RE-INVENTING THE UNITED STATES FOREST SERVICE: EVOLUTION FROM CUSTODIAL MANAGEMENT, TO PRODUCTION FORESTRY, TO ECOSYSTEM MANAGEMENT

By Doug MacCleery

Author's Note: This paper is based substantially on a paper I wrote with the same title that was issued in 2008 as part of a report titled Reinventing forestry agencies in the Asia-Pacific Region published by the Asia-Pacific Forestry Commission. Material has been added to this paper that was edited out of the published version due to space constraints. Relevant corrections and additions have also been made, as well updates based on events occurring after 2008.

This paper ends with the situation in which the Forest Service found itself about fifteen years ago. Much has happened since then, mostly related to wildfire. Yet the events laid out in this paper remain very relevant today. As discussed in this paper, in 2008 the Forest Service was essentially out of the timber business. It was positioned for a mission shift based on managing the National Forests for a broad range of resource objectives under the rubric of ecosystem management.

But the stage had already been set for a future driven by deteriorating forest health conditions and greatly increased wildfire risk that would soon capture a dominant place in the attention of the agency and its partners. Fighting wildfire and protecting at risk rural communities would soon dominate the agency's agenda.

This paper is written from the position of an insider -- one who began his career in the late 1960s as a field forester on two national forests in northern California. I then came to Washington as young forester working for the National Forest Products Association just in time to get involved in the passage of the National Forest Management Act of 1976 and in the development of the NFMA regulations. I then worked from 1981-87 as Deputy Assistant Secretary for Natural Resources and the Environment in USDA, a position having policy oversight over the Forest Service. I spent the rest of my career working in the Forest Service's Washington Office before retiring in 2010. Beginning in the late 1960's until retiring in 2010 (and after that, as well), I both observed and sometimes personally participated in many of the events discussed in this paper.

Hopefully this paper will be useful to those with interest in the rich history of the U.S. Forest Service and how things came to be what they are today.

HISTORICAL CONTEXT LEADING TO THE ESTABLISHMENT OF THE NATIONAL CONSERVATION FRAMEWORK AND THE FOREST SERVICE

Throughout the nineteenth century, United States policy encouraged rapid settlement and economic development of its western territory. To accomplish this, a variety of approaches were developed, including transfer of federal (public domain) lands to individual farmers, ranchers and corporations, especially railroad companies that built transportation infrastructure.

After 1850, the population grew rapidly (20 to 25 percent per decade) and settlement of the western territories accelerated. Concerns began to be voiced over some of the environmental and economic implications of rapid development, including: (1) accelerated deforestation (forests were being cleared for agriculture at the rate of almost 3 500 hectares (over 13 square miles) per day; (2) massive wildfires due to logging and land clearing (wildfires annually razed 8 to 20 million hectares or 20 to 50 million acres); (3) extensive areas of "cut-over" land or "stump lands" remained unstocked or poorly stocked with trees for decades (estimated at 32.5 million hectares or 80 million acres) in 1920); (4) significant soil erosion by wind and water in some places; and (5) major wildlife

depletion due to commercial hunting and subsistence use (Trefethen 1975; Williams 1989; MacCleery 1992). It was gradually recognized that these conditions were jeopardizing future economic development, as well as being concerns in their own right.

EARLY 1900s: CONSERVATION POLICY FRAMEWORK

A number of policy and institutional changes were put in place during the early decades of the twentieth century (MacCleery 1992). This conservation policy framework included:

- Closing the public domain to further private land disposal and reserving the remaining public lands (most of which were in the western part of the country) for protection and management, as national forests, national parks and national wildlife refuges.
- Promoting and encouraging the protection of forests and grasslands — across all ownership categories — from wildfire, insects and disease.
- Improving natural resource management by acquiring scientific knowledge on the management of forests and wildlife and on the more efficient utilization of raw materials.
- Improving the management and productivity of both agricultural lands and forests through technical and financial assistance to farmers and landowners.
- Adopting and enforcing federal and state wildlife conservation laws.

The rationale for public land reservation in 1900 was watershed protection and timber production. There were major concerns at the time that forest depletion would lead to timber shortages, even a "timber famine" (Williams 1989). In 1900, wood was considered an essential raw material for both industrial and domestic use.

Given the long time frames associated with tree growth, plus the relatively low timber prices at the time, it was assumed widely that once the original forest capital was removed private landowners would not make the forest management investments needed to assure adequate long- term supplies of timber for the nation.[1] Therefore, national forests were reserved to secure "favorable conditions of water flows, and to furnish a continuous supply of timber…" (1897 Organic Administration Act). By 1900, about 70 percent of the total national area of productive forests had been transferred to private ownership.

Rather than transferring the remaining 30 percent of forest lands to private ownership or giving administrative responsibility to the states or local authorities, the United States opted for direct federal administration of much of the remaining public domain lands.

The Forest Service, established under the United States Department of Agriculture, became the primary government agency for administering the national forests and supporting collaborative forest management across the country.

Federally administered lands are concentrated in the western United States and make up about 261 million hectares (647 million acres). These lands contain approximately 100 million hectares (247 million acres) of forest land — or about a third of all forests in the United States. The Forest Service administers 78 million hectares (193 million acres) of land, or about 8 percent of the total area of the United States (Table 1).

Table 1. Land area and ownership in the United States

[1] Although reasonable at the time, this assumption has since proven invalid. Owing to rising real prices for wood products and a favorable tax and related institutional climate that encourages long term investments in timber-growing practices, private forests now account for 92 percent of national timber harvest, while also providing high levels of watershed protection (USDA/Forest Service 2004).

Ownership category	Land area(millions of acres)	Percent of all lands
Private lands	1.362	60
Public lands		
National Forest System	193	8
Bureau of Land Management	262	12
National Park Service	84	4
National Wildlife Refuges	94	4
DOD/Energy/other agencies	15	1
Total Federal	647	29
Indian Trust lands	54	2
State and local	195	9
Total public	897	40
All lands	2,263	100

Sources: Based on USDA/ERS (2001) and USDA and USDI statistics.

FOREST SERVICE: ORGANIZATIONAL PHILOSOPHY AND STRUCTURE

One of the most significant structural re-organizations in the early years of forest management in the United States occurred when the Forest Service was created in 1905. At that time, management responsibility for the forest reserves was transferred from the Department of the Interior's General Land Office to the Department of Agriculture.[2] This signified a major change in organizational culture from the land disposal philosophy of the Department of the Interior to the production and scientific management philosophy of the Department of Agriculture.[3]

Gifford Pinchot established the organizational philosophy and tone for national forest management which continued for many decades. Instructions from Secretary of Agriculture James Wilson to the new Forest Service (written by Pinchot), stated how forest reserves (later to become the national forests) should be managed (Roth and Williams 2003):

> *In the administration of the forest reserves it must be clearly borne in mind that all land is to be devoted to its most productive use for the permanent good of the whole people; and not for the temporary benefit of individuals or companies. All the resources of forest reserves are for use, and this use must be brought about in a thoroughly prompt and businesslike manner, under such restrictions only as will in-sure the permanence of these resources….In the management of each reserve local questions will be decided upon local grounds…and where conflicting interests must be reconciled the question will always be decided from the standpoint of the greatest good of the greatest number in the long run.*

At the time it was established, the Forest Service was crafted on European models of forest administration and was characterized by:

- A professional line and staff cadre that was required to pass proficiency exams as a condition of hiring (Roth and Williams 2003).
- A set of core values and a common approach to problem-solving. These values were reinforced by the curricula and cultural values taught in forestry schools.

[2]In 1907 the forest reserves were renamed "national forests".

[3] Over time, one of the largest federal land-managing agencies has been located in the Department of Agriculture, while almost all other land-managing agencies are located in the Department of the Interior (DOI); this led to many proposals to either shift the Forest Service back to the DOI or to create a Department of Natural Resources within which all federal land-managing agencies would reside. None of these proposals has been implemented successfully.

- A decentralized decision-making structure with considerable discretion given to field managers. This reflected purposeful design, as well as the practicalities of the remote locations and poor communications that existed in forest areas at the time and the high variability of resources and local conditions. Previous requirements for upward reporting and approval that had existed under the Department of the Interior were reduced or eliminated (Roth and Williams 2003).

- The Forest Service becoming the central identity and organizing structure in professional employees' lives. Employees were required to move frequently if they wanted to advance professionally. This both expanded professional experience and reduced the risk of employees becoming "captured" by local economic interests.[4]

- A "promotion from within" policy, under which the agency prided itself that any professional employee with enough talent (and luck) could aspire to become the Chief of the Forest Service.

The basic values of the Forest Service were established early on and were characterized by Pinchot's instructions to his forest officers in the 1905 *Use Book*:[5]

> *The administration of forest reserves is not for the benefit of the Government, but of the people….Forest Officers, therefore, are servants of the people. They must obey instructions and enforce the regulations for the protection of the reserves without fear or favor, and must not allow personal or temporary interests to weigh against the permanent good of the reserves; but it is no less their duty to encourage and assist legitimate enterprises. They must answer all inquiries concerning reserve methods fully and cheerfully, and be as least as prompt and courteous in the conduct of reserve business as they would in private business.*

For decades the Forest Service was characterized by a management philosophy established early on in its history. Until the 1970s, most Forest Service professional employees were foresters with rural American values who had graduated from forestry schools that taught curricula that re-enforced these values. While the agency had a highly decentralized decision-making structure, what emerged was a remarkably consistent approach to solving problems and viewing the world.

In addition to the management of the national forests, the Forest Service was delegated responsibilities for forest management and wood technology research, and for providing assistance to private forest landowners. In cooperation with emerging state-level public forestry agencies, the Forest Service geared up to improve wildfire suppression and to provide technical and financial assistance to small forest landowners.

By the 1920s, the Forest Service's organizational framework was largely in place. This included three operational divisions: (1) the National Forest System (NFS); (2) Research and Development (R&D); and (3) State and Private Forestry (S&PF). This organizational structure remains today (Figure 1).

[4] Until the mid- to late 1970s, professional employees working for the national forests generally did not apply for job openings. Such promotions or transfers were offered with a strong expectation that they would be accepted. These usually required the employee and his or her family to move, often to remote locations. It was widely understood that if a particular employee turned down two such offers, the next one would be very long in coming, if ever.

[5] The Use Books were issued annually and later would evolve in to the Forest Service Directives System (Forest Service Manual and Handbooks). The 1905 *Use Book* can be viewed on line at: link.

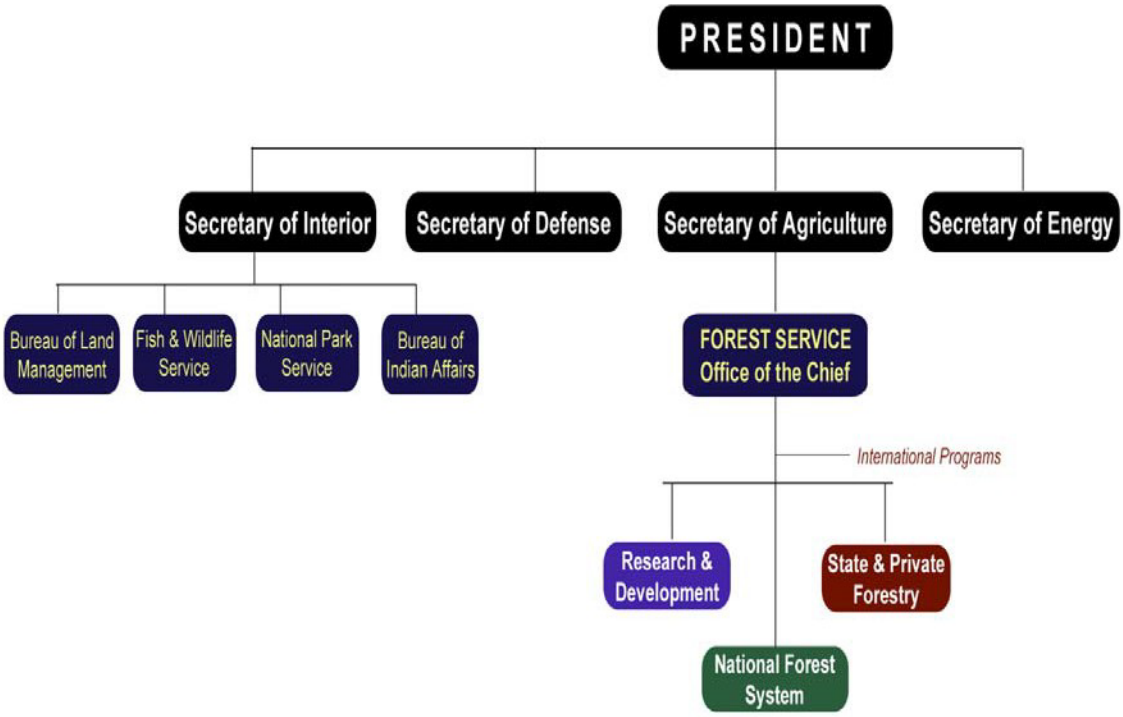

Figure 1. Organizational relationship of federal land management agencies

The National Forest System has always been the largest of the divisions by far. From inception, it has had four hierarchical levels:

- Ranger districts, subdivisions of national forests, where most fieldwork is carried out.
- Supervisor's Offices – the administrative offices for each individual national forest.[6]
- Regional Offices, providing an intermediate administrative level below the headquarters (there are nine regional offices in existence today).
- National Headquarters, located in Washington, DC.

THE EVOLVING USE AND MANAGEMENT OF NATIONAL FOREST SYSTEM LANDS (1905–1970)

National forest lands traditionally and statutorily have been managed for multiple objectives such as timber, recreation, wildlife, water, grazing, mining and wilderness. The advantages of multiple use are that: (1) it provides administrative flexibility to shift management over time in response to changing public demands and preferences on public lands; and (2) it sets the stage for significant debates over preferred use, especially as competing demands become intense.

In the 1970s, Forest Service Chief John McGuire remarked that the management of millions of acres of federal lands for multiple objectives in a modern, pluralistic democracy was a "grand experiment" and that "the jury is still out" with regard to the success or failure of the experiment. These words still hold true today. The management of the national forest lands — established in the midst of controversy — remains controversial to this day.

The early history of national forests

National forest management from 1905 up to the Second World War was mostly custodial in nature. An early focus was to establish the boundaries of the national forests and to prevent, or

[6] Over the last several decades many adjacent national forests have combined administrative offices.

respond to, unauthorized uses (such as illegal timber felling, unauthorized mining, agricultural encroachment, and livestock overgrazing).

