



# 1 A CENTURY OF CHANGE

I EMPHASIZE five major developments that occurred in the history of the Forest Service over its first century, from 1905 to 2005, each of which took place against the backdrop of the prior history of the forest reserves that began in 1891, when the first legislation leading to the Forest Service's establishment was passed. These developments were the initial commitment to the forest reserves as publicly owned resources. That effort was soon followed by battles to ward off their privatization. From its earliest years, the agency commenced a long-term campaign to shape private forest management, a task that the federal agency effectively abandoned in the early 1950s and nominally and selectively shifted to the states. Later, citizens from outside the agency attempted to become involved in its affairs, which engendered varied responses from the agency itself. From the 1970s onward, the participation in forest affairs by diverse groups of scientists and professionals accompanied changes in the public context within which the agency carried out its objectives. Finally, the Forest Service has been steadily challenged to develop its management capabilities over the years as its tasks have become more elaborate and complex.

## From Private to Public

When Congress passed an omnibus public lands bill in 1891, the legislation contained a brief provision that authorized executive orders to establish forest reserves. This move was one of a number of decisions made by Congress and the president that modified traditional public land objectives. The traditional objective had been to shift control of timber lands to private individuals and corporations. With the new legislation, the focus shifted to retaining and managing forests as public assets. In earlier years, Congress had taken similar action only in special cases, when, for example, it excluded from sale areas that contained timber that was critical for naval shipbuilding. Later in the nineteenth century, however, Congress began to assert public interest in natural resources on a wider scale, establishing public lands for parks, wildlife refuges, and watershed protection, as well as for timber production. Congressional designations of public lands that became forest reserves were the most numerous of these federal actions to assert public interest in natural resources. The western forests were initially called “reserves” with the notion that lands should be “reserved” from sale to private parties and retained as public assets to be managed by public agencies. In the East, a policy of acquisition as well as retention of forest land was adopted, leading over the years to the addition of almost 25 million acres to the national forests.

The primary implication of this significant shift in public land policy was the belief that private owners could not be relied upon to accomplish a wide range of public objectives. If the nation wanted undeveloped park areas for the enjoyment of its citizens, it could not depend on private enterprise to retain the land’s natural qualities for that purpose. If the nation wanted abundant game and wildlife, which legally belonged to the public, it could not rely on private enterprise to provide either; the economic urge to sell wildlife in the market would be powerful. If the nation wanted to preserve archeological and historic sites, private enterprise could not be relied upon for the same reason. If the nation wished to guarantee future supplies of timber, the drive for short-term economic profit could not guarantee restoration

of cut-over lands because this activity required a longer-term commitment of investment with lower returns than private enterprise could tolerate.

Behind the creation of all such “reserves,” particularly the forest reserves created under the 1891 act, was the notion of *public* enterprise, which could be carried out by public ownership and management. By establishing these reserves, Congress made permanent public assets out of the public lands that had previously been heavily subject to privatization. The U.S. Forest Service was constituted to manage the most extensive of these public assets.

The nation’s forests presented a distinctive example of the relationship between private and public ownership of land. Those who exploited the standing timber of the nation’s forests had migrated from New England to New York and Pennsylvania, then to the upper Midwest around the Great Lakes, then to the South, and finally to the Pacific Northwest. These lumbermen were prone to “cut and run,” that is, to cut down the existing timber and then leave the land without doing anything further. In many cases, continuing tax liabilities prompted the owner of cut-over land to simply abandon it so that ownership reverted to the government, sometimes local and at other times state, which took responsibility for its future use. At times the timbering process left considerable waste wood on the ground, leading to fires, and it became a governmental responsibility to fight those fires.<sup>1</sup>

Most of the time, abandoned lands meant the loss of tax revenue to local governments. Beyond that issue, the remnants of “timber mining” by private enterprise left a number of other problems that public bodies had to address. This role of government was a marked reminder of the ultimate public context within which private enterprise carried out its activities. Abandoned lands one way or another became a public responsibility, so governments sought ways to transform that liability and those lands into public assets.<sup>2</sup>

The transition that the forest reserves of the West underwent did not come easily. Many who had customarily used the public lands for their own private purposes, such as mining, timber extraction, livestock grazing, hunting game for the market, or homesteading, continued to do so. The initial occupants of the public lands (who might be termed “squatters”) had long

considered these activities to be a “right” that could not be denied them. As a result, much of the early history of public land management was simply an attempt to manage the land for public purposes in the face of resistance from users claiming their right to encroach on public lands. Eliminating squatter homesteads in Yosemite Valley in California, requiring stockmen to obtain permits to use forest grazing lands, prohibiting the poaching of buffalo or elk in Yellowstone National Park, and preventing timber theft in forest reserves were all phases of the attempt to establish public rather than private rights to public lands.

