵ Bill Worf, Region 1's chief of recreation and lands, argued that fire control had proven to be one of the most "unnatural" effects on much of the region's wilderness. Suppressing fires, he wrote at the time, had "a drastic effect on the natural ecology. Letting lightning fires burn is the 'natural process.'"⁶ The questions raised by Moore, Worf, and others directly challenged the Forest Service's hidebound commitment to suppressing all wildland fires.⁷

"HERETICS!"

The debate came to a head in 1970. Forest Service leaders such as Jack Barrows, a long-time fire researcher and, at the time, director of the Division of Forest Fire and Atmospheric Sciences Research in Washington, D.C., advocated for more research to improve control of wildland fire. In a 1970 talk he gave to the Society of American Foresters, "Forest Fire Research for Environmental Protection," Barrows emphasized the "danger and waste of wildfires." And he introduced several programs under way at the Northern Forest Fire Laboratory (Fire Lab) in Missoula as examples of how research could help improve the prevention, detection, and suppression of all wildland fires. Just as Gifford Pinchot and others had argued before him, Barrows believed that protection of the nation's forests meant protecting all public lands from fire.⁸

By the late 1960s, however, some Forest Service researchers had begun to explore the beneficial role fire played on the landscape. In one innovative field study, researchers at the Northern Forest Fire Laboratory investigated how prescribed burning affected wildland attributes, such as air and water quality, erosion, vegetation development, conifer regeneration, and small-animal populations.⁹

At the same time, another Missoula Fire Lab researcher pursued an even more provocative question. Taking an ecosystems approach, Bob Mutch hypothesized that some wildland species may have "inherent flammable properties that contribute to the perpetuation of fire-dependent plant communities." In 1969, he conducted extensive combustion tests in the Fire Lab's burn chamber using plants from three ecosystems. In 1970, the science journal *Ecology* published Mutch's research results demonstrating that plants from fire-dependent ecosystems burn more readily than those from non-fire-dependent communities. In the article, Mutch also called for studying wildland fire as part of an ecosystem process.¹⁰

In response to the intensifying debate about the natural role of wildland fire and wilderness, in 1970 the Forest Service organized a series of meetings and workshops to explore the agency's management of wilderness and possible alternatives to the 10 a.m. policy. For example, Region 1 hosted "Beyond Roads End," a wilderness workshop for administrators, researchers, and public land managers. To give a historical context for the Wilderness Act, meeting organizers provided participants with a workbook of reprints going back as far as a 1930 Robert Marshall article in *Scientific Monthly* arguing for wilderness protection. It also included Worf's draft of proposed changes to the region's multiple-use guide, and his comments about the ecological benefits of wildland fire in wilderness.

That same year, the Forest Service hosted a national fire policy meeting in Denver. Recommendations from this conference



COURTESY OF BOB MITCH

Like the Vatican's use of smoke when announcing a new pope, this small puff of smoke from the Bad Luck Creek Fire signaled the Forest Service had selected a new policy for fire in its wilderness areas.

included a call for the agency to reaffirm the 10 a.m. policy but with exceptions previously approved by the chief. Meeting participants agreed that regional foresters should be allowed to manage fires in wilderness areas, but to do so they must first prepare management plans with clearly stated justifications, criteria, conditions, and actions to be taken.¹¹ In other words, to reintroduce fire in the wilderness required building a bridge between science

and legislation on one side, and public beliefs and agency traditions on the other.

To initiate these changes required senior administrators willing to question Forest Service doctrine and take significant risks with their own careers. It also called for foresters, many of whom had fought fires earlier in their careers, to disregard years of education and training and to stand back and watch as wildfires burned,

knowing that if a fire escaped from a wilderness study area or threatened individuals or property, it could cost them all their jobs. Understanding the risks involved, a colleague later jokingly referred to those willing to test the radical idea of letting some wildfires burn themselves out in the backcountry as “Renegades! Heretics!” Indeed, he was surprised at the time that they were not all fired.¹²

But change called for more than renegade foresters and risk-taking administrators, as visionary as they now appear in retrospect. Even though many Forest Service personnel might have agreed in principle with those who saw an important link between fire and the ecological integrity of wilderness, to implement a change of policy and build a defensible fire management plan, administrators needed the same comprehensive knowledge and data long available to those responsible for fire prevention and control. They needed evidence.

