

Chapter 2

Historical Context of Old-Growth Forests in the Pacific Northwest—Policy, Practices, and Competing Worldviews

K. NORMAN JOHNSON AND FREDERICK J. SWANSON

species. We consider the roles of private, state, and federal lands in the conservation and use of old-growth forests. These ownerships have distinctive management objectives, rules, regulations, and practices. Most of our story, though, will inevitably focus on our federal forests, because they have the strongest commitment to grapple with the question of how to deal with old growth and that is where we now have the most remaining.

A Chronology

Native people lived with the forests of the Pacific Northwest for millennia—for the entire existence of modern/postglacial forests before Europeans arrived. But we have but little idea of how native people viewed old-growth forests. We do know that some of these forests, such as old-growth cedar groves, permeated the lives of coastal natives, who built homes of cedar planks, totem poles of whole tree boles, and baskets of bark. Also, understory plants were probably important for sustenance and medicines. These values continue to this day.

The effect of native people on forests appears to have ranged from profound to slight—profound in lowland valleys and foothills (well documented by David Douglas in journals from travels in 1820s; Whitlock and Knox, 2002) where fire was a management tool, and very minor in remote valleys in the Cascades well removed from major travel routes and mountain resources, such as berry fields and obsidian gathering sites. In the broad picture we feel that the influence of native people on the character and distribution of old-growth conifer forests of the region was localized in sites where other resources attracted use and that the frequency of fires observed in the paleoecological and dendrochronological records could have been generated by lightning strikes alone.

1785–1900—Farms to the First Forest Reserves

As European settlers and government agents drove tribes of native people from their lands, land policies of the U.S. government gradually took shape and effect. Originally, land policies in the United States were designed to shift all land into private hands, and hundreds of millions of acres passed into private ownership from 1780 to 1880 (Dana and Fairfax, 1980). Few restrictions were placed on private land use. In many places forests were converted to farms: From 1780 to 1880, more than thirty percent of the

The history of our changing relations with the forest is painted on the landscape in the distribution of forests of various types and ages—old-growth forest is a critical part of that mosaic. It is important to put consideration of the future of old-growth forests in the context of their past. To set the stage for chapters that follow, we trace the history of management of Pacific Northwest forests: how we have perceived the forests at different points in time, the goals and constraints for use of the forests, and how we have actually treated the forests. These changing relations are expressed in our objectives, language, legislation, regulation, and policies and in the history of logging, fire suppression, and other management actions. The interplay of these factors in part represents the balance of power among competing worldviews of the value of forests—in the starkest contrast, for commodity exploitation and use versus their value as natural ecological systems.

Our focus will be on the conifer forests of Oregon and Washington, which we divide into wetter types (e.g., Douglas-fir, western hemlock) west of the crest of the Cascades and north of the Rogue River and drier types (e.g., ponderosa pine) that lie to the east and south of these geographic boundaries. We define *old growth* as forests of advanced age (at least 150–200 years old) that are characterized by structural complexity and a mix of

forests in the East and South were converted to cropland, and the white pine in the upper Midwest was liquidated by the late 1800s.

Early Euro-American settlers (mid-nineteenth century) in the Pacific Northwest likely saw old-growth forests as an impediment to travel, agricultural development, grazing, and perhaps other uses of the landscape, but like the native people, there was probably little overlap of primary land occupancy and old-growth forests. The first significant encounter between western civilization and old growth may have come with initial logging powered by oxen, steam, trains, and human sweat—this was the same kind of big timber featured in Paul Bunyan stories of the logging of the upper Midwest. This early exploitation of the timber resource occurred mostly on private lowlands forests that had been carved out of the public domain. This harvest was first consumed locally for home building and other uses, but the California gold rush created a commercial market for the wood from Northwest forests, as did the building of railroad lines across the West.

In the mid- and late 1800s, forest policy became a national issue as cutover forests became common and Congress established the first forest reserves and passed a series of acts focused on the role of forests in the West (Dana and Fairfax, 1980). This period culminated with the Organic Act, which established the purpose of the reserves and authorized the sale of large, dead, and mature trees, viewing old-growth trees primarily as wood products (table 2.1).

