A PUBLICATION OF THE FOREST HISTORY SOCIETY

SPRING/FALL 2014
VOL. 20, NOS. 1 & 2

Forest History Today

MESSAGE FROM THE PRESIDENT

"Not everybody trusts paintings but people believe photographs."–Ansel Adams

STEVEN ANDERSON

When Gifford Pinchot hired the first forest rangers in the U.S. Forest Service, he outfitted them with cameras and asked them to document what they did and saw. He knew the power the photographs could wield as he fought for funds to manage the nation's forests and sought public support for new policies. No one can deny that visual images have played an important role in the conservation and environmental movements.

That is why, from its beginnings in 1946, the Forest History Society has collected and preserved photographs of early lumbering techniques, forest products, forest management, and other subjects. The FHS staff has already helped thousands of students, writers, and scholars find historic photographs that advance understanding of forest history. Now, more than 25,000 images are available on the FHS website in an easily searchable database, with another 20,000 to come. Anyone can freely use the thumbnail and medium-resolution versions for educational and other noncommercial purposes. The photographs are also attractive for many commercial purposes and films, including Ken Burns's documentary about the national parks.

Our collection of moving footage has also been used widely. The History Channel, PBS, and the Discovery Channel are among the many media that have sought out clips on a variety of topics. *Swamp People* contacted us about historic film showing Louisiana cypress logging for one episode. Most recently, FHS contributed numerous photos and film clips to the *American Experience* film "The Big Burn."

We have posted numerous clips of historic footage on our YouTube channel. An example of the appeal of historic footage is response to a clip about the history of the crawler tractor: it has been viewed more than 288,000 times. The clip is an excerpt from *Timber on the Move: A History of Log Moving Technology*, an award-winning documentary film that FHS produced. To see a selection of such clips, go to www.youtube.com/foresthistory.

I am pleased to announce two initiatives that make new use of our visual resources in important ways. The first is the web portal "Repeat Photography Collections for Sustainability and Working Forests." These are before-and-after photo pairs or sequences taken at the same physical point at different times. Repeat photography is a powerful visual resource for scientific study and education in forest and landscape management. These photographs, whose subjects range from working forests to wilderness areas, can help us understand ecosystem processes and effects of human and nonhuman disturbances. They can inform our concepts of sustainability and help us understand the implications of public policy and assess the results of management decisions.

This is the first centralized location on the web for users to access, compare, and interpret such photographs. The images will come from both the FHS Photograph Collection and from institutional and individual collaborators. By providing an authoritative site on the subject, we expect to identify previously unknown repeat photographic pairs and sequences, promote the creation of new repeat sets, and foster interest in the future uses of repeat photography.

Sally Mann, a renowned American landscape and portrait photographer, said, "Photographs open doors into the past, but they also allow a look into the future." We hope that providing access to and stimulating more work in repeat photography will help students, teachers, journalists, foresters, and many others gain insight that can elevate our awareness of conservation challenges. When you go to www.repeatphotography.org to see the initial postings of photos, and please contact Eben Lehman, FHS's archivist, if you would like to donate photo pairs or discuss the project.

We have been working on the second initiative for several years and are excited that it is coming to fruition. FHS, in collaboration with the Cradle of Forestry in America Interpretive Association, is producing and distributing *First in Forestry: Carl Schenck and the Biltmore Forest School*. It will be the first documentary film to examine the pivotal role that the Biltmore Estate's chief forester and America's first school of forestry played in American conservation history. The film is being made by Bonesteel Films of Asheville, North Carolina. We expect to show it on PBS stations around the country in collaboration with UNC-TV.

Our film will mix interviews with leading scholars and experts with historical photographs and footage drawn in part from our holdings and recreation footage to vividly tell this incredible story. The film weaves together broad historical events with personal stories, highlighting individuals who, often acting in opposition to the prevailing attitudes, created sweeping changes with national implications: George Vanderbilt, Frederick Law Olmsted, Gifford Pinchot, and of course Carl Alwin Schenck.

Support for the film has come primarily from many individuals but also from two grants by the Blue Ridge National Heritage Area. Fundraising is continuing to ensure as wide a distribution of the film as possible and also to provide a short version of the film to show at the Cradle of Forestry Visitor's Center as well as in school systems nationwide. Go to www.firstinforestry.org for more information and to support the film. Contributions of any size are most welcome, as they will be matched on a 1:1 basis by an individual donor.

As we embark on exciting initiatives in 2015 and beyond, I want to express our appreciation to our members, supporters, and leaders who have seen us through the past year. We have recovered from an electrical fire that temporarily caused significant disruption in daily activities for FHS staff, and your support and encouragement have brought us back stronger and more vibrant. □

Forest History Today

A PUBLICATION OF THE
FOREST HISTORY SOCIETY
DURHAM, NC

Vol. 20, Nos. 1 and 2
Spring/Fall 2014
Published June 2015

Forest History Today is published by the Forest History Society to keep readers apprised of the best forest history writing and FHS activities. Please send article proposals to Jamie Lewis, 701 Wm. Vickers Avenue, Durham, NC 27701, 919/682-9319 or e-mail to: jglewis@duke.edu.

ON THE COVER
Entrance to
Carl Alwin Schenck Grove

Articles appearing in this journal are abstracted and indexed in HISTORICAL ABSTRACTS and AMERICA: HISTORY AND LIFE.

CONTENTS SPRING/FALL 2014

FEATURES

DEPARTMENTS

ANNUAL REPORT

EDITOR'S NOTE

by James G. Lewis

Have you ever been in an urban forest and had the feeling that you were off in the wild because you could no longer hear any cars? Did you find yourself on a trail and felt as Emerson did when he wrote, "In the woods, is perpetual youth"? Or have you been in a state park, turned on a trail and thought, "Geez, I'm in the wilderness!"? I can answer "yes" to all three of those questions. Here in Durham we have Duke Forest, the Eno River, and Umstead State Park to explore and escape to. I find being in the forest—and what feels like wilderness in this increasingly urbanized region—is often restorative, if not transformative.

Historians will tell you there are both legal and cultural constructs of wilderness. Although Duke Forest, the Eno River, and Umstead State Park are not, by legal definition, "wilderness," such places do give a sense of being *in* wilderness. Wilderness, in all its many constructs, was celebrated on September 3, 2014, around the United States, when its supporters commemorated how the legal construct of wilderness has been protecting the cultural one for 50 years. It was on that date in 1964 that President Lyndon Johnson signed the Wilderness Act, which created the National Wilderness Preservation System, the most extensive system of protected wild lands in the United States. Since its signing, the law has continually inspired people to protect wilderness and enjoy it, too.

As someone who studies the history of forests and how humans interact with them for a living—and who enjoys running and hiking wooded trails for recreation—I've been fortunate to spend time in and write about both legally designated wilderness areas in Montana (www.bit.ly/VFkgsa) and places that are wilderness areas in all but legal standing, like in Maine (www.bit.ly/1iuesr7). So it's more than a little ironic that I've not visited any of North Carolina's 12 federal wilderness areas. But it's fine with me. I have Duke Forest, the Eno River, and Umstead Park, even though they aren't on the wilderness list. It doesn't alter my enjoyment of these places—if anything, it makes me appreciate them all the more because they remain wooded oases in this rapidly growing area.

What these local places have in common with federal wilderness areas is how they came to be protected and cherished spaces. The history of each involves someone at some point looking at the landscape, whether it was abandoned agricultural fields in need of restoration (like Umstead) or a forested area in need of protection (like Joyce Kilmer–Slick Rock Wilderness), and deciding that intervening on behalf of the public was a greater good for both the land and people.

In the case of what would become federal wilderness areas, that effort was led in large part by Aldo Leopold, Bob Marshall, and Howard Zahniser, whose story is the focus of the Academy Award–nominated documentary film *Wild by Law* (1991). All three men were leaders of the Wilderness Society, an organization formed in 1935 by Leopold, Marshall, and six other men to counter the rapid development of national parks for motorized recreation. The Wilderness Society supported projects like the Appalachian Trail but opposed others like the Blue Ridge Parkway because roadways like it were built at the expense of wilderness. (The tension between access to wilderness and protecting its integrity that led to the Society's establishment is still evident today.) Zahniser, the executive secretary of the Society from 1945 until his death in 1964, carried forth the torch lit by Leopold and Marshall by writing the Wilderness Act and serving as its strongest advocate. The efforts of these and many other people have led to the protection of countless beautiful areas.

At just an hour long, *Wild by Law* is a great introduction to this decisive episode in American history. In September, the day after I addressed a community meeting in Idaho's panhandle, where people are struggling to make a living in a region surrounded by wilderness, I hosted a screening of the film at the Durham County Library and a question-and-answer session. The discussions in both places reminded me that passion runs high on the issue of wilderness protection, and that the issue is and will remain a complex and contentious one, but for good reasons. I encourage you to seek out this film and then to celebrate 50 years of the Wilderness Act and all that it has done for what President Johnson called "the total relation between man and the world around him." I also hope you'll start visiting wilderness areas—however defined—around you.

■■■

Not only did we celebrate the 50th anniversary of the Wilderness Act in 2014, but we also marked the golden anniversaries for the Land and Water Conservation Fund and the Economic Opportunity Act. They were all part of President Johnson's Great Society program, remembered largely for the efforts to legislate social justice and economic uplift. Few recall today that Johnson envisioned the Great Society would provide, in part, "a place where man can renew contact with nature." (What may be even more surprising is to learn that Johnson helped enact more than 300 environmental measures, a record that remains unmatched, according to historian James Morton Turner.) The first two laws helped protect and expand places to come in contact with nature, while the Economic Opportunity Act, which created Job Corps, meant the federal government would fund a supplemental workforce to help land management agencies conserve nature. And so you'll find articles about all three laws in this issue, along with two book excerpts, and the usual suspects in the back.

Thanks to an anonymous donor, we can present the "Material Culture of Environmentalism" photo essay and two additional articles in color. When *Forest History Today* was first published twenty years ago, most historic photos—and even contemporary photos—provided to us were black and white. What qualifies as an historic image today, however, is more likely to be in color. Accurate reproduction is important to our understanding of history. If you would like to underwrite color printing of historic photos in future issues, please contact me at **james.lewis@foresthistory.org**. □

To restore American forests, it would take a German forester.
His legacy is still growing.

First in Forestry

Carl Schenck & The Biltmore Forest School

THE FOREST HISTORY SOCIETY

A film from The Forest History Society | www.FirstInForestry.org

CRADLE OF FORESTRY
Interpretive Association
IN AMERICA

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 479458

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 untrammeled 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 MUTCH

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 subalpine 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]

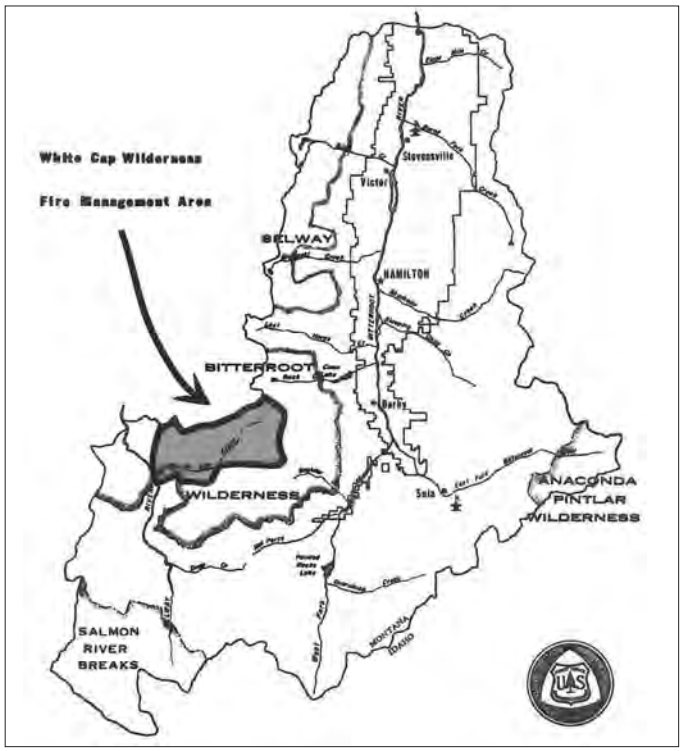
In 1973, the first full year of the approved fire management plan, several lightning fires burned in the White Cap study area, most totaling less than a quarter acre. Some fires were suppressed and others allowed to burn, per the prescriptions. On August 10, 1973, lightning ignited a fire along Fitz 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]

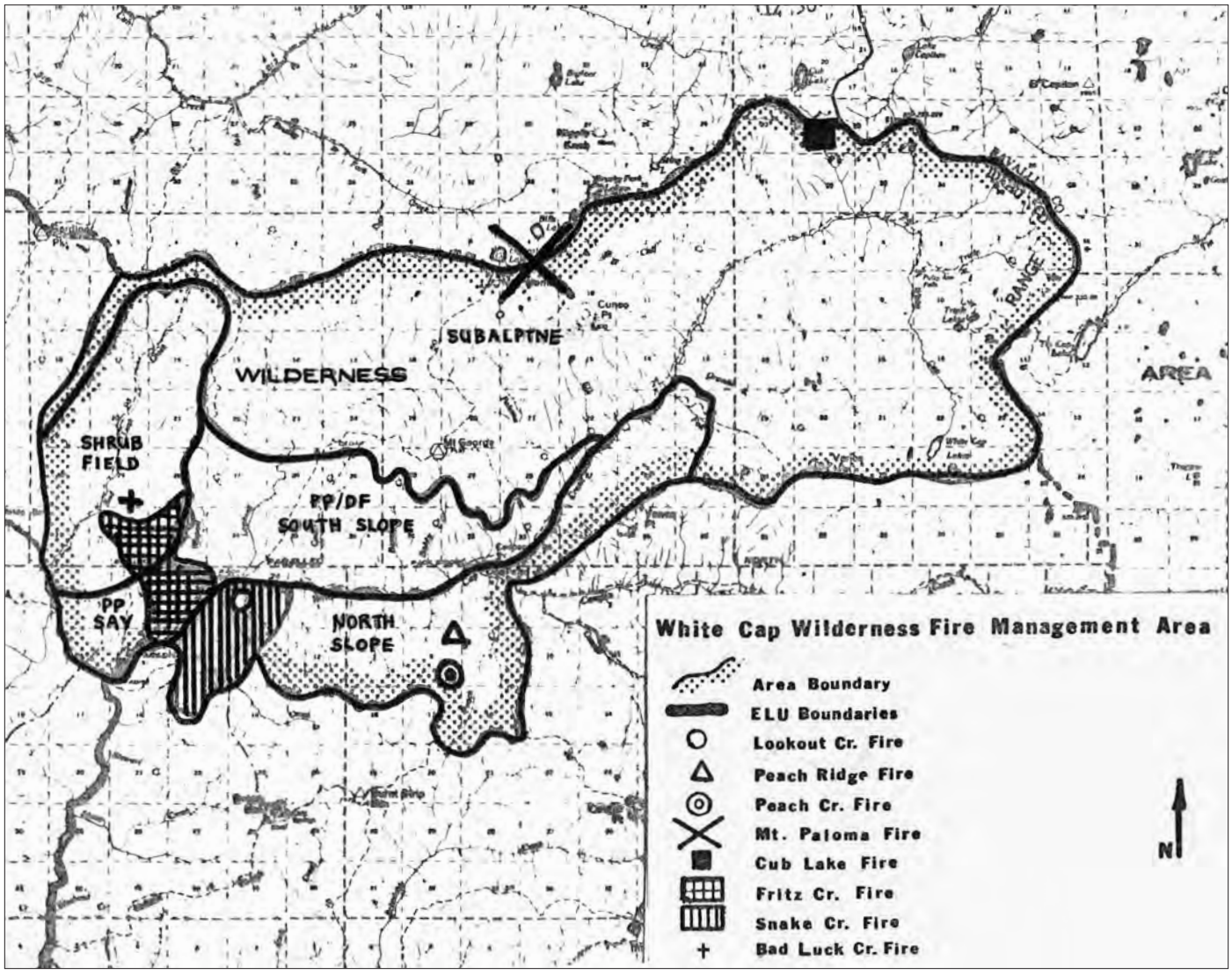
Bob Mutch and colleagues at the Fire Lab established permanent research plots later that year to study the long-term effects

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. □

Diane Smith is a research historian at the Missoula Fire Sciences Lab of the U.S. Forest Service's Rocky Mountain Research Station. She is currently at work on a 100-year history of wildland fire research.

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.

"A VOICE FROM THE WHITE CAP FIVE"

by Bob Mutch

I am reminded of the time 32 years earlier when my daughter Linda and I first placed our boots on this very same White Cap trail. That first hike familiarized us with the landscape where we intended to return free-burning fires to their former role. The forest greenery that served as a backdrop on our first hike was a mystery, an enigma, an array of puzzle pieces not yet assembled into a coherent whole.

The challenge for those of us charged with developing wilderness fire planning guidelines and prescriptions to ensure a more natural role for fire in wilderness was to make sense of the "greenery" over the next two years—to assemble all the pieces in a way that facilitates the return of fire.

And now it is 2002. I make final adjustments to my Kelty pack at the White Cap trailhead and survey my hiking companions. It is fun to be hiking again with the White Cap Five. As I write this, two of them are no longer with us. Bud Moore died in 2010 and Bill Worf in 2011. They have passed from our lives, but their wilderness legacy lives on through each new fire that visits the Selway-Bitterroot Wilderness.

Our celebratory walk back in time, intending to rekindle our earlier campfire at Cooper's Flat [a few days before], is professionally documented. Steve Woodruff of the *Missoulian* newspaper penned an editorial a week after the celebration under the heading "Wilderness fires blaze trail to safer, healthier forests." Woodruff wrote: "Some of the old-timers who launched that bold experiment returned to White Cap Creek last weekend, along with a few members of the public and a contingent representing the new generation of forest stewards. What they found was a healthy, thriving forest and some lessons worth heeding elsewhere in the west."

Ian Marquand, an award-winning videographer for CBS in Montana, is along to film a short video titled "Wilderness Fire Pioneers" for statewide airing. Paul Trachtman, former science editor for *Smithsonian Magazine*, accompanies us to ask questions and write an article for the magazine.[1]

Dave Campbell, district ranger on the West Fork District of the Bitterroot National Forest, joins us as our amiable host for the anniversary. More importantly, we recognize his zeal and enthusiasm for wilderness fire, a committed leader who always tries to find sufficient latitude for another wilderness fire—and another and another and another. There could not be a stauncher supporter for wilderness fire in the twenty-first century.

Other Forest Service participants on the hike include Brad Powell, Regional Forester; Dave Bull, Bitterroot National Forest Supervisor; Chris Ryan, Wilderness Specialist; and Judith Fraser, Wilderness and Trails Coordinator.

Linda has traveled from her duty station at Sequoia and Kings Canyon national parks in California to help us commemorate three decades of wilderness fire in the Selway Country. Her path with me into the White Cap as a 10- and 11-year-old helped lead her to seasonal fire jobs in various national parks through college and to her current National Park Service career studying natural resources in the Sierra Nevada.

Counting myself blessed for having such a congenial contingent of camping companions, I cinch the waistband on my pack a little tighter and fall in behind the others. Four hours from now we will arrive at the flat around the historic Cooper's cabin and rekindle the campfire for an evening of reminiscing.

But first another nine-mile White Cap journey from Paradise to Cooper's is about to be added to my many previous ones. A journey repeated so often over the years that one might be inclined to shift into cruise control. But that is never the case on this trail—one that follows the rhythm of White Cap Creek. Sometimes the trail is close enough to hear water tumbling over rocks. Other times, from hundreds of feet upslope, gaps among trees reveal sunlight finding the white rapids. No matter the vantage point, the trek remains tranquil, soothing, energizing.

After all, this is the fabled Selway-Bitterroot Wilderness. The 100-square-mile White Cap fire project area signifies a special kinship between land and people, producing a legacy of free-burning fires that help put the "wild" back in wilderness.

The sun-dappled shade at the Fitz Creek crossing offers a damp transition between the Paradise trailhead and a dusty wilderness trail beyond. Two friends ensconced along the Fitz trickle testify to this niche of moisture: sturdy stalks of *Equisetum arvense* (horsetail), and the graceful fronds of *Adiantum* L. (maidenhair fern). Years ago, before the intestinal parasite giardia became a concern, a Sierra Club cup would have transferred a cool sample of Fitz Creek to the lips. Not now.

Ahead, along the sun-baked trail, another friend awaits, a slender grass whose name 10-year-old Linda loved to pronounce: *Deschampsia danthonioides* (annual hairgrass). The contagion of wilderness is often embedded in simple connections.

No smoke exists on the horizon this sunny, summer day, but signs of fire are ever-present as we traverse south-slope ponderosa pine forests. Numerous fire scars at the bases of orange-barked trees attest to historical surface fires that burned here every 10 to 15 years. A mantle several inches deep of dead needles, some 10 inches long, provides the only fuel necessary to easily spread low-intensity fires through these stands.

These ponderosa pine needles contain a large amount of oils, waxes, and resins. When crushed, they smell of turpentine. The loosely arranged bed of highly flammable needles ensures that fires will range widely on hot and windy summer days. The pine trees on these south slopes are often referred to as "a forest born of fire." Indeed, the White Cap was ideally suited as an outdoor laboratory to determine ways to return fire to a more nearly natural role.

"Probably more picnics have been held in the shade of ponderosa pine than any other western tree," observed John Kircher in *Ecology of Western Forests*. Our group is no different: we enjoy a noontime break under the pines. As we share stories and eat our trail lunches, all around us the sun-heated pine bark emanates the characteristic smell of vanilla. Blue sky, warm sun, imposing ponderosas, vanilla-scented breezes, and shining water lull some of us into a catnap on pine needle beds.

Following our respite beside the stream, we are ready to make short work of the remaining few miles to Cooper's. As we finally

cross the open meadow at the cabin site, we all search for a favorable tent site. We know our dinner and our evening campfire await us.

As our spirits and memories are warmed by the dancing campfire flames, we take turns reflecting on the previous 30 years. "We had taken the shovel and Pulaski folks about as far as we could," Bud Moore recalls. "We needed to do something different. The Wilderness Act says that natural processes should proceed. Why, in light of that, to put out a fire was almost illegal. We had clear objectives—we could do things with fire."

"Until that time, we had put out every fire," says Bill Worf. "The 10 a.m. fire policy we were operating under was the bible. This was a radical change. By gosh, we would just let Nature do her thing."

"A fellow by the name of Bud Moore, the director of Fire, gave me a call one day and he said, 'Are you willing to have this pilot project on your forest?'" says Orville Daniels. "And I said, 'Absolutely.'"

I offer my recollections: "When I started smokejumping in Missoula in 1954 and 1955 and later served on a fire overhead team fighting fire all over the United States for 11 years—there the fire was the enemy. And after working in the wilderness, I learned that fire is just a process. It is part of the system."

"I had to first learn about the wilderness resource," says Dave Aldrich. "Then I had to learn about fire ecology—that fire is not just the enemy we put out or a tool we use to burn slash. It is a natural process in the ecosystems of the northern Rocky Mountains."

Recalling the first large fire that was allowed to burn, Orville Daniel reminds the group that "the national awareness just seemed surprised that we actually had a fire—the 1973 Fitz Creek Fire—that we did not put out. It burned for 43 days. The national media came to look at it and they said that Smokey Bear is going crazy. And he is now enjoying fire instead of putting it out."

As he so often does, Daniels has the last word, asking us all to look ahead as well: "Thirty years ago we met here and I never thought we would meet here again. Sure, it's fun to meet and be nostalgic, but let's get started on the next 30 years."

Finally, the campfire works its magic. We are ready for our tents and sleeping bags on this historic occasion—warmed by the campfire on the outside and by the strength of our long-time connections to each other on the inside. Lying there inside my sleeping bag beneath so many stars on that warm August night gives me plenty to ponder as I drift into a long, trail-induced sleep.

RETURN TO PARADISE

The next day we retrace our steps back to Paradise Guard Station at the trailhead where the public will help us commemorate this thirtieth anniversary of wilderness fire in the Selway. The crowd fills the available chairs under the yellow nylon fly. Bud's Paris-living daughter, Vicki, backpacks into our midst just in time to join the group for the first of several short talks honoring the occasion. Bud was just starting to talk and he said, "You're just in time for my speech," and Vickie replied, "I'm going to get a drink of water first."

Doris Milner became one of the strongest supporters of the wilderness fire program when it began in 1972. She was president of the Montana Wilderness Association at that time. It was a special treat to have her contribute some remarks to the group that Saturday morning. She was successful in her efforts in the 1970s to enlarge the Selway-Bitterroot Wilderness through the addition of the Magruder Corridor—an area the Forest Service had previously earmarked for timber sales.

Good friend Dave Bunnell, the Forest Service's national prescribed fire specialist, also joined us for Saturday's celebration and reflected on his first encounter with the White Cap Five in the 1970s: "Renegades! Heretics! I'm surprised they weren't all fired." Spoken with Dave's usual "take no prisoners" directness.

My remarks to the crowd acknowledged the consistent leadership provided by the Bitterroot National Forest. The easy decision to make, and the risk-free one, is simply to suppress new lightning fires. Many follow that path. But, year after year, the Bitterroot managers and staff evaluate new fires and allow many to burn that are within prescription—then living with that decision for weeks or even months.

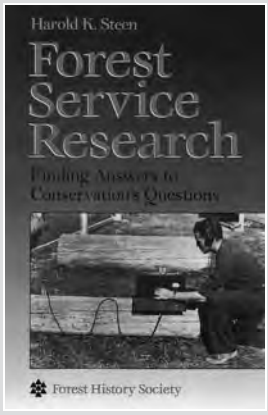
Managers at all levels should be rewarded for making the difficult decisions to return fire to the land and held accountable when fire management plans are not implemented. It is important to couple sustainable resource management practices with effective emergency preparedness measures to better benefit wilderness and society. □

From the unpublished manuscript "Wilderness Burning—The White Cap Story," by Bob and Linda Mutch.

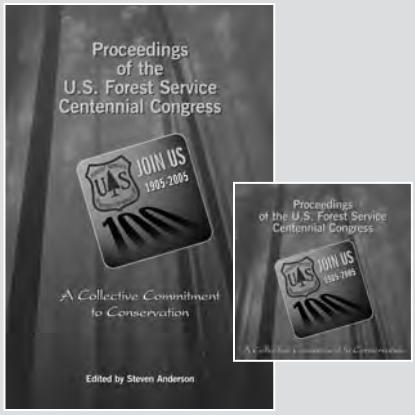
NOTES

1. Paul Trachtman, "Fire Fight," *Smithsonian Magazine*, August 2003, available at http://www.smithsonianmag.com/science-nature/fire-fight-88634003/?no-ist.

U.S. Forest Service History from the Forest History Society…



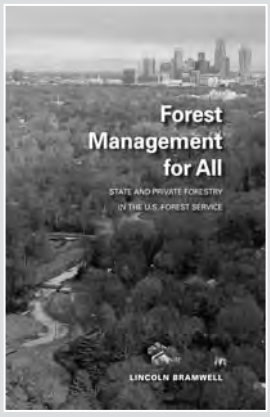
Forest Service Research:
Finding Answers to Conservation's Questions
Harold K. Steen, paper $10.95



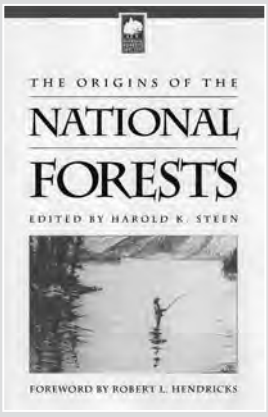
Proceedings of the U.S. Forest Service Centennial Congress: A Collective Commitment to Conservation
Steven Anderson (ed.), paper $24.95;
Also available on CD with bonus material

The Chiefs Remember:
The Forest Service, 1952–2001
Harold K. Steen, cloth $29.00, paper $20.00

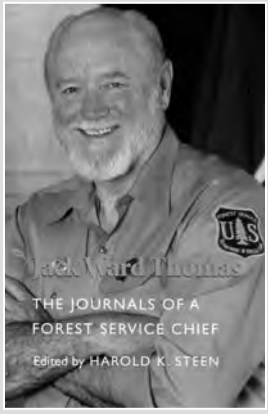
The Forest Service and the Greatest Good:
A Centennial History
James G. Lewis, cloth $29.95, paper $19.95,
3-DVD set $18.00



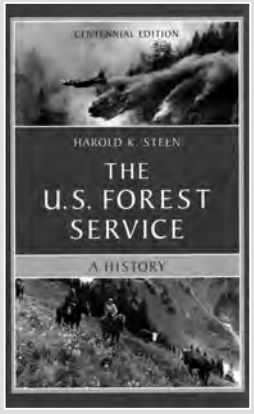
Forest Management for All:
State and Private Forstry
in the U.S. Forest Service
Lincoln Bramwell. paper; $10.95



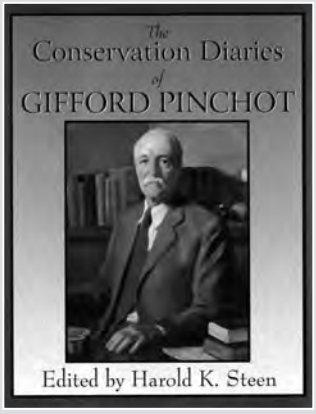
Origins of the National Forests:
A Centennial Symposium
Harold K. Steen, cloth $31.95, paper $16.95



Jack Ward Thomas:
The Journals of a Forest Service Chief
Harold K. Steen (ed.), paper $30.00



The U.S. Forest Service:
A History (Centennial Edition)
Harold K. Steen, cloth $40.00, paper $25.00



The Conservation Diaries of Gifford Pinchot
Harold K. Steen (ed.), cloth $29.00, paper $17.95

Learn more about these titles or purchase them online at www.ForestHistory.org/Publications/Books.html.

Often overlooked by historians, the Land and Water Conservation Fund Act "has arguably exerted a far greater influence on the nation's environment than its more famous Wilderness Act cousin." It was signed into law the same day as the Wilderness Act in 1964. Photographs of the presidential signing ceremony reveal a great deal about how the two laws were perceived when passed—perceptions that continue today.

LBJ, WILDERNESS,

AND THE LAND AND WATER CONSERVATION FUND

On the 50th anniversary of the signing of the Wilderness Act, it seems appropriate to begin this essay with the almost iconic image of President Lyndon Johnson affixing his signature to what many assume is this long-sought and hard-fought bill, surrounded by an impressive cadre of wilderness warriors beaming in approval. It is the morning of September 3, 1964, and this black-and-white time capsule perfectly captures the culmination of the assembled group's efforts to protect the wild and "untrammeled" places under siege by the nation's yearly multiplying millions. Countless historians, reporters, students, and websites have uncritically illustrated this important moment with this famous photograph.

Now look again…closely. What *exactly* is Johnson signing in this photo? My question arises because, although not many people realize it, on the morning of September 3, 1964, in the Rose Garden of the White House, President Lyndon Johnson signed not one but two remarkable pieces of environmental legislation: the well-known Wilderness Act and the far-lesser-known Land and Water Conservation Fund (LWCF) Act. Just a few minutes prior to the photographer's capturing this image, Johnson had proclaimed: "It is with a great deal of pride and pleasure and hope for the future that we enact into law today by signing these bills some of the most far-reaching conservation measures that a farsighted nation has ever coped with."[1] So, which one is under Johnson's pen at this precise historical moment? As it turns out, even the archivists at the LBJ Presidential Library cannot say for certain.

The fates of wilderness and the LWCF had long been intertwined, and the cooperative bipartisan effort that finally led to successful wilderness protection depended heavily on the politics of the LWCF. The objective of the measure, officially called the Land and Water Conservation Fund Act of 1965, was "to assist in preserving, developing, and assuring accessibility to all citizens" of outdoor recreation resources.[2] More specifically, the LWCF had two primary purposes: to provide funding for the management and acquisition of federal lands, including the purchase of private in-holdings and the augmentation of existing wilderness areas, parks, and forests, and to provide matching grants to states for recreation planning, land acquisition, and facilitate development of projects such as urban parks and municipal playgrounds. To accomplish these goals, Congress organized the LWCF as a federal "trust fund" that could accumulate revenues, up to an established annual ceiling. The LWCF was popular and palatable because in many ways it was what I like to call "green-pork" environmentalism—it created a win-win situation for legislators, who could pick and choose the projects they wished to fund.

BY SARA DANT

ABBIE ROWE, "LBJ SIGNING WILDERNESS ACT," 3 SEPTEMBER 1964, NATIONAL PARK SERVICE HISTORIC PHOTOGRAPH COLLECTION

President Lyndon Johnson signing legislation into law on September 3, 1964, in the Rose Garden of the White House accompanied, from left to right, by: Rep. Quentin Burdick (D-ND), Margaret "Mardy" Murie, Rep. Wilbur Mills (D-AR), Sen. Frank Church (D-ID), Alice Zahniser, Rep. Wayne Aspinall (D-CO), Sen. Norris Cotton (R-NH), Sen. Clinton Anderson (D-NM), Secretary of Agriculture Orville Freeman, Rep. John Saylor (R-PA), Secretary of the Interior Stewart Udall.

The individuals gathered before the camera document the close relationship between these twin pillars of conservation legislation. The two women to Johnson's right, for example, are Margaret "Mardy" Murie (left) and Alice Zahniser, wife of advocate Howard Zahniser, who both had long family traditions of citizen activism on behalf of wilderness protection. But standing there with them, fourth from the left, is Idaho Democratic senator Frank Church, who had shepherded both proposals through the formalities of legislation by serving as floor manager for both the Wilderness Bill and the LWCF. Church had effectively linked the two laws by calling the LWCF a vital supplement to the "precious resource" of wilderness.[3]

The LWCF idea had originated early in the John Kennedy administration, but its fate soon became connected to the politics of wilderness. In particular, House Interior Committee chair Wayne Aspinall (D-CO, sixth from left) was frustrated that the super-efficient Senate Interior Committee was inundating his committee with conservation legislation, leaving the House to play a subordinate, rubber-stamping role. Realizing that Aspinall could hold the wilderness bill hostage, Senate wilderness proponents consented to letting Aspinall take the lead on the LWCF bill. Before Johnson took his seat at this table that morning, he observed: "I think it is significant that these steps have broad support not just from the Democratic Party, but the Republican Party, both parties in the Congress."[4] Indeed, the congressional unity on display during the summer of 1964 was nothing short of remarkable, as the Senate passed the LWCF by a whopping 92-1 majority, while the House voted "aye" on the Wilderness Bill in a similarly lopsided 373-1 vote.[5] The smiling men in this photograph, hailing from both sides of the aisle, perfectly capture that rare political harmony.

But back to the mystery of *which* act Johnson is signing in this image. I am willing to put my money on the Wilderness Act and not the LWCF Act, and here is why. The Wilderness Act became Public Law 88-577 and the LWCF Act became Public Law 88-578, which means that Johnson signed the Wilderness Act first.[6] In the photograph, Johnson has an impressive array of pens lined up in front of him and also clutched in his left hand. Presidents commonly use numerous pens to sign important legislation so that they can reward supporters with a commemorative souvenir from the occasion. Given the number of unused pens remaining, it seems likely to me that Johnson has just begun the signing

process, and thus has the Wilderness Act in front of him.