HEADING IN A NEW DIRECTION

Sometimes systemic change requires having the right people in the right place at the right time. In the late 1960s and early 1970s, Region 1 of the Forest Service experienced a convergence of individuals who would directly influence the future of wildland fire in wilderness areas. One arrived in 1969, when the Forest Service transferred Bud Moore from Washington, D.C., back to Missoula to serve as the regional director of Fire Control and Air Operations. In his new position, Moore assumed responsibility for controlling wildland fire throughout Region 1. After a lifetime spent traversing the Selway-Bitterroot area and nearly 40 years fighting fire there, Moore came to his new position viewing fire as a natural part of the regional landscape. As he wrote in his field journal in 1971, the Selway-Bitterroot was “big fire country, its diverse landscapes laced with vegetation spawned by both ancient and recent fires. . . [I]n the Selway-Bitterroot fire is the agent whose raw force has in the past perpetuated vegetative and wildlife variety.”¹³

Based in part on Moore’s personal observations, the respect he commanded from those in the fire control community, and the recommendations of both the wilderness workshop and the national fire policy meeting, Region 1 soon advocated a policy of letting “wildfire more nearly play its natural role.”¹⁴ Before Moore could adopt this policy regionwide, however, he needed to present a management plan to the chief of the Forest Service for approval. For this, Moore turned to a relative newcomer to the area, Orville Daniels, the new Bitterroot National Forest supervisor.

Like Moore, Daniels came to Region 1 with an interest in fire, having worked on fire control on the Challis National Forest in Idaho. The two agreed to establish a fire management test area in the Selway-Bitterroot Wilderness, which represented many of the ideals described by the Wilderness Act. They focused on the 66,000-acre White Cap drainage because it appeared to have a long history of wildland fires, coupled with highly effective suppression efforts over the past few decades. The drainage also represented a microcosm of the wilderness area as a whole, with a mixture of north- and south-facing slopes, ponderosa pine and subalpine communities, shrub fields, and even grand fir–cedar ecosystems along some streams.

Daniels enlisted forester Dave Aldrich, who had worked in fire control in Idaho, to assume the new position of wilderness fire planner for the Bitterroot National Forest. Then Daniels hired research forester and former smokejumper Bob Mutch to colead

the project. Mutch, who worked at the Forest Service’s Fire Lab in Missoula, came to the project with an established interest in the ecology of wildland fire. He also had direct access to the facilities and additional expertise the two-man team would need to develop a data-driven fire management plan in three years, the window of time assigned by Daniels.

Dave Aldrich and Bob Mutch started work on the Selway-Bitterroot Wilderness Fire project in August 1970. To make the most of the limited field time left that year, they conducted an extensive reconnaissance of the White Cap drainage, even snowshoeing through the area until extreme winter weather prohibited backcountry travel. As part of their planning effort, and to increase their understanding of wildland fire behavior, Aldrich and Mutch visited Sequoia and Kings Canyon national parks, where the National Park Service had initiated a program to allow some backcountry fires to burn. As Aldrich later recalled, they not only discussed fire ecology with those at the forefront of this kind of management and policy change, they also flew over a fire that managers had allowed to burn that year. Aldrich returned to Missoula with a much greater appreciation of the role fire played in the region. “It’s a part of the ecosystems out here and it had been [throughout] time,” Aldrich recalled. “I was learning and learning fast and liking it.”¹⁵

Based on their initial inquiries and observations in the field, Aldrich and Mutch established three goals for the project’s first full year: 1) develop inventory methods that could be adapted for use in other wilderness areas; 2) identify the past relationships between fire and ecosystems in the Selway-Bitterroot Wilderness; and 3) with these tools and fire histories in hand, determine management strategies for a more natural incidence of fire in the White Cap study area and wilderness generally. Enlisting the help and advice of botanists, soil scientists, hydrologists, dendrochronologists, fuel specialists, wildlife and fisheries experts, and others, Aldrich and Mutch listed all trees, shrubs, flowering plants, and grasses found in the drainage, described the hydrology and geological formations, and inventoried the 32 species of birds observed in the study area. They documented the size and occurrence of fires in the study area from 1926 to 1970 (a total of 212 fires) and sampled tree cores, finding evidence of fires going back to at least 1746. In addition, they contracted with Jim Habeck, a botany professor at the University of Montana, to conduct a more general reconnaissance of the entire Selway-Bitterroot Wilderness to help put the White Cap study area into a broader biological and geological context.¹⁶ Most significantly, the team mapped 380 plots in the drainage and, applying inventory methods developed by Fire Lab fuel specialist Jim Brown, began collecting fuel data. Some of these initial plots would be remeasured every year for three years, with more than a thousand plots in the test area documented by 1973.¹⁷