1900–1960—Rise of Sustained Yield Forestry

As with most laws, the Organic Act left much room for interpretation. Some hoped that the protection aspects of the language would be emphasized; others hoped that the use aspects would be highlighted. Gifford Pinchot, the first professionally trained forester in the United States and soon to be the first chief of the U.S. Forest Service, came down strongly on the side of use, albeit conservative use, focused on contributing to the economic development of the West under the supervision of resource professionals. Pinchot's vision led to the sustained yield model that dominated forestry for most of the twentieth century. The forest, including water and forage, was to be used at a rate that would not impair its permanent value (Dana and Fairfax, 1980; Johnson, 2007).

This vision was to be implemented through scientifically trained foresters with their "science" coming from disciplines that supported the management paradigm of the day—the sustained yield model of forest man-

agement. Forests would be grown as a crop with the goal of a "regulated forest" in which the same amount of timber would mature and be harvested each year. Maximum harvest age would generally not be greater than the age of maximum average growth—eighty years for Douglas-fir on a medium productivity site, which is well short of old growth—and it could be shortened for economic reasons. Wildfire and pests would be controlled and suppressed. All lands that could produce commercial crops would produce them over time. Forest lands would be roaded to provide access for timber harvest and to allow control of wildfire. Old growth—"decadent, over-mature, slow-growth forests"—would be a high priority for harvest to make way for fast-growing, second-growth stands and as a source of revenue and high-quality wood products (Cleary, 1986; Hirt, 1994; Langston, 2005; Johnson, 2007).

By World War II, much of the high-quality old growth on private lands in the Northwest and across the West had been cut. Attention then turned to public lands, especially the national forests; the sustained yield model became the reigning management system for these lands. The Forest Service was ready, having assessed the federal forest resources of the region, with old growth described and mapped as "large saw timber," reflecting the commodity value of this forest.

Clearcutting dominated in the federal forests in wetter forests west of the crest of the Cascade Range (Westside) in Oregon and Washington. *Clearcutting* was termed "even-aged management" and represented to the public in corporate advertisements as nature's way—like stand replacement fire, but without wasting the wood. In the drier pine forests to the east of the crest of the Cascades (Eastside), single-tree selection was used to target the big, old ponderosa pines that were most susceptible to insect attack. In both cases, harvest targeted old-growth stands and trees for removal, and this action was justified in the name of forest "health" or removal of "decadent" old trees.

As allowable cuts on the national forests shifted from theory to reality in the 1950s to meet the demands of the postwar housing boom, the Forest Service was forced to reduce existing primitive-area designations, which in turn intensified the call for formal wilderness, leading to the Wilderness Act of 1964. However, few commercial timberlands were included in the designated areas. The act also called for the president to identify other roadless areas (one-third of the national forests) to Congress within a decade. This provision became the next political battleground over federal forest management and had the net effect of delaying entry into many of these areas for decades.

TABLE 2.1. Major federal legislation relevant to forestry and especially old-growth forests.