However, the most telling clues come from the two photograph contact sheets of this historic event, which show sequentially numbered prints made directly from uncut film negatives. Interestingly, even the contact sheets needed some sleuthing. Although the archival numbering system begins at the top left of the first page shown here, it distorts the actual order of the photographs; whoever developed the contact sheet accidentally placed the first set of negatives on the third line. But close examination of the actual negative numbers reveals the true sequence of the morning: image 1A (#364-13 on the contact sheet), the logical starting number for the photo shoot, shows Johnson delivering his opening remarks, and is followed by image 2A (#364-14), a wider-angle image of the original photo above. As Johnson begins signing, he also begins distributing pens: Howard Zahniser's widow Alice gets the first, Margaret Murie the second. The number of pens begins to diminish and with good reason: the president's daily diary entry for September 3 lists 64 attendees at the signing, and most were there on behalf of wilderness.[7]

The image on the opposite page, I contend, shows Johnson signing the LWCF Act. On the second contact sheet, sequentially numbered and following the first, Johnson's signing of the Wilderness Act appears to culminate three frames prior to this photo, with Secretary of Interior Stewart Udall leaning over the president's shoulder to confirm completion (#364-34). Johnson then got up and shook a few hands, as seen in the next two photographic frames, before returning to his desk, and a much-diminished pen supply, to sign, in this image here, the second bill of the morning: the Land and Water Conservation Fund Act of 1965. In many ways, this photo illustrates the status of the LWCF vis-à-vis the Wilderness Act, both at the time and ever since. To put it bluntly, the LWCF was an afterthought—no one was watching or clapping, no one was waiting for a pen, indeed, no one was paying even the slightest attention to the birth of this quiet, almost anonymous act that has arguably exerted a far greater influence on the nation's environment than its more famous Wilderness Act cousin.

The LWCF has long attempted to resolve the essence of William Cronon's lament in his "The Trouble with Wilderness" essay: too much environmental protection "out there" and not enough at home.[8] Since 1968, the fund's major source of revenue has been

CECIL STOUGHTON, "CONTACT SHEET SHOWING SIGNING OF WILDERNESS ACT," SERIAL #: CSS-364-1T024-64, 3 SEPTEMBER 1964, LBJ PRESIDENTIAL LIBRARY

This contact sheet shows the first twenty-four of forty-seven images that the official White House photographer captured during the historic signing of the Wilderness Act and the Land and Water Conservation Fund Act on September 3, 1964.

CECIL STOUGHTON, "LBJ SIGNING THE LAND AND WATER CONSERVATION FUND ACT, SERIAL # 364-37-WH64, 3 SEPT 1964, LBJ PRESIDENTIAL LIBRARY

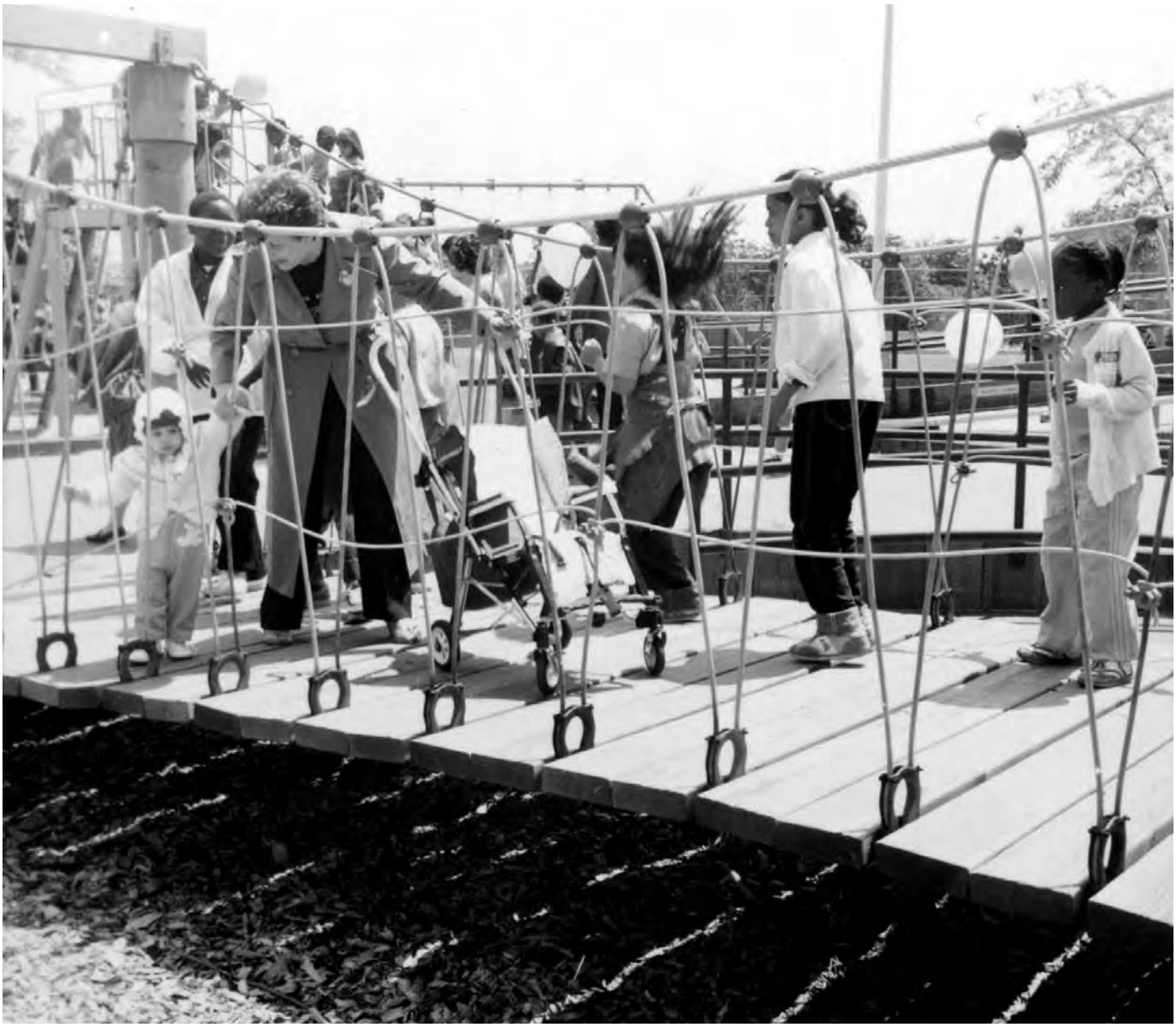
President Lyndon Johnson signs the Land and Water Conservation Fund into law with no one watching.

the mineral leasing receipts generated by oil and gas drilling on the Outer Continental Shelf. This shrewd political move not only provides a lucrative wellspring of money, it also assuages a great deal of congressional guilt by allowing mineral exploitation to fund land and water conservation. The law stipulates that 60 percent of the money from the LWCF be available to the states, while the federal government's four land management agencies have access to the other 40 percent. Significantly, the law also contains a formula that sets aside fully 85 percent of federal funding for acquisitions east of the 100th meridian. This provision not only allayed western senators' fears of a "federal land grab" but also ensured adequate spending on what Church called "the section of the country where land is most desperately needed for recreational purposes."[9] Thus the LWCF allows federal agencies to buy in-holdings in wilderness, park, and forest areas—"out there"—but it has also built urban parks, baseball diamonds, swimming pools, and playgrounds where most Americans actually *live*.

The "Playground for All Children," pictured on the following page, is a fine example of the fund's efforts to provide state and local matching grants for the acquisition and development of high-quality outdoor recreation areas. Begun in 1980 and dedicated four years later, this LWCF-funded project in Queen's Flushing Meadows section of New York City is a pioneering urban public space dedicated to both disabled and able-bodied children.[10] In this image, children traverse a 12-foot-long suspension bridge that spans a knowable space in their own neighborhood, not some remote river in some distant wilderness area to which they could never travel. And they can do so with crutches, in a wheelchair, or on their own two feet. The playground aligned with the Great Society's ideal of making the American Dream—which now included a healthy environment—accessible to all Americans, and fulfilled Johnson's vision for an act that could "create new concepts of cooperation, a creative federalism, between the National Capital and the leaders of local communities."[11] As Cronon admonished, "we need to embrace the full continuum of a natural landscape that is also cultural, in which the city, the suburb, the pastoral, and the wild each has its proper place." The LWCF does exactly that.

Because of the LWCF, several states now have playgrounds like this one, as well as permanent recreation planning and development programs. Maryland, for example, instituted Program Open Space to acquire parklands, while New Jersey created the Green Acres Program to provide loans as well as grants for local land acquisition, rehabilitation, and development. In addition to providing impressive state-aid grants, the LWCF has also funded scores of new national park units—seashores, lakeshores, trails, wild and scenic rivers, historic sites, and recreation areas.[12] And though the original legislation indicated that the primary focus of the fund's preservation efforts should be the acquisition of recreation lands in the East, near major population centers, all regions of the country, including the West, have fared remarkably well.[13]

Although few may have been paying attention when Johnson signed the LWCF Act on that September morning back in 1964, this mighty funding engine has enriched the nation by furnishing the fiscal muscle necessary to develop urban recreation and acquire adequate easements for environmental protection. And if Johnson



NEW YORK CITY PARKS PHOTO ARCHIVE

"Kids in Playground," c. 1984. Children crossing a suspension bridge at the LWCF-funded Playground for All Children, the nation's first completely accessible public playground for both disabled and able-bodied children, in Flushing Meadows, New York.

appears to be squelching a slight smile as he quietly signs the LWCF into law, it may be because he already planned to use this new fund to buy the last parcel for creating Guadalupe Mountains National Park in his home state of Texas, where private property advocates abound.[14] As one writer commented, the LWCF "forged a powerful alliance of private citizens and government officials at the federal, state, and local levels," and analyzing these photographs helps environmental historians clarify and illuminate this powerful alliance.[15] For 50 years, this anonymous act has quietly set aside some of the last, best places in both wild and urban environments so that we may all get on with the task of living fully and rightly in the world. □

Sara Dant is Professor of History at Weber State University in Ogden, Utah. Her next book, The Environment in the American West: A History, *is forthcoming with Wiley, and she is currently working on a history of the Land and Water Conservation Fund and an article on the early uses of the Weber River.* *The author wishes to thank Neil Maher, Cindy Ott, Christopher Banks, Doug Scott, Ed Zahniser, Tom Smith, and Mark Harvey. This article originally appeared in* Environmental History *(2014) 19(4): 736–43.*

NOTES

1. U.S. President, *Public Papers of the Presidents of the United States* (Washington, DC: Government Printing Office, 1965), Lyndon B. Johnson, "Remarks Upon Signing the Wilderness Bill and the Land and Water Conservation Fund Bill," 1963–64, Book II, 1034.
2. Public Law 88-578 (16 U.S.C. 4601-4 et seq.). Available at: http://www.nps.gov/lwcf/lwcf_act.pdf.
3. *Congressional Record—Senate*, 12 August 1964, 18523–25. See also Sara Dant, "Making Wilderness Work: Frank Church and the American Wilderness Movement," *Pacific Historical Review* 77, no. 2 (May 2008): 237–72.
4. Johnson, "Remarks," 1034.
5. *Congressional Record—Senate*, 12 August 1964, 18523–25.
6. Wilderness Act (Public Law 88-577 [16 U.S. C. 1131–36]). Available at: http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5253940.pdf.

7. "September 3, 1964," President's Daily Diary, Box 2, LBJ Presidential Library, Austin, TX.
8. William Cronon, "The Trouble with Wilderness; or, Getting Back to the Wrong Nature," in *Uncommon Ground*, ed. William Cronon (New York: W.W. Norton & Co., 1995), 69–90. Available at: http://www.williamcronon.net/writing/Trouble_with_Wilderness_Main.html.
9. *Congressional Record—Senate*, 1 September 1964, 20604–9.
10. See New York City Department of Parks and Recreation, "Flushing Meadows Corona Park: Playground for All Children," accessed July 18, 2014, http://www.nycgovparks.org/parks/fmcp/highlights/12639.
11. See Samuel P. Hays, *Beauty, Health, and Permanence: Environmental Politics in the United States, 1955–1985* (New York: Cambridge University Press, 1987). U.S. President, Public Papers of the Presidents of the United States (Washington, DC: Government Printing Office, 1965), Lyndon B. Johnson, 1963–64, Book I, 705, 706.
12. "1964 and All That—A Quick History of the Land and Water Conservation Fund Program" [National Park Service Web Pages], accessed June 6, 2014, http://www.nps.gov/ncrc/programs/lwcf/history.html. See also http://www.dnr.state.md.us/land/pos/ and http://www.nj.gov/dep/greenacres/.
13. Carol Hardy Vincent, "Land and Water Conservation Fund: Overview, Funding History, and Current Issues," July 10, 2006, Congressional Research Service, accessed August 15, 2014, http://www.recpro.org/assets/SORP_Reports/lwcf_overview_funding_history__current_issues.pdf.
14. Hal K. Rothman, *Promise Beheld and the Limits of Place: A Historic Resource Study of Carlsbad Caverns and Guadalupe Mountains National Parks and the Surrounding Areas* (Washington, DC: Department of Interior, 1998), 226–27. Available at: http://www.nps.gov/history/history/online_books/CarlsbadCav/.
15. Orin Lehman, "On the 25th Anniversary of the Land and Water Conservation Fund," *The Conservationist* 45, no. 3 (November–December 1990): 44.

FREQUENTLY ASKED QUESTIONS ABOUT THE LAND AND WATER CONSERVATION FUND

WHAT IS THE LAND AND WATER CONSERVATION FUND?

The Land and Water Conservation Fund (LWCF) takes a portion of royalties energy companies pay the government for extracting publicly owned offshore oil and gas from the Outer Continental Shelf. The government then takes those revenues and reinvests them in the conservation of our federal, state, and local public lands and natural resources.

HOW DOES THE FEDERAL GOVERNMENT USE THE LAND AND WATER CONSERVATION FUND?

The federal government uses the fund to acquire and protect pockets of private lands within our national parks, forests, refuges, trails, Bureau of Land Management lands, and in other places. The "stateside" of LWCF is distributed to all 50 states, DC, and the territories by a formula based on population, among other factors.

WHY IS THE LAND AND WATER CONSERVATION FUND IMPORTANT?

Over its 50-year history, the Land and Water Conservation Fund has protected more than seven million acres of land and supported more than 41,000 state and local park projects. The LWCF has protected land in 98 percent of United States counties.

IS THE LAND AND WATER CONSERVATION FUND SECURE?

Although the Land and Water Conservation Fund is authorized to receive up to $900 million per year, Congress nearly always diverts the funds for other uses. This often leads to inadequate funding for vital conservation projects.

Despite inadequate funding, LWCF remains the premier federal program to conserve our nation's land, water, historic and recreation heritage.

LOCAL COMMUNITIES AND ECONOMIES

The Land and Water Conservation Fund contributes to the overall health and economic strength of local communities.

- **LWCF is vital for public access to outdoor recreation**
  More than 42,000 grants totaling over $4 billion have supported protection of three million acres of recreation lands and over 29,000 recreation facility projects on the state and local levels. Funding supports conservation efforts by the four federal land management agencies: National Park Service, Bureau of Land Management, U.S. Fish and Wildlife Service, and U.S. Forest Service.

- **LWCF is an important economic driver**
  The Land and Water Conservation Fund supports jobs and the revitalization of local communities. The Department of the Interior estimates that the $214 million spent on land acquisitions in 2010 returned more than double that investment, supporting an estimated $442 million in economic activity and about 3,000 jobs.

- **LWCF attracts other kinds of funding**
  Over the life of the program, more than $3 billion in LWCF grants to states has leveraged more than $7 billion in nonfederal matching funds.

- **LWCF returns are greater than the investment**
  Research has found that every $1 of LWCF funds invested results in a return of $4 in economic value from natural resource goods and services alone.

Sources: The Wilderness Society, U.S. Forest Service

If a picture is worth a thousand words, then what's the value of two photographs to forest history?

Repeat photography—the art of taking photographs of a specific location at two or more different times—is a powerful visual resource for scientific study and education in forest and landscape management. From working forests to wilderness areas, such photographic pairs can help us understand ecosystem processes, document the effects of human and non-human disturbances, and assess the results of management and policy decisions, to name a few benefits.

The FHS Repeat Photography Project showcases forestry-related "before-and-after" photographs by collecting sets of repeat photographs and providing a centralized location on the web for users to access, compare, and interpret them.

Explore the Repeat Photography Project and learn how you can contribute images at:
www.repeatphotography.org

THE FOREST HISTORY SOCIETY

This project is a collaboration between The Forest History Society and several other organizations. For a list of all supporters, please visit the website.

Reforestation at Clemons Tree Farm, Rock Creek, 1941

Reforestation at Clemons Tree Farm, Rock Creek, 1951

As part of his War on Poverty, President Lyndon Johnson signed the Economic Opportunity Act in 1964. The law established Job Corps, which was designed to connect poverty-stricken young people to the land, just as the Civilian Conservation Corps had done a generation earlier. Fifty years later, Job Corps is more vital to the work of the Forest Service than ever.

TRANSFORMING AMERICA'S YOUTH

50 YEARS OF JOB CORPS CIVILIAN CONSERVATION CENTERS

This year marks the 50th anniversary of President Lyndon Johnson's call on Americans to build a "great society" and his sponsorship of the largest social and economic reform agenda since President Franklin D. Roosevelt's New Deal. Central to Johnson's sweeping Great Society domestic agenda were the programs of his War on Poverty initiative. The Economic Opportunity Act, designed to eliminate poverty and expand educational opportunities, included the Job Corps to provide job training and education for disadvantaged young people ages 16 to 21.[1]

As the preamble to the act declared, it was "the policy of the United States to eliminate the paradox of poverty in the midst of plenty in this Nation by opening to everyone the opportunity for education and training, the opportunity to work, and the opportunity to live in decency and dignity."[2] At the time he signed the law, much attention was focused on urban poverty, even though rural citizens made up 43 percent of the poor. Twenty-nine percent of Americans lived in rural areas and more than half of rural poverty was found in the South. Three out of four rural poor were white, but poverty was proportionately greater among African Americans and other nonwhite rural residents.[3] Although sections of the Equal Opportunity Act have since been rescinded and many programs from Johnson's War on Poverty dismantled or reduced in scope, Job Corps proved its value and continues today.

A NEW GENERATION'S CIVILIAN CONSERVATION CORPS

The birth of Job Corps coincided with the rise of the environmental movement and new legislative authorities for federal forest management, including the Multiple-Use Sustained-Yield Act of 1960 and the Wilderness Act of 1964, and later the Wild and Scenic Rivers Act of 1968 and National Environmental Policy Act of 1969. These laws fundamentally changed land management planning and how national forest resources were used. Less widely known is the U.S. Forest Service's central role in designing the Job Corps program. Forest Service leaders like Chief Edward P.

BY ALICIA D. BENNETT

COURTESY OF U.S. FOREST SERVICE

On the left, Wolf Creek Job Corps graduate and Construction Craft Laborer Apprentice Mercedes Thompson at work. On the right, Antonio Searles of the Blackwell Job Corps Civilian Conservation Center traveled to the Northern Research Station Institute for Applied Ecosystem Studies to clear brush and debris and remove fallen trees near the center's main building.

Cliff and Deputy Chief Clare Hendee and future leaders like Jack Deinema, Max Peterson, Ed Shultz, and Clayton Weaver saw Job Corps as a unique opportunity and seized it.[4]

The Forest Service's history of involvement in programs that combined employment with land stewardship dated back to the Civilian Conservation Corps (CCC) of the 1930s, which provided room, board, education, and work for millions of unemployed young men. For Forest Service leaders like Cliff and Hendee, Job Corps was their generation's opportunity to husband human resources as well as the nation's abundant natural resources. Tony Dorrell, the first director of Job Corps' Curlew Conservation Camp in Curlew, Washington, believed that Cliff and Hendee, having begun their Forest Service careers working with the CCC in the 1930s, recognized that the future of the Forest Service lay as much in people as in trees, and the two envisioned that Job Corps would train leaders skilled in dealing with people.[5] Indeed, as an architect of the Forest Service Job Corps, Hendee recognized the singular opportunity that the program represented: "The immediate concern of Job Corps," he wrote, "is to salvage human lives now passing through a critical state, a period in which opportunity lost is lost forever. The added prospect of salvaging and developing neglected natural resources makes the program doubly worthy."[6]

Job Corps conservation camps were designed to "provide academic education and practical training in work-based learning to conserve, develop and manage, and enhance public natural resources and recreation areas, or to develop community projects in the public interest."[7]

A subset of the President's Task Force in the War Against Poverty was given responsibility for conceptualizing Job Corps.[8] The Job Corps Planning Group included stakeholders from government agencies as well as education and sociology experts selected by Sargent Shriver, director of the Peace Corps. Jack Deinema, the personnel officer in the Forest Service's Region 4 (Intermountain Region) representing the U.S. Department of Agriculture (USDA) on the planning group, was able to ensure that the conservation centers remained a part of the Job Corps model despite skepticism from other members of the group.[9]

In the days leading up to the vote on the Economic Opportunity Act, it remained unclear whether the legislation had enough votes to pass. A substantial number of rural members of Congress, predominantly Republican, had a strong interest in conservation, and many of them were on the fence. Spencer Stewart, a lobbyist for conservation causes, approached Shriver and assured him that he could deliver their votes if Shriver could promise that a certain percentage of Job Corps students would be engaged in conservation work.[10] It was decided that 40 to 50 percent of the Job Corps enrollees would be assigned to conservation centers, with the balance enrolled at large urban residential centers. Language specifying work experience gathered through public lands conservation was included shortly before the legislation went to the House floor for approval, and Stewart delivered the promised votes.[11]

Initially, the conservation camps were designed exclusively for young men who needed to complete basic education and develop skills and work habits necessary to find and hold jobs in the mainstream of society. (Today's centers are coeducational and offer nontraditional vocational training to female students.) The intent was that on graduation, they would enroll in large urban centers for focused vocational training. Once Job Corps had launched, the parallels with the CCC emerged, particularly the need for medical and dental care along with adequate food and shelter. Briefing Agriculture Secretary Orville Freeman's staff, Hendee reported on the progress corpsmen had made as of December 1, 1966. Along with observations regarding enrollees' improved reading skills and fewer brushes with law enforcement, Hendee stated that the typical enrollee entered Job Corps seven pounds underweight but had gained ten pounds within the first five months of enrollment, figures comparable to those for the CCC boys.[12]

The boys' poor health, due to a lack of medical treatment and poor nutrition, was often the reason for their educational failures. Tony Dorrell recalled the connection between corpsmen's health and education. "For me, it was a very personal learning lesson about the human misery and problems inflicted on young people

COURTESY OF THE VERN HAMRE PHOTOGRAPH COLLECTION, NATIONAL MUSEUM OF FOREST SERVICE HISTORY

Nineteen corpsmen and two residential staff from Schenck Job Corps Civilian Conservation Center visited with Chief Edward P. Cliff of the Forest Service in Washington, D.C., on December 30, 1965.

born and growing up in poverty." Dorrell remembered taking a busload of corpsmen to church in Republic, Washington. "When it came time for the first hymn, the congregation was expecting strong and vibrant young voices to join in the singing. It did not happen because the corpsmen were not able to read the words in the hymn books."[13]

Forest Service Job Corps vocational training aligned with the varied conservation needs on national forests and grasslands. Enrollees planted trees, installed water systems, built recreation facilities and small erosion control dams, fought wildfires, and constructed roads, trails, and firebreaks. The work projects at the conservation centers addressed two issues facing America—natural resources degradation and job skills training. In addition to addressing work on public lands that might not otherwise have been accomplished, the land stewardship projects exposed Job Corps students to career pathways in conservation and resource management and, for many, instilled lasting and meaningful connections to the land.

The Equal Opportunity Act authorized "conservation camps and training centers." Official Forest Service correspondence designated the civilian conservation centers as "camps"; however, directors and camp staff commonly referred to them as "centers" to avoid confusion with the many other kinds of camps operated by the Forest Service. On December 23, 1967, Public Law 90-222 renamed the Youth Conservation Corps as Job Corps Civilian Conservation Centers.[14] This redesignation occurred because the Office of Economic Opportunity (OEO), fearing closures should Democrats lose the 1968 election, wanted to associate the conservation centers with the positive public recognition of the CCC.[15] Regardless of the name, the corpsmen became an important tool for developing and maintaining the public's natural resources.

"WHAT DO YOU WANT WITH A JOB LIKE THIS?"

Jack Deinema represented USDA at the Equal Opportunity Act signing ceremony in the White House Rose Garden on August 20, 1964. It was a just reward for Deinema, who had been detailed to the Washington headquarters and worked long days, evenings, and weekends in an old hotel off Dupont Circle to get the legislation passed.[16] Little did he realize while watching the president sign the bill that he was in for more of the same. Following the signing, the Forest Service created the Division of Job Corps Administration. Deinema and Jack Large were appointed as director and deputy director, respectively, reporting to Clare Hendee, the deputy chief of administration.

Because of pressure from Sargent Shriver, now director of OEO, to get the Job Corps up and running quickly, the conservation

PHOTO BY CHARLES BERTRAM OF THE *LEXINGTON HERALD-LEADER*

Frenchburg Job Corps students Demitri James, left, and Alex Fochtmann cut a board for scaffolding at the historic Gladie Cabin on the Daniel Boone National Forest in Kentucky. Job Corps students helped the U.S. Forest Service restore the historic cabin's shake shingle roof in 2013.

camp program's conceptualization and implementation developed simultaneously.[17] Comparatively speaking, the Forest Service had an easy time opening its conservation camps; the Department of the Interior, having to coordinate five internal agencies (Bureau of Land Management, National Park Service, Bureau of Reclamation, Bureau of Indian Affairs, and Sport Fish and Wildlife), struggled to get its camps operational.[18]

As OEO's director of conservation centers, Deinema oversaw the establishment of both Forest Service and Interior camps, with Interior's full support.[19] "Personnel at OEO came from the fields of education, business, and politics and had very little federal management experience," Deinema stated. "Consequently, they were constantly in turmoil and upheaval and had difficulty dealing with their governmental partners."[20]

Deputy Chief Hendee directed that he wanted the "very best people" to staff the Forest Service conservation camps and set particularly rigorous standards for selecting camp directors. "The Forest Service nominated their best men and we quickly gained prestige with Shriver and his top circles," recalled Deinema. "I pirated Bob Shrake, and Barbara Yessel, from the Forest Service and both were instrumental in gaining OEO staff support." Shrake would eventually be appointed the regional director in Denver, and Yessel would serve as the administrative officer for Weber Basin Job Corps in Ogden, Utah. Observed John Baker, assistant secretary of Agriculture for rural development and conservation during Job Corps' first two years, "[A]s distinct from the urban centers, the Forest Service centers had tried-and-true leadership of very high caliber—the Forest Service officers—in terms of knowing human nature and all those kinds of things."[21]

Not everyone came from the Forest Service, however. Mike O'Callaghan was serving as Nevada's health and welfare director when President Johnson selected him to serve as a regional director of the conservation camps.[22] Camp directors like Zane Smith and Tony Dorrell credit O'Callaghan with much of the early success of the civilian conservation camps. O'Callaghan, who would eventually serve under Deinema in the OEO headquarters to direct the national conservation center field supervisor program, was the first OEO field supervisor for the Job Corps' western region.[23] "We center directors had two bosses—our forest supervisor and Mike O'Callaghan," said Tony Dorrell. "The forest supervisors were responsible for center administration and the work program. Mike was responsible for education, vocational training, counseling, and all other OEO interests. Mike was an outstanding leader, a strong personal supporter, and a friend to all of us working in Job Corps for the Forest Service."[24] O'Callaghan would later serve two terms as governor of Nevada and remained a strong friend and supporter of the Forest Service.

Job Corps proved a way for the Forest Service to develop leadership and administration skills among its emerging leaders. Tours in OEO generally lasted 24 months, and career Forest Service employees who accepted Job Corps assignments were assured they could return to the Forest Service.[25] The majority of the first camp directors were promoted to leadership positions—forest supervisor, assistant regional forester, regional forester—and a handful went on to become deputy chief, associate chief, and in the case of Max Peterson, chief. After serving as a regional forester

in Region 5 (Pacific Southwest), Deinema concluded his Forest Service career as deputy chief of administration. "I've had a full and rewarding career with the Forest Service from smokejumper to deputy chief; but the highlight and probably most fulfilling role was my participation in the Civilian Conservation Centers," recalled Deinema.[26]

Hendee instructed each Forest Service region to nominate two qualified candidates for every camp, and special guidelines were created to facilitate the selection of camp directors.[27] Early in the program, the typical camp director was a district ranger between 30 and 40 years old with 10 to 20 years of professional experience.[28] Conservation camp directors endured a strict selection process following nomination, including evaluations by OEO, panel interviews with OEO and Forest Service representatives, and the satisfactory completion of training. The first few groups of camp directors were personally interviewed by Shriver and often found it an intimidating experience.[29] Of one nominee Shriver demanded, "What do you want with a job like this? Why don't you continue with forests and trees? They don't talk back!"[30]

"I was fortunate to survive the Sargent Shriver interview and the great training that followed in preparation to be a center director," said Zane Smith, a district ranger on the Okanogan National Forest prior to his appointment as the first director of the Cispus (Washington) Conservation Camp. Smith would go on to assignments in the Office of Youth Opportunity and multiple appointments as a forest supervisor and in the Office of the Chief, and ultimately served as Region 5's regional forester.[31] Smith pointed to his advancement as evidence of Chief Cliff's commitment to staff who served in Job Corps.[32]

BUILDING COMMUNITIES AND COMMUNITY RELATIONS

Conservation camp locations were selected based on factors that included political considerations, population density, location, local poverty rates, and the availability of existing facilities.[33] Conceived primarily as a residential program, the camps necessitated the construction of student housing and cafeterias, in addition to education and vocational classrooms; some camps, including Blackwell, Ouachita, and the Lyndon B. Johnson, were at former CCC locations. Max Peterson, at the time an engineer in the Division of Administrative Management, advised the Job Corps Planning Group on locations, design, and building construction budgets.[34] Peterson asked Region 5's architectural staff to develop design concepts for the centers, designs that ultimately served as the model for both Forest Service and Interior camps.

As USDA's representative on the Job Corps Planning Group, Deinema sought a balance between work and education at the conservation camps. Deputy Director Jack Large advised on the design of the training programs; he wanted the conservation projects to impart the technical vocational skills the corpsmen needed.[35] Thus, a typical conservation project, such as the construction of a water system for a recreation area, would include training in heavy equipment operations, surveying, carpentry, plumbing, and cement masonry.

Early in the program, the performance of Job Corps centers was primarily judged by how rapidly they could graduate students. Students were encouraged to quickly move through the program and enter the workforce after having reached a moderate level of employability. At Forest Service conservation centers, however, training was heavily concentrated in the construction trades, which required lengthier stays. Jack Large introduced union-operated preapprenticeship programs in 1966, and the role of these programs was expanded after 1969.[36] "Unions added a dimension of technical professionalism to the process," recalled Tony Dorrell. "We went from being education and work centers to education and work training centers."[37]

The camps functioned as small communities. The earliest Forest Service camp directors had wide latitude to govern in a manner that addressed a camp's particular challenges and often emphasized cultivating responsibility and leadership qualities in the students. Learning leadership, personal accountability, and responsibility were integrated into all camp activities.[38] Practically from program inception, students were involved in the operation and maintenance of their centers. Learned responsibility also partly explain why it was not uncommon for students to graduate and be hired into staff positions: "Camp staff must be trained to replace itself so that Job Corps enrollees in time and after proven readiness can become staff members themselves."[39]

Deputy Chief Hendee knew that the program's success started with properly preparing his staff for the task ahead. He mandated that all conservation camp staff receive college-level training lasting from four to six weeks focused on specific areas, such as counseling, education, or work skills, and he emphasized the joint responsibility of the entire staff for the success of each part of the program. "All camp employees, down to the cooks and administrative clerks, were held responsible for teaching and counseling students and monitoring their performance."[40]

As with the CCC, some rural communities opposed the establishment of conservation camps because of the racial composition of the young male students. Depending on a center's location, up to 70 percent of the enrollees were African American and nonwhite Hispanics. Forest Service leaders, realizing that the attitudes of local communities would determine Job Corps' success, crafted a comprehensive public relations plan.[41] The agency's strategy, put into operation even before camps opened, had two prongs, recalled Deinema:

> *The reputation and caliber of our local rangers and forest supervisors, as well as their advance ground work, was instrumental in gaining public support.… Pat Healy [OEO's head of the rural conservation centers], Barney Old Coyote [Interior's coordinator], and I set off on a national whirlwind trip in the USDA turbo jet airplane inspecting proposed sites and meeting with local townspeople to measure their reaction.*

He realized that "racial fears were very much in evidence" in the predominantly white small towns close to the proposed conservation centers. According to Deinema, it was the advocacy of Civilian Conservation Corps graduates who appeared in force that turned community opinions toward acceptance of the camps.[42]

To ensure good relations with the communities, moral standards and ethical conduct were expected of staff members as well as corpsmen.[43] After a few years of operation, personal exposure to the Job Corps students and favorable publicity generated by the camps led to peaceful coexistence, despite occasional acts of student misconduct. Community relations councils, made up of representatives from local communities, also assisted in involving students in community life and resolving difficulties that arose.

PHOTO COURTESY OF U.S. FOREST SERVICE

Timber Lake Job Corps welding students work together to determine the best way to join pieces of metal. Welding is a popular vocational trade for female Job Corps enrollees.

WILDERNESS AND RESOURCE MANAGEMENT

President Johnson described the Great Society as "a place where man can renew contact with nature." An original Job Corps orientation pamphlet stated,

> *Working and living in the outdoors, close to nature, often brings a beneficial effect to the individual—in his attitude, outlook, and philosophy, even in his mental and physical health. Although this benefit or "change" may not be specifically pinpointed at any given time, we know this is so, because people of all ages seek out nature and natural surroundings for change, refreshment, recreation, and meditation.*[44]

Much like the Civilian Conservation Corps three decades earlier, the conservation camps' placement in a forest setting was seen as correlating with students' fresh starts toward new lives. Arrival at a Civilian Conservation Center was (and still is) often a student's first exposure to national forests and grasslands. The conservation center model for Job Corps was incorporated into the program's structure at the insistence of prominent political leaders. Hubert Humphrey, for example, had been a strong advocate for a new CCC program while a U.S. senator and remained a Job Corps supporter after becoming vice president in 1965.

Some education leaders who dominated the original Job Corps Planning Group voiced skepticism about the value of training enrollees in conservation work. Christopher Weeks, who served as program troubleshooter and special assistant to Shriver from February 1964 to July 1966, later remembered: "I've been out to several Job Corps conservation centers there in beautiful areas, and the kids were pretty well-behaved. They stayed in line. They didn't learn a heck of a lot out there either. They were out there chopping brush and clearing paths and doing fairly menial work.… Whether they came back with really usable skills is very questionable." Others from the Washington office during the same time period, like assistant secretary John Baker, came away with more favorable personal impressions from visits: "I was greatly impressed with the educational component of Job Corps. Instead of working all day chopping trees, Job Corps would spend, say, the morning learning basic arithmetic and reading and so on."[45] With time the curriculum improved and expanded.