Another main focus of Forest Service efforts was reducing uncontrolled wildfires that were common prior to the 1930s. Curtailing the 8 to 20 million hectares (20 to 50 million acres) that consistently burned annually, mostly on private lands, was considered a prerequisite for the long-term management of forests and grasslands — both public and private.

The focus of these efforts was on protecting all lands from wildfire, regardless of their ownership; but systematic control became effective only during the 1930s, when large public employment programs were established. By the 1960s, the area burned by wildfire had declined by 90 percent compared to the 1930s (Figure 2). This was accomplished through highly successful federal, state and private landowner cooperation.[7] Within the Forest Service, the State and Private Forestry Division was responsible for this coordination.

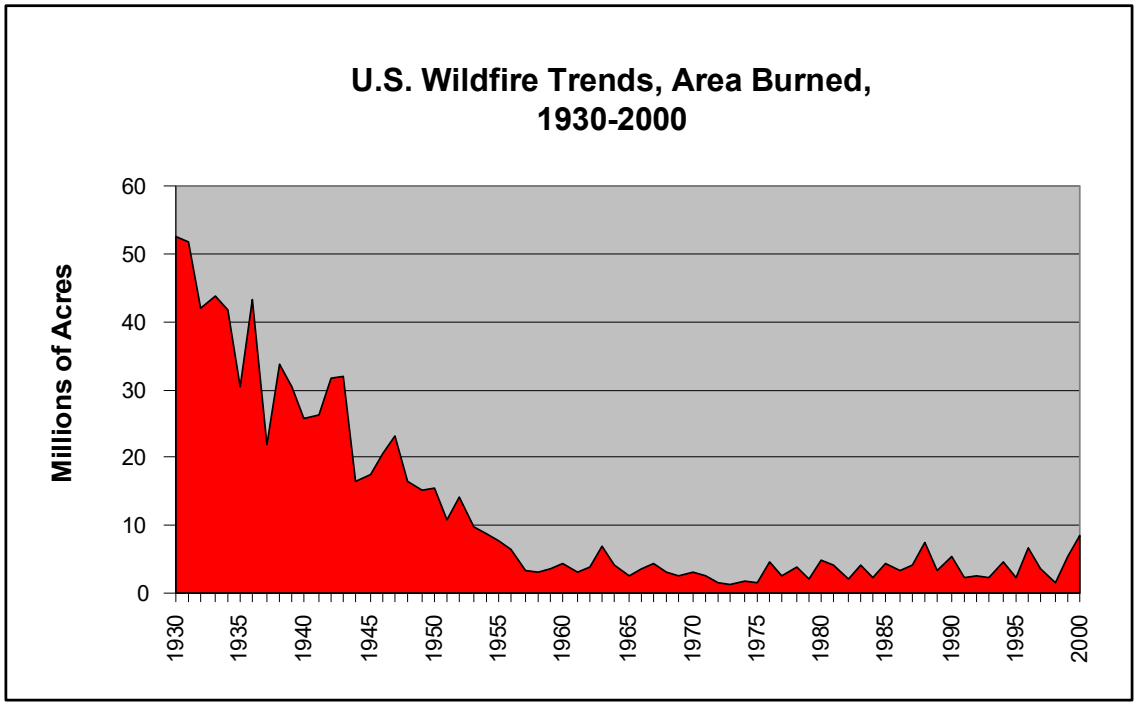

Figure 2. Area burned by wildfire (1930–2000)
Source: U.S. Wildfire Statistics, USDA/Forest Service.

Increased demands on national forests after the Second World War

After the Second World War, there was substantial expansion in the demands placed on federal lands for a variety of products and uses. After the war, as millions of service men and women returned home and started families, demand for timber for housing rose dramatically. The nation increasingly looked to the national forests in the western United States to meet this demand (Steen 1976).

National forest timber sale levels increased from a range of 9 to 13.5 million m^3 (2 to 3 billion board feet) in the late 1940s to 45 to 50 million m^3 (10 to 11 billion board feet) in the 1960s. By the 1970s, national forests were meeting about 14 percent of the nation's total wood needs, and over 30 percent of softwood sawtimber production— the primary source of lumber and plywood

[7] For example, today firefighters of the various federal and state agencies are trained to use standardized firefighting equipment and techniques. Federal, state and local agency firefighters from anywhere in the country can be mobilized, sent to emergency situations elsewhere in the country and operate effectively with standardized radio frequencies, equipment, terminology and training.

for housing (USDA/Forest Service 2004; Howard 2003).

This substantial increase not only served to meet a critical national need for timber, it also took pressure off private forest lands, many of which had been heavily logged to meet war-effort demands (Fedkiw 1989).

Forest Service's response to the increased demands

In order to gear up to expand national forest timber sales, the late 1950s and 1960s witnessed a major increase in Forest Service employees (Figure 3). From 1955 to 1975, the number of Forest Service employees more than doubled, from 9100 to over 19,500 (Williams 2004a; OPM 2006). Most were foresters, with an increasing number of civil engineers after 1965, who were hired to prepare and administer timber sales and build roads.

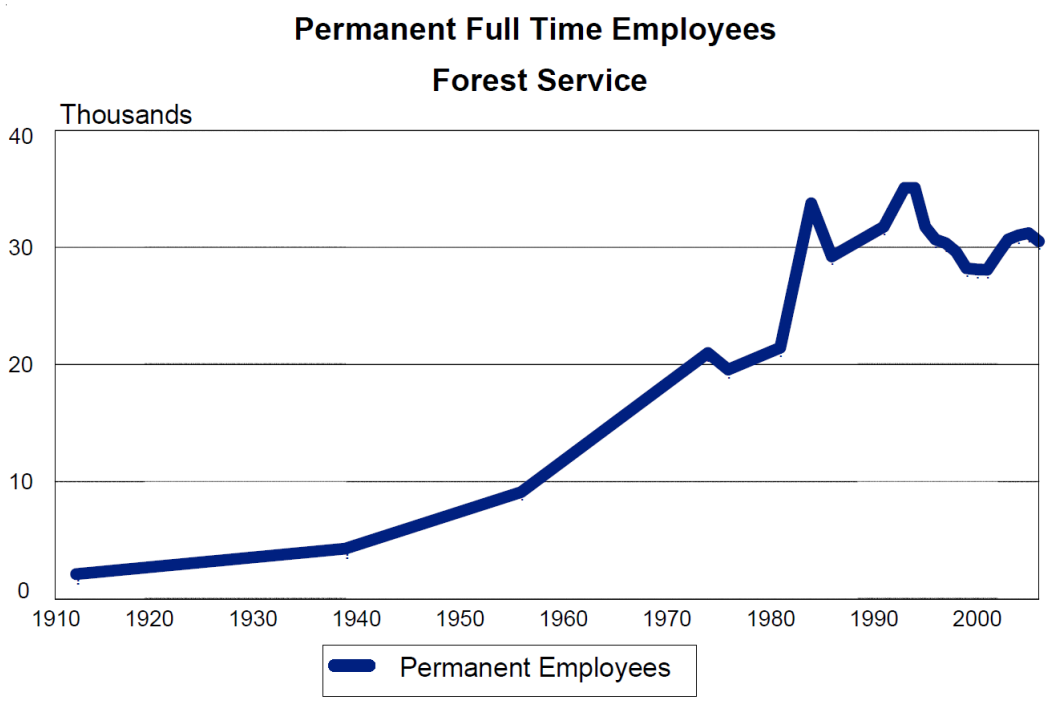

Figure 3. Changes in permanent full-time Forest Service employees
Sources: Williams (2004a); OPM (2006); HRM (2006).

By the 1960s, each individual national forest had developed a management plan that specified the maximum annual allowable timber harvest. Commercial harvest of timber from national forest lands has subsequently been carried out primarily using short-term (one to five years duration) contracts for logging and road building only. Among other tasks, Forest Service managers designate the timber to be harvested, locate and design forest roads and specify the logging systems to be used. Timber sale contracts specifying the requirements for harvest of timber and construction of roads (if needed) are also prepared by Forest Service employees. Such contracts are advertised, competitively bid and awarded to the qualified private contractor submitting the highest bid (often a wood processing mill or logging contractor). Administration of these contracts is overseen by Forest Service employees.[8]

The Forest Service seen as a model public agency

After its first 50 years, the Forest Service generally was looked upon as a stunning success — an

[8] Required reforestation of logged areas is generally done by the Forest Service, usually using funds deposited into a special fund by the logging contactor. Federal agencies generally use private planting contractors and planting stock raised in federal nurseries.

agency known for high morale, a strong sense of purpose and administrative excellence. A 1952 *Newsweek* magazine article stated, amongst other factors, that due to its sterling reputation, "The Forest Service is one Washington agency that doesn't have to worry about next fall's election. Nor will the next administration have to worry about the Forest Service. In 47 years, the foresters have been untouched by scandal". Because of this, "Most Congressmen would as soon abuse their own mothers as be unkind to the Forest Service"[9].

A 1960 book on public administration, *The forest ranger*, documented the Forest Service as a case study example of an efficient and effective public institution (Kaufman 1960). Kaufman attributed the Forest Service's success to a sense of shared purpose, values and a common culture. Ironically, however, two decades later, the reputation of the Forest Service would be in tatters.

Congressional endorsement of managing NFS lands for multiple objectives

The 1950s witnessed a substantial increase in demand for non-timber uses, outputs and values from national forests and other federal lands. Per capita personal incomes rose rapidly after 1940, rising from about $2 000 annually in 1940 to $26 000 in 2000 (adjusted for inflation) (U.S. Department of Commerce 2001). An increasingly mobile and affluent population began to look to national forests for outdoor recreation. Visits to national forests had increased from about 5 million in the early 1920s to 18 million in 1946, but surged to 93 million visits in 1960 and 233 million in 1975 (Census 1975 and 1994).

The increased demands on national forests led to an interest in legislatively expanding their authorized uses from watershed protection and timber production as elaborated in the 1897 Organic Act. The Multiple Use-Sustained Yield Act of 1960 (MUSYA), which was hailed by the Forest Service as a significant accomplishment, gave the agency permissive and discretionary authority to administer national forests "for outdoor recreation, range, timber, watershed, and wildlife and fish purposes".

The passage of MUSYA created the impetus for multiple-use planning and the hiring of new specialists, such as soil scientists, to assist in integrating uses on the ground (Fedkiw 1999; Williams 2002). These multiple-use plans often zoned national forests into general administrative emphasis areas, but still required considerable on-the-ground coordination with regard to where specific uses (timber, recreation, wildlife, mining, grazing) were to occur and how conflicts were to be resolved (Fedkiw 1999).

1960s recreation and wilderness legislation

In the 1960s, a growing segment of the public began seeking statutory protection for maintaining federal lands in their "natural" condition. The Wilderness Act, passed in 1964 after much debate, provided for the designation of significant areas of federal land in their natural and "untrammeled" condition.[10] Most commodity uses were prohibited from these areas. The Wilderness Act set the stage for much of the controversy and antagonism over the use and management of national forests that remains today.[11]

In 1968, the Wild and Scenic Rivers Act and the National Trails System Act were passed. These acts created separate systems within which rivers and trails with outstanding scenic, recreational, geological, cultural, historical, or other values could be designated by Congress into national systems, often after being proposed for such designations by federal land-managing agencies (DPC 1988). A Land and Water Conservation Fund was established, financed by oil revenues, to help finance the purchase of land in nationally designated areas.

---

[9] *Newsweek*, 2 June 1952.

[10] The Forest Service had advanced the primitive area and wilderness concepts by establishing several "primitive areas" in the 1920s and 1930s.

[11] In 1975, legislation was passed to allow designation of wilderness areas in the eastern United States (DPC 1988).

The environmental movement of the 1970s — a new agenda

The growing environmental awareness of the 1960s continued to evolve into a general concern over the deterioration of air and water quality and the negative environmental and health effects of industrialization. Industrial air and water pollution were significant in and around most cities. Rachael Carson's *Silent spring* galvanized public concern over pesticide use (Carson 1962). The first Earth Day (1970) successfully raised public awareness on environmental issues. Congress responded to these concerns by passing a variety of laws that addressed air and water quality as well as toxic control and endangered species.

A primary focus of the environmental legislation of the 1970s was to reform the way federal agencies made decisions affecting the environment. The National Environmental Policy Act of 1969 (NEPA) required federal agencies proposing actions that could have a significant effect on the environment to evaluate a range of alternatives to the proposed action and come to a reasoned choice after providing the public with an opportunity for comment. Although only a procedural law, NEPA has had a profound impact on federal decision-making.

The Endangered Species Act of 1973 (ESA) provided a statutory mandate for protecting species in jeopardy. It prohibited federal agencies from carrying out actions that might adversely affect a species listed as threatened or endangered. The ESA became a powerful tool that mandated that primacy in federal decision-making be given to endangered species protection, and, by extension, to biodiversity. More than any other law, the ESA was the genesis of the move toward "ecosystem management" on lands managed by the federal government for multiple objectives.

In 1974, the Forest and Rangelands Renewable Resources Planning Act (RPA) required the Forest Service periodically to assess the national long-term demand and supply situation for all renewable resources, and to plan how agency programs would address projected resource demands and needs. In 1976, the National Forest Management Act (NFMA) provided detailed guidelines for the management of national forest lands and for increased participation of the public in national forest decision-making. Both the RPA and NFMA were intended to encourage planning and stakeholder involvement. It was hoped that the process could help to resolve the differences between environmentalists and timber, mining and livestock-grazing communities. This did not transpire.

Many environmental laws in the 1970s authorized and encouraged individual citizens and NGOs to bring lawsuits to require federal agencies to enforce the laws. This encouragement included federal financing of citizen and NGO lawsuits against federal agencies.[12] These statutory provisions substantially increased the role of NGOs as an element of environmental law enforcement and of United States courts in interpreting the "intent of Congress" in passing these laws. As many of these laws contain vague goals and standards, this has often put the courts in the de facto position of setting environmental policy through judicial interpretation.

The 1960s–1970s environmental movement had other subtle effects. One was generating interest among affluent young urban people in careers in conservation and natural resources. These "Earth Day graduates" have subsequently moved into influential positions in most federal and state land-managing agencies.

Another major shift since the 1960s has been the movement of urban people to many rural areas adjacent to national forests. These former "urbanites" have caused a significant change in the preferences expressed by local people for how national forests should be managed.

[12] Under the Equal Access to Justice Act, citizens and NGOs can be reimbursed for the costs of bringing litigation against the federal government -- even if they only partially prevail or settle out of court, they can recover attorney fees.