ACT	DATE	PURPOSE	FORESTS RECOGNIZED AS A VALUE?	EFFECT ON OLD-GROWTH USE AND CONSERVATION
Land disposition acts	1785-1860	Shift public domain into private hands	No	Shifted most of the low-elevation, productive old growth into private hands, where it was harvested
Creative Act	1891	Allow president to retain parts of public domain	No	Enabled incidental retention of some old-growth forests
Organic Act	1897	State purposes of forest reserves established by president; continuous supply of timber and protection of watersheds; allow sale of large, dead, or mature trees	No	Allowed old-growth forests to be harvested for commercial purposes; limited harvest to large, dead, or mature trees
O and C Act	1937	Establish goals of BLM lands in western Oregon; provide sustained yield of timber and contribute to community stability	No	Committed old-growth forests on O & C lands to harvest as part of sustained yield
Multiple-Use Sustained-Yield Act	1960	Recognize goals for which national forests were being managed	No	None
Wilderness Act	1964	Maintain areas in a wild state forever; establish process for considering other federal roadless areas for wilderness	No	Some old-growth forests incidentally placed within wilderness areas in a permanent reserve status
Endangered Species Act	1973	Prevent further harm to species listed as threatened or endangered and their habitat; make recovery of species a primary objective for federal lands	No	Provided a legal mechanism for conservation of old-growth forests—as habitat for endangered species, especially on federal lands
National Forest Management Act	1976	Require integrated planning; put a variety of controls on timber harvest; provide for diversity of plant and animal communities	No	Provided a legal mechanism for conservation of old-growth forests on the national forests—as a contributor to the viability of designated species; removed Organic Act requirement that harvest be limited to large, dead, or mature trees
Healthy Forest Restoration Act	2003	Expedite actions to reduce fuel hazard on federal forests while maintaining or contributing to restoration of the structure and composition of old-growth stands	Yes	Provided the first legislative protection for old-growth trees and forests

Passage of the Multiple-Use Sustained-Yield Act in 1960 did little to change the worldview inherent in the sustained yield model and conversion of old forests to tree plantations. Timber primacy still drove federal agency priorities (Cleary, 1986), with foresters in charge, tremendous demand for the softwood timber on the national forests, and the continuing concern over timber scarcity. But now federal forest managers targeted harvest of high-value, old-growth forest to capitalize on the clear, tight-grained wood and to get "thrifty young stands" growing in place of the "decadent, over-mature forest."

1970-1990—Emergence of Ecological Forestry

In the early 1970s, three laws were passed that changed the power balance in the debate over national forest management, where most remaining old-growth forest existed in the Northwest. Those laws were the National Environmental Policy Act (NEPA) in 1970, Endangered Species Act (ESA) in 1973, and National Forest Management Act (NFMA) in 1976 (table 2.1). Although neither NEPA nor ESA specifically mentioned old-growth forests, their focus on assessing environmental impacts and on conserving ecosystems would inevitably have implications for the management of the remaining old-growth forests.

The NFMA originated in the clear-cutting controversy on the national forests, which began in West Virginia, Montana, and Wyoming in the 1960s and became a national issue in the 1970s. The NFMA reaffirmed that the national forests should be managed for multiple use and sustained yield. The NFMA, however, among other things, called for national forest management to provide for diversity of plant and animal communities based on the suitability and capability of the specific land area in order to meet overall multiple-use objectives. In turn, the regulations implementing NFMA called for fish and wildlife habitat to be managed to maintain viable populations of vertebrate species in the planning area. A viable population was regarded as one having sufficient reproductive individuals to ensure its continued, well-distributed existence in the planning area. Taken together, NFMA and ESA embodied a strong, affirmative responsibility on the part of a land management agency to ensure the viability of species dependent upon habitats found in the national forests and grasslands or, if they were threatened or endangered, to ensure that they be recovered to the standard of viable populations.

In this way, forest planning and policy for the national forests began to slip away from the framework of sustained yield and economics and toward that of ecology and conservation biology. It was a critical turning point for the future of old-growth forests.

While these social perspectives and policies were evolving in the 1970s, so was the science of ecology and forestry. Whole new branches of ecology were developing, including landscape ecology and conservation biology. The Forest Service adopted ecosystem management—a more holistic ecological and social approach to forest management goals and practices—in the 1990s. A central axiom of the new ecological approach to forestry was stated by Seymour and Hunter (1999: 29): "Manipulation of a forest ecosystem should work within the limits established by natural disturbance patterns prior to extensive human alteration of the landscape." The key assumption here is that native species were adapted to these circumstances and perhaps in some cases even dependent on the natural disturbance regime. Thus, maintaining a full range of similar conditions under management would offer the best assurance against losses of biodiversity (Johnson, 2007).