In the winter of 1971–72, with the end of their three-year planning window fast approaching, Aldrich and Mutch synthesized the data that they and others had collected for the 100-square-mile study area along the White Cap drainage. First, they defined the various fire management zones, or “ecological land units,” in terms of land forms, soils, and vegetation. They described these zones as shrubfield, ponderosa pine–savanna, ponderosa pine–Douglas-fir south slope, north slope, and subalpine, then made specific recommendations for responding to fire in each of the five zones. For example, fires that put people or property at risk or occurred along some of the fire management area boundaries,



COURTESY OF BOB MUTCH

The Snake Creek fire proved an immediate challenge to the new policy because it was adjacent to the prescription area. Fire crews found themselves fighting that fire while Forest Service officials watched the Fitz Creek fire burn on the other slope. Orville Daniels later recalled a technician saying, “You know, we just thought you were full of talk when you said you were going to have fire in the wilderness. We never believed you would have the courage enough to do it. We believe you now.”

and thus threatened nonstudy areas, were to be suppressed. On the other hand, fires west of the Peach Creek drainage or in sub-alpine communities were to be observed and allowed to burn. Yet others would be suppressed or observed depending on the time of year, the fire’s exact location, and the availability of fuel and its condition. In some cases, fires might be observed initially but suppressed later, depending on conditions on the ground.

The project management team intended these detailed recommendations not only to function as a specific plan for the White Cap but also to serve as a model for creating “a defensible planning basis for preparing fire management prescriptions in wilderness.” Others could learn from their experience in both developing and implementing a fire management plan in wilderness areas. However, they had authorization to pursue their study in the White Cap only until June 30, 1973, when the three-year commitment would expire. Aldrich and Mutch therefore requested immediate approval of their proposal so that they would have time to implement the fire management plan during the 1972 fire season. In July, the fire control officer, the forest supervisor, and the regional forester all approved it, opening the door for its final approval by the Washington office.

In early August, Orville Daniels and Bob Mutch flew to Washington to brief Chief John McGuire on the proposed changes to the management of fire in the study area. McGuire, a former

forestry researcher himself, agreed that fire would help restore ecological processes to fire-dependent wilderness lands, and on August 17, 1972, he formally approved the management plan. The very next day, lightning ignited the Bad Luck Creek fire. In accordance with the just-approved prescriptions, the fire was observed and allowed to burn until it extinguished itself.

The following year presented a more serious challenge, testing the team’s resolve to apply the plan consistently in potentially dangerous weather conditions. Because of the unusually dry season, many fire control specialists in the region recommended that the project team abandon the plan until conditions improved. But Daniels had the support of both Bud Moore and Chief McGuire and so decided to stick with the fire management plan as it had been written.¹⁸