These competing claims of private and public rights to public lands were played out over many years and were frequently resolved in favor of the public. This controversy continues to the present day when, for example, stockmen reassert the claim that their permits to use the range are in the form of a property right rather than a limited privilege or when off-road motorized vehicle users make the even more vigorous assertion that they have a “right” to travel anywhere on public lands.

The attempt to establish the authority of public administrators such as the U.S. Forest Service to manage lands for public rather than private objectives took place not only at the level of resource use but also in the halls of Congress. Western resource users—miners, livestock owners, and lumbermen—all readily called upon their elected representatives in Congress for assistance when their claims of private rights to use public resources met resistance from the local officials of the Forest Service. At times this assistance to constituents took the form of legislation to modify forest management. The most extreme proposals were to abolish the reserves or transfer them to the states or to exclude particular lands, such as grazing lands, from the reserves and open them to sale.

In one case, petitioners successfully got Congress to pass legislation that opened the national forests to homestead settlement. The Theodore Roosevelt administration professed “antimonopoly” objectives in its resource policy and gave substance to this claim by endorsing a policy to give priority in its grazing program to the “small rancher.” Congress took heed, and the Forest Homestead Act, passed on June 11, 1906, provided that lands

within the national forests that were “suitable for agriculture” would be available for settlement under the homestead laws. To aid in implementing this policy, Congress went further on August 12, 1912, authorizing the Forest Service to reclassify all national forest land to determine what lands should be returned to the public domain for homesteading.<sup>3</sup>

The timing of efforts to “privatize” national forest lands varied over the years. A particularly contentious situation arose after the dismissal of Gifford Pinchot as chief of the Forest Service in 1910.<sup>4</sup> For the next decade, from 1910 to 1920, Congress continually took issue with the agency, and an observer might well have considered the Forest Service’s survival to have been doubtful. The agency’s own commitment and competence enabled it to survive. But the attacks, in different form depending on the circumstances, continued.

In the 1920s, as grazing became an ever more hotly contested issue because of permit fees, stocking levels, and disputes over the condition of the range, western members of Congress conducted extensive hearings in their region, hoping to arouse and organize anti-Forest Service sentiment.<sup>5</sup> These hearings led to unsuccessful proposals to transfer forest grazing lands to the states. Still later, in the 1930s and 1940s, due to depression and preoccupation with World War II, these congressional attacks on the agency abated somewhat. But in the 1960s and 1970s they were revived, fed by disputes with the Bureau of Land Management over grazing issues on its lands but still embroiling all the public lands.

Gradually the issues took on sharp partisan contours as the Republican Party in 1980 became a vehicle for organizing western hostility to public ownership of the public lands. President Ronald Reagan’s secretary of the interior, James Watt, represented a new influence in western land affairs; he had become well known as spokesman for the Mountain States Legal Foundation, a “think tank” in Colorado that continually expounded the virtues of private enterprise and lobbied for two proposals: either sell public lands to private enterprise or transfer them to the states. Both proposals foundered, largely from opposition in the West itself.<sup>6</sup>

By the time the George W. Bush administration came to power, the context for the debate over public lands management had begun to change. The

main source of privatization theory became the Property and Environment Research Center (PERC) at Missoula, Montana, and its leaders were early advisers to the new president.<sup>7</sup> But the proposals either to privatize or distribute the public lands to the states through legislation appeared to be too risky for the Bush administration; it sought to change the rules and interpret them so as to benefit private enterprise. At the same time, the western constituency for public land management had begun to change from overwhelming representation by the extractive industries to a more recently developed clientele. In this new grouping, advocates of environmental and ecological objectives had greater influence and often could partially neutralize those who were formerly dominant in western affairs. They were shaping a process leading toward greater support for public land management objectives.<sup>8</sup>

These more recent western attitudes toward the public lands became more manifest in the last quarter of the twentieth century. In the 1970s and on into the presidential administration of Ronald Reagan, western views toward federal ownership of the public lands were decidedly hostile and popularly known as the “Sagebrush Rebellion.” These lands, so the argument went, belonged to those who occupied and used them and should either be privatized or transferred to western states. The fight over this issue was waged with considerable vehemence and media publicity.<sup>9</sup>

But when different versions of similar proposals appeared during the George W. Bush administration, first in the form of a mining law revision that would permit unused mining claims to be transferred to private investors for economic development of almost any kind and then an administration proposal to sell national forest land to fund local schools and roads, they both met with almost instant and widespread opposition. The discord came not only from the West but the rest of the country as well, and it revealed strong support for continued federal ownership.<sup>10</sup> It appeared that the earlier Sagebrush Rebellion had masked a deeper and less sensational support for public ownership and use of the national forests. This grassroots support merely awaited a crucial opportunity for expression and found it in opposing the privatizing strategies of the Bush administration.