Ecological studies in the Pacific Northwest Blue Mountains and H. J. Andrews Experimental Forest and the Forest Service research effort "old-growth wildlife habitat research program" helped set the stage for the rise of old growth and the role of scientists in the policy arena. Increasingly, old growth became a central focus in the eyes of the public as the fight over exploitation versus protection erupted, pitting people who saw old growth as "over-mature timber" against those who saw "cathedral-like, ancient forests" (see chapter 11). Despite the lack of direct legislative recognition of old-growth forests (table 2.1), these forests increasingly became the political focus of ecological management.

1990-2000—The Final Battle

CONSERVATION OF BIODIVERSITY AS THE ASCENDANT GOAL ON THE FEDERAL FORESTS

By the late 1980s, the science, laws, policies, and economic and social forces were commencing a major battle about the management of the Northwest's federal forests in general and the management of old forests in particular. The triggering event occurred when environmental groups sued the Forest

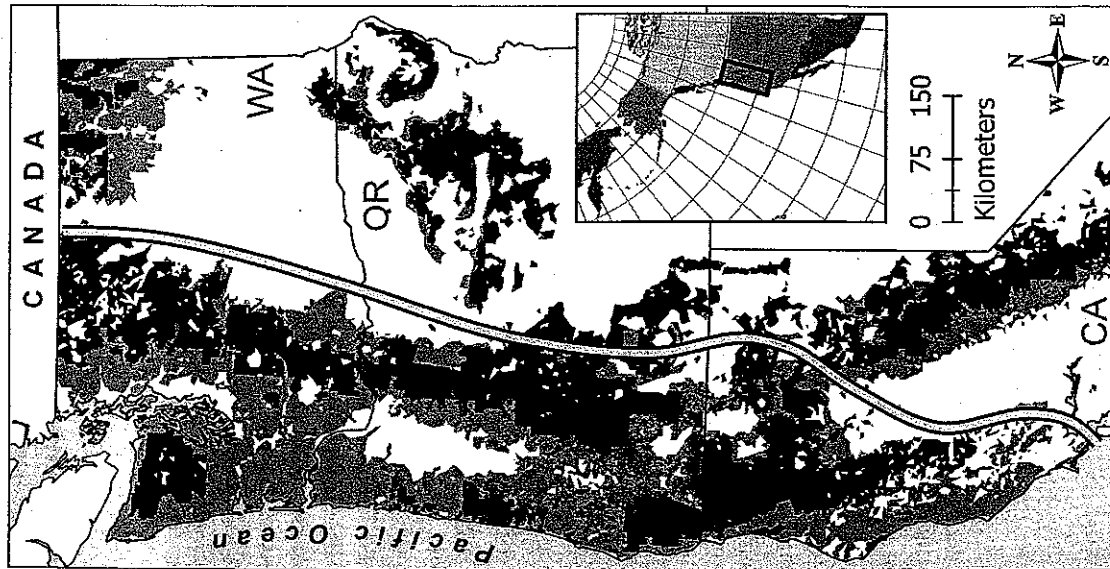


FIGURE 2.1. Federal forest lands (black) and nonfederal forest lands (gray) in Washington, Oregon, and northern California. Federal lands to the west of the double line fall within the range of the northern spotted owl and the Northwest Forest Plan.

BOX 2.1 THE NORTHWEST FOREST PLAN FOR FEDERAL LANDS

Thomas A. Spies

The Northwest Forest Plan of 1994 ushered in a new era of forest management on twenty-four million acres of federal lands (Forest Service and Bureau of Land Management) across three states of the Pacific Northwest (fig. 2.1). Bounded by the range of the northern spotted owl, the plan sought to protect and restore old-growth forests and watershed and streamside conditions to maintain viable populations of birds, mammals, fish, amphibians, plants, fungi, and lichens whose habitat had been reduced by more than 450 years of logging, development, wildfire, and its suppression. In addition to protecting native biodiversity, the plan called for producing a predictable and sustainable level of timber sales from federal forests.

