The Northwest Forest Plan

A Report to the President and Congress

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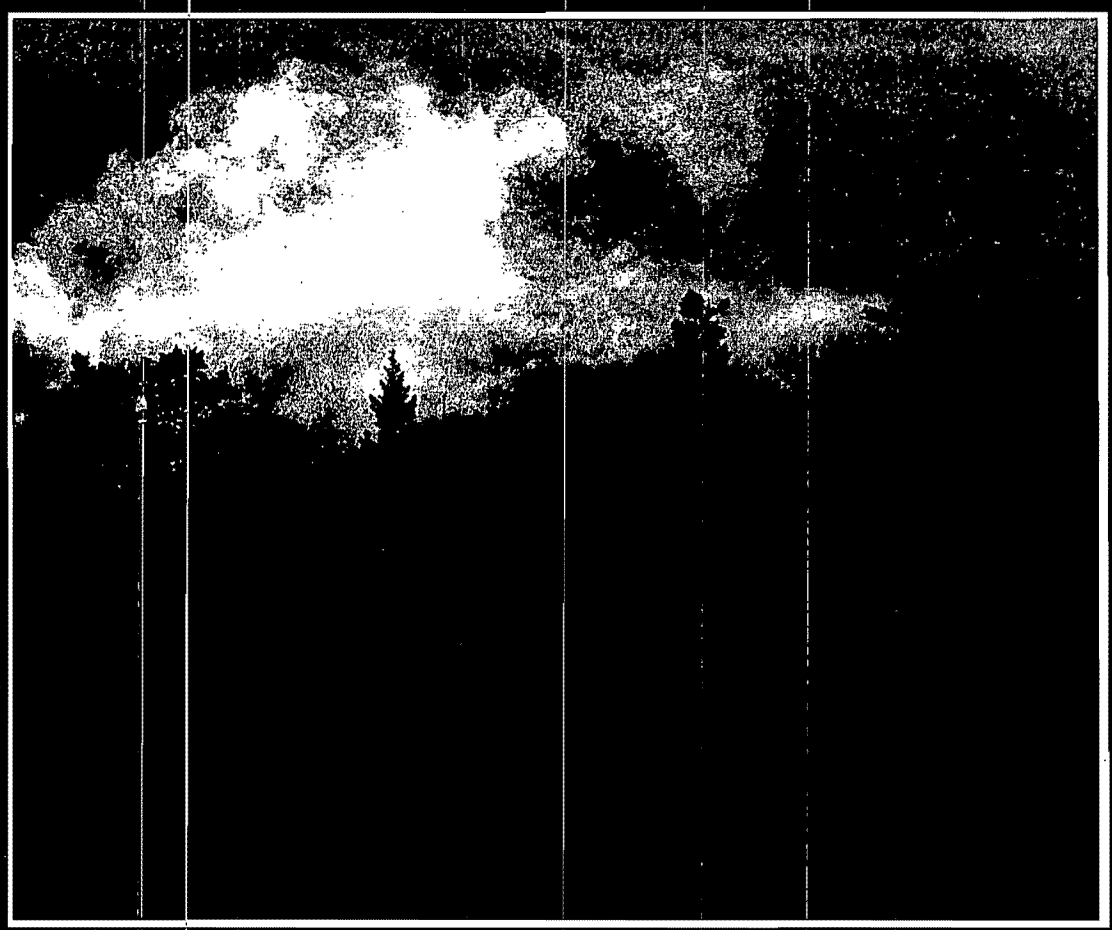

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ABSTRACT

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The Northwest Forest Plan is a comprehensive design for managing federal forests; providing economic assistance to hard-pressed workers, businesses, and communities; and coordinating the activities and responsibilities of federal agencies and state, local, and tribal governments in western Oregon, western Washington, and northern California. The Plan, announced in July of 1993, is a direct outgrowth of the Forest Conference held in Portland, Oregon, in April 1993; it was intended to break the impasse that had brought federal timber sales to a standstill in the region of the northern spotted owl. The interagency and intergovernmental component makes the Plan a model of government reinvention through streamlining, coordinating, developing partnerships, and collaborative decision making. The forest ecosystem management component includes regionwide federal land allocations and strategies for conserving aquatic resources, managing forests, planning timber sales, harvesting timber, using adaptive management, and protecting sensitive species on nonfederal forestlands. The economic assistance component is intended to give the workers and their families, businesses, counties, and communities affected by changes in federal forest policies the opportunity to adjust and prepare themselves for a prosperous, sustainable future. Much has been learned since the Plan was unveiled in July of 1993, and this report reviews accomplishments, develops observations on implementation, and identifies opportunities for further progress.

Keywords: Northwest Forest Plan, Option 9, ecosystem management, federal forestry, northern spotted owl, timber dependence, timber supply, endangered species, aquatic conservation, adaptive management, rural economic assistance.

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SUMMARY

A Threshold for Change: the Northwest Forest Plan

About This Report

This report was drafted at the request of Congress, as directed in the fiscal year 1995 Interior and Related Agencies Appropriations Conference Report. It summarizes the events that led to the development of the Northwest Forest Plan, the components of the Plan, accomplishments in meeting the Plan's commitments, and observations about what is working well and where improvements could be made.

The forest lands of the Pacific Northwest and northern California define the region's identity, woven into the lives and livelihoods of the people who call this region home. From the Pacific Ocean to the Cascade Range and from the Canadian border south to Mendocino County, California, these forests provide clean water, pure air, a home for plant and animal species, opportunities for recreation, and a place for solitude and contemplation. These same forests also provide a wide range of resources that people demand, including wood for forest products; fish for commercial and sport fishing; lakes, rivers, and mountains for tourism and recreation; and many other resources for a variety of smaller industries.

For the past few decades, policies that required both timber harvest at or near historical rates and increasing environmental protection proceeded along parallel tracks. Underlying these often conflicting mandates was an emotional debate over which track should have greater emphasis. The debate intensified in the late 1980s, when public attention and conflict over the issue gained national prominence.

A series of legislative and legal battles in the late 1980s led to an injunction in 1991 that prevented the Forest Service from preparing any new timber sales in northern spotted owl habitat; in 1992, the Bureau of Land Management was also enjoined from any new timber sales in owl habitat. These legal actions brought federal timber sales to a virtual halt.

The Clinton Administration inherited the Northwest timber issue in 1993, and a commitment to resolve it was high on the President's list. To end the legal impasse, remove the injunctions from the region's federal forest lands, and move the region forward, the President asked his Administration and federal professionals to create a science-based forest management plan built on these five goals:

- Adhere to the nation's laws.
- Protect and enhance the environment.
- Provide a sustainable timber economy.
- Support the region's people and communities during the economic transition.
- Ensure that federal agencies work together.

These goals had widespread support from a diverse group of participants at President Clinton's Forest Conference in Portland, Oregon, April 2, 1993, though people clearly differed on which goals should receive the greatest emphasis. The challenge to the Administration was to develop a plan that achieved each of these goals while recognizing that difficult tradeoffs would have to be made to address people's often conflicting demands. Two months later, the President announced his forest plan with its proposed agency coordination, economic assistance, and forest management components.

Agency coordination was implemented immediately by the Administration. The Administration proposed and Congress secured federal appropriations to start the economic assistance program by December 1993. And, on April 13, 1994, the federal forest management plan was completed, incorporating nearly 110,000 public comments.

Meeting Goals

How the five main goals that served as the Plan's foundation have been met during the first two years of implementation are outlined below.

Adhere to Our Nation's Laws: Providing Certainty for the Future

One of the underlying philosophies of the Plan was that making the difficult decisions required to comply with environmental laws today would provide greater certainty for all forest habitat and its users tomorrow. The Plan attempts to increase certainty by using the best science available, and managing adaptively so that learning becomes a primary product of all management actions. The Plan was also designed to increase certainty by integrating the nation's environmental laws, which were independently drafted, making them sometimes difficult to interpret and susceptible to legal challenges.

Within two months after the Plan's release, the injunctions were lifted, clearing the way for agencies to plan new timber sales and other management actions, for the first time in three years. In December 1994, the Plan was the first regional land management plan to pass full legal muster, from the same court that had placed the injunctions on the federal government three years earlier. Since then, individual agency actions have continued to prevail on subsequent legal challenges, allowing the Plan to move forward.

Protect and Enhance the Environment: A New Era for Natural Resource Management

The concept of ecosystem management recognizes that forests are complex networks of biological systems connected and dependent on each other, and that people are an integral part of those ecosystems. Although ecosystem management has been widely studied, it is just beginning to be implemented on the ground. The Northwest Forest Plan is one of the first large-scale attempts to define and operate ecosystem management across an entire region.

The Plan covers the range of the northern spotted owl, which includes western Washington and Oregon plus northern California. The 24.4 million acres of federal forest lands in this region are allocated into seven categories created to maintain and restore nearly 80% of the remaining

late-successional and old-growth forests, water quality, fish and wildlife habitat, and to allow a sustainable timber harvest of 1.1 billion board feet per year.

An aquatic conservation strategy was implemented to restore and maintain the health of watersheds, providing direction for analysis, restoration, and monitoring. More than 1,100 watershed restoration projects are completed or initiated. Nearly 12 million acres of watersheds have been analyzed, with another 2.5 million acres projected to be analyzed by the end of fiscal year 1997.

The region is divided into 12 physiological provinces to focus on how land management activities will address the unique ecological attributes of each subregion. For example, the old-growth rain forests of the Olympic Peninsula Province in Washington have different management requirements than do the less dense and drier forests of the Klamath Province in northern California. The Provinces allow the Plan's standards and guidelines to be adapted to fit unique, local conditions.

Because of the conservation benefits on public lands, federal agencies are also working differently with nonfederal land owners. Nonfederal land owners are working voluntarily with the U.S. Fish and Wildlife Service and National Marine Fisheries Service to manage millions of acres of habitat for a variety of species by developing habitat conservation plans. These cooperative efforts give land owners the opportunity to comply with the Endangered Species Act by maintaining important habitat areas, and they can, in return, move forward with their economic goals; 24 plans and agreements are completed, covering more than 1,756,000 acres; another 56 are underway, potentially protecting about 7.5 million acres.