Nonetheless, USDA and Forest Service leaders were confident that along with job skills, Job Corps students would gain critical citizenship, leadership, and teamwork skills from working on the nation's public lands.[46] Even as it has evolved, the curriculum of the conservation centers has sought to build physical health through activities on the national forests and grasslands while developing critical thinking and problem-solving skills.

Job Corps students are particularly known for their work in firefighting and forestry. Around the country, conservation centers provide camp crews, who support the work of fire and other incident management crews, and Type II fire crews, composed of students and led by staff who are certified wildland firefighters. The Advanced Pre-Forestry program was established in 1992 to cultivate students for careers in natural resources. Graduates have

the option of continuing their forestry education at a four-year college, joining the Forest Service as entry-level forestry technicians, or entering the Wildland Firefighter Apprenticeship program. Appropriately, the Advanced Pre-Forestry program is at the Schenck Job Corps Center on the Pisgah National Forest, near the site of the first forestry school in the United States, founded by Carl A. Schenck.

Also at the Schenck Job Corps Center is the Advanced Fire Management Training program. Here, students learn wildland and prescribed fire tactics and strategies while working on a full-time initial attack crew. This program has its origins in 2003, when Mike Coren, the Schenck center's maintenance supervisor, Rick Kiel, the works program officer, and Greg Philipp, the fire management officer on the Grandfather Ranger District on the Pisgah National Forest, wanted to expand the Schenck forestry program to include a fire management component with an associated Type II Initial Attack resource—a goal that would be realized with the formation of the Davidson River IA Crew.[47] Coren, Kiel, and Philipp designed a training program that would engage Job Corps students from across the country in providing local and national wildland fire and all-hazards incident support. The core team they formed worked with management personnel from Regions 1 and 8, the Washington Office, the national forests in North Carolina, and the Bureau of Indian Affairs. The first nine students arrived at the Schenck Job Corps center in October 2007. The program now graduates around 18 students each year and has close to a 100 percent employment placement rate with public and private entities.[48]

COURTESY OF THE VERN HAMRE PHOTOGRAPH COLLECTION, NATIONAL MUSEUM OF FOREST SERVICE HISTORY

Senator Hubert Humphrey congratulates a Job Corps graduate in 1965. Humphrey was instrumental in shaping the language of the Job Corps bill passed in 1964. On the left is Sargent Shriver, director of the Office of Economic Opportunity, the federal agency that oversaw Job Corps.

On March 15, 2013, partially in response to the success of the Advanced Fire Management Training Program, Chief Tom Tidwell announced a partnership between Job Corps and Fire and Aviation Management (F&AM). This partnership established a national fire management apprentice program that helps transition entry-level students into full-time positions while providing a foundation in Forest Service training, values, and leadership skills.

During the relatively slow fire season of 2014, 2,368 Job Corps students worked a total of 1,987 days and contributed 160,327 hours on wildfire and prescribed fire assignments—surpassing the 124,009 hours worked on 2013 assignments. Students at eleven conservation centers participating in hazardous fuels reduction projects spent 19,393 hours treating 57,276 acres, mostly in the wildland-urban interface. When fully implemented in 2018, the program will have the capacity to dispatch more than 800 firefighter Type II–qualified Job Corps students nationwide for any type of service needed by the Forest Service, and every center will be able to support all-hazard emergencies, hazardous fuels, and forest health programs nationwide. Participating Job Corps students will have the opportunity to compete for permanent or seasonal appointments, helping fulfill the Forest Service's goal of a highly skilled and diverse wildland fire management workforce.

THE JOB CORPS TODAY

The Forest Service initially operated 29 conservation camps and the Department of the Interior had 26.[49] Today, there are 125 Job Corps centers nationwide, the majority of which are operated by private contractors and nonprofit organizations; 28 conservation centers operate on public lands under an interagency agreement between the U.S. Department of Labor and USDA. Although concentrated in the Southeast and the Pacific Northwest, conservation centers are located across the country on 24 forests and grasslands, national parks, and wilderness refuges in 18 states.

Forest Service Job Corps centers house, educate, and train more than 5,200 young people at a time. Students from ages 16 to 24 can obtain a high school diploma or a general equivalency diploma while receiving hands-on vocational training in more

than 30 trades. Forest Service centers graduate approximately 4,200 students a year, each with the skills necessary to obtain a living-wage job and adapt to a changing workforce. Historically, 80 percent of Job Corps graduates start new careers, enroll in higher education programs, or enlist in the military.

The Forest Service considers the program part of its core mission. Over the past nine years, the agency has assumed leadership of centers managed by the Fish and Wildlife Service, the National Park Service, and the Bureau of Reclamation. The agency is now the only public land management agency that operates civilian conservation centers and is the largest single operator of Job Corps centers nationwide.

For an agency facing $5.56 billion in deferred maintenance costs,[50] the Civilian Conservation Centers provided a cost-effective method to complete essential conservation projects on national forests and grasslands that otherwise would not receive the necessary resources or manpower. In the past two fiscal years, Forest Service Job Corps students have contributed more than 500,000 hours of service work on public lands. Data entry technicians, heavy equipment operators, and mechanics are all critical workers for modern natural resources management. Local communities, national forests, and other public land management agencies often turn to local Job Corps centers for help in restoring campgrounds and trails, improving wildlife habitat areas, and building infrastructure that supports recreational access to people with disabilities. In 2014—the golden anniversary year of the Wilderness Act—more than 60 students constructed and installed kiosks and wilderness backpack scales in wilderness areas and assisted with trail construction and maintenance.

Conservation centers continue to perform public service. As first responders during local, state, and national disasters, Job Corps students and staff have conducted hurricane cleanups, assisted with reconstruction after storms and floods, and even participated in the recovery efforts after the *Challenger* and *Columbia* space shuttle disasters. Such projects integrate the students' vocational and educational training with practical activities while teaching the responsibilities that come with being a citizen.

Forest Service Job Corps students often travel for construction projects—restoring the Mount Roosevelt Friendship Tower on the Black Hills National Forest, remodeling the Challenge Visitor Center on the Plumas National Forest, and restoring Grey Towers National Historic Site, the home of the agency's founding chief, Gifford Pinchot. Perhaps the best example is the construction of the Camino Real Ranger Station in New Mexico, completed in 2011. This project entailed demolishing the existing 2,000-square-foot station and constructing a 6,500-square-foot, energy-efficient structure that met the Forest Service principle of sustainable operations. More than 500 students from all 28 Job Corps conservation centers participated.

Not all the work involves national forests. Five centers—Angell, Golconda, Great Onyx, Ouachita, and Pine Knot—train students in urban forestry. In 2014, Angell Job Corps urban forestry students partnered with the Siuslaw National Forest (California) and the Forest Service State & Private Forestry Office to perform 7,560 volunteer hours on urban ecosystem management, rehabilitation, heritage resources, and campground and trail maintenance projects. Annually, the centers provide an estimated $2 million to $4 million in support for urban forestry community service projects.

The conservation centers are a source for the Forest Service to recruit entry-level employees who reflect diversity, thus helping the agency provide opportunities for underserved populations to pursue natural resources careers. Job Corps students' vocational training in forestry, natural resource management, and firefighting can lead directly to careers at a federal land management agency.

President Obama's Twenty-first Century Conservation Service Corps (21CSC) will put both veterans and young people to work and designate Job Corps centers as Public Lands Corps. This new hiring authority will allow federal land management agencies to hire Job Corps graduates for entry-level positions noncompetitively. Job Corps has connected nearly 1,500 enrollees with training opportunities in the 21CSC, giving these students career-path federal employment opportunities.

CONCLUSION

Forest Service Job Corps, a direct heir of the Civilian Conservation Corps, is a rare alignment of solutions to the challenges of youth unemployment and the urgent need to protect our nation's natural resources. It visibly embodies the Forest Service mission, "To care for the land and serve people."

The Economic Opportunity Act was intended to help the poor pull themselves up from poverty. As President Johnson acknowledged in his March 16, 1964, message to Congress recommending its creation, the program "is not a simple or an easy program."[51] But despite fifty years of challenges, including different bureaucratic homes, changing presidential administrations, shifting budget priorities, and center closures, Job Corps still gives America's youth an opportunity to escape poverty and improve their lives. In program year 2013, Job Corps served more than 109,000 students, 70 percent of graduates joined the workforce or enlisted in the military, and more than 12 percent pursued further education. More than 60 percent completed Job Corps career technical training.[52] The centers emphasize professional credentials and certifications, allowing students to graduate fully skilled in their vocations. The rigorous training provided by national trade unions—United Brotherhood of Carpenters and Joiners of America, International Union of Painters and Allied Trades, International Masonry Institute, International Union of Operating Engineers—facilitates job placement after a student graduates. The centers continually adapt their programs to provide the training necessary to place student in jobs.

In an era of shrinking federal budgets and resources, the Job Corps is still giving individuals "the opportunity for education and training, the opportunity to work, and the opportunity to live in decency and dignity," as President Johnson said. Consider the case of Sergio A. Gutierrez. Born in Mexico in 1954, as an impoverished 16-year-old living with his grandmother in Carlsbad, California, he was drifting into a life on the streets. "I came from a low-income family, had no familial support, and literally confronted death in the streets," he said. After enrolling in a Job Corps civilian conservation center, he earned his high school equivalency diploma. "Quite simply, Job Corps saved my life. The Wolf Creek Job Corps Civilian Conservation Center in Glide, Oregon, immediately provided me a safe place and gave me a reason to care about living.… Beyond job training, the center provided a positive way to look at yourself and opportunities.… As a result, I have been able to give back to our country."[53] Today Gutierrez is the chief judge of the Idaho Court of Appeals. His achievements are exceptional, yet every day the Job Corps program gives opportunities to youngsters at risk and makes possible outcomes like those of Sergio Gutierrez. □

Alicia D. Bennett is the Public Affairs Officer in the Job Corps National Office. She can be reached at 303-275-5934 or adbennett@fs.fed.us.

NOTES

1. Economic Opportunity Act of 1964. Public Law 88-452, U.S. Statutes at Large 78 (1964): 508.
2. Ibid.
3. Memorandum from Edward P. Cliff, Chief, U.S. Forest Service to Regional Foresters, Directors and Area Directors, U.S. Forest Service (July 26, 1967), on file with author.
4. "A Brief History of the Creation of the Job Corps Civilian Conservation Centers" (2009), unpublished government document on the role of the U.S. Forest Service in creating and implementing the Job Corps program, on file with author.
5. E-mail message from Tony Dorrell to author, April 1, 2014, 09:39 MST.
6. Job Corps White Paper "Job Corps—Conservation Camp Program, Clare Hendee, Deputy Chief, U.S. Forest Service (undated), on file with author.
7. Economic Opportunity Act of 1964.
8. The phrase "War Against Poverty" was in the task force's name but the program and agenda are known as the "War on Poverty."
9. "Brief History of the Creation of the Job Corps Civilian Conservation Centers."
10. Ibid.
11. Ibid.
12. Memorandum to file Job Corps: Forest Service History, Emergency Projects from Clare Hendee, Deputy Chief, U.S. Forest Service (undated), on file with author. CCC enrollees gained on average eleven to fifteen pounds after the first three to four months in camp. See Neil M. Maher, *Nature's New Deal: The Civilian Conservation Corps and the Roots of the American Environmental Movement* (New York: Oxford University Press, 2008), 98–100.
13. E-mail message, Tony Dorrell to author, April 1, 2014, 10:39 MST.
14. Economic Opportunity Act Amendments of 1967. Public Law 90-222. U.S. Statutes at Large 81 (1967): 672.
15. E-mail message, Tony Dorrell to author.
16. E-mail message, John Deinema to author, March 22, 2014, 15:41 MST.
17. "Brief History of the Creation of the Job Corps Civilian Conservation Centers."
18. Ibid.
19. Ibid.
20. E-mail message, John Deinema to author.
21. Michael L. Gillette, *Launching the War on Poverty: An Oral History*. (Oxford: Oxford University Press, 2010), 228.
22. "Mike O'Callaghan, 74, Nevada Governor, Is Dead," *New York Times*, March 8, 2004, accessed at http://www.nytimes.com/2004/03/08/national/08OCAL.html.
23. E-mail message, Tony Dorrell, to author, April 1, 2014, 09:39 MST.
24. Ibid.
25. Job Corps White Paper, "Job Corps—Conservation Camp Program, Clare Hendee, Deputy Chief, U.S. Forest Service," (undated), on file with author.
26. E-mail message, John Deinema to author.
27. Memorandum from Clare Hendee, Deputy Chief, U.S. Forest Service to Regional Foresters, U.S. Forest Service (July 9, 1964), on file with author.
28. Job Corps White Paper, "Job Corps—Conservation Camp Program," Clare Hendee, Deputy Chief, U.S. Forest Service, undated, on file with author.
29. Memorandum to file Job Corps: Forest Service History, Emergency Projects from Clare Hendee, Deputy Chief, U.S. Forest Service (undated), on file with author.
30. Ibid.
31. E-mail message, Zane G. Smith, Jr., to author, March 30, 2014, 10:58 MST.
32. "Job Corps—Conservation Camp Program."
33. "Brief History of the Creation of the Job Corps Civilian Conservation Centers."
34. Ibid.
35. E-mail message, John Deinema, to author, April 1, 2014, 11:00 MST.
36. E-mail message, Tony Dorrell, to author, April 1, 2014, 10:39 MST.
37. Ibid.
38. "Job Corps—Conservation Camp Program."
39. Ibid.
40. Ibid.
41. Job Corps White Paper "Public Relations Guidelines for Establishing and Operating Forest Service Job Corps Camps," Clare Hendee, Deputy Chief, U.S. Forest Service (undated), on file with author.
42. Ibid.
43. Memorandum from Clare Hendee, Deputy Chief, U.S. Forest Service to Regional Foresters, R-1–R-9, U.S. Forest Service (September 1, 1967), on file with author.
44. U.S. Department of the Interior, *Job Corps Conservation Centers Program: A Guide for Teachers, Youth Workers, Counselors, Neighborhood and Community Leaders*. (Washington, DC: U.S. Department of the Interior, Bureau of Reclamation, Bureau of Sports Fisheries and Wildlife, National Park Service, Bureau of Indian Affairs, Bureau of Land Management; U.S. Department of Agriculture, Forest Service, n.d.), 13.
45. Both quotes are in Gillette, *Launching the War on Poverty*, 228.
46. "Brief History of the Creation of the Job Corps Civilian Conservation Centers."
47. Anthony M. Conte, "Schenck Civilian Conservation Center Advanced Fire Management Training Program," *The Lookout*, Volume 5, Issue 1, January 28, 2010.
48. Ibid.
49. "Brief History of the Creation of the Job Corps Civilian Conservation Centers."
50. USDA Forest Service, "National Forest System Statistics FY2013," FS-905 (13) January 2014, accessed at http://www.fs.fed.us/publications/statistics/nfs-brochure-2013.pdf.
51. Lyndon Baines Johnson, "Special Message to the Congress Proposing a Nationwide War on the Sources of Poverty" (March 16, 1964), *The American Presidency Project*, accessed at http://www.presidency.ucsb.edu/ ws/index.php?pid=26109.
52. U.S. Department of Labor, "Improving Job Corps," *National Law Review*, February 15, 2015, accessed February 17, 2015, http://www.natlawreview.com/article/improving-job-corps.
53. Sergio A. Gutierrez, "Job Corps Helped Make Me the Person I Am Today," *Washington Post*, May 27, 2014, accessed February 23, 2015, http://www.washingtonpost.com/opinions/job-corps-helped-make-me-the-person-i-am-today/2014/05/27/cb0531fa-e2bd-11e3-9442-54189bf1a809_story.html.

Political campaign buttons have been around since the nineteenth century. In the 1960s, environmental groups adapted the communication genre to bring awareness and support to their causes. One new button collection at the Smithsonian's National Museum of American History serves as a "Baedeker guide to the history of environmental concerns."

THE MATERIAL CULTURE

OF ENVIRONMENTALISM: LOOKING FOR TREES IN THE SMITHSONIAN'S PINBACK BUTTON COLLECTION

Since its establishment in 1846, the Smithsonian Institution has acquired millions of human-created artifacts—from the stone tools wielded by early hominids to today's bumper stickers and smart phones. At the Smithsonian's National Museum of American History, those artifacts span the centuries and the globe, documenting changes in the extractive industries, such as hunting, fishing, whaling, agriculture, horticulture, forestry, mining, petroleum drilling, and ice harvesting, and in transportation, communications, and public health. The museum's rich collections in music, sports, entertainment, numismatics, and textiles also contain many objects reflecting human interactions with the natural environment.

One expanding collection specifically documents the material culture of post-1960s environmentalism. To record the political movement's regional variations, topical priorities, and tactical approaches, the museum has acquired such ephemeral material as placards, flyers, calendars, refrigerator magnets, mugs, and games. The largest and most diverse subset of this collection consists of thousands of pinback buttons.

Pinback buttons have long been used in the United States and elsewhere to promote candidacies, advance or oppose causes, and legitimize political positions. As a form of advocacy, these physical symbols are designed to attract attention and possibly change attitudes or behavior. Beginning in the 1960s, the evolving environmental movement left a colorful and telling trail of such artifacts.

The subjects addressed by the buttons in the Smithsonian collection can seem like a Baedeker guide to environmental concerns: wilderness preservation, wild and scenic rivers, public parks and forests, deserts, wetlands, water projects, fish and wildlife, endangered species, ocean conservation, and global warming. Some buttons pled for animal rights; others advocated organic farming, renewable energy, public transportation, and environmental justice. The thousands of different buttons created since the first Earth Day in 1970 constitute a tangible timeline of the cross-pollination of ideas, tactics, and organizational influences, dramatically conveying environmentalism's breadth and fractionalization. Especially in the United States, environmentalism covered an ever-expanding range of concerns, but as a movement, it lacked a cohesive center. The splintered causes pursued their individual agendas and competed with one another for resources and attention, leaving behind their slogans and symbols.

The core of the Smithsonian's trove of environmental buttons came into the public trust thanks to two individuals, Michael

BY JEFFREY K. STINE & ANN M. SEEGER

McCloskey and Jerry Meral, who generously donated their substantial personal collections.

McCloskey's collection came about rather informally. During his association with the Sierra Club (1966–1999), the last 17 of those years as the organization's executive director, he traveled around the country to meet with activists, who often presented him with buttons promoting their campaigns or causes. McCloskey later said he "was quite mindful that we were making history, so I was anxious to hold onto things that illustrated our movement." To him, the buttons served as "mementos of the vitality and diversity" of the growing environmental movement.[1]

Meral's approach to collecting was far more proactive. Following assignments with the Environmental Defense Fund (1971–1975) and the California Department of Water Resources (1975–1983), Meral spent two decades directing California's Planning and Conservation League, a coalition of 100 conservation groups formed to lobby for environmental legislation at the state level. In his efforts to underscore the commonalities and national significance of local environmental campaigns, Meral found himself serving as a clearinghouse of information, ideas, tactics, and strategies. Recognizing that the multitude of often-isolated struggles reflected patterns of pervasive social changes, he began amassing environmental buttons in 1970 as a means of documenting the movement. Decorating his office walls with buttons, he used their messages to inspire, to emphasize shared public passions for environmental ideals, and to demonstrate the wide range of perspectives.

The buttons collected by McCloskey and Meral feature images and phrases ranging from humorous to sober, from clever to mundane. Many incorporated iconic images, such as the symbol for ecology used in association with Earth Day or the 1968 "Earthrise" photograph taken by astronaut William Anders from Apollo 8. Others, such as a series ridiculing President Reagan's secretary of the Interior, James Watt, satirized personalities and events.

As you will see on the following pages, trees often provided button designers with a common visual link and vocabulary. Some of their creations dealt directly with forests and forestry, of course, while others utilized sylvan images to address a broad spectrum of concerns. □

Jeffrey K. Stine, author of the FHS Issues Series book America's Forested Wetlands: From Wasteland to Valued Resource*, is Curator for Environmental History at the Smithsonian's National Museum of American History. Ann M. Seeger is Curator Emerita in the museum's Division of Medicine and Science.*

NOTES

1. Michael McCloskey quoted in Jennifer Hattam, "Medals of Honor," *Sierra* 86 (May/June 2001), 68. A personal recounting of his career with the Sierra Club can be found in Michael McCloskey, *In the Thick of It: My Life in the Sierra Club* (Washington: Island Press/Shearwater Books, 2005).

COURTESY OF JERRY MERAL

Jerry Meral spent decades collecting buttons. Shown is about half of the collection he donated to the Smithsonian's National Museum of American History.

Few post–World War II images (1 and 2) gained wider international recognition than the peace symbol, which British artist Gerald Herbert Holtom designed in 1958 by combining the semaphore letters N and D (for "nuclear disarmament") within a circle. Like other movements in the 1960s and 1970s, environmental organizations freely appropriated the peace symbol and often incorporated trees into the image to signal their concerns.

1

2

Some campaigns were oriented toward urban conservation efforts, such as combating tree diseases (3 and 4).

3

4

Many messages encouraged civic engagement, such as recycling or tree planting (5–6).

5

6

Some buttons, like this ecofeminism button from the early 1980s (7), referenced the intersection of environmentalism with other movements.

7

8

9

10

Trees came to symbolize conservation values. Recognizing the power of those symbols, designers made liberal use of them in their business advertisements (8–10).

Efforts to protect California's redwoods intensified during the late twentieth century. Environmental advocates sought to introduce redwood conservation into the 1980 presidential campaign and even gave the trees a political voice (11–14).

11

12

13

14

Rising timber harvest levels on national forests in the Pacific Northwest made the U.S. Forest Service a target for both ridicule and protest (15–17).

15

16

17

Irony and satire have long distinguished political buttons. The Forest Service's famous fire prevention icon Smokey Bear proved irresistible to designers, who used the ursine character as a stand-in for the agency (18–21).

18

19

20

21

One striking aspect of the Smithsonian collection is the growing international focus on environmentalism. In the late 1980s, the accelerating rate of logging in the Amazon rainforest stimulated the creation of new protest buttons (22–25).

22

23

24

25

Sometimes the simplest message could convey the most meaning (26).

26

This excerpt from the new book Hemlock: A Forest Giant on the Edge *revisits and updates one of the Forest History Society's most frequently cited publications, Hugh M. Raup's article "The View from John Sanderson's Farm—A Perspective for the Use of the Land," and the land about which it was written.*

THREE VIEWS FROM JOHN SANDERSON'S WOODLOT

The hemlock, which was abundant up to 1875, furnished not only lumber but tanbark. The great trees were cut down in June, and the bark was taken off and piled up to dry. It was used by local tanneries; there was one on West Street, where there is now a store, and another, a very prosperous one, conducted by Deacon Sanderson.

—A. F. Johnson, 1922[1]

This farm formerly of more than 400 acres is situated in the Bennett Hill district of the north part of Petersham. Sixty years ago it was extensively cultivated by John Sanderson, one of the wealthiest farmers in northern Worcester County. He was killed in his barn in 1831 in the act of taking a pair of unruly oxen off the cart tongue.

—George Sumner Mann, n.d.[2]

It is likely the most famous farm in the scholarly fields of ecology and environmental history. When Hugh Raup transformed the slide show–based lecture that he had presented to enthusiastic audiences for years and published it as "The View from John Sanderson's Farm—A Perspective for the Use of the Land," he produced an instant classic for the journal *Forest History* and opened the eyes of people in many disciplines. The article used the Harvard Forest dioramas and the history of colonial management of the farm that became the Harvard Forest to insist on the critical need to understand the role of humans and social forces in determining the fate of the land. The fundamental qualities of the land remained the same, he asserted, but the people and forces behind their actions changed over time, informed by incomplete knowledge of their circumstances:

BY DAVID R. FOSTER

DAVID FOSTER

John Sanderson's farm today, looking across cow pastures to the old Marsh place, known today as Fisher House.

> *I suggest that the principal role of the land and the forests has been that of stage and scenery. The significant figures have always been the people, and the ideas they have had about what they might do at specific points in time with the stage properties at hand. At each such point in time an actor could play his role only by the rules he knew—in terms of his own conception of his relation to the play of which he was a part. He was always hampered by lack of precise knowledge of the stage and its properties, the land and the forests. Perhaps more important than this, he had severely limited knowledge of the changing rules by which he and other actors of his time were playing. Both of these failings are perennial and no doubt will continue to be.*[3]

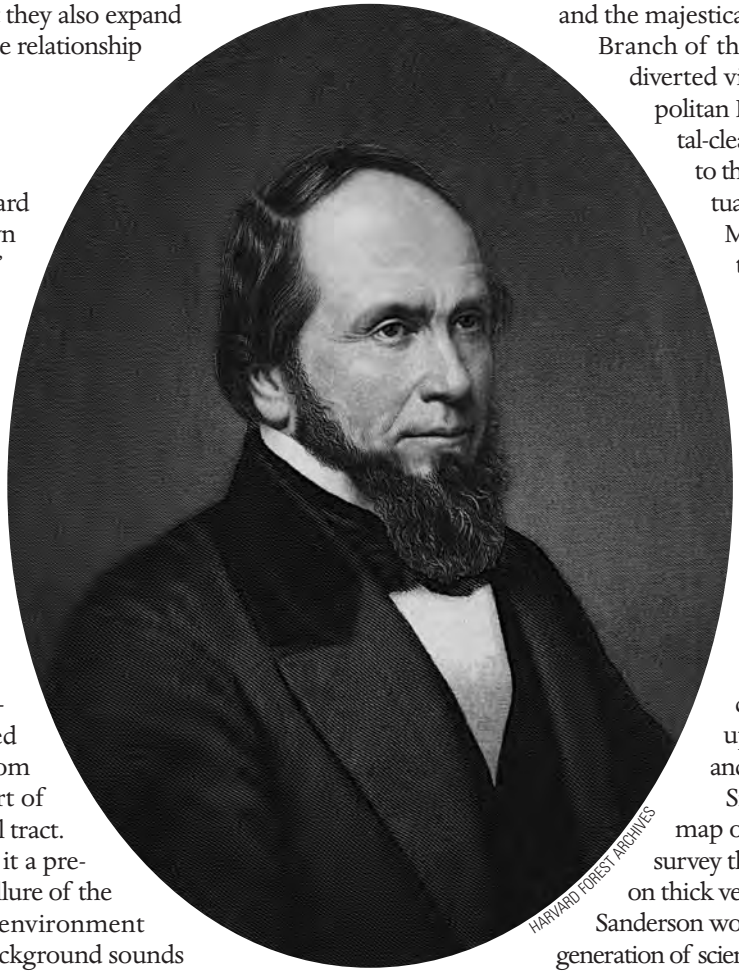
Raup's influential piece drew from his decades of inquiry into land-use history in Petersham, Massachusetts, the extensive insights into the relationships among soils, vegetation, and human activity advanced by Steve Spurr, Earl Stephens, Walter Lyford, and others, and Ernie Gould's economic analysis of Harvard Forest's history as a financially unsuccessful forest manager. Published in 1966, "The View from John Sanderson's Farm" presaged by forty years the injection of social science into the field of ecology and the development of such programs as "Coupled Human Natural Systems" by the Biology Directorate at the National Science Foundation. Along with Raup's other papers—"The History of Land Use at the Harvard Forest" and "Some Problems in Ecological Theory and their Relation to Conservation"—it extended the legacy of ecological studies grounded in history and seeking to advance conservation that were the hallmark of the Harvard Forest's first director Richard Fisher and have become the centerpiece of our Long Term Ecological Research program. "John Sanderson's Farm," as the piece became known, was immensely popular and quickly came to hold the distinction as the most-cited paper in the journal's history. The themes that Raup explored have also stayed alive and contentious as revealed by a recent challenge to his assertions regarding the failure of natural resource conservation by our colleague and Brandeis professor Brian Donahue in a 2007 article in *Environmental History* aptly called "The New View from Sanderson's Farm."[4]

In all of the illuminating focus on Sanderson's farm and fields, one very important fact largely escaped notice. Sanderson was more than a simple farmer, though he may have been typical in many regards. He was also a tanner whose most important building was a small water-powered tannery and most treasured piece of woodland was a hemlock forest. The tannery was a critical economic

engine in the Sanderson enterprise and one that helped John earn the reputation as a shrewd businessman and the distinction as the head of one of the richest families in the region. Meanwhile, the hemlock woodlot and the adjoining Black Gum Swamp, which despite its name was dominated by hemlock and red spruce, remained the only continuously forested parts of the expansive Sanderson farm through the eighteenth and nineteenth centuries. This "ancient woodland," as the British would call such a heavily used but intact section of forest, provides us a great deal of history and many lessons. The resulting tales greatly inform our understanding of hemlock and its place and dynamics in the New England countryside. But they also expand on Raup's insights regarding the relationship between humans and the land.

JOHN SANDERSON'S HEMLOCKS

Around Shaler Hall, the Harvard Forest's headquarters, it is known simply as "the hemlock forest." Any reference to John Sanderson's woodlot today would likely draw blank expressions from the undergraduates who spend their summers measuring trees there or the scientists who have dedicated their lives to understanding it. The area is thoroughly dominated by hemlocks, which give it its well-deserved local name, including a few that approach 250 years in age. One of our oldest and most intensively studied forests, it is just a short walk from our main building, in the heart of our thousand-acre Prospect Hill tract. Age, history, and access make it a premier site for research, but the allure of the hemlocks and their peaceful environment with its quiet yet distinctive background sounds are unspoken motivation for every study conducted there.



John Sanderson Jr., the third generation head of the farm, sold the property in Petersham, acquired a farm in the fertile Connecticut Valley, established a highly successful bank, and became a state senator.

The stand does have remarkable scientific assets to draw researchers, most important of which is an unrivaled catalog of data. These records range from a century of detailed maps to 10,000 years of fossil records on climate, disturbance, and forest dynamics. We have a decadal record of the fluxes of carbon dioxide, energy, moisture, and other substances into and out of the woods, along with minute-by-minute graphs of water flow in small streams that drain the area. The atmospheric measurements come from a set of instruments positioned just above the forest atop a tower capped by a twenty-foot pole that once served as the mast of a small sailing vessel. This is just part of the bizarre array of ecological equipment and paraphernalia that distinguish (and occasionally clutter) the forest. The tower sports another item that garners considerable attention from afar, a digital camera that yields captivating panoramas posted hourly on a website. The view scans across the tops of the hemlocks, pines, and hardwoods to the fire tower atop Prospect Hill. Whether in brilliant sunlight, heavy mist, or skies filled with fat flakes of snow, the images convey information about the state of the foliage and plants that can be related to the streams of environmental data flowing in tandem from many other devices towards a central digital archive, where all are curated for use by scientists across the globe.

John Sanderson's hemlocks shade the headwaters of two small watersheds that drain to separate coastal waterways. One flows to the vast Quabbin Reservoir down Bigelow Brook and the majestically wooded course of the East Branch of the Swift River. From there it is diverted via a buried aqueduct to metropolitan Boston, where it provides crystal-clear and unfiltered drinking water to that urban population and is eventually released into Boston Harbor, Massachusetts Bay, and the Atlantic Ocean. The other watershed contains the ages-old course of water flowing north to the Millers River, then west to the Connecticut Valley and south by way of New England's largest river through the heart of Connecticut to Long Island Sound. Thus, beneath the hemlocks it is possible to examine the intimate interactions between living and decaying plants, diverse organisms, and layers of soil that condition waters that eventually end up in kitchen sinks or seas miles and years apart.

Since its appearance on the first map of the Harvard Forest—a crude survey that was hand-inked and colored on thick vellum by the Class of 1907—the Sanderson woodlot has been studied by every generation of scientist to reside in Petersham. Over the years, the collections of peculiar equipment and studies in those woods have yielded data that fill many archive drawers and digital storage devices. The work has advanced the missions and tapped the funding of nearly every federal agency that cares about the environment—NASA, Department of Energy, Environmental Protection Agency, U.S. Forest Service, and National Science Foundation. Today, these interests and many others converge on an 80-acre plot in the heart of the woodlot where every stem down to a thumb's width is measured, mapped, and recorded. Funded by the Smithsonian Institution and Harvard University, this effort to link the intimate dynamics of every plant in the woods to its environmental drivers and the forest processes that control the movement of gases, material, and water is part of a global network of plots that extends from Malaysia to Australia, Brazil to Panama, and Yosemite on to Ontario and finally New England.

For decades, the Sanderson woodlot has contributed to all that we know about hemlock. These days we are converging on the woodlot in earnest, for it has become our ground zero in the documentation and analysis of the latest chapter in the species' tumultuous history, its response to the hemlock woolly adelgid. We strive to follow the tiny insect to understand its movement and behaviors, and we seek to know, long before the first overt signs of collapse occur, when the trees first feel this foe's damage. We will document the ripples of cause and effect as the gradual changes in the health, function, and form of this grand foundation species reverberate through the environment, other plants, and habitats of these woods. All the while, the scene of slowly dissolving hemlocks will wrench the hearts of those objective scientists tending the instruments, counting the insects, and archiving those seemingly endless streams of data. Hugh Raup was right. The relationship of people to this woodlot and the tree that dominates it is a story in itself.

DAVID FOSTER

A sediment-filled coring tube and other gear adjacent to Hemlock Hollow in the old Sanderson woodlot.

