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Forest History Today

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The First Year—Growing Pains

January 19, 2020, marked the one-year anniversary of when the Forest History Society began working in its new headquarters. In many ways we haven't missed a beat, but in others, it seems that everything has changed; every decision is made within a new context. This is an exciting time for FHS, its leadership, staff, supporters, members, the forestry community, and the fields of forest, conservation, and environmental history.

It took many months to settle into our new quarters. The staff deftly organized materials while setting up offices and preparing for on-site researchers. Creating and posting signage and recognition plaques to recognize our many benefactors became a top priority. An emergency generator was delivered and tested to ensure climate control for the archives and power to other essential areas.

Slowly, the newness of arriving each morning to a fantastic workplace became commonplace, although I don't think the awe will wear off anytime soon. Visitors are all understandably impressed, and those who had been to our previous location are especially wide-eyed. The forestry and conservation community is increasingly recognizing this new point of pride.

Without benefit of publicity, calls to use our new meeting space, the Lynn W. Day Education Center, started coming in. We have concentrated on hosting programs aligned with the FHS mission. So far, we've hosted 100 folks for the Duke Forest annual public meeting, a visit from 90 middle-school students, and a two-day colloquium recognizing the 250th birthday of Alexander von Humboldt, the influential scientist, explorer, and naturalist. We've held open houses for the local chapters of the American Institute of Architects and the Society of American Foresters, and for two neighboring retirement communities.

As envisioned, both the library and the archives are witnessing a healthy increase in their collections of books and records. This spring the Global Fire Monitoring Center (GFMC) in Freiburg, Germany, will send its archival records. This came about because a FHS member connected us with the GFMC, whose goal is reducing the harms of wildfire and increasing knowledge about the role of natural fire and sustainable application of fire in land-use systems.

Of course, as with any new construction, there remains a "punch list" of items for the building contractor to address. Because of a subcontractor error, we experienced high humidity levels in the archives that caused some materials to develop a visible mold. The problem was caught early and was completely remediated last September. The testing company remarked that we now likely have the cleanest archive in the region.

On May 3, 2019, we celebrated with a grand opening. How heartwarming it was to see 160 of our donors, friends, members, leaders, and staff enjoy the results of their support and the work of those who came before us! The event included a welcome in the Harley Langdale Jr. Foundation Lobby, building tours, a ribbon cutting on the George H. Weyerhaeuser Plaza, and a reception. In honor of Smokey Bear's 75th anniversary, our staff created a display drawn from the Rudy Wendelin collection housed at FHS for the L. Michael and Karen C. Kelly Exhibit Hall. Some of Rudy's original artwork and a 1950s version of the Smokey Bear suit was shown for the first time, and many attendees had their photo taken with Smokey Bear. A fun time for our guests, who came from all around the United States and Canada.

With such a resource to launch the Society into the future, it is important to make sure that our priorities are clear and we have a well-developed vision. We are now preparing a strategic plan. We've already brought together librarians, archivists, and historians to consider the Society's future as a specialty library and archives and provide recommendations for its leaders to consider. The process will also include a leadership survey, a membership survey, and a workshop at the October 2020 board meeting. Our best opportunity for success is when everyone participates.

This also applies to your membership contribution: it is easiest to succeed when everyone participates. Without funding, the recommendations of the strategic plan will remain only aspirational. Please help us make the most of the opportunities provided by our new headquarters by renewing your membership. Be a part of history!

Forest History Today

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SOCIETY NEWS

I'm pleased to welcome you to the new version of our magazine! Overhauling its design has been a hope of mine for several years. The layout this one replaces was first introduced in 1997, and though serviceable, it had become dated. Although we at FHS love old things, it was time for a redesign—especially in light of recent events at FHS. We launched a new website a few years ago that is both more robust and easier to use on a mobile device. At that time we also unveiled a new logo. And last year we moved into our new building. Everything was new, which made the magazine look that much more out of step.

Updating the magazine's design is in many ways as important as the new website and building. *Forest History Today* is frequently the first item from the Society that people encounter. We hand out the magazine at conferences and meetings and to visitors to the new building. A few months after publication, the entire issue is made available to all through the website for free. (You'll find every issue on the magazine's homepage, at www.foresthistorytoday.org.)

Along with the new website and logo, we have a style guide that defines what fonts and colors to use in our publications and website. Our publications designer, Kathy Hart of Zubigraphics, used the guide as her starting point and inspiration for the magazine redesign. The various colors used throughout the issue—in caption boxes, ribbons, and fonts—are from the palette. Kathy has been designing our books, magazines, and other materials for more than twenty years and knows our aesthetics and sensibilities as well as anyone. She's also very easy to work with, which made this task, which could have been challenging or frustrating, enjoyable. The first article Kathy redesigned and showed me is the first feature of this issue, an article about the Idaho ski resort Sun Valley. When you see how she laid out the opening photograph, I think you'll react as I did: "Wow! I want to go there!" I felt as if I was going to tumble down that snowy hill.

I'd also like to thank Sally Atwater for her feedback on the design of this issue, and her many years of stellar editing work. When I took over as editor in 2007, I knew my time and limited editing skills would best be spent on developmental editing. I wanted a copy editor whose familiarity with forestry and forest conservation would complement my history background. Like Kathy, Sally had done a great job on my first book two years before I took over editorship, and also like Kathy, she had worked on several of our books and knew us well. She does much more than copyediting, and that's why her title is Editorial Consultant. Hiring Sally was the smartest move I've made as magazine editor.

The smartest move I've made in my life was marrying Dianne Timblin. When we married in 1999, neither of us knew, of course, that seven years later I'd become a magazine editor. An editor and marketing writer herself, she has been an invaluable sounding board about articles, ads, and more for the magazine since day one, providing countless hours of free editorial consultation. She even contributed an article about wood paving blocks that, in my opinion, showed that the history field had lost a really good historian to the marketing world.

Naturally, Dianne has been involved with this redesign. For example, I wanted to change the column titles "Books of Interest," "Biographical Portrait," and "History on the Road." As I shared with her my ideas, she listened and quietly

considered them. "Simpler is better," she advised. "And you want to be consistent here, just like with the other parts of the magazine we've discussed." Further discussion led me back to the beginning, to "Media," "Portrait," and "Places," respectively.

Incidentally, "Books of Interest" is now "Media" because I will include reviews for forest history–related websites and museum exhibits along with books and films. If you know of ones to include, please email me at james.lewis@foresthistory.org.

Of course, without the many authors whose work you're about to enjoy, there would be no issue for you to read! James Skillen, Michael Childers, and Thomas and Patricia Straka each make returns to these pages. In 2009, Skillen wrote about Congress and the next Public Land Commission. Childers wrote about the riots in Yosemite in 1970 for us in 2016. The Strakas frequently contribute to the Places column. We've published biography entries produced by the World Forestry Center before, too.

New contributors are Angela Aleiss, L. Anders Sandberg and Peter Clancy, David N. Cole, and Jean Mansavage. Thank you one and all.

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ON THE COVERS
Front: Still photo from *Dances with Wolves*, courtesy of Marc Wanamaker/ Bison Archives

Back: Images courtesy of Jean Mansavage

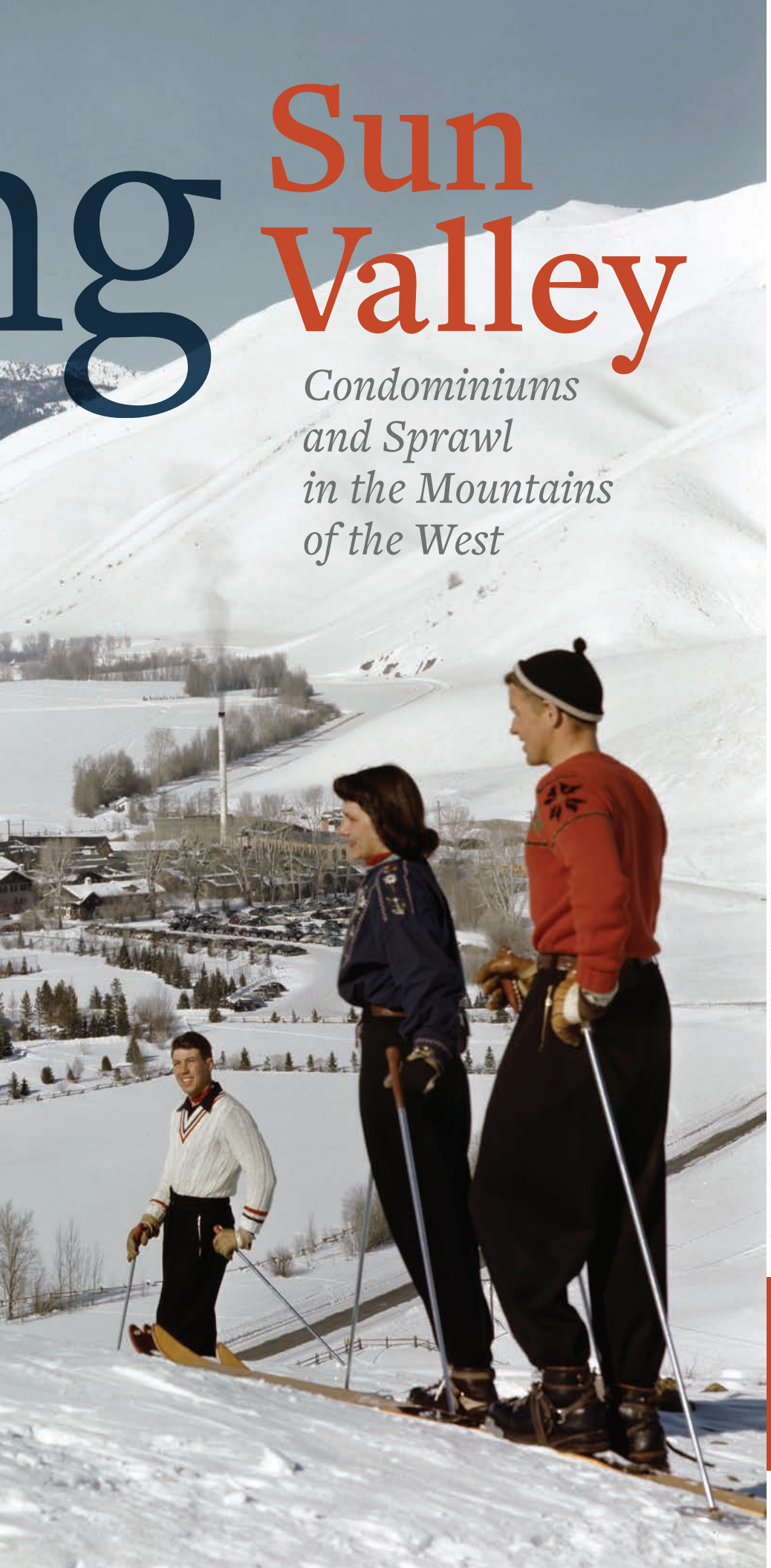
Articles appearing in this journal are abstracted and indexed in HISTORICAL ABSTRACTS and AMERICA: HISTORY AND LIFE.

Remakin

BY MICHAEL CHILDERS

ng Sun Valley

Condominiums and Sprawl in the Mountains of the West



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This undated Union Pacific Railroad publicity department photo from either the 1930s or 1940s, with Sun Valley Lodge and Challenger Inn in the foreground, shows how open the valley was before the appearance of the "instant villages."

The Sun Valley ski resort initially began as a popular remote getaway for the rich and famous. Ironically, the resort and surrounding area changed dramatically because of a 1961 law designed to solve an urban housing shortage.

The clamor of construction echoed across the northern end of Idaho's Wood River Valley throughout the summer of 1965 as crews raced to complete Sun Valley's new village. Lying between the resort's iconic Sun Valley Lodge and the Challenger Inn, the quaint, pedestrian-only village would soon include three restaurants, a sports shop, a gift shop, and a bookstore. Also included in the $30 million makeover were two new ski lifts, each extending farther up the northern side of Mount Baldy, an expansion of the resort's golf course, and the addition of an Olympic-sized swimming pool. The investment by the resort's new owner, California developer Janss Corporation, marked Sun Valley's rebirth as one of the nation's premier ski destinations. Within five years' time, the resort where movie stars once frolicked on the slopes and Ernest Hemingway completed *For Whom the Bell Tolls* became, as one journalist noted, "neat" again.[1]

But it was not the renovations to the Sun Valley Lodge, or the construction of the new pedestrian shopping mall with its boutiques and restaurants, or even the new ski lifts that returned the famous Idaho resort to its former glory. Rather, it was the addition of

four new complexes of condominiums that forever redefined both the resort and its surrounding region. Established as a legal form of property by the federal government in 1961 as a way to help solve the nation's urban housing crisis, condominiums provided an affordable option to homeownership by redefining the interior of an apartment as property, leaving the exterior, facilities, and grounds to be managed cooperatively. This mixture of private and public space lowered property costs while allowing for greater density. But although condos, as they came to be called, did expand homeownership across the country's cities, they also redefined ski resorts, particularly throughout the American West, by making vacation homes affordable for the growing numbers of the upwardly mobile white middle class. In doing so, condos remade resort landscapes into a new form of suburbia.[2]

By the end of the decade, longtime residents of the Wood River Valley area, and its four small towns of Sun Valley, Ketchum, Hailey, and Bellevue strung along a line running north to south like charms in a bracelet, found their once isolated communities facing the problems of suburban sprawl. "They call them condominiums . . . I say they are instant slums," fumed Mary Hemingway from the deck of the home that she and her famous husband had built together in 1959, shortly before his death.[3] Such denunciations were becoming increasingly common across the West as real estate developers raced to cash in on the region's high-risk, high-reward real estate boom. Understanding the growing desire for vacation homes, particularly in mountain settings with access to public lands, they seized upon the relatively low construction costs of condominiums to make millions.[4]

Developers saw the combination of realty with recreational amenities as a potent mixture for generating massive profits. The once rural landscape of the Wood River Valley region was transformed into sprawling suburban enclaves that featured both the promises and the problems of suburban development. The view from Hemingway's home, which once overlooked the valley's sagebrush-covered hills, had become cluttered with all the hallmarks of suburban sprawl—residential subdivisions, shopping centers, office parks, civic institutions, and networks of roads connecting them.[5]

"They call them condominiums… I say they are instant slums," fumed Mary Hemingway. Such denunciations were becoming increasingly common as real estate developers raced to cash in on the region's real estate boom.

For Sun Valley's new owner, Southern California developer Bill Janss, condos were more than a quick way to make money. They were also a potential way to preserve mountain landscapes by limiting the scale of development. His approach was born out of years of experience in developing both ski resorts in Colorado and suburban communities in Southern California. Explaining his reasoning, Janss told *SKI Magazine* in 1964, "A recreational development is not a subdivision. The last thing you want is a city or a suburb."[6] Rather, he asserted, ski resorts must blend into their natural settings to attract new buyers. Condominiums offered an ideal way to mix high-density residential lodging with open-space preservation, making open space as valuable an asset as square footage. By limiting the size and number of new condo complexes, along with infilling the small area between the Sun Valley Lodge and the Challenger Inn, Janss sought to preserve the resort's historic feel while adding much needed amenities—and revenue.

"WINTER SPORTS UNDER A SUMMER SUN"

Sun Valley originally grew out of America's love affair with downhill skiing, which emerged in the 1930s. Sparked by the successful 1932 Winter Olympic Games in Lake Placid, New York, the recruitment of European ski instructors to the United States, and creation of outing clubs, downhill skiing bloomed into a fashionable winter sport across much of the country. Small rope-tow operations opened in seemingly every community that had enough snow and a hill big enough to schuss down. In the West, larger ski areas like Badger Pass in Yosemite National Park, Timberline Lodge on Mount Hood National Forest, and Berthoud Pass in Colorado offered an inkling of the sport's future promises. But none captured the public's imagination quite like Sun Valley.[7]

Perhaps more than any other ski resort in North America, Sun Valley was an invention of advertising and marketing. Seeking to bolster passenger numbers during the winter months, in 1935 Union Pacific Railroad's chairman W. Averell Harriman, himself an avid skier, commissioned an Austrian sportsman, Count Felix Schaffgotsch, to find the ideal location in the West to build a destination ski resort that offered the right mixture of snow, scenery, and of course, access by rail. Schaffgotsch spent the next several months traveling throughout the western

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Sun Valley began with Averell Harriman (right) hiring Count Felix Schaffgotsch to find an ideal location for a resort accessible by the Union Pacific Railroad.

states, deeming every site he visited unacceptable until he happened upon the Wood River Valley, which sits just outside of the southern edge of the Sawtooth National Forest. Seeing its gentle rolling hills and rail station in the nearby ranching community of Ketchum, in January 1936 Schaffgotsch declared that he had found what he was looking for. Harriman agreed. He bought a local ranch and began building his resort, which opened seven months later.

Harriman hired publicist Steve Hannagan, who had made Miami Beach into a popular winter destination. Hannagan, who hated cold weather but loved the idea of capitalizing on the area's nearly three hundred days of sunshine, christened it Sun Valley and created the tagline "Winter sports under a summer sun."[8] Harriman invited Ernest Hemingway and Hollywood celebrities to the resort to help promote it when it opened in December 1936. The new resort quickly gained national fame. Photos of skiers and celebrities cavorting at the resort and riding the world's first chairlift soon appeared in *Life* magazine. Newspapers regaled readers with stories of the resort's "ultra-modern Alpine hotel" sheltered in the shadow of the Sawtooth Mountains, which Hannagan claimed protected the resort from harsh winter temperatures and allowed skiers to schuss down the slopes "stripped to the waist."[9] The resort received additional publicity with the release of the popular 1941 musical film *Sun Valley Serenade*, one of several movies of the era either filmed or set there.

However, it was the $1.5 million Sun Valley Lodge, with its heated pool, majestic dining area, and luxurious rooms, that redefined the American skiing experience. But whereas Harriman sought to capture the romance of European Alpine lodges with his Swiss-style lodge and timbers made of painted concrete, he took a different tack with the adjacent Challenger Inn. Less opulent than the lodge, the inn was a more affordable option for visitors wishing to hit Sun Valley's slopes and still take in most offerings. Placed in the center of the valley floor, the two lodges focused visitors' experiences on dining, shopping, and socializing, rather than skiing. Guests took buses to the base of Proctor and Dollar Mountains, each separated by several miles. (Bald Mountain, located southwest of Dollar, would open three years later.) There, chairlifts whisked them comfortably to the top of each mountain's gentle slopes. Adding to Sun Valley's romantic allure, a host of European ski instructors led by Austrian ski champion Friedl Pfeifer put novice skiers through their paces on the slopes and then joined them

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Publicist Steve Hannagan promoted the idea of "Winter sports under a summer sun." Guests could ski down Bald Mountain, seen in the distance from the Challenger Inn in this 1955 photograph, or lounge in the heated swimming pool.

for après-ski cocktails at sundown. By combining luxury, a romanticized Alpine village, and skiing, Sun Valley came to define destination vacations, a model future resorts would later build upon.[10]

During World War II, the hotel served as a convalescent hospital for the U.S. Navy and did not reopen to the public until December 1946. In the years that followed, the resort struggled as Americans embraced the automobile at the expense of rail travel. Sun Valley's isolation, once seen as an asset, became a liability as millions flocked to ski resorts within a day's drive of the West's booming metropolitan areas. New ski resorts cashed in on the heady mixture of proximity and real estate in attracting tens of thousands of new visitors every year. Beginning with the opening of Squaw Valley in California in 1960, the construction of small resort villages adjacent to national forests promised sizable profits to developers lucky enough to find the right mixture of snow, access, and most importantly, investors. Sun Valley fell on hard times.

"INSTANT VILLAGES"

The first resort condominium projects built in the United States were Crystal Lakes at Lake Tahoe and the Silver Skis Chalet in Crystal Mountain, Washington, in 1963. Each proved a smashing commercial success, with the developer of Silver Skis Chalet selling all 64 of its units for $9,000 to $14,000 apiece in a matter of days.[11] Within a year, condominium construction exploded across the country as developers looked to cash in on the latest ski boom. Colorado's Vail Ski Resort exemplified the new land rush. Within a decade of its opening, the posh resort earned $1.3 million in real estate sales alone, the majority coming from the sale of individual condo units.[12]

At Smugglers' Notch in Vermont, in 1969 IBM's CEO Thomas Watson Jr. invested $4.25 million redeveloping the small ski area into a thriving resort. Watson renamed the small ski hill Madonna Mountain and commenced building thirty-three townhouses, fifteen apartments, two restaurants, a small shopping village, and the now-requisite eighteen-hole golf course as the first phase of a ten-year development plan for a year-round vacation retreat. "The basic idea," Watson explained to *The New York Times*, was to build a resort "where owning a home is carefree, where automobiles are unnecessary because everything is a five-minute walk and where children can play safely anywhere." Condominiums made such "instant villages," as critics dubbed them, possible.[13]

For resort developers like Watson and Vail's Peter Seibert, who pioneered the modern ski resort residential design, condos were a sure-fire method to cash in on the nation's recreational real estate boom.[14] Because they allowed developers to offer multiple dwellings on the same tract of real estate, condominiums magnified profits, as was the case with Snowmass

in Colorado, where buyers quickly snapped up 124 condominiums at $14,000 to $15,000 apiece before ground had even been broken.[15]

Buyers were motivated by price and convenience. Sometimes no more than a single-room studio, a condo offered the convenience of a vacation home without the traditional expenses and responsibilities of a single-family dwelling. In 1967, *SKI Magazine* noted that in Aspen, Colorado, a good building site cost a minimum of $12,000. Factor in the short construction season, cost of materials, and lack of access to power, water, and sewer, and building a vacation home was well out of reach for most middle-class people. Condos offered an affordable and convenient alternative, with shared maintenance costs, amenities like swimming pools and recreation centers, and even the opportunity for rental income, all within a relatively short distance from the beach, the lake, or a ski lodge.[16]

THE LAW OF UNINTENDED CONSEQUENCES

The original intent of making the condominium a form of property ownership had nothing to do with ski resorts. As a part of the Housing Act of 1961, Congress sought to alleviate the nation's growing housing crisis by liberalizing the Federal Housing Authority's home mortgage insurance program, using a Puerto Rican law as its model. The FHA insured mortgages for single-family units in multifamily apartment buildings in efforts to foster greater homeownership among moderate- and low-income families. But the law's true innovation was the establishment of the condominium as a legal form of property in the United States. Blending older cooperative apartments and individual ownership, a condo gave the owners title to the interior space of their apartments, along with joint ownership of all external common areas, such as grounds, heating plants, and hallways. This greatly decreased the cost of purchasing a home by divorcing homeownership from landownership. Theoretically, this would make homeownership possible for millions.[17]

At the signing ceremony for the law, President John Kennedy optimistically proclaimed: "These programs, old and new, offer our communities

Steve Hannagan promoted the resort as a film location to generate free publicity. In 1965, the movie *Ski Party*, costarring Frankie Avalon as a college student on spring break, was filmed there. The movie was shot just before the condominiums were built.

and private builders and lenders the opportunity and the challenge to build the cities of tomorrow where families can live in dignity, free from the squalor of the slums and the unbroken monotony of suburban sprawl."[18]

Condominiums failed to solve the nation's urban housing crisis, however. Rather than becoming the basis for the cities of tomorrow, as lawmakers had envisioned and Kennedy had promised, the new law had an unintended consequence that transformed underpopulated areas: it effectively subsidized resort development throughout the country and made it feasible for the nation's swelling middle class to purchase (and possibly rent out) a vacation home in the mountains—something Bill Janss had already recognized.[19]

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Bill Janss, seen in this undated photo, bought out his brother Ed's share of Sun Valley and aimed to keep 75 percent of the land as open space while expanding the resort by building condominiums.

Third-generation real estate developers, Bill and his older brother Ed grew up in Los Angeles. Both attended Stanford, where Bill anchored the university's ski team and later earned an alternate spot on the 1940 Winter Olympics team. After serving in World War II as a P-38 fighter pilot, Bill returned to California and eventually joined Ed in running the family business. In 1955, the brothers turned their attention to cashing in on Southern California's postwar real estate boom by developing the planned community of Thousand Oaks on the family's Conejo ranch property. But rather than following the tried-and-true model of bulldozing the landscape flat and then quickly putting up houses cheek to jowl, they preserved much of the property as open space to create a more natural sense of place for homebuyers.

By this time, "smog" and "sprawl" had entered into the nation's lexicon as middle-class anxieties fed a broad environmental movement focused on quality-of-life concerns—one of the most prominent being the preservation of open space. Driven by growing demand for housing and an increasing dependence on the automobile, suburbs across the country were rapidly transforming rural landscapes into communities indistinguishable from one another, with their ticky-tacky houses, as a popular contemporary song proclaimed.[20] In contrast, open space promised to relieve suburbanization's monotony, conserving natural settings and providing access to greater recreational opportunities.[21]

With Thousand Oaks, the Janss brothers turned conservation into a selling point. Bill later recalled, "I saw Thousand Oaks grow, and got a feel for what could be done with land."[22] Open space made Thousand Oaks a desirable community to live in by evoking the Conejo Valley's once rural setting, yet the development also provided modern amenities like supermarkets and fuel stations. Although critics viewed the community as little more than a cynical scheme promising affluent homebuyers they could have it all, to Bill and Ed the combination of land preservation and real estate represented the future.

THE SEARCH FOR A SUPER MOUNTAIN

It was with this lesson in mind that Bill and Ed Janss turned to developing their first ski resort. While vacationing in Aspen, they began thinking earnestly about getting into the ski resort business. After a day on the slopes with a former Stanford classmate, Kingsbury "Bill" Pitcher, the three fell into a serious discussion about developing their own resort. Ski areas like Aspen, they noted, offered opportunities similar to Southern California, where real estate sales depended as much on location as on price. Additionally, all three knew the ski industry. The idea struck them as potentially profitable, and the Janss brothers asked Pitcher to begin looking for a "super mountain anywhere in Colorado" on which to build their ski resort.[23]

Like Count Schaffgotsch before, finding the ideal location took time—in Pitcher's case, three years. But sitting in a narrow valley just a short distance from Aspen at the headwaters of Brush Creek were twin mountains, Burnt and Baldy, that offered the ideal mixture of gentle slopes, ample snow, and private land adjacent to a national forest. If the perfect ski resort existed, this location checked every box. And so, in August of 1958, Janss Investment Corporation filed for a special-use permit with the U.S. Forest Service to convert the mountains into a winter playground. It would take six years for the firm to break ground on its new resort. After fending off a rival application by Aspen architect Fritz Benedict and purchasing several

ranches in the area, the Janss brothers entered into an agreement with Aspen Skiing Corporation to begin developing Snowmass, in which the longtime ski resort company would develop the on-mountain facilities and Janss Investments would build the base village.[24]

In many ways Snowmass mirrored the dozens of other new ski resort developments scattered across the West. As with Sun Valley, Snowmass' base village sat on several acres of private land adjacent to several thousand acres of national forest. Ski lifts provided access to nearly two thousand acres of mostly gentle terrain ideal for novice and intermediate skiers. Sales of real estate, primarily condominiums, brought in hefty profits. Yet Snowmass differed from other resorts in one significant way. Wanting to preserve as much of the valley's natural setting as they had with Thousand Oaks, the Jansses hired their former rival Benedict to design a compact, walkable, mixed-use village, where "the skier should be able to ski to the lifts and eliminate the car."[25] Inspired largely by the look of European mountain villages, Snowmass' West Village had 140 condos, six lodges, a handful of private chalets, several shops, restaurants and cafes for après-ski refreshment, even an opera house. With no need for cars, visitors parked in hidden lots adjacent to the village.

"A recreational development is not a subdivision," Janss said when explaining the rationale behind Snowmass. "The relationships between mountain, streams, trees and man-made facilities are critical and a mistake once made is almost impossible to correct. Nature, pitted against man with modern tools, is becoming more and more fragile."[26] The plan was to preserve as much of Brush Creek's natural setting from the sprawl of second homes already dotting the hillsides. Condominiums allowed a much more compact resort, preserving more of the area's open space.

As Snowmass took shape at the base of Burnt Mountain, the Union Pacific was facing a much different reality with Sun Valley. It had become a well-worn joke throughout the ski industry that the railroad giant's annual budget meeting always opened with the board of directors asking how much money its ski resort would lose over the coming fiscal year. Sun Valley had been Averill Harriman's pet project. But after 1946, when Harriman left the corporation's helm, Union Pacific's primary focus became moving freight, not passengers. Sun Valley soon began to bleed cash. Seeking a solution to the resort's financial woes, in 1964 the Union Pacific board approached the Janss Corporation for help in renovating the aging resort. Although focused on developing its Snowmass project, the California real estate firm immediately grasped Sun Valley's worth, specifically the possibilities for the 4,800 acres of undeveloped property surrounding the two historic lodges and adjacent ski areas. All that was needed, the Janss brothers told them, was building new shopping and lodging amenities and making some on-mountain improvements to attract skiers, and Sun Valley would once again rival any ski resort. But that would come with a hefty price tag: an estimated $5 million just to start.