Provide a Sustainable Timber Economy: The Timber Supply Pipeline Is Flowing Again

From 1991 to 1994, the federal timber-sale program west of the Cascade Range was virtually shut down by court injunctions. The timber pipeline went down from about 5 billion board feet sold and available for harvest before the injunction to about 1 billion board feet three years later. In 1994, the injunctions were lifted and federal timber could again be offered for sale.

Filling the pipeline again posed a two-step challenge: first, to develop a science-based federal forest management plan that would allow the injunctions to be lifted, and then to physically re-establish a sustainable timber-sale program from scratch.

Volume offered in fiscal years 1994, 1995, and 1996 (mmbf)

Agency	FY 1994	FY 1995	FY 1996	Total
Forest Service				
Oregon and Washington	156	393	516	1,065
N. California	67	100	167	334
Subtotal	**223**	**493**	**683**	**1,399**
Bureau of Land Management	18	127	190	335
Total	**241**	**620**	**873**	**1,734**

The Forest Service estimates that, of this amount, 77% was saw timber; 14% was pulp and other non-saw-timber products; 5% was posts, poles, and pilings; 7% was fuelwood; and 1.5% was cull material. The Bureau of Land Management reports only saw timber when reporting volume offered. More than 1.7 billion board feet were offered for sale from federal forest lands in Washington, Oregon, and northern California from 1994 to 1996—enough to build 142,000 average homes and employ about 11,700 people.

If the President's proposed budget is funded by Congress, the Plan is projected to meet the 1.1 billion board feet timber harvest target in western Washington, Oregon, and northern California in 1997.

Timber and other resource personnel in the region have had to spend considerable unplanned time on litigation related to the salvage provisions of section 2001(k) of the Recissions Act (1995) and requirements of resulting court orders. The agencies believe that this unplanned workload may affect final accomplishments for 1997.

Support the Region's People and Communities During a Period of Economic Transition: The Economic Adjustment Initiative

Unemployment for the entire region is at its lowest in two decades. In Oregon alone, more than 58,000 jobs have been created between May 1995 and May 1996 (Oregon Employment Department 1996), and population growth in both metropolitan and nonmetropolitan areas throughout the region are above national averages. Nonetheless, changes in the timber industry resulting from federal sale reductions are creating hardships for people, businesses, and communities in rural parts of the region that have not benefited from regional economic growth, and are far from major transportation corridors. The Northwest Economic Adjustment Initiative is aimed at providing both immediate and long-term relief for those people, businesses, and communities. Partnerships with representatives from federal agencies, states, tribes, and local communities have created new opportunities to help people help themselves through this difficult transition in the forest products industry.

The initiative proposes to make $1.2 billion available over five years to develop much-needed infrastructure in timber-dependent communities, provide technical and financial assistance to rural businesses, create new jobs through restoring the region's forested watersheds, and provide job training and retraining for dislocated workers. In the Plan's first two years, nearly 14,800 job-related effects were created.

Job-related effects include worker placement for those completing training programs, short- and long-term jobs retained and created in 1995, and jobs expected to be created after 1995. The job estimates, by category of assistance and state are

Category	Oregon	Washington	California	Total
Workers and families	449	368	0	817
Business and industry	5,160	1,730	1,420	8,310
Communities and infrastructure	1,013	585	401	1,999
Ecosystem investment	2,361	701	611	3,673
Total	**8,983**	**3,384**	**2,432**	**14,799**
Percent	61%	23%	16%	100%

Not included in the totals are 1,743 jobs resulting from loan guarantees made by the Small Business Administration within timber-affected counties. Jobs from loan guarantees totaled 768 in California, 723 in Oregon, and 252 in Washington.

Additionally, the Initiative has distributed more than $555 million in grants and loans, and more than 100 communities have been assisted. The distribution of funds by category of assistance and state for the $555 million obligated from fiscal year 1994 through 1996 was

Category	Oregon		Washington		California		Total	
	Millions $	%	Millions $	%	Millions $	%	Millions $	%
Workers and families	20,320,000	4	16,250,000	3	4,000,000	1	40,570,000	8
Business and industry	77,087,435	14	38,086,892	7	36,601,400	7	151,775,727	28
Communities and infrastructure	114,188,782	21	81,859,452	14	74,838,719	13	270,886,953	48
Ecosystem investment	45,348,837	8	30,286,055	5	16,592,674	3	92,227,566	16
Totals	256,945,054	47	166,482,399	29	132,032,793	24	555,460,246	100

Here are some examples of projects funded in fiscal years 1994 and 1995:

Assistance to workers and families

More than $27 million has been awarded to retrain more than 4,900 workers in communities affected by changes in the timber industry; 81% of these workers have subsequently been placed in jobs.

Assistance to business and industry

Grants and loans of $88.6 million were awarded to stimulate business growth and economic development to more than 100 rural communities in Washington, Oregon, and California in fiscal years 1994 and 1995.

Assistance to communities

Grants and loans of $162.7 million were awarded to help rural communities in Oregon, Washington, and California plan and build water systems, retool mills, update and refurbish hospitals, build new waste treatment facilities, and support other community infrastructure improvements in fiscal years 1994 and 1995.

Ecosystem investment

An investment of $65.5 million funded several hundred watershed and ecosystem projects in Oregon, Washington, and California, to restore habitat and provide jobs.

Ideas for projects and programs are gathered and considered by one-stop centers for all types of financial assistance. Each state has one Community Economic Revitalization Team whose membership is individually tailored to deal with the needs of workers, families, businesses, and communities in their state. The Teams are working to streamline government processes and overcome bureaucratic barriers. Nearly 50 barriers have been identified and removed in 1994 and 1995.

An additional problem associated with federal harvest reductions is the economic threat to some county governments that traditionally depend on 25 to 50% of the federal timber receipts to provide a substantial portion of their budget. To help ensure these counties could continue to provide vital public services, the Administration proposed and Congress authorized a substitute fixed-payment schedule based on 85% of the average of federal timber receipts from 1986 to 1990. The payments, which began in 1994, will decline at the rate of 3% per year until 2003. Finally, the Plan incorporates a provision, proposed by the Administration and authorized by Congress, that ends tax exemptions given to foreign companies exporting unprocessed logs, to keep more logs here for domestic processing.

Ensure That Federal Agencies Work Together

The Plan directs government agencies to work cooperatively rather than as separate agencies. This cooperation is difficult because agencies have different mandates, responsibilities, and cultures that sometimes overlap or conflict. Agencies like the Forest Service and the Bureau of Land Management share similar missions to manage federal lands for resources, recreation, and environmental protection; regulatory agencies like the National Marine Fisheries Service and Fish and Wildlife Service are responsible for conserving species under their Endangered Species Act jurisdiction.

To coordinate and focus Plan implementation, the federal agencies are working together in new interagency groups that do not take decision authority away from individual agencies but require them to coordinate with other agencies and the public.

In this effort, agencies have developed regionwide means to coordinate activities, improve communication, share information, and eliminate duplication. As an example, the consultation process under the Endangered Species Act that used to take about 114 days is now taking an average of 30 days in Oregon, Washington, and northern California.

Advisory committees were established to ensure that federal decision makers receive input from local, state, and tribal governments and the public. The committees are focused on building coordination, communication, and trust among the 7 departments and 16 agency programs implementing the Plan.

The Interagency Steering Committee (ISC), based in Washington, DC, establishes policies for the Plan, and resolves regional issues that are brought before them.

The Regional Interagency Executive Committee (RIEC) serves as the senior regional body coordinating and implementing the Plan. Advising the RIEC is the Intergovernmental Advisory Committee (IAC), which ensures a forum for the states, local governments, and tribes.

Each of the 12 provinces has a Provincial Interagency Executive Committee (PIEC), of federal agency managers who oversee the public programs within their province. Advising the PIECs are the Provincial Advisory Committees (PAC), made up of community, business, and environmental representatives, along with tribal, state, and local officials.

The Regional Ecosystem Office (REO) provides independent recommendations and scientific, technical, and other staff support to the RIEC. Staff members of the REO are on loan from federal agencies participating in the Plan.

Assisting the Economic Adjustment Initiative are the Multi-Agency Command (MAC) and the Regional and State Community Economic Revitalization Teams (RCERT and SCERTs). The MAC members are based in Washington, DC, and the regional and state CERT members include state and local representatives from California, Oregon, Washington, tribal organizations, and the federal agencies responsible for awarding grants and loans.

The Plan in Progress

The body of this report contains hundreds of observations on Plan implementation and opportunities for improving what has already been completed. Although each observation is important in its own right, three broad conclusions were reached.

Government Agencies Are Working Together

Government agencies are working together—and working with interested citizens—to better serve the public and meet their diverse demands. Such coordination is saving staff and financial resources, creating trust among and between the agencies, leading to better and more unified positions, and helping manage the inevitable conflicts. Successful partnerships require people to look beyond their own missions and values to develop mutually agreed upon solutions. Working things out takes considerable patience and time, but in the end more people feel better about the decisions and the mix of resources being managed.

The Ecosystem Approach Is Changing How Forests Are Being Managed

An ecosystem management approach is more than just a general concept; it also provides a set of management tools that can be applied on the ground and be made to work. But these tools are new, and improvements are being made to better meet economic and environmental policy commitments. The adaptive management concept—designing management actions to produce learning and making changes as we learn—will be used to refine the Northwest Forest Plan. It will take a decade or more to refine the tools that were developed in 1993 and 1994, but the agencies are off to a measurable start.

The Economy and the Environment Are Moving Toward a New Equilibrium

People want more of both environmental protection and products from their forests. The Plan seeks a new equilibrium by taking a comprehensive, multiownership look at integrating forestry and economic assistance. Difficult choices were made to assure that the region's late-successional and old-growth forests that were in decline would survive over time. The result was a new federal timber-sale rate that is expected to grow slowly over time and a more flexible approach to regulating private lands in recognition of the rights of private land owners.