The newer environmental and ecological interests taking shape during and after the 1970s brought to the federal public lands a more solid commitment to continued public ownership and management than the Forest Service had enjoyed in previous years. While the extractive industries had often varied in their choice of private, state, or federal ownership and management depending on how each would serve its private objectives, the newer environmental and ecological advocates were more committed to public management, and they stuck to that course. They emphasized that private industry had long demonstrated its inability to advance environmental and ecological objectives. To pursue and achieve those objectives, they argued, public management seemed essential.<sup>11</sup>

## The Agency and the Industry

The national forests were established in a climate of distrust of the nation's private forest industry, which had been responsible for the rapid forest destruction of the nineteenth century. Their establishment was also intended to offset a looming timber shortage that would be detrimental to the nation, and public ownership of a large chunk of the nation's forest resources was intended to ameliorate some of the more disastrous problems that were foreseen. It was thus somewhat ironic that, once established, the U.S. Forest Service proceeded to sell timber from the national forests and thus continue liquidation of the nation's timber resources.

It did so because of its general philosophy, derived largely from European forest management practices, that the existing "old" and "virgin" forests in its care were no longer productive, had outlived their usefulness, and should be replaced with forests having an annual growth rate greater than that of the ancient trees; they could be made so by continuous cultivation and cropping.

While wood from liquidating the old-growth forests would add to the nation's timber supplies, the problem of a timber shortage eventually would be resolved by the contributions from this new so-called regulated forest,

which would be cared for from initial planting to harvest as fully as a crop of wheat or corn. The atmosphere of the new age represented by the U.S. Forest Service was thus one of optimism about the nation's wood supply, which the agency would foster. By example, it would persuade the private forest industry to do likewise.<sup>12</sup>

Gifford Pinchot, first chief of the U.S. Forest Service, was skeptical about the ability of private industry to adopt such enlightened practices. Economic returns from "mining" existing trees precluded much interest in investing in a new crop; it was much more advantageous for timber businesses simply to abandon the cut-over land, returning it to the responsibility of local and state governments. Opportunities for investors were much greater in other kinds of production rather than in forest land. As a result, Pinchot did not believe that the national forests could become a model for the private forest industry; it simply was not primed to benefit from the example of the national forests.<sup>13</sup> Some form of public regulation of the private industry was required. The key problem was the production and cultivation of a new crop, the central focus of "sustained-yield" management. Tending a new crop was always the other side of the coin of timber harvest, and the industry was in no mood to do this voluntarily. After he left the Forest Service, Pinchot seemed to spend as much time advocating federal regulation of the private timber industry as he spent with Forest Service affairs themselves.<sup>14</sup>

Successive chiefs of the Forest Service after Pinchot, except perhaps William Greeley, the third chief, took up the same mission. They predicted that a "timber famine" would follow simply because private industry continued to "cut and run" and failed to stop and invest in new trees. Only public regulation could prevent such a disaster. Chief after chief proposed regulation, with Pinchot continuing the chorus from outside the agency.<sup>15</sup> A few bills were introduced in Congress to accomplish that objective, but they received little attention. Because of firm opposition from the industry, such proposals were dead on arrival.

Yet the issue continued to shape public debate and generated a deep mutual distrust between the agency and the industry until well after World War II.<sup>16</sup> It was only in 1952 that the new chief, Richard McArdle, effectively

halted the campaign simply by ignoring it as an issue worthy of mention in his first annual report. Only then did the issue's disruptive role in agency-industry relationships disappear.<sup>17</sup> This three-decade episode was a distinctive phase of an internal battle over national forest affairs and a backdrop to the close relationships that developed between agency and industry because of wartime emergencies and that continued in succeeding decades.

One major development in the management of the nation's forests arose from solidifying the role of the states in forest affairs.<sup>18</sup> One step in the debate over public regulation of private forests was to admit the seriousness of the public versus private management issue but to propose regulation by the states rather than the federal government. Pinchot had insisted on federal regulation, but many who were interested in forest affairs chose the state regulation route. The result was that some states began developing forest regulatory bureaucracies in a more favorable political climate, which was considered a means of reducing the intensity of the federal versus private debate.

The major development that arose from the role of the states was a patrol-and-suppression fire management policy carried out through a federal grant-in-aid program called for in the Weeks Act of 1911 and expanded in the Clarke-McNary Act of 1924.<sup>19</sup> Tentative steps toward a fire program had begun to evolve in the states already, and private industry was amenable to some action simply because the uncertainty of fire as a potential threat to those who owned logging rights or forest property rendered their activities somewhat speculative and their investments shaky. Thus, it was from this common interest in more effective fire programs that there arose a more cooperative relationship between public and private forest advocates. This constituted a stage in which relationships between states and private forest industry became increasingly close, much more so than federal public-private relationships.