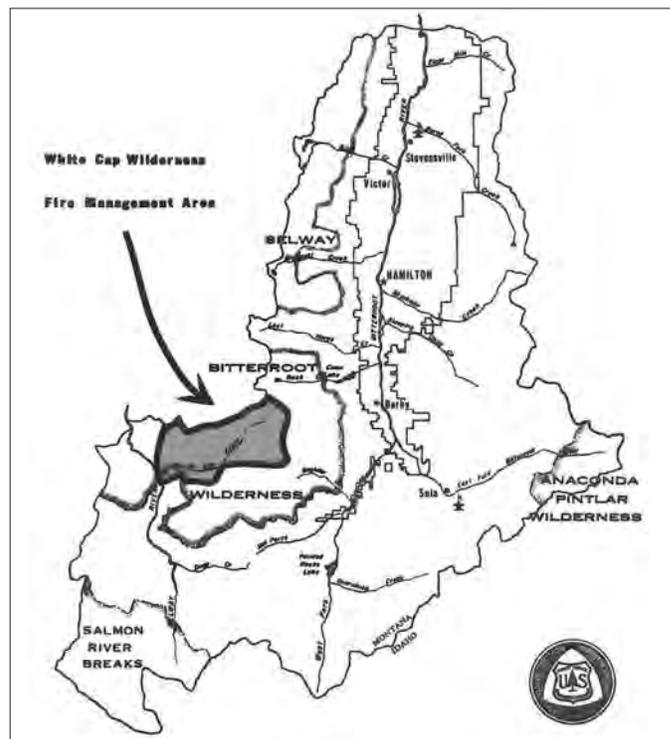
In 1973, the first full year of the approved fire management plan, several lightning fires burned in the White Cap study area, most totaling less than a quarter acre. Some fires were suppressed and others allowed to burn, per the prescriptions. On August 10, 1973, lightning ignited a fire along Fitz Creek in the ponderosa pine–savanna ecological land unit. The recommendations for this area, given conditions on the ground, called for observation, with suppression if the burn crossed into the adjoining ecological land unit. To help prevent this possibility, on August 13, a fire crew of seven men created what they hoped would be a defensible

boundary between the two land units. But wind soon carried the fire across the line in two places, increasing the fire's total size to 400 acres. The next day, 80 firefighters arrived to fight the fire—dubbed the Snake Creek fire—in the adjacent area, while the fire continued to burn under observation in the ponderosa pine-savanna land unit. Eventually, the Snake Creek fire burned through 1,600 acres despite aggressive suppression efforts. Indeed, it took rain on August 31 to fully extinguish it. Moreover, the same August 10 storm that ignited the Fitz Creek fire started another along Peach Creek, where the prescriptions also called for observation. But in this case, the fire management team decided to suppress it after just three days, fearing it might merge with another fire burning outside the study area.¹⁹

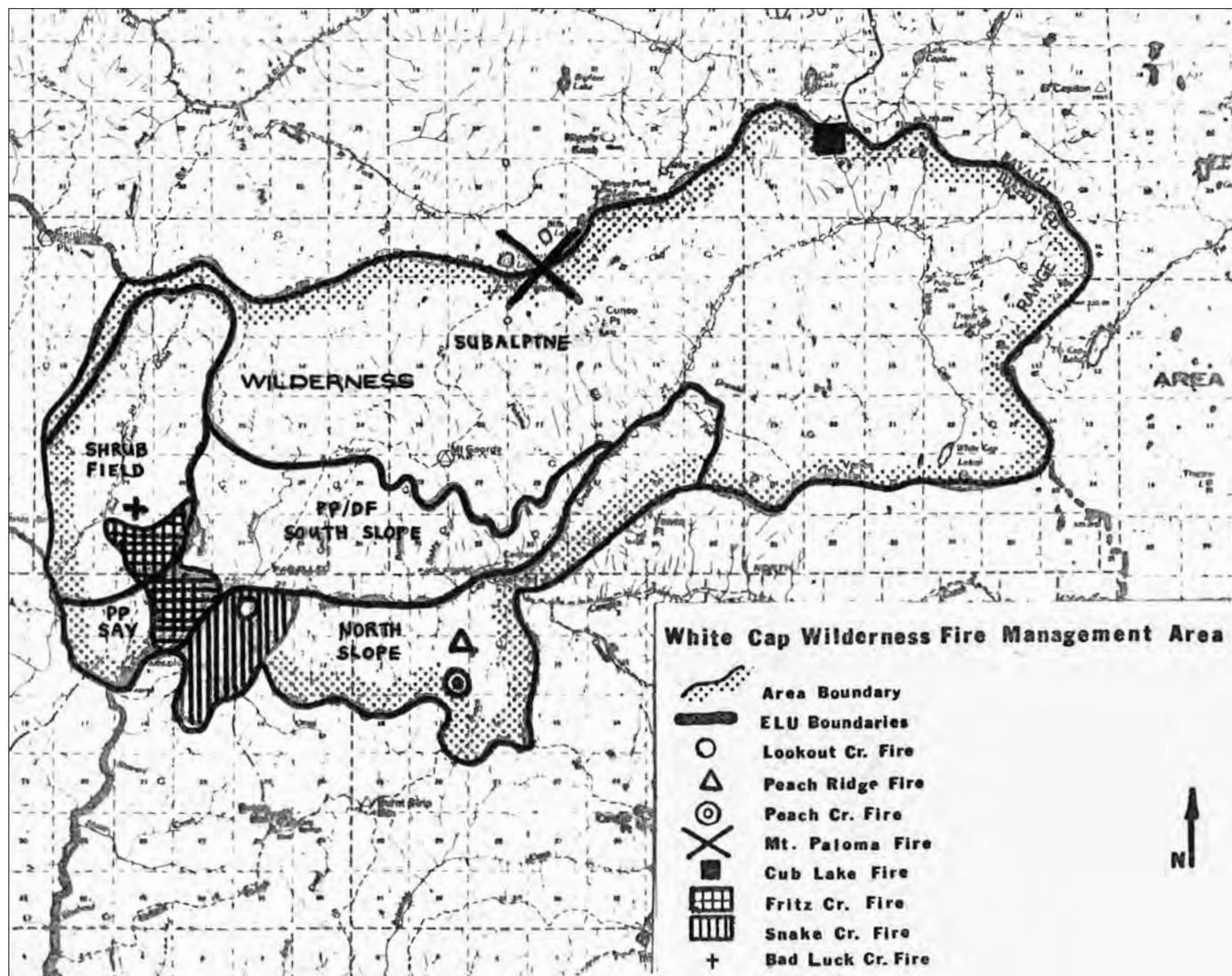
Bob Mutch and colleagues at the Fire Lab established permanent research plots later that year to study the long-term effects