For those who depend on federal timber sales, the Plan's 75% reduction in sales is too large. For those who believe that all of the remaining late-successional and old-growth forests should be protected, the Plan's 80% protection of these forests is too small. Where people stand on the new equilibrium depends on their beliefs and values.

SUMMARY:
THE NORTHWEST FOREST PLAN IS A PLAN IN PROGRESS

After being shut down for three years, federal forest management is moving forward, though under somewhat difficult circumstances. Federal expenditures are being reduced to balance the budget. The reduced federal staff implementing the Plan is simultaneously doing field work, fighting fires, addressing mandates from the Congress and courts, and meeting a variety of other responsibilities. And both the federal agencies and the public are still learning how to work together in the context of some polarized perspectives about the role of public lands.

More important though, people from a wide variety of backgrounds, needs, and expectations are beginning to sit down with each other and federal resource managers--and finding common ground. These new partnerships often start when people work together and achieve a small success like a thinning timber sale or a watershed restoration project. The trust being established today may make decisions easier in the years to come.

The Plan is designed to be adaptable and flexible. It allows people to consider and incorporate new information, scientific results, and on-the-ground experience to meet Plan objectives. Over the next few decades, the Plan, if carefully implemented, will generate more old-growth habitat and provide environmentally sound, sustainable timber production for the entire region. Most important, the Plan can prevent a return to the gridlock and frustration of the past. It is a starting point for the people, communities, and forests of the Pacific Northwest and northern California, a blueprint for a new way of managing the region's natural resources for the continued benefit of everyone.

CHAPTER 1

About This Report

The forests of northern California, Oregon, and Washington are an integral part of the lives and livelihoods of the people who call this region home. From the Pacific Ocean to the Cascade Range and from Mendocino County, California, to the Canadian border, these forests provide clean water, pure air, and a home for plant and animal species, along with a place for people to connect with their natural history. These same forests provide a wide range of resources that people demand, including wood for forests products; fish for commercial and sport fishing; rivers, lakes, and mountains for recreation and tourism; and a myriad of natural resources for many smaller industries.

How these federal forests are managed for the people of the region and the nation has been strongly debated since the late 1800s. The context for that debate changed dramatically in the early 1990s, when federal forest management was virtually halted by the courts for three years. The shutdown would remain in place until the federal land management agencies made their plans more effective in sustaining total forest environments, including dependent plant and animal species.

Over the last century, the United States has built strong forest management and protection programs founded on the principle of sustained yield, in which timber inventory characteristics are used to assure more timber is grown than harvested. By most measures, the nation has successfully met this challenge. Timber harvest in 1920, across all ownerships, was double the net annual growth; by 1992, net annual growth exceeded harvest by 34% (MacCleery 1992). Although the nation enjoys sustainable timber harvest, many have questioned whether sustaining timber growth reflects the sustainability of a forest's noncommercial timber, and other plant, fish, and wildlife species.

To help assure the sustainability of all forest-associated plant, fish, and wildlife species, Congress passed forest planning statutes in 1976 that expanded the responsibilities of federal land management agencies to negotiate resource allocations and practices among those with different perspectives about how those resources should be used (Fairfax and Yates 1987). After nearly two decades of forest planning under those statutes, many believe the time has come to re-think sustained yield and to consider whether timber harvest rates should be calculated after determining the kind and amount of habitat needed to assure the long-term health of fish, wildlife, and plant species.

Underlying the evolving definitions of sustainability and planning are many opinions that often cause deep divisions about how much, if any, timber should be cut on federal lands. Some believe federal forests should be transferred back to nonfederal land owners for more active management that characterizes historical timber sale rates. Others believe timber harvest should be banned from federal lands altogether. These strong differences of opinion about federal land management are reflected by the heartfelt and diverse feelings that people in the Pacific Northwest and northern California have about their forests. For the generations of people who have

made their livelihood harvesting timber and producing forest products, the forests represent the lifeblood of the region's economy and symbolize a proud tradition of hard, demanding work managing a renewable resource. For the many people who revere the beauty and solitude of an old-growth forest as well as its associated ecological and economic benefits, the forests personify the very soul and quality of life that make the region such a special place to live for both current and future generations.

In the Pacific Northwest and northern California, the debate over the future of the region's forests has pitted people, businesses, and communities against each other. Their disagreements reached a crescendo with the court order to shut down.

About the Plan

To help the region move forward, President Clinton proposed his *Forest Plan for a Sustainable Economy and Sustainable Environment*, now called the *Northwest Forest Plan*, on July 1, 1993. The Plan attempts to integrate science, management, restoration, and protection in a manner that reflects the innumerable demands now being placed on the region's forests and forest-dependent communities. The Plan also attempts to provide a new sense of certainty about how much of the region's forest will be available for management, how much will be restored, and how much will be protected. Finally, the Plan attempts to provide a framework for bringing people together, while realizing that in the end it is the people themselves who must be willing to work through their different perspectives about the region's forests.

Purpose and Methodology of the Report

This report attempts to clarify the reality and the perceptions about the Northwest Forest Plan by summarizing:

- The events that led up to the Plan;
- The Plan's components, the President's commitments, and the agencies' accomplishments in meeting those commitments; and
- Observations about what is working well and opportunities for making improvements.

The report was drafted at the request of Congress, as directed in the fiscal year 1995 Interior and Related Agencies Appropriations Conference Report. The report was prepared by the USDA Office of Forestry and Economic Assistance, formerly known as the U.S. Office of Forestry and Economic Development, which was established in 1993 by the Clinton Administration to oversee the implementation of the Northwest Forest Plan. Research for this report began in the fall of 1995. Letters were sent requesting input to each land management and regulatory agency's regional office. Each agency sent letters to its field offices, also requesting information. Follow-up meetings were held with a cross section of line and staff personnel at 16 of 18 National Forests, the 7 Bureau of Land Management Districts, the 3 Fish and Wildlife Service Field Offices, the 3 National Marine Fisheries Service Offices, and the Environmental Protection Agency's Regional Office.

All data presented in the report were provided by the responsible agency at the authors' request. The report was reviewed by federal officials responsible for designing and implementing the Plan and other individuals knowledgeable about it.

The Report's Boundaries

The report:

- Provides an analysis by the USDA Office of Forestry and Economic Assistance of implementation of the Northwest Forest Plan;
- Reflects agencies' accomplishments for the Plan's first two years, 1994 and 1995, with some preliminary information from 1996;
- Provides observations and opportunities that the Administration, Congress, and agencies may wish to consider in improving forest management and economic assistance throughout the region; and
- Focuses on the timber resource, but recognizes that the Plan affects all uses of the forest.

The report does not:

- Reflect the official views of the Clinton Administration or of individual agencies;
- Offer recommendations;
- Reflect the views of nonfederal personnel;[1]
- Analyze the adequacy of the Plan's underlying scientific basis or commitments; or
- Analyze the real or perceived effects of the salvage rider contained in the fiscal year 1995 Rescissions and Emergency Appropriations Act because doing such analysis is premature until its effects are reviewed in 1997.

How To Read This Report

The report was written for an array of readers.

- Read the **summary** if you are interested in a brief overview of the events that led to the Forest Conference and of the most talked-about forestry and economic-assistance issues under the Northwest Forest Plan.
- Read **chapters 2 and 3** if you are interested in the events that led to President Clinton's Forest Conference and the subsequent forest planning and implementation.
- Read **chapters 4 through 6** if you are interested in a better understanding of the Plan's governmental coordination, forestry, and economic assistance components and accomplishments. These chapters also include a list of observations on implementing the Plan and opportunities for improving it.
- Read **chapter 7** if you are interested in some general observations on what we have learned.
- Read **appendix A** if you are interested in reviewing President Clinton's original commitments.
- Read **appendix B** if you are interested in how the Administration and agencies met the President's commitments outlined in appendix A.

[1] This report should be reviewed by a wide array of citizens who are not working for federal agencies before any actions based on it are taken.

CHAPTER 2

THE SETTING

FOREST CONSERVATION IN THE UNITED STATES AND THE REGION

Efforts to conserve the nation's forests began in the 1860s and 1870s when writers like George Perkins Marsh and John Wesley Powell began publishing their work on human influences on the natural environment. These works, along with a philosophical foundation provided by Henry Thoreau, Ralph Waldo Emerson, John Muir, and Gifford Pinchot, gradually moved the nation to think about its current approach toward land use, which had focused on land disposition by the federal government and extracting natural resources.

By the turn of the century, National Parks and Forest Reserves had been established; a National Wildlife Refuge would be created early in the first decade. In the century that has passed since that time, federal forest conservation has gone through distinct periods of emphasis: custodial care, commodity production, and environmental awareness. To differing degrees, debate about the appropriate role of government in managing or preserving federal lands was a central focus during each of these periods.

Custodial Care

Two federal agencies were established to manage federal forests, grasslands, and waterways under the concepts of sustained yield; the USDA Forest Service and the USDI Bureau of Land Management.

Today's Forest Service was established in 1905 to protect natural resources, secure favorable water flows, and provide a sustainable flow of commodities for current and future generations. Even so, contributing to the nation's industrial development was clearly the focus for the agency's efforts. In establishing the Forest Service, President Theodore Roosevelt's Secretary of Agriculture wrote:

> *You will see to it that the water, wood, and forage of the reserves are conserved and wisely used for the benefit of the home builder first of all, upon whom depends the best permanent use of lands and resources alike* (Samuel Trask Dana, as cited by Dana and Fairfax 1980).

In 1937, the Oregon and California Act mandated that the "O&C" lands in western Oregon be managed by the General Land Office, later to become the Bureau of Land Management, to promote, among other things, community stability. Until World War II ended, federal land managers focused on fire protection, grazing, and an ongoing debate over forest preservation on public lands. In fact, the forest-products industry generally opposed federal timber sales during

this period, which was dominated by the Great Depression in the 1930s, to avoid flooding the timber market and competing with the private timber-supply sector.

Nonetheless, though sustainable use enjoyed broad support, many disagreed with this utilitarian perspective and argued for a federal agency whose primary responsibility was natural resource preservation. In 1916, the National Park Service was established to "preserve the [national] parks for posterity in essentially their natural state" (Dana and Fairfax 1980). Although the Park Service's holdings were a fraction of the federal lands, their existence institutionalized the management-versus-preservation debate in that federal agencies were now in charge of both managing and preserving federal lands.