EFFECT OF THE 1970s ENVIRONMENTAL AGENDA ON NATIONAL FORESTS

Hiring of resource specialists

One of the responses of the Forest Service to the environmental laws enacted in the 1970s was to rapidly increase the hiring of resource specialists — wildlife biologists, soil scientists, hydrologists, archeologists and other experts. Such specialists were required to prepare environmental analyses under NEPA and forest plans under NFMA, as well as to carry out soil and watershed evaluations, archeological investigations and related activities to enable timber sales and other projects to progress in compliance with the new environmental legislation (Fedkiw 1999). Between 1980 and 1985, Forest Service permanent full-time employment rose from about 21 400 to 29 200 employees (Williams 2004a; OPM 2006; HRM 2006).[13]

Many of these specialists were Earth Day graduates; although they were hired to assist in assuring compliance with applicable environmental laws, they also helped change the culture and values of the agency itself. These new employees eventually had a profound impact on the Forest Service.

Concerns over land management practices and resulting expansion of protected areas

The use of clear-cutting timber harvest practices increased dramatically in national forests after the Second World War. By the 1970s, an increasingly vocal and well-organized public disliked the visual and other effects of prevailing timber-harvesting activities and sought political remedies to reduce them. Concerns over clear-cutting led to Congress recommending guidelines for the application of clear-cutting on federal lands, and eventually to the passage of the National Forest Management Act of 1976.[14] Later, as clear-cutting greatly diminished after 1990, the focus of many environmental groups shifted to oppose commercial timber harvesting more generally.

In addition to clear-cutting concerns, a second major public thrust was aimed at designating significant areas of national forest land as statutory "wilderness" or similar statutory categories emphasizing protection of natural values, recreation and other uses, and limiting or prohibiting commodity production. Between 1980 and 1985, Congress passed omnibus state-wide wilderness acts for 25 states (including most of the states containing national forest lands).

The 1980s and the "War in the Woods"

The 1980s saw a merging of focus and linkage between concerns over national forest land management practices and wilderness designation generated by language in virtually all omnibus state-wide wilderness acts. This language prevented the Forest Service from considering any more additions to the National Wilderness Preservation System after completion of the first round of land management planning under the NFMA, but required such consideration when forest plans were revised ten to 15 years later. This dramatically shifted the focus of many environmental groups from "wilderness" designation *per se* to seeking to protect as much undeveloped and unroaded land as possible for potential future designation as wilderness.

Issues emerging strongly in the 1980s that reflected this changed focus included concerns that the Forest Service was selling timber in some areas below its cost of production and the old-growth/ northern spotted owl issue in the Pacific Northwest (Fedkiw 1999). While both of these issues reflected important public policy issues, they also acted as wilderness "proxies" designed to protect

[13] Some of the increase in permanent full-time employment during this period was due to conversion of temporary, wage grade employees to permanent full-time status.

[14] In response to the national forest clear-cutting controversy, in March 1972, the Senate Subcommittee on Public Lands published a set of guidelines for clear-cutting on public lands (U.S. Senate 1972). These guidelines, called the "Church Guidelines" after Subcommittee Chair Frank Church of Idaho, were later incorporated into the statutory requirements of NFMA.

the inventory of undeveloped and roadless areas.

The late 1980s and early 1990s were characterized by increasing administrative appeals and lawsuits charging that the Forest Service was violating the NFMA, the ESA and other environmental laws. Such legal challenges became common and were successful often enough to delay proposed timber sales and other projects and create uncertainty over national forest timber and other commodity program outputs (Fedkiw 1999).

Dissent from within the ranks of the Forest Service

In addition to public conflict, debate over the use and management of national forest lands was growing within the ranks of agency employees. In the mid-1980s, the Forest Service installed a new electronic communication system that linked its various field offices and line organizations. The electronic communications system (called the Data General or "DG"), was very innovative for the time, allowed for greatly improved internal communication vertically between organizational levels as well as horizontally among Forest Service employees. Soon several informal networks were established that allowed like-minded employees to share information and ideas on national forest activities and policies.

These network dialogues became fora for internal debate and fostered a growing sense of solidarity and democracy within the ranks of Forest Service employees who disagreed with official policy and trends (and also among employees willing to debate the dissenters). Several of these fora became institutionalized such as the so-called "Eco-Watch" dialogues.[15] To its credit, Forest Service leadership, although it may not have liked how official communications equipment was being used, did not systematically seek to stifle such dialogue.

Other dissent was growing within the ranks, especially among forest supervisors. In 1989, at what was to become known as the "Sunbird" conference, 14 forest supervisors from the Northern Region (Montana and northern Idaho) provided an "open letter" to Chief Dale Robertson stating their view that existing national forest timber harvest levels were jeopardizing important resource values such as water quality, and were out of step with many national forest stakeholders. The letter was leaked to the press and created considerable attention in the media and in the environmental community. Although a number of other forest supervisors criticized this letter and those that had issued it, it was viewed as evidence of broad internal divisions within the ranks of senior Forest Service line officers.

The Regional Forester for the Northern Region, John Mumma was considered to be sympathetic to the views of his forest supervisors and when he resigned, rather than accepting a transfer, it was seen by many, correctly or not, as a brave rebuff to a Forest Service leadership seeking to stifle internal agency dissent.

Additional internal dissent came from lower-level employees. For example, Jeff DeBonis, a Forest Service timber sale planner and an Earth Day graduate, broke ranks with the agency in 1989 by sending a seven-page letter directly to Chief Robertson (copied to several members of Congress) raising concerns over Forest Service timber-harvesting policies in the Pacific Northwest. DeBonis later resigned from the Forest Service, but before doing so he established the Association of Forest Service Employees for Environmental Ethics (or AFSEEE), with a self-proclaimed role as "environmental conscience" on Forest Service policies and practices.[16]

Dissent from within the ranks of the research community and its culmination in the northern spotted owl controversy

[16] The AFSEEE's website can be viewed at: http://www.fseee.org/

From the 1950s through the 1970s, two ideas were widely accepted by practicing foresters on the Pacific Coast (and by many forest research scientists, as well). The first was that clearcutting in relatively large blocks (16-50 hectares or 40-120 acres) replicated natural processes, such as wildfire, and is necessarily to regenerate most early and mid-successional tree species, such as Douglas-fir, the most valuable timber species on the Pacific Coast. The second was that a regulated forest made up of a mosaic of even-aged stands having a relatively even distribution of age classes, with the oldest age class being about 120 years old, would sustain virtually all wildlife species and most other non-timber resource values, as well. A related assumption was that old-growth forests are "biological deserts," supporting relatively few species and growing very slowly. Therefore, they should be replaced by young forests as soon as possible. The result of these ideas was the broadly held view that production forestry and achieving other multiple use values (including maintaining the viability of forest dependent plant and animal species) was presumed to involve relatively few hard tradeoffs, as long as water quality is protected and site productivity maintained.

By the mid-1970s, research studies began to reveal that late-successional and old-growth forests provided essential habitats for a suite of wildlife and plant species. In 1981, a summary of this research by eight Forest Service scientists was published in *Ecological characteristics of old-growth Douglas-fir forests* (Franklin *et al.* 1981).

Scientists such as Jerry Franklin and Chris Maser began to promote a "new" style of forestry (or "New Forestry") that would reflect the concepts behind this emerging research (Franklin and Forman 1987; Franklin 1989). This new forestry approach involved, among other concepts, leaving downed logs, standing dead trees, clumps of trees and other "biological legacies" within cutting areas. Franklin and Maser developed a broad media and environmental group following as they began to speak out publicly against the existing national forest timber-harvesting policies.

Intervention by the courts and its aftermath

By the mid-1980s the northern spotted owl took center stage as the "poster child" for species thought to need large areas of old-growth and late-successional forest. As conservation biologists estimated that 1 000 or more nesting spotted owl pairs would likely be required to maintain a viable species population, protection of millions of acres of old-growth forests was potentially needed to accomplish this objective.

In March 1989, federal district court judge William Dwyer issued an injunction on the harvest of virtually all national forest timber within the range of the northern spotted owl (i.e. western Washington and western Oregon and northern California), and subsequently ordered the Forest Service to revise its standards and guidelines by March 1992 "to ensure the northern spotted owl's viability". This created an economic and political crisis.

In October 1989, the Forest Service, the Bureau of Land Management and the U.S. Fish and Wildlife Service formed the Interagency Scientific Committee (ISC), chaired by Forest Service research biologist Jack Ward Thomas. The resulting ISC report, which was issued in May 1990, provided a framework for federal agencies to determine how much federal forest might need to be preserved as owl habitat given various ratings of risk to owl viability (Thomas *et al.* 1990).

In June 1990, the U.S. Fish and Wildlife Service listed the northern spotted owl as "threatened" under the ESA, which required federal agencies to avoid any action that might jeopardize the species regardless of the opportunity costs or economic effects associated with not taking that action.

In April 1991, the House Agriculture Committee convened its own panel, the Scientific Panel on Late Successional Forests, also chaired by Jack Ward Thomas, which issued its report in October

1991 (Johnson *et al.* 1991). The Scientific Panel report provided a number of management options with estimated timber sale levels and risk to the northern spotted owl and several other species associated with mature forests.

The news from these reports was not good for stakeholders who wanted to maintain a high level of jobs in rural, timber-producing communities while also protecting the viability of the owl and other species. The earlier presumption of a high degree of compatibility between production forestry and the viability of all forest-dependent species was being unraveled by these panels.

Forest Service re-invention under Chief Dale Robertson — setting the stage for major change

When Dale Robertson became Chief in January 1987 during the second term of the Reagan Administration, he expressed more interest in meaningful organizational re-invention than previous Forest Service Chiefs. He recognized that the Forest Service was under siege and needed to change.

Judge Dwyer's 1989 injunction on the harvest of national forest timber within the range of the northern spotted owl only reinforced the urgency of that change,

Chief Robertson began to openly encourage experiments in innovation and elimination of institutional hurdles by establishing re-invention pilots to reduce red tape and improve customer service.[17] He allowed field units — if they adopted efficiencies that saved the agency money — to keep those savings to advance their own local priorities, even if those activities fell outside the budget line items where the savings had occurred (Kennedy School 1994). He often said that, "there are no failures, only learning experiences".

Robertson further saw "New Forestry" ideas being advocated by Franklin, Maser and other scientists as a way to shift the course of the agency. He sought to institutionalize applicable parts of this evolving science and make it part of a Forest Service initiative. This came to be called "New Perspectives" (Salwasser *et al.* 1993; Kessler *et al.* 1992). Under "New Perspectives," Robertson encouraged field managers to work with scientists to put practical shape and substance in field applications to the somewhat amorphous New Forestry concepts.

Chief Roberson also launched initiatives to enhance fish habitat restoration (Rise to the Future) and encouraged Administration efforts to increase national forest outdoor recreational opportunities (America's Great Outdoors). These initiatives emphasized forging mutually beneficial partnerships with outside groups to create greater opportunities for visitor enjoyment of the national forests (Brown and Williams 2001).

In addition to agency reinvention, Chief Robertson actively took a variety of steps to increase the number of women and minorities in the Forest Service. In particular, he established programs with historically black colleges and universities to encourage their students to choose careers in natural resources (Brown and Williams 2001).

Robertson was also concerned about the level of clearcutting on the national forests and the erosion of public support resulting from it. The culmination of this came in April 1991 when Robertson met on the Ouachita National Forest in with Arkansas Senator Richard Pryor. Robertson had grown up in Arkansas and had once been a district ranger on the Ouachita NF. Senator Pryor was a vocal critic of clearcutting on national forest lands, but supported the need for timber harvesting in general. Out of this "walk in the woods," as it famously came to be known, Robertson made a commitment to curtail the amount of clearcutting on the Ouachita

[17] Dale Robertson had begun the process of agency re-invention even before he became Chief (in his position as Associate Chief under Chief Max Peterson).

National Forest. There were several New Perspectives projects on the Ouachita that involved little or no clearcutting. Robertson promised Senator Pryor that he would make them standard practice there (Steen 2000). This decision received a great deal of visibility and was both praised and roundly criticized (in particular, by the timber industry and many professional foresters).

The two issues, New Perspectives and limits to clearcutting, became linked on the eve of the 1992 United Nations Conference on the Environment and Development (the UNCED "The Earth Summit") in Rio de Janeiro. The issues surrounding national forest clearcutting and harvest of old growth forests in the U.S. had been given much visibility prior to UNCED. The George H. Bush Administration wanted to announce some initiatives related to domestic forests prior to the President's arrival at the conference. Dale Roberson saw in this a major opportunity to obtain an official sanction for both New Perspectives and limits on clearcutting (Steen 2000). In coordination with the Administration, on June 4, 1992 Dale Robertson announced that an "ecological approach" would now govern management of the national forests (Robertson 1992). He said that this means:

> *... that we must blend the needs of people and environmental values in such a way that the National Forests and Grasslands represent diverse, healthy, productive, and sustainable ecosystems.*

The details on what this was to mean were to be drawn from the on-going work on New Perspectives and also included a commitment to eliminate clearcutting as a "standard practice" on all national forests.[18]

But Dale Robertson's tenure as Chief will always be known for internal and external conflict and its manifestation in the northern spotted owl controversy that came to a head during at that time. Robertson's actions during this crisis set the stage for agency reinvention, perhaps even more than he may have understood at the time.

Even though he was under pressure to do so, Robertson did not take steps to stifle the internal debate and the use of the DG as a vehicle for internal dialogue. He felt that it was part of the democratic process. But having grown up in rural Arkansas and having lived and worked in many rural, timber dependent communities in the West, he personally understood the pain and economic and social difficulties these communities were going through.

Yet he listened to and supported the recommendations of his scientists, which were evolving over time, about what would be required to meet the agency's legal obligations to protect the northern spotted owl and other species associated with late successional forests.

When the Clinton Administration came into office in January 1993, it became clear that Dale Robertson's days as Chief were numbered. He had become too closely identified as a protector of timber interests and the status quo. In fact, some political appointees of the Clinton administration appeared to go out of their way publicly to depreciate Robertson and his deputy, George Leonard. Many in the Forest Service greatly resented this treatment of Robertson and Leonard.[19]

In December 1993, Jack Ward Thomas, the charismatic scientist who had become famous for his work on the spotted owl issue, replaced Dale Robertson as Chief.

The irony of the very public firing of Chief Dale Robertson and Associate Chief George

[18] Clearcutting could continue to be used where no practical alternative existed.