Right: The Selway-Bitterroot Wilderness Area is on the border between Idaho and Montana.

Below: The fire at Fitz Creek (sometimes called Fritz Creek) was one of six fires started by lightning in the summer of 1973 in the White Cap Wilderness Fire Management Area. The Snake Creek fire started when the Fitz Creek fire jumped the fire break.



MAP FROM "WHITE CAP FIRE MANAGEMENT PLAN SUMMARY—1973"



MAP FROM "WHITE CAP FIRE MANAGEMENT PLAN SUMMARY—1973"



COURTESY OF BOB MUTCH

The band of “renegades” reunited in 2002 and hiked to the White Cap area to see their handiwork. Once decried as heretics, the Forest Service used the occasion of the 30th anniversary to celebrate the men who had overturned the decades-old fire policy. From left to right: Bob Mutch, Bill Worf, Bud Moore, Orville Daniels, and Dave Aldrich. Joining them was Doris Milner, president of the Montana Wilderness Association in 1973 and a strong supporter of the wilderness fire program.

of some of the first fires allowed to burn through the wilderness area in decades. Field crews conducted fuel inventories and collected vegetation data for a total of six years (from 1973 to 1977 and again in 1980). They also remeasured stands 1 through 100 in the original White Cap study area. These in-depth field evaluations of fuel and vegetation before and after fire exclusion, followed by inventories of conditions on the ground after fires were allowed to burn, provided researchers with some of their earliest detailed documentation of the effects of wildland fires in fire-dependent wilderness ecosystems. And that, in turn, helped influence both public opinion and public policy. Fires burned in the approved area without suppression and, contrary to the worst fears of many, the wilderness survived. Indeed, as vegetation and other studies documented over the years, the burned areas showed robust rejuvenation.

FROM FIRE CONTROL TO FIRE MANAGEMENT

Based in part on the success of the White Cap project, Forest Service administrators, managers, and researchers alike began to express greater openness to the idea of allowing some fires to resume their natural role in wilderness areas. Significantly, this change started at the top when Chief McGuire announced in 1973 that the Forest Service Division of Fire Control would henceforth be known as the Division of Fire Management. “The substance of the change, while reflected in many of our current activities, will be developed to a larger degree by our actions in the coming years. Without lowering our capabilities as a top-

notch fire suppression outfit, we must raise the quality of our performance in other aspects of professional fire management such as fuels management and fire prevention,” McGuire wrote.²⁰ At the same time, the journal *Fire Control Notes* changed its name to *Fire Management* to reflect this new “attitude and approach to managing fire.”²¹

Other national forests soon began to develop their own plans for fire management in wilderness areas. For example, in 1974, based in part on the White Cap example and data collected by University of Montana professor Jim Habeck along the Moose Creek drainage and adjacent wilderness ecosystems, the Forest Service approved the Nez Perce National Forest’s Bear Creek fire management plan. In 1975, the Gila Wilderness in New Mexico implemented a plan that allowed some fires to burn under limited conditions. And in 1976, Region 1 approved a new management plan for the entire Selway-Bitterroot Wilderness, calling in part for fire management prescriptions.