Throughout the 1920s and 1930s, attempts were made to set aside Forest Service lands from commercial use, and these attempts were successful to a limited degree. In 1929, the Forest Service administratively established the first primitive areas, and the agency created wilderness and recreation areas in 1939. This custodial period ended in the mid to late 1940s, when federal timber harvests throughout the nation—especially in the Northwest region—rose in response to the postwar building boom.

Commodity Production

The postwar years were characterized by unprecedented population growth, economic expansion, and development. As a result, new demands for timber were enormous. And, as timber demand grew, so did calls for more intensive forest management.

The land management agencies promoted and the timber industry now strongly supported increased timber harvest from federal lands. For example, between 1945 and 1965, Forest Service timber harvest on the west side of Oregon and Washington climbed from about 149 million cubic feet to 807 million cubic feet (894 million board feet to 4.8 billion board feet). In other words, Forest Service timber could have built the equivalent of 119 thousand, average-sized, one-story houses in 1945 and 640 thousand in 1965 (figure 1).

While demand for federal timber rose, so did demand for recreation on federal lands. Thus, more and more Americans visited federal lands and saw the nation's forests and how harvesting was rising, primarily through the silvicultural practice of clearcutting.

The disagreements between use and preservation of federal lands intensified through the 1950s, and an environmental movement that was increasingly diverse and embedded in different segments of society grew through the 1960s. To help clarify its mission during this period of increasing and conflicting demands on a limited land base, Congress passed the Multiple-Use Sustained Yield Act (1960), which recognized the agency's role in managing lands for fish, wildlife, and recreation in addition to wood, water, and forage in a manner that would best meet the needs of the American people.

Four years later, the environmental movement's new prominence helped pass the Wilderness Act (1964) after an eight-year debate. The Act authorized public lands managed by the Forest Service, Bureau of Land Management, and other federal agencies to be Congressionally set aside from large-scale commercial uses. In essence, it informally amended the Multiple-Use Act by requiring the management agencies to undertake preservation in addition to other uses, as only the National Park Service had in the past.

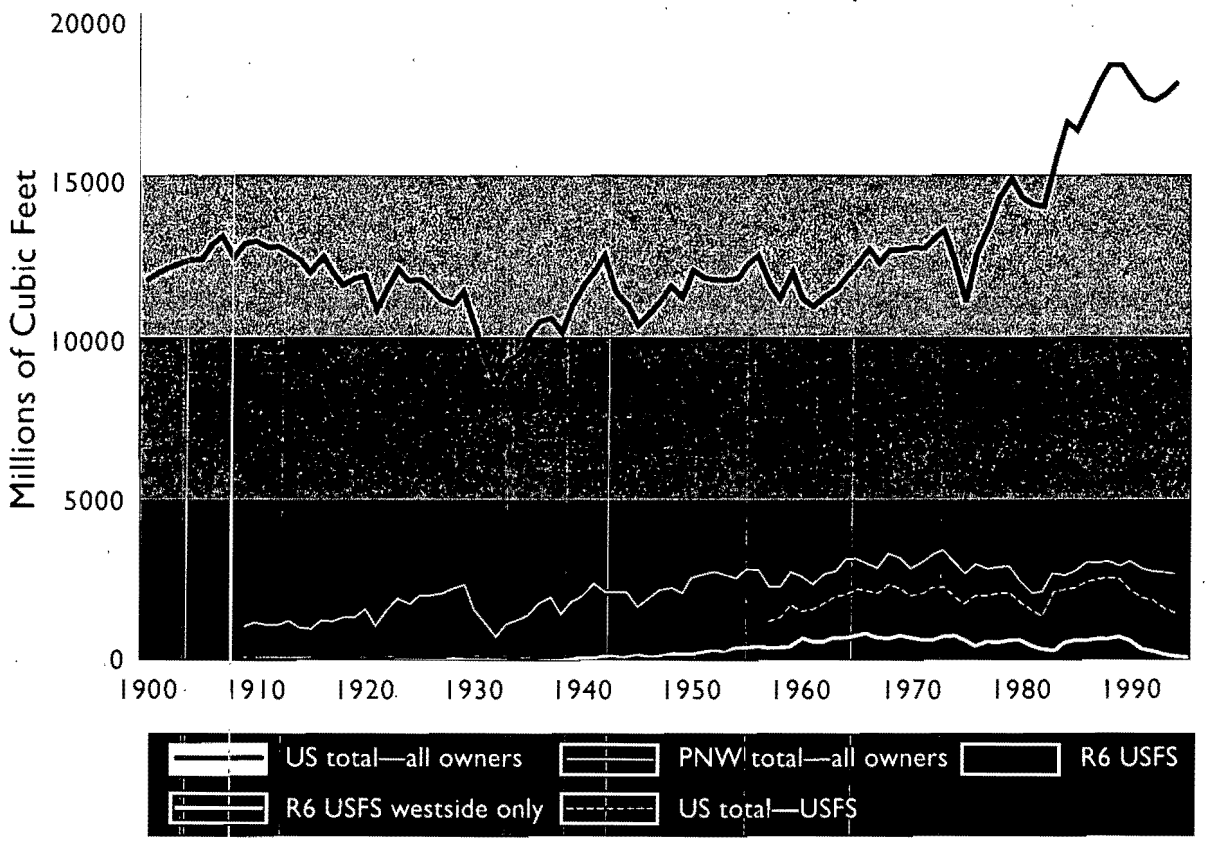


Figure 1—Timber harvested between 1900 and 1990.

Environmental Awareness

Although some people had disagreed about the central role of land management agencies since their inception, these differences took on a more pronounced tone after the mid 1960s. For the next 25 years, environmental interests successfully pushed for forest management reforms through legislation and judicial interpretations, and the timber industry successfully pushed for legislative and administrative timber sale rates that would keep them close to those in the mid 1960s (figure 1). With policies promoting both environmental protection and timber sales at the same time, the policies would inevitably collide.

Environmental protection

Efforts to enlarge the National Wilderness Preservation System served as the foundation for forest policy debates from the mid 1960s to the mid 1980s. Issues related to Alaska wilderness designations and the Forest Service's Roadless Area Review Evaluations (RARE I and II) were the most intensive and most controversial. The Alaskan National Interests Lands Conservation Act of 1980 designated 56 million acres of wilderness in resolving issues related to Alaska wilderness; RARE I and RARE II (USDA FS 1978, 1979) identified 62 million acres of roadless Forest Service lands, of which nearly 35 million were eventually designated as wilderness, state by state. Wilderness designations were also made at smaller scales outside of Alaska for the Bureau of Land Management, National Park Service, and the Fish and Wildlife Service.

The National Wilderness Preservation System began with 9.1 million acres. Today, it includes about 103.6 million acres—57.4 million are in Alaska and 46.1 million are in the lower 48 states. Together, the National Wilderness Preservation System is nearly equal to the areas of Oregon and Washington combined. In the Pacific Northwest and northern California, nearly 7 million of 24 million acres of federal lands have been designated as wilderness. Of this amount, 81% is forested.

Many people wanted more than just federal land set aside; they wanted to know that harvest and other practices on managed land would not degrade fish and wildlife habitat, and soil, water, and air quality. Controversies surrounding the practice of clearcutting on the Monongahela National Forest in West Virginia and the Bitterroot National Forest in Montana brought national attention to intensive forestry practices being used on federal lands across the nation. So, beginning in 1970, a series of legislative initiatives substantially strengthened existing environmental statutes and created new statutes to require the federal land management agencies to both plan for and analyze the environmental effects of their decisions. These statutes required the agencies to plan or to consider multiple uses in allocating public land resources, but like the Wilderness Act (1964), they would eventually result in reducing federal lands available for harvest. And in northern California and the Pacific Northwest, these laws would eventually be used to force great changes in federal land management.

The National Forest Management Act (1976) and Federal Land Policy Management Act (1976) were two of the most important pieces of legislation affecting the Forest Service and Bureau of Land Management, respectively. These two acts incorporating the principles of multiple use required the agencies to broaden their timber-sale planning efforts to systematically incorporate multiple resource considerations, and the biological and economic rationale for those considerations. The agencies were required to use current scientific information and consult with the public as well.

Federal forest planning is widely viewed as one of the most complex and difficult planning efforts in the nation. As Cubbage et al. (1993) point out:

> *[Forest planning] required an uneasy marriage of science, economics, history, public administration, abstract values, and the rule of law.*

Although many of the nation's most significant environmental laws were passed in the late 1960s and throughout the 1970s, they did not begin to have significant effects on commodity production until the mid to late 1980s. By then, most state wilderness bills had been passed and most of the Forest Service and Bureau of Land Management plans had been completed. The Forest Service plans administratively reserved around 40% of the region's public multiple-use lands in various land-use allocations that limited or prohibited timber harvest. The Bureau of Land Management reserved about 20%.

Timber production

As concern for the environment grew, so did demand for timber. Not surprisingly, people started to look at where that timber would come from. The 1960s, 1970s, and 1980s saw several regional timber-supply studies and administrative and legislative policies that responded to their conclusions.

The Region's Most Important Forestry Laws

Hundreds of laws guide the management of our nation's natural resources. The Forest Service alone has compiled a list of 197 laws that have been passed since 1872 that affect how it practices forestry in the United States. Listed below are some of the most important laws that guide management of federal and nonfederal lands in northern California and the Pacific Northwest.

Clean Air Act Amendments (1990)—Establishes standards for the amount of point and nonpoint pollution that can be released into the atmosphere. Nonpoint pollution standards affect federal and nonfederal land owners' prescribed burning operations.

Endangered Species Act (1988)—Sets federal procedures for identifying and protecting threatened and endangered plant and animal species on federal and nonfederal lands.

Federal Lands Policy and Management Act (1976)—Authorizes the Bureau of Land Management to inventory and manage its public lands in accordance with the principle of multiple use and sustained yield. The Act requires the agency to complete management plans every 10 years.