The plan attempted to meet these goals by dividing the twenty-four million acres of federal forest land (nearly half of all public and private lands in the region) into zones of allocations including late successional reserves (thirty percent of plan area), "hazard" reserves (seven percent of plan area), "adaptive management areas" (six percent of plan area), and "matrix" lands (sixteen percent of plan area) where timber production could be carried out. The remaining thirty-seven percent of the land was already zoned into areas excluded from timber production, such as wilderness and administratively withdrawn land. Under these allocations, eighty percent of the existing mature (roughly eighty to 200 years old) and old-growth forests (large trees, including some more than 200 years in age) or 2.4–6.4 million acres, depending on the definition, were protected in new or existing reserves. Twenty percent of mature and old growth occurred in the matrix and was expected to be a major source of revenue from timber harvesting. Logging in the matrix was to be done using new ecologically based silviculture practices that left patches of trees to retain species and habitat diversity instead of removing all of the trees in a clearcut.

The plan also called for thinning in the numerous plantations that occurred inside reserves. The purpose of this was to restore ecological diversity and facilitate future development of old growth forests and spotted owl habitat. In drier forests, thinning and prescribed burning were allowed in older forests in late successional reserves to reduce fuel in the form of live and dead shade-tolerant conifers and shrubs that had accumulated as a result of fire suppression. In the historical natural fire regime, these forests had been regularly thinned out by frequent low- to moderate-severity fires.

Monitoring and adaptive management were expected to be important parts of the plan. A decade into implementation of the plan, monitoring revealed these outcomes:

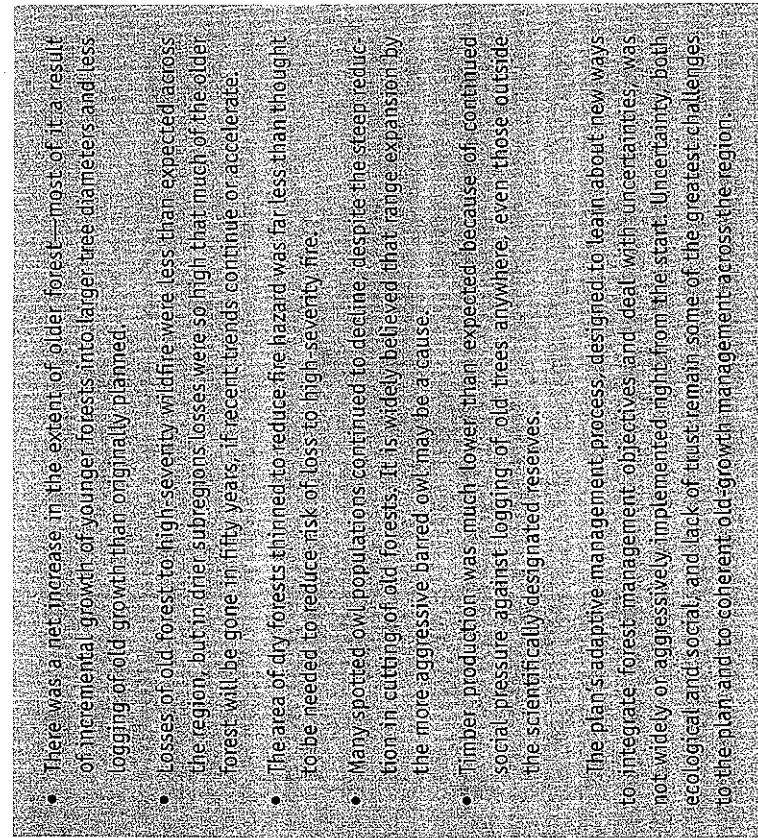


FIGURE 2.2. Harvest for the Douglas-fir region (western Oregon and Washington).

coming from old-growth forests. As the NWFP was implemented, even that modest level of old-growth harvest generally did not occur for several reasons, including public protest, litigation, and attempts to protect little known species (Thomas et al., 2006).