In 1978, the Forest Service announced a revised policy to provide “well planned and executed fire protection and fire use programs that are cost-effective and responsive to land and resource management goals and objectives.” Building on the experience of the White Cap study, the Forest Service directed managers of national forests and wilderness areas to complete their own fire management plans. These plans were to include an evaluation of the fire protection and fire use necessary to meet land management goals and objectives, as well as measurable standards, such as the maximum individual fire size and tolerable annual

and long-term allowable burned acreage. If a fire failed to meet the objectives set forth as part of the plan, it still would “receive suppression action that is fast, energetic, thorough, and conducted with a high degree of regard for personnel safety,” according to the new directive.²² Although the Forest Service expected full implementation of this change to take up to five years, this was, in essence, the end of the 10 a.m. policy.

PROTECTING THE COMMUNITY OF LIFE

Fifty years ago, advocates for the environment came together to protect some of the nation’s last wild places from development and exploitation. Building on Bob Marshall’s arguments on behalf of wilderness, these visionaries—U.S. presidents, legislators, foresters, and environmentalists alike—worked to protect wilderness and its “community of life” to ensure that it was “affected primarily by the forces of nature, with the imprint of man’s work substantially unnoticeable.”

In the early 1970s, Bud Moore, Orville Daniels, Dave Aldrich, and Bob Mutch read those words and began to explore the policy implications for wildland fire in wilderness areas. Using some of the same research techniques and technologies that others had applied to suppress fires, they surveyed the landscape of the White Cap drainage in Montana and developed recommendations on how to better manage fire under different environmental conditions. They also documented the historical effects of lightning-started fires, illustrating the crucial role fire had played in the study area. Ultimately, they argued that if Forest Service administrators and land managers were serious about preserving wilderness areas in pristine conditions, then these same managers needed to accept fire as a natural and vital part of that landscape.

In 1975, Forest Service Chief John McGuire lamented that many assumed that “the shift from fire control alone to fire management meant Smokey Bear was laying down his shovel. This, of course, is not true.”²³ Indeed, the Forest Service continued to fight fires on public lands and, even to this day, sends out fire crews to suppress many if not most of them. However, as noted by McGuire’s successor, R. Max Peterson, in those wilderness areas where fires were allowed to burn, they “greatly [reduced] the severity of future fires as well as [helped] to preserve the natural order of wilderness ecosystems.”²⁴ As Bob Mutch would later quip, this new approach to managing fires rather than simply suppressing them all was “this radical idea of letting nature do its thing.”²⁵ He and his colleagues working in the White Cap study area in the early 1970s had the vision, determination, and ultimately the data to help make that happen. □

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NOTES

1. *Use of the National Forest Reserves, Regulations and Instructions* (Washington, DC: Government Printing Office, 1905), http://www.foresthistory.org/ASPNET/publications/1905_Use_Book/1905_use_book.pdf. Though a committee prepared the *Use Book*, which was a revised version of the manual used by the Department of the Interior’s Division of Forestry, the book clearly reflects Pinchot’s philosophies and ideas.
2. Henry S. Graves, *Report of the Forester for 1911* (Washington, DC: Government Printing Office, 1912), 29.