Astonished by the cost and unwilling to pour more cash into what seemed to be a money pit, the board asked the Jansses if they would be interested in buying Sun Valley. The brothers quickly agreed, taking ownership of Sun Valley in 1960. "You only get the chance to buy a national park [sic] once," Bill recalled when accepting Union Pacific's offer.[27] As rumors of the sale slowly trickled out over the next year, Union Pacific's president Arthur Stoddard admitted at the time of the sale, "The operation of Sun Valley has been rather remote from our business of running a railroad."[28] Some skiers lamented the end of an era, but when it was finally announced that the California real estate firm would invest some $30 million in the resort over the next decade, many cheered the hoped-for revival of America's most famous ski resort.[29]

"The relationships between mountain, streams, trees and man-made facilities are critical and a mistake once made is almost impossible to correct. Nature, pitted against man with modern tools, is becoming more and more fragile."

REINVENTING SUN VALLEY

The first order of business was to reimagine the resort village and whom it would attract. "The first thing we did," Bill Janss told a reporter in 1972, "was to say 'Sun Valley is for people.'" Almost immediately he did away with the private dining area for celebrities at Sun Valley Lodge.[30] Construction of a new shopping mall began immediately, and the lodge's old boiler room was converted into a nightclub. "I realized the one problem with Sun Valley was the village had to have a certain size," Janss explained. "You have to have enough people to support five or six restaurants, and more than one night spot."[31]

CSNAFZGER, SHUTTERSTOCK

The people Janss hoped to draw needed places to stay. Construction of four new condominium complexes began the following year. Clustered around tiny manmade Sun Valley Lake, within a short walking distance of the new shopping village and the ski lifts at the base of Dollar Mountain, the condo complexes promised buyers easy access to restaurants and recreation with the amenities of home. Additionally, the Janss Corporation offered attractive financing, placing the potential of owning a resort real estate property within reach of many people who typically were not able to invest in a second home. Lured by the combination of easy financing and location, buyers bought all of the initial 128 condo units within days.[32]

Soon, the resort began to flourish. The *Idaho Statesman* celebrated the "more than a hundred residents or families" that had moved into the Ateliers condominiums.[33] Bill bought out his brother for $6 million the following year, becoming Sun Valley's sole owner.[34] Drawing from his experiences with both Thousand Oaks and Snowmass, along with other resort projects in Hawaii and California, he vowed, "We will not destroy our principal attractions, space and quality."[35] He aimed to keep 75 percent of the land as open space.[36] The key to preserving open space was the condominium, which allowed what he called "a total development" by accommodating more people and generating more profits while limiting the overall footprint. The additional benefit of private ownership with

This contemporary view of the Sun Valley area shows "the microcosm of a present national dilemma," as one writer noted in 1972. On the one hand, as imagined by Bill Janss, development is fitted into the landscape. On the other hand, this much development brings the problems of suburbia into the valley.

shared maintenance costs allowed Janss to control the resort's overall feel while the individual condominium owners shouldered the burden.

But condos where just half of the equation of Sun Valley's reinvention. Lifelong skiers themselves, the Janss brothers understood that Sun Valley's two mountains needed significant improvements. They began at Bald Mountain, the larger peak, by extending the lift to the top; it had become operational three years after the resort opened. After buying out his brother's share of the resort, Bill doubled the number of chairlifts on both mountains and expanded the north-facing slopes of Bald Mountain. He also had the upper runs on "Baldy" groomed, opening more of the mountain to intermediate skiers, arguing, "You don't learn to ski while standing in lift lines." And in 1973, he built Lookout Restaurant atop Baldy and began construction of a new lift up its southern ridgeline, which he named Seattle Ridge for its sometimes inclement weather.[37]

As Ruth Lieder, Janss' public relations spokesman, observed, "There's a basic consensus, since Bill took over, that the development on the mountain has been phenomenal. No one can discount that. They criticize everything else."[38] Indeed, criticisms of Janss centered on the surrounding area's rapid growth, which, right or wrong, many locals blamed on the resort. Within seven years of the Jansses' purchase of Sun Valley, subdivisions built by other developers sprawled across the Wood River Valley floor, causing locals and visitors alike to complain about snarled traffic, the conversion of the area's sagebrush-covered hills, and limited services. Condemnations of "resort sprawl" were wholly consistent with those about suburbanization. Although magazine articles lamented the loss of open space and an idealized rural lifestyle, the drawbacks did little to dissuade any buyers from moving to Sun Valley.[39]

It seemed as if everyone in Idaho had caught "Janss fever," but not many developers shared his desire to protect open space. This unsurprisingly led to conflict. When asked about the pace of development, John Vhay, the city planner for the nearby town of Ketchum, railed, "Look down the valley. The whole area has been cut up. By God, if you could see the subdivisions proposed for this valley! We had one [development] come in last night that just made me want to cry. A little chunk of sagebrush land down there cut up into quarter-acre lots."[40] In the five years between 1965 and 1970, Blaine County—home to Sun Valley and the nearby former sheep-ranching community of Ketchum—added 896 new residences, the overwhelming percentage being condominiums. New developments blanketed the valley bottoms of nearby Elkhorn, Parker, and Independence gulches. Everywhere one looked, it seemed the rangelands were being filled with condominium complexes.[41]

Although magazine articles lamented the loss of open space and an idealized rural lifestyle, the drawbacks did little to dissuade any buyers from moving to Sun Valley.

Even Janss was susceptible to the promise of fantastic real estate profits, announcing in 1972 his partnership with Johns-Manville Corporation, a mining and construction materials firm looking to diversify its holdings, in developing Elkhorn Village just down the valley from Sun Valley Lodge. Once again, he promised to limit the development's effect on the local environment by building a small, dense village. "Elkhorn is going to be the first really well-done recreation village in which they have put a limit in the number of units," he stated. Locals took a less sunny view of the new development, which called for 2,110 units that would accommodate 5,000 people, seeing it as another example of Janss' greed.[42] As Ketchum's Vhay put it, "There's a feeling that Janss is just going to glut the market to where it's no longer economical for him and then he'll clear out."[43]

To develop the new village, Janss and Johns-Manville turned to California developer RecreActions. Elkhorn followed the Janss formula of mixed-use, high-density development that preserved much of the area's natural setting. The first condos were completed for the 1972–1973 season, and by 1976 the village included an ice-skating rink, eighteen-hole golf course (the third in the area), and more retail space. However, Elkhorn proved too costly, nearly bankrupting Janss. After briefly negotiating with Disney, which was looking to get into the ski resort business, he sold Sun Valley to a reclusive oil and real estate magnate, Earl Holding. The owner of the Little America Hotel chain and Sinclair Oil, Holding sought to attract greater numbers of intermediate skiers and aggressively pursued summer visitors. Such changes caused further discord throughout the area as sprawl continued to spill down the valley into the towns of Ketchum and Haley.[44]

"In Sun Valley is the microcosm of a present national dilemma," wrote *SKI Magazine* journalist Morten Lund in 1972. The "purveyors of suburbia" now ran ski resorts, particularly Sun Valley, Lund warned. "With all the good and bad things that reside in that milieu considered, suburbia is the preferred milieu of nearly every American not an intellectual or striving for a Third World kind of life."[45]

Although many bemoaned Sun Valley's suburbanization under Bill Janss, many others welcomed it. The same mixture of affordability and access that was driving suburbanization across the country was driving this resort's remarkable pace of growth, and that of other resorts around the country. And for many, it was the condo that opened the door to owning their own dream vacation home. "I think they are magnificent," one owner proudly told Lund of his purchase, although he went on to say that not all condos were equal in construction quality. "I've been all over the world in a lot of communities, in Europe, here, Mexico. I don't know any that are better."[46]

And that was the point. Condominiums remade Sun Valley by democratizing the once exclusive resort for a growing number of Americans now able to travel and own a vacation home. Created by a law intended to solve the urban housing crisis of the 1960s, within a decade, condominiums had become synonymous with ski resorts. Like most modern resorts, Sun Valley capitalized on its amenity-based economy through real estate development, bringing with it both greater access for the masses and sprawl. As Lund noted, unless you were "an intellectual or striving for a Third World kind of life," the new Sun Valley was utopia, and the condo the new middle-class vacation home.

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They Left A Trace

A History of the Wilderness Management Research Unit

BY DAVID N. COLE

A wilderness visitor registers at a wilderness trailhead to receive a mailback questionnaire—part of Bob Lucas' early 1970s baseline study of wilderness visitors in Montana.

Passing a law in 1964 establishing wilderness areas within the National Forest System did not mean that the U.S. Forest Service immediately understood how to manage these areas. To do that required research to understand these areas and how they were being used.

The year 1964 was a landmark one for important legislation in the United States. Among the bills passed that year was the Wilderness Act, which created a new category of public lands. Lands designated as wilderness were to be afforded the highest level of protection, even more protection than national parks and wildlife refuges. Like parks and refuges they were to be preserved in their natural condition, but above all, they were to be managed to protect their "wilderness character." Like parks and refuges they were available for public enjoyment, as long as recreation did not adversely affect the values for which the area was designated. They were to be used and enjoyed "as wilderness." What did it mean to be charged with protecting wilderness character and managing for uniquely wilderness experiences? And how should one go about doing that?

The new land designation "wilderness" gave federal land managers a unique set of management objectives. Uncertainty about what those objectives were and how to achieve them was a problem. Prior to 1964, there were administratively designated wildernesses, open and available for recreation use. Through the 1950s and particularly the 1960s, wilderness recreation increased greatly. Heavy use resulted in significant impact on the environment (such as eroded trails, compacted campsites, piles of litter, and human waste problems).

Increasing use meant popular destinations were often crowded and less likely to offer the outstanding opportunities for solitude that wilderness was expected to provide. Increasing use and impact was a cause for concern, with little clarity about the nature or seriousness of the problem and uncertainty about what to do about it.

In response to this situation, in 1966, the Senate Appropriations Committee asked the U.S. Forest

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Service to develop a proposal for a wilderness management research unit, within the Research Branch of the agency.[1] Responding to this request, the Intermountain Forest and Range Experiment Station developed a thirteen-page proposal that documented the challenge of wilderness management and specific research questions that needed to be addressed. It laid out a program focused on: 1) the wilderness visitor, 2) plant and animal ecology in wilderness, 3) wildlife species in wilderness, and 4) insect, fire, and disease control in wilderness.

It asked for an annual allocation of $300,000 and proposed that the research be conducted at the new Forestry Sciences Laboratory, located on the University of Montana campus in Missoula—an ideal location given its proximity to 7.3 million acres of existing or proposed wilderness.

Much of the proposal was accepted. In 1967, the new wilderness management research unit was established there. However, only $75,000 was appropriated.[2] The Forest Service appointed Bob Lucas the first project leader and transferred him from the Lake States Forest Experiment Station in St. Paul, Minnesota. Lucas, a geographer, had conducted pioneering research on visitors to the Boundary Waters Canoe Area, a large tract of wilderness in northern Minnesota. His initial tasks were to develop a problem analysis to guide the new unit's research program and to hire an additional scientist. For the latter, he selected George Stankey, a doctoral student in geography from Michigan State University.

The Wilderness Management Research Unit was the first research institution in the United States to focus intensively on the subject. It remained the only research institution in the world to work exclusively on wilderness for decades, as interest in wilderness exploded around the world and wilderness acreage in the United States increased from 9.1 million acres in 1964 to more than 100 million acres today. As such, its influence around the world has been profound, arguably more influential than any other Forest Service research program of its size. The unit produced much of the pioneering and seminal research in the field, collaborated with and often funded other wilderness researchers. It defined much of the research agenda for the burgeoning wilderness management field and provided much of the raw material for training successive generations of wilderness scientists and managers.

To describe the work and influence of this pioneering research unit, I divide the unit's tenure into three time periods. From 1967–1977, Bob Lucas and George Stankey were the sole scientists in the unit. Both social scientists, in-house research during this period focused on wilderness visitors. From 1978–1987, budgets increased briefly. David Cole, Randy Washburne, and Margaret Peterson joined the unit and the research agenda expanded. Randy Washburne, Margaret Peterson, and George Stankey left the unit in 1982, 1984, and 1987, respectively, and Bob Lucas retired in 1988. During the final period, from 1988–1993, the research agenda expanded further. David Cole became project leader. He was joined by Alan Watson, whom Bob Lucas hired in 1987. Alan was interested in social science issues beyond recreation visitors. Peter Landres was hired in 1992 to explore a broader range of ecological issues in wilderness. In 1993, the unit morphed into the Aldo Leopold Wilderness Research Institute.

THE LUCAS AND STANKEY PERIOD, 1967–1977

As befits the fact that wilderness science was a brand-new field of inquiry, the initial emphasis of the unit was on descriptive studies and development of and improvement in research techniques. Because there were only two scientists—both social scientists, at that—the emphasis was on "visitor studies, use patterns, visitor characteristics, attitudes concerning wilderness, its use and management, and, particularly on the esthetic or social carrying capacity of wilderness and on management to match use to capacity."[3] The emphasis on visitor studies and social carrying capacity was retained throughout the 1970s, but was increasingly supplemented by research on the ecological impacts of visitors.

Much of the early work of the unit was so simple and basic as to appear—from the perspective of today—to be commonsense. But the unit's research results were new knowledge and, in many cases, counter to prevailing notions. As Lucas noted, "Experienced administrative officers working with the same Wilderness sometimes disagree as to whether the area's main use season is summer or fall, whether half or one-fifth of the visitors hike, how long they stay, where they go, and their estimates as to the level of use may vary by a hundred percent or more."[4] Even the most basic and descriptive information went a long way towards making management more science-informed.

Bob Lucas' earliest personal research sought to refine methods for estimating recreation use in wilderness. He found that use estimates from trail registers were inaccurate but could be adjusted using correction factors obtained by either observing or using automatic cameras to estimate the proportion of different user types that failed to register. Some kinds of visitors—horsemen, hunters, day-users, and teenagers—are less likely to register.[5] Much of Lucas' empirical work in the early 1970s focused on a "baseline survey" of summer and fall visitors to wilderness and backcountry areas in Montana. He sought comparable data on users of these areas, regarding activity patterns, visitor characteristics, and preferences for management, facilities,

and use situations. Since these original surveys, similar visitor surveys—often using questions first developed by Lucas—have been conducted in wilderness areas and parks around the world, resulting in an ever-improving understanding of wilderness visitors and an increased ability to monitor and understand trends over time.[6]

One finding of the baseline survey was that use distribution on trails and at campsites is very uneven. Certain places are much more crowded and heavily impacted than other places. This led to a study of the degree to which users might distribute themselves more equitably if they were given information about which trails are crowded and which ones aren't. Lucas found that such an effort was unlikely to be effective unless visitors have information in the planning stages of their trip and unless information on more than just use levels is provided.[7] This interest in use distribution and how it might change over time or be altered through management led Lucas to cooperate with scientists from Resources for the Future, Inc., to develop a simulation model of wilderness visitor flows.[8] With this tool, managers could simulate the effects of policies under consideration, such as limiting use at most trailheads, building a new trail or the effect of an increase in amount of use. Without having to actually try out the change, managers could get an idea of what the resulting use pattern would be, what would happen to the number of encounters between parties and how crowded camping areas would be.

In 1969, George Stankey did the fieldwork for his first research project. The resulting report on visitor perceptions of wilderness recreation carrying capacity proved to be highly insightful and influential—for its conceptualization of the issue, its methodology, and its empirical results.[9] The study aimed to understand the nature of high-quality wilderness experiences, what characteristics of use influence experience quality, and how to manage for quality experiences. Extending the work of Lucas on perceptions of Boundary Waters Canoe Area visitors, Stankey studied visitors to the Bob Marshall Wilderness in Montana, the Bridger Wilderness in Wyoming, the High Uintas Wilderness in Utah, and the Boundary Waters Canoe Area. Recognizing that there are many different ideas about what constitutes a wilderness experience, Stankey reasoned that experience quality should be judged—not by the average visitor—but by those he called "purists," those visitors whose personal definitions of what is and is not desirable in wilderness most closely match the legal framework provided by the Wilderness Act. These visitors defined a high-quality wilderness experience as one with few encounters with others, in an environment where human evidence was minimal, and where it was possible to camp far from others.

The unit produced much of the pioneering and seminal research in the field, collaborated with and often funded other wilderness researchers.

Stankey asked visitors how they would feel about encountering an increasingly large number of other groups, in this way relating satisfaction with one's experience to level of use. He referred to widely shared preferences as norms—both regarding the number of encounters with other groups and appropriate methods of travel and group size. Hundreds of subsequent visitor studies have taken a similar approach—often referred to as a normative approach.[10] Stankey found that other characteristics of the groups encountered affected satisfaction more than the number of groups encountered. This finding ran counter to the perception that defining carrying capacity was the key to management and capacity was all about the number of visitors. Stankey found that, in addition to the amount of use, visitor satisfaction was affected by method of travel, group size, and where encounters occurred. He then described a range of management actions, including restricting the number of users, that might be taken to manage wilderness within its capacity and provided data on visitor opinions about the desirability of these actions.

The wilderness visitor research of Lucas and Stankey was supplemented by several studies of ecological impacts of recreation in wilderness conducted by University of Montana cooperators. Sheila Helgath studied trail deterioration in the Selway-Bitterroot Wilderness in Idaho, finding that most trail segments were stable, though a few deteriorate rapidly, and that deterioration rates are determined more by location, design, and maintenance than by the amount of use they receive.[11] Sid Frissell developed a campsite condition monitoring technique and applied it to campsites at popular destinations in the Spanish Peaks Primitive Area.[12] Both of these studies innovated techniques that have subsequently been used in scores of other areas and that continue to be used today. They also discovered new knowledge that is so fundamental that few modern recreation ecologists know who first discovered it.

As important as their empirical research was, Lucas' and Stankey's conceptual contributions to wilderness management and their close cooperative work with other

scientists and wilderness managers exceeded that. The result was a much larger and more closely-knit wilderness community than would normally have been possible given the meager investment made in the research unit. The publication of the textbook *Wilderness Management*, in collaboration with fellow Forest Service scientist John Hendee, is a fitting culmination of the unit's first decade.[13] The comprehensiveness of the book reflects Lucas' and Stankey's work organizing the field of wilderness management, developing concepts and principles as well as their empirical research. It is strengthened by the time they spent with wilderness managers and working within the larger community of wilderness scientists they helped nurture and foster. Although the first edition of the book was written when the field was barely a decade old, it is currently in its fourth edition, and 40 years later much of the book remains as originally written.

SOCIAL AND ECOLOGICAL SCIENCE: 1978–1987

In 1978, funding for the Wilderness Management Research Unit doubled. David Cole was hired to increase the unit's capacity to work on ecological impacts in wilderness. Randy Washburne was hired to develop support for and work on several ambitious survey projects. There were also more funds available to support cooperative research on a wider array of wilderness issues. In 1980, Margaret Peterson joined the unit to assist in technology transfer and work as a junior scientist. The primary research themes of an updated work unit description were visitor studies, ecological impacts of recreation, and improving wilderness management systems. Based on the prestige they developed over the preceding decade, requests for Lucas' and Stankey's time increased greatly. The wilderness concept was spreading around the world. As the only research institution in the world devoted exclusively to wilderness management, international requests for guidance and visits increased along with similar domestic requests.

Bob Lucas, the foremost pioneer of wilderness science, worked from the unit's beginning in 1967 until his retirement in 1988. George Stankey, seen washing up in camp during fieldwork in 1969, served in the unit from 1969 until 1987.

During this period, much of Bob Lucas' time went into administrative tasks. However, he continued empirical research on use measurement techniques, finding that self-issued permits provided better data than trailhead registers.[14] In 1982, he repeated the survey of Bob Marshall Wilderness visitors first conducted in 1970, providing the first systematic information on trends in wilderness visitors and visits.[15] He developed the first in-depth discussion of trends in wilderness visitation, concluding that the rate of increase in wilderness visitation had slowed and use of many areas, particular in national parks, had declined.[16] He also wrote and spoke about his concern for increased regulation in wilderness and its effect on freedom and spontaneity.[17]

By this time, George Stankey had largely shifted away from empirical science. Requests for his expertise came from around the world and, during this period, he spent two years in Australia, teaching classes and working with the New South Wales National Parks and Wildlife Service. When in Missoula, much of Stankey's effort went into two planning frameworks that proved to be highly influential. With Roger Clark, he expanded on the notion of the value of diversity in recreation experience to operationalize the framework referred to as the Recreation Opportunity Spectrum.[18] Along with Sid Frissell, David Cole, Bob Lucas, Randy Washburne, and Margaret Peterson, he worked to operationalize a process for dealing with recreational carrying capacity—a process that came to be known as Limits of Acceptable Change (LAC).[19]

With the wilderness concept spreading around the world, requests from abroad for guidance and visits increased along with similar domestic requests.

The genesis of this project was a request, in 1979, from Tom Kovalicky, deputy supervisor of the Flathead National Forest, to work with managers of the Bob Marshall Wilderness on some sort of demonstration of innovative wilderness management. At the same time, the research unit was being barraged with requests for help in dealing with carrying capacity. Managers sought something more than a list of factors to consider when grappling with the issue; they wanted a step-by-step process. Developing and applying such a process seemed a good idea for the demonstration project. The project took six years to complete and represented the largest outlay of time and resources in the history of the unit. All the scientists were involved, working to develop and publish the framework, conduct empirical studies of visitors and impacts, and work with managers on the LAC plan for the Bob Marshall Wilderness Complex.

Following development of the framework, years were spent training agency personnel in its application. The LAC framework proved to be highly influential, providing the conceptual basis for a series of similar frameworks developed for other applications and around the world. Bob Lucas stated that by turning "what had long been referred to as carrying capacity into a practical management tool," development of LAC was the research unit's "major accomplishment."[20]

The addition of David Cole, there on temporary assignment, in 1978, allowed the unit to balance its work on wilderness visitors with work on ecological impacts. Cole's initial assignment was to develop a program of work on recreation impacts in wilderness, based on a survey of existing literature. By 1978, a number of relevant studies had been conducted, but few researchers had conducted more than one study. Existing knowledge, therefore, was disparate and unorganized; it was not cumulative and seldom applied to wilderness management problems. One of Cole's first products was an annotated bibliography of more than 300 previous studies.[21] Synthesis of this information and its organization into a coherent field of recreation ecology followed, most notably in a state-of-knowledge review, the first textbook on recreation ecology, *Wildland Recreation: Ecology and Management*, and a number of book chapters, including one in the second edition of *Wilderness Management*.[22] Parallel to the early work of Bob Lucas on improving use measurement techniques, Cole developed monitoring techniques for campsites and trails in wilderness. Using these techniques, he documented trends in impact, in some cases over periods of up to 32 years.[23]

In a manner similar to Stankey's work on visitor experiences, Cole identified the use factors that influence the nature and magnitude of ecological impact: amount, type, timing, location, and geographic distribution. He systematically studied the influence of each of these factors in a variety of environmental settings across the country, using a combination of experimental techniques and examination of existing recreation sites. Most of this work was conducted on campsites, but he also worked on trails. He studied the disturbance process and the rate at which impact occurred, using experimental application of trampling and camping in previously undisturbed environments. He

studied rates of recovery in places where recreation use was curtailed. Many of the fundamental principles of recreation ecology emerged from this work. Cole found that the relationship between amount of use and impact is generally curvilinear; a little use causes substantial impact, with higher levels of use having less effect.[24] Vegetation in forests was often more fragile than that in meadows, even at high elevations.[25] He emphasized the management implications of these studies, pointing out how results were often counter to prevailing wisdom. Impacts are usually minimized by concentrating rather than dispersing use. Resting and rotating sites—allowing them to recover—is usually a futile strategy. Recreation impacts may be more unsightly in meadows than in forests, but meadows are generally not more fragile.

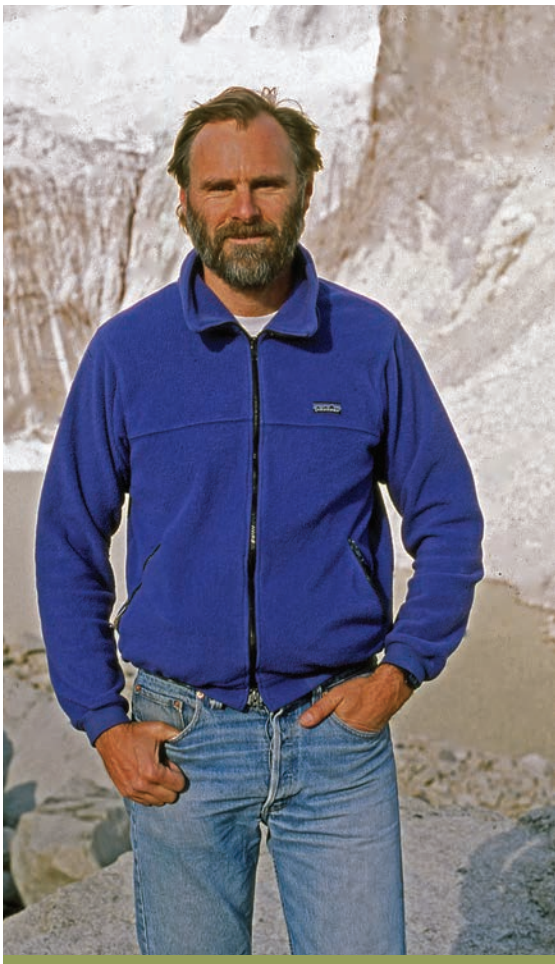
BEYOND WILDERNESS RECREATION: 1988–1993

In 1987, George Stankey resigned from the Forest Service, returning to Australia to teach. Funding was sufficient to hire David Cole into a permanent position and to hire Alan Watson into George Stankey's position as a social scientist. Bob Lucas retired in 1988 and David Cole was appointed project leader. For a long time, Bob Lucas had been interested in information and education as an alternative to regulation. So, in the mid-1980s, the unit began to devote substantial resources to low-impact education—improving the accuracy of message content and increasing the effectiveness of communication channels. Much of this was spurred by a trip organized by the National Outdoor Leadership School (NOLS) in 1985 that Bob Lucas and David Cole attended. On that trip, NOLS and the Forest Service agreed to collaborate to improve the content of low-impact educational messages and assure that they were consistent with science, a project that David Cole undertook. He collected brochures, pamphlets, articles, and other examples of recommended low-impact practices, from management agencies around the country. He compared them to each other, finding they were frequently contradictory. He evaluated them in the light of existing research and distilled them into a consistent set of science-based messages. This work was summarized in a handbook on low-impact practices, a revision of the *NOLS Conservation Practices*, and *Soft Paths*, the first book-length treatment of what came to be called Leave No Trace (LNT) practices.[26] Subsequently, a video version of *Soft Paths* was produced, containing the first version of Leave No Trace principles—principles that have since spread around the world. Interagency brochures were produced, training sessions were held, and ultimately a nonprofit organization, Leave No Trace Center for Outdoor Ethics, was created to further this work.

Work on communication methods was more limited, and much of it was conducted by cooperators with funding from the research unit. David Cole collaborated with Steve McCool and Tim Hammond from the University of Montana to assess the effectiveness of posting LNT messages on trailhead bulletin boards. They found that as the number of messages increased, the attention devoted to each message declined, as did the ability to retain message content: hikers exposed to eight messages could not identify any more of the agency-recommended practices than those exposed to only two messages.[27]

Around 1990, after the departure of Bob Lucas and with the hiring of Alan Watson, research emphases shifted again. Basic research on ecological impacts and experiential quality and the factors that influence them was to continue, but there would be new emphasis on understanding visitor conflict and on trends in visitors and impacts. The effectiveness of management techniques was evaluated, particularly in places that receive concentrated use and, given widespread interest in the LAC process, research was to be conducted on appropriate indicators and standards and cost-effective techniques for monitoring them. Given the latter emphasis item, Peter Landres was hired in 1992 to increase the unit's capacity to work on ecological issues other than recreation.

With the addition of Watson, in-house empirical social science research increased dramatically.



David Cole and other researchers shared their expertise with park managers around the world. Cole's work sites included Torres del Paine National Park in Chile.

Margaret Petersen is shown measuring vegetation cover on campsites in the Bob Marshall Wilderness in the early 1980s.