[19] In his The Journals of a Forest Service Chief, Jack Thomas also expressed his views on the treatment of Chief Robertson and George Leonard: "I resented it then and I resent it now." (Thomas, J.W. 2004).

Leonard is that much of the groundwork for Forest Service reinvention, and the changes in land management practices associated with it, as it later played itself out, were put into place during the turbulent tenure of the Chief fired by the Clinton Administration for being too closely tied to the status quo and the past.

The "Perfect Storm"

The 1980s and 1990s were particularly difficult for the Forest Service. Strong dissent came from external sources and from within its own ranks, both on national forests and within its research community. In the Pacific Northwest, protests became particularly strident, with vocal public demonstrations and acts of civil disobedience (such as tree sittings and vandalism of logging equipment and tree spiking). Between 1985 and 1993, environmental NGOs were successful in nationalizing (and even globalizing) the spotted owl/old-growth issue (Fedkiw 1999).

On the other hand, the Reagan and the George H.W. Bush administrations resisted reductions in timber sales levels, as did the Congressional Appropriations Committee and other committees to which the Forest Service reported.

But even without this political resistance in Washington, Forest Service leadership knew only too well the economic and social pain being suffered by scores of rural communities whose economies depended on national forest timber. Such economic pain was real and, in many cases devastating to the same communities that the Forest Service had encouraged to locate and grow next to national forests in the late 1950s and early 1960s, based on Forest Service promises of reliable supplies of timber for harvesting and processing. Tens of thousands of jobs in small rural communities were at risk.

It can be claimed that the Forest Service's sensors and early warning systems were not functioning well during this period — that they were not properly picking up signals from the urban public, environmental groups, internal agency sources and its own research community that substantial management changes were needed. Or if such signals were being received, perhaps the Forest Service was simply too inflexible to respond effectively to them. In reality, a cacophony of mixed and often conflicting signals was being heard — not just from those seeking change, but also from timber-dependent communities, the timber industry, ranchers, members of Congress and their staffs, scientists and the duly appointed officials of the Executive Branch of which the Forest Service is a part. The challenge for Forest Service leadership in sorting through these signals — the "fog of war" — was indeed daunting.

The Clinton Forest Conference and the Northwest Forest Plan

In April 1993, shortly after he assumed office, President Clinton convened a Forest Conference in Portland, Oregon, to consider ways to address the impasse that had existed in the Pacific Northwest for four years. The result was to commission yet another scientific team headed by Forest Service research scientist Jack Ward Thomas. In May 1994, a final proposal was submitted by the Forest Ecosystem Management Team (FEMAT) to Judge Dwyer who lifted his injunction in June 1994. In December 1994, Judge Dwyer affirmed that the plan met the requirements of the ESA, NFMA and other laws.

Under the final decision flowing from FEMAT, now called the Northwest Forest Plan (NWFP), of the 9.9 million hectares (24.5 million acres) of Forest Service and BLM land covered by the plan, only 16 percent would be available for sustained timber harvesting (another 6 percent would potentially be available in so-called "Adaptive Management Areas"). Federal timber sale levels in the Forest Service's Pacific Northwest Region, which had averaged about 62.5 million cubic meters annually (5 billion board feet) between 1977 and 1989, averaged 1.5 million cubic meters annually (342 million board feet) between 1999 and 2004 — a 93% reduction.

The adoption of the NWFP affirmed a process that had been ongoing for at least a decade, the gradual transfer of significant amounts of power in the Forest Service from line officers and foresters to scientists and agency resource specialists — and from the Forest Service itself to federal regulatory agencies and the courts.

Even outside the Pacific Northwest, after 1990 National Forest timber sales drop

National forest timber sales had been relatively consistent between 1960 and 1989. After 1989, however, as a result of court decisions, public pressure and management plans imposed to protect the northern spotted owl and other endangered species, national forest timber sale levels went into free fall. Between 1989 and 2004, they dropped by more than 80 percent, from about 50 million m^3 annually (11 billion board feet) to between 9 million and 13.5 million m^3 annually (2-3 billion board feet) (Figure 4).

Between 1988 and 2004, the area harvested by clear-cutting dropped by 91 percent, from 283 000 to 19 000 acres, and clear-cutting as a percentage of all harvesting in national forests declined by about 80 percent, from 38 percent to 7 percent annually (Annual National Forest System Reforestation and Timber Stand Improvement Reports; Table 20).

In addition to the reduced use of clear-cutting, smaller sized trees and dead and dying timber began to make up a greater percentage of harvests from national forests than in the past. Between 1990 and 1996, the percentage of sawlog-sized logs harvested from national forests dropped from 77 percent to 56 percent of total harvest volume and harvest of dead and dying timber increased from 26 percent to 47 percent of national forest timber harvest volume.

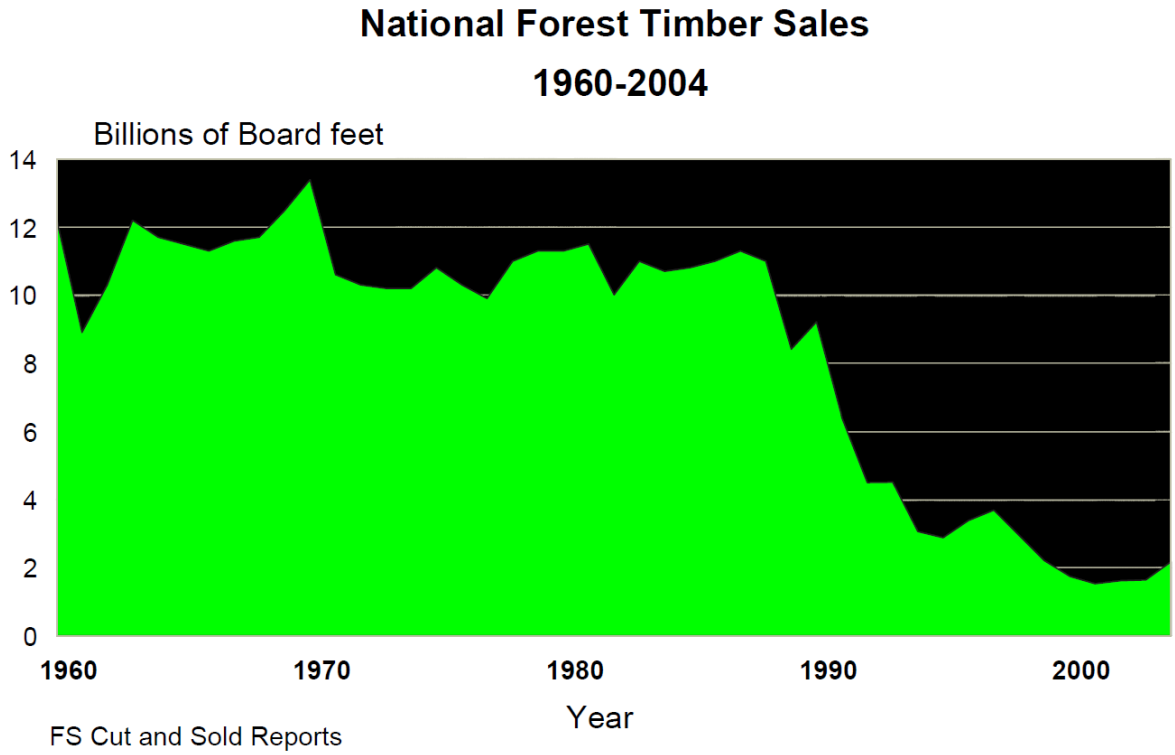

Figure 4. National forest timber sales (1960–2004)

INSTITUTIONALIZING THE SHIFT TO ECOSYSTEM MANAGEMENT — A NEW MISSION FOCUS FOR NATIONAL FOREST SYSTEM LANDS

With the election of President Bill Clinton, Jack Ward Thomas, the charismatic scientist who had become famous for his work on the spotted owl issue, replaced Dale Robertson as Chief of the Forest Service.[20] Jack Ward Thomas worked under a Clinton Administration that wanted to advance its environmental agenda on national forests and other public lands. But he was also faced with a Congress whose Republican leadership (in both Houses) was hostile to that agenda.[21]

When Thomas became Chief, he inherited an agency under siege. Many agency employees who had chosen careers in natural resources out of a sense of mission and conviction to conservation were feeling unfairly vilified by environmental groups and their sympathetic press. Thomas set about working to restore the agency's self-esteem. Among others issues, he sought to institutionalize the meaning and content of the emerging "ecological approach" to national forest management. "New Perspectives" was renamed "ecosystem management" and various efforts were made to institutionalize it and distinguish it from the multiple-use sustained-yield management approaches of the past.

Jack Thomas issued and widely discussed a publication for employees titled *Forest Service Ethics and Course to the Future*, which laid out the elements of ecosystem management (USDA/Forest Service 1994). It stated that "our land ethic is to promote the sustainability of ecosystems by ensuring their health, diversity, and productivity." This approach included four components: 1) protecting ecosystems; 2) restoring deteriorated ecosystems; 3) providing multiple-use benefits for people within the capabilities of ecosystems; and 4) ensuring organizational effectiveness.[22]

Another effort to institutionalize ecosystem management was a major two-week interagency conference in 1995 to develop a *Scientific Framework for Ecosystem-based Stewardship of Federal Lands and Waters* (Tucson, Arizona; 4–14 December). This conference was attended by more than 400 scientists, resource specialists and resource managers from all federal land managing and many state-level agencies. The scientific and management based papers initially presented at this conference were later refined, peer reviewed, and published in a three volume set for use by scientists and field practitioners (Johnson et al 1999).[23]

The purpose was to lay out the scientific and practical dimensions and implications of ecosystem management so as to accelerate the collective learning curve and assist in institutionalizing its adoption into agency practice and culture.[24]

The move to ecosystem management by the Forest Service and other federal land managing agencies occurred in the absence of explicit statutory authority. Rather, it was an administrative response to a variety of factors, the most important being the requirements of the Endangered Species Act and court cases brought to enforce it.

Chief Thomas in a variety of public comments made clear his view that the 1970s environmental legislation, in particular the Endangered Species Act, had resulted in a "de facto mission shift" of the national forests to biodiversity protection. Thomas repeatedly asked political leaders in Congress to legislatively affirm or deny if it was their intent that the national

[20] Although a career Forest Service employee, Thomas did not undergo the senior executive training required of top career civil service positions. Therefore, he accepted his appointment as the first political appointee to be Chief since Gifford Pinchot and Henry Graves, based on the promise that he would later be converted to career civil service status. This never occurred.

[21] For his account of the pressures he faced in responding to the demands of Congress and the Clinton Administration see *The Journals of a Forest Service Chief* (Thomas 2004).

[22] Chief Thomas' mantra to FS employees was to "tell the truth and obey the law."

[23] Dennis Le Master and I co-authored a scientific paper for this conference: The historical foundation and evolving context for natural resources management on federal lands. (MacCleery, D.W. & Le Master, D.C. 1999).

[24] Chief Thomas later expressed to me his disappointment that this major effort to institutionalize ecosystem management was not as effective as he had hoped. My take on this was that it was a fine effort to bring together the art and science of ecosystem management into one place. But publishing a set of papers in three volumes was not enough. It needed to be followed up by a targeted educational effort directly with employees to find ways to put those lessons in place in real world situations.

forests be managed primarily for biodiversity, and if so (or if not), prescribe the sideboards. Not surprisingly, such clarification never came.

THE DEVELOPMENT OF "PROCESS GRIDLOCK"

Due to the lack of social consensus as to how national forests should be managed, a tendency developed for the Forest Service, other federal agencies (such as the U.S. Fish and Wildlife Service), Congress and the courts to add process and procedure to national forest planning and decision-making. Consequently, national forest management became increasingly costly and time-consuming, while providing considerable opportunity for individuals and interest groups to delay or block proposed actions. The term "process gridlock" thus came into use.[25]

Many Forest Service employees, who previously had prepared projects in the field, had to be shifted to conduct environmental analyses, respond to administrative appeals and support related work. Planning and environmental analysis was estimated to consume 40 percent of total direct work at the national forest level (USDA/Forest Service 2002). This led to an increase in the number of staff in forest supervisors' offices, regional offices and the Washington Office at the expense of district field offices. It also extended the time needed to arrive at final management decisions.[26]

Chief Thomas often expressed his view that environmental laws and regulations were substituting process for needed action. He frequently spoke on the gridlock issue and on the tendency toward a short-term perspective by the regulatory agencies that oversaw national forest management (Thomas 2001b):

> *Regulatory agencies, given their missions, will always opt to accept as little short-term risk as possible and be relatively indifferent to long-term dynamic changes in the ecosystem in question. Multiple-use oriented agencies, given their missions, will usually opt for greater short-term risk with a longer-term view. The regulatory agencies' cards trump those of the land management agencies.*
>
> *From my perspective, it seems that each time there was a decision to be made, it was made on the conservative (low immediate risk) side. These cautious decisions, piled one on top of the other, finally accumulated to slow management to a crawl headed for a stop.*[27]

In response to a question from President Clinton at the "Forest Summit" on April 22, 1993, Chief Thomas said:

> *... the National Forest Management Act and its regulations for viability of all species is a tough law. If you don't perform under that law, you get to go to the penalty box under the*

[25] As an example, in response to public controversy over timber management activities, the Forest Service, on its own discretion, put in place an administrative process that allowed any citizen or group, after a land management decision is made by a line officer, 30 days to appeal that decision to the line officer above the one making the decision. This line officer, in a quasi-judicial procedure, would consider the appeal in the light of the written record and either affirm or deny the appeal. That decision could then subsequently be appealed to the line officer above that up to the Chief, with an option for a discretionary review of the decision by the Secretary of Agriculture. When the Forest Service leadership felt that this discretionary administrative appeals process had become overly cumbersome and proposed that it be streamlined, Congress passed a law preventing the agency from doing so (the 1993 Forest Service Appeals Reform Act, 16 U.S.C. §1612).

[26] This process slowdown became an issue for the Clinton Administration. In March 1995, President Clinton's nominee for Secretary of Agriculture, Dan Glickman, during his Senate confirmation hearings, was grilled on the topic of "conflicting laws." Glickman promised to appoint a task force and provide a report to Congress assessing the conflicting laws issue and making recommendations to deal with it. This report, although called for repeatedly by Congress, was never released. Apparently the Clinton Administration was not eager to provide to the Republican Congress anything that would suggest that environmental laws or regulations might need to be amended.

[27] The focus on short-term effects on forest resources, e.g. water quality and fisheries, is illustrated by the adverse ruling in Pacific Coast Federation of Fisherman's Association V. NMFS, 253 F.3d 1137 (9th Cir. 2001).