World War II witnessed a growing rapprochement between the Forest Service and the timber industry based largely on their common efforts to supply wood for the war effort.<sup>20</sup> Close cooperation continued in the immediate postwar years in a joint effort to supply the rising demand for housing construction, long pent up by depression and war. Amid this common

effort to increase wood production, the agency not only dropped its criticism of the industry and demands for regulation but also made major changes in its method of calculating the allowable wood harvest on its own lands. It did so in such a way as to increase the attractiveness of its supplies to industry purchasers. The key to these changes lay in the agency's method of predicting future wood production. By inserting into its calculations favorable estimates of the effect of intensive "inputs" such as superior seed, fertilizers, and herbicides to suppress competing vegetation and treatments to control pests and diseases, the agency could "predict" larger wood harvests. It was then possible to increase the current allowable cut in line with these predictions. The entire process came to be called the "allowable cut effect" or the "earned harvest effect," and it provided a rationale for justifying increased harvests, much as the industry, which had depleted most of its own supply, demanded.<sup>21</sup>

This calculation method also led to a rhetorical shift from the long-standing goal of "sustained-yield" production to the new goal of "maximum production." It also gave rise to pressures within the agency to modify other statistical calculations and thereby hide its commitment to ever more intensive cutting. A further effect was that the new calculation method tended to solidify the agency's commitment to wood production as its dominant objective at the same time much of the public and the scientific world were asking it to conserve resources, in line with newer environmental and ecological objectives.

By the beginning of the twenty-first century, the nation's forest reserves had come full circle. In 1891, they were thought of as a response to the depletion of the nation's forests and the impending "timber famine."<sup>22</sup> These forests were to be saved from disposal to private parties so that they would forestall the predicted shortage of wood and thus solve a national problem that private industry, in its eagerness for immediate profits, could not solve. The national forests, moreover, were to serve as a model for long-term "sustained-yield" timber management that industry could emulate.

Over time, however, these roles tended to change. Important sectors of the wood products industry, faced with shortages of "virgin" timber, began to be interested in growing new forests. Amid the prevailing markets for

building lumber, this effort made little headway, but once pulp and paper began to dominate, industry's perspective changed. The shorter growing cycle for pulpwood and the expanding markets for it made investments in permanent wood production plantations more economically feasible. A new wood products industry based on pulp production began to develop in the nation's Southeast. With these changes, the national forests contributed no more than a fraction of the nation's wood supply, and their role in providing the nation's goods and services shifted markedly toward environmental and ecological objectives, public benefits that private industry was singularly unable to supply. By the year 2000, the national forests were playing a new role in the national life of the country.<sup>23</sup>

The twenty-first century brought about an entirely new and profound change in the forest industry when, in the search for more investment returns, many forest landowners came to the conclusion that their lands were more valuable for development than for long-range management for wood production. This new perspective seemed to focus on two venues. Larger timber landowners began to analyze and divide their holdings, with the objective of selling the more attractive of their sites to individuals who wanted to build homes, while owners of smaller tracts near cities found considerable financial advantage in "liquidating" their woodlots—selling them to developers who were fostering the "sprawl" taking place around urban areas.

As the largest forest landowner in the country, the Plum Creek Timber Company, advanced eastward from its home country in the northern Rockies to establish roots in New England, its development plans aroused considerable opposition from citizens. New Englanders were appalled at the prospect of losing "traditional uses" of their forest lands.<sup>24</sup> The Forest Service took considerable interest in the use of conservation easements to protect land from development for continued wood production around cities, championing the use of federal funds in the Forest Legacy Program for easement purchases. In 2002, the chief of the Forest Service, Dale Bosworth, identified sprawl as one of the four main threats facing the agency in the twenty-first century.<sup>25</sup> The threat of sprawl, especially in the nation's Southeast, tended to establish a new partnership between the industry and the agency.

## Transition in Agency Publics

The broader public context within which the Forest Service carried out its management mission differed vastly at the beginning of the twenty-first century from that of its earlier years. Activities such as recreation, which was a barely noticeable part of the world of forestry in 1891, had become of vast importance or even dominant more than a century later. At the time of its founding, the agency rejected the notion of national forests as venues for home, work, and play or as wildlife habitat, considering those objectives to be inappropriate. Public interest in those objectives became even more active during the twentieth century. Watersheds, which ranked high on the agency's initial agenda in the 1890s, were a recognized but less urgent issue throughout the next century.<sup>26</sup>

The agency's initial concentration on its clientele of timber producers and ranchers engaged in extractive grazing prompted it to downplay and even reject the importance of other potential objectives, but over time it was forced either by circumstance or by law to give other forest uses greater recognition. Finally, toward the end of the twentieth century, a new public context arose, emphasizing the importance of the environmental and ecological resources of the national forests and challenging all users to focus on resource sustainability amid pressures from increasing human use.

In 1891, at the legislative birth of the national forest system, the reserves were of importance to many sectors of the public. Some Americans looked upon them as amenities with potential for national parks.<sup>27</sup> For others they promised an important source of wood as other sources of future supply continued to decline; some viewed them as habitat for game that needed protection so that depleted populations might be restored.<sup>28</sup> Still others thought of the forests as watersheds to protect water supplies.<sup>29</sup> But as the reserves were transformed into national forests, this range of objectives was narrowed considerably to a primary focus on grazing and timber, the two most visible extractive activities. These issues dominated the agency's objectives for a number of decades. How this change came about is a major element in the story of the American public's relationship with the national forests.