Moreover, Lucas' retirement freed up substantial funds for extramural research. Perhaps after two decades, the era of pioneering research was over, but this was a period of substantial research output by the unit. The first empirical study Watson undertook, in cooperation with Joe Roggenbuck and Dan Williams from Virginia Tech, was a study of visitors to three wilderness areas in the South: Caney Creek in Arkansas, Cohutta in Georgia, and Upland Island in Texas. Besides collecting baseline information on visitors to wildernesses in a region and in ecosystem types that had never been studied, a major objective was to provide scientific input to the selection of indicators and standards, as part of the LAC process. Visitors were asked their opinions regarding which attributes of wilderness have the most impact on their experience. Littering and damage to trees in campsites, noise, and seeing wildlife were found to be very important influences on wilderness experiences. Less important were the number of encounters with other people, though campsite encounters were more important than trail encounters.[28]

In 1990, Watson started field studies of conflict between horse users and hikers in the John Muir and Sequoia-Kings Canyon Wildernesses in California and the Charles Deam Wilderness in Indiana. Twenty years earlier, George Stankey had found conflict between the two groups, with hikers being more bothered by meeting horse groups than other hikers.[29] Watson explored this conflict in more detail, employing multiple measures of conflict, evaluations of whether encounters were disliked, as well as evaluations of whether one's experience goals were interfered with due to encounters. He also examined the extent to which four potential determinants of conflict (definition of place, specialization level, focus of trip/expectations, and lifestyle tolerance) predicted the degree of conflict, learning a lot about what predisposes visitors to experiencing conflict. Most fundamentally, hikers who dislike meeting horses in wilderness believe that horses are inappropriate in wilderness. They "also are not as likely to accord high status to horse users, have stronger relationships with the wilderness, and place more value on the opportunities for solitude than those who do not dislike horses."[30]

Watson and Cole collaborated on several projects. To extend the work on visitor trends begun by Lucas, in 1990 and 1991 visitor surveys were repeated in three wilderness areas that had initially been studied between 1969 and 1978; the Boundary Waters Canoe Area in Minnesota, Desolation Wilderness in California, and Shining Rock Wilderness in North Carolina. Analysis of trends showed that characteristics of the people who visit wilderness changed more consistently than the type of trip they take, their evaluations of conditions, or their preferences for conditions and management. In particular, visitors were older, more highly educated, more likely to be female, and to have visited other wildernesses.[31]

The final collaborative project was a study of high-use destination areas a short distance from trailheads and close to large urban areas. Such places are generally highly crowded and impacted; they continue to have

the same problems and concerns that first surfaced in the 1960s and spurred creation of the Wilderness Management Research Unit. Similar to the LAC project earlier, a major goal of the project was to bring both ecological and social science to bear on these issues, seeking increased insight into how to manage such places. Work was conducted in six lake basins in the Alpine Lakes, Mount Jefferson, and Three Sisters Wildernesses in Washington and Oregon. Recreation impacts on system trails, user-created trails, campsites, and lakeshores were quantified, as were encounters between groups, during the day and in the evening, on the trail and at the destination. Exit interviews were conducted with visitors to explore who they were, what they encountered, their responses to what they encountered, and their management preferences.

Not surprisingly, encounter rates in these destination areas were extremely high, clearly exceeding what most visitors preferred. Ecological impacts were also substantial, although generally not higher than has been reported elsewhere. Most visitors expected to have numerous encounters and were not bothered by their experience. They noticed impacts and reported that impacts detracted from their experience. Few visitors supported reducing use levels—the most effective means of reducing encounters—but were highly supportive of site management approaches to limiting impact.[32] Study findings influenced a new wilderness recreation management strategy developed by the Forest Service—one that embraced the oft-lauded approach of internal zoning—as well as wilderness planning in the Pacific Northwest, at wildernesses such as Mt. Hood and Alpine Lakes.[33]

Cole's personal research focused on trend studies and further exploring the relationship between amount of use and amount of impact, in environments that vary in their durability. Studies indicated that trails were generally stable, although some segments are prone to rapid deterioration.[34] Most campsites—once they have been repeatedly used—are also relatively stable.[35] Campsite impact during the 1970s and 1980s often increased greatly, but more from the proliferation of new campsites than the deterioration of existing ones.[36] This work had important implications both for wilderness management and Leave No Trace practices. In popular places, it is important to concentrate use on a few established sites that rangers keep as small, clean, and attractive as possible. In little-used places, use should be dispersed, places where incipient impact is apparent should be avoided, and rangers should try to eliminate evidence of use and impact.

To extend experimental methodologies, Cole worked with Neil Bayfield, the Scottish ecologist who pioneered experimental studies of recreation impact in the 1960s. They developed a standardized method for conducting trampling experiments to facilitate the comparability of trampling experiments, studies that were increasingly common around the world.[37] These methods were applied to 18 vegetation types, in Washington, Montana, Colorado, New Hampshire, and North Carolina. Results showed that vegetation types growing in close proximity to each other can vary at least thirty-fold in durability. The ability to resist being damaged by trampling was often negatively correlated with the ability to recover from damage, and it was possible to predict the resistance and resilience of vegetation by examining plant morphological characteristics.[38] These results added to knowledge about where managers should locate facilities and what

Encounter rates in these destination areas were extremely high, clearly exceeding what most visitors preferred. Ecological impacts were also substantial, although generally not higher than has been reported elsewhere.

In 1988, Alan Watson was hired to continue the social science agenda of Lucas and Stankey. He broadened the array of social science issues that were studied.

visitors should be told, in Leave No Trace messages, about more durable routes over which to travel and camp.

A quarter century after establishment of the Wilderness Management Research Unit, the program still did not have sufficient funding to work on the array of research needs identified in the 1966 proposal to Congress. Cole worked to identify scientists who could contribute new types of expertise to wilderness management. For example, he recruited and funded Rick Knight at Colorado State University to synthesize knowledge about recreation impacts on wildlife, resulting in the first book on the topic.[39] The hiring of ecologist Peter Landres, in 1992, also reflected this interest in expanding the array of issues the unit could explore. Much of Landres' time during the final year the research unit existed was devoted to developing a research agenda for ecological work beyond recreation. He collaborated with David Cole on a further elaboration of threats to wilderness ecosystems[40] and ultimately focused his work on monitoring.[41]

In 1992, Congressman Bruce Vento (D-MN), concerned that agencies were not giving wilderness management the attention it deserved, introduced a bill called the Forest Service Wilderness Management Act in Congress. Among other things, the act called for creation of an interagency research entity, what would become the Aldo Leopold Wilderness Research Institute, to be located in or near Missoula, Montana. Although the bill was never enacted, the Forest Service's Research branch leadership decided to administratively create such an institute by assimilating the Wilderness Management Research Unit, its personnel and resources, and then seeking to attract additional resources to expand the program. In 1993, the institute was dedicated, and 26 years after it was created, the Wilderness Management Research Unit ceased to exist.

LEGACY

Although it only existed for 26 years and usually had a staff of only two or three scientists, the legacy of the Wilderness Management Research Unit is profound. Staff scientists organized and gave structure to two fledgling disciplines—wilderness science and recreation ecology. They developed and refined sampling protocols and research methods for both these fields, protocols and methods that have been repeated in hundreds of subsequent studies. They coauthored the first textbooks in these fields as well as the first book devoted exclusively to Leave No Trace practices. The science being done moved from basic observation, description, and organization to ever more sophisticated theory and hypothesis testing. With collaborators they developed two of the most important recreation planning frameworks, the Recreation Opportunity Spectrum and Limits of Acceptable Change. The arc of the unit's contributions to knowledge can be traced from the pioneering work of two social scientists, to the seminal recreation ecology work of the unit's second decade, to the increasingly diverse and productive agenda that was taken on in the final years and is being carried on by the Aldo Leopold Wilderness Research Institute.

As important as their contributions to knowledge was their attention to building and nurturing a collegial and vibrant network of wilderness scientists and managers. Staff scientists mentored young scientists, provided funding for research projects, collaborated with others, organized and attended conferences and workshops, and interacted frequently with field managers and rangers all over the country. They attended and gave talks at international wilderness conferences, expanding the collaborative network further. Most of the first few generations of wilderness scientists and recreation ecologists worked with, were funded by, or otherwise collaborated with unit scientists, leaving them profoundly influenced

by those interactions. The ultimate legacy of the Wilderness Management Research Unit is this network of scientists and managers working on wilderness issues, made wiser and more informed by the work that was done by this small group of scientists.

David N. Cole served with the Aldo Leopold Wilderness Research Institute from 1978 until his retirement in 2013. As Emeritus Scientist, he continues contributing to wilderness science. *This article is reprinted from the April 2019 issue of the* International Journal of Wilderness *and can be accessed at www.ijw.org.*

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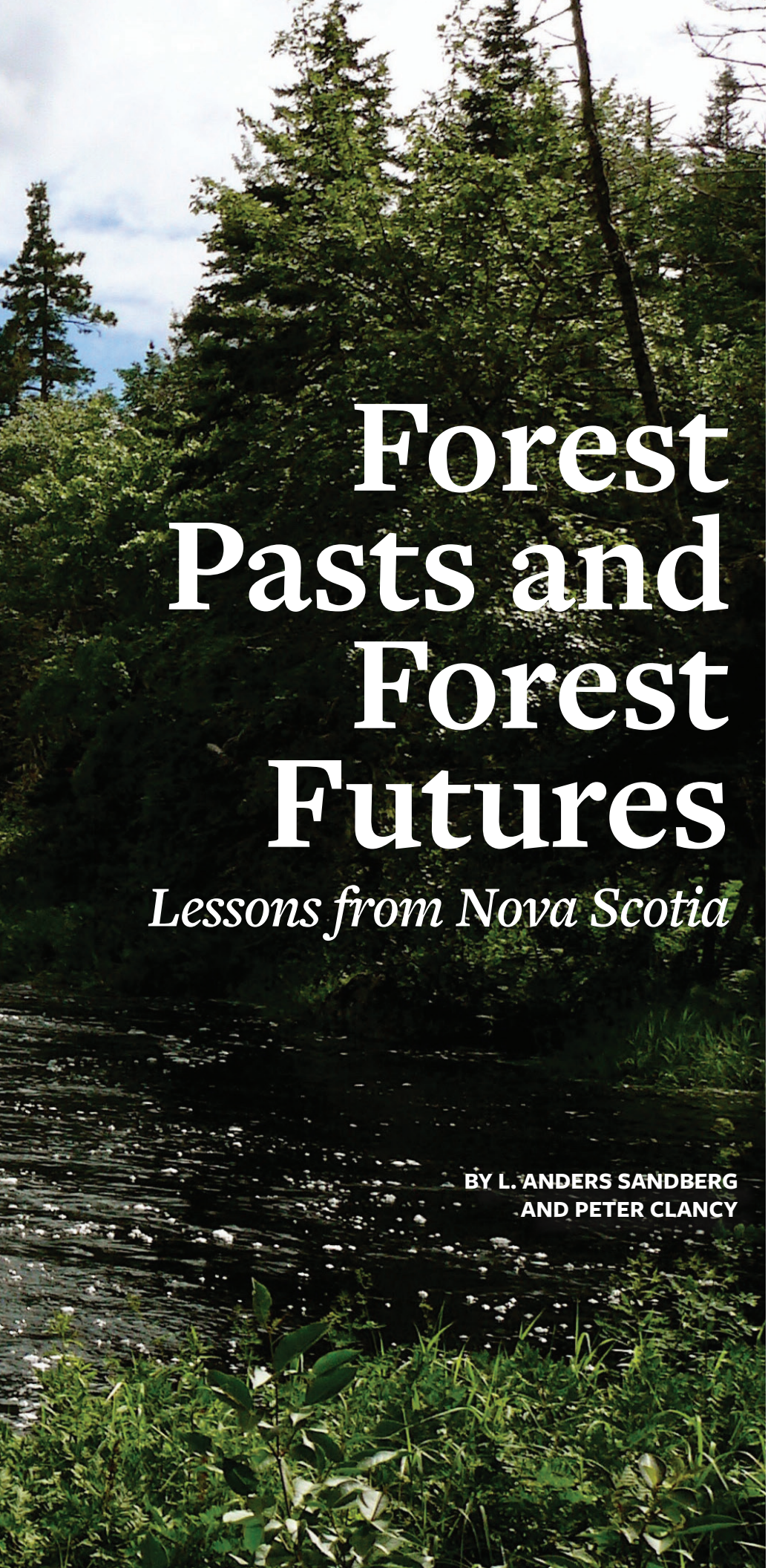

Forest Pasts and Forest Futures

Lessons from Nova Scotia

BY L. ANDERS SANDBERG AND PETER CLANCY

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Forestry in Nova Scotia is in transition. This review essay explores the potential for historical ideas and approaches to help the province find a new, more socially and ecologically responsible direction.

In this review article we consider the forest industry in eastern Canada, a once dominant region of the world's pulp and paper industry. Today, the globalized forest industry is divesting in the region while turning its attention and capital investments to the global South.[1] Using the province of Nova Scotia as a case study, we identify two directions for the future, one aligned with the pulp and paper industry with its associated industrial forestry practices, and another that is receptive to locally, socially, and ecologically focused alternatives. This second approach is grounded in a long, if neglected, tradition of alternatives to industrial forestry.

Several decades ago we were part of a project exploring the forest economies of Nova Scotia and New Brunswick. The ensuing book, *Trouble in the Woods: Forest Policy and Social Conflict in Nova Scotia and New Brunswick*, was published in 1992. Sandberg, the editor, took a broad approach, looking at how provincial governments had worked with pulp and paper companies to secure long-term leases for their wood supplies or exerting their monopoly powers to buy pulpwood from the provinces' numerous small woodlot owners. We also documented how the forest had been managed using industrial forestry practices, with clearcutting, monocultural tree plantations, and pesticides and herbicides, and how a corporate sector operating in compliant jurisdictions could exploit not just forests but also local communities, residents, small woodlot owners, and wildlife. The book occasioned sixteen book reviews

in both the academic and mainstream media. It was one of several that in the late twentieth century critiqued forestry in various jurisdictions, including Maine (*Beyond the Beauty Strip: Saving What's Left of Our Forests,* by Mitch Lansky, 1992), Canada (*Cut and Run: The Assault on Canada's Forests*, by Jamie Swift, 1983; *Lost Initiatives: Canada's Forest Industries, Forest Policy and Forest Conservation*, by Peter Gillis and Thomas Roach, 1986; and *At the Cutting Edge: The Crisis in Canada's Forests*, by Elizabeth May, 1998), and Indonesia (*Rich Forests, Poor People: Resource Control and Resistance in Java*, by Nancy Peluso, 1994).

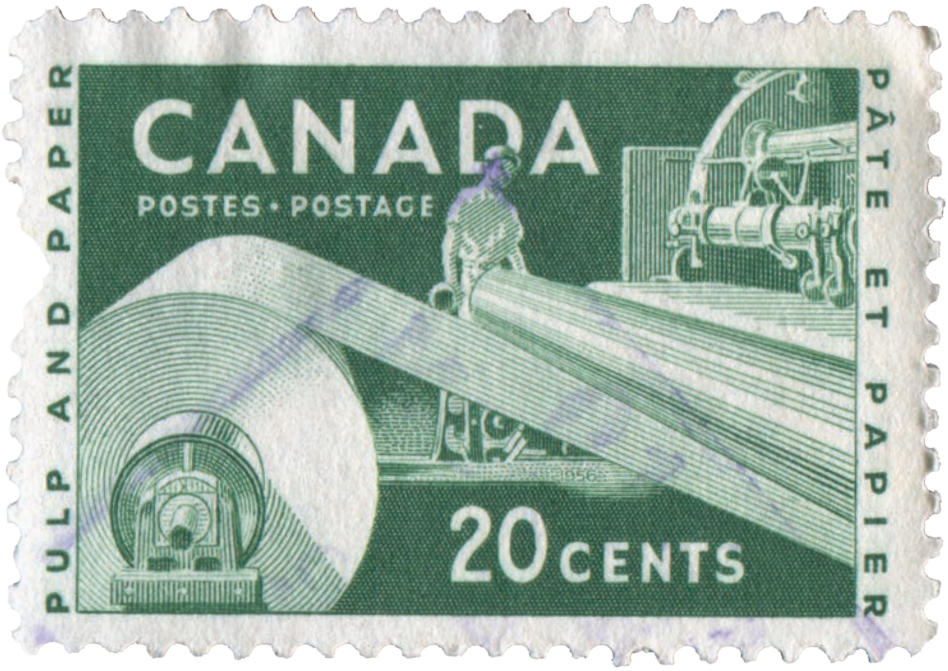
Almost a decade later, we were part of another project inspired by some of the foresters we had encountered in our research and travels in Nova Scotia. In writing *Against the Grain: Foresters and Politics in Nova Scotia*, published in 2000, we argued that foresters were not always the handmaidens of industrial forestry but, in fact, were a diverse group of professionals with strong views and convictions. They could provide insights into how to relate to the forest and its nonhuman inhabitants in respectful ways, even though they were not always able to express their views in public. We learned, among other things, that the conservation efforts of the province's first chief forester in the 1920s were scuttled by the patronage policies and rural politics at the time. We wrote about the colonial legacy of Nova Scotia in sawmilling, the rise of the pulp and paper industry, and the struggle between a public-minded forester and concession-focused politicians. We also wrote about how Nova Scotia, in contrast to neighboring New Brunswick, had resisted the pesticide spray option to fight a spruce budworm infestation, largely because a forest entomologist in the province's Department of Lands and Forests held different views on forest pests and forest ecology. The book also contained biographies of foresters who had worked for the welfare of the many small woodlot owners in the province by promoting their place in wood markets and managing their woodlots in effective and collaborative ways. We observed that the seemingly small day-to-day activities of people in the forest economy can make a difference.

Nearly two decades later, we returned to the subject of Nova Scotia forests to consider their development over the long term. We found ourselves in a similar position to the one almost thirty years earlier, but this time our approach was more historical than political and economic. We perceived Nova Scotia's forest history as having colonial, industrial, and pulp and paper forest industry stages, with an undetermined stage in the present. The advantage of writing over the *longue durée* is that you begin to see the weight of history on the present, but there is a corresponding danger—that the present and future can seem almost predetermined.

AT A CROSSROADS

In Nova Scotia, as elsewhere in the northern hemisphere, the forest industry is at a crossroads. Until recently, three pulp and paper mills—one established in the late 1920s and the other two in the 1960s—dominated the province's forest sector. But the global restructuring of the forest industry that began in the 1980s has had dramatic consequences for the industry.

The oldest of the province's three large pulp mills, at Liverpool in the southwestern part of the province, closed in 2012, selling all its lands and ceding its crown leases to the provincial government. A second mill, at Port Hawkesbury on Cape Breton Island, recently closed part of its operations, scaled down its employment, and has changed hands several times. Port Hawkesbury Paper's current pulp operation feeds a paper mill that produces super-calendered paper for retail inserts, magazines, and catalogs. The mill employs 325 workers and supports an additional 700 indirect



This postage stamp, issued circa 1956, celebrated the strength and central position of Canada's pulp and paper industry on a national scale. More than a half-century later, forest-related industries in Nova Scotia are in transition.

jobs, and can produce 400,000 tons of paper per year.[2] Vancouver-based investor firm Stern Partners, which purchased the mill in 2012, describes itself as operating twenty companies independently of each other, collectively generating $1.75 billion in revenue and employing 7,000 people.[3] The third mill, Northern Pulp, at Abercrombie in the middle of the province, produces 280,000 tons of kraft pulp annually and employs 300 workers.[4] It is owned by Paper Excellence Canada, a Vancouver-based pulp mill conglomerate that has grown from a single mill to a multinational group producing 2.7 million tons of pulp and paper and employing 2,300 workers.[5] Paper Excellence Canada is in turn owned by Asia Pulp and Paper, one of the largest pulp and paper companies in the world. Based in Jakarta, APP has a current annual combined pulp, paper, and packaging-grade capacity of more than 18 million tons per year.[6] All the pulp produced at the Nova Scotia mill is exported to one of APP's paper mills in Indonesia.

Those production and employment data indicate that the Nova Scotia operations are but a small portion of large corporations' global business. Yet the Nova Scotia mills continue to dominate the local raw wood market—holding large freeholds and crown leases, buying most of their pulpwood from woodlot owners, and buying wood chips from sawmillers who in turn may obtain sawlogs from the lands controlled by the pulp and paper companies. The current mill owners and their predecessors have also benefited from government tax breaks and grants, interest-free loans, subsidies, and other concessions to support their operations.

The pulp companies work to ensure continued support for their privileged corporate positions in the province. Northern Pulp, for example, for decades has caused severe air and water pollution in its neighborhood. In 2015, the Nova Scotia government, under pressure from the public, set a deadline of January 2020 for the company to install an alternative pollution abatement facility; the company is unlikely to meet that target date and has appealed to its constituencies to press elected officials for an extension—the implied threat being that a strict deadline will force Northern Pulp to close. The company set up a web page called "Northern Pulp cares about forestry families of Nova Scotia" with the following statement:

> Nova Scotia is home to many, many families who rely on our forests for their livelihood. Nova Scotia is also home to many Nova Scotians who may not directly depend on our forestry industry for their livelihood, however do indeed depend on the products it creates and the economic value it brings. The world wants—and needs—our products. The more voices we have now, the louder our collective voice will be in helping to guide our government to well-informed decisions about an industry that WE ALL rely on. **We are proud to be forestry families of Nova Scotia.**[7] [emphasis in the original]

The page has a form letter people can easily fill out and automatically send to their provincial legislators and the premier of Nova Scotia, expressing their support for extending the 2020 deadline. On the same web page, the company lists its supporting partners—rural lumber and sawmill companies. Since the late 1990s, when Northern Pulp's own chipping facilities ceased operations, these companies have built chipping infrastructure to provide the raw material for pulp. They also purchase their sawlogs from Northern Pulp's crown leases, and thus their fortunes, and those of their employees, are tied to the survival of the larger mill.

The provincial government has also promoted a biofuel industry that relies on cheap wood fiber. The biofuel industry is being marketed as a green industry that is environmentally benign compared with fossil fuel energy. This may be an illusion, or at least there are vocal opponents to this particular view of the biofuel industry. They claim that the industry is a major contributor to carbon emissions and also continues to degrade the forest.[8] As in the past, the supposition is that big business will supply jobs for people, revenue for government, and votes for politicians.

This integrated business model is not uncommon in the industry, and it has been a commercial and political success for generations. But low-cost production from southern regions has relentlessly pressed northern producers to cut all operating costs, up to and past the point of rendering the business commercially unsustainable.

CRITICISMS ABOUND

Now consider the narrative put forward by opponents of industrial forestry and its economic, social, and environmental consequences. The environmental movement in Nova Scotia has decried industrial forestry practices since the 1970s, including use of pesticides to control spruce budworm and herbicides to suppress hardwood regeneration.[9] Nova Scotians are increasingly distrustful of the data the pulp and paper mills provide to justify their access to Crown lands wood and subsidies and other benefits in the province.[10] Citizens have been concerned about the forest industry pollution since the 1960s, when a disposal facility was established at Boat Harbour, adjacent to a Pictou Landing First Nation Reserve. Despite assurances that local waters would be protected from pollution and remain open to fishing and recreational activities, these promises were broken. Since 2010

a growing coalition, including the local First Nations community, non-Native residents and local business people, has challenged the company's social license. This now includes the prospect of mill closure.[11]

Another growing criticism of the Nova Scotia forest sector is that the forests are being degraded—becoming increasingly uniform in species composition and dominated by younger age classes. Investigative reporter Linda Pannozzo has shown how the volume of wood going into lumber vis-à-vis pulpwood is rapidly decreasing, even though the lumber-pulpwood ratio remains stable because new sawing technologies produce less waste from smaller-diameter wood.[12] Pannozzo has also shown how forest inventory calculations have changed such that it is now difficult to determine the extent of the deterioration of the forest. The province's Department of Lands and Forests is in fact using increasingly complex and inconsistent measures to track the situation, and has continually worked against Pannozzo's efforts.

In Nova Scotia, small woodlot owners control extensive areas of woodland, which have often been managed in more environmentally benign ways than the industrial forests.

VOICES FROM THE PAST

In Nova Scotia, small woodlot owners control extensive areas of woodland, which have often been managed in more environmentally benign ways than the industrial forests. Several books and other accounts celebrate the region's mixed Acadian forest type and provide instruction on how to manage it. Jamie Simpson, a woodlot owner who holds a master of science in forestry, for example, has written a guide to forest stewardship for woodlot owners. The Department of Lands and Forests has also produced a guide to managing the multi-species Acadian forest, though it is notable that the work was contracted out rather than done in-house.[13] Looking back, we find consistent support for such forestry in work done by a forest inventory done in the 1950s and department extension foresters in the 1960s.[14]

From Nova Scotia to Algonquin Park: Memoirs of a Dirt Forester, by Donald George, is the account of a forester working to promote alternative forest management practices. Working in Algonquin Park in Ontario, he came to endorse and promote a hardwood selection harvesting and shelterwood cutting of the pine forests there. Both management systems leave forest cover while enabling continuous commercial cutting. After his retirement to Nova Scotia, George advocated for such systems in the province but faced obstacles from both the provincial forest bureaucracy and the pulp and paper industry. Gary Saunders, another retired Lands and Forests forester, provides a retrospective on initiatives similar to those of George in a recent guest editorial in an *Atlantic Canad*a forest trade journal.[15] These traditions in alternative forestry share a foundation of working with forest ecosystems rather than against them, in contrast to the two extremes of manipulative interventions and lock-up of forests in preserves.

Another narrative with implications for the future involves indigenous rights and responsibilities in Nova Scotia. The local Mi'kmaq population has a deep connection to lands and forests: this First Nation once relied on forest products for subsistence use—canoes, tools, shelters—and also valued forests as habitat for game animals and fish. After European settlement, as the Mi'kmaq were marginalized, impoverished, reduced in numbers, and pushed off their lands and onto reserves, they became more reliant on wood as a material for the manufacture of tradable goods—ax handles, barrels, baskets, and other handcrafts. But soon their sources of wood became increasingly scarce, access to forests was restricted, and replacement products came on the market. William Wicken has documented this process, culminating in the year 1927, when three Mi'kmaq members asserted their rights to hunt on private lands and challenged the province to take them to court on the issue. Though they lost their case, the proceedings show the continuity (though there was change as well) in First Nations' insistence that they have long-standing rights and responsibilities in the province's lands and resources. Those rights have since been acknowledged and recognized in recent court decisions.[16]

Many programs in Nova Scotia seek to involve Mi'kmaq as business partners in conventional forest ventures by training them how to work with wood and encouraging them to pursue higher education through various competitions.[17] Other initiatives base forest development on *Netukulimk*, a central concept in Mi'kmaq culture. The Unama'ki Institute of Natural Resources, which advances this approach, defines *Netukulimk* as "the use of the natural bounty provided by the Creator for the self-support and well-being of the individual and the community. *Netukulimk* is achieving adequate standards of community nutrition and economic well-being without jeopardizing the integrity, diversity, or productivity of our environment."[18]

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Depending on who you ask, the paper mill at Pictou Landing, like other paper mills, simultaneously represents both economic opportunity and environmental threat.

One example is the black ash, promoted in Mi'kmaq forestry because of its value for handcrafts and fishing poles. It is now widely planted and has achieved protection from the provincial government—only Mi'kmaq can legally harvest this tree. The Mi'kmaq also plant trees along streams to protect and build trout habitat.[19] In a recent initiative, the Nova Scotia government launched a three-year pilot project giving the Mi'kmaq forest planning and management responsibility based on their forestry approach for two blocks of crown land, totaling about 20,000 hectares.[20]

Forest ecologists also support a different forest regime in Nova Scotia, in a tradition that we wrote about in *Against the Grain* nearly two decades ago. Their voices can be heard more clearly today. The *Nova Scotia Forest Notes* website, for example, acknowledges a debt to two ecologists, Robie W. Tufts (1884–1982) and Merritt Gibson (1930–2010).[21] Their works straddle older and new versions of ecological forestry. Tufts, a migratory bird officer for Nova Scotia from 1919 to 1947, in a 1927 text for Canadian children, cited economic as well as aesthetic and biodiversity reasons for bird protection. He informed young readers that "insects which multiply so rapidly in such immense numbers would devour all the vegetation in our fields and in our forests were it not for these little birds. We might save our orchard trees for a time, at least, by constant spraying but could never keep our forests alive in this manner."[22] The dominant scientific position in the 1920s was that the primary solutions to insect "problems" were natural and biological rather than chemical. This position changed with the chemical revolution in agriculture and forestry after the Second World War, when DDT became a dominant item in fighting forestry pests.[23] In Nova Scotia, however, there were people who remained skeptical of the use of chemicals in agriculture and forestry. A. D. Pickett wrote of the harmful effect of pesticide spraying in Nova Scotia's apple orchards, and he practiced experiments with biological controls in the 1950s (he merited several pages in Rachel Carson's *Silent Spring*), and Lloyd Hawboldt at the Nova Scotia Department of Lands and Forests, a forest entomologist, stubbornly opposed spruce budworm spraying in the province in the 1970s.[24]

Merritt Gibson, a longtime biology professor at Acadia University, wrote extensively on birds and nature in Nova Scotia. His work is now embraced by those who see nature as threatened, such as the creators and followers of *Forest Notes*, and his work has been picked up and extended by other nature writers.[25] Gary Saunders, mentioned above,[26] writes in *My Life with Trees* about talking and listening to and thinking with trees, tracking the personal relationships that some animal species, including humans, have with specific trees, such as the connection between the jackpine sawfly and the Kirtland's warbler.[27] Many of these naturalists make a connection between appreciation

of nature and criticism of forest industry, as the growing destruction of the former makes the latter increasingly relevant.