ÅSA'S HOLLOW

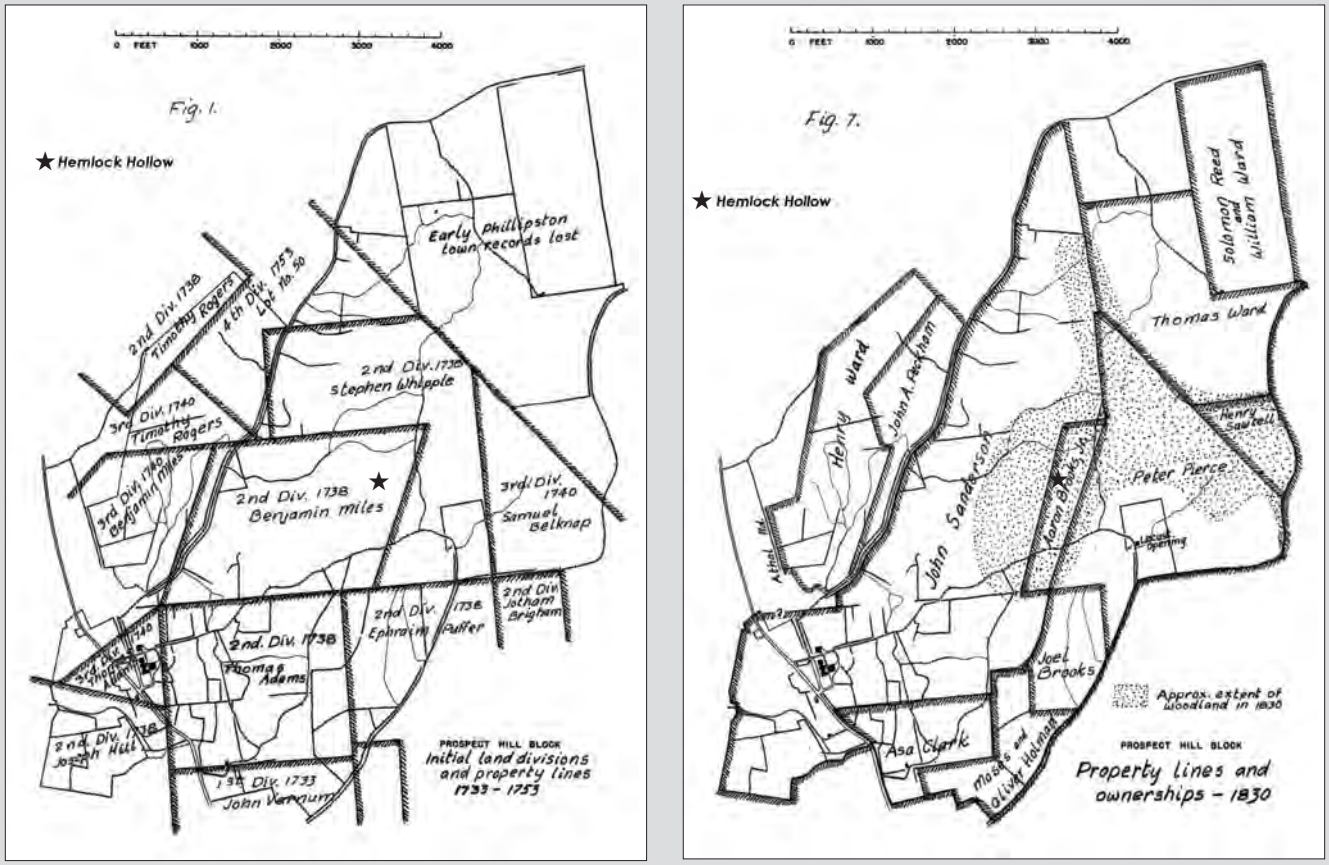
My first foray into John Sanderson's woodlot was on a steamy July day in 1983. The ancient hemlock forest immediately captivated me with its contrast to the rest of the second-growth landscape that I had thus far seen in Petersham. I'd recently been studying wilderness landscapes in the vast forest and wetland expanses of Labrador, so I was drawn to the chance to study the oldest and least disturbed part of this Harvard Forest landscape.

From my brief reading of Steve Spurr's 1950s research, I knew that a few trees in this stand dated back a couple of centuries to the town's founding, but beyond that the story faded. How long had hemlock been here and how had the scene changed through the millennia? When did these trees get established, and what did the colonial landowners do with its original ancient growth? Had it changed much or were Spurr and Hugh Raup correct in asserting that this and other ancient woodlands—at Slab City and Tom Swamp—were reasonable analogs for the forests that had prevailed in this landscape for thousands of years? The literature that I had uncovered thus far left all of these questions unanswered, and even my cursory reading of this landscape suggested that it would be impossible to derive any more information from the trees and forest itself unless we applied tools and approaches unavailable to my predecessors.

As I hiked along pondering these things, the hemlock's deep shade offered me some modest respite from the July heat, but my golden retriever soon found a more refreshing niche—a small woodland pool filled with mud and just enough water to reach her belly. As she sank down into the water, it occurred to me that the muds below might reveal the deep history of these woods and open up insights into its even wilder past. That the idea came from my dog Åsa was apt, since she was named for the daughter of a Swedish friend and fellow paleoecologist who would have relished the scene and the direction of my thoughts.

If we carefully analyzed the mud for the remnants of the plants, bugs, and other materials that accumulate over time, the pool might reveal information going back hundreds or even thousands of years. We might get lucky and be able to complement the early studies of Spurr and others with some innovative paleoecology.

But a dose of reality dashed that flight of scientific elation. Åsa had beelined to the center of the tiny pool. Wouldn't every moose,



COURTESY OF HARVARD FOREST

The early land division and evolution of the Sanderson farm. Hemlock (or Åsa's) Hollow is indicated by the star.

wolf, and deer that had passed this way through prehistory have sought similar refreshment? Wouldn't the destruction have escalated during recent centuries, when most woodlots were grazed by cattle, sheep, and hogs? The large trees and thick mossy groundcover had a pristine appearance, but the mud in this small pool was likely a churned-up soup.

Still, it seemed worth exploring, even though the effort turned out to be both challenging and comical. The pool was only about 20 feet across and held just a few inches of water, but the only way we could establish a solid and stable platform over the water and mud surface was to deploy our standard equipment—an immense pontoon boat fashioned from two 18-foot-long canoes bridged by an eight-foot sheet of marine plywood lashed across the thwarts. This unwieldy nautical vessel spanned nearly the entire depression. Feeling self-conscious and even a little foolish, we completed our work with spirits buoyed by the retrieval of nearly a meter of dark, oozy sediment.

Back in the lab, however, disappointment settled in as graduate student Tad Zebryk processed the mud and began to examine the resulting microscope slides for pollen. His scans revealed no variation between the various samples: each level had more or less a similar plant composition. Even more troubling was the nature of the vegetation that the pollen counts revealed. Through much of the length of the core he found ragweed, a common weed of agricultural fields whose appearance in large numbers we conveniently use to identify the onset of colonial clearing of the New England forest. My fears based on Åsa's romp in the pool appeared to be well justified: the core was clearly one homogeneous mess.

In a fairly desperate appeal for solutions and alternative explanations as we examined these discouraging results, I turned to Tad and asked what he thought. As if he had been jolted into a new mode of concentration, his brow creased and then his finger pointed toward the wrinkled and mud-stained map of the coring site. Brown-streaked fingerprints obscured parts of the outline of the basin and the concentric lines that marked each contour at 10 centimeters of depth. I had been impressed when he produced this bathymetric map and wondered to myself how he had done it. Now, he rather sheepishly admitted that since there was no easy way to probe the pool, he had simply put on hip boots and waded across the depression in a series of straight parallel lines, noting the depth of water and mud every meter. It hadn't dawned on him that we might just end up coring in one of his footsteps.

In no time, we had loaded the pickup with canoes, plywood, rope, and coring gear and were on our way back to Åsa's Hollow. By following our detailed notes and positioning our platform just a few feet west of the original hole, we were able to retrieve a new meter of mud from a location that we hoped had escaped Tad's well-intentioned but destructive transect. Back in the lab we were heartened by the appearance of discrete fine black layers of charcoal in the green matrix as we sliced the core lengthwise. Detailed graphs from one section of the core depicted highly resolved fluctuations in mineral matter, charcoal, and the pollen of many plant species. When radiocarbon dates arrived back from the lab, each of the dates fell into nice chronological order and the truly ancient nature of the record was revealed. We were euphoric. At nearly 10,000 years old and comprising minute particles of plants, soil, and charcoal from within 50 feet of the tiny pool, this core and its record eventually became recognized as

one of the most detailed and spatially resolved histories of the New England landscape. And quite remarkably, it portrays the dynamics of a single forest in which hemlock was challenged yet thrived for more than 8,000 years. Our perseverance in coring brought us important discoveries, some major publications, and the need for a more proper designation of the site: Hemlock Hollow.

The story from that mud is told elsewhere in the book *Hemlock*, but the distinctive features emerging from this Sanderson woodlot site are worth highlighting. The long, continuous record has a unique quality, its local scale: the pool was surrounded by trees whose pollen rained onto its surface and whose branches blocked pollen from more distant sources. By matching this local record with the somewhat broader picture obtained at the Black Gum Swamp a hundred yards away, we were able to place the hemlock forest in a larger context of regional-scale vegetation and climate change.

The prominent message from this record was that hemlock has been the predominant tree in John Sanderson's woods since it first migrated north to New England 8,000 years ago under a warming climate. A second notable fact was that whenever major disturbances hit this site and altered the forest, hemlock always recovered and reassumed its dominant role. In each case, whether fire, drought, insects, or people were involved, hemlock returned as part of what must have been an impressive scene of towering trees—hemlock, pine, birch, oak, spruce, and black gum—that would have darkened the tiny woodland hollow. The process of recovery was excruciatingly slow in human terms, each instance requiring 500 years or more before hemlock assumed its greatest abundance and settled into its dominant role for the next thousand years or more. This record provides a new perspective on the forest that we walk through today. In many ways, the Sanderson woodlot has the appearance of an ancient forest. Yet the larger trees just barely exceed 200 years in age, and the pollen record tells us the forest is still less than midway in recovery from the colonial-era disturbances wrought by John and his kin.

DAVID FOSTER

Archaeologist Dianne Doucette (lower left) and students excavate John Sanderson's tannery.

Given the widespread emergence of the hemlock woolly adelgid throughout the stand in 2012, the forest will never reach an old-growth condition this time around before this new dynamic of hemlock death begins. We look to the mid-Holocene hemlock decline 5,000 years ago for perspective on how this adelgid episode may play out. The optimistic message emerging from the ancient script is that hemlock has always recovered from past devastating blows, so there is strong likelihood that the species will recover from this new one. The sobering news is that following that great prehistorical decline, it took hemlock nearly 2,000 years to regain its former abundance.

A truly wonderful message emerges from this lengthy story of Åsa's Hollow. It is a story of serendipity. The studies that Richard Fisher, Bob Marshall, Earl Stephens, and Tad Zebryk pursued were all based on collecting every last scrap of historical evidence that can be gleaned from any available source about a tree or a site or a landscape and its changes over time. Each episode has been a novel pursuit. The different forms of evidence and the nature of the resulting information and its messages are never known at the outset. In this kind of historical and ecological research, any source is fair game, and the boundaries are limited only by one's imagination and the quirks of history. In some cases, like Pisgah or the Sanderson woodlot, the site itself reveals most of the story, told by peculiar sources like cut stumps, downed

wood, buried soils, and the mud in a woodland depression.

In other cases, someone comes across the notes, samples, and charts left by Harvard Forest predecessors in the official archive or an attic or bookshelf and sees with a new set of eyes that they contain gems of information. Who would have guessed that three graduate students in the 1920s would have preserved a record of tree growth from clearcut old-growth forests at Pisgah in the form of a series of paper strips stuffed in a yellowed envelope? And, yet 60 years after these penciled marks captured every decade of growth in those stems, they told a compelling story of age-old growth and release after disturbances.

In another instance, a heavy, oversized volume of handwritten pages has sat for decades on a bookshelf in our archives, known generally to contain daily notes made by one of the early classes at the Harvard Forest, back when our residential "Community House," the old Sanderson farmhouse, was the heart and center of the entire enterprise. The entries are dated, and the volume has been leafed through by dozens of bored or aimless scholars looking for a bit of diversion over the years, but it took a historically oriented and ecologically aware scholar who knew more than a little about Harvard Forest alums to recognize the writing in the volume and the insights that it holds. The tight script is Bob Marshall's, and the journal turns out to capture a single, singular year in Harvard Forest history—the initiation of the greatest experiment in the institution's history and the year that Marshall forged the Harvard Forest approach to forensic ecology. That record stimulated the new focus on Marshall that led to the recovery of his plot and the discovery of his role in developing historical approaches in ecology.

So, there is a lot of serendipity in our science, as we find unusual records that no one ever thought of seeking or even guessed were there. After all, who would have expected an unbroken 10,000-year record of forest growth and death to emerge from a small pool in the woods that had been ignored for decades and was likely disturbed by animal, man, and forest processes? And how have so many scholarly books been written about the founder of the Wilderness Society without a single writer's stumbling on a treasure trove of personal writings, data, and unpublished photographs that have sat for decades in Petersham and that capture a joyous and inspirational period in the young man's upbringing? And therein lies the other side of our science coin. To seize on serendipity requires insight as well as a bit of perseverance. In their quest to use colonial records to understand the nature of very early New England, landscape historians and scientists overlooked the fact that the notations of which trees served as boundary and corner markers provided an unbiased record of the composition of the forests before they were disturbed by the new immigrants. It took imaginative ecologists and others to recognize this. Serendipity is key, but seldom do historical gems fall right into your lap, or announce themselves on the other end of a telephone line. But that too can happen.

SERENDIPITY AND HISTORY

It was the autumn of 1999. A dealer in rare books was on the phone, saying that the Petersham Historical Society had suggested that the Harvard Forest might be interested in a book he wanted to sell. He often picked up boxes of miscellaneous books and old journals at auctions, he said, and a recent haul included the account book for a farm in Petersham. I asked the name of the family.

"Sanderson," he replied. As I sat silent, he continued. "The volume begins in 1775 and runs well into the 1800s. It must cover multiple generations, for it contains a couple of different handwritings. It is organized in the typical style of a farm or business account book with pages listing expenses and others tallying income against the names of various individuals."

Then, he played his trump card. "I gather that the Sandersons once owned your land and that you all have some interest in its history."

With this pronouncement I got right down to business. In a matter of minutes we had arranged for him to bring the leather-bound volume to Petersham for us to assess its contents. Then we broached but did not resolve the challenge of establishing a fair value for something that was worthless to the world and yet priceless to the Harvard Forest.

When he arrived and I began flipping through its well-handled pages filled with notations, the value of "priceless" increased tenfold in my mind. When I recognized the details of actions and transactions that it contained, the deal was sealed. In blue ink and flowing hand, the inside cover read "Jonathan Sanderson 1775." Inside, most pages were dense with columns written in a range of cursive scripts by different hands. The notations shared a similar organization, but at first glance each was indecipherable. I could make out the pattern—name, date, item, number. Then, with a bit of effort, words took form. First, the names were familiar from the cemetery just 50 yards down Main Street from where I sat. The nineteenth-century neighborhood was all there—Mann, French, Wheeler, Sanderson, and more. Then there were the items—cows, cattle, cheese, hay, butter, and bark. And finally, as others joined me to share in this impromptu exploration, we began to decipher activities—laying stone walls, mowing fields, and driving cattle to Boston. In the front section of the volume, the numbers were British, with pounds, shillings, and pence. Every page was revealing. As I read on, a real world began to take form. This was a world of concrete items, actions, and daily decisions by real people in a distant landscape that I now walk and study every day—a world previously known only through artifacts like stone walls in the woods, census figures, ancient newspaper accounts, and trees growing in abandoned fields. In my hands, the account book was speaking directly in words and numbers.

The deal was done—for $750. In no time, my assistant Linda Hampson dropped all her other tasks and was poring over the words and struggling with the handwriting. She dived into the volume and transcribed and formatted each page on her computer screen so that it mirrored the original and allowed us to concentrate on content rather than the laborious challenge of deciphering the unfamiliar scripts. In the effort, we discovered that she brought two personal advantages to this effort. Her personal passion for New England history and antiquities made many terms, actions, and scenes familiar. And when completely stumped by a word, she could take it home to her Yorkshire-born husband, who frequently recognized it as slang from the old sod.

We learned much about the Sandersons and their farm as the transcribed volume took shape; over time it transformed our understanding of our land, its history, and the hemlock woodland. Some insights were quotidian, like the routine purchase and bartering of animals, labor, and local farm produce. Others opened our eyes to the unsuspected breadth of the world of eighteenth- and nineteenth-century farm families. Most remarkable was the frequency with which the Sandersons engaged the commercial world in

Boston and beyond, selling cheese and butter, purchasing calico and other cloth, tools, and goods like sugar, and dealing with drovers and neighbors who would share in the task of driving the livestock to the Brighton slaughterhouses or on to Boston markets.

There were other major revelations. Many of the nineteenth-century stone walls that bisect our woods and line the old roads were not built by the strapping men of the Sanderson family, as we had always imagined. Rather, the tallies of workdays in the journal indicated that a family who rented a separate farm in the town of Shutesbury from John Sanderson had spent weeks assembling these walls. Many other debts were worked off in part by laboring in Sanderson's fields and improving his land. Learning about previously unknown real estate assets, the great number of cattle, oxen, and horses that passed through the farm, and the scale of business conducted, we came to recognize that men in rural New England like John Sanderson were not poor dirt farmers scratching a living out of barren and rocky soil. Rather, they were successful and calculating businessmen who thrived in a world where land could be improved through hard labor, and materials were regularly exchanged with neighbors, distant cities, and far flung parts of the world. Going back to the census, newspaper accounts, and gazetteers, we confirmed that Petersham was one of the most prosperous towns in northern Worcester County. A town leader, John Sanderson was considered among the most successful of its citizens.

DAVID FOSTER

A large stone used to grind hemlock bark sits on a stone pier adjacent to the stream that supplied the tannery operation.

From the journal it also became clear that John was a diversified producer of foods, goods, and services, as well as a broker of diverse assets. Beyond farming, he was a small industrialist, as indicated by one gazetteer that stated "much of [Sanderson's] wealth came from his tannery." The leather business was inextricably linked to the land, for it depended on hides produced on local farms that were soaked for months in vats of tannin-rich solution derived from the ground-up bark of hemlocks from local woodlots. John's wife, Lydia, carried the family and farm enterprise forward with son John when her husband died at age 62. They all seem to have been shrewd business operators. From this small tanning industry, they turned a regular profit in hard cash that was then invested in the farm or other land holdings. Hugh Raup concludes his history of John Sanderson's farm by noting that the family wisely sold out at the height of land values in Petersham and then purchased a magnificent farm in the agriculturally rich Connecticut Valley town of Bernardston, where they started one of the region's major banks, raised prize oxen, and launched additional careers that included politics for John Sanderson Jr., a state senator. This success was grounded in no small measure in the hemlock woodlot that provided a critical raw material and the small stream that powered the tannery.

Every town in New England had one or more tanners along with the operations needed to produce enough leather to meet the demands for work, home, and pleasure. Despite their ubiquity, such small-scale tanneries are poorly understood by historians and archaeologists, and their ecological implications are completely unexplored. When we launched the archaeological excavation of John Sanderson's tannery in collaboration with Elizabeth Chilton at the University of Massachusetts and Dianna Doucette at Harvard's Peabody Museum, we were surprised to learn that it was the first attempt in the northeastern United States to excavate a tannery and learn exactly how such critical operations were constructed and run. The stream provided two resources—water

to wash the gore off the hides and soften them through soaking, and the energy to drive the immense grindstone that shredded the hemlock bark so that its rich tannins could be leached out. Brought by the wagonload, hides and hemlock bark converged at the tannery. The skins headed to a separate building for flensing and beaming, processes that hand-stripped the fat from the hide and then limbered it up by working it over a wooden beam. The bark was delivered to the mill, shredded, and then soaked in water with the hides in deep vats.

Knowing this, the history and use of the hemlock woodlot became much clearer. Jonathan Sanderson, the family patriarch, began to carve his farm from the Petersham wilderness in the 1770s, just decades after the town was founded. Over time his son John followed his lead and expanded the arable and pasture lands out from this Main Street homestead. Because the hemlock woodlot and Black Gum Swamp were a large distance from the barns and had poor drainage and low fertility, they were among the family's last acquisitions. But in the extensively cleared landscape of the early nineteenth century, timber, firewood, and bark became increasingly scarce and valuable commodities. The Sandersons cut the woodlot heavily the first time and then harvested it repeatedly, presumably husbanding the many resources and favoring species that served specific needs for the farm businesses. Chestnut, which sprouted prolifically, was cherished for posts, beams, and other building material because of its rapid growth, straight grain, and resistance to decay. Oak and pine timber could be readily sold or used as needed. But for John and his major industry, hemlock was critical. Its sustained abundance in the woods must have been a result of deliberate management. Although hemlock wood was much less valuable than that of many other species, the bark would have kept the tannery crew busy, including brother Joel, who ran the operation and supervised three to five men and boys.

Our tannery excavation remains in its early stages, progressing slowly as it also serves as a focal activity in our summer research and educational program that teaches integrated historical approaches to ecology and conservation. But through the efforts of Dianna Doucette, archaeologist Tim Binzen, and some superb students, the general layout of the buildings and operation of the site have become clear. A small Cape-style house with numerous ells for barns, sheds, a well house, and outhouse sat atop the steeply rising banks of a brook that reaches ten feet across during a spring freshet.

Today, it is a lovely scene of trees and stone and water, but in the tannery's heyday, the same view would have been bleak and likely nauseating. The land was undoubtedly treeless and bare, with cartways and trails eroding the slopes and stream banks. The stench of putrid hides and their scrapings would have filled the air and accompanied the fetid odors emanating from dozens of vats filled with hides soaking in the tannic baths. The stream, with its many duties, would have wandered from the marsh above through an open pasture filled with cattle, into the millpond and mill, past all of the working men and processing areas, and then left the site filthy with an infusion of silt, manure, and trimmed fat, all stained dark brown from the bark. On a steamy August day, travelers on the Athol-Petersham road would have hurried past.

The grueling effort of running the tannery was very much a seasonal boom-or-bust affair. Today the stream seldom runs in the summer once the trees leaf out and the forested watershed begins to evaporate vast quantities of water. In the deforested landscape that John Sanderson knew, this atmospheric diversion of water by trees would have been substantially reduced, yielding more streamflow, but the tanner would still have had to use weather and ingenuity to run his mill for a few months each year. Water was stored in two locations. A half-acre millpond sits behind a massive rock dam that spans the valley within view of both the tannery and the miller's house. A quarter-mile upstream, nearly ten acres of marsh is dammed today by beavers that have capitalized on the long, low rock dam that the Sandersons erected and used to manage the large volume of water. By controlling the flow from the marsh, they could have kept the millpond full.

The census records from Petersham list three tanneries, with Sanderson's regularly noted as the most productive. Joel Sanderson and his crew processed about a thousand hides a year, an extraordinary yield given that each could require up to a year of soaking. The operation would have required an extensive complex of vats and processing capability, for which our archaeological foray is just beginning to account. At the same time, this level of production would have consumed an immense amount of hemlock bark, likely far more than would have been produced from the farm alone. Consequently, in this business, as in most of their other enterprises, the Sandersons were engaged in a constant stream of transactions with many people.

This commercial venture brought considerable cash to the farm and allowed it and the family to prosper. At its heart lay the fields that produced the cattle, swine, goats, sheep, and calves and the woodlot that harbored a grove of hemlock that endured throughout the tumultuous New England colonial period. The farm journal records the labor of cutting that yielded bark, a bit of timber, and cordwood. In the records from Hemlock Hollow, we see the consequence as repeated harvests turned a diverse old-growth forest into a woodland of sprout chestnut and hemlock. It was the resilience of hemlock and the care of the woodlot owners that enabled hemlock to persist through those years of use and emerge as the final dominant species long after the farm was sold and chestnut declined. And it was hemlock that made the whole tannery operation work and ultimately allowed John Sanderson, his family, and farm to thrive. □

David Foster is an ecologist and faculty member at Harvard University and author of several books on New England's forests. He has served as the director of the Harvard Forest's 3,750-acre ecological laboratory and classroom in central Massachusetts since 1990. David is also the principal investigator for the Harvard Forest Long Term Ecological Research program. This excerpt is reprinted with permission of Yale University Press.

NOTES

1. "Some reminiscences and recollections of School District No. 10, Petersham, MA," unpubl., Harvard Forest Archives, Petersham, MA.
2. Mann Family Geneology, unpubl., Harvard Forest Archives, Petersham, MA.
3. Hugh M. Raup, "The View from John Sanderson's Farm: A Perspective for the Use of the Land," *Forest History* 10:1 (April 1966): 7.
4. Ibid., 2–11; and Brian Donahue, "A New View from John Sanderson's Farm: A Perspective on New England Environmental History and Conservation," *Environmental History* 12:1 (January 2007): 9–34.

In this excerpt from his new book Living a Land Ethic: A History of Cooperative Conservation on the Leopold Memorial Reserve, *Stephen Laubach examines the ownership history of the "Shack," the property forester and conservationist Aldo Leopold purchased in 1935 and restored.*

REVISITING "GOOD OAK"

THE LAND-USE HISTORY OF ALDO LEOPOLD'S FARM

In his essay "Good Oak," Aldo Leopold wrote about how he and his family made a literal and figurative cut through a fallen tree near their now-famous "Shack." This essay from Leopold's *Sand County Almanac* is perhaps the most widely read account of the environmental history of Sauk County, Wisconsin. Yet part of his story, about a bootlegger who stripped the land of fertility and then "disappeared among the landless anonymities of the Great Depression," leaves many unanswered questions. What crops did he and other previous landowners grow? How did these settlers' agricultural practices influence Leopold's ideas about conservation and land health on private land? How did land use following European settlement compare with that of earlier periods? Although scholars have researched the recent history of this land, few have closely scrutinized the legacy of those who lived there prior to the Leopold family.

I find that examining previous inhabitation of the area allows for a better understanding of the human story behind one source of inspiration for Aldo Leopold's land ethic. He proposed with this concept that the boundaries of ethical behavior be expanded beyond interactions among humans to also include humans' interactions with "soils, waters, plants, and animals, or, collectively: the land."[1] Leopold called for a change in societal attitudes, from viewing land as a commodity to seeing it as something to be cherished and respected. Events in his life, particularly his experiences with landownership and ecological restoration at the Shack, played an important role in shaping his views on stewardship of privately owned land.

I also use federal and state agricultural census data for this property to show shifts in farming practices that matched regional patterns in American agriculture. As for many farms in the area, agriculture on this parcel changed from a small, mixed-use operation in the 1860s to more specialized farming by the 1920s. These and other records indicate that the "bootlegger" described in "Good Oak," Jacob Alexander, farmed the land as best he knew and in keeping with common practices, especially in the face of challenging economic and climatic conditions.

NATIVE AMERICAN SETTLEMENT OF WISCONSIN

To fully understand the history of land-use change around the Leopold Memorial Reserve and how these events influenced Leopold's views on conservation ethics, one must start well before the bootlegger's time, with what we know of its use by Native Americans. The proximity of the Shack property to the plentiful food supply and transportation networks of the Wisconsin and Fox rivers helps explain its long history of human settlement. Paleo-Indians first arrived in the region at the end of the most recent glacial period, some 12,000 years ago.[2] Charcoal and pointed

BY STEPHEN LAUBACH

JAY WILBUR, NATURAL ARCH AND BRIDGE SOCIETY

Natural Bridge State Park has a natural sandstone arch created by the eroding effects of wind and water. The bridge has an opening 25 feet high by 35 feet wide. Glaciers missed this weathered formation in Wisconsin's Driftless Area during the last Ice Age. Near the bridge is a rock shelter used by native people when the glacier was melting, 11,000 years ago.

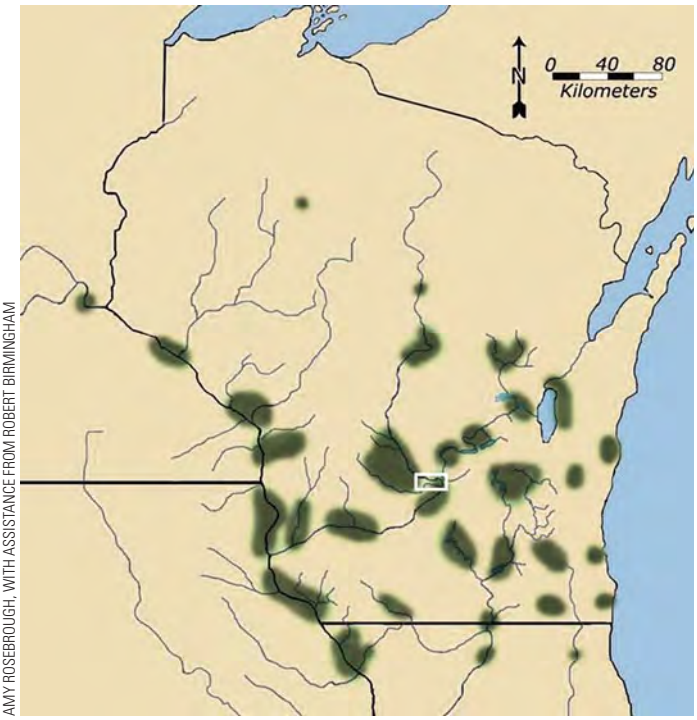
chipped-stone artifacts have been found 20 miles to the southwest of the Shack in a rock formation that gives Natural Bridge State Park its name. These remains suggest that the state's earliest inhabitants lived in small groups and traveled great distances to obtain sparse food in a subarctic climate. During the next 7,000 years, the warming climate led to an increased food supply, larger and more permanent settlements, and expanded trade. Approximately 4,500 years ago, Early Woodland Indians near Baraboo left behind pottery and fired clay.[3]

Around 500 BCE, Native Americans constructed some of the first conical burial mounds that later became common across the Upper Midwest. The presence of grave offerings, such as shell beads, bear canine teeth, copper artifacts, and pottery from the mound culture of the Middle Woodland Indians, suggests the emergence of larger Native American settlements and trade networks in the area between 800 BCE and CE 400. The Late Woodland Indians continued this rich tradition of burial mounds through CE 1200 but expanded on the practice by constructing more extensive mounds in a variety of shapes, including round, linear, and animal silhouettes called effigy mounds. Many of these effigy mounds have been lost to agriculture and development, but some remain on the land; close to the Leopold Memorial Reserve a noteworthy mound in the shape of a human is located at Man Mound Park.[4] Although mounds from this period occur elsewhere in the Midwest and beyond, they are especially abundant in Wisconsin, which had at least 15,000 prior to European settlement. Sauk County alone was thought to have 1,500. Only 100 remain in the county today, and of those, only a few dozen are in good condition. The meaning of the mound shapes has been subject to considerable debate, but recent scholarship indicates that the effigies were connected with clan-system beliefs in spirits of the upper, middle, and lower worlds.[5] Examination of the shape and contents of the burial mounds thus reveals extensive information about the lives and beliefs of the Woodland Indians.

The Late Woodland and Mississippian civilizations in the Upper Midwest collapsed between 1200 and 1300 CE for unknown reasons. Some hypotheses include overpopulation, conflict with other groups, and a prolonged cooling period. At this time a third group, the Oneota Indians, thought to be descendants of the Late Woodland Indians but whose customs had changed drastically with new agricultural practices, emerged in two settlements: one near Lake Winnebago and Green Bay to the northeast, and the other near La Crosse in the southwest. First referred to as the Winnebago Tribe, in Wisconsin the members now use the name Ho-Chunk Nation.[6]

NATIVE AMERICAN CONTACT WITH EUROPEANS

By the time white explorers and fur traders arrived in the 1600s, the indigenous population in the state had dropped dramatically, perhaps because of warfare or infectious diseases spread by the



AMY ROSEBROUGH, WITH ASSISTANCE FROM ROBERT BIRMINGHAM

A map showing the location of Native American effigy mound clusters. The area around future Leopold Memorial Reserve and the Shack is denoted by a white rectangle.

early European explorers.[7] During this period, a coalition of French and Ho-Chunk forces drove out the recently arrived Fox and Sauk Indians from the Green Bay area, and the ousted groups settled in present-day Sauk County. Fur trading thrived in the latter area because of its rich supply of game and its proximity to the Wisconsin and Fox rivers at the present-day city of Portage. The north-flowing Fox River's connection to the Atlantic Ocean via the Great Lakes and the south-flowing Wisconsin River's connection to the Gulf of Mexico via the Mississippi River helped connect the area's fur products to global markets. Early European explorers described this part of the Wisconsin territory as "affording excellent hunting grounds, abounding in deer, elk, and moose and very rich in bears and beavers."[8]

Just after the Revolutionary War, the Sauk and Fox tribes abandoned the area for unknown reasons, leaving the Ho-Chunk as the only Native Americans in the vicinity. One early white pioneer, Edward Tanner, wrote in 1818, "The Winnebago [Ho-Chunk] Indians inhabit the country bordering on the tributary streams on both sides of the [Wisconsin] river.… Their territory extends from the Mississippi to the vicinity of Green Bay, and the number of their warriors is seven hundred." Of the location near Portage where the Fox and Wisconsin Rivers nearly meet, he continued,

> *"The two rivers might be united by a canal of only one mile in length.… At this prairie the Fox River does not exceed sixty feet in width, and is usually from three to ten deep, has little current,*

SAUK COUNTY HISTORICAL SOCIETY

The effigy mound at Man Mound Park near the Leopold Memorial Reserve. It is estimated that Sauk County had 1,500 mounds.

WISCONSIN HISTORICAL SOCIETY, IMAGE 4376

This postcard shows Fort Winnebago in 1834, two years after the brief Black Hawk War concluded. The war is also known for giving young Abraham Lincoln his brief military service.

> *and is full of a thick growth of wild rice. It abounds with some geese and an immense quantity and variety of ducks."*[9]

Such abundance made this land highly desirable and led to growing conflicts between the white settlers and Native American inhabitants. These conflicts included a skirmish in 1827, which helped prompt the U.S. government's construction of Fort Winnebago, near Portage, in 1828.[10] Officials at the new Fort Winnebago Indian Agency mediated disputes between white settlers and Indians. After failed attempts to coexist, in 1832 the U.S. Army drove out returning Sauk Indians from the region during the Black Hawk War.[11] Following his capture, Chief Black Hawk explained his reasons for participating in the uprising that had led to the war:

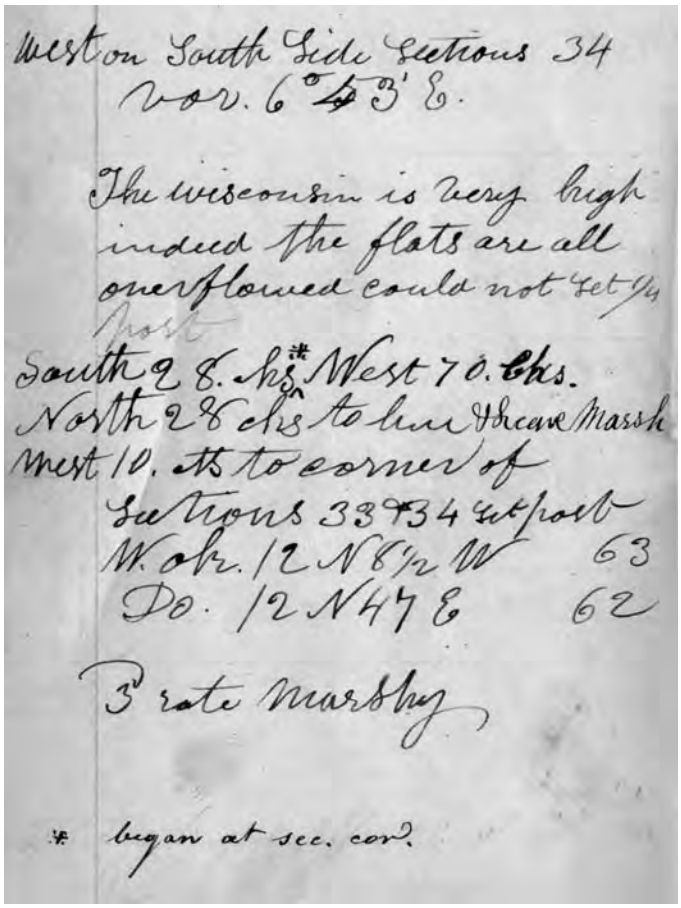
> *"I have determined to give my motives and reasons for my former hostilities to the whites, and to vindicate my character from misrepresentation.… My reason teaches me that* land cannot be sold. *The Great Spirit gave it to his children to live upon, and cultivate, as far as it is necessary for their subsistence.… Nothing can be sold, but such things as can be carried away."*[12]

Black Hawk's words had little effect, however, on policies that encouraged the sale of land in the region to the growing number of white settlers. After the Ho-Chunk signed an 1837 treaty ceding the tribal lands east of the Mississippi to the United States, the federal government opened up much of Wisconsin and other parts of the Northwest Territory to white settlers. Meanwhile, government officials forcibly relocated the Ho-Chunk tribe to Minnesota and, later, to Nebraska. Some members, however, resisted the treaty, remained and were later recognized as rightful owners of their ancestral lands in south-central Wisconsin.[13]

THE ARRIVAL OF LAND SURVEYORS AND SETTLERS

The presence of so many new settlers in the 1840s signaled a new era in the state's history. The local, state, and federal government documents from this period provide insights into the settlement of specific locations, including the site where Leopold's Shack now stands. Land surveyors in particular took detailed field notes during this period. Teams of surveyors, their work mandated by the 1785 Land Ordinance Act and 1787 Northwest Ordinance Act, reached eastern Wisconsin in 1833 and took until 1866 to complete the project statewide. They described the future Shack property along the Wisconsin River as a mixture of open oak savanna, marshland, and forest, with the land occupying a floodplain forest and oak opening.[14] Red, white, burr, and black oak trees grew best in this landscape, which was kept open and savanna-like by regular fires, with one early surveyor describing the land as "third rate rolling, sandy; oak—barrens" and "marshy." The only European settler present at that time, the surveyor noted, was "a Norwegian named Anderson."[15]

Around the time of the Civil War, the federal government began conducting the ten-year agricultural census in Wisconsin, and officials collected more extensive information about people living in the newly surveyed region on the edge of the western frontier. Agricultural census data from 1860 reveal that little of the area's expanses of oak savanna and woodland was under plow. The new owners of the future Shack property, William and Caroline Baxter, farmed less than 25 percent of their land. Census data for the land, however, indicate that grain production and animal husbandry steadily rose during the early years of farming.[16] In one firsthand account of the area from this period, the founder of the Sierra Club, John Muir, wrote a vivid description of this sparsely settled land in the early days of white settlement after he and his family had moved to Wisconsin from Scotland in 1849:



Surveyor J. E. Whitcher's notes about the land that would become the Leopold Memorial Reserve area, from 1845. The sentence near the top reads, "The Wisconsin is very high indeed, the flats are all overflowed, could not set ¼ post."