Gifford Pinchot was the architect of the initial public role of the national forests and the U.S. Forest Service. He deliberately rejected the notion of forests as wildlife refuges or as public amenities.<sup>30</sup> He also gave little attention to watershed objectives and subordinated them to the more important grazing and wood production programs. Amid these various public objectives expressed in the first decade and a half of the forest reserves, Pinchot brought economic development to the forefront of forest management, making economic activities such as grazing and timber production integral parts of the Theodore Roosevelt administration's economic conservation program. Thus, the agenda of the Governors' Conservation Conference of 1908, which Pinchot had an influential hand in drafting, did not give much attention to wildlife or aesthetics and focused on water resource development rather than watershed management.<sup>31</sup>

Decisions that considerably narrowed the focus of national forest management gave rise to separate streams of conservation action. Rejected by the development policy makers in the Theodore Roosevelt administration, those parties favoring a focus on wildlife or "amenity objectives" looked elsewhere for support. They sought special legislative and executive authorization for programs that were then established without connection to the national forests. These efforts to enhance both amenity and wildlife objectives resulted in the development of the National Park Service on the one hand and state and national fish and wildlife programs on the other.

From 1920 to 1960, some of these proponents of wildlife and aesthetic issues who had earlier been excluded from the national forest agenda sought once again to be part of national forest affairs. Wildlife advocates broadened their constituency from the wealthy big-game hunters who were represented by the Boone and Crockett Club to local and regional sportsmen's clubs with a wider membership, and by the 1930s, they had begun to achieve greater influence in public affairs.<sup>32</sup> The automobile gave hunters more ready access to the national forests. The Forest Service responded by establishing the Division of Wildlife in 1937.

In similar fashion, automobile camping brought an ever-larger number of people to the national forests. At the same time, the growing demand for

the Forest Service to establish wilderness areas for aesthetic enjoyment, an objective that Pinchot had rejected, led in 1964 to legislative authorization for such areas. By the 1950s, this new group of users demanded to be recognized in the agency's authorizing statute. That demand led to the Multiple-Use and Sustained-Yield Act of 1960, which put a de jure stamp of legal approval on users and uses that were already playing a role in agency affairs even though they were not yet legally recognized. The agency's constituency in 1960 was thus vastly different from that of 1905.

In the second half of the twentieth century, that constituency changed even further, and with a twist that presaged a new direction in agency affairs with implications far beyond the simple addition of new uses and new users to old. In the decades after World War II, a public of citizens and scientists became more interested in the national forests as reservoirs of a much wider range of resources, evolving from game to nongame wildlife, then to a wider range of plants and animals, and finally developing into a focus on biodiversity as the way to think about wild forest resources.<sup>33</sup>

This emphasis was brought to bear on forest objectives especially through participation in the planning process established in the National Forest Management Act of 1976. It involved an emphasis not so much on user opportunities as on the detrimental effect of increasing numbers of users on forest "wild resources"; it required that uses and users be curbed in order to protect and enhance the forests' ecological health. Ecological forestry also received more recognition from the Bill Clinton administration and became a significant element in the work of the Science Advisory Committee, appointed by that administration to revise regulations to administer the 1976 act, including its proposal to make "ecological sustainability" a central objective in the administration of the national forests.<sup>34</sup>

These evolving constituencies of the Forest Service brought to agency affairs an increasingly well informed public and independent sources of knowledge that could be brought to bear on a wide range of forest management issues. Many citizen organizations were formed to focus on a particular national forest or forests in a specific region. Such organizations had considerable personal knowledge and systematically organized information at their

disposal and could track affairs on particular forests and respond quickly to agency proposals.

In some cases, individuals with a special interest in a particular aspect of forest affairs such as endangered species became a source of expert knowledge on which citizen groups could draw. Often these individuals were as well informed as agency staff and therefore could meet the agency on even terms in the world of public debate and decision making. Yet the Forest Service seemed to be almost oblivious to this significant public development. Instead, the agency attributed public criticism less to informed citizens and more to the dramatic and media-fostered images of tree sitters and street demonstrators.<sup>35</sup>

## Forest Science and Forest Professionals

The scientific and professional context of forest affairs changed considerably over the years of the Forest Service's existence, at times reflecting the agency's need to deal with new responsibilities and, in the late twentieth century, mirroring the interest of scientists in the newly observed ecological conditions of the forests. The national forests were originally designated during a period in which the "scientific culture" purported to provide a superior way of dealing with public issues. With the new scientific culture, public administrators were selected for their professional skills rather than for their patronage of a particular elected official. This early pretension to forest science involved not just a method of hiring staff and making decisions but also an actual science: silviculture, or the cultivating of forest trees. It was the subject matter of science, not the method, which changed in the agency over the course of its first century, changes which reflected changes in the agency's management directions.