In the Eastside ponderosa pine region outside the NWFP area, similar changes were afoot (fig. 2.1). Under the threat of a lawsuit, the Forest Service instituted a temporary measure to conserve the remaining large trees (greater than twenty-one inches in diameter) and old-growth stands, largely reversing the direction of the national forest plans they had just put in place and halting the harvest of large, old trees on the Eastside national forests. That temporary measure is still in effect.

These new policies and their implementation led to the collapse of the old-growth timber economy (see chapter 7). By the 1990s, harvest on private lands came almost exclusively from young growth that had regenerated after the virgin stands had been cut (fig. 2.2). That harvest continued largely unaffected by the debate over endangered species and old-growth forests. On the federal lands, however, old growth was the dominant source of wood and the halting of old-growth harvesting accelerated the closure of old-growth mills and the retooling of others to handle small logs from private lands. The decline in harvest also forced wood products workers to shift to other, often lower paying, jobs and caused significant difficulties for some communities (Helvoigt et al., 2003; Thomas et al., 2006). Even with this contraction of federal harvest and hardship to people and individual communities, the economy of the Pacific Northwest, as a whole, has continued to grow. Thus, federal harvest levels have shifted from a regional economic problem to a local, community problem, and national political energies have largely turned elsewhere.

credible strategy could be developed to conserve the northern spotted owl (see chapter 17).

The political, policy, and science spheres lined up, leading to unprecedented direct involvement of scientists in the policy arena (Franklin, 1995). These efforts included the Interagency Scientific Committee report on the northern spotted owl (Thomas et al. 1990), the "Gang of Four" (Johnson et al., 1991), and "FEMAT" (Forest Ecosystem Management Assessment Team) (FEMAT, 1993). They culminated in the Northwest Forest Plan (NWFP) (box 2.1), which continues to guide forest policies on the federal forests of the Pacific Northwest. Collectively these strategies turned protection of species associated with old-growth forests into a primary goal for forest management—timber management would come second. They also recognized that old-growth conservation was about more than owls and always had been: The NWFP calls for conservation of more than 1,000 species thought to inhabit old-growth forests.

The NWFP strategies were estimated to allow harvest at approximately twenty percent of historical levels—with much of that reduced harvest still

An additional issue surrounds the "O and C" lands managed by the Bureau of Land Management in western Oregon (table 2.1). Originally given to the Oregon and California Railroad Company in payment for construction of a railroad connecting the two states, the federal government took back these lands when the railroad violated terms of the deed. In the mid-1930s, they were given a special mandate to provide a permanent timber supply and contribute to economic stability of local communities. The NWFP treated these lands the same as the national forests. A lawsuit challenged that interpretation and the Bureau of Land Management to develop a new management plan with their own unique approach, perhaps somewhat similar to the state plans discussed below. The future of old-growth forests under that plan is unknown: Levels of cutting of old growth may increase on those lands, although not back to harvest levels of the late twentieth century.

EFFORTS ON STATE LANDS

State forests in both Oregon and Washington cover large areas, especially in the coastal provinces. In the past ten years, state forest management agencies have attempted to merge the sustained yield model with the ecological forestry model: providing a steady income from timber products while recognizing the ecological values of old forests and the species within them. Washington State has committed to conserving its remaining old forest while agreeing to a long-term Habitat Conservation Plan for endangered species and has also drawn up a new site-specific management plan to guide harvests. Oregon, which has mainly young forests established after major fires in the nineteenth century and early to mid-twentieth century, has committed to a "structure-based" management approach that will provide more diverse forests in the future while attempting to provide a steady stream of revenue from those lands.

2000—Old-Growth Forests, Fire, and Fuel

The sustained yield model of forestry generally called for the suppression of all wildfires that occurred. In dry forests, the resulting buildup of stand densities, compounded by the removal of the large fire-resistant ponderosa pines, resulted in a major fuel management problem. This change potentially converts an ecosystem characterized by high-frequency, low-severity fires to forest conditions susceptible to severe, high-intensity, stand-replacing fires.