Multiple Use Sustained Yield Act (1960)—Clarifies the Forest Service's broad mission to manage the National Forests for recreation, range, timber, water, wildlife, and fish in a combination that will best meet the needs of the American people.

National Environmental Policy Act (1969)—Requires that environmental impact statements accompany all proposed major federal actions significantly affecting the quality of the human environment.

National Forest Management Act (1976)—Requires the Forest Service to prepare management plans for each National Forest. The plans are to meet the requirements of the Multiple-Use Act to address such matters as nondeclining even flow, biological diversity, the suitability of lands for timber production, and economic and social factors in agency decision making.

Oregon and California Act (1937)—Mandates that the Oregon and California railroad lands be managed by the General Lands Office (which became the Bureau of Land Management) for sustainable timber production, water quality, and recreation to promote community stability. The Federal Lands Policy and Management Act did not amend the intent of this statute.

Water Quality Act (1987)—Establishes standards for the amount of point and nonpoint pollution that are released into the nation's waters. Specifies procedures to control nonpoint pollution and identified forestry practices that could negatively affect water quality.

TEXT BOX 1 Source: Society of American Foresters 1993

Timber Trends in Western Oregon and Western Washington (USDA FS 1963) looked at timber supply across all ownerships. The study reported that the high-volume, old-growth timber inventory on private lands was declining. The timber harvests from those lands were expected to decline throughout the next three decades until they start to recover after 2010, when their second growth would reach harvestable age.

In 1969, the Forest Service's *Douglas-fir Timber Supply Study* (USDA FS 1969) looked at whether intensive timber management techniques—such as planting genetically improved stock, fertilization, and other timber stand-improvement activities—could increase timber supplies. The study suggested supplies could be enhanced through intensive timber management, but supplies would decline over the length of a harvest rotation regardless of management intensity.

Oregon State University's *Timber for Oregon's Tomorrow* (Beuter et al. 1976) reaffirmed that private timber supplies would decline through the first decade of the 21st century; however, the

report also suggested that federal harvests could maintain their 1970s average indefinitely or that federal agencies could depart from current harvest rates to offset the private harvest reductions (Beuter 1995). Oregon State University updated their study in 1989 (Sessions et al. 1990) and, in so doing, recognized that supply on federal lands would indeed drop instead of increase because of changes in land-use emphasis (Beuter 1995).

Throughout the 1960s and 1970s, the timber industry and federal government, spurred by these studies, placed more attention on the kind of supply the federal government could provide. As discussed below, increasing timber demand, a projected reduction in private timber supply by the end of the century, and a stable supply source from federal land based on traditional sustained-yield calculations all contributed to policy determinations that were meant to support federal timber sale rates that met or exceeded those of the mid 1960s.

People who were supported by the federal timber harvests generally thought that the federal government should do everything it could to make up for the gap on private lands. As voices grew louder for environmental protection, other voices focused on the agencies' timber management plans—which preceded the multiple-use forest plans required by the National Forest Management Act of 1976 and similar plans required by the Federal Land Policy Management Act of 1976—and what appropriations would be needed to fund their proposed timber sales (McCracken, personal communication).

Throughout the 1970s and 1980s, administrations and Congress continued to fund the Forest Service's and Bureau of Land Management's timber-sale programs, and therefore harvest, at or around historically high mid-1960s rates (figure 1). Although market-based recessions caused significant fluctuations in harvest rates, sales remained essentially flat.

Another important timber-supply issue in the late 1960s centered on whether the burgeoning log-export market was keeping logs from being processed at home. In 1968, the first raw-log export limitations, which would eventually turn into a permanent ban, were passed to assure that timber harvested on public lands was processed in the United States.

Past administrations were supportive of increasing timber sales as well. In 1970, the Public Land Law Review Commission and, in 1973, the President's Advisory Panel on Timber and the Environment both supported public policies that would maintain or increase current timber production rates.

In an attempt to reduce the inflationary effects on housing prices in the late 1970s, President Carter sent a letter to his Secretaries of Agriculture and Interior directing them to depart from nondeclining even flow to boost federal timber sales. In 1992, the USDA Assistant Secretary looked at opportunities for nearly doubling the federal timber-sale volume across the nation. Although these administrative actions were never implemented on the ground, they reflected the counter pressure applied to implementing the nation's environmental laws being passed at the same time.

The concern over public and private timber inventories intensified the region's forestry debate. With timber inventories on private lands decreasing, many who relied on these lands now planned to rely, at least partially, on federal forests until their second growth reaches harvestable

age during the 21st century. For some parts of the region, this period is still some 15 to 20 years away. Their reliance on shifting to public land timber increased competition with companies that had historically depended wholly or partially on federal lands. The hope—and many believe the commitment—was that increased harvest of old-growth forests would provide a supply of timber to fill in the gap. But this hope did not come to pass.

In summary, at the same time environmental legislation was being implemented and tested in the courts, through the 1960s, 1970s, and 1980s, the executive and legislative branches were proposing timber sales that met or exceeded historically high rates of the mid 1960s. After the early 1980s recession, federal land managers, at the urging of Congress and the Administration, actually maintained these mid-1960s sale rates on a timber base that was reduced as a result of forest planning. This scenario set land management agencies up for some inevitable challenges across the region.

Impasse: The Executive Branch, the Courts, and Congress

At the heart of regional forestry issues is how the region's federal land management agencies—the Bureau of Land Management and Forest Service—care for the public lands they have been entrusted, by law, to manage through the Federal Land Policy Management Act (1976), Multiple Use-Sustained Yield Act (1960), National Forest Management Act (1976), and the Oregon and California Act (1937). Closely tied is how the management and regulatory agencies—the Fish and Wildlife Service, National Marine Fisheries Service, and the Environmental Protection Agency—undertake their responsibilities in the context of such mandates as the Endangered Species Act (1986) and the Clean Water Act (1977), which regulate federal actions that affect the environment. Finally, how all federal agencies meet their mandates must take into consideration their tribal trust responsibilities.

Starting in the late 1960s, federal land management and regulatory agencies in the region struggled to define the future of federal forest management in the context of the nation's environmental laws. But the struggle was about much more than defining laws; it was a struggle between different, professional, natural-resource disciplines—their training, assumptions, and often values. Ultimately, the struggle was between people of the region and nation. Federal agency actions were challenged in the court of public opinion, courts of law, state and federal legislatures, and the highest levels of the executive branch. In 1991, the disagreements, which had attracted national attention by that time, resulted in court injunctions that virtually halted all federal forest management activities in the region for the next three years.

Three agencies—the Bureau of Land Management, the Forest Service, and the Fish and Wildlife Service—have primarily been involved with this issue. The activities of each agency are described below (table 1), along with some of the most important litigation that has affected their actions.

Table 1—Key events leading to the Northwest Forest Plan

Year	Forest Service	Bureau of Land Management	Fish and Wildlife Service	Congress
1983		Assimilate new information on spotted owls into existing plans		
1984	Regional guide issued that included prescriptions for protecting spotted owl habitat Timber sales on Mapleton District enjoined			California, Oregon, and Washington wilderness bills passed Mapleton rider in the FY 1985 Interior Appropriations bill allows certain enjoined timber to be sold
1985				Mapleton rider continues
1986				Mapleton rider continues
1987		Assimilation of new information on spotted owls into forest plans	Two petitions are received to list northern spotted owl as a threatened or endangered species. FWS decided not to do so.	Mapleton rider and Silver Complex Fire riders prohibiting administrative appeal and judicial review under some environmental laws
1988	Spotted owl guidelines produced		Court finds that agency decision not to list was arbitrary and capricious	
1989	Injunction preventing timber sales in owl habitat Oregon and Washington forest plans released Enjoined sales released by Section 318	→ → Section 318 requires optional owl protection for BLM Section 318 challenged on constitutional grounds		Section 318 of FY 1990 Interior Appropriations Bill passed with sufficiency language to release enjoined sales
1990	Interagency Scientific Committee (ISC) Report on northern spotted owl released Notice that the Forest service would conduct timber management activities in a manner not inconsistent with the ISC recommendations	→ BLM consults with Fish and Wildlife Service who recommends adoption of ISC recommendations BLM chooses to adopt alternative "Jamison Strategy"	→ Northern spotted owl listed as a threatened species throughout its range Challenged for failure to designate critical habitat	Section 318 expires and is not reenacted

Year	Forest Service	Bureau of Land Management	Fish and Wildlife Service	Congress
1991	Notice challenged and injunction on auctioning or awarding timber sales until standards and guidelines are adopted	Challenged for failure to consult with Fish and Wildlife Service on Jamison Strategy Court ruled BLM could proceed with timber sales while they consulted Request for Endangered Species Committee to be convened to exempt 44 timber sales	Secretary Lujan forms recovery team	House Committees form "Gang of Four" to develop options for resolving regional timber issues
	New management plan for spotted owl habitat adopted that incorporates ISC report recommendations New plan challenged and timber sales are again enjoined Changes were made to address new information, viability of other old-growth species and BLM actions	Designated 6.8 mm acres of critical habitat across the region Appeals court enjoined timber sales while consulting on Jamison Strategy Section 318 found to be constitutional by Supreme Court Timber sales enjoined until environmental impact statement analyzed logging affects in spotted owl habitat Endangered Species Committee proposes that 13 of 44 timber sales be exempted	Draft Recovery Plan released "Presentation Plan" released as an alternative to the Recovery Plan by Secretary Lujan for adoption by Congress	
1993	Scientific Assessment Team Report responds to issues in 1992 injunction President's Forest Planning effort begins	Exemptions withdrawn after court rules that Committee may have been tainted by improper communications →	Final Recovery Plan presented to Secretary Lujan, but not released before Administration left office →	

Actions of the Forest Service

The Forest Service manages about 19.4 million acres of federal land throughout the region. Forest plans guiding the management decisions are required to provide for a diversity of plant and animal communities based on the suitability and capacity of the specific land area to meet multiple-use objectives. Forest Service regulations further require that viable populations of certain vertebrate species be maintained across their historical ranges in the planning area. Ultimately, the viability rule would be interpreted by some courts to establish a biological imperative that the Forest Service would be required to address.