3. F. A. Silcox, *Report of the Chief of the Forest Service, 1935* (Washington, DC: Government Printing Office, 1935), 21–24.
4. The complete text of the Wilderness Act is available at <http://www.wilderness.net/NWPS/legisact>.
5. William R. Moore, “From Fire Control to Fire Management,” *Western Wildlands* 1(3) (1974): 13. Moore traces the impact of Forest Service policies on the region’s ecology in his book *The Lochsa Story: Land Ethics in the Bitterroot Mountains* (Missoula, MT: Mountain Press Publishing Company, 1996).
6. William A. Worf, “Draft of Material Proposed for Regional Multiple Use Guides” [1969], in *Beyond Road’s End: Wilderness*, Northern Region Wilderness Workshop handbook [1970].
7. The National Park Service went through a similar struggle: some park managers advocated implementation of the 1964 Aldo Commission report recommendations, including the reintroduction of wildfires in national parks to improve wildlife habitat, while others strongly opposed letting any national park land burn. See Hal K. Rothman, *A Test of Adversity and Strength: Wildland Fire in the National Park System*, <http://www.nps.gov/fire/wildland-fire/learning-center/history/a-test-of-adversity-and-strength.cfm>, and *Blazing Heritage: A History of Wildland Fire in the National Parks* (New York: Oxford University Press, 2007), 101–27.
8. Jack S. Barrows, “Forest Fire Research for Environmental Protection,” *Journal of Forestry* 69(1) (1971): 17–20.
9. See, for example, Penelope A. Latham, Raymond C. Shearer, and Kevin L. O’Hara, *Miller Creek Demonstration Forest, A Forest Born of Fire: A Field Guide* (Ogden, UT: USDA Forest Service, 1998), RMRS-GTR-7.
10. Robert W. Mutch, “Wildland Fires and Ecosystems—A Hypothesis,” *Ecology* 51(6) (1970): 1046–51; quote is on 1046.
11. USDA Forest Service, “Report of the Fire Policy Meeting, Denver, Colorado,” May 12–14, 1971, referenced in Stewart Lundgren, “The National Fire Management Analysis System (NFMAS) Past 2000: A New Horizon,” in *Proceedings of the Symposium on Fire Economics, Planning, and Policy: Bottom Lines*, April 5–9, 1999 (Albany, CA: USDA Forest Service, 1999).
12. David Bunnell, quoted in Paul Trachtman, “Fire Fight,” *Smithsonian Magazine* (August 2003): 48.
13. Moore, “From Fire Control to Fire Management,” 12.
14. Orville Daniels, interviewed August 18, 2012, as part of the Selway-Bitterroot Wilderness History Project, <http://selwaybitterrootproject.wordpress.com/2012/08/18/the-bad-luck-fire/>; and “Selway-Bitterroot Wilderness Management Plan” (n.p.: USDA Forest Service, [1976]), 23.
15. Dave Aldrich, interviewed September 5, 2012, as part of the Selway-Bitterroot Wilderness History Project, <http://selwaybitterrootproject.wordpress.com/2012/09/05/paradigm-shift/>.
16. In 1972 and 1973, Habeck would measure approximately 600 additional fuel plots in the adjacent Moose Creek, Bear Creek, and Selway River drainages; many of these plots would be measured again in 1974 and 1975.
17. In recognition of the 50th anniversary of the Wilderness Act, researchers at the Missoula Fire Sciences Lab hope to revisit the study area, using the boxes of fuel inventories documenting the effects of fuel exclusion as baseline data to reevaluate wilderness conditions after 40-plus years of allowing fires to resume a more natural role in the Selway-Bitterroot Wilderness.
18. See Orville L. Daniels, “Test of a New Land Management Concept: [Fitz] Creek 1973,” *Western Wildlands* 1(3) (1974): 23–26.
19. Orville L. Daniels, “Fire Summary—White Cap Wilderness Fire Management Area 1972–1973” [1973], on file at the Missoula Fire Sciences Lab.
20. John McGuire, *Fire Management* 34(2) (1973), 1. McGuire’s quote is on the journal cover.
21. *Ibid.*, 2. The quote is on the table of contents page.
22. U.S. Forest Service, *Report of the Forest Service, Fiscal Year 1978* (Washington, DC: USDA Forest Service, 1979), 140–42.
23. U.S. Forest Service, *1974 Report of the Chief, Forest Service* (Washington, DC: USDA Forest Service, 1975), 2–3.
24. “New Policy Issued on Managing Fires in Wilderness,” *News from the Forest Service*, February 14 [1980].
25. Gail Wells, “Wildland Fire Use: Managing for a Fire-Smart Landscape,” *Fire Sciences Digest* 4 (January 2009): 3.