The fires across the West in the early years of the current century, culminating in the San Bernardino fire of 2003, created intense presidential and congressional interest. Thus, the call for legislation to expedite fuel treatments across the West led to the passage of the Healthy Forest Restoration Act—the most important piece of forest conservation legislation in the last quarter-century. That law expresses congressional intent and desire to speed up fuel treatments, requires that danger of inaction be considered equally with danger of action in NEPA analyses, and limits the time judges have to consider attempts to stay actions. The Healthy Forest Restoration Act set two important precedents: It provided (i) the first statutory protection of old-growth forests and (ii) the first statutory call for the use of past ecological conditions in planning.

Old-Growth Forests of the Pacific Northwest in a Global Context

Some might view our changing relations with old forests in the Pacific Northwest as globally unique but, in fact, the region's struggles can be seen as just another manifestation of a global process in which human cultures have shifted their engagements with forests often and in similar ways. Many preindustrial cultures inhabited old forests, and other cultures avoided the "dark forests" where that was possible. As the number of people and their capacity to change the environment grew, they cleared forests for agriculture and grazing. At times, this land use conversion stage of human engagement gave way to unregulated exploitation. With elimination of forests came growing concerns about future timber famines and the environmental impacts of harvests. These fears led to regulations to constrain and guide forest management in many parts of the developed world.

The timing and terminology of these forests conservation efforts differed, however, by culture and ecosystem and, as in the United States, the policies often did not explicitly recognize "old growth." For example, in Australia the focus of forest conservation efforts that began twenty years ago was on "rain forests"—a complex forest ecosystem defined not so much by successional stage as by species composition, structure, and climate. In Germany and Austria, where humans have used almost every acre of forest over the past several thousand years, some small fragments of "virgin" or "primeval" forests (lacking evidence of prior human uses for logging or grazing) are left in the mountains, and some of these were protected by religious communities. In the past twenty years in Europe, many areas of

previously used forests have been put into reserves that will become "virgin forests of the future," according to some European ecologists. It may be that intentional culturing or "restoring" of old-growth forests is now part of the story—perhaps for the first time in history.

Thus, the social and policy trends we see in the Pacific Northwest appear to be part of a more general pattern of treatment of iconic, complex natural forests—however named: habitation or avoidance → exploitation → conservation → cultivation—but the sequence has varied from region to region depending on the timing of initial encounter by industrial societies. Currently, in parts of the developing world, old, native forests (especially rain forests) are undergoing unregulated exploitation. The Pacific Northwest of North America has experienced full expression of this sequence in part because the forests were extensive and European invasion was recent and incomplete, as also is the case in Australia and Canada (Lane and McDonald, 2002). In this region, we can see the pattern of shifting human engagement with the forest in the history of language for old forests: The "virgin, old-growth" forest came to be viewed as "large saw timber" in the exploitation stage (first half of the twentieth century) and then they became "ancient forests" in the 1980s–1990s conservation era. How will we speak of the old forests in coming decades? Will the pattern of our treatment of these forests become more nuanced, less linear, and more varied in space and time?

Conclusion

Old-growth forests have been central to forest management opportunities and debates throughout much of the history of American forestry. Our changing view of old growth is written in the social, policy, scientific, and forest management histories of our country. Despite this long history, it is only since the 1980s that the value of old growth has been recognized in forest plans and only since 2003 that its protection has been mandated in federal forest policy. The rise in the status of old growth and its naming do not mean, however, that the issue is now "solved" or laid to rest. If fact, we are only just beginning to understand what this sea change in forestry means. Old difficulties remain, and new ones are emerging. The concept of old growth still remains socially and scientifically diverse, making policy and management of it on the ground very challenging. In addition, new understanding of the importance of natural disturbances in the development of old growth and the effects of climate change challenge its iconic

status as a stable, enduring entity. For example, debates over salvaging old forest after a fire have now sprung up. The public generally supports the idea of salvaging followed by planting, but from an ecological standpoint, such natural disturbances create distinctive habitat and provide a way of extending the ecological influences of old growth from one forest generation to the next. How old growth will be valued by the next generation of humans is unknown. However, if the past is any guide, a new chapter in the story of old growth will be written.

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