Some government foresters and scientists who supported or kept quiet about their critical views of the pulp and paper industry's management goals, have spoken out in late career or retirement. Bob Bancroft worked as a wildlife biologist in the Department of Lands and Forests. Since retirement he has become increasingly critical of the effects of industrial forestry. In 2011, the Registered Professional Foresters of Nova Scotia slated him to be named to its hall of fame, but his nomination was withdrawn at the last moment. A spokesperson indicated that the timing wasn't right, adding that though Bancroft had "done a lot to promote harmony between the industrial forestry side and environment side, . . . recent emails he wrote kind of blew that out of the water and promoted disharmony."[28] Two years later, however, Bancroft was inducted into the hall of fame.

That a different forest regime is emerging in Nova Scotia may be evidenced in a recent development. In 2018, commissioned by the provincial government, William Lahey, a respected law professor and former Deputy Minister of the Department of Environment and Labour from 2004 to 2007, led an independent examination of the state of the forests of Nova Scotia.[29] He and his colleagues examined forestry options for the province and proposed establishing three categories: forests set aside as parks or reserves, where forest harvesting would be excluded; high-productivity forests managed to produce the maximum volume of wood fiber for industry; and finally, an ecological forestry sector where various forms of the selection cutting system would be used to promote and maintain ecosystems capable of sustaining complex ecological and biodiversity functions. "Ecological forestry" would balance environmental, social, and economic values "using forest practices that give priority to protecting and enhancing ecosystems and biodiversity."[30]

The provincial government has indicated that it intends to follow Lahey's recommendations. Environmentalists have also welcomed Lahey's report, though they express some reservations and skepticism about whether the recommendations will be implemented in a timely fashion.[31] One criticism is the endorsement of chemical herbicides. Another is the failure to address the end use of the forest. "End use" refers to the ultimate and most beneficial use of the forest from a value-added, social, and environmental perspective. The gap in tackling end use is that it could, with the additional lack of regulations on private lands, lead to the continuation of low-grade forest growth and use. Yet another criticism of Lahey's report is that it equated ecological forestry with management practices that mimic natural dynamics and disturbances, perhaps because the technical experts he relied upon chose to downplay the extensive literature that questions whether forest harvesting—especially clearcutting—can have the same effect as natural disturbances, such as forest fires.[32]

The report also slights the lessons provided by the history of forestry in the province—its major developments and the insights of forest practitioners prior to the 1980s. In many ways, the report is ahistorical, disregarding both constraints on what is possible and inspiration for what could be. The refusal to engage with questions related to the forest industry's end uses is disturbing as well, given how the pulp and paper industry has shaped the forest.

What is the future of forestry in Nova Scotia and elsewhere in the northern belt of North America, now that the pulp and paper industry has declined? Nova Scotia provides us with some answers on the alternatives to industrial forestry. We believe it is urgent to explore the possibilities for different forest industries, forest uses, and forestry approaches and identify those that support local social needs and local forest ecologies. These ideas need not be invented: many already exist, to be found in the alternatives used and proposed in the past and the present. They do, however, require enabling policies from provincial and federal authorities, if the biases of traditional practices are to be overcome.

Nova Scotia exemplifies the dilemmas faced by the pulp and paper industry and associated industrial forestry. It also illustrates the growing public criticism of the sector and an appetite for alternatives. Interest in change is supported by residents, woodlot owners, indigenous peoples, environmentalists, ecoforesters, and naturalists. Now a path for change has been endorsed by the provincial government, at least officially. However, a more stringent challenge lies in implementation. One way forward, we propose, is to listen more closely to the dissenting voices of the past.

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BY ANGELA ALEISS

Celluloid Heroes

Native American Movies Filmed on U.S. Forest Service Land

Filmed on national forests and grasslands, these Westerns feature stunning landscapes and groundbreaking characters.

Several fine movies offer an alternative to the film industry's negative Indian stereotypes by presenting significant Native American characters, as well as actors. The six movies described contain scenes filmed on national forests and grasslands, according to their end credits and/or publicity material. All are readily available on popular streaming services like Netflix and Amazon or on DVD.

Broken Arrow (1950). Considered by many to be the first film made in the post–World War II era that treated Native Americans sympathetically, *Broken Arrow* calls for tolerance and understanding between Indians and whites. The film is based on the true story of the friendship between a U.S. Mail rider, Thomas Jeffords (James Stewart), and the Apache Indian leader Cochise (Jeff Chandler). Although the Apache wedding ceremony with Jeffords and an Indian girl, Sonseeahray (Debra Paget), is purely fictitious, the film's producers avoided having characters speak in the broken English of previous Hollywood Indians, and they alluded to several Apache customs, like the girl's coming-of-age ceremony. Canadian Mohawk actor Jay Silverheels (best known as Tonto on the television series *The Lone Ranger*) portrays Geronimo. Director Delmer Daves had previously lived among the Navajo and Hopi and employed more than 240 Indian extras from the Fort Apache Indian Reservation for this film. The film is set in the southeastern Arizona Territory during the post–Civil War years, but much of it was shot in the scenic red-rock landscape in and around Sedona in the Coconino National Forest.

Dances with Wolves (1990). This three-hour epic story of Lieutenant John J. Dunbar (Kevin Costner), a Union Civil War hero who takes up living among the Lakota Sioux, won seven Academy Awards, including best picture, director (Costner), and screenwriter (Michael Blake, who also wrote the novel the film is based on). The film features excellent performances by Rodney Grant, Wes Studi, Floyd Red Crow Westerman, and Graham Greene, who earned an Academy Award nomination for best actor in a supporting role. The character of Stands with a Fist (Mary McDonnell), the white woman seized years before by the Lakota as a child who later marries Dunbar, is based on a historical figure, Cynthia Ann Parker, a white girl captured by the Comanche who became the mother of Quanah Parker, the last free Comanche leader. The movie's stunning cinematography includes scenes filmed in Spearfish Canyon in the Black Hills National Forest and the vast prairie of Fort Pierre National Grassland.

Dead Man (1995). Despite its surreal and psychedelic atmosphere, this Western written and directed by Jim Jarmusch shows Native American culture in extensive detail. A young accountant, William Blake (Johnny Depp), lost and badly wounded, travels across the remote western frontier and encounters an outcast Native American named Nobody (portrayed by a Canadian Cayuga actor, Gary Farmer). As Nobody leads the dying Blake from the physical to the spiritual world, the black-and-white cinematography and Neil Young's atmospheric electric guitar soundtrack create a dark, hypnotic world. Members of the Makah Indian Tribe participated in the penultimate scene, and they offered technical expertise about traditional longhouses and totem pole carvings. All the dialogue of the Makah is in their native language and, notably, not subtitled. Locations include the Coconino National Forest and the tall redwoods of the Rogue River–Siskiyou National Forest.

The Last of the Mohicans (1992). Fans of James Fenimore Cooper's enduring *Leatherstocking* tales will see

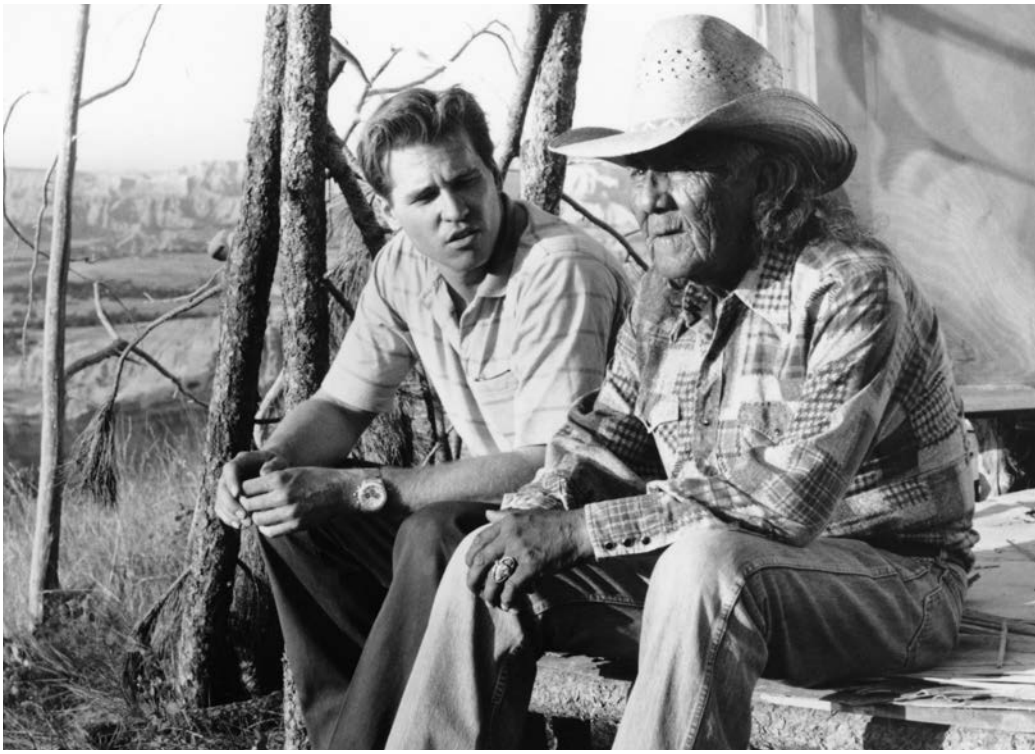
ALL PHOTOS THIS ARTICLE—MARC WANAMAKER/BISON ARCHIVES

Wes Studi (front) had a small speaking role in *Dances with Wolves* but a large, significant role as Magua in *Last of the Mohicans*.

a modern-day twist on the villainous Magua (Wes Studi) in this retelling. The story takes place during the Seven Years' War in western New York and features Daniel Day-Lewis as the swashbuckling young Hawkeye trying to save his love interest, Cora (Madeleine Stowe), and her sister, Alice (Jodhi May), from Magua. In this version, directed by Michael Mann, who cowrote the screenplay, Magua emerges as a heroic symbol of Indian survival and autonomy against the imperialistic British and American forces. An unusually subdued Russell Means plays Hawkeye's adoptive father and adviser Chingachgook, whose son Uncas (Eric Schweig) develops an unspoken passion for Alice. The opening scenes were filmed along the Elk Pen Trail (TR 166) in the Pisgah National Forest in North Carolina.

The Outlaw Josey Wales (1976). Perhaps Clint Eastwood's best Western, this movie is also a favorite among Native Americans I've spoken with. Josey Wales (Eastwood, who also directed) is a peaceful Missouri farmer who joins a Confederate guerrilla unit after Union soldiers murder his family. At the end of the war, he refuses to surrender and guns down the Union soldiers after seeing them butcher his unit when they attempt to surrender. As Union militia and bounty hunters pursue him, Wales traverses the countryside and along the way befriends the elderly Cherokee Lone Watie (Chief Dan George) and a Navajo woman (Geraldine Keams) named Little Moonlight, and several others, as they make their way toward a ranch owned by one of the group members. Once at the ranch, Wales makes peace with Ten Bears (Will Sampson), leader of the neighboring Comanche. The movie features scenes shot in the rugged Patagonia Mountains of the Coronado National Forest in Arizona.

Thunderheart (1992). As one of Hollywood's few movies about contemporary Native Americans, *Thunderheart*'s story about a part-Lakota Sioux FBI agent (Val Kilmer) assigned to investigate a murder was inspired by events on South Dakota's Pine Ridge Reservation in the 1970s. Strong performances are given by Native American actors Marvin Thin Elk, John Trudell, Graham Greene, and Sheila Tousey, who made a striking debut as a Dartmouth-educated teacher and activist. (Tousey's character was based on the Native Canadian activist Anna



Mae Aquash, who was murdered on Pine Ridge in 1976.) Screenwriter John Fusco lived among the Lakota Sioux and studied their language; for him, *Thunderheart* brought Hollywood Indians "up to date" for American audiences. The Buffalo Gap National Grassland in South Dakota, with Badlands National Park in the background, was one of the movie's locations.

Film historian Angela Aleiss received her PhD from Columbia University and now teaches at California State University–Long Beach. She currently volunteers with the U.S. Forest Service Office of Tribal Relations. Her forthcoming book, Hollywood's Native Americans: Stories of Identity and Resistance, *will be published by Praeger. She would like to thank Marc Wanamaker of Bison Archives for providing the photos.*

CLOCKWISE FROM TOP LEFT:

***Broken Arrow*, with Jeff Chandler, Basil Ruysdael, and James Stewart, broke new ground for Native Americans in several ways.**

Chief Dan George, as Lone Watie, has the drop on Clint Eastwood's title character in *The Outlaw Josey Wales*. More than forty years on, the film remains popular with many Native Americans.

***The Last of the Mohicans* (1992) with Daniel Day-Lewis (right) and Eric Schweig, featured several Native American actors in prominent roles.**

***Thunderheart* features Val Kilmer (left) and Marvin Thin Elk, one of several Native American actors in this contemporary film.**

NEPA at 50

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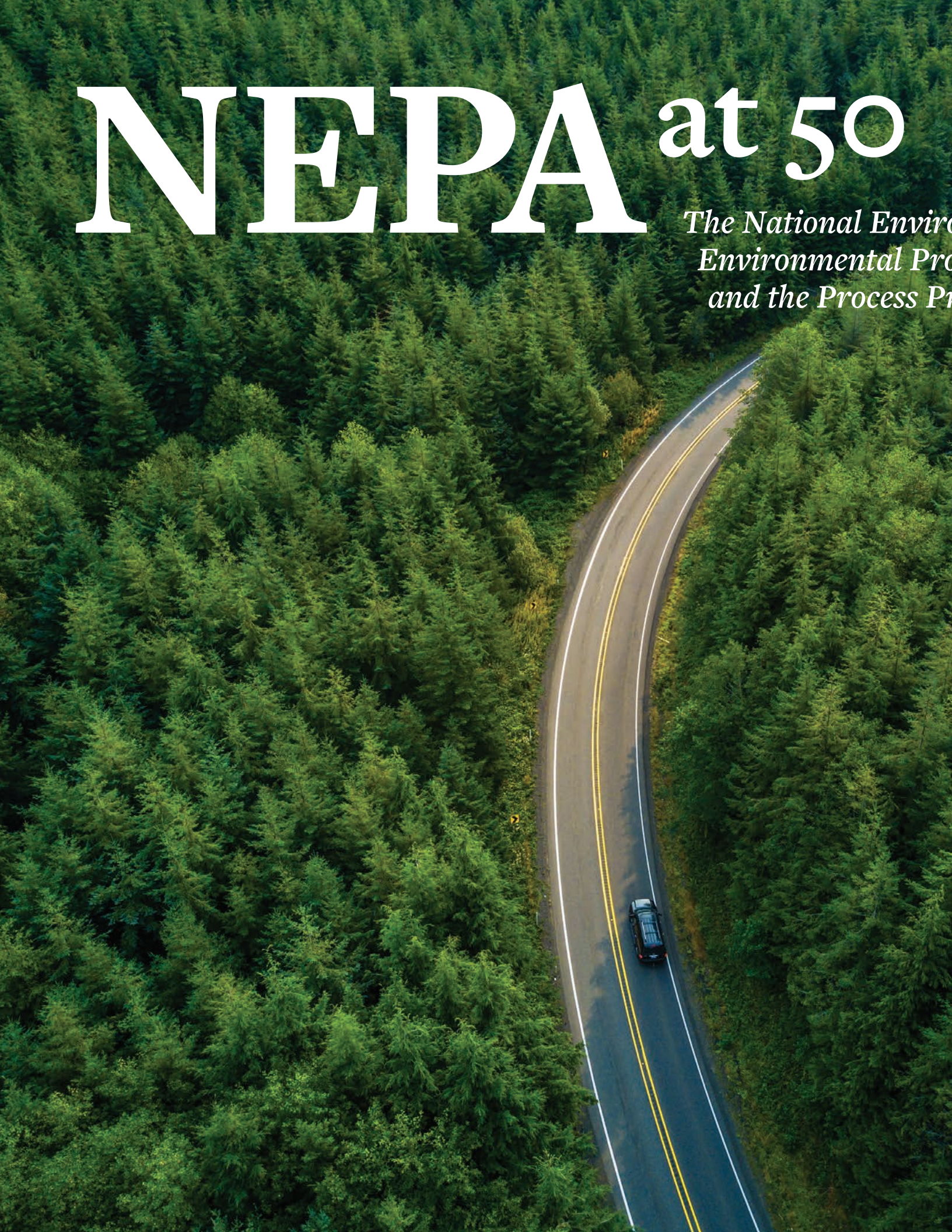

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BY JAMES R. SKILLEN

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Fifty years ago, President Richard Nixon signed the National Environmental Policy Act, one of the most significant federal conservation laws ever passed. Yet few Americans outside of natural resources management understand how the law—which remains the subject of much debate—affects management of federal public lands.

If you have visited a U.S. Forest Service office recently, you know that 2019 was an important anniversary year: Smokey Bear turned 75. To mark the occasion, outfitter and camping stores sold Smokey Bear T-shirts, bandanas, belt buckles, and bumper stickers, all reminding you to protect America's forests from the ravages of anthropogenic wildfires.

Another important anniversary happened concurrently, but you'd have a hard time finding memorabilia to mark the occasion. Fifty years ago, on December 23, 1969, Congress passed the National Environmental Policy Act (NEPA). As interpreted by regulations and judicial decisions, NEPA's primary mandate is for federal agencies to prepare detailed environmental impact statements for major actions that will significantly affect the environment. Although NEPA is one of the most important federal conservation laws ever passed, most Americans have never heard of it because it is hidden behind the veil of bureaucracy and administrative process.

Those who do know NEPA offer mixed reviews. Some praise it as an essential tool for environmental protection; some revile it as an unreasonably time-consuming and expensive roll of red tape. Looking back over the past fifty years, we can see how NEPA marked a new chapter in American environmental governance, transformed federal agencies and land-use planning, and became an ossified feature of federal administration.

LEGISLATIVE HISTORY

The National Environmental Policy Act emerged in a dynamic period in federal land and resource politics. In 1960 Congress passed the Multiple Use–Sustained Yield Act, formalizing the Forest Service's multiple-use mandate and acknowledging changing public demands on the 192 million acres of national forests and grasslands. In 1964 the Wilderness Act protected the value of primitive recreation and undeveloped landscapes. A political compromise behind its passage produced the Public Land Law Review Commission, which challenged prevailing land disposal policies. The commission spent six years reviewing the vast body of contradictory and antiquated federal land law and made legislative recommendations to bring the law into closer alignment with public interests. The commission's 1970 report, *One Third of the Nation's Land*, provided a truly comprehensive assessment, but its recommendations still focused primarily on balancing competing land uses.[1]

The commission's approach did not satisfy one of the environmental movement's core demands: a comprehensive and ecologically oriented environmental policy. Historian Thomas Dunlap writes, "Environmentalism emerged as a movement when people applied an ecological perspective to their lives and society, seeing the world as webs of relationships rather than separate things."[2] Environmental legislation before NEPA had largely addressed separate things—national forest management, wilderness preservation, wild horse protection. The environmental movement demanded new legislation that would address ecological relationships.

Political scientist Lynton Caldwell, who drafted much of NEPA, articulated this demand clearly. He observed that the nation's "tendency is to deal with environmental problems segmentally. . . . The public decision-maker . . . must

Political support for the National Environmental Policy Act was so strong that President Nixon chose to sign it on January 1, 1970, as a symbol of Republican commitment to environmental protection.

deal with environmental questions without the help of a general body of environmental policy to which he may turn for authoritative guidance." This "practical" approach, he complained, "has again and again produced some very impractical results."[3] Specifically, he argued, federal land and resource policy "is based upon a set of historically derived assumptions—legal, economic, and political—that provide no means for taking the fundamental ecological context of land use into account."[4] The nation, he insisted, needed an ecological approach to land and resource policy, where the scope was determined by the "metes and bounds of ecosystems" rather than jurisdictional boundaries or individual resource programs.[5]

Caldwell worked closely with Senator Henry Jackson (D-WA), Representative George Miller (D-CA), and others to create that broader, ecological framework. For Jackson, the key to environmental protection was landscape-scale land-use planning. A wide enough scale could allow planners to find better opportunities to balance economic development, environmental protection, and social equity. "Intelligent land-use planning and management," Jackson later told the Senate, "provides the single most important institutional device for preserving and enhancing the environment, for ecologically sound development, and for maintaining conditions capable of supporting a quality life and providing the material means necessary to improve the national standard of living."[6] Large-scale planning was not itself novel; indeed, the New Deal had emphasized broad conservation planning. The novelty was Jackson's and Caldwell's ecological orientation: "'Conservation' as a concept," Caldwell allowed, "has been helpful principally as an intermediary proposition, midway between unrestricted competition among resource users and an ecologically based view of public responsibility for the self-renewing capabilities of the ecosystem."[7] The new system of land-use planning that Jackson and Caldwell envisioned would be framed through an ecological lens.

In February 1969 Jackson introduced a bill to deal with federal policy and planning: the National Environmental Policy Act. The bill articulated a substantive and comprehensive environmental policy that would "encourage productive and enjoyable harmony between man and his environment to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation." It included additional goals of attaining "the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences" and assuring "all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings."[8] To help advance this policy, the bill would establish a three-person council on environmental quality to advise the president, assess the nation's progress on environmental issues, and provide guidance to federal agencies.

Late in the legislative process, Jackson amended the bill to address an obvious legal concern: the policy statement would be impossible to enforce. Congress could not predetermine and therefore mandate all substantive decisions necessary to "achieve productive harmony" between people and the nonhuman

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environment, so it had to give agencies broad discretion in their planning and management work. But without enforceable mandates or action-forcing mechanisms, NEPA would remain an aspirational statement that federal agencies could functionally ignore. This risk was exacerbated by the fact that Congress layered NEPA on top of existing federal law. The Forest Service, for example, was still mandated to produce timber, and its appropriations were still tied to specific production levels. It was difficult to see how NEPA's exhortation to productive harmony would guide the agency's timber program. The amendment, which became Section 102 of the law, addressed this problem by requiring an enforceable process.

Section 102 of NEPA mandates that federal agencies "utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision-making which may have an impact on the environment." Specifically, for every "major Federal action significantly affecting the quality of the human environment," NEPA requires the responsible federal agency to prepare what would become known as an environmental impact statement (EIS).[9]

Reflecting the environmental movement's growing strength, NEPA faced little resistance in Congress and passed over only 15 nay votes in both houses. Political support for the act and for a national environmental policy was so strong that President Nixon chose to sign it on January 1, 1970, as a symbol of Republican commitment to environmental protection: "The nineteen-seventies," the president declared, "absolutely must be the years when America pays its debt to the past by reclaiming the purity of its air, its waters, and our living environment . . . the decade of the seventies will be known as the time when this country regained a productive harmony between man and nature."[10]

And legislatively, at least, it was. Virtually all the major pieces of federal environmental legislation in force today were either passed or significantly amended in the seventies—Clean Air Act of 1970, Clean Water Act of 1972, Federal Insecticide, Fungicide, and Rodenticide Act of 1972, Endangered Species Act of 1973, Safe Drinking Water Act of 1974, Toxic Substances Control Act of 1976, National Forest Management Act of 1976, Federal Land Policy and Management Act of 1976, Public Rangeland Improvement Act of 1978. In many ways, NEPA was the prolegomenon for these environmental laws. It was the broad statement of environmental policy that Congress worked out in subsequent legislation.

Virtually all the major pieces of federal environmental legislation in force today were either passed or significantly amended in the 1970s. In many ways, NEPA was the prolegomenon for these environmental laws.

IMPLEMENTATION

For a law as sweeping and significant as NEPA, the actual text is remarkably terse. Section 102 describes NEPA's environmental review process in a mere two pages. For each "major Federal [action] significantly affecting the quality of the human environment," the responsible federal agency is mandated to prepare a detailed statement on

> (i) the environmental impact of the proposed action, (ii) any adverse environmental effects which cannot be avoided should the proposal be implemented, (iii) alternatives to the proposed action, (iv) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and (v) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.[11]

The process requires consultation with relevant agencies and governments as well as public disclosure. With such general guidelines, the practical meaning of NEPA, as with many federal statutes, fell to administrative regulations and litigation. What, after all, constitutes a major federal action, or a significant environmental impact? How many or what range of alternatives did agencies need to include? How much public disclosure and participation was required? The initial guidelines of the Council on Environmental Quality (CEQ), issued in 1971, hardly answered these questions, and federal agencies were slow to produce robust EISs. They had little incentive to initiate lengthy and expensive review processes, particularly for decisions that until that point had been routine.

The full scope of NEPA evolved through litigation, starting with the Bureau of Land Management. The agency announced a route for the 800-mile Trans-Alaska Pipeline on the same day President Nixon signed NEPA, and one week later, the Interior

secretary approved construction of a utility road along the route. After complaints from environmental groups, BLM prepared an eight-page EIS for the road, concluding that it would have no significant environmental impacts.[12]

Environmentalists sued, arguing that BLM couldn't isolate the utility road from the larger pipeline project. The district court agreed and enjoined road construction until the agency prepared a more comprehensive EIS. In January 1971 BLM released a 246-page EIS for the pipeline project, but the Interior Department's legal review found that even this long EIS was not adequate. The agency spent another year expanding the EIS to six volumes, with three volumes of appendices. The process had taken 175 person-years of work and cost $9 million.

Environmentalists opposed to the pipeline still weren't satisfied, and the Wilderness Society won another injunction. In desperation, and in the midst of an oil crisis, Congress stepped in and exempted the pipeline project from further NEPA review.[13] Nonetheless, the litigation made clear that EIS preparation required detailed consideration of *all* significant environmental impacts, and EISs grew in length and complexity as a result.

The litigation made clear that EIS preparation required detailed consideration of all significant environmental impacts, and EISs grew in length and complexity as a result.

A flurry of NEPA litigation in the early 1970s provided an increasingly expansive interpretation of the statute, particularly Section 102, from what constituted a major federal action to the scope of the impacts and alternatives that an EIS should address. BLM remained on the losing end of many NEPA cases. Courts ruled that the agency needed to prepare detailed EISs for grazing decisions rather than just one programmatic EIS for its grazing program, that it needed to prepare a programmatic coal-leasing EIS rather than just EISs for separate coal leasing decisions, that it needed to consider all reasonable alternatives to a proposed action even if some of the alternatives were beyond its control.[14]

The CEQ captured these interpretations in its 1978 regulations, and it continues to issue guidance documents for various aspects of NEPA implementation, adding a variety of obligations and options not explicitly mandated in the law itself, including categorical exclusions and detailed public participation requirements. And federal land agencies have integrated NEPA with two other land-use planning statutes, the National Forest Management Act and the Federal Land Policy and Management Act. Land-use plans required by these statutes are considered major federal actions significantly affecting the environment, so the agencies go through the formal EIS process as part of their planning.

Today, the EIS process often begins with a much shorter environmental assessment, in which the agency considers the scope and consequences of a proposed action. If it determines that the action does not require an EIS, it will issue a "finding of no significant impact" (FONSI). The agency is likely to issue a FONSI even if the action will have environmental impacts, so long as it can fully mitigate them. No comprehensive data exist showing how often agencies choose this path, but one CEQ report placed the ratio at around one hundred EAs to one EIS.[15]

If the agency determines that an EIS is needed, it begins a process that draws on a diverse range of expertise and invites public input at several points:

- **Scoping.** The agency publishes a notice of intent to prepare an EIS in the *Federal Register* and invites public input at the outset to determine the scope of the issues it should address and the major parties it should consult.
- **Draft EIS.** The agency publishes a draft EIS that includes an interdisciplinary assessment of environmental impacts resulting from a full range of alternative decisions. It then identifies the preferred alternative. The agency announces a period for public comment that lasts at least forty-five days.
- **Final EIS.** After receiving and analyzing public comments, the agency makes any necessary revisions and publishes a final EIS. In it, the agency must respond to every unique, substantive comment it received. The agency must provide a waiting period of at least thirty days for review.
- **Record of Decision.** The agency announces its final decision, ending the NEPA process.
- **Supplemental EIS.** The agency may need to follow up with a supplemental EIS if new information emerges.

It is easy to see why EIS preparation is lengthy and expensive, leading to documents that can run thousands of pages with multiple appendices, well beyond the 150 to 300 pages envisioned in CEQ guidelines. And a single draft EIS may garner tens of thousands of public comments.