Endangered Species Act. And we forget that the first paragraph of the Endangered Species Act says it's not the species that's listed, it's the ecosystem on which it depends. If you consider those two things in combination, and the case law, it appears to me, at least, that we have a de facto policy of biodiversity protection, particularly for National Forest lands. It becomes an overriding objective.

Chief Mike Dombeck who, under President Clinton, replaced Thomas as Chief in January 1997, was generally less vocal about conflicting laws and gridlock issues.

But the concerns re-emerged when Dale Bosworth, a former regional forester, became Chief in 2001. Bosworth directed an agency review of the gridlock issue, culminating in a 2002 report, "The Process Predicament: How Statutory, Regulatory, and Administrative Factors Affect National Forest Management". The review noted that, while the statutory requirements of environmental laws were not necessarily directly in conflict, over the years overlapping procedural requirements, procedural redundancy, court decisions and multiple layers of interagency coordination had created major inefficiencies in decision-making. The review report concluded that:

Too often, the Forest Service is so busy meeting procedural requirements, such as preparing voluminous plans, studies, and associated documentation, that it has trouble fulfilling its historic mission: to sustain the health, diversity, and productivity of the nation's forests and grasslands to meet the needs of present and future generations. Too often the paralysis results in catastrophe.

CHANGED ROLE OF THE FOREST SERVICE IN PUBLIC PARTICIPATION

The role of public participation in federal land management planning has evolved considerably over the decades. In the 1950s and 1960s, district rangers or forest supervisors (usually after informally sensing acceptance in the local community) would typically announce decisions that they had determined to be in the best interest of the national forests, its customers and stakeholders. The 1970s environmental laws, particularly NEPA and NFMA, directed federal land-managing agencies to increase formalized public participation substantially and mandated more open and "transparent" consideration and evaluation of a full range of management alternatives. These laws also increased the legal standing available to stakeholders to sue federal managers in court to enforce compliance with both the procedural and the substantive requirements of these laws.

In response, a "rational planning model" evolved, based on an objective of seeking to optimize the various multiple uses and objectives using estimated values for market and non-market uses (Bowes and Krutilla 1989). The approach was also premised on a rather optimistic assumption that federal agency decisions arising from it would lead to a working consensus among diverse stakeholders and that such stakeholders would consent to share the land and resources under a politically acceptable social contract. In retrospect, the premise was overly optimistic.

In recent years, a new agency role has emerged in which the Forest Service has shifted from being a "mediator" (receiving public input and deciding how best to weigh it in decision-making) to encouraging competing interests to sit down and "reason together" to find ways to accommodate their diverse objectives. This sometimes even includes stakeholders assisting in the design of vegetation management projects. The agency's role in this case is similar to a "facilitator," rather than mediator. While the decision still rests with the agency, the theory behind this approach is that it will lead to more informed decisions having broader public support than in the past. Experience suggests that this approach works best at the local level where the effect of alternative management approaches on specific areas of land can more easily be visualized.

This new role places greater emphasis on effective collaborative skills in dealing with the public and other public agencies. It also relies heavily on forging partnerships to carry out some of the tasks traditionally done directly by the agency itself. It has resulted in an increasing focus on community-based efforts in national forest public involvement.

Barriers and questions still remain regarding this emerging approach. For one thing, active engagement in collaborative decision-making is often discouraged as a result of subsequent administrative appeals and litigation. A second issue arises because federal lands are involved. How to address and balance local versus national interests in the use and management of federal lands is a particularly intractable issue with no easily applied solutions. This conflict is sometimes described as the problem of balancing the interests of "communities of place" with "communities of interest". As local communities become more economically and socially diverse, this can become less of a problem.

FROM MODEL FEDERAL AGENCY TO ADMINISTRATIVE PARALYSIS — WHAT HAPPENED AND WHAT OPTIONS ARE AVAILABLE?

Thirty years after Kaufman (1960) described the Forest Service as a model federal agency, the reputation of the Forest Service was in disarray. Kaufman, in revisiting his 1960 treatment of the Forest Service in *The forest ranger*, reflected that the same characteristics that had made the agency effective when demands on it were relatively modest and rural-based, made it rigid and difficult for it to change when those demands became more intense, diverse and complex (Kaufman 1994).

Living and working in rural areas, many Forest Service staff failed to read or understand the signals coming from urban areas. In addition, the demands of urbanites were often perceived to conflict with the interests of rural communities whose economies were tied to commodity use. Another major factor that worked against change was the Congressional budgeting process, which encouraged and directed the agency to maintain high levels of commodity outputs.

Various opinions have been expressed about what should be done to reduce the polarization related to management of federal multiple-use lands. Some observers feel that the key to improving public agreement lies in effectively managing the transition to vegetation management practices specifically designed to maintain healthy forests and watersheds. Others feel that the key is to improve and make more inclusive and transparent public involvement and participation processes in federal planning decisions. Still others call for more incentives for interest groups to get involved during the planning process by reducing administrative and legal opportunities for such groups to intervene outside the process.

In 1998 a bipartisan group, the Forest Options Group (FOG), operating under the premise that the bureaucratic and stakeholder incentives under which the Forest Service operates need to be substantially reformulated, proposed a number of administrative tests to evaluate alternative collaborative governance and budgeting options on several national forests (Forest Options Group 1999).

After reviewing public comments on a draft proposal, the group proposed the following pilots: 1) Entrepreneurial budgeting -- the forest is funded out of net receipts; 2) Collaborative management -- a collaborative board of directors oversees the forest; 3) Collaborative planning -- a collaborative board writes and implements the forest plan; 4) Forest trust -- the pilot forest is managed under legal trust doctrines with trustees and beneficiaries; and 5) Gross receipts/rate board -- the pilot forest is funded out of gross receipts and user fees are set by a rate board (for details on three options, see: link).

None of these options has actually been field tested, although, the group's "collaborative

governance" pilot is quite similar to the governance structure of the Valles Caldera National Reserve in New Mexico that was added to the National Forest System in 2000. Under this new governance arrangement, a Board of Trustees, appointed by the President, provides management direction for the unit. Funding for administration of the unit is eventually to come from user fees generated from the unit.

BUILDUP OF FOREST FUELS AND CONCERNS OVER ECOSYSTEM HEALTH AND INCREASING FIRE RISK

The shift in focus and mission within the Forest Service occurred at the same time as concerns have grown over the ecological health of significant areas of the national forests (Sampson and Adams 1993; USDA/Forest Service 1993; GAO 1999). A multiyear drought in the western United States, coupled with a multi-decade buildup in forest density and forest fuels, has led to a significant increase in unusually severe wildfires (with consequent damage to sensitive watersheds, ecological values and adjacent communities).

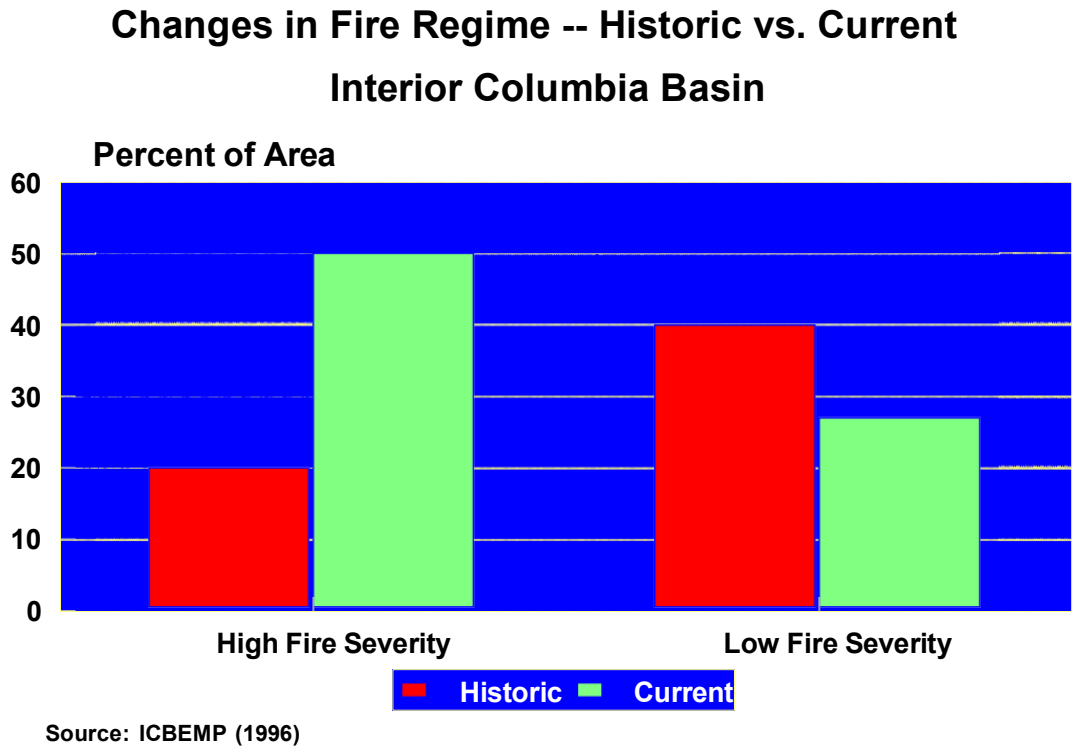

Figure 5. Changes in fire regime condition class
Source: ICBEMB (1996)

The increased incidence of severe fires is entirely coincidental to the mission shift within the Forest Service, but it has created a strong sense of new direction and urgency for the agency as a replacement for its previous focus.

Federal land managers estimate that over 100 million acres of federal forest lands are at unnaturally high risk of catastrophic wildfires and large-scale insect and disease outbreaks because of unhealthy forest conditions (Senate Agriculture 2003).

An additional risk factor is the major expansion of residential development into rural areas, often adjacent to national forest lands. This has created a new and growing local and community constituency that supports thinning and restoration of forests to reduce the risk of severe wildfires.

Many areas in western states that were subject to frequent, low intensity non-lethal fires in the nineteenth century are now at risk from uncharacteristically intense and destructive wildfires (Figure 5) (Arno and Allison-Bunnell 2002; Sampson and Adams 1993; Pyne 1984).

The buildup of forest fuels is often attributed to the success of modern fire control. The reality is that a significant reduction in ecosystem fires in many parts of the western United States already occurred in the 1870s and 1880s, predating modern fire control by more than 50 years. This reduction in the number and extent of ecosystem fires was associated with the elimination of burning by indigenous peoples and the introduction of large numbers of livestock, which changed fuel dynamics and often prepared a mineral seed bed for forest regeneration (Arno 1985; Gruell 1985; Pyne 1984). Modern fire control, which became increasingly effective after 1950, exacerbated the problem.

Active management of vegetation, including thinning and prescribed use of fire, is seen as key to restoring ecological health and reducing hazardous fuels buildups. But a paradox of the shift in national forest objectives resulting from the 1970s environmental laws is that the ability of the Forest Service to achieve important environmental objectives by taking proactive measures to restore and maintain ecological systems is being undermined by difficulties in implementing the process and analysis requirements that have been established over the years by these same laws.

Author's note: For a discussion of the forest health, wildfire issue, see a paper I wrote titled: How did we get into this mess and how do we get out of it?

The hazardous forest fuels and fire risk situation is forcing a change in Forest Service management emphasis away from ecosystem management to firefighting is reflected in budgets and personnel (Figure 6). (This shift has only been exacerbated over the last 15 years.)

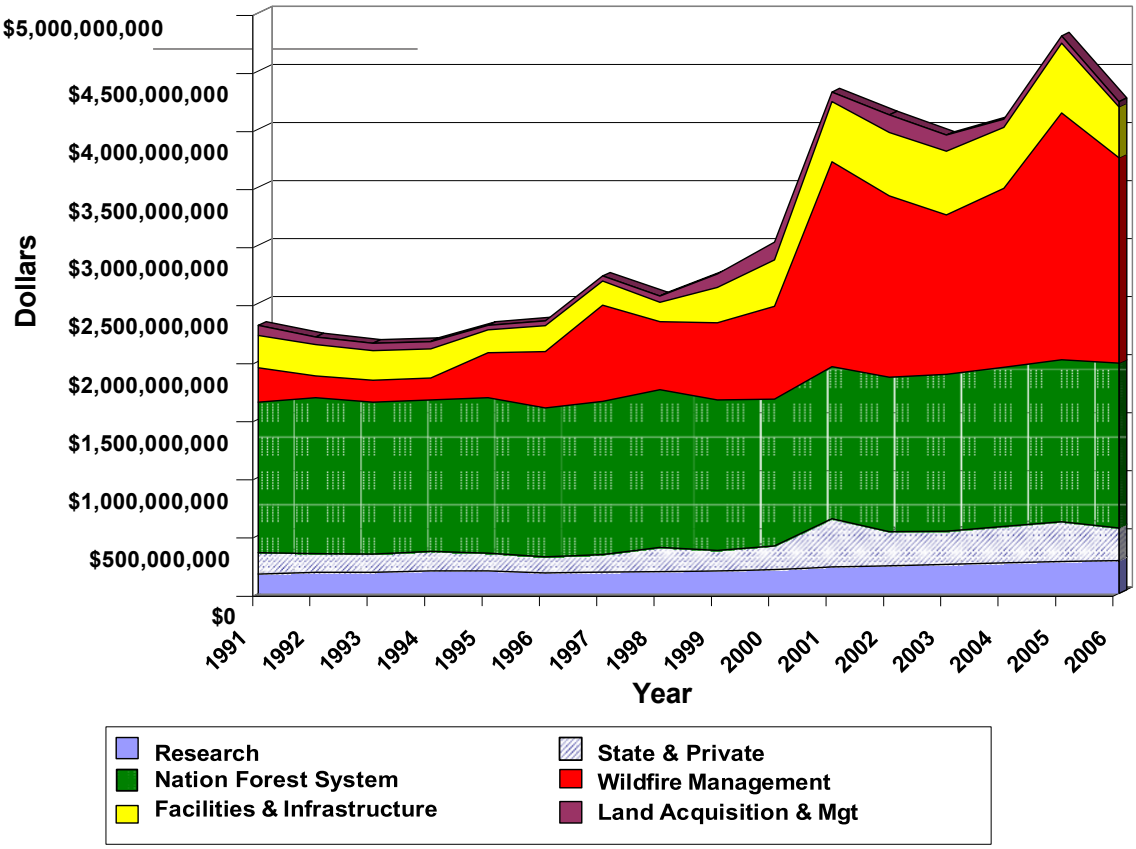

Figure 6. Changes in Forest Service discretionary budget by activity
Source: Forest Service Budget Summary (1991–2006), USDA/Forest Service.