"This sudden plash into pure wilderness—baptism in Nature's warm heart—how utterly happy it made us! Nature streaming into us, wooingly teaching her wonderful glowing lessons, so unlike the dismal grammar ashes and cinders so long thrashed into us."[17] Although Muir's adolescence as a family laborer on a pioneer farmstead in Wisconsin included many hardships, he clearly reveled in the chance to live in a new, wild area far removed from the dreary city life of his early years in Scotland.

As more land in the area was cleared and put into production, yields on the Baxter farm increased over the years despite the low quality of their sandy floodplain property. In the Baxters' first two decades there, they grew mainly corn, wheat, and oats, perhaps to sell to an influx of settlers attracted to work in a Wisconsin Dells pinery that was new to the lumber industry at that time.[18] The Kilbourn Dam, just upstream and among the earliest of several dams that eventually dotted the river, had been completed in 1859 to help regulate water levels for logs being floated downstream.[19] On the Baxter farm, the most dramatic increase of crop production in the early years was in corn, which went from none in 1860 to 500 bushels by 1880. Other crops, such as potatoes, apples, barley, buckwheat, and molasses, were also sources of income and subsistence to the Baxters and other nearby farm families. In 1880, for example, the Baxters had 15 apple trees that produced 40 bushels, and some of these trees may have formed the orchard just west of the Shack "at the foot of the sandhill," which Leopold refers to in his "Good Oak" essay.[20]

After the chinch bug, an insect pest, arrived early in the Baxters' years on the farm, wheat farming collapsed throughout Wisconsin. In Sauk County, hops quickly took wheat's place as a cash crop, but its duration was also brief.[21] As an ingredient in beer, this crop's appearance in the agricultural records corresponded with a "hops craze" in the area during the 1860s and 1870s. According to one account, "preachers and temperance men even went into hop raising, quieting their consciences with the rationalization that the hops would be used for tanning. In fact, a meeting was held in the county courthouse one evening to discuss the matter. 'The arguments were many and the house was filled. The argument of big profits . . . seemed to be sufficient for most of them.'" Another observer wrote, "When you saw a farmer in 1867, the peak year, with an expensive driving team and a fancy buggy you just assumed that he was a hop grower. In that year Sauk County raised more than a fourth of all the hops grown in the state, and they brought up to 65 cents a pound." But the arrival of another insect pest, the hop louse, put an end to many get-rich-quick farming schemes.[22]

A more lasting enterprise for the Baxters was their animal husbandry, which increased notably in their first two decades. They began with a small dairy operation, making 100 pounds of butter from three cows in 1860; by 1880 their butter production had risen to 500 pounds. Sheep, swine, and poultry were nonexistent in the 1860 census but had increased by 1880 to between 10 and 30 of each. The Baxters and other area farmers most likely chose to sell butter, wool, and eggs because such products were less subject to the vagaries of the weather and less likely to spoil in transport than field crops or milk. The combined increase in animal husbandry, corn, and other products provided the Baxters with a comfortable income even as they withstood economic challenges such as the demise of wheat and hops. Over the next several decades, they and their children remained in the area and expanded their landholdings.

THE BEGINNING OF THE MODERN AGRICULTURAL ERA

Wisconsin agricultural census data from this land in the early twentieth century paint a very different picture than the one just 45 years earlier. Area farmers began to shift from raising a diverse mix of animals and crops toward a monoculture more similar to what has become common on twenty-first-century farms. The relationship of these farmers to the Wisconsin River also changed dramatically. Beginning in the late 1800s, federal, state, and local agencies constructed levees starting just east of the Baxter property and extending downstream to the flood-prone city of Portage, and the Kilbourn Dam upstream was rebuilt. The improved flood regulation made the land less susceptible—though never immune—to inundation. During their years of ownership, from 1915 to 1935, Jacob Alexander and his wife Emma moved away from livestock toward row-crop agriculture. They ceased raising sheep but maintained a small number of cows, pigs, and hens—the last being the source of the knee-deep chicken manure the Leopold family removed from the Shack upon its purchase. Among the grain crops, wheat production remained low following the end of Wisconsin's period of high-volume wheat production a few decades earlier, but the Alexanders had about the same acreage in corn and oats as was recorded in the 1880 census.[23]

As European farmers returned to work after World War I, more commodities supplied from overseas reduced the global demand for American agricultural goods, and consequently prices

WISCONSIN HISTORICAL SOCIETY, IMAGE 30472

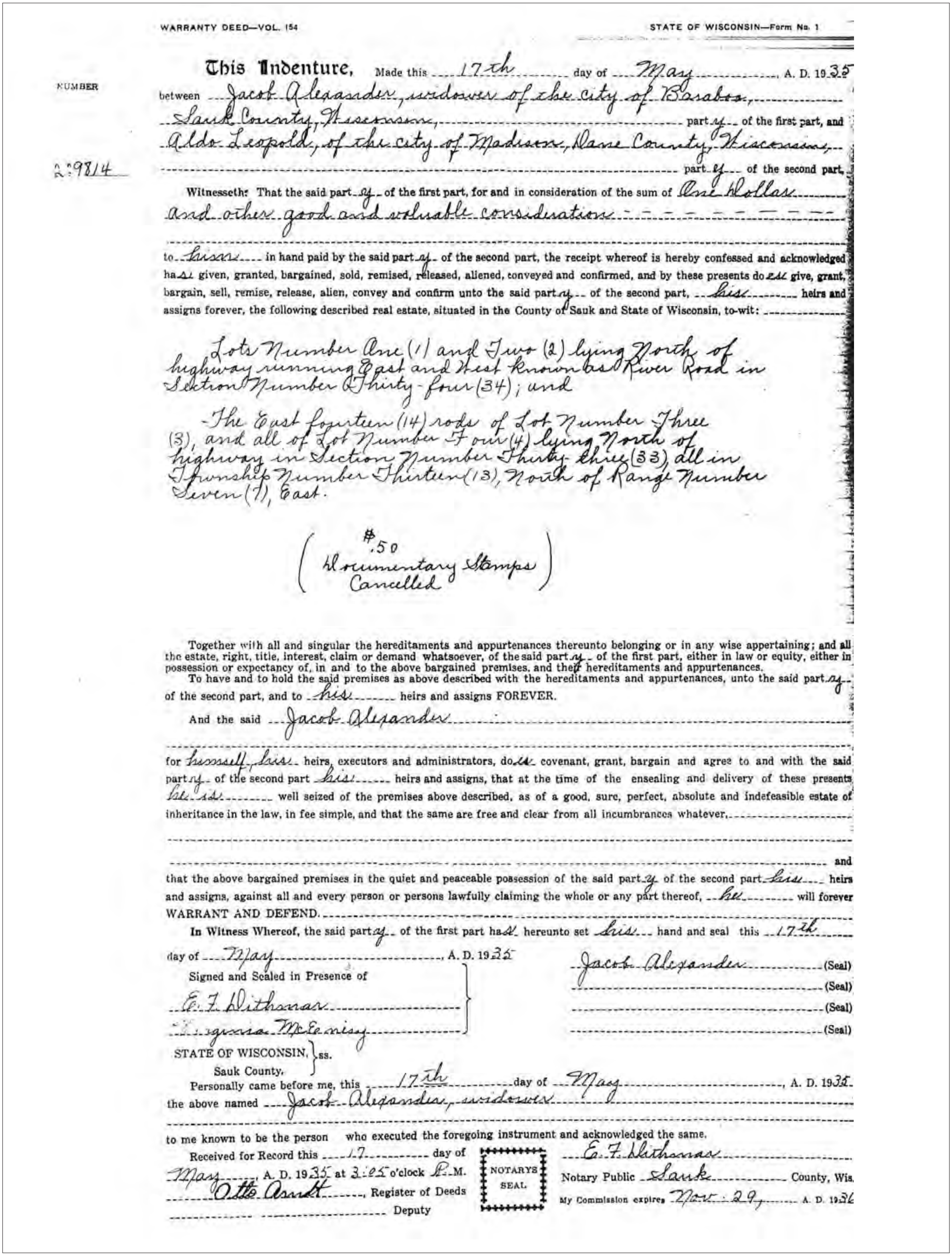
A hops yard near Wisconsin Dells, ca. 1880. Hops became the leading cash crop after wheat succumbed to a pest, and then met the same fate and was succeeded by animal husbandry.

began to drop.[24] Furthermore, increased mechanization accompanying the advent of gasoline-powered tractors, as well as higher yields from new crop varieties, made life more difficult for small farmers unable to afford the technology. In this economic climate, a depression began in the agricultural sector that preceded the national economic collapse of 1929. Farming on the Alexander property no longer provided sufficient income, and in the 1930s state records show that Jacob Alexander was unable to pay his property taxes.[25] Like farmers across the country, Alexander may have been striving to increase production to offset debt from low prices: he nearly doubled the amount of land farmed in an effort to compensate for commodity prices that had in some cases dropped roughly 85 percent from World War I highs.[26] In 1933, his last year on the property, he farmed his third-highest total acreage, which suggests a last-ditch attempt to overcome his dire financial troubles.

During the drought years of the 1930s, however, the weather did not cooperate with Alexander's hopes for a bumper harvest. Although the Wisconsin droughts were not as dramatic as those in the Dust Bowl to the south and west, Wisconsin did experience a local dust bowl during these years.[27] Unable to receive enough income from his withered crops to keep up with new developments in agriculture, and being recently widowed after his wife Emma's death in March 1933, Alexander gave up on farming, abandoned his land, and went to live with his sister Ida in California. He did not sell the land at this time, however, most probably because the severe economic depression gripping the country would have made it difficult to find a buyer.

Alexander returned to Wisconsin in the spring of 1935 to live with his brother George near Baraboo, and he began farming again at the age of sixty-five, on land rented from George's neighbor.[28] County records indicate that he was saddled with a debt of $548 in unpaid property taxes on his abandoned farmstead. Taking care of unfinished business from his last attempt at farming and perhaps glad to be rid of the reminder of a failed business venture, he signed a warranty deed on May 17, 1935, transferring this land to Aldo Leopold.[29] Free of the burden of unpaid taxes, he was now set to return to full-time farming. Before he was able to realize this dream, though, Alexander died, in January 1936.

The collapse of the agricultural sector in the United States that began after World War I lasted well through the 1940s and claimed the livelihoods of many small family farmers like Jacob Alexander. These events also forced the surviving farmers to examine more seriously the ideas of Aldo Leopold and other national leaders, such as Hugh Hammond Bennett, Paul Sears, and J. I. Rodale, who were involved in the "permanent agriculture" movement of the 1930s to 1950s. Proponents advocated smaller-scale farming that worked within ecological limits instead of pushing for maximum production at all costs. The message of permanent agriculture even reached beyond farmers to the broader public. According to the historians Randal Beeman and James Pritchard, "adherents had some initial success in promoting the concepts of societal longevity, ecological interdependence, and the utopian possibilities of the new farming. Permanent agriculture's many



WARRANTY DEED—VOL. 154 STATE OF WISCONSIN—Form No. 1

NUMBER

29814

This Indenture, Made this 17th day of May, A. D. 1935 between Jacob Alexander, widower of the city of Baraboo, Sauk County, Wisconsin, party of the first part, and Aldo Leopold, of the city of Madison, Dane County, Wisconsin, party of the second part,

Witnesseth: That the said party of the first part, for and in consideration of the sum of One Dollar and other good and valuable consideration

to him in hand paid by the said party of the second part, the receipt whereof is hereby confessed and acknowledged has given, granted, bargained, sold, remised, released, aliened, conveyed and confirmed, and by these presents does give, grant, bargain, sell, remise, release, alien, convey and confirm unto the said party of the second part, his heirs and assigns forever, the following described real estate, situated in the County of Sauk and State of Wisconsin, to-wit:

Lots Number One (1) and Two (2) lying North of highway running East and West known as River Road in Section Number Thirty-four (34); and

The East fourteen (14) rods of Lot Number Three (3), and all of Lot Number Four (4) lying North of highway in Section Number Thirty-three (33), all in Township Number Thirteen (13), North of Range Number Seven (7), East.

($.50 Documentary Stamps Cancelled)

Together with all and singular the hereditaments and appurtenances thereunto belonging or in any wise appertaining; and all the estate, right, title, interest, claim or demand whatsoever, of the said party of the first part, either in law or equity, either in possession or expectancy of, in and to the above bargained premises, and their hereditaments and appurtenances.

To have and to hold the said premises as above described with the hereditaments and appurtenances, unto the said party of the second part, and to his heirs and assigns FOREVER.

And the said Jacob Alexander

for himself, his heirs, executors and administrators, does covenant, grant, bargain and agree to and with the said party of the second part his heirs and assigns, that at the time of the ensealing and delivery of these presents he is well seized of the premises above described, as of a good, sure, perfect, absolute and indefeasible estate of inheritance in the law, in fee simple, and that the same are free and clear from all incumbrances whatever,

and that the above bargained premises in the quiet and peaceable possession of the said party of the second part his heirs and assigns, against all and every person or persons lawfully claiming the whole or any part thereof, he will forever WARRANT AND DEFEND.

In Witness Whereof, the said party of the first part has hereunto set his hand and seal this 17th day of May, A. D. 1935

Signed and Sealed in Presence of

E. F. Withamar

Virginia McEniry

Jacob Alexander (Seal)

(Seal)

(Seal)

(Seal)

STATE OF WISCONSIN, Sauk County, ss.

Personally came before me, this 17th day of May, A. D. 1935. the above named Jacob Alexander, widower

to me known to be the person who executed the foregoing instrument and acknowledged the same.

Received for Record this 17 day of May, A. D. 1935 at 3:05 o'clock P. M.

Otto Arndt, Register of Deeds

Deputy

NOTARYS SEAL

E. F. Withamar

Notary Public Sauk County, Wis.

My Commission expires Nov. 29, A. D. 1936

SAUK COUNTY REGISTER OF DEEDS

The deed for the sale of land from Jacob Alexander to Aldo Leopold, dated May 17, 1935.

STEPHEN LAUBACH

All that remains of the Alexander house is the remnants of the foundation.

precepts circulated through the late 1940s, reaching Americans of all stripes with their infectious promises of health, wealth, and prosperity."[30] Reeling from the disastrous effects of the Dust Bowl and the Great Depression, farmers and city dwellers alike were hungry for new ideas about how to grow food without destroying the soil.

LEOPOLD'S EVOLVING VIEWS ON CONSERVATION

When he wrote "The Good Oak," Aldo Leopold considered the history of his small farm in central Wisconsin. Although he never specifically mentioned indigenous land-use practices in this essay, he implicitly compared the area's robust land health during pre-settlement times with events from the 1860s onward, such as the extinction of the passenger pigeon, the disappearance of elk in the state, and the widespread drainage of marshland for farming. As for his immediate predecessor's land-use history, Leopold referred to Jacob Alexander as a bootlegger who had carelessly burned down the property's house. There is no evidence to suggest that he knew Alexander personally, however, and it is clear from government records that Alexander was, if indeed a bootlegger at all, also a legitimate farmer.[31] It is possible, too, that a trespassing bootlegger or squatter inhabited Alexander's abandoned house and burned it down sometime between late 1933 and early 1935. Yet Leopold's further description of the bootlegger as a farmer who "skinned" the land of its fertility suggests that Leopold's criticism of Alexander is grounded, to at least some degree, in actual events on the land. Overall, the bootlegger character in the *Sand County Almanac* may have been part composite sketch of previous dwellers and part fictional character.

Regardless of the true identity of the bootlegger, this description and the events noted in "The Good Oak" serve as a useful metaphor for major problems in the agricultural sector of the United States, thus advancing Leopold's literary goals. The problems that started in the 1860s and came to a head in the 1930s—declines in land health and economic well-being—were clearly outside the control of the individual farmers, who had property taxes, mortgages, and equipment debts to pay amid drought, industrialization, and wildly fluctuating prices for their crops. The economic challenges of the Great Depression, which began earlier in the agricultural sector than in the rest of the country, pushed farmers like Alexander to pursue poor practices on marginal farmland. In the earliest years of the Depression, critiques of agricultural practices by Leopold and others were ahead of their time and therefore unknown to farmers like Jacob Alexander.

Aldo Leopold went on to connect his appraisal of farming practices to a broader assessment of conservation responsibilities of society as a whole. While working for the U.S. Forest Service, he regularly suggested that public agencies expand or reimagine their conservation mission. In 1924 he successfully lobbied for the establishment by the Forest Service of the Gila Wilderness in New Mexico, the first such publicly protected land in the country. He also criticized federal policies that offered a bounty for killing large carnivores like wolves and grizzly bears, policies that he himself had once supported. He often interacted with private landowners, as when he mediated policy disputes between the Forest Service and local ranchers who were using a mix of private and public grazing lands. Between 1928 and 1932, while working on game surveys as a consulting ecologist, he witnessed firsthand the poor condition of wildlife habitat in the Midwest.[32]

By the time Leopold bought the Shack, he was more keenly aware of the challenges to conservation posed by individual landowners than he had been in his days with the Forest Service. He became involved in outreach to landowners to set up projects in wildlife, forest, and watershed management. Experimenting on his own property as he pioneered the idea of restoring degraded farmland to its pre-European settlement condition deep-

ened his thinking about the role of private landowners and provided fertile ground for ideas later articulated in *A Sand County Almanac*. In "The Land Ethic," he noted: "There is a clear tendency in American conservation to relegate to government all necessary jobs that private landowners fail to perform." The solution, Leopold went on to suggest, lay in "a land ethic, or some other force which assigns more obligation to the private landowner."[33] This gradual turn in his thinking influenced the conservation strategies advocated by Leopold later in his life. Inspired by his interactions with private landowners and his own efforts to restore a worn-out farm near Madison, he concentrated for much of the remainder of his career on the responsibilities of private landowners in conservation. □

Stephen Laubach is an outreach specialist for the Earth Partnership program at the University of Wisconsin–Madison Arboretum. He also does regional consulting on land and water conservation. This article is adapted from his book Living a Land Ethic: A History of Cooperative Conservation on the Leopold Memorial Reserve *(University of Wisconsin Press, 2014).*

NOTES

1. Aldo Leopold, *A Sand County Almanac and Sketches Here and There* (New York: Oxford University Press, 1949), 204. I owe a tremendous debt to Fawn YoungBear-Tibbetts, UW–Madison Arboretum Earth Partnership program, and Konrad Liegel, 1980 Leopold Memorial Reserve summer fellow, for the information included in this excerpt.
2. Ronald J. Mason, "The Paleo-Indian Tradition," *Wisconsin Archeologist* 78, nos. 1–2 (1997): 78–111. See also Kenneth Lange, *A County Called Sauk: A Human History of Sauk County, Wisconsin* (Baraboo, Wisc.: Sauk County Historical Society, 1976), 6–9.
3. R. A. Birmingham and L. E. Eisenberg, *Indian Mounds of Wisconsin* (Madison: University of Wisconsin Press, 2000), 71, 74; Lange, *County Called Sauk*, 9.
4. Birmingham and Eisenberg, *Indian Mounds*, 81, 96, 109.
5. Robert Hall, "Red Banks, Oneota, and the Winnebago: Views from a Distant Rock," *Wisconsin Archeologist* 74, nos. 1–4 (1993): 10–79.
6. Birmingham and Eisenberg, *Indian Mounds*, 162, 164–67. "Ho-Chunk" will be used in this text as well.
7. William Green, "Examining Protohistoric Depopulation in the Upper Midwest," *Wisconsin Archeologist* 74, nos. 1–4 (1993): 290–393.
8. Henry Ellsworth Cole, *A History of Sauk County, Volume I* (Chicago: Lewis Publishing, 1918), 103.
9. Edward Tanner, *Wisconsin in 1818* (Madison: State Historical Society of Wisconsin, 1908), 289–90.
10. Martin Zanger, "Red Bird," in R. David Edmunds, ed., *American Indian Leaders: Studies in Diversity* (Lincoln: University of Nebraska Press, 1980), 64–87; Francis Paul Prucha, *Guide to the Military Posts of the United States, 1789–1875* (Madison: State Historical Society of Wisconsin, 1964), 5–9.
11. Juliette Augusta Kinzie, *Wau-bun: The Early Days in the Northwest* (Portage, WI.: National Society of Colonial Dames in Wisconsin, 1975), 58–79.
12. Donald Jackson, ed., *Black Hawk: An Autobiography* (Urbana: Illinois Paperbacks, 1964), 101; emphasis in the original.
13. Henry Merrell, *Pioneer Life in Wisconsin* (Madison: State Historical Society of Wisconsin, 1876), 393.
14. Information on the Land Ordinance and Northwest Ordinance Acts of 1785 and 1787 and their application in Wisconsin is from Curt Meine, *Correction Lines: Essays on Land, Leopold, and Conservation* (Washington, DC: Island Press, 2004), chap. 9; and Meine, "The View from Man Mound," in *The Vanishing Present*, ed. Donald M. Waller and Thomas P. Rooney (Chicago: University of Chicago Press, 2008), 24.
15. 1845 surveyor account of J. E. Whitcher for external survey of Sauk County, sections 32–36, T13N and R7E. Available online through the Wisconsin Board of Commissioners of Public Lands and the UW–Madison Digital Collections Center at http://libtext.library.wisc.edu/SurveyNotes/. The term "third-rate" was used by surveyors to refer to land with limited potential for agriculture; "first-rate" had prime agricultural potential. Information about the agricultural potential of land is from a conversation with landscape historian Rob Nurie on 25 May 2011.
16. Agricultural data for 1860, 1870, and 1880 are from the United States Bureau of the Census, located in the archives of the Wisconsin Historical Society (hereafter, WHS), "United States Census Schedules for Wisconsin—Productions of Agriculture," series 1676 (box 7, shelf 4/33/P5), 1677 (box 7, shelf 4/33/P6), and 1678 (box 7, shelf 4/33/O6), respectively. Data is also available from 1850 in series 1675, box 2, shelf 4/33/O4. Copies of warranty deed records showing the year of purchase by Baxters were originally obtained by Konrad Liegel from the Sauk County Register of Deeds; copies of Liegel's report are located in the Aldo Leopold Foundation archives at the Leopold Center, shelf "Graduate Fellows." These records show that the property had been owned by seven other landowners, starting with J. A. Noonan in November 1849. Most of these periods of ownership may have been speculative since they were often brief, with one as short as nine months. The Baxters, however, lived on this property between 1858 and 1912.
17. John Muir, *The Story of My Boyhood and Youth* (Boston: Houghton Mifflin, 1913), 63.
18. H. B. Staines, "Agriculture of Sauk County," *Trans. Wis. State Agr. Soc.* 1 (1852): 215–17.
19. Richard D. Durbin, *The Wisconsin River: An Odyssey through Time and Space* (Cross Plains, WI: Spring Freshet Press, 1997), 217–20. The city of Wisconsin Dells was originally named Kilbourn, hence the name of the dam.
20. Leopold, *Sand County Almanac*, 17.
21. The end of Wisconsin's wheat craze in the 1860s is documented in Lange, *County Called Sauk*, 67–68.
22. Ibid., 67.
23. After 1880, all agricultural data were collected by the state rather than the federal government. The data for the Alexanders are from the WHS archives, Wisconsin Department of Agriculture, "Annual Enumeration of Farm Statistics by Assessors," microform, 1924–35. State agricultural census data from before 1922 were destroyed by fire.
24. Randal S. Beeman and James A. Pritchard, *A Green and Permanent Land: Ecology and Agriculture in the Twentieth Century* (Lawrence: University Press of Kansas, 2001), 10–11; Deborah Fitzgerald, *Every Farm a Factory: The Industrial Ideal in American Agriculture* (New Haven, CT: Yale University Press, 2003), 17–20.
25. Tax information is located at the Wisconsin Historical Society in the Sauk County Treasurer Tax rolls (microform), 1935, reel 19, AP 98-0075.
26. Fitzgerald, *Every Farm a Factory*, 18.
27. Michael J. Goc, "The Wisconsin Dust Bowl," *Wisconsin Magazine of History* 73 (1989–1990): 162–201.
28. Alexander was one of five siblings. Details about his life between 1933 and 1936 are from his obituary in the *Baraboo News-Republic*, January 10, 1936. This as well as other documents from the time of his death are included in his probate records in the Sauk County Historical Society.
29. Warranty deed located in the Sauk County Register of Deeds. Jacob Alexander to Aldo Leopold. *Deeds*: vol. 154, p. 422. Sauk County, Wisconsin. Township 13 North, Range 7 East. Copy of Konrad Liegel report located in ALF archives, shelf "Graduate Fellows."
30. Beeman and Pritchard, *Green and Permanent Land*, 71.
31. Leopold, *Sand County Almanac*, 9.
32. For Leopold's advocacy on behalf of the Gila Wilderness Area and for information about his work studying game populations, see Curt Meine, *Aldo Leopold: His Life and Work* (Madison: University of Wisconsin Press, 1988), 196–226, 268.
33. Leopold, *Sand County Almanac*, 213.

In an American forest managed by a German forester,
the Industrial Revolution met the Scientific Revolution.

First in Forestry

Carl Schenck & The Biltmore Forest School

THE FOREST HISTORY SOCIETY

A film from The Forest History Society | www.FirstInForestry.org

CRADLE OF FORESTRY
Interpretive Association
IN AMERICA

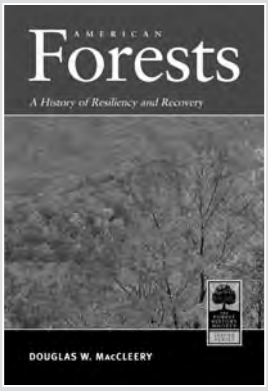
Forest History Society Issues Series

Order online at www.ForestHistory.org

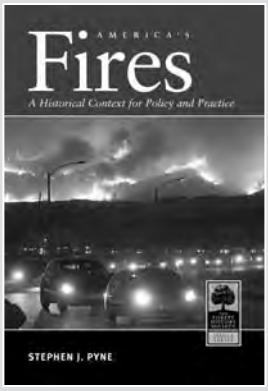
The Issues Series booklets bring a historical context to today's most pressing issues in forestry and natural resource management. Written by leading experts, each one presents a balanced overview of critical and often contentious issues. Attractive, informative, and aimed at the general reader, the booklets provide an excellent introduction to the novice or useful refresher for the experienced.

$9.95 each.
Call 919/682-9319 for discounts on orders of ten or more.

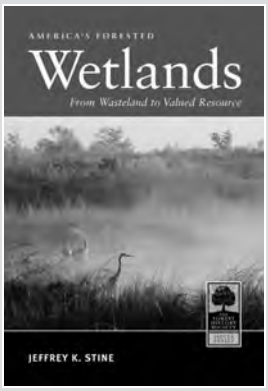
Wood for Bioenergy
by Brooks C. Mendell & Amanda Lang
88 pp; 10 photos; 18 figures



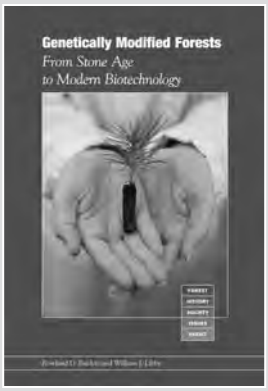
American Forests
by Douglas W. MacCleery
65 pp; 36 photos; 18 figures



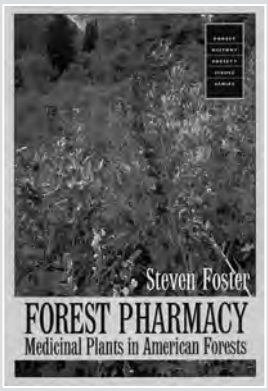
America's Fires
by Stephen J. Pyne
94 pp; 22 photos; 31 figures



America's Forested Wetlands
by Jeffrey K. Stine
96 pp; 28 photos; 7 figures



Genetically Modified Forests
by Rowland D. Burton & William J. Libby
79 pp; 36 photos



Forest Pharmacy
by Steven Foster
58 pp; 17 photos; 4 tables

Newsprint
by Thomas R. Roach
56 pp; 26 figures

Forest Sustainability
by Donald W. Floyd
80 pp; 21 photos; 11 figures

Canada's Forests
by Ken Drushka
105 pp; 17 photos; 14 figures

Biographical Portrait

WALLACE L. FONS

FIRE RESEARCH PIONEER

by David R. Weise and Ted R. Fons

During his 30-year career with the U.S. Forest Service, Wally Fons laid the foundation for much of the understanding we have today of forest fire's many properties by applying his mechanical engineering background. He left a legacy of research that formed the basis for the fire behavior and danger systems still used in the United States. In addition to fire behavior topics, he applied his engineering skills to many other forestry-related issues.

Wallace Leo Fons was born November 23, 1899, in Ashland, Wisconsin, to Leon and Rose Fons. He started working for Standard Oil Company in Patterson, California, as a pumping plant operator in August 1918. After spending half a year at University High School in Oakland, he entered the University of California in May 1925 and completed a B.S. in mechanical engineering in 1930. He continued to work for Standard Oil as an engineer until 1931, when he was laid off during the Great Depression and returned to his alma mater to pursue a master's degree in mechanical engineering. From 1931 to 1933 he worked as a laboratory assistant to L. M. K. Boelter (for whom the Schmidt-Boelter heat flux sensor is named) in a photometric lab and studied the relationship between headlamp construction and automobile road performance. In December 1933 he was hired by the Division of Fire Research at the California Forest Experiment Station (now the Pacific Southwest Research Station) of the U.S. Forest Service, the agency he worked for until his death in 1963.

In Fons's initial assignments, he assisted in studies looking at the effects of solar illumination of smoke plume detection by a human observer and designed methods to store rainwater in catchments for fire suppression. Another fire research pioneer,

COURTESY OF TED FONS

Wallace L. Fons at his desk at the Southern Forest Fire Laboratory, Macon, Georgia.

George Byram was performing related research on visibility and smoke plume detection at the Appalachian Forest Experiment Station in Asheville, North Carolina. Fons also began to assist in forest fire behavior studies and was part of the research team that conducted experiments in ponderosa pine (*Pinus ponderosa*) surface fuels, measuring the rate of perimeter growth as a function of various environmental factors. This work, similar to the field-based approaches taken in Canada and Australia in the early days of fire research, established some of the basic understanding of fire spread in uniform, dead fuels and would later influence the development of the Rothermel fire spread equation.

The California fire research group, whose other members were John R. Curry, Charles C. Buck, and H. D. Bruce, produced an analysis of fire behavior research needs. In charge of research on forest fuels and wind measurement, Fons helped map active fires and measure weather and fuel moisture on the Shasta National Forest to develop information for firefighters.[1] He also assisted Curry in perhaps the first experiments in the United States designed to investigate the effects of wind and fuel moisture on fire growth in uniform fuel beds of ponderosa pine needles.[2]

Fons returned to his studies in mechanical engineering in 1938 and earned his master's degree in 1940. His thesis research produced the first physically based fire spread model in the Western Hemisphere, if not the world.[3] During this time, Fons used a variety of state-of-the-art anemometers to measure low-velocity winds, improving understanding of wind flow beneath, within, and above a forest canopy. His work identified the similarities and differences in wind flow in forests, shrubs, and grasslands.

The California fire research group identified more than 70 problems related to fire suppression in California that required further research.[4] As Fons and others sought to conduct controlled studies of fire behavior in which various factors were held constant to isolate effects, the need for specialized equipment became evident. Fons used his mechanical engineering background to build the first wind tunnel used to study wind effects on fire spread.[5] The wind tunnel was used outdoors first on the Shasta Experimental Forest, in northern California, and then was moved to the San Dimas Experimental Forest in the San Gabriel Mountains of southern California. It was the only wind tunnel used to study wind effects on fire until the Southern

Forest Fire Laboratory in Macon, Georgia, was built in 1958.

Other fundamental work conducted by Fons and his colleagues from 1936 to 1950 examined how the physical and chemical properties of fuels affected ignition and the rate of combustion. He studied the effectiveness of "wet" water for fire suppression and found that its use could lengthen the time when fuels would not easily ignite, thus giving a fire manager more time to suppress a fire. Buck, Fons, and Clive Countryman developed equations to predict postfire erosion on southern California's four national forests, areas well known for their frequent catastrophic fires followed by mudslides.[6] This seminal work is still used today.

With the close of World War II and the advent of the nuclear age, Fons and other Forest Service scientists became involved in a series of classified studies. Several of these were concerned with the blast effects from nuclear weapons and the potential impacts on forests, including ignition of forest fires. Some 22 reports were produced from this work between 1950 and 1960; many are now declassified and available through the Defense Technical Information Center (www.dtic.mil). The studies initially were overseen by Professor R. Keith Arnold at the University of California, with Fons serving as the Forest Service's project leader.