In addition to their forest plans, the Forest Service recognized that both scientific and public opinion were evolving to support an ecosystems approach toward forest management. In 1990, the agency announced a "New Perspectives" program that would commit the agency to multiple uses with more sensitivity to ecological and social values (Robertson 1990). In 1991, then Chief F. Dale Robertson announced that the agency would reduce the silvicultural practice of clearcutting by at least 25%. Timber sales would remain at or near the current rates, however.

Yet it was the forest plans that most affected how the region's National Forests would be managed. The Forest Service's Oregon and Washington forest plans took an average of 11 years to complete. When the plans were adopted in 1989, events related to protecting the spotted owl overwhelmed their movement toward an ecosystem approach. But, to differing degrees, the forest plans served as the basis for the old-growth management strategy that exists today. In northern California, the forest plans were not finished until 1995, and they actually served to refine the Northwest Forest Plan. Throughout these forest planning efforts, issues associated with protecting spotted owl habitat were paramount.

In 1984, the Forest Service had sought to provide guidance to forest planners in the region by issuing a regional guide that included a strategy for protecting spotted owl habitat. This "Spotted Owl Habitat Area" protection strategy was challenged by the National Wildlife Federation, and, as a result, the Forest Service produced new spotted owl guidelines in December 1988. Many scientists and environmentalists considered this new approach inadequate to assure the long-term viability of owl populations. The timber industry also disliked the guidelines because of the associated reduction in timber harvest and a sense that the science was not strong enough to support the proposed reductions.

Both the timber industry and environmentalists brought lawsuits against the Forest Service's new owl plan in February 1989. In March 1989, U.S. District Court Judge William Dwyer issued a preliminary injunction against the Forest Service, preventing timber sales throughout the region's spotted owl habitat on the grounds that the plan likely violated the National Forest Management Act (1976) and National Environmental Policy Act (1970).

In October 1989, the Congress intervened by enacting Section 318 of the fiscal year 1990 Interior Appropriations Act. Section 318 established a two-year timber sale program, retroactively for fiscal year 1989, of 7.8 billion board feet to be achieved by the end of fiscal year 1990. The Act stated that, with the exception of the Endangered Species Act, compliance with the requirements of Section 318 for those sales would be sufficient to meet the nation's environmental laws. This "sufficiency" language has taken several forms, but the label is generally given to legislation in which Congress legislatively declares that an action meets environmental laws, thus effectively

precluding successful legal challenges for failure to meet those laws. As a result, Judge Dwyer's injunction was vacated.

In the meantime, the Forest Service joined with the Bureau of Land Management, the Fish and Wildlife Service, and the National Park Service in October 1988 to charter an Interagency Scientific Committee to prepare a conservation report on the spotted owl. The Committee's report, released in April 1990, was regarded as the best scientific information available on the spotted owl. The Forest Service initially planned to adopt the Committee's recommendations but was superseded by the Bush administration's decision to initiate another study to develop an alternative strategy. In October of 1990, the Forest Service said by Federal Register Notice that they would "conduct timber management activities in a manner not inconsistent with the Interagency Scientific Committee recommendations."

Sufficiency Language

Definitions—The term "sufficiency language" or "sufficiency provision" is a short-hand expression that—as applied to regional timber sales—is often used to describe legislation that declares a federal action sufficient to meet the law.

Effect—Sufficiency language essentially insulates a federal agency's decision from being **successfully** challenged administratively or legally on environmental grounds specified in the legislation. Sufficiency advocates have often assumed that environmental protections and processes would continue to be administratively applied so there would be more certainty in the timber sale program. Although the executive branch may choose and have chosen to comply with those laws, sufficiency language does not require them to do so. Opponents of sufficiency language argue that land management agencies can take short cuts and their rights to question their federal government are taken away, increasing distrust between the government, segments of the public and commodity purchasers.

For example—Section 318 of the fiscal year 1990 Interior and Related Agencies Appropriations Bill directed that existing plans for the region's National Forests and Bureau of Land Management lands known to contain spotted owls constitute adequate consideration for the purpose of meeting the statutory requirements that were the basis for the lawsuits that had led to an injunction on timber sales. Therefore, 7.8 billion board feet of enjoined timber was released for sale. Those sales could not be challenged based on compliance with the National Forest Management Act, National Environmental Policy Act or other environmental statutes. Section 318 did, however, recognize that the timber sale program must still comply with the Endangered Species Act.

Precedents—In the past, 29 statutes related to federal land management alone have specifically deemed that Congressional specifications satisfy federal statutes. The Supreme Court reaffirmed that Congress could waive statutory provisions of previously enacted laws.

TEXT BOX 2

The Forest Service notice was again challenged because Section 318 expired at the end of fiscal year 1990, and Congress did not reenact similar provisions for the next year and beyond. In May 1991, Judge Dwyer enjoined the Forest Service from auctioning or awarding timber sales in spotted owl habitat until the agency adopted standards and guidelines for the conservation of the owl, and completed an environmental impact statement, which the court ordered be done by March 1992. In response, the Forest Service developed a new management plan for spotted owl habitat, in which they proposed to follow the Committee's recommendations.

Another suit challenged the adequacy of this new plan, and, in July 1992, Judge Dwyer issued yet another injunction until the Forest Service made changes that addressed new information

developed since the Committee's report was published, the viability of other old-growth-related species, and the effects of the Bureau of Land Management's decision not to follow the Committee's strategy.

The Forest Service pulled together another team to respond to Judge Dwyer's concerns. The Scientific Analysis Team report was released in March 1993. No formal actions were taken based on the report, but the findings were used in developing the subsequent Northwest Forest Plan. In the meantime, the newly elected Clinton Administration had committed to holding a conference to resolve regional forest management issues. The Forest Conference would take place within the month.

Actions of the Bureau of Land Management

The Bureau of Land Management manages 2.7 million acres in western Oregon and northern California. Unlike other Bureau of Land Management lands that are managed solely with a multiple-use mandate under the Federal Lands Policy and Management Act of 1976, most of these lands in western Oregon are also managed according to the Oregon and California Grants Lands Act of 1937 (O&C Act). Congress provided in the O&C Act that lands

> *shall be managed...for permanent forest production...in conformity with the principle of sustained yield for the purpose of providing a permanent source of timber supply, protecting watersheds, regulating stream flow, and contributing to the economic stability of local communities, and industries, and providing recreational facilities.*

The Bureau of Land Management's seven timber management plans, required by the Federal Lands Policy and Management Act, were in place by the early 1980s. These plans provided spotted owl habitat protection, which was strengthened in 1983 and 1987 in response to new information. Timber harvest in these areas was deferred, but timber management plans were not adjusted downward commensurate with this additional habitat protection.

Like the Forest Service, the Bureau of Land Management recognized that scientific and public opinion was evolving to support an ecosystems approach. Within the context of the O&C Act, the Bureau worked to re-draft its plans in the late 1980s and early 1990s to reflect such an approach. One of the cornerstones of their planning effort was a recognition that their forest should be managed for different successional stages, which would help assure that biological diversity would be maintained over time. These plans, which were released in draft form in 1992, served as another basis for the Northwest forest planning effort.

As it did the Forest Service, Section 318 directed the Bureau of Land Management to protect additional owl areas while mandating timber sales for 1989 and 1990. These sales were also deemed to be sufficient to meet the nation's environmental laws. Both the Forest Service and Bureau of Land Management were challenged over timber sales in owl habitat. Both agencies argued that Section 318 insulated it from lawsuits; although the Ninth Circuit Court of Appeals held that sufficiency language was unconstitutional, the Supreme Court reversed the Circuit's ruling in March 1992.

After the June 1990 listing of the spotted owl as a threatened species, the Bureau of Land Management consulted with the Fish and Wildlife Service, as required by the Endangered Species Act, on 157 of 453 timber sales. The Fish and Wildlife Service response recommended that the

Bureau of Land Management adopt conservation measures, including the recommendations of the Interagency Committee's report. The Bureau of Land Management chose to develop an alternative strategy, commonly known as the "Jamison Strategy"—after the Bureau of Land Management's Director, Cyrus Jamison—that would provide for higher harvest rates than those that would result from the Committee's standards and guidelines, though below those currently being scheduled.

In April 1991, the Bureau of Land Management was challenged for failure to consult with the Fish and Wildlife Service on implementing the Jamison Strategy. In September 1991, U.S. District Court Judge Robert E. Jones ruled that the Bureau of Land Management had violated the Endangered Species Act but could continue to sell timber while it consulted on the Jamison Strategy. In March 1992, after three Bureau of Land Management employees testified that they were still implementing the Jamison Strategy, the Ninth Circuit Court of Appeals affirmed that the Bureau of Land Management must consult with the Fish and Wildlife Service. The court also held that timber sales could not go forward until consultation was completed.

In February 1992, in a separate suit, Judge Helen Frye enjoined the Bureau of Land Management from selling timber in spotted owl habitat until it prepared an environmental impact statement that analyzed the effects of logging spotted owl habitat.

The Bureau of Land Management's decision not to fully implement the Interagency Committee Report's recommendations was an important factor in Judge Dwyer's decision in 1992 to impose an injunction on Forest Service timber sales. The success of the Committee's strategy was predicated on implementation by both the Bureau of Land Management and the Forest Service.

In another set of actions, the Bureau of Land Management requested, on the same day as Judge Jones' September 1991 ruling, that Interior Secretary Manuel Lujan convene the Endangered Species Committee to exempt 44 timber sales in western Oregon from the Endangered Species Act. The Endangered Species Act provides that a federal management action may be exempted from the Act by an Endangered Species Committee composed of senior Administration officials. The Committee may grant an exemption if it finds that benefits of an agency's actions clearly outweigh the costs and no other reasonable and prudent alternatives to the action exist.