As the courts demanded an expansive reading of NEPA's procedural requirements, they

U.S. FOREST SERVICE

NEPA and other environmental laws passed in the 1970s meant that the public had input into forest management plans. Meetings like this one in 1989 are still held today.

simultaneously undercut one of the original intents of NEPA's sponsors: that agencies protect the environment. Agencies must prepare detailed, even exhaustive, environmental impact statements, but they are not required to select the most environmentally sound management option. In an early landmark decision, *Calvert Cliffs' Coordinating Committee, Inc. v. United States Energy Commission* (1971), the D.C. Circuit Court ruled that NEPA's substantive environmental goals were flexible, which "leaves room for a responsible exercise of discretion and may not require particular substantive results."[16]

As a result, NEPA remains a procedural rather than substantive law, reviewed under Administrative Procedures Act standards. Courts rule against an EIS only if the agency's preferred alternative is "arbitrary and capricious," lacking adequate information and rationale. This procedural interpretation has frustrated the law's original authors and environmentalists. Caldwell later wrote, "To regard the action-forcing provision of Section 102 (the so-called NEPA Process) as the essence of the Act is to misinterpret its purpose."[17]

NEPA'S REVOLUTIONARY EFFECTS

Despite the courts' procedural interpretation of NEPA, the law has had dramatic consequences for federal agencies, particularly federal land agencies, pushing them to apply an ecological lens in their planning and management. First, NEPA set new requirements for the use of interdisciplinary science and public participation in agencies' decision-making. Whereas range, forest, and park managers might have made major decisions in the past based on their professional expertise in a particular field, NEPA regulations required them to gather scientific data from a full range of disciplines. And whereas they previously consulted with those directly affected by management decisions, NEPA regulations required them to "seek input from the general public, the mass public, the so-called man in the street . . . to involve everybody.[18] The flood of new information, interests, and values could not help but alter agencies' decisions on balance, and it elevated ecological perspectives.

Second, and closely related, NEPA and later statutes—the National Forest Management Act and the Federal Land Policy and Management Act in particular—fundamentally changed the composition and culture of agency staff. Prior to the 1970s, foresters generally ran Forest Service decision-making, and range conservationists ran BLM decision-making. But to meet the requirements set forth by NEPA regulations, the agencies had to hire biologists, archaeologists, sociologists, and a host of other "ologists." This opened the door for a whole new professional cadre within the agencies, many of whom applied an ecological lens to federal lands and resources. As these new professionals entered the agencies and climbed through the ranks, they reshaped agency cultures. It is striking that in the early 1990s, the Forest Service had two chiefs who came out of research ecology rather than forestry: Jack Ward Thomas and Michael Dombeck. This would have been inconceivable in the 1960s.

Third, when combined with the Endangered Species Act of 1973, NEPA led federal land agencies to adopt a new framework called ecosystem management in the 1990s. Ecosystem management emphasizes ecological rather than political boundaries, ecological processes rather than just resource outputs, and collaborative, interdisciplinary approaches to decision-making. Even as a procedural law, NEPA contributed to the kind of ecologically oriented management that Caldwell, Jackson, and others envisioned.

NEPA OSSIFICATION

NEPA began as a revolutionary law that helped transform federal land-use planning. Over the past twenty-five years, though, the law has ossified as it has been routinized in administrative process. And to some extent, the law is beginning to show its age. One legal scholar writes that "NEPA was born in an era that had faith in bureaucratic comprehensive rationality, the idea that predictive analysis of a broad class of administrative decisions would produce rational decision making that would consider environmental impacts."[19] That faith has been tested sorely by new developments in ecological science, public administration, and political experience.

Critics of NEPA tend to agree that the EIS process has become so lengthy and expensive that it prevents agencies from fulfilling their management responsibilities. It is difficult to assess these complaints in detail, since comprehensive data are lacking. The National Association of Environmental Professionals reported that the nearly 200 EISs completed in 2012 had taken an average of 4.6 years to complete. Cost is even more difficult to assess, since NEPA-related work is distributed widely within federal agencies. The Department of Energy provided one estimate by looking at the amounts paid to outside NEPA contractors. The department reported that between 2003 and 2012, it paid an average of $6.6 million per EIS to contractors; the median cost was $1.7 million.[20]

But even that doesn't capture the full cost of NEPA, since it excludes routine litigation. For example, the Forest Service's multiple-use mandate gives the agency broad management discretion, which it works out through the planning process. When people disagree with the agency's decisions, they often have no substantive legal recourse. As a result, they sue the agency under NEPA, arguing that it has failed to fulfill its procedural obligations. On the one hand, this holds the Forest Service and other agencies accountable, challenging them when they purposefully try to avoid their obligations. On the other hand, the agencies must invest enormous amounts of time and money in litigation even when they have done their due diligence.

NEPA remains part of the bedrock of environmental decision-making for federal land agencies, and both its substantive goal and its planning emphasis remain critical today.

The Forest Service, which prepares a disproportionate number of federal EISs, has regularly expressed frustration with the process, particularly as combined with its planning obligations under the National Forest Management Act. The agency assumes that most of its EISs will be litigated, resulting in a process that is focused on legal defensibility. In one 2002 report, entitled "The Process Predicament," the agency lamented, "Line officers can never be sure when documentation is enough . . . They must constantly assess the risk of failure in the courts . . . They are left with the choice of either spending more time and money on analysis to cover a variety of potential court interpretations, or withdrawing project proposals for fear of adverse court decisions."[21] They can't be sure exactly what information will be required in court, so they err on the side of information quantity over quality, resulting in documents more useful to litigation than to management.[22] Consequently, the process has added years to the period for drafting and issuing forest plans, a phenomenon dubbed "analysis paralysis," by which time many of the recommendations are outdated.[23] Certainly this wasn't the intent of NEPA's authors.

The cost, in time and appropriations, of EIS preparation has led to another concern about NEPA compliance: agencies have incentive to avoid EIS preparation altogether and use other forms of NEPA analysis that have evolved in administrative regulations. According to the Environmental Protection Agency, federal agencies produced thousands of draft and final EISs in the 1970s, but that number plummeted in subsequent decades. One reason, certainly, is that CEQ regulations and court decisions clarified what did and did not require an EIS, but the numbers are still striking. In 1973 federal agencies produced 2,036 draft and final EISs; in 2000 they produced 473.[24]

Rather than preparing EISs, federal agencies rely on two main options. First, they have identified a growing number of what are called categorical exclusions. These are decisions that the agencies decide categorically do not have significant effects on the environment. Second, as noted above, they prepare environmental assessments that result in either a finding of no significant impact or a mitigated FONSI. In the latter, the agency recognizes that its action will have a significant impact on the environment, but it concludes that it can mitigate that impact sufficiently to avoid triggering an EIS.[25]

These and other problems arise because NEPA is primarily an administrative process that has been

increasingly routinized, and even more importantly, professionalized and outsourced. It has become an end in itself, and NEPA compliance therefore runs the risk of being isolated from actual decision-making.[26]

LOOKING AHEAD

NEPA remains part of the bedrock of environmental decision-making for federal land agencies, and both its substantive goal and its planning emphasis remain critical today. The past fifty years and the dramatic changes in federal land management, however, suggest room for improvement. In an ideal world, Congress would update the act so that it once again helps shape federal land and resources management. One notable improvement would be to reduce the burden of EIS preparation on the front end while increasing post-EIS monitoring. Rather than demanding that agencies consider everything up front, ostensibly allowing them to make the one best decision, NEPA could seek more modest initial considerations but require ongoing monitoring to identify emerging environmental impacts, including unanticipated consequences. In other words, NEPA could prescribe an iterative and adaptive process.

Given the current state of Congress, this kind of nuanced amendment is not a realistic hope. Indeed, since NEPA was enacted, Congress' ability to pass meaningful environmental legislation has atrophied.[27] And as I show in a forthcoming book, *The Land Is My Land*,[28] the partisan divide over federal lands has hardened to the point where compromise is all but impossible. Whereas the Sagebrush Rebellion against federal land authority of the late 1970s and early 1980s was a regional, bipartisan challenge waged by those with a material interest in federal lands, the most recent rebellion, evidenced by standoffs at the Bundy ranch in Nevada in 2014 and the Malheur National Wildlife Refuge in 2016, was a national challenge waged by a broad conservative coalition with limited direct ties to federal lands.

So, in the end, beyond all the benefits that NEPA has had on federal land management, the law has another, wider historical legacy. It stands as a reminder that bipartisan work to balance resource production and environmental protection is possible. Critics of NEPA today should call Congress and other decision-makers back to that task, which is essential for Americans, their forests, and their environment.

James R. Skillen is the author of The Nation's Largest Landlord: The Bureau of Land Management in the American West *(2009) and* Federal Ecosystem Management: Its Rise, Fall, and Afterlife, *both from University Press of Kansas. His next book,* This Land Is My Land, *will be published by Oxford University Press in 2020. Sections of this essay have been adapted from* Federal Ecosystem Management.

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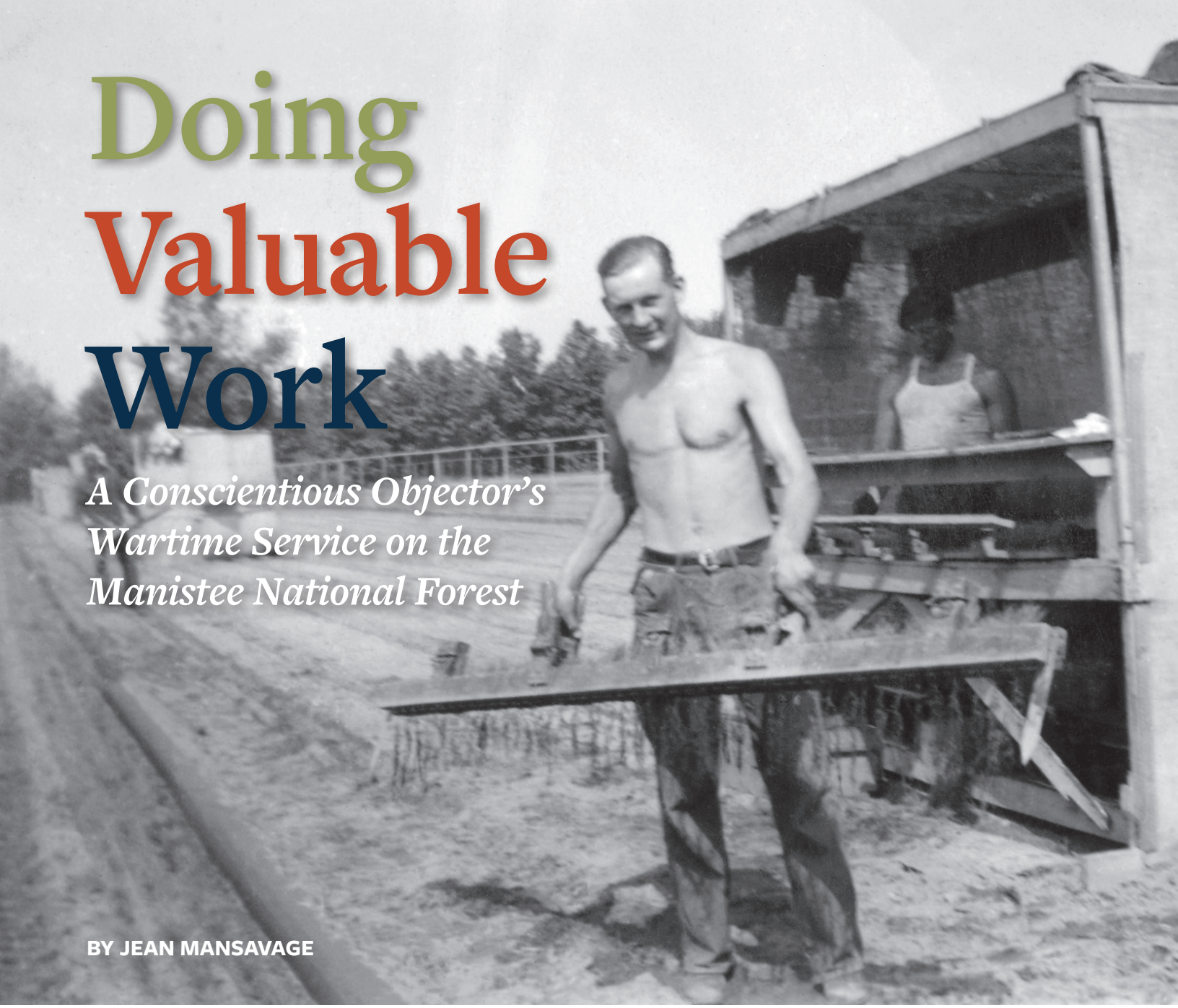
Doing Valuable Work

A Conscientious Objector's Wartime Service on the Manistee National Forest



BY JEAN MANSAVAGE

At the outbreak of World War II, conscientious objectors in the United States had several options for serving their country. Emil Mansavage spent the war doing forestry work. He captured his time at a Civilian Public Service Camp in Michigan in a scrapbook and unpublished memoir.

On July 4, 1942, Emil Mansavage, a central Wisconsin farm boy and tractor mechanic, lost his independence to the first U.S. peacetime draft. Under the Selective Service System, the federal government sent Emil, a conscientious objector who refused military service, to Civilian Public Service Camp #42 in Michigan, where he performed "work of national importance" for the war's duration. Camp Wellston, a former Civilian Conservation Corps forestry camp, is the backdrop for more than 300 photographs Emil shot to document his four-year experience. His photos and unpublished memoir reveal the role played by roughly 150 conscientious objectors at Camp Wellston in maintaining and guarding the Manistee National Forest during World War II.[1]

CONSCIENTIOUS OBJECTORS AND THE DRAFT

In 1939, the German invasion of Poland and the resulting declarations of war by Great Britain and France spurred the U.S. Congress to approve large military appropriations and granted preparedness powers to President Franklin Roosevelt. The following year Congress created the first peacetime draft. The underlying tenet of the

ALL IMAGES COURTESY OF EMIL MANSAVAGE

Emil Mansavage holds a threading rack of pine seedlings before transplanting them in the Chittenden Nursery in 1942. In the shelter Orlando Weaver is threading the seedlings into the rack.

Selective Training and Service Act of 1940, the legal authority for the draft, was that no citizen liable for military service be exempt in time of national emergency. Nevertheless, when preparing that legislation, Congress developed provisions for men who were opposed to participation in war because of religious training and belief—better known as conscientious objectors, or COs. Section 5(g) of the Selective Service Act distinguished two types of objectors: those classified I-A-O, who opposed combatant military duty and served primarily in the military's medical corps, wearing uniforms and receiving military pay and benefits; and those classified IV-E, who opposed all service with the armed forces and performed alternative work under civilian direction but collected no pay or benefits for their service.[2]

The Selective Service assigned roughly half of the nearly 11,950 IV-E conscientious objectors to 151 Civilian Public Service (CPS) camps, which had been built by the Civilian Conservation Corps (CCC) and were operated under technical direction of the U.S. Forest Service, Soil Conservation Service, National Park Service, Bureau of Reclamation, or U.S. Fish and Wildlife Service. Of the remaining IV-E objectors, roughly one quarter worked in mental hospitals and the rest as dairy farm laborers and herd testers, health educators, and human subjects in medical research projects.[3] By law, the Selective Service administered the overall CPS program and provided camp buildings and basic tools, and the War Department lent cots, bedding, and larger mechanical equipment. However, the National Service Board for Religious Objectors (NSBRO), an organization representing the three traditional peace churches—Mennonites, Brethren, and Quakers—oversaw the day-to-day camp activities and supplied food, clothing, medical care, education, and recreation for the men. The above federal land-management agencies supervised the actual work projects that the COs performed.[4]

In 1942, the War Production Board classified wood as a critical war material, a decision with major consequences for the national forests. Timber harvests from those stands increased eighty-nine percent between 1940 and 1944. Concurrently, tree plantings in national forests decreased ninety-six percent because of manpower and funding shortages. To make matters worse, the Forest Service lost the labor of CCC enrollees when Congress terminated the program in mid-1942. With the forfeiture of about 2,500 permanent and seasonal employees to the military draft, the Forest Service sought alternative means to maintain the essential tasks related to timber growth, fire protection, and lumber production. The disbursement of approximately 2,000 IV-E conscientious objectors into thirty CPS camps under Forest Service direction helped offset those losses.[5] Conscientious objectors at those thirty sites—the most camps directed by any single agency—completed 1.2 million man-days of labor for the Forest Service performing routine forestry tasks: fire presuppression and disease control; maintenance and construction of roads, trails, fire towers, and communication lines; nursery operation; and reforestation. Additionally, about 250 COs served as smokejumpers in the western states, parachuting to fight and prevent fires in the back country.[6]

In 1942, the War Production Board classified wood as a critical war material, a decision with major consequences for the national forests.

EMIL MANSAVAGE'S SERVICE EXPERIENCE

Emanuel "Emil" Mansavage, born March 25, 1916, in Stevens Point, Wisconsin, was the third of seven children and a second-generation American of Prussian-Polish extraction. Emil attained only an eighth-grade formal education because his father, Anton, required his six sons' labor on the family's seventy-acre potato and rye farm. Most Polish immigrants to Portage County, Wisconsin, adhered strongly to the rituals and customs of Catholicism. However, around 1930, when Emil was in his early teens, his family left the Catholic Church and joined the local Jehovah's Witness congregation.[7]

During World War II, the Selective Service viewed Jehovah's Witnesses as the "most troublesome" of all the groups of conscientious objectors.[8] Unlike the traditional peace churches, Witnesses did not teach nonresistance as part of their doctrine and did not hesitate to use physical force. Church leaders did not advise members to claim conscientious objector status and deemed congregants who were sufficiently knowledgeable of the Bible to be the equivalent of ordained ministers, and thus eligible for complete deferment from military service as recognized clergy members under the IV-D draft classification. The nebulous qualifications for the faith's "ministers" led the Selective Service to deny the IV-D deferment to many Jehovah's Witnesses, who then typically refused to report to military induction or to work at a CPS camp. Department of Justice statistics show that Jehovah's Witnesses constituted over two-thirds of the 6,086 draft law violators who professed some type of religious conscientious objection but did not comply with the 1940 draft law.[9]

Emil, however, chose not to defy the draft law and wanted to perform civilian work of national importance. Initially, Emil's local draft board denied him the IV-E status and classified him 1-A, available for combatant military service, in May 1941. He promptly appealed his 1-A classification and ultimately received CO status in August 1941, becoming his county's first conscientious objector. Emil based his petition on religious training and belief, saying that he was conscientiously opposed to participation in war in any form. He later explained, "I just couldn't see training and going out and killing someone I didn't even know, so I chose civilian service instead."[10] His oldest brother, Ted, had struck out on his own in 1927 and served in the Merchant Marine during World War II; older brother Victor received a medical deferment because of heart problems; younger brothers John and David both served prison sentences after being denied ministerial deferments and for refusing to become IV-E conscientious objectors; and the youngest brother, Don, was too young for the draft.[11] On May 2, 1942, the Selective Service called Emil to serve and mandated that he report to Camp Wellston, Michigan, on July 4, 1942.[12]

Emil Mansavage chose not to defy the draft law and wanted to perform civilian work of national importance. He reported to Camp Wellston, Michigan, on July 4, 1942.

Emil's past employment experience positioned the twenty-six-year-old well for work under Forest Service direction. In addition to helping on the family farm, he had labored as a farm equipment mechanic for three years, served for two years as a part-time fire warden and towerman for the Wisconsin Conservation Department, and was also a qualified radio and business-machine operator and a large truck and tractor driver. At Camp Wellston, Emil performed an array of assignments in line with those skills.[13]

The CPS COs performed more than eight million man-days of labor yet were paid no wages for their work and did not qualify for life or medical insurance or any other GI benefits. The "no pay" policy for men in CPS was a congressional and Selective Service System policy aimed at making COs prove their pacifist sincerity. As Col. Lewis Kosch, chief of Selective Service System Camp Operations, stated to Congress, "We have been against payment [because] we feel that the very fact that a man does not get paid is one means of sorting the conscientious objector from the slacker or the fellow who is just trying to hide behind the skirts of the religious objectors."[14] Lack of congressional appropriations for compensation caused hardship; the COs, their families, and churches paid for conscientious objectors' and any dependents' necessities. In March 1942, camp-sponsoring churches decided to give each man $2.50 per month for soap, razor blades, tooth powder, brushes, combs, shoe polish, and similar items. Two years later, churches raised the amount to $5 a month. In mid-1945, thirty-two Wellston COs went on a seven-day fast, while continuing to work, to publicize the lack of consideration given their dependents; their goal was to have the 54 cents per day it cost to feed them distributed to the neediest dependents of men in the camp.[15]

Emil mentioned this no-pay policy in his memoir: "I worked for free for almost 4 years for the federal

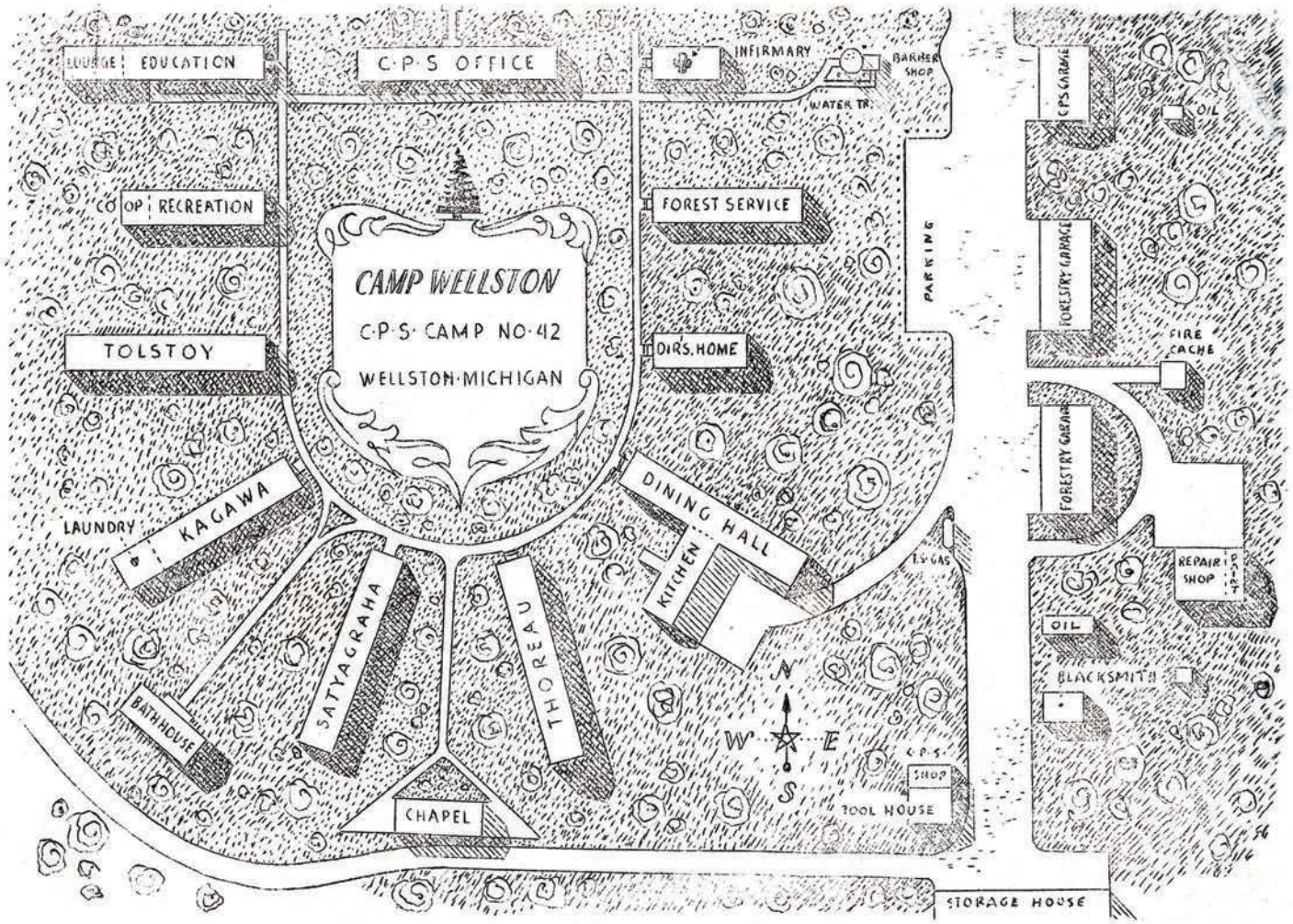


Diagram of CPS #42, Camp Wellston, Michigan, from Emil's time there. The barracks' names have a pacifist theme: Leo Tolstoy, the Russian novelist and nonviolent anarchist; Toyohiko Kagawa, a contemporary Japanese Christian pacifist; Satyagraha is a Sanskrit term coined by Mahatma Gandhi for his particular style of nonviolent resistance; and Henry David Thoreau, author of "Civil Disobedience."

government . . . Never got a dime from them." Emil and 64 other men at Wellston would have accepted pay for their work. A signed petition directed to Selective Service, Church of the Brethren, and NSBRO leadership dated November 18, 1943, stated, "We the undersigned members of CPS Camp #42 would accept pay (not to exceed that of the Armed Forces) for our services to the Government of the United States." In a letter accompanying the petition, its initiator clarified, "Many times in the past, during discussions concerning pay for CPS men, it has been stated that conscientious objectors will not accept pay. Therefore, since no vote has ever been taken among the men concerned, I thought it fitting to submit this petition as a cross section of the opinion on this subject."[16]

WARTIME WORK ON THE MANISTEE

President Roosevelt established the Manistee National Forest on October 25, 1938, in Michigan's Lower Peninsula along the shores of Lake Michigan from lands the federal government had previously acquired under the Weeks Act of 1911 and from several additional land purchases. The original forest unit encompassed almost 400,000 acres, of which 66,000 acres were logged or burned and 350,000 acres needed replanting. By 1945, the Manistee covered 539,000 acres and stretched forty miles east to west and seventy miles north to south.[17] During the Great Depression, the Manistee hosted 25 CCC camps, with Forestry Camp #68, Company 677, moving to Camp Wellston in July 1938 to facilitate work in the Chittenden Nursery, a quarter of a mile from the camp.[18] Wellston housed as many as 165 enrollees at a time between 1938 and 1942.

To establish the nursery on 87 acres east of the town of Wellston in March 1934, CCC workers cleared 35 acres

Emil "running a line" around a forty-acre plot while wearing snowshoes to navigate the deep winter snows. By demarcating the plot that belonged to the Forest Service, Emil accurately recorded the number of ties removed from each area and kept his crew off private property.

for seed beds, and six months later they planted 65 million seeds. They also built a pump house, a warehouse, oil storage, a residence and office, and structures for cone storage, seed extraction, and a greenhouse. In four years' time, the nursery produced between 25 million and 50 million red, white, jack pine, spruce, cedar, and hardwood seedlings.[19] By September 23, 1942, when Camp Wellston officially became a CPS camp under Selective Service System direction, the nursery had expanded to 120 acres, with 75 acres of seed beds, where 50 to 120 men worked for six months of each year.[20]

Emil's assignments over the four years at Camp Wellston included several projects high on the Forest Service's priority list: maintaining forestry telephone lines, cultivating and transplanting nursery trees, managing timber stand improvement crews, and contributing to fire hazard reduction, fire presuppression, and firefighting efforts.[21] Following several weeks of physicals, orientation, and safety training, he began his first task in the hot days of August 1942—replacing old insulators and retying the wires on more than one hundred miles of Forest Service telephone lines strung across the national forest. In September, Emil began a six-week assignment of transplanting racks of pine seedlings into the furrows at the nursery. Emil and the other two men with whom he worked were considered the most productive team of the nursery crew.[22]

During heavy snows in the winter of 1943, Emil's duties shifted to lumbering tasks when he supervised a "tie gang" that felled low-quality trees for use as railroad ties. This task provided needed materials for the war effort and also opened space in the forest for planting higher-quality trees.[23] For this work, Emil employed his surveying skills to run "a line around 40"—to delineate each 40-acre plot to keep his crew working on government property and to obtain an accurate count of the number of ties taken from the plot. He also performed a daily inventory of the tools charged out to his crew, and he drove a Cletrac 20 dozer and Caterpillar tractor to skid the ties out of the forest. The men performed this work during winter months because they could skid ties over the snow without damaging the sandy soil. The crew was also responsible for cutting wood for the camp's winter heating fuel supply.[24]

In the spring of 1943, the camp's Forest Service technical director, Wilbur "Bud" Gardner, learned of Emil's fire-hazard assessment experience with the Wisconsin

Conservation Department and transferred him to work the telephone switchboard at the Camp Wellston guard station. This was the "nerve center" for all fire towers in the northern section of the Manistee: all telephone and radio communications regarding spotting and fighting fires came to this location. At the dispatcher's desk, Emil marshaled these communications along with the fire lookouts' "cross shots" to determine fire locations and record burning permit locations to help determine where firefighting crews were needed.[25]

To assess the daily fire hazard during fire season—a calculation that determined fire tower staffing requirements—Emil took weather readings three times a day. He measured wind velocity, noted the days since rain, recorded the amount of last precipitation, took psychrometer readings to determine the relative humidity in the atmosphere, logged minimum and maximum temperature readings, observed the condition of vegetation, and compiled the data into several graphs and charts to complete fire-watch forms for his Forest Service supervisors. Many of Emil's photos also illustrate his responsibility for seasonally maintaining weather monitoring equipment, such as the anemometer, used to measure wind speed, that sat high atop an antenna tower.[26]

Dry weather during the first twelve days of October 1943 generated high fire-hazard warning levels on the forest. Being short of fire lookouts, Gardner assigned Emil to the Kellogg Tower on the Cadillac District of the Manistee, roughly 18 miles from camp. During his three days there, Emil spotted a visible fire, used an Osborne Firefinder to get a bead on the flames, and notified the Wellston guard station of its location. In addition to watching for fires, Emil also trained a new lookout to take over for the remainder of the fire season. In November, after fire season ended, Emil collected equipment from the towers for repair and maintenance.[27]

While Emil worked communications and recorded weather conditions at the guard station, other CPS men at Wellston fought forest fires, conducted deer counts, built bridges to shorten the travel distance to fight fires, and assisted local farmers with seasonal farm needs.[28] Pitching in to help local farmers promoted generally good relations between CPS men and nearby communities. However, some local residents disparaged the COs at Camp Wellston as unpatriotic slackers. Emil appears to have angered a man with a vacation home near the camp. Joseph Floersch's complaint was actually a backhanded compliment when he observed that "these boys work for other people during the day . . . One works at Halstead's Garage. They say he's is a very good mechanic."[29] Emil did moonlight at that garage during his evenings after work and on his day off from guard station duties, at the request of Claude "Pop" Halstead. It helped Emil work out some of the "kinks in the old game," the mechanic skills he'd honed working for the farm implement dealer.[30] The NSBRO camp section representative, Joseph N. Weaver, repeated Emil's explanation in his

Other CPS men at Wellston fought forest fires, conducted deer counts, built bridges to shorten the travel distance to fight fires, and assisted local farmers with seasonal farm needs.