One series of studies examined the fundamental thermal properties of various forest fuels. These studies produced information on thermal conductivity, specific heat, absorptivity, and other properties of many common fuels found in the United States—information that is still relevant today.[7] Another series of studies focused on the blow-down of trees and involved tests and measurements to determine the ability of a tree trunk to bend, the composition and distribution of biomass in tree crowns, and air flow through a forest canopy.[8] A video of the blast effects on the artificial ponderosa pine forest constructed in Nevada is available on the Internet (http://bit.ly/1wvzGP6).

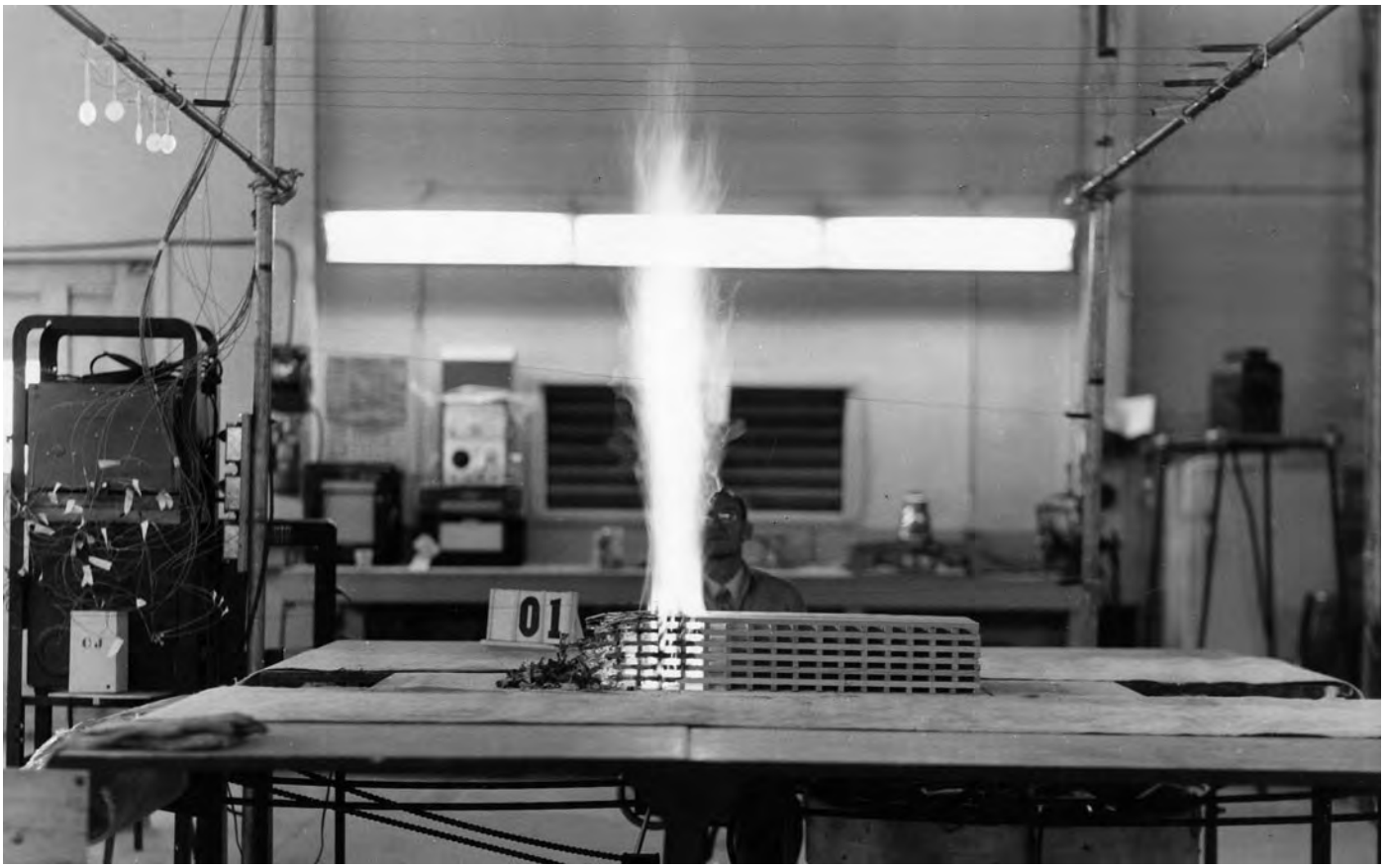
In many cases, Fons's topics required innovative thinking and novel ways of collecting data. His approaches were unusual enough that a national weekly news magazine covered the wind tunnel, a fire table, and a spinning fire wheel—all designed to study fire in a controlled, systematic fashion—in an article about forest fire research.[9] Fons measured the flexion of a tree to known wind velocity by putting different trees in a truck bed with the instruments and driving down a road at fixed speeds. This work was extended to measuring the blast effects on individual, isolated trees "planted" in concrete at the Nevada Proving Grounds in what was called Operation Tumbler-Snapper (www.youtube.com/watch?v=JaefRdulTk0). Next, a forest stand was assembled by harvesting trees from Mount Charleston on the Nevada (now Toiyabe) National Forest and transporting them to the flats at the Nevada Proving Grounds for Operation Upshot-Knothole, where a forest was built to represent a typical woodlot in Western Europe.[10] Other blast effects work was performed on the Pacific Proving Grounds at Bikini and Eniwetok atolls during Operation Castle, and in Australia at the Iron Range Test Site. The forest types included ponderosa pine, Douglas-fir (*Pseudotsuga menziesii*), grand devil's claw (*Pisonia grandis R. Br.*), coconut palm (*Cocos nucifera L.*), beach naupaka (*Scaevola sericea* Vahl var. *sericea*), and North Queensland tropical rain forest. Fons died before the testing took place in Australia in 1964. The final report of Operation Blowdown acknowledged that Fons "contributed materially to the success of this experiment,"[11] but his work had already been recognized by the Department of Agriculture: in May 1961 Vice President Lyndon Johnson had presented Fons with the USDA Superior Service Award for "notable pioneering contributions to forest fire research and to national defense including the establishment of the thermal and blast effects of nuclear explosions on forests and other natural cover."[12]

During the late 1950s, fire damage to buildings and forests in the United States became an issue of national concern and led to the establishment of the Committee on Fire Research by the National Research Council of the National Academy of Sciences. To better understand this issue, the Forest Service built three laboratories specifically to study wildland fire—the Southern Forest Fire Laboratory in Macon, Georgia (1958), the Northern Forest Fire Laboratory in Missoula, Montana (1961), and the Western Forest Fire Laboratory in Riverside, California (1963). Fons used his engineering knowledge and previous experience to design the low-speed wind tunnels at the Southern and Northern Forest Fire labs. While these laboratories were in the planning and construction stages, Fons and his team started an eight-year-long project called Project Fire Model to develop and study a laboratory-scale fire, which would provide a diagnostic model of a steady-state, free-burning fire in solid fuel. When the Forest Service moved Project Fire Model from the Pacific Southwest Experiment Station to the Southern Forest Fire Laboratory in 1960, Fons moved to Macon to continue working on it. This project examined fire spread in wood cribs and provided fundamental knowledge about the flame and fire spread, including heat transfer mechanisms. Fons would not live to see its completion; he died on October 20, 1963, in Macon. George Byram assumed leadership of the project upon his death.

COURTESY OF USDA FOREST SERVICE

To determine the strain of wind on a tree stem caused by nuclear blasts, researchers loaded trees into specially equipped trucks and drove them at a known speed to simulate the effects of wind. Here, a white fir tree is being tested.

Wallace Fons married Della Baker in Berkeley, California, in 1929, and together they had two children, Leona and Theodore. As was typical of Forest Service families during this era, Della, Leona, and Ted often accompanied Wally to the remote locations in California where the various experiments were conducted, occasionally



COURTESY OF USDA FOREST SERVICE

Researchers used wood cribs to gain fundamental knowledge about flame and fire spread in simple fuels that set a basis for today's work in complex fires and fuels. Pictured is H. D. Bruce.

helping by washing a truck or taking water to the crew. Della, who had studied chemistry at the University of California, served as a sounding board and technical editor for much of Wally's unclassified work, effectively functioning as unsung collaborator. □

David R. Weise, PhD, is a research forester with the U.S. Forest Service's Pacific Southwest Research Station in its Fire and Fuels Program. He has worked for the Forest Service since high school and has worked at all three fire labs. Ted R. Fons worked for the U.S. Forest Service during his college summers. As a geophysicist, he specialized in seismic data analysis, computer processing, and interpretation, worked for Mobil Oil and the State of Alaska, and established Excalibur Geophysical Consultants. For a complete list of Wallace Fons's publications, please contact David Weise at dweise@fs.fed.us.

NOTES

1. John R. Curry and C. C. Buck, "Problem Analysis: Forest Fire Behavior Research, California Forest and Range Experiment Station," manuscript dated July 1, 1938, National Forest Service Library, Fort Collins, CO.
2. J. R. Curry and W. L. Fons, "Rate of Spread of Surface Fire in the Ponderosa Pine Type of California," *Journal of Agricultural Research* 57(4): 239–367.
3. W. L. Fons, "An Eiffel Type Wind Tunnel for Forest Research," *Journal of Forestry* 38(11): 881–84; and W. L. Fons, "Analysis of Fire Spread in Light Forest Fuels," *Journal of Agricultural Research* 72(3): 92–121.
4. C. C. Buck, H. D. Bruce, C. A. Abell, W. L. Fons, *A Forest Fire Protection Problem Analysis for California* (Berkeley, CA: USDA Forest Service, California Forest and Range Experiment Station, 1941).
5. J. R. Curry and W. L. Fons, "Forest-Fire Behavior Studies," *Mechanical Engineering* 62: 219–25; and W. L. Fons, "Influence of Forest Cover on Wind Velocity," *Journal of Forestry* 38(6): 481–86.
6. C. C. Buck, W. L. Fons, and C. M. Countryman, "Fire Damage from Increased Run-off and Erosion, Angeles National Forest" (Berkeley, CA: California Forest and Range Experiment Station, 1948).
7. G. M. Byram, W. L. Fons, F. M. Sauer, and R. K. Arnold, "Thermal Properties of Forest Fuels," Interim Technical Report AFSWP-404 (Washington, DC: USDA Forest Service, Division of Fire Research, 1952); and G. M. Byram, F. M. Sauer, W. L. Fons, and R. K. Arnold, "Thermal Conductivity of Some Common Forest Fuels," Interim Technical Report AFSWP-405 (Washington, DC: USDA Forest Service, Division of Fire Research, 1952).
8. T. G. Storey and W. L. Fons, "Natural Period Characteristics of Selected Tree Species," Interim Technical Report AFSWP-864 (Washington, DC: USDA Forest Service, Division of Fire Research, 1956); T. G. Storey, W. L. Fons, and F. M. Sauer, "Crown Characteristics of Several Coniferous Tree Species," Interim Technical Report AFSWP-416 (Washington, DC: USDA Forest Service, Division of Fire Research, 1955); and W. L. Fons and W. Y. Pong, *Tree Breakage Characteristics under Static Loading Ponderosa Pine*, Technical Report AFSWP-867 (Washington, DC: USDA Forest Service, Division of Fire Research, 1957).
9. Alva G. Neuns, "Forest Fire," *Collier's Magazine*, July 22, 1955, 30–33.
10. F. M. Sauer, R. K. Arnold, W. L. Fons, and C. C. Chandler, "Operation UPSHOT-KNOTHOLE, Nevada Proving Grounds, Project 8.11b, Ignition and Persistent Fires Resulting from Atomic Explosions—Exterior Kindling Fuels: Report to the Test Director," WT-775 (Washington, DC: USDA Forest Service, Division of Fire Research, 1953).
11. W. L. Fons and T. G. Storey, "Operation Castle, Project 3.3, Blast Effects on Tree Stand: Report to the Test Director," WT-921 (Washington, DC: USDA Forest Service, Division of Fire Research, 1955); and W. L. Fons, F. M. Sauer, and W. Y. Pong, "Blast Effects on Forest Stands by Nuclear Weapons," Technical Report AFSWP-971 (Washington, DC: USDA Forest Service, Division of Fire Research, 1957).
12. Quote is from the certificate presented by Johnson and is in the possession of Ted Fons.

Available from the Forest History Society

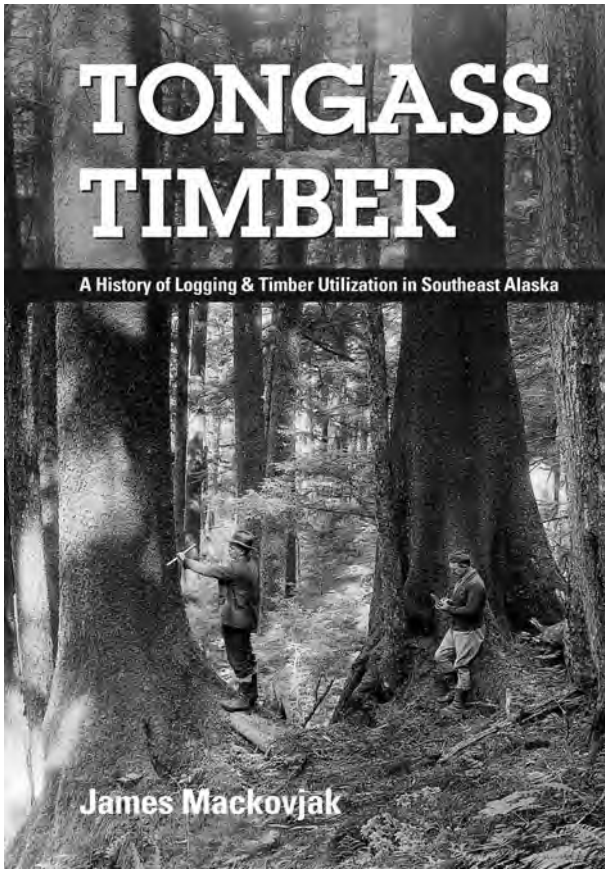
Tongass Timber: A History of Logging & Timber Utilization in Southeast Alaska

By James Mackovjak

The story of Southeast Alaska's forests mirrors human interest in economic development. However, their remote location meant large-scale commercial logging wasn't feasible until the 20th century.

But then the establishment of wood pulp mills in 1954 in Ketchikan and then Sitka, and lasting more than four decades, exposed the environmental and economic limitations of an integrated wood products industry in Alaska.

Tongass Timber traces the history of these efforts, their motivations, and resulting impacts. It is the human story behind the economics. This background reveals the forces that influence the present choices about forest management in Southeast Alaska.



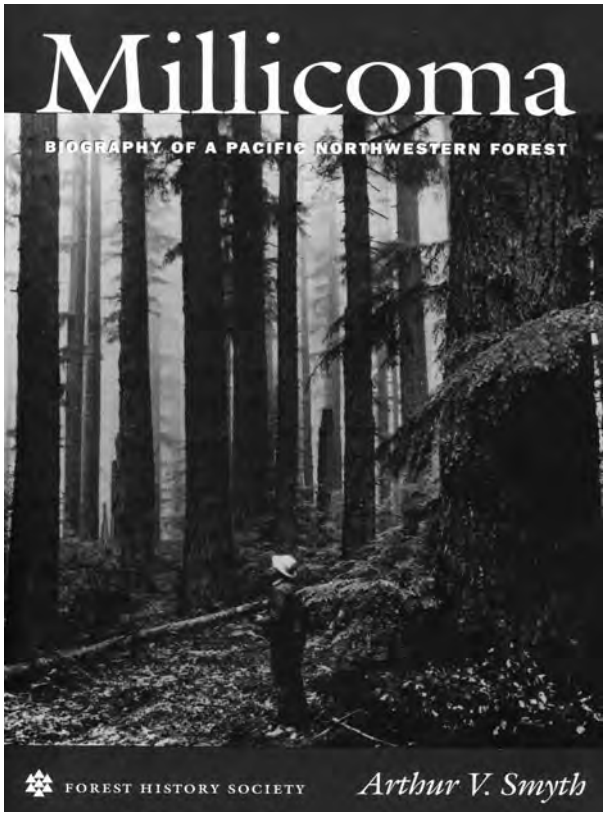
$19.95 + shipping and handling | soft cover; 386 pages; 77 photos/figures | ISBN-13: 978-0-89030-074-9 **www.foresthistory.org**

Millicoma: Biography of a Pacific Northwestern Forest

By Arthur V. Smyth

"This is the story of the life of a forest—how it began and how the forces of nature and the human hand changed it. No attempt has been made to identify villains or heroes. Rather, this is what happened to a landscape over several generations."

With that introduction, Smyth begins weaving the story of his days as a forester for the Weyerhaeuser Company in Oregon's Coos Bay area into a larger "biography" of an industrial forest in the Pacific Northwest. A Douglas-fir forest purchased by the Weyerhaeuser Company in the early 1900s, Smyth combines the historical record and his personal experience in the Millicoma Forest into "a fascinating saga of one of Oregon's most productive and intensively harvested forests," one that stretches from pre-colonial times through the spotted owl controversy of the 1990s and beyond.

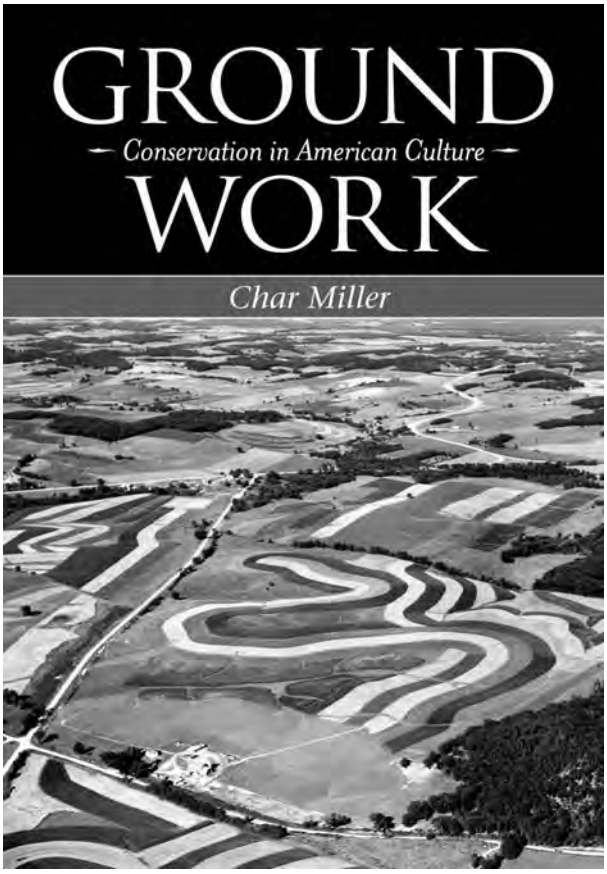


$12.95 + shipping and handling | soft cover; 164 pages; 4 maps and 48 photos | ISBN: 0-89030-058-5 **www.foresthistory.org**

Ground Work: Conservation in American Culture

By Char Miller

In *Ground Work*, Char Miller demonstrates his remarkable ability as a historian to cast new light on familiar events and figures, such as Bernard Fernow and Gifford Pinchot, and create a deeper and richer understanding of their significance, both in their times and in our own. *Ground Work*'s thirteen essays span topics from the Progressive Era roots of the American conservation movement, on which Miller has proven his virtuosity in earlier works such as *Gifford Pinchot and the Making of Modern Environmentalism*, to new insights into the impact of documentary films, and on the environmental perceptions of 21st century urban America. Advanced undergraduate and graduate courses in environmental and forest history will find these essays stimulating, general nonfiction readers will find them very enlightening.



$19.95 + shipping and handling | hard cover; 182 pages; 39 photo/figures | ISBN: 978-0-89030-069-5 **www.foresthistory.org**

TO OUR MEMBERS

Thank you for your annual membership gifts that keep the Forest History Society available as a free public resource worldwide.

Because of you
more valuable historical documents and images of forest and conservation history were collected, preserved, and made accessible for the benefit of current and future generations.

THE FOREST HISTORY SOCIETY

Thank you from the staff and patrons

Special thanks to

FHS CIRCLE OF STEWARDS

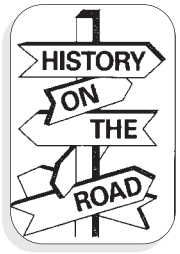
Whose legacy gifts are making a lasting contribution to the work of the Forest History Society.

For gift planning inquiries, please contact the FHS Development Office at (919) 682-9319.

HISTORY ON THE ROAD

CARL ALWIN SCHENCK GROVE, PRAIRIE CREEK REDWOODS STATE PARK, CALIFORNIA

By James G. Lewis



The silence, once I recognized it, struck me as odd, but then it made sense. I've been in louder empty churches, an apt analogy because I was here to pay my respects to the late, great man. I stood alone in the natural cathedral. The giant trees reminded me of the Corinthian columns that supported the roof of my childhood church—too big to wrap my arms around and requiring that I tilt my head all the way back to see the decorative capital of flowers and leaves. The top of the coastal redwoods and giant sequoias have their own version. I moved about the trail of marked trees silently so as not to disturb the named sentinels that guard the grove. It seemed silly because I was alone but it made all the sense in the world because of the reverence I feel for those honored here: Olmsted, Sargent, Vanderbilt, Pinchot, Fernow, and sixteen other founding fathers of the American forestry movement. They are the men that I have shared my life with, for a quarter of a century now, having spent countless hours studying, questioning, challenging, and arguing with and about them. But I had come to pay tribute to the man for whom the redwood grove is named and who had selected the trees that bore their names: Carl Alwin Schenck.

How is it that a redwood grove in northern California is named for a German forester who had barely stepped foot in these woods until he came here on July 4, 1951, for the dedication ceremony in his honor? He would have told you the answer is "love." The love Schenck's former students felt for him, and he them. Schenck's saying that "Forestry is a good thing but love is better" is inscribed on the commemorative marker. Actually it tells us that "the alumni, his friends and admirers . . . have caused these trees to be designated in his honor as a mark of their affection for him and their devotion to his leadership and his teaching." In mid-twentieth century America "affection" was an acceptable term for men to use when saying they loved one another. The word really harkened back to their youth, when they trailed through the forest behind Schenck like so many flannelled fledglings. But the inclusion of Schenck's quotation tells you it was more than affection. "Affection" stands for many other things: "admiration," "respect," "friendship." But most of all "love."

"Have caused these trees" is an interesting choice of language. They—the alumni, "his boys" as he called them—had

FOREST HISTORY SOCIETY PHOTO ARCHIVES, CARL A. SCHENCK FOLDER

Dr. Carl Alwin Schenck addresses the crowd. The stage was placed just to the left of the entrance (see next photo).

been his cause while he was their teacher. He taught them forestry, for sure, but taught them to be men, to drink beer around the campfire, and to drink deeply from the well of life. To know the great philosophers and the Bible. To know their oaks from their maples. To know that good forestry meant good roads. They in turn had made him their cause, to bring him back to the United States following World War II, to show him that they had become the men he expected them to be and had done the great things he prepared them to do. The last tree named is in their honor: "All Schenck's Old Boys of The Biltmore School."

■■■

The Carl Alwin Schenck Grove is in Prairie Creek Redwoods State Park in northern California. The grove is named for Dr. Carl Alwin Schenck (1868–1955), the chief forester of the Biltmore Estate in Asheville, North Carolina, and founder of the Biltmore Forest School, the first school of forestry in North America. The grove was dedicated on July 4, 1951, by Schenck in a ceremony attended by his former students, friends, and local dignitaries.

Schenck operated the school from 1898 to 1909 on the estate before he was dismissed by the owner, George Vanderbilt. Schenck then spent the next four years traveling with his students throughout the United States and Europe examining working fields and lumber operations before shuttering the school and returning to his native Germany by 1914. He maintained contact with some of his students over the next four decades. In 1951, the American Forestry Association and the school's alumni sponsored Schenck on a tour of the United States, during which forests were named in his honor. One of the many was a grove named for him through a program operated by the Save the Redwoods League.

The grove has two trail loops with numbered markers bearing the names of founders of the American forestry movement as selected by Schenck and one dedicated to his former students. Markers are still visible for (in sequential order) Frederick Law Olmsted Sr., Charles Sprague Sargent, George W. Vanderbilt, Gifford Pinchot, Sir Dietrich Brandis, Carl Schurz, John Sterling Morton, John Aston Warder, Nathaniel Egleston, Bernhard Fernow, Joseph T. Rothrock, Filibert Roth, Samuel B. Green, Dr. Homer D. House, and Dr. Clifford Durant Howe. (House

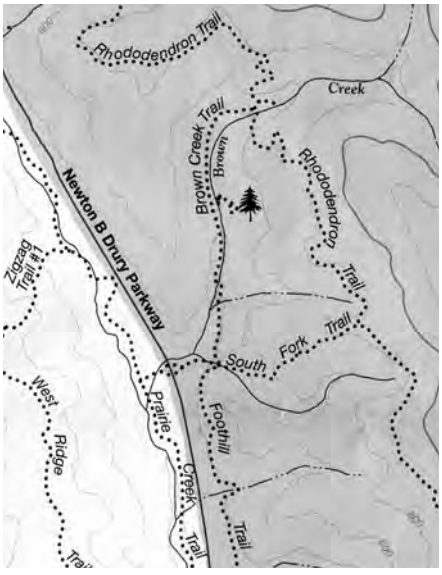
COURTESY OF THE AUTHOR

The entrance to Schenck Grove. The commemorative marker is on the left. The bridge railings "point" towards the George Vanderbilt tree.

The path and markers 1 through 4: Olmsted, Sargent, Vanderbilt, and Pinchot.

PHOTOS COURTESY OF THE AUTHOR

The tree on the lower map indicates the grove's location.



MAPS ©2011 CALIFORNIA STATE PARKS

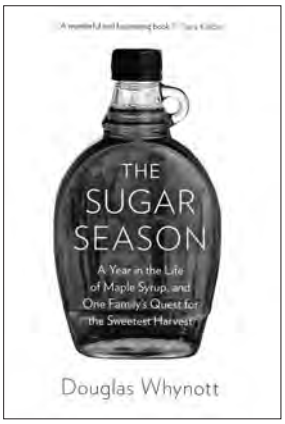
and Howe taught under Schenck at the Biltmore School.) Five markers are missing. It is hard to determine what names they bore because of a discrepancy between the names recorded at the time Schenck announced them in 1951 and the standing markers. For example, Nathaniel Egleston was not named by Schenck but his name is on marker number 12; Fernow was the twelfth man named by Schenck but is on marker 13. (You can hear his speech at http://foresthistory.org/audio/blog/DrCarlSchenck_speech.mp3). The Save the Redwoods League is in the process of digitizing their files relating to their many memorial groves, which may help clear up the discrepancy.

Directions: The Carl Alwin Schenck Grove is located off the Newton B. Drury Scenic Parkway, approximately 8 miles north of Orick, California, off U.S. Highway 101. To access the grove, park on the road at the Brown Creek Trail trailhead. Begin the 1.3-mile walk by going 0.2 miles east on the groomed dirt path to the trail junction. Turn left (north), staying on Brown Creek Trail and heading away from South Fork Trail. The footbridge to Schenck Grove is about 1.1 miles north of the junction. At the other side of the bridge sits the marker unveiled at the dedication. Allowing at least three hours to hike there and back leaves ample time to explore the grove. □

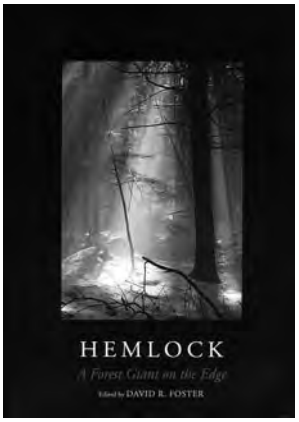
James Lewis is an executive producer and historical consultant on the documentary film First in Forestry: Carl Schenck and the Biltmore Forest School *(www.firstinforestry.org), which is being produced by the Forest History Society.*

BOOKS AND FILMS OF INTEREST

by Eben Lehman and James G. Lewis

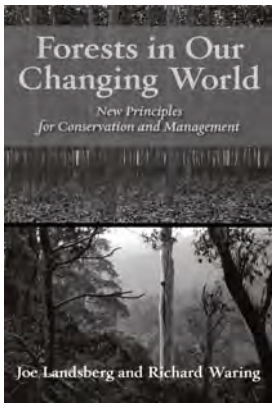


Late in 2012, the maple syrup industry made worldwide news headlines when suspects were arrested for stealing more than 545,000 gallons of syrup—worth $18 million wholesale, or 13 times the price of crude oil—from a warehouse in Quebec. The "Great Canadian Maple Syrup Heist," as the news media christened it, revealed just how big the maple syrup business had become. One of North America's oldest craft industries—still associated with horses, sleds, and wooden buckets in the public's mind—was suddenly being directly compared to OPEC and drug cartels on the evening news. In ***Sugar Season: A Year in the Life of Maple Syrup, and One Family's Quest for the Sweetest Harvest*** (Da Capo Press, 2014), Douglas Whynott provides us with an intimate look at life in the modern-day maple sugar industry by shadowing a maple syrup entrepreneur, Bruce Bascom, through the 2011–2012 winter season. Bascom's Maple Farm, in New Hampshire, is no small operation, and producing maple syrup is big business. Family owned and operated for generations, the farm is one of the largest maple sugar producers in the region. With Bascom as his guide, Whynott follows the entire syrup-making process from production through distribution and sale. The hanging sap buckets of old are gone; new technological advances allow for piping that runs the sap directly from trees into sugarhouses for processing. To understand how this is possible, Whynott explains how the species' unique biology allows for sap production and how sap ultimately becomes sugar. Even though technological advances and economic consolidation have transformed the maple sugar industry, this book is still very much about the importance of tradition. Whynott reveals the camaraderie that still exists within the industry as well as in the communities that produce maple sugar. He also reveals a business with an uncertain future. The effects of climate change were felt in the 2011–2012 season, one of the warmest winters ever recorded. This, combined with the politics of the industry—and the role played by Canadian producers and their "global strategic reserve" of syrup—raises questions about the future of the maple sugar industry. Whynott's book, while something of a cautionary tale about climate change, also clearly demonstrates the importance of maintaining one of America's iconic and traditional forest product industries. (EL)

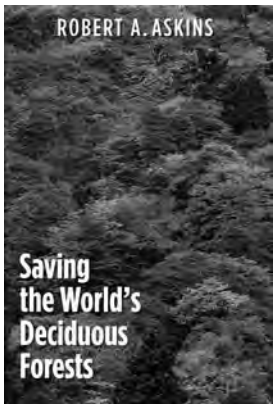


"No other tree species in our eastern landscape exerts such a widespread and profound influence on the environment and other organisms, including ourselves." This is how David Foster, director of the Harvard Forest, describes the threatened eastern hemlock. Edited by Foster, ***Hemlock: A Forest Giant on the Edge*** (Yale University Press, 2014) explores the past, present, and future of this tree species using knowledge drawn from a century of long-term studies at the Harvard Forest. (Excerpts from the book appear in the previous issue of *Forest History Today* and elsewhere in this issue.) Although it is a tale of scientific research conducted at Harvard Forest, the book is an engrossing read for nonscientists, showing what is special about hemlock woods and why humans have been so attracted to them throughout history. The ecological history of the hemlock is remarkable because of how adaptive the tree has been, and how important the species is to eastern forests. The significance of the hemlock tree lies in its function as a foundation species, one that Foster says can "create, define, and maintain entire ecological systems," and its imminent loss has implications for numerous other plants and animals. The species is currently under grave threat from the hemlock woolly adelgid. This pest, shipped to the United States on a Japanese hemlock in 1951, spread quickly during the second half of the twentieth century and now infests native hemlocks from Maine to Georgia. Foster details the various research studies on the hemlock's decline 5,500 years ago, like that of paleoecologist Margaret Davis and her discovery that it was caused by a biological agent and not climate change, and what they mean for the hemlock today. In sum, the future of the hemlock now looks increasingly bleak. As Foster notes, it is especially distressing because of the foundational role hemlock plays in northeastern forests as a whole. The book is not a eulogy, however, and it offers lessons for the future—especially, how we can apply our knowledge of the hemlock to other threatened species. (EL)

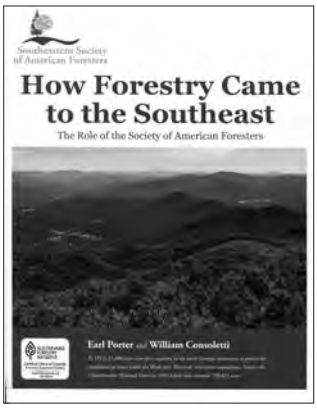
The management of forests around the world is the subject of ***Forests in Our Changing World: New Principles for Conservation and Management***, by Joe Landsberg and Richard Waring (Island Press, 2014). The book examines forest policy within the context of a rapidly changing global climate. Landsberg and Waring, both experienced researchers and forest scientists, believe that the public needs a better understanding of how climate and weather affect tree physiology and forests. Although they provide valuable information on forest



types, the effects of climate change, and the economics of forest management, the book is not intended just for professional foresters. Using an accessible style, Landsberg and Waring aim to reach a wider audience and improve general knowledge of global forest resources. To that end the book features a helpful glossary of technical terms, explains the benefits and value of forests, and provides an introduction to forest management concepts from around the world. All of these topics are examined in detail, but the many complexities of forest management are broken down into easily digested components. For example, micro- and macroscale economic decision making about forests is clearly explained, with information on the economic principles of thinning, harvesting, and using fire, as well as how to understand forest growth and yield estimates. At less than 200 pages, the book is neither overwhelming for general readers nor simplistic for forest managers. (EL)

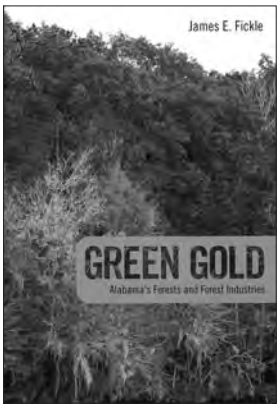


Another look at the conservation and management of global forests comes from Robert A. Askins. ***Saving the World's Deciduous Forests*** (Yale University Press, 2014) explores the Northern Hemisphere's deciduous forest ecosystems across North America, Europe, and Asia. Askins provides a detailed look at the history and ecology of ecosystems dominated by oaks, maples, and other hardwoods and examines the commonalities among the similar types of woodlands found across the three continents. He documents the histories of these ecosystems—going back millions of years to their origins—as well as more recent environmental history and the effects of humans on the forests. A strength of the book is its examination of the wildlife ecology of the forests: the extinction of mammoths, mastodons, and other large mammals, the decline of woodland bird populations, and the increasing density of deer populations due to declining predators. The book also provides insight into other environmental threats that have global consequences, such as climate change, fire, and the transport of species across continents. Askins does not just focus on commonalities, though; he also contrasts the distinct histories of each region and the resulting ecological and cultural differences. Efforts to protect and restore forests and ecological diversity on each continent have historically been influenced by unique cultural differences. For example, the Japanese tradition of observing natural scenes rather than actively exploring them helped form region-specific conservation strategies. Overall, Askins makes a wealth of scientific knowledge accessible to the general reader, who will gain a solid understanding of the similarities and differences found in the deciduous forests of North America, Europe, and Asia. The comparing and contrasting of conservation strategies on each continent also provide important lessons for future global cooperation. (EL)