The Endangered Species Act Committee met and, in May 1992, proposed that 13 of 44 sales be exempt, along with the provision that the Bureau of Land Management complete a series of planning requirements that would obviate the need for the Committee to meet again. On review, the Ninth Circuit Court of Appeals ruled that the Committee's decision may have been tainted by improper communications with people who were not party to the Committee. The matter was remanded back to the Committee, where the Bureau of Land Management withdrew its application for an exemption.

Actions of the Fish and Wildlife Service

The Secretaries of Commerce and Interior, through the National Marine Fisheries Service and the Fish and Wildlife Service, are authorized through the Endangered Species Act to identify and protect threatened and endangered plants and animals. The Fish and Wildlife Service's responsibility under the Endangered Species Act covers both federal and nonfederal lands.

In 1987, the Fish and Wildlife Service had before it two petitions to list the northern spotted owl as a threatened or endangered species but decided not to do so. In 1988, U.S. District Court Judge Thomas Zilly ruled that the Fish and Wildlife Service's decision not to list was arbitrary and capricious and not supported by expert opinion. The Fish and Wildlife Service reconsidered and, in July 1990, listed the spotted owl as threatened throughout its range.

Typically, the regional director of the Fish and Wildlife Service would prepare a recovery plan after listing a species that would ultimately be approved by the director of the agency. For the spotted owl, Secretary Lujan withdrew the delegation of authority to the field and formed a recovery team in March 1991. This team reported directly to Secretary Lujan, bypassing the agency's regional and national leadership. A recovery plan was released in draft form in April 1992. Secretary Lujan announced that expected job losses from implementing the draft plan were too great. He asked another team to draft an alternative plan, which resulted in his Preservation Plan, released in May 1992. This plan did not meet the immediate requirements of the Endangered Species Act, but it was intended to have provided for persistence of the owl over the next 100 years.

The Bush Administration released the Preservation Plan and testified in favor of its adoption by Congress. Legislation was never introduced to implement the Preservation Plan, however. The draft recovery plan was revised based on public comment and review and presented to Secretary Lujan in December 1992 for approval. Secretary Lujan did not authorize its release before he left office in January 1993. A limited number of copies were published as a "final draft recovery plan" soon thereafter and were available to the Forest Ecosystem Management Assessment Team. On a related matter, the Fish and Wildlife Service designated 6.8 million acres as critical habitat across the region after having been found to have failed to do so by Judge Zilly in another lawsuit in February 1991.

Summary of Agency and Court Actions

The preceding discussion touches on some of the most important challenges to federal forest management in the region. Since 1989, 11 U.S. District or Circuit Court judges have made rulings related to the actions of the Forest Service, Bureau of Land Management, and the Fish and Wildlife Service as they affect the northern spotted owl and managing federal forest lands in the Pacific Northwest and northern California. These agencies were sued and found by the 11 judges to be in violation of one or more federal laws or regulations affecting the management of federal forests, protection of endangered species, and compliance with procedures pursuant to the National Environmental Policy Act or other statutes.

As Judge Dwyer noted, the actions of the Executive Branch, in particular, often ran contrary to available science and the advice and recommendations of the agency's own scientific experts. In addition, the actions of individual agency administrators were often inconsistent and antagonistic to another agency's ability to take corrective actions to bring its management into compliance with court rulings or applicable statutes. This statement shows the difficulty, especially for land management agencies, of operating within the context of multiple-use mandates and the complex mix of political, economic, social, and ecological issues.

Congressional Efforts Toward a Resolution

An inability to resolve the old-growth debate should not be solely attributed to the federal agencies and previous Administrations. Each agency operates under its own legislation and serves constituencies that often disagree with one another. Again, the old-growth debate was, and continues to be, a debate among the citizens of the region and nation about how agencies should implement the nation's environmental laws. As such, it caused the nation's representatives in Congress to become increasingly involved through the 1980s and early 1990s.

In many aspects, Congressional involvement in the old-growth issue began after the state wilderness bills were passed in 1984. At that time, some members of Congress believed that they had resolved, at least for the time being, regional forest land-use allocation issues. But as wilderness issues cooled down, spotted owl and old-growth issues heated up. Citizens increasingly challenged, both through administrative appeals and in the courts, the Forest Service's and Bureau of Land Management's timber sales based on their compliance with their planning and regulatory statutes. To many managers, the appeals process was particularly frustrating because decisions could be indefinitely delayed. In 1988, one group threatened to bring a great deal of logging to a temporary halt by filing appeals against 220 U.S. Forest Service timber sales in a single month.

In response to the success of these administrative and legal challenges, efforts were successful to add sufficiency language to appropriations acts that would limit or prohibit administrative appeals or judicial review. One of the first sufficiency riders was included in the fiscal year 1985 Interior and Related Agencies Appropriations Act. The Act allowed certain timber sales on the Mapleton District of the Siuslaw National Forest to be resold despite an injunction. These efforts continued and riders were included in the Forest Service and Bureau of Land Management's appropriations bills for fiscal years 1986, 1987, 1988, and 1989. This legislation prohibited administrative appeals and judicial review on individual timber sales, then Districts and Forests, and finally—in the Silver Complex Fires—across multiple forests.

By 1989, Judge Dwyer had enjoined the Forest Service's regional timber-sale program. In response, Section 318 was added to the fiscal year 1990 Interior and Related Agencies Appropriations Act. This provision was accompanied by a colloquy between key Senators, in which they agreed that such riders would be suspended in future years and a long-term solution worked out in the authorizing committees.

During fiscal years 1991, 1992, and 1993 Interior Appropriations debates, attempts were made to attach amendments to allow components of the region's timber-sale program to proceed with sufficiency language. These efforts were defeated, however, clearing the way for the injunctions by Judges Dwyer, Frye, and Zilly from 1991 to 1994.

In May 1991, at the request of the House Agriculture and Merchant Marine and Fisheries committees, a scientific panel of four well-known forestry and wildlife scientists was asked to provide options for managing and protecting old-growth forests. The panel, which came to be known as the "Gang of Four," was assisted by hundreds of experts from both land management and regulatory agencies. Their report, which did not provide recommendations but produced 36 alternatives, broke new ground in linking old growth, owls, and fish habitat. The report was also the first large-scale interagency effort that focused on a comprehensive set of alternatives and the ecological and economic risks associated with each alternative.

Ultimately, Congress was unable to pass a long-term old-growth solution to this problem. Between 1988 and 1992, 26 bills were introduced and 6 congressional hearings were held that related to or sought to resolve the old-growth forest issue (Gorte 1995). Their contents ranged from comprehensive old-growth protection to mandated timber harvests, and from limits on judicial review to redistricting judicial districts. Only one bill encompassing comprehensive federal land management direction was ever reported out of a full authorizing committee. This Congressional interest in the old-growth debate, and inability to reach agreement, underscores the diverse and strongly held opinions of many citizens.

The Forest Conference

By the summer of 1992, with the region's timber-sale program stalled for more than a year, forestry was becoming an important issue for the region in the 1992 Presidential and general elections. President Bush made a campaign swing through the region, in late summer, advocating support for changes to the Endangered Species Act. Democratic front-runner, then Arkansas Governor, Bill Clinton also spoke out on the issue and committed to holding a multiparty timber summit, if elected.

The Presidential Transition

After the election, President-elect Clinton established a Timber Summit Transition Office to gather information and guide development of the promised meeting. The Summit was to focus on how interested parties could assist the Administration in developing a plan that would move forest management decisions out of the courts and back to the managers.

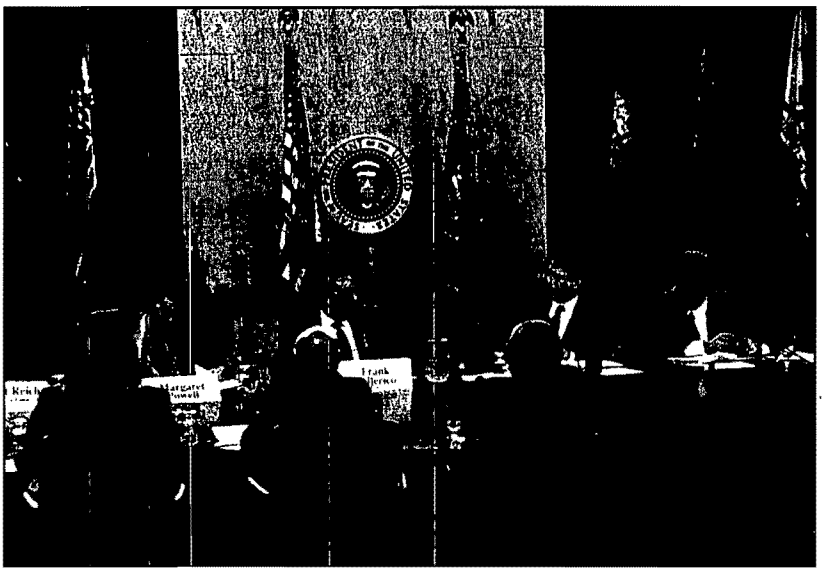
Staff contacted interested Congressional leaders, governors, and interest-group representatives. Fifteen-hundred letters were sent on behalf of the President-elect to gather input from federal, state, and local elected officials; tribal leaders; and private and nonprofit organization representatives on how best to organize a timber summit and what it should achieve.

The high interest in the transition team's work reaffirmed the need for the summit. People were united in their desire for the summit to use an inclusive process where the President himself would provide leadership to resolve the issues. People also agreed that any resolution should be "balanced" and include both forest management and economic assistance components. People whose livelihoods depended on the forest thought that a timely resolution that would allow sales to move forward was a top priority. But people disagreed on what form the timber summit should take, whether it should lead to an Administrative or Congressional resolution, and even whether the Administration should include the public in its deliberations.

The Forest Conference

On April 2, 1993, President Clinton traveled to Portland, Oregon, to convene what he called his Forest Conference, to reflect the broader array of issues that were included in the transition team's report.

The President was accompanied by Vice President Al Gore, Secretary of Agriculture Mike Espy, Secretary of the Interior Bruce Babbitt, Secretary of Commerce Ron Brown, Secretary of Labor Robert Reich, Environmental Protection Agency Administrator Carol Browner, Office of



The President at the Forest Conference.