Current Forest Service employment and funding

Since the 1980s, in spite of a precipitous drop in national forest timber sale levels, the total number of permanent full-time employees in the Forest Service has remained relatively stable, at around 30 000.

Appropriated levels of funding for the three branches of the Forest Service have also remained relatively stable since 1990 (but have declined in inflation-adjusted terms). The major exception has been a major increase in funding for fire and treatment of forest fuels.

STREAMLINING PROCEEDURES TO REDUCE HAZARDOUS FOREST FUELS AND RESTORE ECOSYSTEMS

In 2002, President George W. Bush announced the "Healthy Forest Initiative" (HFI), which was designed to reduce administrative, regulatory and statutory barriers to increasing the area of federal lands treated to reduce forest fuels. A variety of actions took under HFI to put these reforms in place.

Some regulatory reforms include: 1) procedures which allow certain fuel-treatment and rehabilitation projects to proceed in compliance with NEPA, but with limited documentation (termed categorical exclusions); 2) joint Endangered Species Act (ESA) counterpart regulations by the Departments of the Interior, Agriculture, and Commerce that make the ESA consultation process more effective for fuels treatment projects; and 3) new stewardship contracting instruments that encourage integrated treatment of fuels in one operation, often using the value of removed timber to help fund treatment costs.

In late 2003, Congress passed the Healthy Forest Restoration Act (HFRA), which reduces some statutorily required process requirements associated with fuels treatment and forest restoration. HFRA was the first substantive federal law governing management of national forest lands passed since the 1976 National Forest Management Act.[28]

HFRA provides for expedited NEPA processes and other streamlined processes to expedite fuels reduction treatments in the following categories of NFS and BLM lands: 1) the wildland-urban interfaces of at-risk communities; 2) at-risk municipal watersheds; 3) where threatened and endangered species or their habitats are at-risk to catastrophic fire and where fuels treatment can reduce those risks; and 4) where windthrow or insect epidemics threaten ecosystem components or resource values.[29]

While the area treated for fuels has increased substantially over the last four years, this rate remains substantially below what is needed.

Significant barriers to addressing fuels treatment problems remain. These include: 1) prescribed fire is risky and puts smoke in the air, 2) mechanical treatment that removes merchantable trees can be controversial, 3) the "myth of the forest primeval" also gives rise to opposition to

[28] The author was detailed to the Senate Agriculture Committee for six months to provide (and to access) technical assistance during HFRA deliberations in the Senate. Upon returning to the FS, I assisted in preparing guidelines for implementation of HFRA.
[29] HFRA provisions for expedited treatments include: expedited environmental analysis of HFRA projects; a pre-decisional protest process, rather than a post-decisional appeals process; expedited judicial review of legal challenges to HFRA projects, including direction to courts, when considering requests for injunctions, to balance the short and long-term environmental effects of the project against the effects of no action. HFRA also provides for environmental considerations in hazardous fuels projects for maintenance and restoration of old-growth, provides for community collaboration, and requires performance monitoring. For actions taken to implement HFRA, go to: HFRA implementation actions.

management (the idea that if we do nothing, the forest will somehow return to what it used to be), 4) as discussed, regulatory bias favors weighing the short-term impacts of treatment more than long term benefits, 5) fuels treatment and forest restoration are expensive (small, less valuable trees are removed; larger trees are left), and 6) the processing capacity for small diameter wood products has diminished substantially in many areas with reduction in national forest timber sales.

SEEKING TO RE-EMPOWER LOCAL COMMUNITIES

The shift in power from local communities (whose economies were heavily dependent on national forest commodity resources) to national and regional special interest groups, that progressively took place from the 1970s through the 1990s, left many local communities feeling they had little voice in determining their own future (Lee 1994).

Under President George W. Bush, various efforts were made to re-empower local communities and increase their influence over national forest management decisions. These efforts are referred to as "cooperative conservation" or "cooperative federalism." In August 2004, President Bush signed an Executive Order directing federal agencies to involve local communities and stakeholders more meaningfully in decisions affecting them. In August 2005, a national White House conference on cooperative conservation was held in St. Louis to develop strategies to advance this goal. In addition, the Forest Service has a National Partnership Office at its headquarters location in Washington, D.C., to assist in training and building organizational capacity within the agency and in local communities.

Two caveats should be noted with respect to these efforts to re-empower local communities. The first is that these efforts are based almost entirely on administrative action, which could be reversed by a future Administration. Whether or not this happens may depend on whether broad bipartisan support for local community re-empowerment emerges. The second is that these efforts leave unresolved the issue of effectively balancing national and local interests in managing federal lands, with the possibility of national interests again reasserting a dominant position.

THE CHECKERED HISTORY OF EFFORTS TO RE-ORGANIZE THE FOREST SERVICE

Over the years, many proposals have been made to change to the Forest Service's organizational structure, but very few have been adopted and the organizational structure of the agency remains much the same as it was 50 years ago (Figure 1). The most frequently proposed changes have been to move the responsibility for administration of the national forests back under the DOI or, alternatively, to combine the Forest Service, DOI land-managing agencies and other federal land-managing agencies (such as the Corps of Engineers) under a new federal Department of Natural Resources (DNR) (Williams 2004).

The first proposal to move the national forests back to the DOI came in 1911 only six years after the forest reserves were moved to the USDA and subsequent proposals have been advanced regularly since that time.[30] Opposition by Forest Service stakeholders and resistance from within the ranks of the agency has always been sufficient to block the implementation of these proposals.

Those organizational changes or "re-inventions" that have been implemented have come largely in response to shifting demands and have occurred in an incremental fashion, rather than the result of major strategically directed changes in the Forest Service organization chart. Many changes have

[30] Such proposals were advanced in 1920 under the Woodrow Wilson Administration; in 1921 under the Warren G. Harding Administration; in 1932 under the Herbert Hoover Administration; in 1934 under the Franklin D. Roosevelt Administration; in the early 1950s under the Truman Administration; in 1970 under the Nixon Administration, and in 1977 under the Carter Administration (Williams 2004). None of these proposals ever came to pass.

come about in response to increasing or decreasing funding and Congressional appropriations and mandates.

The field organization of the Forest Service — especially ranger districts and forest supervisors' offices — has often successfully re-organized itself to become more integrated, and various field offices have been consolidated to improve efficiencies. In the western United States, many adjacent national forests have been combined under a single forest supervisor's office. In the eastern part of the country, it is not uncommon for all national forests in one state to be administered by a single administrative office.

Such efforts have often been initiated locally or in regional offices in response to shifts in funding or public demands (most often with headquarters' encouragement and concurrence), rather than being directly orchestrated nationally.

Downsizing and re-invention under the Clinton Administration

The sharp decline in timber sales resulting from implementation of the Northwest Forest Plan caused a major downsizing of Forest Service program offices and employees in the Pacific Northwest. Within the area covered by the plan, Forest Service permanent full-time employee equivalents (FTEs) declined by 36 percent between 1993 and 2002, from 8 431 to 5 365 (Figure 6). Several individual national forests saw declines in FTEs of more than 50 percent during this period.

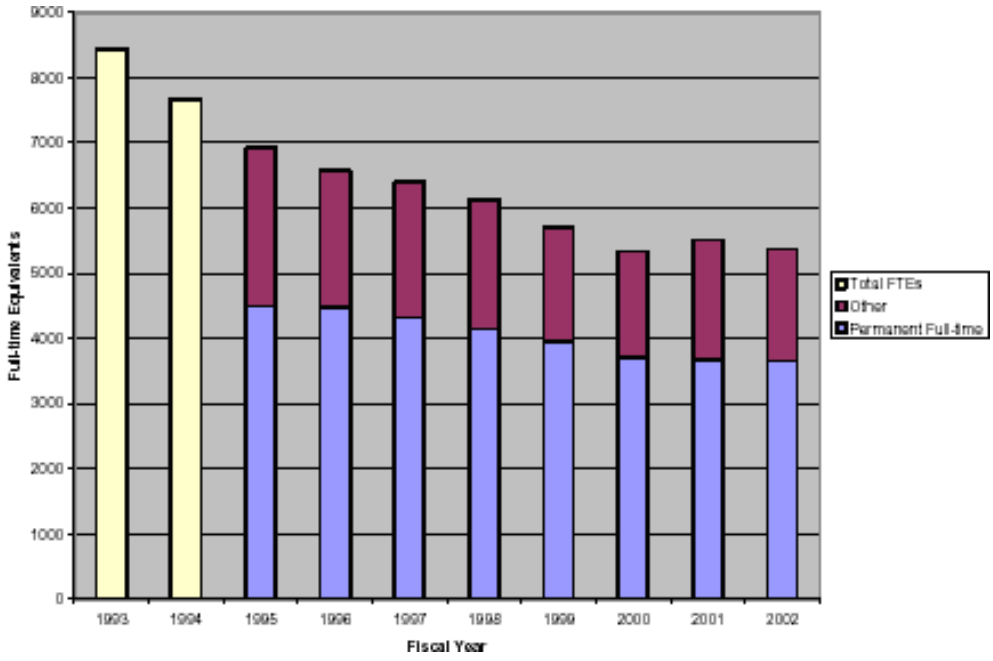

Figure 6. Changes in FTEs in California and the Pacific Northwest (1992–2002)
Source: USDA/Forest Service (2005).

In addition to downsizing in the Pacific Northwest, various other re-invention ideas were developed and formally proposed by the Clinton Administration. During President Clinton's first term, a major "re-inventing government" effort led by Vice-President Al Gore (called the "National Performance Review") sought to streamline and reform federal agencies, including the Forest Service.

The National Performance Review re-invention proposal for the Forest Service included several

elements.[31] But the only one that was eventually adopted was the "enterprise team" concept.[32] With a Republican-controlled Congress, the government-wide re- inventing program became politicized and no proposals that required Congressional concurrence were implemented.

More recent efforts to re-invent the Forest Service

Under the George W. Bush Administration, the focus was to seek to improve the management efficiency of federal agencies generally. The strategy was to evaluate how many of the services that federal agencies currently provide could be carried out more cost efficiently through contracts with the private sector or other entities. A major component of this strategy was to require every federal agency to go through a formal process to assess each of its units and activities for potential savings through outsourcing or "competitive sourcing" (White House 2002).

Not surprisingly, the competitive sourcing evaluations created considerable anxiety within the agency workforce (Wilent 2006).

THE UNREALIZED PROMISE OF ADAPTIVE MANAGEMENT

One of the main ideas emerging from the movement toward ecosystem management in the 1980s was the concept of "adaptive management". The concept of adaptive management is based on the realization that ecosystems and the processes that influence them are so complex that it is difficult or impossible to predict in advance the full implications of proposed management actions. Therefore land managers must proceed with a heavy dose of humility, the application of the best science available and a strong commitment to monitoring the environmental, social and economic effects of management decisions — and to adapt or change decisions based on systematic monitoring. Adaptive management ideally also involves the purposeful design of management practices as experiments to assist in the learning experience (Walters 1986).[36]

The systematic application of adaptive management has not occurred in the Forest Service for a variety of reasons, including a lack of commitment to and funding of needed inventories and monitoring. But there are also inherent cultural barriers, both within land management and regulatory agencies.

As an example, the Northwest Forest Plan established ten so-called "Adaptive Management Areas" (AMAs), covering about 600 000 hectares(1.5 million acres), which were intended to be laboratories for testing innovative management practices. In spite of the opportunity to showcase the application and utility of the concept of adaptive management, most observers feel that this effort has failed miserably (Thomas 2003, Stankey *et al.* 2003).

The rules applying to AMAs were the same as other areas in the NWFP, creating bureaucratic barriers that stifled their primary adaptive management objectives. Jack Ward Thomas (2003), in assessing the implementation of the NWFP, observed:

> *AMAs have been, essentially, managed no differently than other areas covered by the NWFP due to reluctance of regulatory agencies to approve habitat modifications or*

[31] These included: 1) Realigning and conforming regional offices and regional boundaries of the National Forest System, Research and Development, and State and private Forestry -- the boundaries were to have been realigned along ecologically based boundaries; 2) reducing the number of regional offices from 9 to 7 -- the Northern and Rocky Mountain Regions were to be merged and the Alaska and Pacific Northwest Regions were to be merged; 3) integrating most staffs into teams, rather than along existing multiple use functional lines; 4) encouraging "enterprise teams" to compete to provide specialized services internally; and 5) co-locating offices with other federal and state agencies (USDA/Forest Service 1994a).

[32] The enterprise team concept was developed to encourage innovative and entrepreneurial activities within government. These units are self-supporting and enter into contracts with agency offices needing specialized services.

departures from the overall plan….

Adaptive management requires flexibility and social/political permission/willingness for managers to so proceed. Current laws, accumulating case law, agency cultures, and pitched conflict between the societal extremes that care about forest management essentially precludes broad-scale application of new approaches at present.

The short-term risk intolerance common to federal regulatory agencies, which has been discussed previously, remains a major barrier to adaptive management. In addition, the courts have required land management agencies to show they have taken a hard look to assess and consider environmental effects in detailed pre-decision analyses.

Since the late 1970s, the NEPA has been strongly criticized for requiring volumes of upfront analysis and paperwork to "bullet-proof" documents against possible court challenges, while at the same time providing only limited knowledge for improved decision-making (Fairfax 1978). In a major critique of NEPA in the *Columbia Law Journal*, Bradley C. Karkkainen (2002) stated that:

> *…agencies have an incentive to overstuff the EIS with information from every available source, regardless of its quality, so as to achieve a protective layer of redundancy or "overkill" while at the same time inoculating themselves against the charge that they overlooked relevant information…NEPA ambitiously, and naively, demands the impossible: comprehensive, synoptic rationality, in the form of an exhaustive, one-shot set of ex ante predictions of expected environmental results. In the normal course of events, that task proves insuperable.*

Author's Notes:[33] In the case of the NWFP, researchers failed to demonstrate the benefits of adaptive management using methodologies that were meaningful to local decision makers.

One approach to the use of adaptive management would be to incorporate it directly into the planning process during development of a national forest plan. Another would be to look closely at the use of retrospective studies as a tool for adaptive management. There are common approaches that are implemented in many places, for example a variety of treatment types in dry forests to reduce fire hazard, or thinning in in plantations to create more "natural" older forest structure. These are situations where retrospective studies could be useful. In order to do this, agencies need to keep careful records of what was done, why it was done, and where it was done.