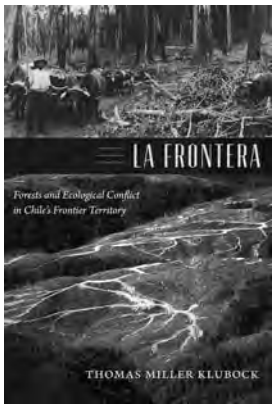
Members of the Society of American Foresters (SAF) have been instrumental in both conserving and developing the forests of Alabama, Georgia, and Florida for more than a century. By 1928, professional forestry and forest industries had matured enough in those states to warrant formation of a subsection of SAF, the Southeastern Society of American Foresters (SESAF). In the 1970s SESAF member Earl Porter began documenting and writing its history. But the manuscript remained unpublished and was amended over the next forty years by others until ultimately landing on SESAF historian William Consoletti's desk. With help from others in the organization, the useful history and reference book ***How Forestry Came to the Southeast: The Role of the Society of American Foresters*** (Southeastern Society of American Foresters, 2014) has finally been published. The book's first section covers the history of forests and the beginning of forestry in the United States, with an emphasis on the Southeast, and includes discussions of topics like private forestry and forestry education, with sidebars on pioneers and leaders and a handy timeline of events both regional and national. The last section offers a good overview of the past forty years of forestry in the region "in the era of regulation, mergers, the rise of TIMOs and REITs, the change in forestland ownership, and the burgeoning biomass industry." Fifteen appendices document the importance of SESAF leaders and offer some useful, relevant tables on landownership and industry. (JL)

Those wanting to know more about Alabama's forests need only look at ***Green Gold: Alabama's Forests and Forest Industries***



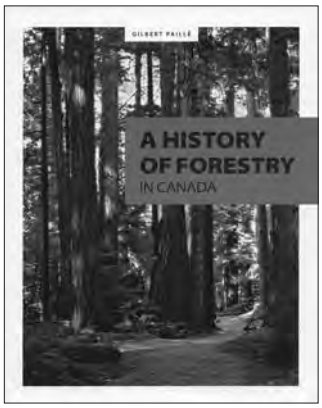
(University of Alabama Press, 2014). Forest industries were of fundamental importance to the history of Alabama and continue to be a major component of the state's economy today. James E. Fickle delves into this history, documenting the development of the timber and forest products industry in the state. He follows the changes in use of forest resources and the evolution of Alabama's forest landscape, with a focus on the late 1800s through the beginning of the twenty-first century. This period saw

changes in the technology of lumber production, the growth of the pulp and paper industry, the introduction of forest management, and the adoption of certification programs. Fickle provides both a historical overview and a ground-level look at forest industry. He examines changes from a technological perspective, such as the evolution of felling timber, transporting logs, and sawmill machinery. He also covers the work done by loggers and mill workers—hard, difficult labor oftentimes done for low wages. Documented also are the use of the convict lease system, battles over unionization, racial discrimination, and other labor topics. An ongoing theme is the recovery and resiliency of Alabama's forest economy and the shift of the pulp and paper industry into the South during the early twentieth century. Charles Herty's chemical research perfected the means to make paper from southern pine pulp—the "green gold" of the title—that facilitated this shift, and the corresponding rise of companies like the Southern Kraft Division of International Paper Company. The post–World War II period brought another resurgence of economic growth as the production of softwood plywood took off. Also of note is the lumber industry's evolution away from the old cut-out-and-get-out era, led by the W. T. Smith Lumber Company's embrace of sustained yield forestry beginning in the 1930s, which transformed the state's forested



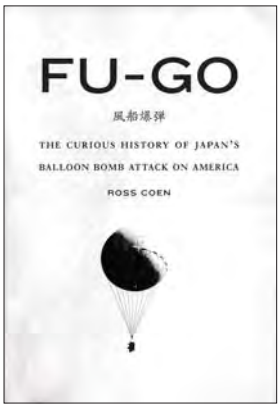
landscape. A great overview of all aspects of the forest industry, this book reveals why it has had a profound influence on Alabama's environment, economy, and society as a whole. (EL)

Forest industry, of course, has had a profound effect on regions beyond the borders of the United States. Thomas Miller Klubock's new work of environmental and social history, ***La Frontera: Forests and Ecological Conflict in Chile's Frontier Territory*** (Duke University Press, 2014), looks at Chile's southern frontier territory, a region commonly referred to as *la frontera*. Klubock first looks at how deforestation and ecological crisis over the late nineteenth and early twentieth centuries opened the door for forest development in southern Chile. This forest policy, specifically the creation of Monterrey pine plantations, would transform the landscape. A conducive climate allowed for the easy transplant of Monterrey pine from the United States' Pacific Northwest to southern Chile. Monterrey pine was crucial to the development of a pulp and paper industry, but many of the long-term effects of pine plantations on soil and water remain unknown. Forest policy did not bring just ecological changes, though. Klubock explores how these policy changes affected the Mapuche communities as well as other rural poor residents, and transformed societal relations between government and rural communities. Some of the worst violence initiated by the state in the late twentieth century would occur in the southern region. A strength of Klubock's work is his use of oral history interviews with members of the Mapuche community and with Chile's foresters and forest industry workers. Overall, the book is a worthy addition to the growing scholarship on the environmental history of Latin America. (EL)



The title ***A History of Forestry in Canada*** (Les Publications du Québec, 2014) pretty much sums up what Gilbert Paillé's new book is about. Although it is primarily aimed at Canadian forestry students, Paillé, who spent 35 years working as a forester and teaching, nevertheless fills a large hole in the historiography of Canadian forestry. More than an ecological or industrial history, the book provides a sociocultural perspective—how people at different times have adapted to and used the forest—from the Native American period, the French and British colonial periods (beginning in 1534), and Canadian confederation (1867) to the present, the last period taking up the bulk of the book. This chapter is subdivided into nine sections: land administration, forest administration, forest management, national forest strategies, forest management activities, environmental protection, the development of forest industries and forest trades, external and internal trade in the main forest products (wood, lumber, pulp and paper), and the forest workforce. Each of these sections begins with a paragraph or two on the topic in world history, then narrows its focus to Canada and then to the relevant provinces and territories. Structuring the book this way places Canada in a global context and makes the presentation of so much material very effective. (JL)

On May 5, 1945, Archie Mitchell took his wife and five children to a picnic lunch near Bly, Oregon. Soon after arriving, his wife and children discovered a strange object on the ground. A tremendous explosion followed, killing his entire family. These would be the only deaths on the mainland United States caused by a Japanese attack during World War II. Mitchell's personal tragedy resulted from an experimental attack plan by the Japanese late in the war. Ross Coen explores this little-known chapter of World



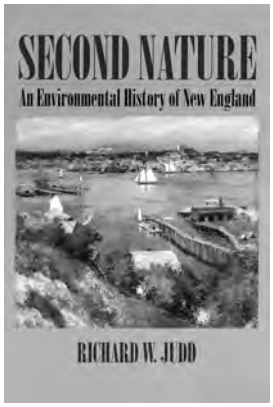
War II history in ***Fu-Go: The Curious History of Japan's Balloon Bomb Attack on America*** (University of Nebraska Press, 2014). Code-named fu-go, the campaign was initiated by the Japanese army, somewhat out of desperation, toward the end of the war. The plan involved flying high-altitude hydrogen balloons—each carrying multiple incendiary bombs and one antipersonnel bomb—in the jet stream across the Pacific Ocean. The Japanese intended that once the balloons reached the western United States, the

bombs would ignite forest fires and cause wanton massive destruction, or at least terrorize Americans and occupy essential personnel with fighting fires. Unbeknownst to the Japanese, when the balloons first began appearing in the United States in late 1944, the U.S. Forest Service prepared to combat the possible forest fires by dispatching smokejumpers and repurposed army paratroopers. The fu-go program, though, proved largely unsuccessful. Of the hundreds of balloons that reached North America, few detonated, and American officials prevented panic by keeping the balloon story out of the news. Coen's chronicling of this little-known chapter of wartime history is a well-researched and engaging read. Especially helpful is the book's appendix, which includes maps and detailed information on every known fu-go balloon incident in the United States and Canada from 1944 to 1945. (EL)

Those interested in World War II history may also enjoy ***Wisconsin's Flying Trees in World War II: A Victory for American Forest Products and Allied Aviation***, by Sara Witter Connor (History Press, 2014), which elucidates how the forest products industry in Wisconsin became an integral part of the

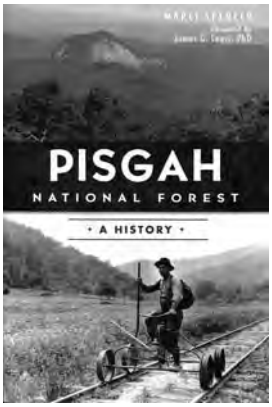
Allied war effort. Connor chronicles the contributions of loggers, wood researchers, factory workers, and many others on the home front to the development of military aircraft. Planes and wooden gliders required timber; Connor discusses the production side but also includes stories of some of the pilots who flew these aircraft in battle. As the war effort got under way, the demand for more and more planes caused a sudden and massive shift in the scale of operations. Connor details the challenges as Wisconsin's forest products industry adjusted to these new demands while dealing with a limited workforce and restrictions on raw materials. Wisconsin contributed more than industrial productivity, though. Research done at the U.S. Forest Service's Forest Products Laboratory in Madison proved vital to the war effort. The lab worked with aircraft companies, the forest products industry, and the military to develop waterproof wood glues and other technologies to be used in aircraft construction. At its core, this really is a story of cooperation. The author shows how the federal government, private industry, and associated entities came together to meet wartime demands and succeed on an enormous scale. Numerous historic photos illustrate this tale of forest products and emerging technology. (EL)

Standard environmental history narratives are typically premised on one of two ideas: either environment determines culture or culture degrades natural ecosystems. Historian Richard W. Judd finds middle ground between these competing narratives. In ***Second Nature: An Environmental History of New England*** (University of Massachusetts Press, 2014), he explores the history of the blended landscape, looking at the wild and built environment together. Judd refers to this mixed environment as "second nature" and examines the eco-



nomic, cultural, and ecological forces that played a role in creating New England's second-nature landscapes. In part one he looks at the beginnings of the second-nature landscape—Native Americans, first colonial settlements, and the transition from natural ecology to farm ecology by 1800. Part two focuses on the industrial age of the nineteenth century, when the landscape was further transformed by logging and fishing industries, as well as the growth of cities and the construction of canals and railroads. This does not mean the region was no longer tied to the natural world, though. Even with industrialization, water was still needed to power the mills, for example. Judd also looks at the spiritual dilemma of human alienation from nature. The nineteenth century's second-nature landscapes helped create the American Romantic and Transcendentalist movements in New England. Finally, part three looks at the modern era and provides a nice overview of the rise of conservation, urban reform, and environmental movements in the region. Judd's search for historical middle ground may alienate some readers, but the book provides an engaging and easy-to-read regional narrative. Though geographically focused on New England, the work covers an extensive time period and a plethora of topics, making it a worthwhile text for a wide variety of readers. (EL)

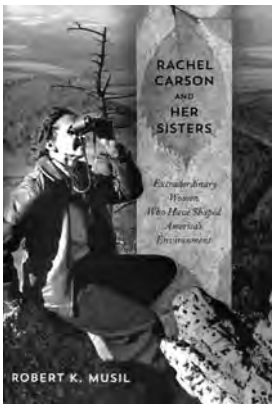
The History Press has been publishing popular histories of cities and towns, urban parks, and even rivers and mountains for some time now. With Marci Spencer's ***Pisgah National Forest: A History*** (2014), they branch out into covering national forests. (FHS historian James Lewis wrote the book's foreword.) Like the press's other books, Spencer's is an accessible, illustrated history aimed at a general audience, perhaps the armchair traveler or a visitor looking to learn more about the place and



wanting only a short, engaging overview. Spencer has done her research, both in libraries and on the ground. A long-time resident of the area, she knows Pisgah National Forest very well, having walked its many trails since childhood. She proves an excellent guide through both its landscape and history. The first half of the book begins with what attracted early visitors to Asheville, North Carolina, among them millionaire George Vanderbilt. Vanderbilt fell in love with the mountainous region and decided to build a home there, the Biltmore Estate. What began as a modest enterprise became the largest private home in the country and was surrounded by

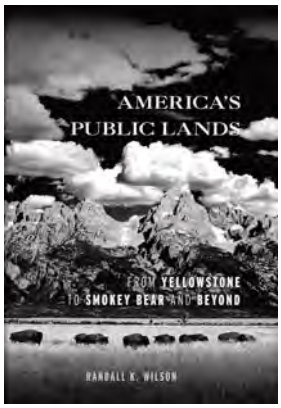
120,000 acres. He hired professional foresters Gifford Pinchot and Carl Schenck to initiate practical forest management, one of the forest's many historical firsts; in 1898 the estate became the home of the country's first forestry school. In 1916 Vanderbilt's private Pisgah Forest became the public Pisgah National Forest, the first one created under the Weeks Act. Spencer, of course, continues the story, bringing the national forest's history up to the present. In the second half of the book she gives descriptions of each of its three ranger districts, highlighting their natural features with a local's knowledge. Have your hiking boots ready when you finish; you will want to go there after reading this. (JL)

Most readers will know the name Rachel Carson or have heard of her famous 1962 best-seller *Silent Spring*, which helped launch the modern environmental movement. But how many know the names Susan Fenimore Cooper, Alice Hamilton, Martha Maxwell, Ellen Swallow Richards, Theo Colborn, or Terry Tempest Williams? In ***Rachel Carson and Her Sisters: Extraordinary Women Who Have Shaped America's Environment*** (Rutgers University Press, 2014), Robert K. Musil, president of the



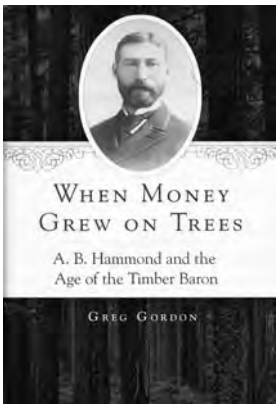
Rachel Carson Council, demonstrates that Carson was not a solitary historical figure or anomaly, but one in a long line of American women naturalists and scientists interested in or involved in developing an ecological approach to environmental science and advocacy. Carson was inspired by her mother and other naturalists like Cooper and Maxwell born in the nineteenth century not only to pursue scientific research but to write in beautiful, accessible prose. She provides the bridge between the women who influenced her and those whom she in turn influenced. Carson not only warned against the use of dangerous pesticides but was an antinuclear advocate and animal rights supporter, efforts taken up by Williams, Colborn, and Devra Davis, among others. In his reexamination of Carson's life and work, Musil is able to tell of the lives and work of these other women—Carson's "sisters in arms" in the fight to protect the environment—and how they connect to Carson. You can see Musil's Lynn W. Day Lecture on the topic at http://www.foresthistory.org/Events/ lecture2014.html. (JL)

America's relationship with its public lands is complex and constantly evolving. In ***America's Public Lands: From Yellowstone to Smokey Bear and Beyond*** (Rowman and Littlefield, 2014), Randall K. Wilson explores the origins of the nation's extensive system of public lands and the challenges faced by the various agencies that manage them. The incredible size and ecological diversity of public lands found throughout the United States has perhaps inhibited scholarship on the history of public lands as a coherent system. Wilson suggests that we need to rethink our assumptions and understandings about public lands. One way to do this is by analyzing their history and origins, since public land in many ways directly reflects how



citizens value nature. Nineteenth-century Americans looked at nature as a commodity because it provided natural resources. That relationship began to change as conservationists brought a more complete ecological view to America's natural landscapes. The first part of the book follows this evolution, documenting the acquisition and disposal of public lands. Part two examines the different types of public lands within the overall public domain system, with individual chapters on national parks, national forests, national wildlife refuges, Bureau of Land Management (BLM) lands, and the National Wilderness Preservation System. The chapter on BLM is especially informative because, as Wilson notes, these federal lands are probably the least recognized or understood by the general public—even though BLM manages more acreage than both the national park and national forest systems and is involved in many ongoing conflicts over land use in the American West. As a whole, the book is essential reading for those interested in how Americans value nature and how they use their collectively owned lands. (EL)

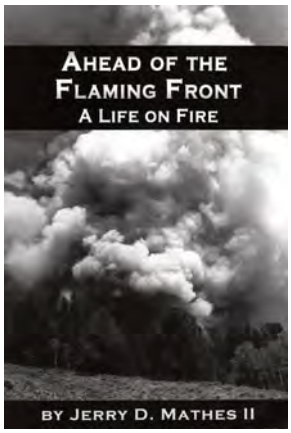
The names of some business titans from America's first industrial era—Andrew Carnegie, J. P. Morgan, Frederick Weyerhaeuser, John D. Rockefeller—still resonate today, but others have faded from history. Greg Gordon resurrects one neglected magnate with his new biographical study, ***When Money Grew on Trees: A. B. Hammond and the Age of the Timber Baron*** (University of Oklahoma Press, 2014). Andrew Benoni Hammond was one of the leading figures of the American timber industry in the late nineteenth and early twentieth centuries. Gordon documents Hammond's life in great detail from his beginnings as a young lumberjack in Maine. Born in 1848, not coincidentally Hammond made the difficult transition



from lumberjack to corporate leader during an era of immense western expansion, railroad construction, and natural resource extraction. After moving west, he built a lumber empire that stretched from Arizona to the Puget Sound. This was the time of the Pacific Northwest timber rush, and Hammond positioned himself to use every advantage and trick to gain access to forest resources. He and other lumbermen enriched themselves by acquiring some 3.8 million acres of prime Oregon public timberland intended for settlers through deceptive—and sometimes outright illegal— means. One unintended consequence of this large land grab and the

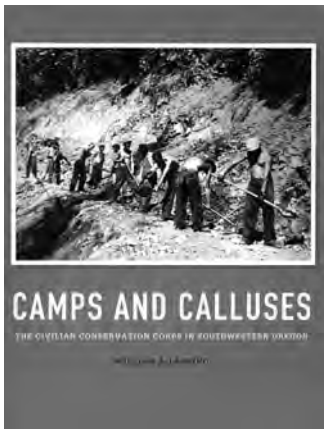
subsequent logging frenzy was that it contributed to the creation of the national forest reserves. Theodore Roosevelt cited abuses by the lumber barons as a primary reason for creating national forests in the western United States. This era was also one of intense labor struggle, and Hammond held a lifelong opposition to unions. His empire included large sawmills and company towns, which brought him into conflict with those attempting to unionize. Hammond directly confronted and thwarted organized labor on several occasions. His antiunion beliefs and hardnosed business reputation were captured in the anecdote that at his own funeral, Hammond sat up in his coffin as the pallbearers approached and yelled, "Six pallbearers? Fire two, and cut the wages of the others by ten percent." Gordon has written a biography that draws on environmental, labor, and business history, one that reminds readers that exploitation of the West's natural resources was not dictated by powers in the East but in large measure by those living in the West. (EL)

As fire seasons in the West continue to grow longer, more costly, and more devastating, it is important to look beyond just



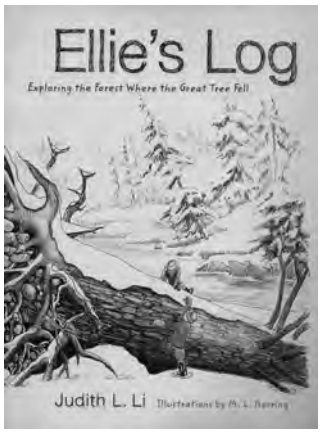
issues of history and policy and consider the perspectives of the men and women on the ground fighting these fires. Jerry D. Mathes II provides this firsthand perspective in ***Ahead of the Flaming Front: A Life on Fire*** (Caxton Press, 2013) by drawing from his own experience of fighting fires for fourteen seasons. His personal narrative presents an excellent account of day-to-day life on the fireline, and an intimate perspective of how wildfires are actually fought on the ground. Mathes shares insight into strategy and safety as he rises from rookie firefighter to veteran. Of particular importance to the narrative are the relationships that Mathes forms with his coworkers. Special bonds are formed while working on the fireline, and Mathes does an excellent job of describing the camaraderie and bravery among firefighters. Also clearly demonstrated is the love for what they do: after a long, exhausting day of work, still wet and cold, covered in soot, and smelling of smoke, he can't wait to get back out there the next day. As Mathes says, "fire runs through the blood like it rips through dry grass in August." Amid the stories of battling fires Mathes also shares his opinions on fire policy, unabashedly stating what he believes works and what does not. He also discusses safety training, or what he sometimes finds is a lack thereof. In addition to fighting fires, Mathes also spent considerable time teaching writing, and it shows. The book is well written and is hard to put down, and is an exceptional read on what it is really like on the front lines battling wildfires in the West. (EL)

During the Great Depression, President Franklin Roosevelt established the Civilian Conservation Corps (CCC) to put young men to work while aiding the conservation and development of American natural resources. A new book by William A.



Lansing, a forester who took up writing the history of Coos County, Oregon, in retirement, focuses on a small, regionally specific portion of this successful nationwide program. ***Camps and Calluses: The Civilian Conservation Corps in Southwestern Oregon*** (self-published, 2014) offers a detailed history of eighteen CCC forest camps in the woods of southwestern Oregon and daily life in a CCC camp, including work, recreation, and the challenges of living in a backcountry area. The work projects completed by the CCC in the region left an impressive legacy: firefighting, working on state park infrastructure, building roads, constructing lookout towers, and maintaining tree nurseries. The best parts of the book are the sections on the individual camps. The experiences of the men, the work projects, and the particulars of life in each camp form a composite picture of the CCC program. Beautifully illustrated throughout, the book is packed with historic photographs and presented in an oversized volume worthy of a place on a coffee table. Lansing also includes images of rare primary documents such as camp inspection reports, camp newspapers, cartoons, and maps. Even though the legacy of the CCC lives on in the many completed work projects, the historical record is minimal for many of the forest camps in southwestern Oregon. This book fills that void with a definitive take on the experiences of the men who spent time working for Uncle Sam in the Oregon woods. (EL)

Younger readers with an interest in forests will thoroughly enjoy ***Ellie's Log: Exploring the Forest Where the Great Tree Fell*** (Oregon State University Press, 2013), by Judith L. Li, with illustrations by M. L. Herring. The story centers on eleven-year-old Ellie, who lives in a cabin in the Oregon woods. Her father is a forest manager and wildlife biol-



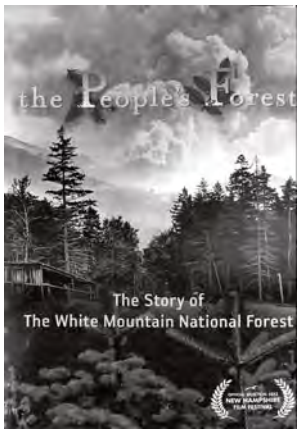
ogist with the U.S. Forest Service, and her mother researches insects. After hearing a large tree fall during a winter storm, she and her friend Ricky begin to explore the forest near her home. With the eye of a young scientist, Ellie notes the different kinds of life she encounters along the way—squirrels, birds, salamanders, insects, mushrooms, moss, and lichen. Ellie continues to explore the forest area around her fallen tree through the spring and into the summer, noting changes to the environment through the seasons and observing how an old log can support life of many different forms. Ellie's "log" in the title also

refers her own logbook journal. This wonderful introduction to the forest shows how children can follow her model and keep their own notebooks on what they observe. Aspiring young scientists, as well as parents and educators, will enjoy this delightful and detailed tour through the forest environment. Additional resources for both readers and teachers are also available online at the book's companion website (www.elliesloog.org). (EL)

For five- to eight-year-olds, ***As an Oak Tree Grows***, by G. Brian Karas (Nancy Paulsen Books, 2014), is a delightful yet fact-based introduction to the life cycle of a tree—from beginning through maturity to its demise—and all the things a tree provides people and animals during and after its life. The picture book begins with a young Native American boy planting an acorn in 1775 somewhere along the northeast coast. In verse and art, Karas then traces how the surrounding land and people change as the tree grows over the next two centuries, and how different cultures and societies perceive, interact with, and benefit from the oak tree's presence, as well as its acorns and shade. The story unfolds in twenty-five year increments, with a timeline running across

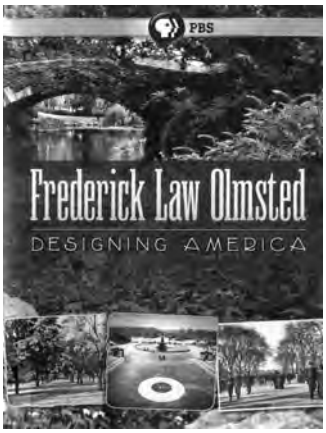
the bottom of the pages. As we watch the tree grow, the background transforms from a Native American village to a modern town: attentive youngsters learn that the natural world is not static. When in 2000 a violent storm erupts and lightning fells the tree, we are told matter-of-factly that "People come to look where the great oak tree once stood. The tree is cut into pieces to be used for furniture, firewood and mulch." On the next page, beside the stump, we see that "a new oak tree grows" and the cycle begins again. The book comes with a fact-filled poster about a tree's life cycle on one side and a history timeline found in the tree's rings on the other. (JL)

The documentary film ***The People's Forest: The Story of the White Mountain National Forest*** (Moore-Huntley Productions, 2014; 48 minutes) tells how citizens of New Hampshire and lovers of the White Mountains organized a grass-roots effort that ultimately changed the map of the United States. From 1880 to 1911, the White Mountains region was subject to intensive, indiscriminate logging and a rash of major forest fires. The destruction of New Hampshire's forests—a popular vacation destination for Bostonians and other New Englanders and the economic engine and source of water for New Hampshire residents—set off a decades-long national battle over the fate of eastern forestlands. A unique partnership of private citizens and business and civic groups that believed conservation could benefit both the environment and the economy found their champion in Congressman John Weeks, a successful businessman from the Boston area who had grown up in the region and still summered there. The result was the Weeks Act of 1911, a groundbreaking piece of conservation legislation that



enabled the federal government, for the first time, to purchase private land to protect vital watersheds and forests and provided states with funding for combating wildfire. Though the Weeks Act benefited mostly the eastern United States, the law led to the creation of fifty-two national forests and grasslands spread across forty-one states—a total of more than twenty million acres. (JL)

Frederick Law Olmsted: Designing America (Hott Productions, 2014; 55 minutes) is the most recent film produced by Lawrence Hott and Diane Garey for PBS. Made in the traditional PBS style, it is perfect for classroom use because of its length (55 minutes) and subject—a biography of Olmsted (1822–1903), America's first landscape architect and an early preservationist. The film engagingly illustrates and explains Olmsted's numerous park designs, as well the impact of his parks and preservation work on American society. Olmsted spent 40 years designing urban parks around the country, each different from the last. His first, New York's Central Park, remains his most famous. There were many others, and all remain a necessity for urban life. His experience at Central Park, narrator Stockard Channing tells us, would be repeated at nearly every subsequent job: "He did brilliant work and quarreled bitterly with his superiors." Also, Olmsted did not give us natural landscapes, but artificial ones—ones "every bit as artificial as Disney World." By the time Olmsted retired in 1895, he had designed for every public space imaginable: parks, gardens, hospitals, the U.S. Capitol Grounds, and even a world's fair. Additionally, he was one of the first to argue for preserving natural landscapes like Yosemite Valley, the Adirondacks, and Niagara Falls. Ever mind-



ful of America's needs, though his last commission was for a private landowner, Olmsted encouraged millionaire George Vanderbilt to give back to the nation by initiating practical forest management on his 120,000-acre Biltmore Estate. In time, it became known as the Cradle of Forestry. By 1895, dementia had begun to affect Olmsted's ability to work and he retired. Long before then, the film demonstrates, he had made parks an essential part of American life and had helped "design" American perceptions of urban landscapes. (JL) □

MARK YOUR CALENDAR

AMERICAN SOCIETY FOR ENVIRONMENTAL HISTORY
March 18–22, 2015. Washington, DC.
Theme: Turning Protest Into Policy: Environmental Values and Governance in Changing Societies. Information at: http://aseh.net/conference-workshops/dc-conference-2015. Contact: Lisa Mighetto at director@aseh.net.

FOREST HISTORY ASSOCIATION OF ALBERTA
March 18, 2015. Edmonton, Alberta.
Information at: http://albertaforesthistory.ca/.

STATE OF THE SCIENCE AND POLICY WORKSHOP
April 6–7, 2015. University of California, Davis.
"Water Scarcity in the West: Past, Present, and Future."
Contact: Carole Hom, clhom@ucdavis.edu. Information at: http://ccwas.ucdavis.edu/State_of_the_Science_and_Policy_Workshop/2015/

NATIONAL COUNCIL ON PUBLIC HISTORY
April 15–18, 2015. Monterey, CA.
Theme: History on the Edge. Information at: ncph.org/cms/conferences/2015-annual-meeting.

FOREST HISTORY SOCIETY
April 23–25, 2015. Charleston, SC. Board of directors meeting. Contact: Steven Anderson at: steven.anderson@foresthistory.org or 919-682-9319.

FOREST PRODUCTS SOCIETY INTERNATIONAL CONVENTION
June 10–12, 2015. Atlanta, Georgia.
Theme: Unlocking the Potential of Forest Products. Information at: www.forestprod.org/ic/index.php.

ASSOCIATION FOR THE STUDY OF LITERATURE AND ENVIRONMENT
June 23–27, 2015. Moscow, ID.
Theme: Notes from the Underground: The Depths of Environmental Arts, Culture, and Justice. Information at: http://www.asle.org/site/conferences/biennial/.

ASSOCIATION FOR CANADIAN STUDIES IN THE UNITED STATES
October 14–17, 2015. Las Vegas, NV.
Theme: New Horizons in Canadian Studies. Information at: http://www.acsus.org/conference/conferences/23rd-biennial-conference-las-vegas-oct-14-17-2015.

ORAL HISTORY ASSOCIATION
October 14–18, 2015. Tampa, FL. Information at: http://www.oralhistory.org/annual-meeting/.

WESTERN HISTORY ASSOCIATION
October 21–24, 2015. Portland, OR. Information at: westernhistoryassociation.wildapricot.org/conferences.

FOREST HISTORY SOCIETY
October 29–31, 2015. Portland, OR. Board of directors meeting. Contact: Steven Anderson at: steven.anderson@foresthistory.org or 919-682-9319.

SOCIETY OF AMERICAN FORESTERS
November 3–7, 2015. Baton Rouge, LA. Information at: http://safnet.org/calendar/index.cfm.

LYNN W. DAY DISTINGUISHED LECTURESHIP 2015
November 2015. Durham, NC. Co-sponsored by the Forest History Society. Information at: www.foresthistory.org/Events/lecture.html. Contact: Jamie Lewis at james.lewis@foresthistory.org.

AMERICAN SOCIETY FOR ENVIRONMENTAL HISTORY
March 29–April 3, 2016. Seattle, WA.
Theme: Environmental History and Its Publics. Information at: http://aseh.net/conference-workshops/seattle-conference-2016. Contact: Lisa Mighetto at director@aseh.net.

WESTERN HISTORY ASSOCIATION
October 20–23, 2016. St. Paul, MN. Information at: westernhistoryassociation.wildapricot.org/conferences.

SOCIETY OF AMERICAN FORESTERS
November 2016. Madison, WI. Information at: http://safnet.org/calendar/index.cfm.

For the latest listings, please visit our "Conferences" page at: www.foresthistory.org/Events/conferences.html.

ANNUAL REPORT 2014

FROM THE CHAIR

By the time you receive this issue of *Forest History Today*, 2014 will be in the rearview mirror. What an exciting year it was!

After an electrical fire in November 2013, the Society's staff and invaluable historical resources were relocated elsewhere for eight months while remediation efforts took place. During this time the staff worked from several locations, keeping the Society's work going even under challenging conditions. Thanks to the staff's diligence, our disaster recovery plan worked flawlessly, and we are proud to say that despite the damage to the building, only a small number of documents and items were harmed. The staff, library, and archive have now been reunited under one rebuilt roof at our existing Society headquarters in Durham.

Hayes Brown

Filming began on *First in Forestry: Carl Schenck and the Biltmore Forest School*—an FHS-supported documentary film about the introduction of scientific forestry to North America. The film will have public screenings in North Carolina and beyond and will be broadcast by UNC-TV, a 12-station network that provides statewide public television service in North Carolina. UNC-TV will also serve as the sponsoring station for national distribution. The film's release in 2016 will coincide with the 100th anniversary of the Pisgah National Forest as well as the 70th anniversary of the Forest History Society. FHS expects to create a new education module using the film and the book it is based on, *Cradle of Forestry in America: The Biltmore Forest School, 1898–1913*, by Carl Alwin Schenck, for the "If Trees Could Talk" middle-school curriculum and is working on distributing the film to classrooms across North Carolina.

During 2014 numerous researchers interested in forest and conservation history explored the Society's extensive holdings, either onsite or online, and provided us feedback on their experiences. Their comments have highlighted many aspects of FHS that I take great pride in as a Society member and board chair: the helpfulness of the staff; the discovery of materials unavailable elsewhere; and the ability to explore new questions and avenues for research by having all the collections, the library, archives, and other materials together in one place.

Finally, the FHS board of directors and staff sustained their efforts to ensure the Society's facilities will continue to serve the needs of the forest and conservation communities and those who study its history for generations to come. Plans are under way to build a more spacious and technologically advanced facility that will accommodate the Society's growing library and archives and vastly improve the accessibility of the Society's treasured resources—both on site and through online technology—by researchers as well as increasing numbers of the public who are interested in forest and conservation history. Barbara Cushing and Valerie Bass joined the Society's staff in 2014 to assist the board in raising the critical funding for these new facilities and for the ongoing programmatic and operational needs of FHS.

All this is to say that 2014 was a busy and rewarding year for the Society.

As you reflect on your reasons for being a member of FHS, please also consider if you know someone you think might share your appreciation for the Society's work. Society members provide a vital part of the support needed to continue our work and also provide links to others who may help the Society accomplish its mission.

Finally, if you are part of an organization whose records deserve to be protected and archived, please remember that FHS stands equipped to receive these records and make them available for future scholars and historians. Associations, agencies, professional societies, families connected with resource development and conservation, and forest product companies represent but a partial list of organizations that may benefit from the Society's expertise and proven track record of preserving historical materials and telling the story of forest and conservation history in the United States and Canada.

As you will see in subsequent pages featuring the "Honor Roll of Donors," gifts to the Society, publications, and awards and fellowships, I am not alone in being proud to serve and support the Forest History Society. I look forward to what 2015 brings for the Society and hope you will join me in continuing to appreciate and support the important work of the Forest History Society for many years to come. □

TREASURER'S REPORT

The Forest History Society continues its mission to preserve and help people use the documents of forest and conservation history with professional dedication and effectiveness. The board and staff of the Society have worked hard to maintain the accomplishment of our mission in the midst of significant challenges in donor and financial markets during fiscal year July 1, 2013, through June 30, 2014.