Emil drove a 1930s Cletrac 20 dozer tractor to skid logs out of the woods.

response to the complaint to Selective Service headquarters: "The assignee working at Halstead's Garage worked there after [the] evening meal and at the request of the proprietor who had an urgent need for a good mechanic" and had followed the Selective Service directive regarding controlled absences from camp.[31]

Emil's work ethic earned Bud Gardner's respect and as a result he stayed at the guard station for the remaining three years of his stay at Wellston. When Gardner learned that the Selective Service twice intended to transfer Emil to a CPS camp in Oregon, the Forest Service supervisor halted the move by classifying Emil as a "key man," a designation the Selective Service had instituted to ensure that camps did not lose CPS men with critical skills, training, experience, or leadership abilities. Because key men could not be transferred without approval of the camp director and camp superintendent, Emil remained at Wellston,[32] even as many other Wellston men were transferred to CPS camps in the West, including several who had become Emil's close friends.

CLOSING CAMP WELLSTON

World War II officially ended when the Japanese signed surrender documents on September 2, 1945. After that date, the Selective Service began releasing IV-E objectors from CPS camps in the same order as members of the military, as determined by length of service and age. Emil was discharged on March 15, 1946, nearly four years after his arrival at Camp #42. When all the COs had been released from the camp, Wellston was transferred, with its equipment and accessories, to the Forest Service for continued use in protecting the national forest.[33]

Over the course of the war, conscientious objectors in Forest Service CPS camps had provided invaluable service that kept the national forests operating, productive, and protected. The Forest Service chief summarized his ten regional foresters' opinions of CO projects: "We appreciated the CPS assignees as a source of manpower when many types of labor were virtually unobtainable during the war. . . . There were certain types of work in which the assignees performed unusually effective services. This covered such projects as smoke jumping, 'white collar' researcher undertakings, some special fire-prevention activities, and from certain camps, farm labor." In his annual report the chief also stated that wartime nursery maintenance would permit rapid resumption of planting at the war's end.[34] A forest supervisor on the Manistee added, "The objectors are doing valuable work in the forest . . . Without them, we wouldn't be able to continue our planting operations and program of forest improvement. The work performance of the objectors is superior to that of the CCC, for the [CO] enrollees are mature, and many have farm backgrounds."[35]

"The objectors are doing valuable work in the forest... Without them, we wouldn't be able to continue our planting operations and program of forest improvement."

Of his time in camp, Emil wrote, "I gave them almost four years of free service but felt it was worth it." His years in camp were a time of great personal growth, and his CPS experience influenced his remaining life in many respects, including his faith. "I went in as a J[ehovah's] W[itness] but got disenchanted when I found there were over 100 sects in that camp

Dick Mommsen and Lloyd Hulbert sawing out ties from a recently felled tree in February 1943. Note that the snow is up to the men's knees.

Emil at the dispatcher's desk checking the location of a fire after taking "cross shots" from the towermen. The telephone switchboard and radio sending and receiving sets are all in one unit. The white spots on the map are small yellow pins representing burning permit locations. The daily log right in front of Emil is where he recorded the day's weather data and fire hazard status.

and they all figured they were on the right track." He discovered the tenets that had served as the basis for his CO status were not sincerely held by some of his fellow workers. Many Witnesses did not share his work ethic or abide by their promise to work for the government. In his four years, Emil was "sick in quarters" for only three days, but others, he observed, were out "on sick leave an awful lot. As for me I felt I'd committed myself so I'd put out. As the result, I no longer attended their meetings" while in camp; the disenchantment with organized religion continued after the war.[36]

Although Emil parted ways with the religion that had kept him out of the war and ultimately brought him to Wellston, his faith in God never wavered. And, in subsequent years he maintained numerous lifelong friendships he had made in camp, and continued to practice the nurseryman and woodsman skills he refined there. After his discharge, Emil returned to work at the Ace Hardware and Lumber Yard he had purchased with his brother Victor just before the war, eventually becoming the sole proprietor of the small business before retiring in 1988. At home, Emil worked for decades to maintain a healthy timber stand and to create habitat for the native birds and animals on his family's Wisconsin property and each spring he planted two hundred pine seedlings in those woods. While he rarely spoke of explicit religious beliefs, Emil's stewardship of the natural world demonstrated his faith in God, just as his work on the Manistee provided a constructive response to the conditions of war.

Despite being apart from his family and earning no income for the duration of the war, and the criticism he received from a few Michigan residents, overall, he viewed the time positively. Years later, when asked to sum up his CPS years, Emil affirmed, "All in all it was a darn good experience, and if it came up again I'd do it all over again."[37]

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Emil arrives home in Plover, Wisconsin, after spending nearly four years in a Civilian Public Service Camp as a IV-E conscientious objector, March 1946. Afterward, Emil wrote, "I gave them almost four years of free service but felt it was worth it."

NOTES

1. Emil Mansavage, "My Recollection of the Depression: Background Information," April 1984, 9; Emil Mansavage, Civilian Public Service photo album, both in possession of the author. Emil learned photography skills from fellow COs, two brothers from Chicago who ran their own camera shop and taught evening photography classes at the CPS camp. Another CO, Chuck Vette, taught typing classes, where Emil learned how to caption those images.
2. National Headquarters, Selective Service System, Camp Operations Division, "Material Concerning Conscientious Objectors," March 30, 1945, National Archives and Records Administration (NARA) Record Group (RG) 147, Selective Service System (hereafter, SSS), Entry PI 27–23, Conscientious Objectors General File (NARA RG 147-CO), Box 193; Franklin D. Roosevelt, "Executive Order 8675, Authorizing the Director of the Selective Service System to Establish or Designate Work of National Importance under Civilian Direction for Persons Conscientiously Opposed to Combatant and Non-Combatant Service in the Land or Naval Forces of the United States," February 6, 1941, NARA RG 147-CO, Box 193.
3. National Headquarters, Selective Service System, Camp Operations Division, "Projects and Service of Conscientious Objectors," revised March 1, 1945, 1–2, NARA RG 147-CO, Box 193; SSS, *Conscientious Objection: Special Monograph No. 11, Volume I* (Washington, DC: SSS, 1950), 315.
4. Mulford Sibley and Philip E. Jacob, *Conscription of Conscience: The American State and the Conscientious Objector, 1940–1947* (Ithaca: Cornell University Press, 1952), 119–23. The Mennonite Church was the largest of seventeen denominations grouped as "Mennonite bodies" (including the Amish people and Hutterites) by the U.S. Bureau of the Census in its 1936 *Census of Religious Bodies*. Brethren included four church bodies, the largest and oldest being the Church of the Brethren and also included Tunkers, Dunkers, and Dunkards. During SSS operations from 1940 to 1947, there were four denominations of the Religious Society of Friends, commonly referred to as Quakers. SSS, *Conscientious Objection: Special Monograph No. 11, Volume I*, 9–14.
5. L. A. Reuss and O. O. McCracken, *Federal Rural Lands* (Washington, DC: U.S. Department of Agriculture, 1947), 21–22; U.S. Forest Service, "Forestry in Wartime: Report of the Chief of the Forest Service, 1942" (Washington, DC: U.S. Department of Agriculture, 1942), 3, 18–19, at https://digital.library.unt.edu/ark:/67531/metadc799727/m1/; U.S. Forest Service, "Forests in War and Peace: Report of the Chief of the Forest Service, 1943" (Washington, DC: U.S. Department of Agriculture, 1943), 15–17; SSS, *Conscientious Objection: Special Monograph No. 11, Volume II*, Appendices A–G (Washington, DC: SSS, 1950), Appendix G, #119, "List of 151 Civilian Public Service Camps," 283–88; Sibley and Jacob, *Conscription of Conscience*, 126–27.
6. National Headquarters, Selective Service System, Camp Operations Division, "Projects and Service of Conscientious Objectors," revised March 1, 1945, NARA RG 147-CO, Box 193; SSS, *Conscientious Objection, II*: Appendix E, #75, "Man-days Spent in Work of National Importance, by Registrants in Civilian Public Service, May 15, 1941–Mar. 31, 1945," #76, "New Construction and Maintenance Work Accomplished for the United States Forest Service, by Registrants in Civilian Public Service, May 15, 1941–Mar. 31, 1947," 189–192, Appendix G, #119, "List of 151 Civilian Public Service Camps," 283–88; Robert C. Cottrell, *Smokejumpers of the Civilian Public Service: Conscientious Objectors as Firefighters in the National Forest Service* (Jefferson, NC: McFarland & Company, 2006), 5;

Mark Matthews, *Smoke Jumping on the Western Fire Line: Conscientious Objectors during World War II* (Norman: University of Oklahoma Press, 2006), 4; Sibley and Jacob, *Conscription of Conscience*, 127–29.

7. Michael J. Goc, *Native Realm: The Polish-American Community of Portage County, 1957–1992*, 46–56; Emil Mansavage family genealogy; Mansavage, "My Recollection of the Depression," 1–2.
8. Sibley and Jacob, *Conscription of Conscience*, 31.
9. Sibley and Jacob, *Conscription of Conscience*, 31–35; SSS, Conscientious Objection, I: 18–19, 261–64.
10. SSS, "Conscientious Objector Report: Emil Mansavage," D.S.S. Form 48, August 18, 1942; Mansavage, "My Recollection of the Depression," 9.
11. *United States v. Mansavage*, 178 F. 2d 812 (7th Circuit Court of Appeals, 1949); letter, David Mansavage to Emil Mansavage, September 30, 1946; Mansavage, "My Recollection of the Depression," 1–2, 5.
12. SSS, "Order to Report to Work of National Importance: Emil Mansavage," D.S.S. Form 50. In November 1943, his former employer, a farm implement repair service, unsuccessfully petitioned the Selective Service to release Emil as an essential skilled employee. Emil Laszewski, Laszewski Brothers Allis-Chalmers Tractors and Implements General Repair, to Paul Comly French, Executive Secretary, National Service Board for Conscientious Objectors, November 8, 1943.
13. Brethren Service Committee, "Civilian Public Service Personnel Form: Emil Mansavage," Personnel Form 2, 1–2, Swarthmore College Peace Collection, Document Group 25, Records of the Center on Conscience and War, 1940-ongoing [formerly NSBRO and NISBCO], Collection: DG 025, Part I, Series F1 (hereafter, DG 25): "Emil Mansavage case file (restricted)."
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17. Presidential Proclamation 2306: "Manistee National Forest, Michigan," October 25, 1938, Proquest Congressional, at https://congressional-proquest-com.pentagonlibrary.idm.oclc.org/congressional/docview/t67.d72.1938-pr-2306?accountid=6768; Joseph J. Jones, "Transforming the Cutover: The Establishment of National Forests in Northern Michigan," *Forest History Today* (Spring/Fall 2011), 48–55; U.S. Forest Service, "Huron-Manistee National Forests: History and Culture," https://www.fs.usda.gov/main/hmnf/learning/history-culture; David E. Conrad, *The Land We Cared For: A History of the Forest Service's Eastern Region* (Milwaukee, WI: U.S. Forest Service, Region 9, 1997), 80. In 1945, the Forest Service consolidated the Manistee and Huron national forests into the Huron-Manistee National Forest.
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19. CCC, "Camp Inspection Report: F-68, Wellston, Manistee, Michigan," June 28, 1939; CCC, "Camp Inspection Report: F-68, Wellston, Manistee, Michigan," June 6, 1940; CCC, "Camp Inspection Report: F-68, Wellston, Manistee, Michigan," April 23, 1942, NARA RG 35, Box 104; Joseph J. Jones, "Chittenden Nursery, the USFS, and the CCC as Partners in Reforestation," *Silviculture Magazine*, (Summer 2012), https://www.silviculturemagazine.com/index.php/articles/summer-2012/chittenden-nursery-usfs-and-ccc-partners-reforestation.
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22. Mansavage photo album.
23. U.S. Forest Service, Eastern Region, "Environmental Impact Statement: Land and Resource Management Plan," September 1981, 143; Mansavage photo album.
24. Mansavage photo album. Cletrac was short for the Cleveland Tractor Company.
25. Mansavage photo album; Mansavage, "My Recollection of the Depression," 10.
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27. U.S. Department of Commerce, Weather Bureau, "Climatological Data: Michigan Section, October 1943," Vol. LVIII, No. 10 (October 1943), 37–40; Mansavage photo album.
28. Mansavage photo album.
29. Joseph Floersch to Congressman Albert J. Engel, June 28, 1943; Joseph E. Maddy to Senator Arthur H. Vandenberg, August 15, 1943; Paul Comly French to Col. Lewis F. Kosch, November 8, 1943, all letters NARA RG 147-CO, Box 53.
30. Mansavage photo album.
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Thornton Munger at work, in 1911.

U.S. FOREST SERVICE

Thornton Taft Munger 1883–1975

By World Forestry Center

If any one man can be named the father of forest management research in the Pacific Northwest, it is Thornton Taft Munger. Nearly 75 years after he retired from the U.S. Forest Service, his work is still affecting the region and beyond.

Munger was born in North Adams, Massachusetts, a center of progressive religious and social thought, and moved to New Haven, Connecticut, at a young age. He was the only son of a Congregational clergyman, author, and member of the Yale Corporation Board. The boy received a classical education in secondary schools—he graduated from Hotchkiss Preparatory School, in western Connecticut, in 1901—and showed a keen interest in natural history. His family's house in New Haven fronted on the Hillhouse Woods, an 18-acre natural park and plant laboratory in the heart of the city, where he collected flowers and plant specimens.

In his undergraduate years at Yale University, he hiked the extensive woods adjoining New Haven, enlarging his interest in the natural sciences and his love of the outdoors. Given the proximity of Yale Forest School, established in 1900 through the efforts of the federal government's chief forester Gifford Pinchot, it seems only natural that Munger would become interested in forestry. In 1902, he attended a summer short course in forestry at the Pinchot estate at Milford, Pennsylvania, where he learned "the rudiments of forestry" and met the "magnetic" chief.[1]

After receiving his bachelor of arts degree in 1905, on the recommendation of the Yale forestry school's dean, Henry Graves, Munger went abroad for nine months to study forestry practices in Europe. Graves provided him with letters of introduction to foresters in Germany. Upon his return, Munger entered the Yale Forest School with more knowledge of forestry than most of his classmates. He received a master of forestry degree in 1908 and began work for the U.S. Forest Service in Washington, D.C., that summer. Assigned to the Division of Silvics (research) under Raphael Zon, he worked on office reports but, inspired by Zon, sought a career in forest management research.

After just two months in the Washington office, Munger was sent on his first field assignment—a study of the encroachment of lodgepole pine on the more valuable ponderosa pine in eastern Oregon. He concluded that the frequency of forest fires caused unwanted changes and recommended the absolute prevention of fires. This led to policies of fire exclusion and frequent light harvests, mistakes that in a way proved the need for long-term research.[2]

In December 1908, while still in Oregon, he was assigned to the silvics section in the newly created North Pacific District (then consisting of Oregon, Washington, and Alaska) of the Forest Service, with a primary

mission of investigating important commercial trees. At the time, silvics was defined as the study of habits and the natural history of forest trees, and it was the basis for all practical silviculture.[3] Munger spent the next several years getting familiar with forest types and tree species throughout the region while launching studies. Just as his research began, the lumber industry was moving in to the area. "Forest science was in a race to catch up with forest industry," one historian has noted. "It was a race science couldn't win."[4] But in the name of conservation, science and the Forest Service would support industry.

With this assignment, Munger became a resident of Portland, home to the district headquarters. Over the next several decades he took an active interest in civic affairs, including becoming a founder of Portland's Forest Park, a 5,000-acre wooded park that would be, he wrote, "a wilderness [where] the feeling of an extensive, uninterrupted forest sanctuary may be preserved far from the madding crowd."[5] In 1988, Munger and the other park founders were honored with the planting of memorial trees.

In 1913, the Wind River Experiment Station was established near Carson, Washington, on what would become the Gifford Pinchot National Forest. This installation became the cradle of organized forest research in the Pacific Northwest. Munger was interested in Douglas fir, whose growth habits were not well understood, because he believed it to have commercial potential. According to Margaret Herring and Sarah Greene, in their history of Wind River, "as early as 1911, Munger had identified Douglas fir as the preferred forest crop that would be managed with clearcutting and slash burning to guarantee reproduction as quickly as possible. These methods would become the tenets for most forest management in the Pacific Northwest for the next 75 years," when management goals on federal lands shifted from timber production to biological diversity.[6]

Munger provided general supervision over the studies conducted at Wind River and anticipated the complex problems that would arise in managing the extensive, valuable old-growth forest resources of the Pacific Northwest, including reforestation and fire protection. Also at Wind River, plantations of Douglas fir and ponderosa pine were established for study of genetic characteristics of these important trees. Permanent sample growth-and-yield plots and spacing test plantations were established to provide basic data needed for second-growth management. In 1912, Munger initiated an arboretum to test and compare exotic forest tree species with indigenous species, and a Douglas fir natural area was set aside to ensure future ecological studies in an undisturbed condition. During this time, he also conducted genetic studies, established growth plots, and worked on or supervised forest reconnaissance (inventory), the last of which occupied much of his time between 1915 and 1924.[7] Short-term investigations included an avalanche study in Washington and experimental plantings on the Oregon Dunes to stabilize shifting sands.[8]

On July 1, 1924, Congress established the Pacific Northwest Forest Experiment Station (now the Pacific Northwest Research Station), to be headquartered in Portland. Named director, Munger assembled a small staff and planned a program that would use the limited funds available to best advantage. His initial goal was an eventual expansion of research programs, with emphasis on applied research that would benefit both public and private interests. "We have no time now for research for research's sake," he wrote. "The selection of projects will depend on their economic importance."[9]

Within a few years, study programs were expanded and work was underway regionwide. Among Munger's first hires was Richard E. McArdle, later to become chief of the Forest Service. Others who came to national prominence included Leo A. Isaac in Douglas fir silviculture; Isaac's assistant Bob Marshall, the future wilderness advocate; Ernest L. Kolbe in ponderosa pine management and private forestry in the West; and Walter H. Meyer in forest mensuration and forest education. Director Munger was a demanding leader who insisted on scientific integrity, precise composition in correspondence and scientific reports, scrupulous use and accounting of public funds, and overall consideration of the public interest.

During his tenure as station director, research activities and programs greatly expanded, additional experimental forests were established throughout the Northwest, and young foresters were recruited and trained in experimental methods. At the height of its activity, the research organization had nearly 100 technical and semi-professional workers. Munger's policy was to expedite and complete studies, ensuring prompt release and use of information needed by forestland managers. He personally authored many scientific publications, delivered addresses to loggers and landowners, and gave guest lectures at the forestry schools in Washington and Oregon. He gained a reputation for never giving in to political expediency on public forest administrative policies. In recognition of his outstanding contributions, he

was awarded an honorary doctor of science degree by Oregon State College in 1938.

By then, the administrative duties and escalating responsibilities of the job had taken such a toll on his health that he went on sick leave for four months. Later that year, at his own request, he resigned as director to free himself to become chief of the station's forest management research division. This gave him time to direct and conduct research as a climax to his career.

Munger's findings and recommendations were the basis for many changes in forest management practices regionwide. One of those recommendations, which has had an enormous, long-term ecological impact, was his full-throated support of clearcutting to manage Douglas fir instead of selective timber management. The controversy divided researchers at Wind River in the 1930s. In an uncharacteristic step, he openly criticized the selective timber management concept, which was developed by two Wind River researchers assigned to his station in 1931. The concept would have maintained a continuous, sustainable timber supply from a forest of mixed ages and species. The controversy would resurface fifty years later as part of the northern spotted owl debate.[10]

Munger retired in 1946 after nearly forty years in the Forest Service, but he stayed on as a research collaborator, sharing his knowledge and experience in forest resource problems and procedures.

Munger was known worldwide in scientific and professional circles. He was a fellow in the Society of American Foresters and American Association for the Advancement of Science; a member of the Ecological Society of America, Audubon Society, and Northwest Scientific Association; and a charter member of the Oregon Academy of Science. He was active in conservation organizations, such as the Oregon Roadside Council, Save the Myrtle Woods, Oregon Museum of Science and Industry, Western Forestry and Conservation Association, American Forestry Association (now American Forests), and Western Forestry Center (now the World Forestry Center).

In 1977, two years after his death at age 91, the Forest Service officially designated the Thornton T. Munger Research Natural Area on Wind River Forest lands, a fitting tribute to the man who did more than any other to lay the foundation of forest management research in the Pacific Northwest.

This tribute was originally prepared for Thornton Munger's entry into the Forestry Leadership Hall at the World Forestry Center. It was updated by James G. Lewis in January 2020.

NOTES

1. Thornton T. Munger, "Forest Research in the Northwest," interview by Amelia Fry (Forest History Society and University of California–Berkeley, 1967), 20.
2. Les Joslin, *Ponderosa Promise: A History of U.S. Forest Service Research in Central Oregon*, PNW-GTR-711 (Portland, OR: U.S. Forest Service, Pacific Northwest Research Station, 2007), 8.
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6. Herring and Greene, *Forest of Time*, 30, 130.
7. Munger, "Forest Research in the Northwest," 70.
8. Munger, "Forest Research in the Northwest," v.
9. Quoted in Joslin, *Ponderosa Promise*, 10.
10. Herring and Greene, *Forest of Time*, 82–83; Munger, "Forest Research in the Northwest," vi, 123–32.

FHS211, FHS PHOTOGRAPH COLLECTION

In his early years in the Pacific Northwest, Thornton Munger traveled extensively, getting to know the region's forests. In August 1910 he examined the Cascade National Forest (now the Willamette) with Ranger C. T. Beach and Forest Guard Munington (Munger is believed to be on the right).

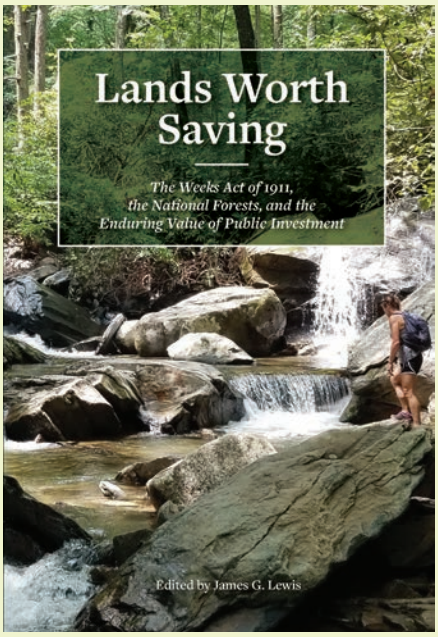
Lands Worth Saving

James G. Lewis, ed.

In 1911, Congress passed the Weeks Act, one of the most transformative conservation laws in U.S. history. Designed to establish national forests in the East, the Weeks Act has helped restore more than 24 million acres around the country. The law also provided a cooperative agreement between the U.S. Forest Service, the states, and private landowners to fight forest fires. This framework is also used today for combating climate change, protecting endangered species, and managing urban forests.

Today, with America's forests now under threat from invasive plants, insects, and diseases and from human impact, the Weeks Act and the lands it has saved face an uncertain future. In this collection, drawn from *Forest History Today* and newly updated, leading historians, conservationists, and legal experts explore the history, impact, and future of natural resource management under the law. By examining what the Weeks Act has done for America, they can help us better understand what's at stake for the nation's public and private forests in the century to come.

James G. Lewis is the author of *The Forest Service and the Greatest Good: A Centennial History* and has served as editor of *Forest History Today* since 2007.



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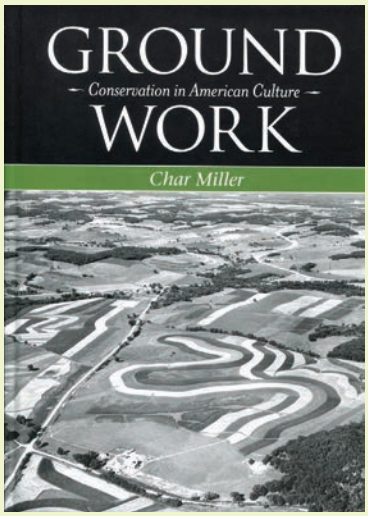

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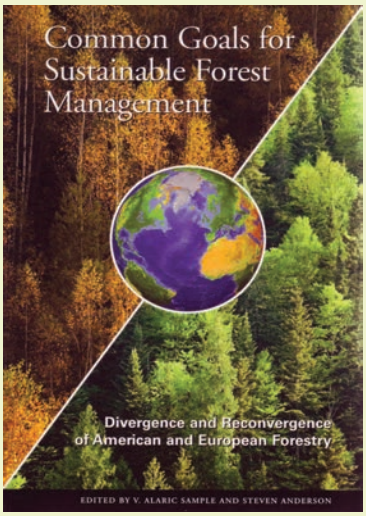

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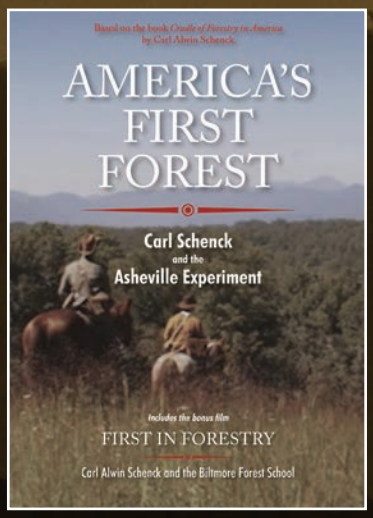

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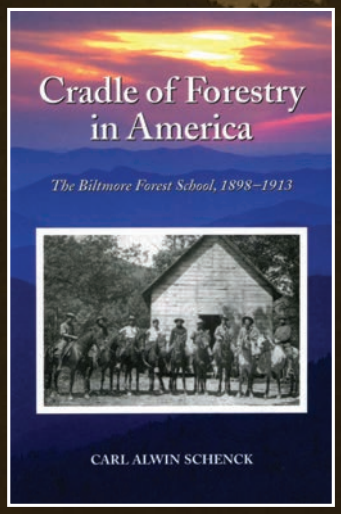

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The Catface Country Turpentine Festival

Examples of catfaces on display at the Bobby Ronald Newton Turpentine Museum. On the left is a tree that was boxed; the other shows the cup-and-gutter system.

By Thomas J. Straka
Festival photographs by Patricia A. Straka

Festivals across the United States highlight aspects of forests and forest products. All across New England, maple syrup festivals fill the late winter weekend calendar. The West Virginia Forest Festival has celebrated the beauty of the Mountain State's fall foliage since 1930. In Washington State, the Mason County Forest Festival was established in 1945 to honor "the area's logging history by showcasing the value of timber to the community, while demonstrating the importance of safeguarding the forests against destructive fires."[1]

Turpentine was a staple of the naval stores industry, a few remnants of which are scattered around the South. Places like McCranie's Turpentine Still in Willacoochee, Georgia, and the restored still on the University of Florida's Austin Cary Forest make for great forest history road trips. But only Portal, Georgia, holds a celebration of the product itself, with the Catface Country Turpentine Festival. The turpentine distillery in Portal is one of only three remaining in Georgia and is the only one that operates on its original site.