With respect to adaptive management and NEPA, in a very positive move, in 2008 the Forest Service and the Department of Interior added permissive language to their NEPA procedures allowing adaptive management alternatives (DOI 2008). While adaptive management was not previously prohibited, there was resistance to using it because of the need to show that the agency has taken a "hard look" at environmental effects.

Both agencies developed regulatory language together with CEQ and the Forest Service has successfully used adaptive management to plan and make decisions ahead of anticipated natural disturbances such as mountain pine beetle epidemics and windstorms to reduce implementation delays. The provision requires that an adaptive management proposal identify any adjustments that may be made when monitoring indicates that the action is not having its intended effect, or is causing unintended and undesirable effects. The Forest Service and DOI also included permissive language allowing for alternative modifications during the NEPA process to facilitate collaboration during planning and decision-making.[34]

---

[33] The author would like to thank Joe Carbone and Jamie Barbour for their insightful suggestions for updating this section of my "Reinventing the FS" paper.

[34] It took until 2020, or more than 40 years, for CEQ do a major revision of its 1978 NEPA regulations under the first Trump Administration. The Biden Administration made additional changes in 2021 and 2024 and Congress made major changes to NEPA through the Fiscal Responsibility Act of 2023.

CHALLENGES FACING THE FOREST SERVICE

A variety of challenges face the Forest Service in the early twenty-first century. Some of these are briefly summarized hereunder.

Loss of technical skills. Since the Forest Service has not hired significant numbers of new employees for two decades, the agency is faced with an ageing workforce. Many employees are within five years of retirement.

Reduced resources at the field level. Increased process demands have resulted in increased staff numbers at the upper levels of the Forest Service. As the agency's budget has declined in real terms, its field offices working on the ground have been disproportionately affected. National forest field units are consequently stressed and stretched to meet the demands being placed on them.

Lack of integration and turf wars. Agency turf wars are hindering integration. In the past, the roles of traditional functional areas in the Forest Service were relatively well-defined. They corresponded to each of the traditional multiple uses. Thus, the timber staff prepared and administered commercial timber sales, the fire staff prepared for and fought forest fires, the watershed and wildlife staff reviewed and commented on proposed projects, helped prepare environmental documentation and carried out watershed and wildlife restoration projects. With the agency focus on forest restoration and treatment of forest fuels, traditional lines of responsibility have become blurred. A timber sale, formally the responsibility of the timber staff (and funded by a timber sale budget line item), may now be the mechanism to reduce forest fuels — a task which was previously the responsibility of the fire staff (funded by the fire budget line item). The same activity may also advance the objectives of restoring watershed conditions or enhancing wildlife habitat (under the purview of the watershed and wildlife staffs, respectively).

It has sometimes been difficult for the existing functional disciplines — with their traditional budget line funding from Congress — to rationalize and clarify their roles under the new mission focus. Considerable integration has occurred at the field level, but the turf battles and responsibility issues remain contentious at regional offices, and especially at the Washington Office level.

Undefined social constituency for ecosystem restoration and fuels' treatment. At present, there is no well-organized national constituency for forest restoration and treatment of forest fuels. Some of the current national forest constituencies, such as the timber industry and wilderness interests, are cool to this new mission focus, or even opposed. For others, such as recreation stakeholders, the issue is considered peripheral to their primary interests. A constituency for restoration and fuels' treatment may now be emerging at local community levels, but it has yet to emerge as a national political force.

LESSONS TO BE LEARNED FROM EXPERIENCE WITH NATIONAL FORESTS

Lessons on organizational re-invention

Since 1905, the management of national forest lands has shifted from custodial management (1905–1945), to production of wood products (1945–1985), and most recently to a still evolving form of ecosystem management that emphasizes restoration and maintenance of forest health, reduction of hazardous fuels, biodiversity and recreation. The most recent shift was rapid, although it was often

---

The Trump Administration recently requested public comment on an interim rule to withdraw the CEQ regulations, relying on agency NEPA procedures and future CEQ guidance instead of CEQ regulations (CEQ 2025). This rule goes into effect March 27, 2025.

resisted both within and outside the Forest Service. It is now is evolving to wildfire and fuels management.

The Forest Service has made these significant changes in its mission focus within an overall organizational structure that has remained largely unchanged since the 1930s. In addition, the substantial changes in mission focus since 1985 have occurred without an explicit change in the statutory mandate governing the purposes for which the national forests are to be managed. While numerous formal proposals to re-organize and restructure the Forest Service have been made over the years, few have been implemented. Those restructurings that have occurred have mainly involved consolidation of management units, largely initiated by field offices in response to shifts in funding and budgets.

Factors contributing to the recent shift in mission focus include: 1) the response of the Forest Service to the requirements of the 1970s environmental laws, especially the Endangered Species Act and National Environmental Policy Act and their evolving interpretation by the regulating agencies and the courts; 2) the increased standing and access to the courts for stakeholders to sue federal agencies, as well as the existence of various economic incentives to do so (Equal Access to Justice Act); 3) diversification of the Forest Service workforce; and 4) the growing numbers and political power of urban areas with their preferences for recreation and biodiversity protection of federal lands.

The Forest Service as an organization has demonstrated both rigidity and flexibility over the years. In response to changing legal requirements and public demands, the Forest Service has been able to "re-invent" itself by making substantial changes in its mission focus. Such changes have not always been easy for the agency, especially when they ran counter to the organizational culture or adversely affected key Forest Service stakeholder groups.

Strong leadership of the agency by career employees who worked their way up through the organization has been a major positive factor in formulating workable responses to shifting demands on the agency. The decentralized decision-making culture of the agency has also been a strength, allowing the agency to adapt to changing needs at local levels.

A major barrier that remains to the Forest Service becoming a true learning organization is that the regulatory agencies that oversee it, and the courts that review legal challenges against it, have yet to embrace the concept of adaptive management. This has prevented the Forest Service from adjusting management approaches and strategies as quickly as hoped in response to lessons learned on the ground.

Effects of Workforce Diversification on the Forest Service

As the Forest Service geared up to increase the production of timber from the national forests, the number of Forest Service employees more than doubled, from 9,100 to over 19,500 (Williams 2004a; OPM 2006, HRM 2006). These employees tended to be comfortable with and reinforce the traditional Forest Service culture and value system.

This began to change during the 1970s and 1980s when the employment of resource specialists increased dramatically, e.g., wildlife biologists, hydrologists, archeologists and other specialists, to assist in preparing environmental analyses, designing projects and preparing national forest plans. Racial and gender diversity has increased, as well. In the 1970s most professional employees were white males, the vast majority of whom were foresters. By 1992, 39.7 percent were women and 15.3 percent were minorities (USDA/Forest Service 1993). These percentages have remained relatively stable since that time. In 2003, 38.5 percent of Forest Service employees were women and 16.3 percent were minorities (USDA Forest Service 2004a).

Lessons on multiple use of public lands

The performance and evolution of multiple use in any specific context depends on a variety of factors, not the least of which is: 1) the nature and intensity of the demands being placed on the land; 2) the nature and scope of the stakeholders or constituencies interested in that management; and 3) the "rules of engagement" that apply to public input and intervention into the decision-making process.

Experience suggests that managing public lands for multiple uses and values seems to work most effectively if some combination of the following conditions are in place: 1) resource demands are relatively modest or can be produced in a compatible way; 2) the constituencies or stakeholders participate actively in the decision making process and are imbrued with the sense of a social contract or respect for the concept of the commonweal; and 3) the rules do not permit a small number of stakeholders to indefinitely delay or halt decisions to which they may object. For the reasons discussed in this paper, these conditions do not exist on NFS lands today.

The experiences in managing the national forests suggests strongly that key land allocation decisions, especially between protected lands, such as wilderness, and land used to produce a broader range of goods and services (e.g. timber), should be recognized as essentially political decisions and, therefore, should not be left to professional land management agencies to resolve. The unwillingness of Congress to make these decisions, or, alternatively, to set clear limits or parameters on the area of protected and/or production lands, has often left the Forest Service in an untenable situation.

Lessons on the need for public lands to secure reliable supplies of timber

In the early twentieth century it was widely assumed that public ownership and management of forest lands was needed to assure that they would be managed effectively for watershed protection and sustained timber production. Today 92 percent of the timber produced in the United States is harvested from private land (USDA/Forest Service 2004). In fact, it can be argued that the existence of public forests designated for multiple-purpose use is contrary to the objective of timber production because it encourages the kinds of public debates and controversy described in this study. As demands for non-timber uses and values on these lands increased, timber production shifted to other forests and to other countries.

Factors contributing to expanded private investment in forestry in the United States include: 1) stable and well-defined institutional frameworks and land tenure and land rights systems, backed by the rule of law; 2) strong and relatively consistent markets for forest products; (3) strong agricultural and forestry institutions and support and delivery systems at national, state and local levels; and 4) increasing per capita income and other measures of economic strength and diversity that encourage investment in the forest sector and result in citizens who cherish forests for their non-timber and environmental values (MacCleery 2001).

The Larger Environmental Effects of Reducing Timber Harvests on Federal Land

The federal lands mission shift has occurred with scant attention being given to the ecological effects of shifting resource consumption demands from federal to other lands. Today the U.S. population consumes more resources than at any time in its history and also consumes more per capita than any other nation. Since the first Earth Day in 1970, the average family size in the United States has dropped by 16 percent, while the size of the average single-family house being built has increased by 50 percent (Census 2000, Census 1994, Census 1970-1990).

After the reduction in timber harvest from national forest and other federal lands, between 1990 and 2002, U.S. softwood lumber imports (mostly from Canada) rose from about 53 to 86 million cubic meters, increasing from 28 to 37 percent of U.S. softwood lumber consumption (Howard 2003, USTR 1996). Much of the increase in Canadian lumber imports has come from

the native old-growth boreal forests. In Quebec alone, the export of lumber to the U.S. tripled since 1990 and has become a public issue there (Statistics Canada).[35] Imports of panel products have increased even more than lumber.

Harvesting on private lands in the southern United States also increased after the reduction of federal timber in the West. Increased harvesting of fiber by chip mills in the southeastern U.S. became a public issue regionally.

The reduction in national forest timber harvest shifted the environmental impact of U.S. timber consumption to other ecosystems. Yet, the consumption and environmental impact transfer implications of this shift has been given little recognition or attention in the U.S.

A VIEW TO THE FUTURE

A key consideration for the future is whether the public concerned with the management of the national forests can come together and forge a working consensus as to how these precious lands are to be managed. There appears to be a growing consensus in favor of a forest restoration/fuels treatment mission for the Forest Service. But a strong constituency for such a mission focus has yet to develop. Former Chief Jack Ward Thomas wrote that national forest stakeholders currently seem to be too engaged in fighting the battles of the past to look to the future (Thomas 2001a):

> *Fierce in battle, many of the eco-warriors have been unable to come to grips with the consequences of victory and are now reduced to wandering about the old battlefields bayoneting the wounded. Their counterparts from the resource extraction community, likewise, cannot come to terms with defeat and hold "ghost dances" to bring back the good old days when they were undisputed Kings of the West.*

In an opinion piece in *Grist* magazine, Mitch Friedman, one of Jack Thomas' "eco-warriors" on the Pacific Coast suggested that it is time for the environmental community to reconsider the newly re-invented Forest Service and change from confrontation to cooperation and collaboration.[37] Friedman writes that the environmental community should "…push to thin overgrown stands before it gets charred. We need to get better at advocating restoration logging before fires occur".

Friedman also acknowledged that the Forest Service has been "critically hampered by process." He argues that:

> *This is not because the National Environmental Policy Act requires the agency to publish a library even for timber projects that warrant no public concern. It is because we noble conservationists, during 30 years of defense of our wild country, pummeled the agency bureaucrats into thinking that's what NEPA requires….*
>
> *If we want our forest ecosystems restored, we must now disabuse the Forest Service of the inefficiencies we helped impose. We must rescue the Forest Service by becoming its friend, its ally and its core constituency…. We have at hand an opportunity…to build a new conservation movement and a new Forest Service to advance a new central idea of restoration.*[36]

Almost two decades later, many in the environmental community have failed to take on board

[36] "*The Forest Service is dead; long live the Forest Service!: It's time for conservationists to collaborate with an agency they've long demonized"*

Friedman's challenge. It still remains to be seen whether Chief McGuire's "grand experiment" wherein diverse interests consent to "share the land" is a viable approach for multipurpose public land in an era of representative democracy characterized by diverse and fiercely competing special interest groups.

BIBLIOGRAPHY

Apple, D.D. 1997. Changing social and legal forces affecting the management of national forest lands. *Women in Natural Resources*, Vol. 18, No. 1, Autumn 1996.

Arno, S.F. 1985. Ecological effects and management implications of Indian fires. *In Proceedings: Symposium and workshop on wilderness fire.* 15–18 November 1983. Missoula, MT. Ogden, Utah, Intermountain Forest and Range Experiment Station, General Technical Report INT-182, USDA/Forest Service.

Arno, S.F. & Allison-Bunnell, S. 2002. *Flames in our forest: disaster or renewal?* Washington, DC, Island Press, 227 pp.

Babbitt, B. 1994. The Endangered Species Act and "takings": a call for innovation within the terms of the act. *Environmental Law,* 24(2): 355–67.

Bowes, M.D. & Krutilla, J.A. 1989. *Multiple-use management: the economics of public forestlands*. Washington, DC, John Hopkins University Press for Resources for the Future. 357 pp.

Brooks, D.J. 1993. *U.S. forests in a global context*. USDA/Forest Service, General Technical Report RM 228, 7/93.

Brown, H. & Williams G. 2001. *Crossing the divide: Forest Service milestones in the 1980s*. Washington, DC, USDA/Forest Service.

Carson, R. 1962. *Silent spring*. Boston, Houghton Mifflin Co.

CEQ. 2025. *Removal of National Environmental Policy Act Implementing Regulations*. *Federal Register* / Vol. 90, No. 36 / Tuesday, February 25, 2025

DOI. 2008. *Implementation of the National Environmental Policy Act of 1969. Federal Register* / Vol. 73, No. 200 / Wednesday, October 15, 2008.

Census. 1975. *Historical statistics of the United States from colonial times to 1970, Bicentennial edition*, Part 1. U.S. Department of Commerce, Bureau of the Census, Washington, D.C.

Census. 1970–1990. *Characteristics of new housing: current construction reports*. Series C25. Compilation of 1970-90 C25 reports. Washington, DC: U.S. Department of Commerce, Bureau of the Census.