In the early days of the forestry profession, one spoke of "forest science" without really specifying that "foresters" were not only expounding a method of acquiring knowledge but also identifying the subject matter—wood production—about which information was to be obtained through "sci-

ence.”<sup>36</sup> Central to the subject matter of wood production was a sharp revision of the required knowledge, shifting from a broad-based botany to a specialized segment of botany representing trees and shrubs, a subject known as dendrology. Forestry students were advised not to learn the wide-ranging botany in which the pioneers of modern forestry had been trained but to focus on a more narrow range of species, primarily those of commercial value. By 1950, the most widely used dendrology textbook, one written by William Harlow and Ellwood Harrar, advised the reader that “it is felt that students of forestry should first know well the commercial species of North America.”<sup>37</sup>

Young forest professionals were immersed in this selective subject matter so much so that over the years it was virtually impossible for them to develop as thorough a “scientific” approach to other forest resources. The Society of American Foresters (SAF), the professional body of forest specialists, had a similar difficulty in taking a broader view of forest biological resources.

One of the SAF’s members, Leon Minckler, former director of the branch of the Northeastern Forest Experiment Station located in the Shawnee National Forest, attempted in the 1970s to broaden the society’s perspective beyond its limited focus on wood production. He advocated what he called “ecological forestry” and spearheaded a petition drive. His petition, signed by 151 professional foresters, asked the society to establish a special work group (a common practice in the society) on ecological forestry. The petition was denied with the argument that, since all forestry was ecological, there was no need for such a working group. Rebuffed, Minckler then drew up a series of pamphlets on ecological forestry for different forest regions and published them with the National Parks and Conservation Association.<sup>38</sup>

This sharply delineated focus for forest science was closely associated with a similarly sharply limited concept of management. Forest Service staff and other professionals continually argued that such matters as wildlife, recreation, and amenities called for a “nonmanagement” approach, that is, one did not “manage” wildlife, recreation, or amenities.<sup>39</sup> These areas were often identified as areas of “special uses” in contrast with the larger “general forest” that was devoted primarily to wood production.

To implement its scientific objectives, the agency established an elaborate system of research in its forest experiment stations, which were given statutory authorization in the McNary-McSweeney Act of 1929. These continued to provide scientific information about “production forestry,” a term frequently used to refer to the science of wood production.<sup>40</sup>

At the same time, forest education forged ahead rapidly. By World War I, twenty-four forestry schools had been established and twenty of them were still in operation. Their curriculum was almost exclusively devoted to wood production.<sup>41</sup> The desired course of study was outlined by a group headed by Henry Graves, Pinchot’s successor as chief of the Forest Service and first dean of the Yale School of Forestry. Nearly half of the proposed curriculum was devoted to silvics, management, and mensuration; more than a quarter to forest utilization and products; the rest to protecting forests from fire, insects, and disease.<sup>42</sup>

As the agency was forced by circumstances to accept new forest objectives, it seemed to convey almost implicitly the need to “manage.”<sup>43</sup> For example, the agency embraced the idea that recreational users had to be “managed” by isolating them from the general forest and requiring that their camping be confined to selected areas. At the same time, ongoing conflicts among recreational users, for example, between hikers and motorized vehicle users, required the Forest Service to have some idea as to “what those users wanted,” and thus the field of “sociological” research arose to provide information as to how one group of users could be accommodated without arousing the hostility of another. The agency promoted research of this kind but called it “recreation” rather than “forestry” research. This nomenclature perpetuated the notion that “forest science” referred only to wood production and not the entire range of forest-related activities and circumstances.

Wildlife highlighted quite different forest resources because the knowledge base regarding the overall ecology of forests and how that knowledge should be organized for systematic understanding (i.e., research) differed markedly from the information and strategies inherent in traditional forest science. The species of interest in the larger area of forest ecology were not just the few dozen plants containing commercially valuable wood fiber but

some fifteen thousand additional species of plants and animals in the eastern hardwood forests alone. Each of those species, if seriously managed, could require the same degree of scientific and professional attention as did wood-producing species. Moreover, wildlife management required close attention both to habitat (which was the unit of observation and study in wildlife science) and to the relationship between species and their environment. The scope of habitat as a unit of study stood in marked contrast to the scope of the “stand,” which was the unit of observation and management in wood production. Thus, an expanded view of what a forest constituted required a fundamentally different orientation than the traditional notion provided by forest science.<sup>44</sup>

In the last third of the twentieth century, as the notion of wildlife evolved from a narrow view of game animals to a wider view encompassing nongame species and then biodiversity, encompassing the full complex of plants and animals in the forest ecosystem, the world of forestry acquired an entirely new dimension. This new aspect included the comprehensive identification of forest species, their habitats and relationships, changes in population levels over the years, and the impact of human “disturbances” on forest ecological conditions.<sup>45</sup>