Now nearly forty years old, the Catface Festival commemorates the town's historic connection to the once vital naval stores industry, which had its heyday in Portal—the self-proclaimed "Turpentine City"—in the mid-twentieth century. At the festival, visitors can closely observe the entire turpentine manufacturing process and visit a turpentine museum.[2] This Rockwellian small-town festival even has a parade replete with event-themed floats and beauty queens, a true throwback to an earlier time. It all makes for a fun and informative forest history outing. Portal (population 650) is an hour's drive northwest of Savannah, and the festival is held in early October.

THE NAVAL STORES INDUSTRY

Products made from pine resin, such as turpentine, tar, and pitch for ships and household products like soap, are collectively known as naval stores. Pitch and tar were essential for waterproofing ship hulls and decks and for preserving ships' rigging.[3] Even after their uses for naval purposes diminished, the term persisted to describe the industry and its products.[4]

The naval stores industry played an important role in the economic history of the American South.[5] As early as 1608, Virginia producers were sending pitch and tar from pine trees to England.[6] One of the English colonies' first industries, naval stores remained a vital one in the South well into the twentieth century. In the South, longleaf pine and slash pine were the preferred species.[7]

The Carter turpentine still in operation.

LIBRARY OF CONGRESS

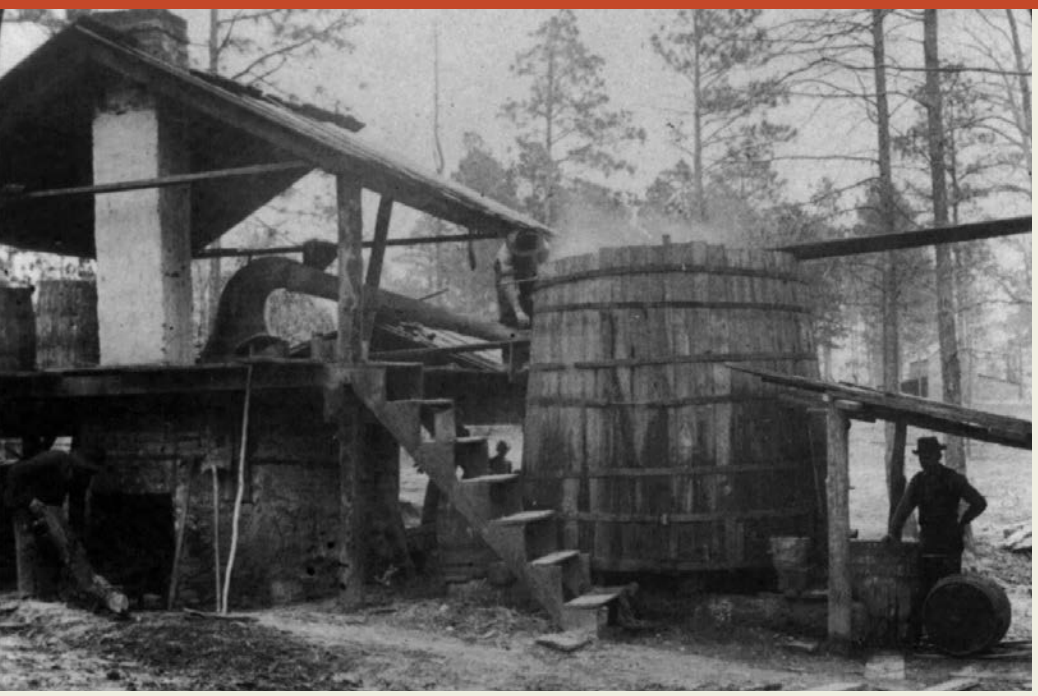
Turpentining refers to tapping crude gum (or resin) from living pine trees and distilling it into spirits of turpentine and rosin. Traditionally, turpentining began with "boxing" the trees. A long-headed axe was used to cut an elliptical hole or notch, called a box, roughly eight to twelve inches wide and four to five inches deep at the base of the tree trunk. This formed a cavity used to collect the resin. Next, the box was "cornered": bark was removed in a chevron pattern on each upper side of the box. These slash marks resembled whiskers on a cat's face. As protection from insects and disease, the wounded tree would secret gum, which flowed into the box. After about ten days the turpentiner returned and collected the resin, dipping a cup into the box and pouring the contents into barrels to await transport to a distillery. Using a tool called a hack, he also chipped a new streak on the catface to generate more gum. A turpentiner would chip and dip a "crop" of 10,000 catfaces in a season (from April to October), typically harvesting 150 barrels of gum turpentine.[8] The entire process was labor intensive and hard work.

Within a few years, the cuts would kill the tree. Boxing and chipping ruined the trees for lumber, even though longleaf pine is excellent for shipbuilding because of its straight, clear wood. After depleting a stand, turpentiners would move to a new one, and the industry slowly migrated across the South, from Virginia to Texas.[9] That changed with the development of the cup-and-gutter system by Charles H. Herty in the early 1900s and other technological innovations. The new practices did not require cutting a deep box, nor did they damage the trunk too severely, so trees worked for gum would sustain less loss of timber. Eventually cheaper products and high labor costs led to the collapse of the industry by 1960 and its demise in 2001.[10]

At the distillery the gum was mixed with a small amount of water and heated in a copper still until the mixture began to boil. Vapor would flow through tubing called a "worm," where it was cooled by water, then condenses and drips into a collection barrel as spirits of turpentine. The mixture would contain both water and turpentine, so laborers would skim turpentine from the surface. This was called gum turpentining. Rosin would congeal at the bottom of the still, and a tap would allow it to flow into a trough for collection. The master distiller knew when to add more water or increase the heat from sounds made by the worm or the boiling gum.[11] The process, which takes from four to six hours, can be seen in its entirety at the Catface Country Turpentine Festival.[12]

THE FESTIVAL AT PORTAL

The turpentine industry in Portal began with F. N. Carter Sr. and his son E. C. Carter, who began operating the Carter Turpentine Still in the mid-1930s.[13] At that time, the United States accounted for more than half of rosin and turpentine production worldwide, but by the 1960s, production had dramatically decreased, due to international competition, increased labor and production costs, and a labor force that preferred to work in the pulpwood industry over the



CLOCKWISE FROM TOP LEFT:

This turpentine still, photographed around 1903 in North Carolina, is similar to the Carter Still in Georgia.

Fire is needed both for making turpentine and a snack. Rosin potatoes are boiled over an open flame.

The spirits of turpentine flow from the still tubing, which comes through the wall, into a barrel. It wasn't clear if the quality can be judged by the smell or if it just smells good.

turpentine industry.[14] The Carter still ceased operation in the 1960s and laid dormant for the next 20 years. Unlike other turpentine stills, which were dismantled for valuable copper tubing and iron boilers, the Carter still remained intact. In the 1980s it was restored and is the only one in Georgia on its original site.

Because of the slash marks on the "boxed" pine tree, "Catface Country" was incorporated into the festival's name. This being a typical small-town festival, it starts with a parade featuring fire engines and other emergency vehicles, marching bands, local celebrities, and floats. But only this parade has turpentine-themed floats, some carrying several Miss Turpentines of various ages. On the parade route is Carter's General Store, now more of an antiques store than a general store. It houses a small museum with farming and turpentine items, including an example of a catface. The parade route is walking distance to the festival grounds.

The festival includes all the food, entertainment, arts and crafts, and children's attractions you'd expect at a local celebration like this. Even the food has a turpentine connection. It must have been a desperate forest

worker who first tried boiling potatoes in rosin, but tradition holds that the rosin distributes the heat exceptionally well, producing a truly delicious treat. The potatoes (both Russets and sweet potatoes) are cooked in bubbling 350-degree rosin for an hour. Because of the rosin, you can't eat the skin, but the potatoes are tasty.[15]

The highlight for this forest history buff was the Carter Turpentine Still and the adjacent Bobby Ronald Newton Turpentine Museum. The master turpentiner offers tours for only a few visitors at a time because the space is small and the still is actually operating. The turpentine coming from the still flows into a barrel in the turpentine museum. Rosin flows in the opposite direction late in the day at the end of the process.

It's a wonderful way to spend a day learning about southern culture, an interesting aspect of southern forest history and technology, listening to good music, and perhaps eating your first rosin-boiled potato.

The rosin is collected from the still at the side opposite of the turpentine.

Thomas J. Straka is a forestry professor at Clemson University and Patricia A. Straka is a consulting forester.

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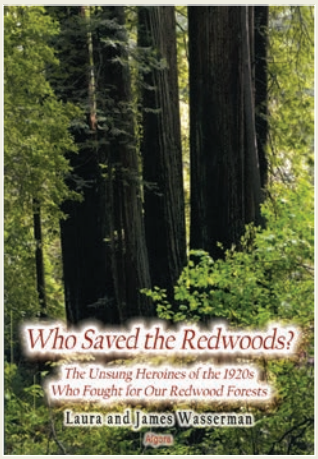
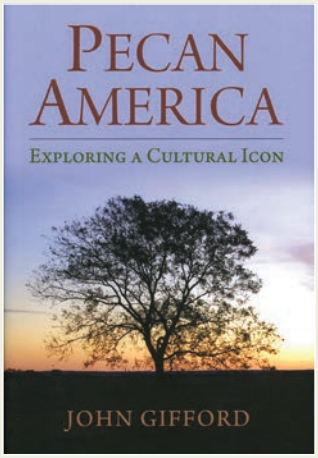
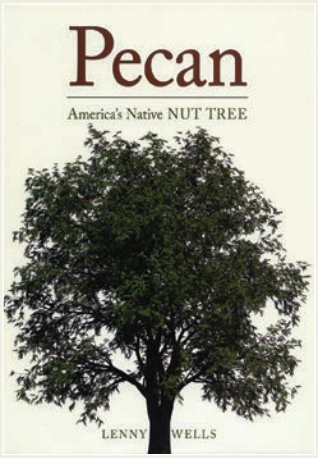
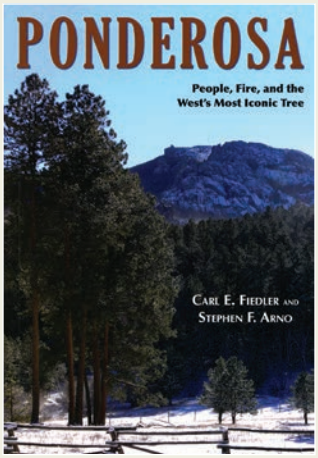








BOOKS

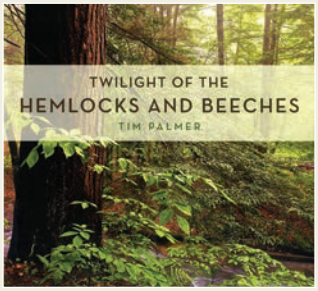
Who Saved the Redwoods? The Unsung Heroines of the 1920s Who Fought for Our Redwood Forests (Algora Publishing, 2019), by Laura and James Wasserman, details a grassroots efforts to stop the Pacific Lumber Co. from logging several thousand acres of redwoods in the 1920s. The answer to the title's question is the Women's Save the Redwood League of Humboldt County, a local organization of middle- and upper-class women led by Laura Perrott Mahan and others who lived nearby. Their efforts led to the establishment of Humboldt Redwoods State Park, the largest expanse of surviving old-growth redwoods on earth. The Wassermans also document the group's struggle to take their movement national via the General Federation of Women's Clubs and the Garden Club of America, and how they publicized their efforts to preserve these forests. (*EL*)

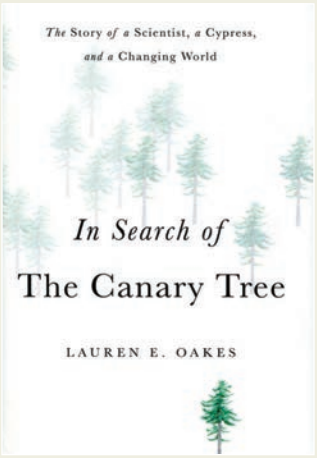
Two recent books focus on the pecan tree. John Gifford's ***Pecan America: Exploring a Cultural Icon*** (University Press of Kansas, 2019) proposes that the pecan tree and its nuts be viewed as an American cultural icon. The book details the historical significance of the pecan in American society, how and where it's grown, how it's marketed based on demand, its nutritional benefits, and its place in folk art and culture. Gifford, a freelance journalist, provides an intimate view of the contemporary pecan industry through interviews with researchers, growers, and harvesters. ***Pecan: America's Native Nut Tree*** (University of Alabama Press, 2017), by Lenny Wells, takes a more academic approach in his environmental history of the pecan tree. Wells explores early uses and European settlers' discovery of the pecan, its cultivation and domestication, and the development of a multimillion-dollar crop. Together the books provide an excellent overview of the pecan's importance to the culture and landscape of the American South. (*EL*)

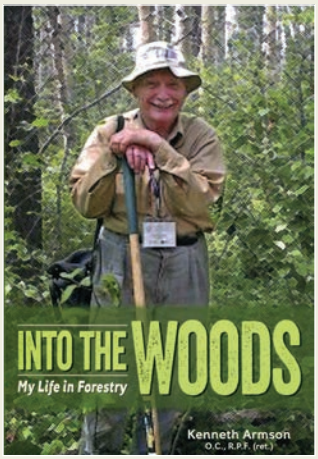
Another book focusing on an individual tree species is ***Ponderosa: People, Fire, and the West's Most Iconic Tree*** (Mountain Press Publishing Company, 2015). Forest researchers Carl E. Fiedler and Stephen F. Arno recount the long history of human interaction with the ponderosa pine forests of the western United States. They also provide information on the ecological importance of fire to these forests and look at recent ponderosa pine restoration efforts. The second half of the book serves as a travel guide to notable ponderosa pine forests in 15 states and British Columbia. (*EL*)

Twilight of the Hemlocks and Beeches (Pennsylvania State University Press, 2018), by writer-photographer Tim Palmer, is a detailed, illustrated exploration of hemlock and beech, two species that have dominated America's eastern forests for more than a thousand years. Palmer discusses the threats these trees face from exotic insects and various pathogens while also documenting their survival, restoration, and recovery. (*EL*)

For her doctoral work, ecologist Lauren E. Oakes spent six years studying yellow cedar (*Callitropsis*







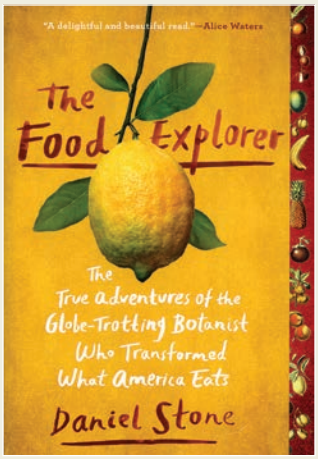
nootkatensis; sometimes called yellow cypress) in southern Alaska, chronicling what happens to a forest after a large-scale die-off. On the day she defended her dissertation, she realized that she had stripped away the human connections to the tree and the beauty of nature generally in the name of scientific investigation. In her debut book, ***In Search of the Canary Tree: The Story of a Scientist, a Cypress, and a Changing World*** (Basic Books, 2018), Oakes tells the story she really wanted to on that day—a first-person account of her adventures in remote Alaskan wilderness and what she discovered as she collected data and from the data, the experiential appreciation of the species she learned from the indigenous people, and the resiliency of the forests and the people closest to them in the face of climate change. (*JL*)

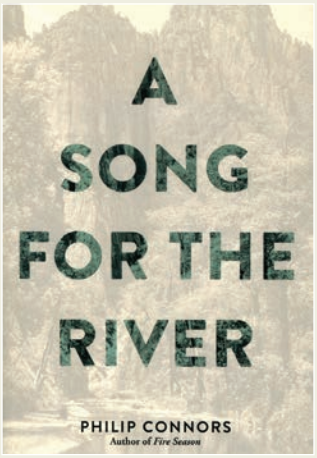
Kenneth Armson's long career as a forester in Ontario spanned more than 50 years in teaching, research, policy, and administration. He was a professor of forestry at the University of Toronto for 26 years and has been a leading advocate for sustainable forest management across Canada for six decades. In 1979 he became the chief forester and executive coordinator of the Forestry Resources Group in the Ontario Ministry of Natural Resources and then was appointed in 1986 as Ontario's first and only provincial forester. Arguably, his two biggest accomplishments are forging forest management agreements, under which the forest industries and governments worked together to ensure that harvested areas regenerated and thrived on Crown land, and the founding of the Forest History Society of Ontario. All of this and more is in his memoir ***Into the Woods: My Life in Forestry*** (Burnstown Publishing House, 2019). (*JL*)

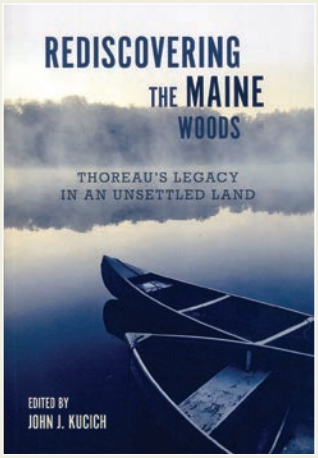
Those interested in the history of national parks and graphic design will enjoy ***Parks: United States National Park Service Maps and Brochures from the Collection of Brian Kelley*** (Standards Manual, 2019). Kelley is a photographer and avid collector with no formal connection to the Park Service. This record of more than 300 national park publications takes the reader on a visual journey through more than a century of promotional materials. Of special note is the work of designer Massimo Vignelli, whose titles in the Helvetica font, white on a black bar, became synonymous with park publications beginning in the 1970s. (*EL*)

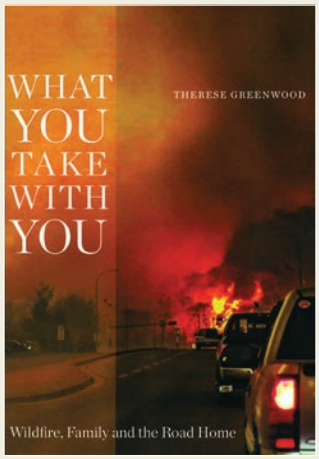
The Food Explorer: The True Adventures of the Globe-Trotting Botanist Who Transformed What America Eats (Dutton, 2019), by Daniel Stone, documents the work of botanist David Fairchild, who traveled the world during the early twentieth century in search of exotic foods and plants, and then managed the Office of Seed and Plant Introduction of the U.S. Department of Agriculture from 1904 to 1928. Many of the 200,000 edible and useful plants he brought to American shores are now products we take for granted, including watermelon, avocado, kale, lemon, peach, and soybean. Fairchild's worldwide adventures fill in an overlooked aspect of American environmental and agricultural history. (*EL*)

In ***A Song for the River*** (Cinco Puntos Press, 2018), by Philip Connors,









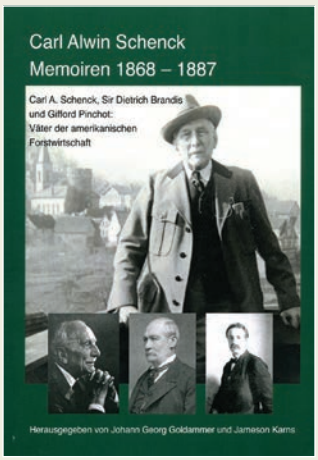
a veteran fire lookout on the Gila National Forest and the author of the acclaimed memoir *Fire Season*, rafts through the Gila Wilderness one last time to say goodbye both to the river, which is threatened by dam construction, and to the friends he made during his many seasons in the lookout tower. It's a moving mixture of memoir, observation about fire policy and ecology in the Southwest, and elegy for his departed friends as he moves through a landscape that has meant much to him. (*JL*)

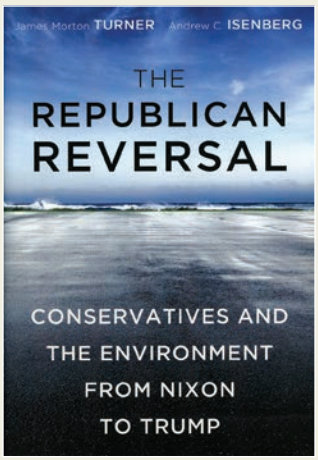
John J. Kucich, inspired by the 150th anniversary of the publication of Henry David Thoreau's *The Maine Woods* (1864) and his participation in a canoe-camping trip retracing Thoreau's journeys in 2014, asked several fellow participants, as well as leading scholars and nonacademics who did not make the trip, "to reimagine the Maine Woods in the twenty-first century." In ***Rediscovering the Maine Woods: Thoreau's Legacy in an Unsettled Land*** (University of Massachusetts Press, 2019), Kucich has gathered their responses into three parts: differing perspectives of the region, reexaminations of Thoreau's writings about Maine, and Thoreau's legacy in the region and the broader national debates about the environment. Essay topics of note here include discussions of multiple use, working forests, and Thoreau's concept of wildness, as opposed to wilderness. (*JL*)

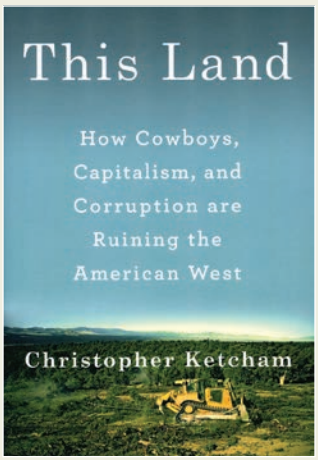
As a wildfire swept toward Fort McMurray, Alberta, in 2016 and forced eighty thousand people to evacuate the city, journalist Theresa Greenwood and her husband had only minutes to pack and escape. In ***What You Take with You: Wildfire, Family, and the Road Home*** (University of Alberta Press, 2019), Greenwood captures the excitement, terror, and heartache of losing everything, giving readers a very different perspective of the effect of wildfire on the many landscapes in our lives. (*JL*)

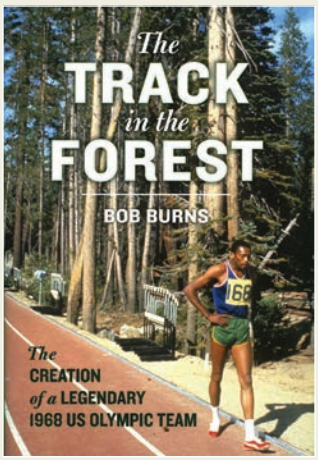
In November 2018, a symposium at Freiburg University in Germany reexamined the connections between the "fathers of American forestry"—Sir Dietrich Brandis, Carl A. Schenck, and Gifford Pinchot. German-born Brandis (1824–1907) mentored fellow German Schenck and the American Pinchot and, through them, deeply influenced forestry in the United States. Along with Schenck's previously unpublished memoir, the presentations have been compiled into ***Carl Alwin Schenck: Pioner der Forstwirtschaft in Amerika (Carl Alwin Schenck: Pioneer in Forestry in America)*** (Kessl Publishing House, 2019), edited by Johann Georg Goldammer and Jameson Karns. Schenck's account of his early life, from 1868 to 1887, is in German and includes much about his family history. The symposium papers about the three men and their connections, some presented by their descendants, are all in English. (*JL*)

The Republican Reversal: Conservatives and the Environment from Nixon to Trump (Harvard University Press, 2018), by James Morton Turner and Andrew C. Isenberg, traces one of the most







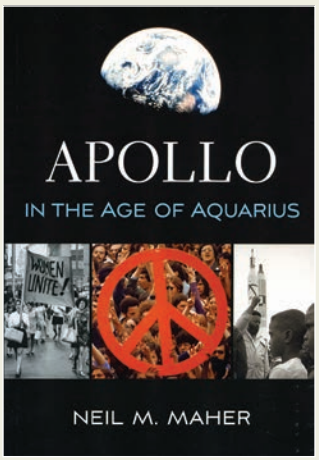


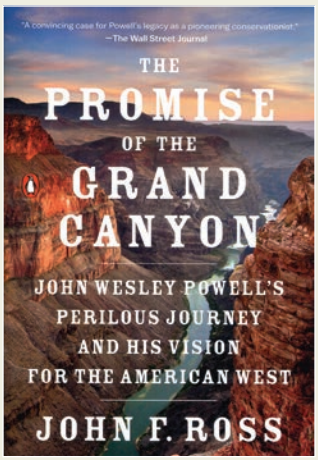
remarkable turnarounds in U.S. political history: how within a few short years, Republicans went from being the political party that could point with pride to its 1960s–1970s slate of pro-environment laws and the creation of the Environmental Protection Agency to one that seeks the dismantling of the very laws and agencies it helped create. (*JL*)

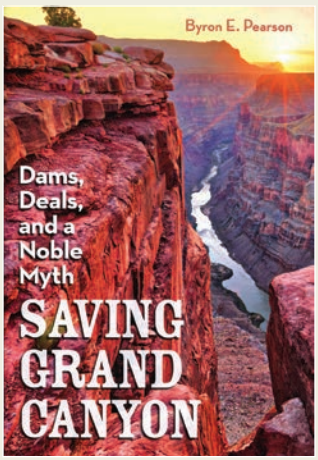
Journalist Christopher Ketcham spent several months crisscrossing the American West by car to see what was happening on the federal public lands. The result is ***This Land: How Cowboys, Capitalism, and Corruption Are Ruining the West*** (Viking, 2019). He found that the grazing, mining, and timber industries are "plundering" large swaths of the 450 million acres of federal lands, and that the federal agencies charged with protecting the public lands do little to stop them—and in many cases are abetting them. Further, he learned that the "Big Green" environmental groups purporting to watch those agencies and companies are no better, frequently agreeing with the policies while portraying themselves as protectors of the land. He concludes his indictment by proposing a radical vision for ecological restoration, beyond enforcing the laws already on the books to protect endangered species: completely removing cattle from the public lands, ending public timber sales, and setting aside some land as off-limits to all uses, even recreation. (*JL*)

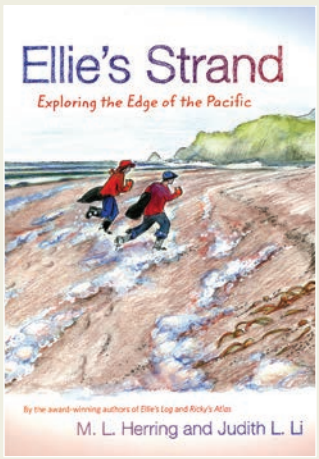
In ***The Track in the Forest: The Creation of a Legendary 1968 US Olympic Team*** (Chicago Review Press, 2019), Bob Burns tells the story of one of the most famous U.S. Men's Track and Field teams. The team trained and held its final selection meet on a track carved out of the Eldorado National Forest above Lake Tahoe, California, in preparation for the Olympics in Mexico City. U.S. track officials realized that training at high altitude was necessary for the men's team to succeed; notably, they didn't extend the offer to the women's team. The book has little on the forest history aspect of the story—this was just before all the modern environmental laws were passed, so construction of the track faced few obstacles—but it's nonetheless a fascinating look at the history of sports and race relations. (*JL*)

One year after those Olympics, three hundred thousand young people gathered for the Woodstock music festival. Most attended the three-day event for free, and many consider it the height of the counterculture movement. In stark contrast, just a few weeks before, American astronauts had walked on the moon, a technological first that cost billions of dollars. Many critics, however, argued the government could have used that money and resources for healing the environment or transforming the lives of the millions of Americans who looked nothing like the white male astronauts. In ***Apollo in the Age of Aquarius*** (Harvard University Press, 2017), Neil Maher reinterprets the Apollo era of NASA's history through the lenses of the women's, environmental, antiwar, and civil rights movements, showing unexpected synergies between the movements and the space program. (*JL*)







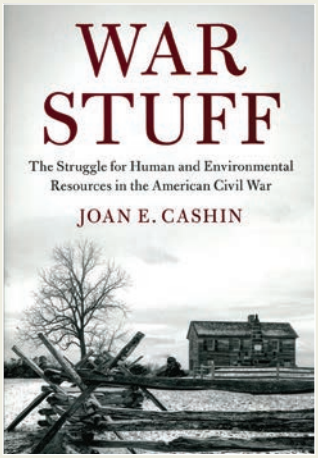


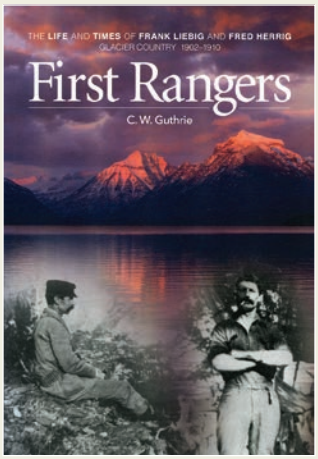
The Promise of the Grand Canyon: John Wesley Powell's Perilous Journey and His Vision for the American West (Viking, 2018) is John F. Ross' biography of the remarkable geologist and explorer. Powell, a one-armed Civil War veteran, gained renown for leading the first boat expedition 900 miles along the Colorado River and through the Grand Canyon in 1869. As director of the U.S. Geological Survey (1881–1894), he argued that the arid West was not suitable for agricultural development and proposed a system for settling the region that would have been sustainable and far less detrimental to the land. His tenure as director of the Bureau of Ethnology, from 1879 until his death in 1902, was important for documenting Native American culture and languages, yet he also advocated the mandatory study of English, Christianity, and western farming techniques, which would destroy their culture and languages. (*JL*)

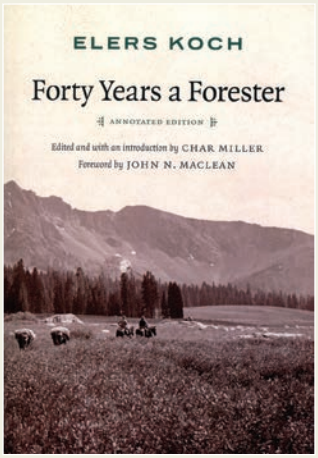
In the 1910s, developers nearly succeeded in damming the Colorado River as a way to transform central Arizona into a Garden of Eden, even though it would have flooded the Grand Canyon. In the late 1960s, during the third and final major attempt to build a dam, the Sierra Club worked hard to block it and, in the process, transformed itself into a national leader of environmental groups. Ever since, it has received the lion's share of the credit for "saving" the Grand Canyon. And as more and more historians repeat this "noble myth," legend has become accepted truth. Byron Pearson sets the record straight in ***Saving Grand Canyon: Dams, Deals, and a Noble Myth*** (University of Nevada Press, 2019). He examines all three campaigns to dam the canyon in order to place the last campaign in the broader context of the contentious water and irrigation history of the American West. The Sierra Club did play an important role, Pearson demonstrates, and the legend started with members' congressional testimony in 1967. However, a year earlier, Congress and a few other individuals had already dealt the dam a death blow—something conveniently left out of the retellings by the organization and historians. (*JL*)

Ellie's Strand: Exploring the Edge of the Pacific (Oregon State University Press, 2018), by M. L. Herring and Judith L. Li, is the third book in a series that reveals the wonders of nature through a child's eyes. The precocious and inquisitive Ellie and Ricky travel to the Oregon coast from their homes in the Cascade Mountains to help with a one-day beach cleanup. They learn about the creatures that live in the coastal environment, of course, but they also are confronted with the harms humans are inflicting on the shore and its nonhuman inhabitants. This book for upper elementary students is evidence that nature education can be engaging and thought provoking. (*JL*)

As the American Civil War dragged on, the competition between civilians and armies over the South's human and material resources grew increasingly fierce. After 1863, southern civilians grew unwilling to aid the war effort and focused on their own survival. Joan E. Cashin's exploration of the effect of the war on humans, sustenance, the built environment, and







timber in ***War Stuff: The Struggle for Human and Environmental Resources in the American Civil War*** (Cambridge University Press, 2018) is a remarkable rethinking of how soldiers and noncombatants consumed these resources. Her material on the military and civilian uses of timber, trees, and forests is of particular interest here. (*JL*)

Three new editions of previously published works are worth checking out. ***First Rangers: The Life and Times of Frank Liebig and Fred Herrig, Glacier Country, 1902–1910*** (Farcountry Press, 2019) is edited by C. W. Guthrie. She uses the journals of two of the earliest federal forest rangers to recall the challenges that the future Glacier National Park landscape posed to a few brave souls in the early twentieth century.