Census. 1994. *Statistical abstract of the United States, 1994*. Washington, DC, U.S. Department of Commerce, Bureau of the Census.

Census. 2000. *Characteristics of new housing: 2000*. 2000 C25 report, Table 16. Washington, DC, U.S. Department of Commerce, Bureau of the Census.

Clark, L. & Sampson, R.N. 1995. *Forest ecosystem health in the inland west: a science and policy reader*. Washington, DC, Forest Policy Center, American Forests.

Domestic Policy Council (DPC). 1988. *Outdoor recreation in a nation of communities: action plan for Americas outdoors*. A Report of the Task Force on Outdoor Recreation Resources and Opportunities to the Domestic Policy Council, Washington, D.C. 6/88.

Environmental Protection Agency (EPA). 2001. *Latest findings on national air quality: 2000 status and trends.* Environmental Protection Agency, Washington, D.C. September 2001. (Online at: http://www.epa.gov/air/aqtrnd00/index.html).

Fairfax, S.K. 1978. A disaster in the environmental movement. *Science,* 17 February 1978: 743–748.

FEMAT. 1993. *Forest ecosystem management: An ecological, economic, and social assessment – report of the Forest Ecosystem Management Assessment Team*. USDA-Forest Service. Portland, Oregon. Online at: http://pnwin.nbii.gov/nwfp/FEMAT/

Fedkiw, J. 1989. *The evolving use and management of the nation's forests, grasslands, croplands, and related resources.* USDA-Forest Service, General Technical Report RM 175, September 1989.

Fedkiw, J. 1999. *Managing multiple uses on national forests, 1905-1995*. Washington, DC, USDA Forest Service. FS-628. 284 pp.

Forest Options Group (FOG). 1999. *Second century: options for the Forest Service*. A report to the American people by the Forest Options Group, January 1999. Online at: https://ti.org/2cfexsum.html.

Franklin, J. 1989. Toward a new forestry. *American Forests* (November–December, 1989).

Franklin, J. & Forman, R. 1987. Creating landscape patterns by forest cutting: ecological consequences and principles. *Landscape Ecology* 1(1987): 5–18.

Franklin, J., Cromack, K., Denison, W., McKee, Maser, C., Sedell, J., Swanson, F. & Juday, G. 1981. *Ecological characteristics of old-growth Douglas-fir forests*. Gen. Tech. Rep. PNW-GTR-118. Portland, OR, U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 48 pp. Online at: http://216.48.37.142/pubs/viewpub.jsp?index=5546.

General Accounting Office (GAO). 1999. *Western national forests: a cohesive strategy is needed to address catastrophic wildfire threats*. Washington, DC, General Accounting Office, GAO/ RCED-99-56.

Gruell, G.E. 1985. Indian fires in the interior west: a widespread influence. *In Proceedings: Symposium and workshop on wilderness fire.* 15–18 November 1983. Missoula, MT. Ogden, Utah, Intermountain Forest and Range Experiment Station, General Technical Report INT-182, USDA/Forest Service.

Grumbine, R.E. 1994. What is ecosystem management? *Conservation Biology,* 8: 27–38.

Howard, J.L. 2003. *U.S. timber production, trade, consumption, and price statistics 1965 to 2002*. Res. Pap. FPL-RP-615. Madison, WI, U.S. Department of Agriculture, Forest Service, Forest Products Laboratory. 90 pp.

Human Resources Management (HRM). 2006. *Workforce data reports from NFC.* Human Resources Management, USDA/Forest Service.

Johnson, K.N., Franklin, J.F., Thomas, J.W. & Gordon, J. 1991. Alternatives for management of late-successional forests of the Pacific Northwest. A report to the Agriculture Committee and the Merchant Marine and Fisheries Committee of the U.S. House of Representatives.

Johnson, N.C. Malk, A.J., Szaro, R.C. & Sexton, W.T., eds. 1999. *Ecological stewardship: a common reference for ecosystem management*, Elsevier Science Ltd., Oxford. On-line reference at:http://www.elsevier.com/wps/find/bookdescription.cws_home/601491/ description#description**.**

Karkkainen, B.C. 2002. Toward a smarter NEPA: monitoring and managing government's environmental performance. *Columbia Law Journal* (May 2002) p. 102, *Colum. L. Rev.* p. 903.

Kaufman, H. *1960. The forest ranger: a study in administrative behavior*. Baltimore, MD, John Hopkins Press.

Kaufman, H. 1994. *The paradox of excellence*. Online at: http://fs.jorge.com/archives/ History_National/Kaufman_1994.htm

Kennedy School. 1994. *What if we could start over: the US Forest Service champions "bottom-up" management*. John F. Kennedy School of Government Case Program. Case: C16-94-1246.0. Harvard University, Cambridge. Massachusetts.

Kessler, W.B., Salwasser, H., Cartwright, C.W. Jr. & Caplan, J.A. 1992. New perspectives for sustainable natural resources management. *Ecol. Appl*. 2, 221–225.

Kuusela, K. 1994. *Forest resources in Europe 1950-1990*. European Forest Institute, Research Report 1. Cambridge, UK, Cambridge University Press.

Lee, R.G. 1994. *Broken trust, broken land: freeing ourselves from the war over the environment*. Wilsonville, Oregon, Book Partners, Inc.

MacCleery, D.W. 1992. *American forests: a history of resiliency and recovery. USDA/Forest Service*, FS-540. In cooperation with the Forest History Society, Durham, North Carolina.

MacCleery, D. 2001. *Pathway to sustainability: defining the bounds on forest anagement*, by

John Fedkiw, Douglas W. MacCleery, and V. Alaric Sample. Durham, North Carolina, Forest History Society.

MacCleery, D.W. & Le Master, D.C. 1999. The historical foundation and evolving context for natural resources management on federal lands. *In* W.T. Sexton, R.C. Szaro, N.C. Johnson & A.J. Malk, eds. *Ecological stewardship: a common reference for ecosystem management*, pp. 517–556. Oxford, Elsevier Science Ltd.

Office of Personnel Management (OPM). 2006. *Breakdown of Forest Service employment by job series – 1973, 1983, 1993, 2003.* Washington, DC. Office of Personnel Management.

Pyne, S.J. 1982. *Fire in America: a cultural history of wildland and rural fire*. Princeton, NJ, Princeton University Press.

Roth, D. & Williams, G. 2003. *The Forest Service in 1905*. USDA/Forest Service, January 8, 2003. Online at:

Robertson, D. 1992. Memo from Dale Robertson to regional foresters and station directors entitled "Ecosystem Management of the National Forests and Grasslands." Washington Office, USDA/ Forest Service, June 4, 1992.

Salwasser, H., MacCleery, D.W. & Snellgrove, T.A. 1993. An ecosystem perspective on sustainable forestry and new directions for the U.S. national forest system. *In* G.H. Aplet, N. Johnson, J.T. Olson & V. Alaric Sample, eds. *Defining sustainable forestry*, pp. 44–89. Covelo, CA, Island Press.

Sampson, R.N. & Adams, D.L., eds. 1993. *Assessing ecosystem health in the Inland West*. Overview papers from an American Forests scientific workshop. 14–19 November 1993, Sun Valley, ID. Washington, DC, American Forests.

Senate Agriculture. 2003. *Report on the Healthy Forests Restoration Act (H.R. 1904)*. Senate Agriculture Committee. November 2003. U.S. Congress.

Society of American Foresters (SAF). 1993. *Taskforce report on sustaining long-term forest health and productivity*. Bethesda, MD. Cited in: *Forest of discord: options for governing our national forests and federal public lands,* 19–20. Bethesda, MD, Society of American Foresters. 1999. 84 pp.

Stankey, G.M., Bormann, B.T., Ryan, C., Shindler, B., Sturtevant, V., Clark, R.N. & Philpot, C. 2003. Adaptive management and the Northwest Forest Plan: rhetoric and reality. *Journal of Forestry,* Vol. 101, No. 1, January/February 2003.

Steen, H.K. 1976. *The U.S. Forest Service: a history*. Seattle, Washington, University of Washington Press.

Steen, H.K. 2000. Traditional forestry hits the wall: excerpt of interview with F. Dale Robertson by Harold Steen, August 12–14 1999, *Forest History Today* (Spring 2000).

Thomas, J.W. 2001a. Testimony in hearing before the subcommittee on forests and forest health on "Conflicting Laws and Regulations – Gridlock on the National Forests". 25 October 2001. Washington, DC, U.S. House of Representatives.

Thomas, J.W. 2001b. Testimony in a hearing on the Northwest Forest Plan on October 24, 2001 before the Senate Subcommittee on Public Lands and Forests of the Committee on Energy and Natural Resources. U.S. Senate, Washington, DC.

Thomas, J.W. 2003. *Sustainability and the Northwest Forest Plan: dynamic vs. static management. Prepared for the USDA Forest Service Pacific Southwest Region Review of Northwest Forest Plan Implementation by Jack Ward Thomas, Boone and Crockett Professor of Conservation, University of Montana, Missoula, Montana, 23 June 23 2003. Online at:*http://www.fs.fed.us/r5/nwfp/plans/sus.shtml

Thomas, J.W. 2004. *The journals of a forest service chief* (Harold K. Steen, ed.) Durham, NC, Forest History Society and Seattle, WA, University of Washington Press.

Thomas, J.W., Forsman, E.D., Lint, J.B., Meslow, E.C., Noon, B.R. & Verner, J. 1990. *A conservation strategy for the northern spotted owl.* (ISC Report). Portland, Oregon, USDA Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service, and National Park Service. 427 pp. Online at: http://pnwin.nbii.gov/nwfp/ConservationStrategyOwl/

Thomas, J.W., Raphael, M.G., Anthony, R.G., Forsman, E.D., Gunderson, A.G., Holthausen, R.S., Marcot, B.G., Reeves, G.H., Sedell, J.R. & Solis, D.M. 1993. *Viability assessments and management considerations for species associated with late-successional and old-growth*

forests of the Pacific Northwest. (Also referred to as the Scientific Assessment Team or SAT Report.) Portland, Oregon, U.S. Department of Agriculture, Forest Service. 523 pp. Online at: http://www.environment.pdx.edu/oldgrowth.htm

Trefethen, J.B. 1975. *An American crusade for wildlife*. New York, NY, Winchester Press and the Boone and Crockett Club.

Twight, B.W. 1990. Bernhard Fernow and Prussian forestry in America. *Journal of Forestry*, 88 (2): 21–25.

United States Department of Agriculture (USDA). 2002. *FY 2003 budget summary*. USDA, Washington, DC. Online at: http://www.usda.gov/agency/obpa/Budget-Summary/2003/2003budsum.htm

USDA/Forest Service. 1971. *National forest management in a quality environment: timber productivity.* Washington, DC, U.S. Forest Service, 1971. 61 pp.

USDA/Forest Service. 1993. *Report of the Forest Service – fiscal year 1992*. Washington, DC. 2/93.

USDA/Forest Service. 1994. *The Forest Service ethics and course to the future.* FS-567. Washington, DC. 1994.

USDA/Forest Service. 1994a. *The reinvention of the Forest Service: the changes egin*. 6 December, 1994. Washington, DC.

USDA/Forest Service. 2001. *Forest resources of the United States, 1997*. General Technical Report NC-219, St. Paul, MN, North Central Research Station.

USDA/Forest Service. 2002. *The process predicament: how statutory, regulatory, and administrative factors affect national forest management*, USDA/Forest Service, Washington, DC, June 2002. Online at: http://www.fs.fed.us/projects/documents/Process-Predicament.pdf

USDA/Forest Service. 2003. *National review of silviculture continuing education and silviculture certification programs: phase one team report*. Forest Management Division, National Forest System. USDA/Forest Service, Washington, DC, 2003.

USDA/Forest Service. 2004. *Forest resources of the United States, 2002*. General Technical Report NC-241, St. Paul, MN, North Central Research Station.

USDA/Forest Service. 2004a. *Forest Service performance and accountability report – fiscal year 2003*. USDA/Forest Service, Washington, DC. April 2004.

USDA/Forest Service. 2005. *Ten year report on the Northwest Forest Plan. Socio-economic draft report*. Vol. 3, Part 1, Chapter 4 (Agency Jobs, Unit Reorganizations, and Budgets).

USDA/Forest Service. 2005. *National forest cut and sold reports*, FY 1950 to date, USDA/Forest Service, Washington, DC.

USDA/Forest Service. 2005a. *Land areas of the National Forest System – 2005.* USDA/Forest Service, Washington, DC. Online at: http://www.fs.fed.us/land/staff/lar/index.html

USDA/Forest Service & USDI/Bureau of Land Management. 1994. *Final supplemental environmental impact statement on management of habitat for late-successional and old-growth forest related species within the range of the northern spotted owl*. Portland, Oregon.

U.S. Department of Commerce. 2001. Bureau of Economic Analysis, July 2001.

U.S. Senate. 1972. *Clearcutting on federal timberlands.* Committee on Interior and Insular Affairs, Subcommittee on Public Lands. Committee Print. 92nd Cong., 2nd Sess. Washington, DC, U.S. Govt. Print. Off., Mar. 1972. 13 pp.

USTR (Office of the U.S. Trade Representative). 1996. U.S. and Canada Reach Agreement on Softwood Lumber. Press release, 16 February, 1966. Washington, DC, Executive Office of the President. 4 pp.

Walters, C. 1986. *Adaptive management of renewable resources* (New York, MacMillan Publishing Company), and C. Walters & C.S. Holling, Large-scale management experiments and learning by doing. *Ecology* 71 (1990).

White House. 2002. *The President's management agenda*. Washington, DC, Executive Office of the President, Office of Management and Budget. Online at: http://www.whitehouse.gov/omb/budget/fy2002/mgmt.pdf

Wilent, S. 2006. Federal forests, private foresters? Forest Service, other agencies mull contracting some services. *The Forestry Source*, Bethesda, Maryland. Society of American Foresters.

Williams, M. 1989. *Americans and their forests: a historical geography*. New York, Cambridge University Press.

Williams, G.W. 2002. *The multiple use-sustained yield act*. Washington, DC, USDA/Forest Service, 7/12/2002.

Williams, G.W. 2004. *Forest Service organization and reorganization: past to present*. Washington, DC, USDA/Forest Service, 12/13/2004.

Williams, G.W. 2004a. *FS employees 1891 to present*. Washington, DC, USDA Forest Service, History Program.

Zhang, D. 2000. *Endangered species and timber harvesting: the case of red-cockaded woodpeckers*. Auburn, Alabama, Forest Policy Center, School of Forestry and Wildlife Sciences, Auburn University.