There was thus a new definition of what a forest was, and this new paradigm generated a wide range of new scientific work with an ecological dimension. These major changes of focus in Forest Service activity came about as a result of mandates in the National Environmental Policy Act of 1969. That act required that the Forest Service obtain comprehensive, “searching,” and “interdisciplinary” analyses of the environmental consequences of its policies and projects. To complete these analyses, the Forest Service had to call upon specialists whom the agency did not traditionally employ, and this brought a new group of natural scientists and new facets of forest science to its work. The new staff included ecologists, zoologists, botanists, and those specializing in nongame as well as game wildlife. These experts were found not in forestry schools but in other academic departments, which led to new and more extensive types of associations between specialists in the Forest Service and their counterparts in academic institutions and other federal resource agencies. These changes tended to fracture a professional culture

that was formerly dominated by silviculturalists and engineers. As these new specialists gradually filtered into the Forest Service, they constituted a group quite different from the agency's traditional professionals, and they came to be known within the agency as the "ologists."<sup>46</sup>

On occasion, the different perspectives of "production" scientists and ecological scientists were rather sharply displayed. For example, in the spring of 2002, two groups of scientists engaged in an exchange with President George W. Bush. On April 16, a letter to the president signed by 220 ecological scientists questioned the wisdom of commercial timber harvesting in the national forests. Describing themselves as "conservation-minded scientists with many years of experience in biological sciences and ecology," they stated that thirteen thousand plant and animal species lived in the national forests. The scientists argued that "it is now widely recognized that commercial logging has damaged ecosystem health, clean water, and recreational opportunities." Most of the signers were associated with a wide range of academic departments, not one of which was a forestry school.<sup>47</sup>

Two weeks later the president received another letter, this one signed not by scientists but by the presidents of the Society of American Foresters, the National Association of Forestry Schools and Colleges, and the National Association of State Foresters. This letter asserted the importance of timber harvesting for the national forests, implied that the authors of the first letter did not represent the scientific forest community, and asserted that they were the more valid voices for forest science. An accompanying report by the Society of American Foresters advised the president to ignore the ecological scientists "in favor of forest management proposals supported by credible scientific evidence."<sup>48</sup>

## Management Capabilities

The capacity of the Forest Service to manage the resources under its charge grew steadily over the course of its first century, but management demands grew at an even greater pace. The agency's growing clientele, with needs and demands that required it to oversee more than just wood production,

taxed its managerial capacity severely at times. The self-image of the agency was that it was a “can-do” organization that could tackle whatever task it faced, but as the century wore on and the “multiple-use” philosophy was followed by “environmental” and “ecological” forestry, the ability of the Forest Service to do a satisfactory job was sometimes woefully limited.

The overriding agency concern from the start was fire—how to suppress forest fires once started and how to prevent them in the first place.<sup>49</sup> Fires had long been the bane of forest communities and were sharply ingrained in the public mind by spectacular ones in the Great Lakes region in the last third of the nineteenth century. By the time the national forests became the focal point of firefighting and fire prevention research, forest firefighting and fire suppression had already been around for several decades. The Forest Service had a labor force at hand to act as firefighters. No matter what one’s job was in the national forests, employees were expected to drop their assigned duties and join the fire brigades at a moment’s notice.<sup>50</sup>

After several years of experience with firefighting, the Forest Service formulated an agency-wide “ten o’clock” policy—the goal that every fire detected one day would be contained by ten o’clock the following morning. This ambitious objective called for increasing management resources, and over the years those resources evolved steadily. The Civilian Conservation Corps (CCC) of the 1930s provided a new and expanded labor force for labor-intensive management tasks, among which firefighting was the most demanding. Specialized firefighting personnel were organized and trained; more effective methods of detecting fires were developed; speedier communication systems were applied; “smoke-jumping,” involving firefighters parachuting to fires in remote areas, was instituted; and aerial drops of fire retardants became routine. Firefighting ate into not only the agency’s management responsibilities but also its budget.<sup>51</sup>

Fire prevention soon took its role alongside fire suppression and became an increasing part of Forest Service fire management. At first, prevention activities focused on the human role in starting fires, with publicity campaigns urging the new hordes of forest visitors to exercise greater care. The agency sponsored media campaigns, the most extensive being the one

that featured Smokey Bear with the admonition that “only you can prevent forest fires.” Most fires were “natural,” caused by lightning, and fire prevention increasingly came to emphasize the fact that fires were made more severe by the forest floor’s accumulation of old vegetation, a potent fuel source. Burning slash, which consists of cut-off tree limbs, unwanted brush, and small trees, to reduce its role in turning small fires into larger ones was a practice that Pinchot required of any timber company that wanted a contract to harvest in national forests.<sup>52</sup>

Both fire suppression and fire prevention programs became increasingly more complex toward the end of the twentieth century because development had pushed into forest areas.<sup>53</sup> These areas were most attractive to urbanites who sought either a vacation home or even a permanent home in the “woods.” This urban fringe in the inhabited forest zone surrounding cities stimulated more human-caused fires, led to demands by forest home owners for more fire protection, and, in turn, led to increasing pressure from rural firefighting units, insurance companies, and the Forest Service itself for residents to take more action to insulate themselves from potential fire damage. People in the residential zone played an important role in federal support for the fire program by insisting that more funds be spent in their location rather than in the deep forest where there was little or no human habitation.