Forty Years a Forester (Bison Books, 2019) is a memoir by Elers Koch, an important figure in the early days of the U.S. Forest Service in western Montana and a younger contemporary of Liebig and Herrig. Koch was an early advocate for wilderness and a critic of the fire suppression policy he had once helped implement. The prolific Char Miller has annotated this edition and provides a new introduction for it.

Speaking of prolific, Stephen Pyne, who has written some two dozen books on the history of fire around the world, distills a career's worth of knowledge into ***Fire: A Brief History*** (2nd ed., University of Washington Press, 2019), which in 200 pages covers the history of fire from before humans to the present in urban, rural, wilderness settings. (*JL*)

FILM

Using woody biomass as fuel to replace coal on an industrial scale is transforming forests. The feature-length documentary film ***Burned: Are Trees the New Coal?*** (Marlboro Films, 2017) explores the consequences of large-scale logging for power generation in the United States, the European Union, and the United Kingdom. The filmmakers argue that burning wood and other biomass, which in some cases can include tires because of the rubber content and chemically treated railroad ties, is not a carbon-neutral option or green solution to climate change, as the energy industry has been saying, and is, in fact, detrimental to the environment.

The 74-minute feature-length version, created for general audiences, covers the biomass pellet industry in the southeastern U.S. and the influence of the UK and EU renewable energy directive on policies, subsidies, and the industry's very existence. It also includes sections on the U.S. biomass industry's chip-burning facilities, waste-to-energy facilities, and forest ecology. Two shorter versions of the film are also available on the film's website (www.burnedthemovie.com). All three versions are available on DVD or for streaming. (*JL*)

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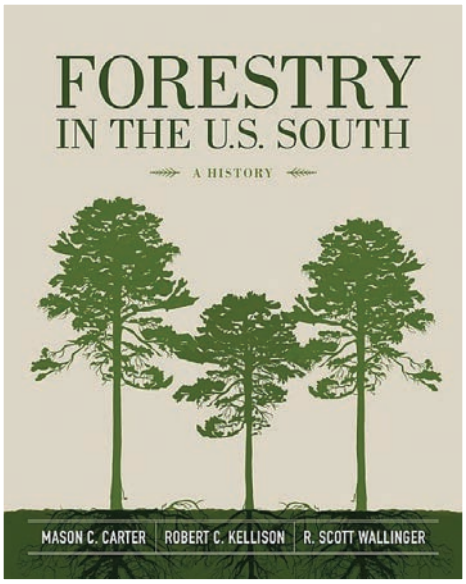

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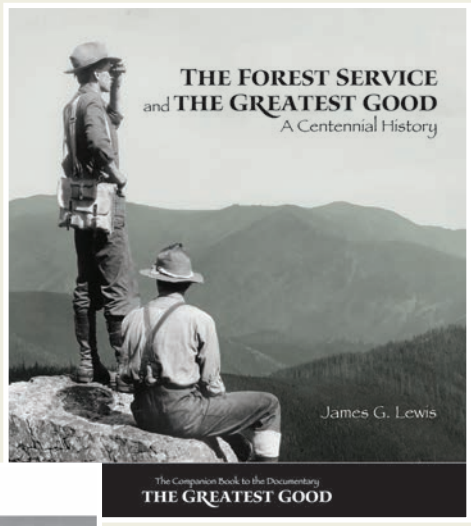

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University of Georgia–Warnell School of Forestry & Natural Resources–Harley Langdale, Jr. Center for Forest Business
University of Maryland–Extension Center
University of Minnesota–Department of Forest Resources
University of Tennessee–Department of Forestry, Wildlife & Fisheries
University of Toronto–Faculty of Forestry
University of Washington Press
USDA Forest Service, Boise National Forest
Virginia Tech–Department of Forest Resources & Environmental Conservation
Wisconsin Department of Natural Resources–Division of Forestry

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We are honored to recognize these individuals for their legacy commitment to the Society's future:

Richard Bury
John Huss Jr.
Morten J. Lauridsen Jr.
David T. Mason
Marjorie McGuire
John Sandor
Larry W. Tombaugh*

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Congratulations and thank you to these members who have supported the Society for 25-plus years!

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*We are delighted to welcome these new members who joined during fiscal year 2019! Members indicated with an * hold joint membership in FHS and the American Society of Environmental History.*

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G. Lynn Sprague
Steve Wilson
Aaron Thomas*
James B. Thompson
TowneBank
Angie Vorhies
W. Second Growth Foundation
Evan Weaver
Weyerhaeuser Company
The Wildlife Society
Matthew Williams
Joseph Woodruff
Qin Yao*

Anderson, Diane: 1 photo album of approximately 150 black-and-white photographs from a trip taken by her father, Melvin Berngartt, through the western United States and Canada from June to August 1949.

Boyer, Chris: 3 folders of Mexico forestry documents, including a significant portion examining forest management in Quintana Roo.

Case, John P.: *Landlooker in the Upper Peninsula of Michigan: From the Reminiscences of John Munro Longyear* (2 copies: a first and second edition); *The Longyear Legacy: Land, Timber, Minerals,* by John Case and Shirley Schwaller.

Clayton, Ed: 3 boxes of materials and publications from Mount Rogers National Recreation Area in Virginia.

Dillon, Chip: *Pulp & Paper North American Factbook* (1982–1983, 1988, 1994, 1996, 1997, 1998, 1999–2000); *International Fact & Price Book* (1994, 1998, 2000, 2002, 2002–03); *Global Fact & Price Book* (2003).

Floyd, Donald: 1 box of approximately 25 books on the history of forestry and conservation.

Gnann, John W., Jr.: 2 boxes of materials accumulated by John W. "Jack" Gnann (donor's father). Includes personal papers, files, books, photographs, slides.

Goel, Ravi: 1 box of papers of John R. Neetzel, a graduate of University of Minnesota (BS, Forestry, 1929) and University of California (MS, Forestry, 1930). Includes correspondence with Henry Graves, Raphael Zon, and other key historical figures. Documents the history of forestry education and the development of forestry in the upper Midwest.

Gunderson, Dave: 11 books: *The Great Black Dragon Fire: A Chinese Inferno*, by Harrison E. Salisbury; *Land of Fur and Gold: Autobiography of Raymond Thompson*, by Raymond Thompson; *In the Wilderness: Coming of Age in Unknown Country*, by Kim Barnes; *Belly River's Famous Joe Cosley*, by Brian McClung; *Shaping the Sierra: Nature, Culture, and Conflict in the Changing West*, by Timothy P. Duane; *Salmon in the Forest: Life in Alaska's Tongass Rain Forest*, by Amy Gulick and Ray Troll; *The Spell of the Vienna Woods,* by Paul Hofmann; *Dry Storeroom No.1: The Secret Life of the Natural History Museum*, by Richard Fortey; *Nature's Keepers: The Remarkable Story of How The Nature Conservancy Became the Largest Environmental Organization in the World*, by Bill Birchard; *Saving Tarboo Creek*, by Scott Freeman; *The River and I*, by John G. Neihardt.

Irland, Lloyd: 1 box of forestry books, journals, and miscellaneous U.S. Forest Service publications.

Kamholz, Ed: 32-plus boxes of research materials related to the history of the Oregon-American Lumber Company, which operated from 1922–1957 and was a prime example of lumbering in the region. Includes photographs, maps, microfiche, articles, and extensive research materials.

Korb, John W.: 1 DVD of photos taken by donor while a forester on the Nez Perce National Forest from 1956 to 1961.

Kusano, John: 2 boxes of U.S. Forest Service Organizational Directories, from 1960s to 2000s.

Larson, Philip R.: 1 box of donor's personal U.S. Forest Service papers and publications.

Locke, Timm: *Business is Good: Stories of Patrick Lumber Company's First Century, 1915 to 2015*.

Miho, Judith: 1 box of additional copies of various Champion Papers Imagination publications. These were from series of annual promotional brochures of paper samples targeting designers, art directors, and creative printers of the time. Will be added to existing Champion Papers Imagination Campaign Collection.

Moriarty, John: 1 box DVDs from The Wildlife Society's (TWS) oral history project titled "Celebrating Our Wildlife Conservation Heritage (COWCH)." These 150 video interviews were conducted with well-known and long-tenured wildlife biologists to collect the knowledge of these folks on the development of wildlife science.

Oliver, Chadwick Dearing: *Global Resources and the Environment*, by Chadwick Dearing Oliver and Fatma Arf Oliver.

Rathbun, Vanessa: Various Alaska maps; *Hooked on Fishing: Lake Fishing on the Chugach National Forest Alaska*, U.S. Forest Service, Alaska Region; *Of Rock And Ice: An Explorer's Guide to the Geology of Prince William Sound Alaska*, Joseph M. Kurtak; script for "Corner Search and Rescue California Style" by L. Bruce Sumner, U.S. Forest Service.

Robbins, Eugene: 3 boxes of forest history–related books and journals.

Sotolongo, Robert: 1 book: *The Overstory Book*, Craig R. Elevitch, ed.

Thrumes, John: 4 boxes of books and historic materials from Westvaco's timberlands division in Summerville, SC.

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 of people and forests. The following is a list of awards for 2018–2019.

2019 THEODORE C. BLEGEN AWARD

The Theodore C. Blegen Award recognizes the best scholarship in forest and conservation history published in a journal other than *Environmental History*. **Sarah Mittlefehldt** won for "Wood Waste and Race: The Industrialization of Biomass Energy Technologies and Environmental Justice," published in the October 2018 issue of *Technology and Culture*. She is an assistant professor at Northern Michigan University in the Department of Earth, Environmental and Geographical Sciences.

In the 1980s, engineers developed new ways to use one of humanity's oldest fuel sources—wood—to create electrical power. This article uses envirotechnical analysis to examine the development of a wood-burning power plant in Flint, Michigan, and argues that when public officials began working with major energy corporations to build industrial biomass facilities in the 1980s and 1990s, new energy technologies designed to run on renewable fuels became part of an entrenched fossil fuel–based power structure that maintained deep historical inequalities. Like other examples of environmental injustice, the burdens of industrial-scale biomass power systems tended to fall on poor, nonwhite communities. By exploring the creation of the Genesee Power Station as part of an envirotechnical regime in Flint, Mittlefehldt's article develops conceptual bridges between the history of technology, environmental history, and environmental justice, and demonstrates the use of history to inform contemporary debates about sustainability.

2019 CHARLES A. WEYERHAEUSER BOOK AWARD

The Charles A. Weyerhaeuser Book Award rewards superior scholarship in forest and conservation history. The 2019 award was given to **Michitake Aso** for *Rubber and the Making of Vietnam: An Ecological History, 1897–1975* (University of North Carolina Press, 2018). He is an associate professor of the Global Environment, at the University of Albany, SUNY.

During a turbulent Vietnamese past, rubber transcended capitalism and socialism, colonization and decolonization, becoming a key commodity around which life and history have revolved. Aso narrates how rubber plantations came to dominate the material and symbolic landscape of Vietnam and its neighbors, structuring the region's environment of conflict and violence. Tracing the stories of agronomists, medical doctors, laborers, and leaders of independence movements, Aso demonstrates how postcolonial socialist visions of agriculture and medicine were informed by their colonial and capitalist predecessors in important ways. As rubber cultivation funded infrastructural improvements and the creation of a skilled labor force, private and state-run plantations became landscapes of oppression, resistance, and modernity.

2019 FREDERICK K. WEYERHAEUSER FOREST HISTORY FELLOWSHIP

This fellowship provides a stipend to Duke University graduate students pursuing research in the fields of forest, conservation, or environmental history. There was no winner for 2019.

2019 LEOPOLD-HIDY AWARD

The Leopold-Hidy Award, named for forester and ecologist Aldo Leopold and business historian Ralph Hidy, annually recognizes superior scholarship in the quarterly journal *Environmental History*, which the Forest History Society and the American Society for Environmental History copublish. **Andrew Baker** won for his article "Risk, Doubt, and the Biological Control of Southern Waters," published in the April 2019 issue. He is an assistant professor of history at Texas A&M University–Commerce.

Baker's article traces early efforts to combat the invasive aquatic plant hydrilla in the southeastern United States. In a region identified with resilient and fast-growing invasive species like kudzu, hydrilla fit right in. Resistant to pollution, adaptable to various water environments, and nearly impossible to eradicate, hydrilla outcompeted its native counterparts, spreading across the South within two decades of its introduction to a canal in Florida in the 1950s. By the 1970s, the threat the plant posed to the booming lakefront development industry in the South alarmed politicians, who grew frustrated by the fact that scientific studies produced as much uncertainty as consensus. The resulting efforts to control hydrilla, which culminated in the introduction of another exotic species—white amur fish—triggered a separate set of environmental consequences and, tellingly, as Baker shows, owed more to politicians than to scientists or cautious regulators.

2019 JOHN M. COLLIER AWARD FOR FOREST HISTORY JOURNALISM

The Collier Award is given to a journalist whose work incorporates forest or conservation history in an article or series of articles published in North America that relate to environmental issues. **Adrian Higgins**, a gardening columnist for the *Washington Post*, has specialized in writing about gardening, landscape architecture, and related environmental areas. His winning article, "Scientists thought they had created the perfect tree. But it became a nightmare," was published in the September 17, 2018, issue of *The Washington Post Magazine*. It traces the history of the Bradford pear tree, from the time its progenitor was introduced to the United States from China around 1918 to the present.

The Bradford variety of the Callery pear was developed in the 1950s, and quickly was cloned by the millions to become the ubiquitous street tree of America's postwar suburban expansion. It was upright and symmetric in silhouette. It exploded with white flowers in early spring. Its glossy green leaves shimmered coolly in the summer heat, and in the fall, its foliage turned crimson, maroon and orange—a perfect New England study in autumnal color almost everywhere it grew. And it grew everywhere planted, from California to Massachusetts, no matter the soil conditions, and seemed resistant to diseases. However, its many positive attributes are now perceived as negatives. It has become an invasive that is displacing native flora and reducing biodiversity. The Bradford's poor branch structure and propensity to break provides its own headaches for property owners. Its ubiquity has made it prone to a blight that can quickly move through communities and kill them by the score.

2019 WALTER S. ROSENBERRY FELLOWSHIP IN FOREST AND CONSERVATION HISTORY

For the first time in its five-year history, this fellowship, given to support the doctoral research of a student attending a university in North America and whose research contributes to forest and conservation history, is being awarded to two candidates: **Aaron Thomas** and **William Wright**.

Aaron Thomas, a PhD candidate at Mississippi State University–Starkville, was selected for his work, "Controlling Christmas: An Environmental History of Natural and Artificial Trees." This project uses real and fake Christmas trees to understand their impact on debates about conservation and forestry management from the late nineteenth century to today. Beginning with charting the evolution of the natural Christmas tree industry, the study pays careful attention to the role conservationists, foresters, and extension agents played in shifting evergreen extraction from the country's forests to tree farms. The second half of the project deals with artificial Christmas trees and highlights that trade's origins in concerns about deforestation. This section also investigates conceptions of "natural" by contrasting the intensive management on farms with the ostensible unnatural production of metal, plastic, and other artificial competitors. Additionally, changes in artificial tree patent blueprints are traced illustrating the shifting visions of the ideal conifer.

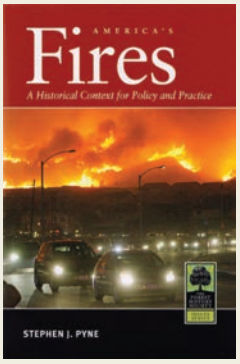
The second recipient is William Wright, a PhD candidate at Montana State University. His project is "Nature Unbound: What Gray Wolves, Giant Sequoias, and Monarch Butterflies Tell Us about Large Landscape Conservation." Gray wolves across the Yellowstone to Yukon region, giant sequoias around Sequoia-Kings Canyon National Parks, and monarch butterflies along milkweed corridors from the Reserva Biosfera dela Mariposa Monarca are the iconic species studied to investigate how human communities in North America were forced to rethink conservation spaces over the long twentieth century (1880s to present). Wright examines how a patchwork of protected areas came to be viewed as part of a much larger landscape mosaic and are becoming increasingly important as lifeforms move in order to adapt to climate change.

ALFRED T. BELL JR. TRAVEL GRANT RECIPIENTS

Jennifer Dunn is a postdoctoral researcher at Michigan Technological University. Her research focuses on the history and management policies of the national forests in Montana and the U.S. Forest Service in the 1970s and 80s. Dunn examined the U.S. Forest Service History Reference Collection and the oral history collection.

Emily Knox is a visiting assistant professor of Landscape Architecture at Auburn University. She is investigating the historic role of livestock grazing on national forest lands. She used the U.S. Forest Service History Reference Collection.

FOREST HISTORY SOCIETY ISSUES SERIES



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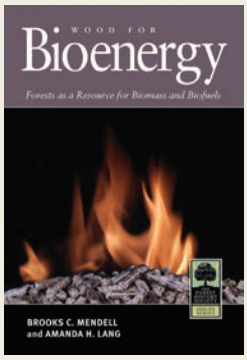
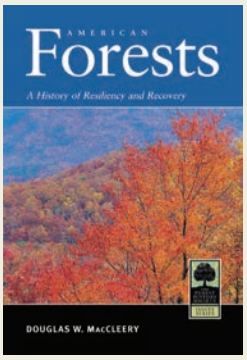
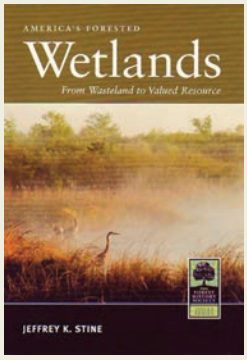


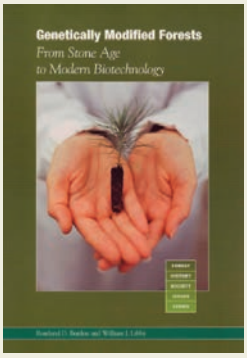
Wood for Bioenergy
by Brooks C. Mendell & Amanda Lang
88 pp; 10 photos; 18 figures



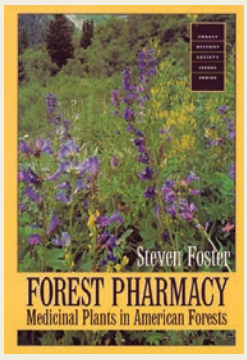
American Forests
by Douglas W. MacCleery
65 pp; 36 photos; 18 figures



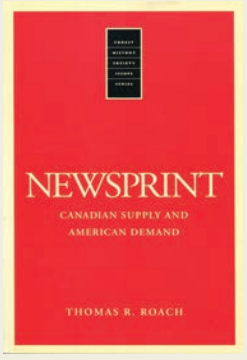
America's Forested Wetlands
by Jeffrey K. Stine
96 pp; 28 photos; 7 figures



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



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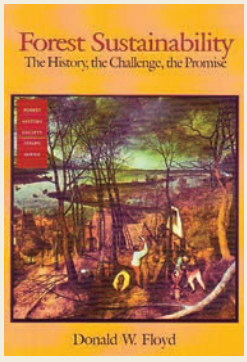

Forest Sustainability
by Donald W. Floyd
80 pp; 21 photos; 11 figures

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

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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
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Millicoma: Biography of a Pacific Northwestern Forest, Arthur V. Smyth, $12.95
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Plantation Forestry in the Amazon: The Jari Experience, Clayton E. Posey, Robert J. Gilvary, John C. Welker, and L. N. Thompson, $16.95
Proceedings of the U.S. Forest Service Centennial Congress: A Collective Commitment to Conservation, Steven Anderson (ed.), $24.95
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, 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, and Robert E. Buckman, $13.00

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Changing Pacific Forests: Historical Perspectives on the Forest Economy of the Pacific Basin, John Dargavel and Richard Tucker, paper $5.00
David T. Mason: Forestry Advocate, Elmo Richardson, $8.00
Bernhard Eduard Fernow: A Story of North American Forestry, Andrew Denny Rodgers III, $5.00
Origins of the National Forests: A Centennial Symposium, Harold K. Steen, cloth $10.00, paper $5.00
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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, $15.00

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

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Forestry in the U.S. South: A History, Mason C. Carter, Robert C. Kellison, and R. Scott Wallinger, $65.00

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The U.S. Forest Service: A History (Centennial Edition), Harold K. Steen, cloth $20.00, paper $15.00

Digital Media Available from FHS

America's First Forest: Carl Schenck and the Asheville Experiment (55 min.); *First in Forestry: Carl Alwin Schenck and the Biltmore Forest School* (28 min.), $24.95 (DVD)
The Greatest Good: A Forest Service Centennial Film (2005), $18.00 (DVD)
The Greatest Good film soundtrack (2005), $15.00 (Audio CD)
Timber on the Move: A History of Log-Moving Technology (1981), $20.00 (DVD)
Up in Flames: A History of Fire Fighting in the Forest (1984), $20.00 (DVD)

For a list of oral history interviews available for purchase, visit: ForestHistory.org/ohi.

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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.

TO OUR MEMBERS

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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.
Thank you from the staff and patrons!

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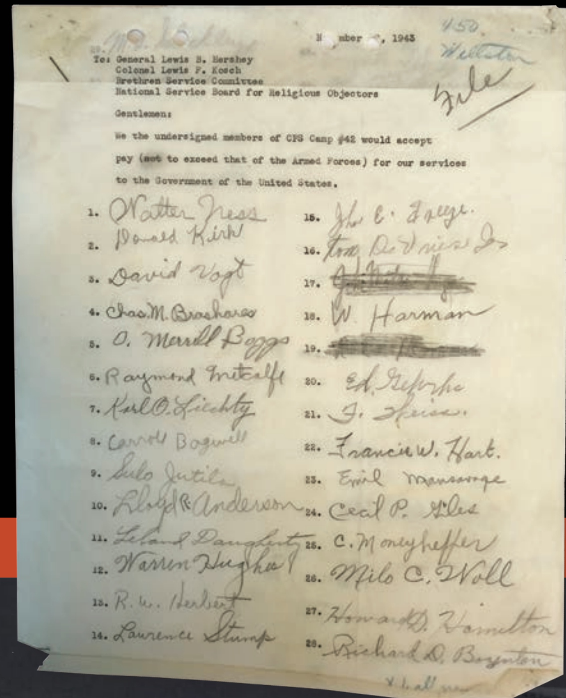
For gift planning inquiries, please contact Laura Hayden at (919) 682-9319.

Historians often begin their research at a library or archive. But to tell the larger story of forestry work undertaken by conscientious objectors during World War II, historian Jean Mansavage started her project by going through a closet in her parents' home. Her father's unpublished memoir and his wartime scrapbook (*below*) enabled her to tell it through the experiences of one man at one camp in Michigan. She then unearthed historical records at the National Archives, including her father's own service records. (At right is a petition that he and 62 others signed to indicate they would accept pay for their services.) She rounded out her research by combing through libraries for books and articles. "Doing Valuable Work: A Conscientious Objector's Wartime Service on the Manistee National Forest" begins on page 62.


N[illegible]mber [illegible], 1943

To: General Lewis B. Hershey
Colonel Lewis F. Kosch
Brethren Service Committee
National Service Board for Religious Objectors

Gentlemen:

We the undersigned members of CPS Camp #42 would accept pay (not to exceed that of the Armed Forces) for our services to the Government of the United States.

1. Walter Ness
2. Donald Kirk
3. David Vogt
4. Chas. M. Brashares
5. O. Mardell Boggs
6. Raymond Metcalfe
7. Karl O. Lichty
8. Carroll Bogwill
9. Sulo Jutila
10. Lloyd R. Anderson
11. Leland Daugherty
12. Warren Hughes
13. R. W. Herbert
14. Laurence Stump
15. John E. Fraze
16. Tom DeVries Jr
17. [illegible]
18. W. Harman
19. [illegible]
20. Ed. Geyer
21. J. [illegible]
22. Francis W. Hart
23. Emil Mansavage
24. Cecil P. Giles
25. C. Moneyheffer
26. Milo C. Woll
27. Howard D. Hamilton
28. Richard D. Boynton

(Left) The radio went bad at the Boon Tower (in the Cadillac District) so lanky Ladner and Joe Blodgett went over to take care of it. The Boon tower is one of the most important in that district as its near the hills thru which the Ann Arbor RR passes thru and sets so many fires.

(Right) Harold McKimmey and Harold Kintner climbing a spar pole on the Wexford- Manistee county line. These spar poles are used in cases of extreme emergency. When the Hazard is very bad and visibility poor men are set on watch atop of them. While they have no fire spotting equipment like the towers they can spot a smoke for quite some distance and judge by landmarks as to where it is.

"Fire in the Cabarfae Hills" This one broke out just at the time Lanky and Joe were at the Boon Tower so they went out to give them a little help. Upon arrival there Mark Swietzer (Cadillac Dist. Ranger) told them they had it pretty much under control and wouldn't need any help from camp. Joe took a picture of this old codger mopping it up with a back pack pump.

Homer Peters was putting the "bead" on a smoke spotted from the Red Bridge Tower. After sighting thru this Osborne fire finder and getting a line on the smoke a degree reading is taken and called in to the Guard Station. The degree readings on our maps correspond with those in the towers and that way we get the location of the fire.

Another view of the warehouse in back of the station. This was taken later in the summer when the leaves were on the trees making it look some what different. The scenery from up here as well as the towers looks quite nice in the summer time.