Net assets at June 30, 2014, increased to $8,544,271 from $7,735,418 for the previous year's end. This is an increase of $808,853, generally attributable to an increase in the value of investments which have been affected by general market increases during this period. During the fiscal year, the board's investment strategy was continued at 70 percent equities and 30 percent fixed

income and real estate investments. Cash and cash equivalents decreased to $237,952 from the prior year's balance of $240,551, a decrease of $2,599. The Society's investment advisor is Bernstein Global Wealth Management.

For the year ended June 30, 2014, the Society's auditors, Koontz, Wooten & Haywood, LLP, expressed an unqualified opinion on the financial statements which they stated "present fairly, in all material respects, the financial position of the Forest History Society in accordance with accounting principles generally accepted in the United States of America." The complete financial statements, along with our federal Form 990, are available for review in the offices of the FHS by appointment during normal business hours.

Since its fiscal year ended, the Society's financial position has remained consistent with that at June 30, 2014, the Society is debt free and owns its own facilities. As previously reported, the Society's offices were affected by a small electrical fire November 5, 2013, which significantly disrupted the operating environment. The Society's staff, in a dedicated and sustained effort, maintained its core operations until the completion of restoration construction and a return to offices was possible on August 1, 2014. While the restoration of the office facility is complete and most of the costs have been covered by insurance, there are still additional costs or capital expenses which may be incurred in excess of insurance reimbursement.

Henry I. Barclay

The board is focusing, among other matters, on plans to secure additional facilities to accommodate additional collections and service, on growing the membership and donor base of the Society as well as creating improvements to availability and accessibility of the Society's rich archival collections. The continued success of the annual fund and other fundraising efforts has strengthened our ability to focus on our core missions with due attention to emerging priorities. As a unique organization in the forest and conservation community, we are strategically positioned for success and a bright future of contributions to FHS members and societal concerns. □

FOREST HISTORY SOCIETY, INC.

Statement of Financial Position ■ June 30, 2014 (with comparative totals from 2013)

Assets	**June 30, 2014**	**June 30, 2013**
CURRENT ASSETS		
Cash	$ 237,952	$ 240,551
Accounts receivable	110,499	70,691
Pledges receivable	5,500	7,115
Inventory	24,783	26,600
Prepaid expense and deposits	37,382	40,716
Total current assets	416,116	385,673
INVESTMENTS	8,183,961	7,331,409
PLEDGES RECEIVABLE DUE AFTER ONE YEAR		
LAND, BUILDING & EQUIPMENT, NET OF DEPRECIATION	92,553	100,254
TOTAL ASSETS	$ 8,692,630	$ 7,817,336
Liabilities & Net Assets		
CURRENT LIABILITIES		
Accounts payable	$ 107,298	$ 44,630
Accrued expense and withholding	41,061	37,288
Total current liabilities	148,359	81,918
NET ASSETS		
Unrestricted		
Undesignated	78,173	210,847
Designated—operations	268,012	124,697
Endowment earnings (losses)	(1,494)	(100,256)
Building and equipment	102,551	110,253
Total unrestricted	447,242	345,541
Temporarily restricted		
Operations	45,703	89,252
Endowment earnings	1,659,003	908,302
Total temporarily restricted	1,704,706	997,554
Permanently restricted—endowment	6,392,323	6,392,323
Total net assets	8,544,271	7,735,418
TOTAL LIABILITIES & NET ASSETS	$ 8,692,630	$ 7,817,336

Contributions and Project Sponsors

Thank you for generously supporting the Forest History Society!

THIS LIST INCLUDES GIFTS FROM JULY 2013 THROUGH JUNE 2014

INDIVIDUALS

$10,000 and Above

Mrs. Frederick W. Davis†
Stanley R. Day Jr.
Vivian W. Day*
Carrie W. Farmer
Lucy Rosenberry Jones*
L. Michael* & Karen C. Kelly
Susan F.* & Jack Moore*
Edward W. (Ned)* & Beverly Phares
Jennifer Speers
Robert M. Weyerhaeuser
Penelope P. Wilson

$5,000 to $9,999

Hayes* & Carrie Brown
Scott* & Nina McCampbell
Robert J. Sivertsen
Evelyn Timblin
R. Scott Wallinger*
W. T. Weyerhaeuser

$2,500 to $4,999

Henry* & Judy Barclay
Thomas R. Dunlap*
Kent* & Liz Gilges
Joy N. Hodges*
Ruth & A. John Huss, Jr.
L. Keville Larson*
Russ Lea*
Doug* & Ruth MacCleery
Michael (Tony) Melchiors*
Dick L. Porterfield*
Lisa Cashdan & Peter Stein*
F. Christian Zinkhan*

$1,000 to $2,499

Steve & Diane Anderson
Patty Bedient*
William Berry
Luther (Tom) Birdzel*
Arthur W. Cooper
Doug Decker* & Marie Mahon
Elise R. Donohue
J. Carter Fox*
William H. Greer Jr.
Dwight Harrigan*
Douglas Hutton*
John T. Karakash
Ann Klumb
Kathleen McGoldrick
Elizabeth Merck
Robert J. Olszewski*
Kurt Pregitzer*
Roger Sedjo*
Bond Starker*
Charles M. Tarver*
Rick Titcomb*
Richard P. Tucker*
Charles A. Weyerhaeuser
F. J. (Rick) Weyerhaeuser*
F. T. Weyerhaeuser
Mark Wilde*
Ed Wilson*

$500 to $999

Douglas C. Allen
Charles W. Bingham
Mason Carter
Terry S. Collins
James E. Fickle
Dudley R. Hartel
Mack L. Hogans
John P. McMahon*
Robert H. Rumpf
George K. Schenck
Michelle Steen-Adams*
Don Stevens*
Alice N. Wellman

$250 to $499

David L. Andres
Kenneth A. Armson
Bill Baughman*
George W. Brown III
John P. Case
Maribeth Collins
Richard Connor Jr.
John G. Dennis*
William L. (Bill) Driscoll
James J. Farrell*
Betsy Jewett & Rick Gill
Jay Gruenfeld
Allison Haltom
Leif C. Hatlen
Robert G. Healy*
Michael A. Hincher
Timothy A. Ingraham
John W. Langdale Jr.
Peter J. Murphy*
Sharlene Nelson
W. Allen & Ginny Nipper
Eugene S. Robbins*
William C. Siegel*
Harold K. (Pete) Steen*
Jack Ward Thomas
Charles H. Thompson
Douglas G. Turner
James T. Tweedie
Henry G. Weyerhaeuser
Dale L. Wierman
Herbert I. Winer*

$100 to $249

Diana D. Apple
T. M. (Mike) Apsey*
Bill Ardrey
James E. Ayres
Lowell E. Baier
Iris W. Baird
Ann Bedsole
Peter G. Belluschi
Michael Bentinck-Smith
James Bibler
Lynn R. Biddison
Harold C. Blanchard
Richard P. Blankenship
Christina Bolgiano
Bill Botti
Frederick S. Broerman
Steven G. Burak
Harold Burkhart
Ann Forest Burns*
Harry W. Camp Jr.
Lenford C. Carey
Francis M. Carroll
Richard D. Carson
Stan Chester
Starling W. Childs II*
Mac Connery
William L. Consoletti
Knight Cox
Douglas W. Crandall
D. M. Crutchfield
Patrick J. Cummins
Charles B. Davey
Alexander T. Davison
R. Alexander Day
Robert M. Dixon
Tony Dorrell
Dennis P. Dykstra
Elizabeth F. Engle
Gerald L. Eoff
Scott & Julie Ernest
Troy Firth
Donald F. Flora*
Victor L. Ford
Edwin Clark Forrest Jr.
Sylvain Fortin
Joe Fox
Jerry F. Franklin
Douglas Frederick
John F. Freeman
Herman William Gabriel
Thomas F. Geary
Russell T. Graham
W. D. Hagenstein*†
W. G. Hallstrom
Harry L. Haney Jr.
Gard Hellenthal
Robert Hendricks
Jeanne M. Higgins
Steven W. Howes
David Hsiung
Jeff D. Hughes Jr.
Joseph H. Hughes
Jeffrey M. Hunt
William C. (Chuck) Hunter
William D. Hurst
Tres Hyman
Christopher Johnson
Kenneth R. Johnson
Norman E. Johnson*
Rhett Johnson
Scott Jones
Timothy A. Kaden
Clyde R. Kalahan
Chester Kearse Jr.
Robert C. Kellison
Ed Kessler
Thomas Kent Kirk
Virginia Kopp
Michael Kudish
Vernon J. (Jim) LaBau
C. Fred Landenberger
Lyle Laverty
Robert O. Lehrman
Douglas Leisz
James N. Levitt
Dennis L. Lynch
Peter MacDonald
Barry MacLean
John M. May, Jr.
Norman R. McDonell
Mrs. John R. McGuire
J. Gage McKinney
J. T. McShan
W. Howarth Meadowcroft*†
Jean-Claude Mercier*
Robert W. Mezger
Joseph S. Micallef
Herman L. Miller
Sharon R. Miller
Stephanie Miller
Michael D. Moore
Jim Moss
Quinn J. Murk
John J. Natt

Alex Nixon
R. Max Peterson
Richard J. Pfilf
Greg Piasecki
John A. Pitcher
James R. Pronovost
Thomas L. Reveley
Peter G. Robinson
John J. Ross
H. Phillip Sasnett
Sheafe Satterthwaite
Fred Schatzki
Judy Schutza
John C. Schuyler
David W. Scott
Malcolm G. Sears
John T. & Linda T. Sigmon
Jim Sitts
David William Smith
Michael P. Smith
James R. Soeth
Rudy C. Sparks
Robert E. Stevenson
Bob Sturtevant
Kenneth O. Summerville
Mark Swift
Frank E. Taylor
Gordon Terry
Gerald Thiede
Charles H. Thompson
Don Thompson
Emmett Thompson
C. A. (Buck) Vandersteen
Frank H. Wadsworth
Marc A. Walley
Allan J. West
Art Widerstrom
Peter H. Wood*
David W. Woodmansee
Cheong-Ho Yi
David C. Young
Hans Zuuring

ASSOCIATIONS, CORPORATIONS, AND FOUNDATIONS

$10,000 and Above

1998 Irrevocable Trust of Lynn W. Day
Cherbec Advancement Foundation
Edwin W. & Catherine M. Davis Foundation
Lucy Rosenberry Jones Charitable Trust
The Kelly Charitable Fund at Schwab Charitable Fund
Weyerhaeuser-Day Foundation

$5,000 to $9,999

Charles A. Weyerhaeuser Memorial Foundation
Green Bay Packaging Inc.
The George Kress Foundation Inc.

$2,500 to $4,999

Forest Investment Associates
The John & Ruth Huss Fund of the Saint Paul Foundation
T. L. L. Temple Foundation

$1,000 to $2,499

American Forest Foundation
Elise R. Donohue Charitable Trust
Frederick & Margaret L. Weyerhaeuser Foundation
Green Diamond Resource Company
Longleaf Charitable Fund at Schwab Charitable Fund
Mason Charitable Trust
NPTA Alliance
The Rodman Foundation
Starker Forests, Inc.
The Carol & Carter Fox Family Fund Community Foundation
The Forestland Group

$500 to $999

American Forest & Paper Association
LandVest Timberland Inc.
Lyme Timber Company
Murray Pacific Corporation
Plum Creek Foundation
Port Blakely Companies
Sonoco Foundation
Thompson Tree Farm

$250 to $499

FP Innovations-Forintek Division
Goodson's All Terrain Logging Inc.
Harrigan Lumber Co., Inc.
Jordan Lumber
Lampe & Malphrus Lumber Company, Inc.
Michigan Forest Association
Moncure Plywood LLC
Muslow Oil and Gas, Inc.
NCASI
Potlatch Corporation
Random Lengths Publications
Scotch Plywood Company
Southern Region Forest Service Retirees Association
Timberland Investment Resources

$100 to $249

Burns Forest Products LLC
Deutsche Banc Americas
Greater Kansas City Community Foundation
Lone Rock Resources, LLC

INSTITUTIONAL MEMBERS

Alabama Forest Owners Association
American Antiquarian Society
American Forests
Appalachian Society of American Foresters
Arthur Temple College of Forestry
Association of BC Forest Professionals
Association of Consulting Foresters
Auburn University, School of Forestry & Wildlife Sciences
Clemson University, Department of Forestry and Natural Resources
Duke University, Nicholas School of the Environment & Earth Sciences
Faculté de foresterie, de géographie et de géomatique
Forest Fire Lookout Association
Forest Resources Association
Horry-Georgetown Technical College, Forestry Department
Joseph W. Jones Ecological Research Center
Louisiana Forestry Association
Marsh-Billings-Rockefeller NHP
Mississippi State University, Forestry Department
Morrison County Historical Society
North Carolina Museum of Forestry
North Carolina State University Department of Forestry and Environmental Resources
National Alliance of Forest Owners
National Association of University Forest Resources Programs
National Museum of Forest Service History
NC Forestry Association
New Hampshire Timberland Owners Association
North American Wholesale Lumber Association
Oklahoma Forest Heritage Center
Oregon Department of Forestry
Oregon Forest Resources Institute
Pennsylvania DCNR Bureau of Forestry
University of Florida, School of Forest Resources & Conservation
University of Idaho
University of Tennessee – Knoxville, Department of Forestry, Wildlife & Fisheries
University of Toronto—Faculty of Forestry
The Billings Farm & Museum
The Danish Museum of Hunting and Forestry
Timber Mart South, University of Georgia
USDA Forest Service—Rocky Mountain Region
Virginia Tech University, Department of Forest Resources & Environmental Conservation
Vrbovec Museum of Forestry & Woodworking Industry
Wisconsin Department of Natural Resources—Division of Forestry

SPECIAL PROJECT SPONSORS (*FIRST IN FORESTRY* DOCUMENTARY FILM ABOUT DR. CARL SCHENCK)

David Altshuler
William Berry
Berkshire Taconic Community Foundation
Christina Bolgiano
Bond Starker*
F. Colin Cabot
Lang Hornthal
Judy Buechner Advised Fund
John W. Krieg
L. Heart Foundation
Dennis L. Lynch
Albert W. Merck
Elizabeth Merck
Josephine A. Merck
D. Bryce O'Brien
Katy Pan
George K. Schenck
Jennifer Speers
The Springfield Foundation
The Topfield Foundation, Inc.
Penelope P. Wilson
Suzanne Wilson

* current or former FHS board of directors member
† deceased

Gifts to the Forest History Society Library

July 1, 2013, to June 30, 2014

Berrien, Gay: 1] Berrien, Gay, ed. *Trinity 2005: One Hundred Years, Trinity National Forest, United States Forest Service, 1905–2005*. Weaverville, CA: Trinity County Historical Society, 2005. 2] Berrien, Gay, ed. *Trinity 2007: The Civilian Conservation Corps in Trinity County, 1933–1942*. Weaverville, CA: Trinity County Historical Society, 2007.

Carter, Mason: 3 DVDs: 1] "Timber Baron to TIMO: A Century of Forestry in Sumter County, AL." 2] Canal [Industries] History 1998. 12 min. 3] The American Can Company. "Spotlight on American Woodlands." July 29, 1980. 18 min. 4] Appleyard, John. *The T. R. Miller Mill Company, Inc. Story: The First 125 Years 1872–1997*. Brewton, AL: Miller Forest Products, 1997.

Texas Forestry Museum: 12 cartons of the George W. Stanley Papers dealing with his education and career as a forest engineer and forester in private industry.

Connor, Sara Witter: Connor, Sara. *Wisconsin's Flying Trees in World War II: A Victory for American Forest Products and Allied Aviation*. Charleston, SC: The History Press, 2014.

Cooper, Arthur W.: Telewski, Frank W.; Scott D. Barrett, *Logging Railroads of Weyerhaeuser's Vail-McDonald Operation: Including the Chehalis Western and the Curtis, Milburn & Eastern*. Hamilton, MT: Oso Publishing Company, 2005.

Davies, Gilbert W.: 1] Davies, Gilbert W. *What You Always Wanted to Know about the Forest Service But Were Afraid to Ask*. 2] Davies, Gilbert W. *Forest Service Follies*. 3] Davies, Gilbert W. *The Forest Ranger Who Could*. 4] Davies, Gilbert W. *1001 Questions and Answers about the Forest Service*. 5] Pendergrass, Lee. "The Forest Service in California: A Public History of Resource Allocation and Use." Unpublished manuscript.

Fox, J. Carter: Rouse, Parke, Jr. *The Timber Tycoons: The Camp Families of Virginia and Florida, and Their Empire, 1887–1987*.

Godden, Jack A.: Davies, Gilbert W. and Florice M. Frank. *Forest Service Animal Tales: More Than 200 Stories about Animals in Our National Forests*. Hat Creek, CA: HiStory Ink, 1998.

Harris, Tom: 2 copies of Harris, Tom; Sara Baldwin; Jacek Siry; Jonathan Smith, *United States Timberland Markets, 2000–2012: Transactions, Values and Market Research*. Athens, GA: Timber Mart-South, 2013.

Levin, Katie Rose: School of Forestry, North Carolina State College. "Fourth Annual Report: N.C. State–Industry Cooperative Forest Tree Improvement Program, June 1960."

Margulies, Adam: 15 cartons of photographs, primarily black and white, depicting various topics of interest to the American Forestry Association. Unprocessed.

National Association of State Foresters: 2 oversize cartons of historical records of the organization.

National Association of University Forest Resource Programs: 2 folders and 1 DVD "McIntire-Stennis: The Driving Force of Sustainable Forestry" to be added to the records of the National Association of University Forest Resources Programs (NAUFRP).

Sellers, Terry Jr.: 4 cartons of personal papers to be added to the existing Sellers archival collection.

Stine, Jeffrey: Li, Judith L. *Ellie's Log: Exploring the Forest Where the Great Tree Fell*. Children's book.

Stock, Jasen: Tree cookie from the Robert Frost "Tree at My Window." In September 2007, the maple tree that is widely regarded as the inspiration for Robert Frost's poem "Tree at My Window" had to be cut down by members of the New Hampshire Timberland Owners Association (NHTOA). Its age and poor health made it a potential hazard to the Derry farmhouse that was the Frost family's home from 1900–1911. As news about the felling of the tree spread, woodcrafters from all over the country contacted the Frost Farm, now a New Hampshire State Historic Site, to ask for pieces of wood.

Tedder, Russell: 12 black and white photos: Hammond Lumber Co., Georgia-Pacific, Coos Bay, Quincy Railroad, Eagle Lumber; Amador Central Railroad timetable, 1914 and 1915; Ione & Eastern timetable, 1906; Amador Central Railroad map, 1912; *Pacific Rail News Magazine*, 1994; *Diesel Era Magazine*, 1991.

Tombaugh, Larry: Digital Audio/Video files. Oral History interviews with 3 North Carolina State Forestry School Deans; also 23 audio oral history files on the history of the school's Hoffman Forest.

Whitmore, Les: 12 cartons of records: International Society of Tropical Foresters, 1990–2013. ISTF ceased to exist in 2013 and these are their financial records, etc.

Wilde, Mark: 1 news clipping: Jacobs, Emma. "Ebony, Ivory, and . . . Timber." *Financial Times*, Aug. 2013. Article about the mix of tree farming and music in the life of Chuck Leavell, keyboardist for the Rolling Stones.

Woessner, Ron: Woessner, Ronald A. "Evolution of Jari: A Chronicle of D. K. Ludwig's Amazonian Project." Unpublished manuscript. □

The Forest History Society awards program enables the Society to recognize research and writing in forest and conservation history and to stimulate further research into our understanding of the relationships between people and forests. High standards for selection reflect equally upon the recipient and the Society. Awards and fellowships are fully supported by endowment. The following is a list of awards for 2014.

LEOPOLD-HIDY AWARD

The Aldo Leopold–Ralph W. Hidy Award honors the best article published in the journal *Environmental History* during the preceding year. The award is presented jointly by the Forest History Society and the American Society for Environmental History, and is judged by the editorial board of the journal. The 2014 recipient is **Natalia Milanesio** for the essay, "The Liberating Flame: Natural Gas Production in Peronist Argentina" (July 2013).

Milanesio's article examines the dramatic rise in the production and use of natural gas during Juan Domingo Perón's government (1946–1955), revealing how "the Peronist government transformed gas into a culturally meaningful object through a web of discourses and images that evoked representations of nature conquered, national prowess, and economic liberation." Milanesio astutely and convincingly argues that the "cultural, social, and political meanings of gas production and consumption in Argentina not only provide an alternative narrative to stories of foreign extraction in the region but also blur the boundaries among nature, culture, and politics." She suggests that the story is one "of accomplishment, an alternative case to common declensionist narratives about imperialist extraction and exploitation in the region."

In praise of her article, one editorial board member called Milanesio's work "innovative," noting that it "points to new directions in the field." Another remarked, "Not only does 'The Liberating Flame' tell a fascinating story about the importance of natural gas in Peronist Argentina, it provokes questions of wider relevance in environmental history." Her article, while tightly focused in time and place, sweeps across the conceptual space of the research field, serving as a model for environmental historical research and analysis.

THEODORE C. BLEGEN AWARD

The Theodore C. Blegen Award recognizes the best article in the field of forest and conservation history that is not published in *Environmental History*. Articles are submitted by editors of scholarly journals and a panel of judges selects the winner based on contribution to knowledge, strength of scholarship, and clarity and grace of presentation. This year, the award was shared by **Nancy J. Turner**, **Douglas Deur**, and **Dana Lepofsky** for their article, "Plant Management Systems of British Columbia's First Peoples," published in *BC Studies: The British Columbian Quarterly* 179 (Autumn 2013): 107–133.

The article was considered an excellent, informative analysis about a timely forest landscape conservation and restoration issue, and how to use traditional ecological knowledge to inform management. In a culture radically different from our own, it shows how a combination of patient, systematic field biology and collaboration with First Nations people can reveal ways of living in and using biodiverse resources in sustainably productive ways. It is considered one of the finest in the *BC Studies* series of studies of First Nations peoples' ecological knowledge systems.

CHARLES A. WEYERHAEUSER BOOK AWARD

The Charles A. Weyerhaeuser Award rewards superior scholarship in forest and conservation history. This annual award goes to an author who has exhibited fresh insight into a topic and whose narrative analysis is clear, inventive, and thought-provoking. The 2014 recipient is **Jared Farmer** for *Trees in Paradise: A California History* (New York: W. W. Norton and Company, 2013).

Farmer provides a sweeping history of California as told through its iconic trees: the native giant sequoia and redwood trees, and the nonnative palm, eucalyptus, and citrus trees. His history of the horticultural movement offers new ways to understand how conservationists saw connections between the native and nonnative, urban and rural, and private and public. The advancing and retreating fortunes of California's iconic trees as part of the socio-economic-environmental history are a reminder, in Farmer's telling, that landscape is astonishingly artificial. This superbly written book has the potential to alter people's concepts of "natural." With a masterful weaving of history and ecology, Farmer offers a significant addition to the literature reaching well beyond California, the American West, or even United States historiography.

F. K. WEYERHAEUSER FOREST HISTORY FELLOWSHIP

The F. K. Weyerhaeuser Forest History Fellowship is awarded annually to a student at the FHS university affiliate, Duke University, whose research is historical in nature and related to forestry, land use, or the environment. Criteria include overall significance and quality of presentation. The 2014 F. K. Weyerhaeuser Fellowship was awarded to **Jonathon Free**, a PhD candidate from Duke's Department of History, for his research project entitled "Dark as a Dungeon: Coal, Community, and Risk in the 1970s."

Free's research explores changes in the American coal industry between the late 1960s and the early 1980s, when coal companies shifted from underground to surface mining, in large part to make mining safer. While new federal health and safety regulations made coal mining significantly less dangerous for coal miners, the movement towards surface mining posed a much greater threat to nearby ecosystems (including forests) and communities. What had once been a risky job became an even riskier industry, though the new risks were more diffuse and politically contentious than those of the earlier era.

This project will demonstrate how efforts by coalfield residents, policy makers, and industry leaders who attempted to confront the risks of underground mining contributed to the emergence of this new set of risks and examine how the new risks influenced the environment, politics, and the economy of the late-twentieth-century United States.

WALTER S. ROSENBERRY FELLOWSHIP IN FOREST AND CONSERVATION HISTORY

This fellowship will be offered for the first time in 2015. While the F. K. Weyerhaeuser Fellowship is for the FHS affiliate university, the Rosenberry Fellowship will be a national-level award. Publicity for the first year is planned to include electronic newsletters from both the American Society for Environmental History and the Forest History Society; announcements on the H-Environment network, which is part of H-NET, the Humanities & Social Sciences online initiative; and direct communications with programs in environmental history and forestry across North America.

ALFRED BELL TRAVEL GRANTS AND VISITORS

Alfred D. Bell Jr. travel grants are awarded to researchers to use the FHS library and archives. Recent Bell Fellows and visitors include:

Chris Eklund, a PhD candidate in history at Auburn University in Alabama, returned to FHS in September for a planned stay as an Alfred D. Bell Fellow. Chris initially had visited in July and did a preliminary survey of materials. His doctoral dissertation will explore the connections between private individuals, government entities, and nongovernmental organizations in the creation of parklands throughout the American South. He believes that more private individuals and local organizations were involved in the establishment of nature preserves and in creating spaces for recreation than have been previously recognized. Land acquisitions and transfers are a frequent topic in a number of FHS archival collections.

Allison Bryant, a student at Yale College, received a Bell grant to spend time at FHS. Her senior thesis will compare the public relations efforts of the early U.S. Forest Service with those of the National Park Service. She found the USFS newspaper clipping files particularly helpful for evidence of the agency's early attempts to educate the public about its mission. She was surprised to find how accurately some works of fiction in the Forests in Fiction Collection reflected the attitudes encountered by early forest rangers in the West.

A senior at Emory University in Atlanta, Georgia, **Jordan Naftalis** conducted research for an honors history thesis, which will examine the foundations of American forestry. She was particularly interested in the contributions of the forestry work done at private institutions such as the Biltmore Estate to the development of a national concern and federal commitment to forest conservation in the early twentieth century.

Rob Shapard, a PhD candidate in U.S. history at the University of North Carolina, discussed with staff a chapter in his dissertation that deals with the creation of the Choctawhatchee National Forest in Florida's Panhandle in 1908. (The national forest was transferred to the War Department in 1940 and no longer exists.) The dissertation focuses on how different groups of people perceived and reacted to the decline of longleaf in the late-nineteenth and early-twentieth centuries.

Michelle Steen-Adams, an associate professor with the Department of Environmental Studies at the University of New England and an FHS board member, utilized our archives to look at the papers of Harold Weaver, a forester for the Bureau of Indian Affairs in the 1940s and 50s, as part of a project on wildland fire in the Pacific Northwest. FHS has copies of a number of the reports he did on fire ecology research on various Indian reservations in Washington and Oregon. The reports use his high-quality photographs as documentation. □

PUBLICATIONS OF THE FOREST HISTORY SOCIETY

These are books and films resulting from Society programs.
To purchase a copy, please visit www.ForestHistory.org/Publications.

From THE FOREST HISTORY SOCIETY

Issues Series—$9.95 each

America's Fires: A Historical Context for Policy and Practice, Stephen J. Pyne
America's Forested Wetlands: From Wasteland to Valued Resource, Jeffrey K. Stine
American Forests: A History of Resiliency and Recovery, Douglas W. MacCleery
Canada's Forests: A History, Ken Drushka
Forest Pharmacy: Medicinal Plants in American Forests, Steven Foster
Forest Sustainability: The History, the Challenge, the Promise, Donald W. Floyd
Genetically Modified Forests: From Stone Age to Modern Biotechnology, Rowland D. Burdon and William J. Libby
Newsprint: Canadian Supply and American Demand, Thomas R. Roach
Wood for Bioenergy: Forests as a Resource for Biomass and Biofuels, Brooks C. Mendell and Amanda Hamsley Lang

Other Publications

A Hard Road to Travel: Lands, Forests and People in the Upper Athabasca Region, Peter J. Murphy, et al., cloth $49.95, paper $29.95
Bringing in the Wood: The Way It Was at Chesapeake Corporation, Mary Wakefield Buxton, cloth $29.95, paper $19.95
Common Goals for Sustainable Forest Management, V. Alaric Sample and Steven Anderson (eds.), $24.95
Cradle of Forestry in America: The Biltmore Forest School, 1898–1913, Carl Alwin Schenck, $10.95
Forest Aesthetics, Heinrich von Salisch, trans. by Walter L. Cook Jr. and Doris Wehlau, $24.95
Forest and Wildlife Science in America: A History, Harold K. Steen (ed.), $14.95
Forest Management for All: State and Private Forestry in the U.S. Forest Service, Lincoln Bramwell, $10.95.
Forest Service Research: Finding Answers to Conservation's Questions, Harold K. Steen, $10.95
From Sagebrush to Sage: The Making of a Natural Resource Economist, Marion Clawson, $9.95
Ground Work: Conservation in American Culture, Char Miller, $19.95
Jack Ward Thomas: The Journals of a Forest Service Chief, Harold K. Steen (ed.), $30.00
Millicoma: Biography of a Pacific Northwestern Forest, Arthur V. Smyth, $12.95
Pathway to Sustainability: Defining the Bounds on Forest Management, John Fedkiw, Douglas W. MacCleery, V. Alaric Sample, $8.95
Plantation Forestry in the Amazon: The Jari Experience, Clayton E. Posey, Robert J. Gilvary, John C. Welker, L. N. Thompson, $16.95
Proceedings of the U.S. Forest Service Centennial Congress: A Collective Commitment to Conservation, Steven Anderson (ed.), $24.95; also available on CD with bonus material
The Chiefs Remember: The Forest Service, 1952–2001, Harold K. Steen, cloth $29.00, paper $20.00
The Forest Service and the Greatest Good: A Centennial History, James G. Lewis, cloth $30.00, paper $20.00
Tongass Timber: A History of Logging and Timber Utilization in Southeast Alaska, James Mackovjak, $19.95
View From the Top: Forest Service Research, R. Keith Arnold, M. B. Dickerman, Robert E. Buckman, $13.00

For a list of oral history interviews available for purchase, visit: www.foresthistory.org/Publications/oralhist.html or call 919/682-9319.

With DUKE UNIVERSITY PRESS

Changing Pacific Forests: Historical Perspectives on the Forest Economy of the Pacific Basin, John Dargavel and Richard Tucker, cloth $39.95, paper $14.95
David T. Mason: Forestry Advocate, Elmo Richardson, $8.00
Bernhard Eduard Fernow: A Story of North American Forestry, Andrew Denny Rodgers III, $21.95
Origins of the National Forests: A Centennial Symposium, Harold K. Steen, cloth $31.95, paper $16.95
Changing Tropical Forests: Historical Perspectives on Today's Challenges in Central and South America, Harold K. Steen and Richard P. Tucker, cloth $31.95, paper $16.95

With UNIVERSITY OF GEORGIA PRESS

Crusading for Chemistry: The Professional Career of Charles Holmes Herty, Germaine M. Reed, $36.00

With UNIVERSITY OF WASHINGTON PRESS

George S. Long: Timber Statesman, Charles E. Twining, $30.00
Phil Weyerhaeuser: Lumberman, Charles E. Twining, $25.00
The Forested Land: A History of Lumbering in Western Washington, Robert E. Ficken, $25.00
The U.S. Forest Service: A History (Centennial Edition), Harold K. Steen, cloth $40.00, paper $25.00

With UNIVERSITY OF NEBRASKA PRESS

This Well-Wooded Land: Americans and Their Forests from Colonial Times to the Present, Thomas R. Cox, et al., $27.95

With GREENWOOD PUBLISHING GROUP, INC.

Beyond the Adirondacks: The Story of St. Regis Paper Company, Eleanor Amigo and Mark Neuffer, $35.00
Lost Initiatives: Canada's Forest Industries, Forest Policy and Forest Conservation, R. Peter Gillis and Thomas R. Roach, $40.95

With ISLAND PRESS

The Conservation Diaries of Gifford Pinchot, Harold K. Steen (ed.), cloth $29.00, paper $17.95

AVAILABLE VIDEOS FROM FHS ON DVD AND/OR VHS

The Greatest Good: A Forest Service Centennial Film (2005), $18.00
Timber on the Move: A History of Log-Moving Technology (1981), $25.00
Up in Flames: A History of Fire Fighting in the Forest (1984), $25.00
The People's Forest: The Story of the White Mountain National Forest (2014), $20.00

THE FOREST HISTORY SOCIETY

is a nonprofit educational institution. Founded in 1946, it is dedicated to advancing historical understanding of human interactions with forested environments. The Society is a membership organization; dues range upward from $75 annually.

JOIN THE FOREST HISTORY SOCIETY

or become a joint member of the American Society for Environmental History and the Forest History Society

Name _____ Title _____
Company/Institution _____
Address _____
City/State/Zip _____
Work phone ( )_____ Home phone ( )_____
E-mail _____
Employer _____
Date of Birth _____

PLEASE ENROLL ME AS A MEMBER IN THE FOLLOWING CATEGORY:

FHS Individual
☐ $75.00
☐ $100.00
☐ $250.00
☐ $500.00
☐ $1000 and up

FHS Student: ☐ $41.00

Institution: ☐ $150.00

Joint ASEH/FHS Memberships:
☐ $56.00 student ☐ $126.00 individual

STATISTICAL DATA

Which of the following best describes your employment setting?

☐ College or university
☐ Federal government
☐ State/local government
☐ Private industry
☐ Consultant/Self-employed
☐ Historical Society
☐ Association or foundation
☐ Museum or library
☐ Other nonprofit
☐ K–12 school
☐ Retired
☐ Unemployed

Which of the following best describes your current position?

☐ Research/educator
☐ Field forester/technician
☐ Staff specialist
☐ Mid-level management
☐ Upper-level management
☐ Private landowner
☐ Journalist
☐ Student
☐ Other _____

Which of the following best describes your field of expertise?

☐ Anthropology
☐ History
☐ Sociology
☐ Forestry
☐ Wildlife
☐ Ecology
☐ Economics
☐ Journalism
☐ Education
☐ Archeology
☐ Other _____

Which of the following best describes your level of education?

☐ Less than high school
☐ High school
☐ College (BA/BS)
☐ Master's degree
☐ Doctoral degree

PLEASE PAY IN U.S. FUNDS

☐ Enclosed is my check or money order.
☐ Charge $_____ to my credit card.
☐ Visa ☐ MasterCard ☐ American Express ☐ Discover
Card # _____
Expiration Date _____
Signature _____

PLEASE MAIL YOUR CHECK AND THIS FORM TO:

Forest History Society
701 William Vickers Avenue
Durham, NC 27701

919/682-9319
www.ForestHistory.org

Financial information about this organization and a copy of its license are available from the State Solicitation Licensing Branch at 919/807-2214. The license is not an endorsement by the state.

THE FOREST HISTORY SOCIETY

701 William Vickers Avenue
Durham, North Carolina 27701

www.ForestHistory.org

Address Service Requested

NONPROFIT
U.S. POSTAGE
PAID
RALEIGH, NC
PERMIT #2172

BELOW: *Bob Mutch and Dave Aldrich in the Selway-Bitterroot Wilderness Area. To learn why they were there, see page 4.*