Forest uses by people, authorized or unauthorized, required quite a different type of management: enforcement. Some uses could and were gradually brought under control through use permits, which was a matter of drawing up rules and then having sufficient personnel to supervise their enforcement. But personnel were also required to deal with unauthorized users—a situation that called for negotiating skills, which field personnel were not likely to possess.

From the very start of the agency in 1905, it was clear that these supervisory tasks were massive. The territory to be supervised was extensive, and many an activity could be carried on by those with imagination, experience, and cunning in the many hours and days between visits by staff. Such circumstances applied to a number of illicit activities outlined in the agency’s “use book,” which served as a bible of directions to personnel in the field.<sup>54</sup>

As time went on, even more people sought to use the national forests for a variety of purposes, some illegal, such as growing marijuana, and management challenges became more extensive over the years.

As public access to the forests increased with the boom in road construction and automobile travel, the agency sought to bring these new users under control by designating where camping could take place. As more users began to arrive with trailers and other recreational vehicles, the agency had to update their campgrounds with larger spaces and water and waste facilities.<sup>55</sup> Designated campsites were established in the backcountry, and the agency developed rescue facilities for injured hikers. So many people began visiting these wilderness areas that the Forest Service established a permit system to limit the number of users.

Later on, forest users became even more mobile with the boom in off-road vehicles (ORVs). These machines presented an even more difficult problem, especially because they made their own trails through the forests. For many years, however, the agency took only limited action to control them. Agency staff debated whether they should be confined to designated trails and prohibited elsewhere, in what was called a “signed-open” policy, or prohibited in designated areas and permitted elsewhere in a “signed-closed” policy. Much of this problem was left to each forest supervisor to deal with, resulting in policy inconsistency across the national forests.<sup>56</sup> In 2003, agency chief Dale Bosworth sought to require each national forest to adopt a control policy. Whether or not this would bring ORV use in national forests under control remained to be seen.<sup>57</sup>

These public-driven multiple uses of the national forests placed the most significant pressure on the Forest Service’s management capabilities. The diverse array of recreation enthusiasts often got into each other’s way, and the agency spent considerable time finding out what each group wanted and how they could be kept from interfering with each other. One way was to provide separate trails for hiking, horseback riding, and motorbiking. The agency’s ability to handle these specialized management tasks varied. For the traditional activities of wood production and grazing, the Forest Service had gained considerable experience, developed needed technical informa-

tion and management skills, and approached its tasks with considerable confidence. Initially lacking that sort of expertise in managing recreation, the agency had to hire specialized personnel in almost every national forest. These new employees were not thought of as “foresters,” however, and the agency even placed them in a separate personnel category.

Environmental and ecological management objectives after 1970 challenged the Forest Service to develop new ways of managing wildlife and watershed resources. It was ill prepared to establish firm management directions for either area because both objectives had been neglected throughout much of the agency’s history. Hydrologists assigned to management positions rather than scientific research were not appointed until after World War II, and the agency’s first separate wildlife administration was in 1937.<sup>58</sup> The agency’s usual practice had not been to provide continuous management for those areas but to devote only enough resources and staff to ensure that the agency complied with the law. Both areas were shaped heavily by evolving scientific knowledge, which could be applied to achieve compliance or enhance management, and the agency chose to confine itself primarily to compliance. It looked upon its role in the evolving science more as a task of keeping informed so as to avoid legal action against it rather than of developing information and professional capabilities for more full-scale management objectives.<sup>59</sup>

These new ecological and hydrological objectives in forest management presented the Forest Service with yet another massive challenge. The agency was continually called upon to take various actions even though its knowledge of these areas was only partially developed. In response to this challenge, there arose the notion of “adaptive management”—the idea that management would be instituted but that it would continuously adapt its practices to take the growing fund of knowledge into account.<sup>60</sup> Forest users, in turn, and especially the wood-using industries, sought protection against adaptive policy changes on the ground that economic investments required greater stability and protection from such “uncertainties.”<sup>61</sup> With ecological forest knowledge continuously advancing, new skills were called for, especially the ability to work effectively with less than complete knowledge. This

skill was at a premium among agency personnel, who were accustomed to a tradition of much firmer management practices.

These century-long developments in Forest Service affairs chart the major patterns of changes in the agency. The three chapters that follow offer a basis for historical understanding that provides more insight into the processes of change that are specific to time and place. In doing so, they stress the fact that, at any given time, the agency functioned in the present and faced the future with an inherited legacy of institutional practice and responsibility. By 2005, the agency had operated under a series of three legacies (corresponding to the three chapters that follow), and each legacy was the result of a distinct period of institutional experience and set of relationships between the public and the agency.