Environmental Policy Director Kathleen McGinty, Office of Management and Budget Deputy Director Alice Rivlin, and Science Advisor Jack Gibbons.

The Forest Conference was a day-long session where the President heard from 52 local elected officials, tribal leaders, forest workers, industrialists, environmentalists, clergy, academics, and employment trainers. Their discussion ranged from how the forests affect their lives to how the old-growth issue could best be resolved. The many issues that had been debated during the previous five years were discussed: creating public-private partnerships, stability of rural communities, opportunities for displaced workers, the role of the regional and national economies, timber supply, old-growth protection, biological diversity, and—above all—ecosystem management. Appendix VII-A, p. VII-130, of the Forest Ecosystem Management Assessment Team report (FEMAT 1993) contains a detailed content summary of the Forest Conference.

In closing the Forest Conference, President Clinton directed his Cabinet to report to him within 60 days with a plan to resolve the region's forestry stalemate. The President asked the Cabinet to determine which policies are at odds with each other, examine their approach toward interagency cooperation, and to follow five principles (above) in developing their forest planning effort.

The Forest Conference has been described as having successfully brought all parties to the table. Many people believed that progress was made toward reaching agreements, but behind statements of accord, strong feelings about what should be done continued. As one regional environmentalist said about ecosystem management, the one concept that everyone seemed to agree on;

> *The only problem with ecosystem management is that* ***I*** *hear the word "ecosystem," and* ***they*** *[the timber industry] hear the word "management"* (emphasis added).

In other words, ecosystem management means very different things to different people. Both environmentalists' and industries' perspectives are sincere and both are accurate. The challenge in the region, as it has in other parts of the nation, has been to develop forest management strategies that truly bring the two perspectives together instead of viewing them independently.

President Clinton's Five Guiding Principles

Economic Assistance—Where sound management policies can preserve the health of forest lands, sales should go forward. Where this requirement cannot be met, we need to do our best to offer new economic opportunities for year-round, high-wage, high-skill jobs.

Forest Management—We need to protect the long-term health of our forests, of our wildlife, and our waterways. They are a gift from God, and we hold them in trust for future generations.

Role of Science—Our efforts must be, insofar as we're wise enough to know, scientifically sound, ecologically credible, and legally responsible.

Timber Certainty—The Plan should produce a predictable and sustainable rate of timber sales and nontimber resources that will not degrade or destroy our forest environment.

Interagency Cooperation—To achieve these goals, we will do our best to make the federal government work together for you. We may make mistakes, but we will try to end the gridlock within the federal government, and we will insist on collaboration, not confrontation.

TEXT BOX 3 Source: Forest Conference, 1993

CHAPTER 3

DESIGNING AND IMPLEMENTING THE NORTHWEST FOREST PLAN

DESIGNING THE PLAN

President Clinton's *Forest Plan for a Sustainable Economy and Sustainable Environment*, now called the Northwest Forest Plan, was released on July 1, 1993 (see appendix A). The Plan has three main components: forest management, economic development, and agency coordination. See appendix B for a detailed summary of the Plan's commitments and the administration's accomplishments. This chapter describes how the Plan was developed, and how the government moved from announcing the Plan to implementing it.

Forest management, economic development, and agency coordination planning teams were formed immediately after the Forest Conference to follow through on the President's direction. Underlying each team was direction to the departments and a commitment by the individual agencies to develop consistent policies that would take advantage of and comply with each agency's mandate to the best of its ability, and to work together rather than as independent agencies.

Cooperation started at the top. A Forest Conference Executive Committee was formed with Administration representatives from the Departments of Agriculture, Commerce, Interior, Labor, and Housing and Urban Development, and the Environmental Protection Agency and the Small Business Administration. The Executive Committee was chaired by the Director of the White House Office on Environmental Policy—the President's environmental advisor. The Executive Committee gave policy direction to the planning teams, resolved internal departmental differences and disputes between departments, provided legal and policy guidance, and served as advisor to the President in developing the Plan.

Forest Management

A Forest Ecosystem Management Assessment Team (FEMAT) was established to

> *...identify [forest] management alternatives that attain the greatest economic and social contribution from the forests of the region and meet the requirements of the applicable laws and regulations* (FEMAT 1993).

The Team's charge as outlined by the Executive Committee was complex and difficult, especially in the legal context within which they were operating. The injunctions halting timber sales in the region had been in place for two years, and many legal precedents had been established over the previous five years. Complying with these laws in a manner that would allow the injunctions to be lifted and assure that the Plan could withstand future legal challenges would require the agencies to integrate the nation's environmental laws. For example, developing a methodology

for habitat protection whereby the "viability" standard under the National Forest Management Act and the "extinction" standard under the Endangered Species Act could be treated in a similar management context.

The Team was asked to develop, within 60 days, a range of options to apply ecosystem management on the ground, based on the best technical and scientific information available. These alternatives were to be developed in a way that maintained or restored habitat conditions for spotted owls, marbled murrelets, anadromous fish, and the late-successional and old-growth forest ecosystem itself. These management alternatives were designed to provide a medium to high probability of ensuring, both biologically and legally, the viability of an estimated 1,400 late-successional and old-growth-dependent species identified in the region.[2] Another goal was to include options that would allow for currently listed species, such as the owl and murrelet, to recover and would keep future listings, such as salmon and other anadromous fish, from affecting federal land management outputs. This goal was an attempt to manage the federal lands in such a way as to avoid the need for additional conservation measures under future Endangered Species Act listings. Given these biological requirements, the Team was asked to suggest patterns of protection, investment, and use that would provide the greatest possible economic and social contributions from the region's forests while providing for their long-term sustainability.

The Team was an interorganizational, interdisciplinary group comprising 104 federal natural resource, social, and economic experts from within the region. The chair was a USDA Forest Service researcher, and the team included local representatives from the Environmental Protection Agency, USDA Forest Service, USDC National Marine Fisheries Service, and USDI Bureau of Land Management and Fish and Wildlife Service. The Team worked in Portland, Oregon, and enlisted more than 500 people to assist them.

Input from nonfederal elected officials, tribes, and the public were provided to the team through writing and through meetings with an Administration official from the Department of the Interior. A special group was organized within the Team to process written and oral public comments and direct them to the appropriate technical expert for their use.

Holding public hearings or meeting with Team members was ruled out, given the short time frame. In retrospect, this omission—and some people's perspective that the Team was not scientifically balanced—were important because many federal land managers who would be responsible for Plan implementation, nonfederal government officials, and citizens believed that their information, ideas, science, and concerns were not adequately addressed by the Team. Of the criticism leveled at the Plan today, much can be traced to people's lack of personal interaction with the Team's process and members.

The Team's report, released in July 1993, included a list of 10 options for managing the region's forests. It also included a scientific assessment of the region's terrestrial and aquatic ecosystems, evaluations of the economic and social effects of those options, and guidelines for implementation and adaptive management. A summary of statements made at the Forest Conference was included to help put the report into perspective. The President chose Option 9 to serve as the basis for the federal and nonfederal forest management components of his Plan.

[2] Failure to meet the "viability" standard in the National Forest Management Act was one of the primary reasons for the 1992 injunction against Forest Service timber harvesting. The Endangered Species Act served as the basis for one of the Bureau of Land Management injunctions.

Economic Development

An equally important team was organized in Washington, DC, to develop a plan for meeting the President's economic objectives. The economic development team was chaired by a Director of the National Economic Council and included representatives from the Council of Economic Advisors; Office of Management and Budget; Domestic Policy Council; Departments of Agriculture, Commerce, Interior, and Labor; and the Environmental Protection Agency and Small Business Administration.

In July 1993, the economic team estimated the economic effects of federal harvest reductions both before and as a part of the President's forest planning effort and to develop an economic transition program for the region. Unlike the ecosystem team, which had to integrate a complex set of environmental laws as defined by the courts, the economic team had considerable flexibility in designing their programs. Moreover, although a formal public involvement program was not established, the team members did meet with nonfederal officials and citizens who requested time to share their perspectives. Additionally, the same Interior Department official who provided input from the region's nonfederal elected officials, tribes, and the public to the ecosystem team also provided input on economic assistance.

The Governor's offices of Washington, Oregon, and California were particularly active in working with the federal government to help inform them about the economic make-up of their states and forest-dependent communities' needs. The three states worked together early on, in providing information to the economic team on how best to develop assistance programs that would take advantage of state and local programs.

The economic team released an outline of an economic assistance program focused on providing financial and technical assistance to workers, businesses, and communities that had been affected by reductions in federal timber supply. The team also recommended that federal, state, and local partnerships be established to more effectively meet those financial and technical assistance commitments.

Agency Coordination

An Interagency Coordination Working Group was established that consisted of career natural resource professionals from both management and regulatory agencies from the region and from their national headquarters. The team was chaired by a special assistant to the Secretary of the Interior. The Working Group identified the institutional factors that may have contributed to the regional shutdown of federal forest management and proposed several ways of doing business differently to better fulfill their resource management responsibilities. The Working Group's efforts focused only on the forestry aspects of the Forest Plan; they make up appendix E of the Draft Supplemental Environmental Impact Statement discussed next. (A copy can be obtained from the USDA Forest Service's Regional Office in Portland, Oregon.) Economic assistance agencies also recognized the need to coordinate their efforts and recommended ways of doing so.

From Design to Action

Implementing the Forestry, Economic Development, and Agency Coordination Plans

Moving from designing to implementing the forestry component of the President's Plan has taken longer than many expected. President Clinton produced a plan (table 2) within 60 working days, and many people envisioned that it could be implemented immediately. Initial discussions with members of Congress while the conference was being organized and during the subsequent planning periods indicated that a Presidential Plan could or should be legislatively authorized. This possibility quickly vanished because some important interests and members of Congress opposed the Plan on the grounds that it either overprotected or underprotected the forests in the region. Without a legislative solution, the Administration moved to implement the Plan administratively, which meant using the FEMAT report as a basis for developing an Environmental Impact Statement in compliance with the National Environmental Policy Act. In the meantime, the injunctions on timber harvesting would remain in place.

The Environmental Impact Statement Team was similar to FEMAT in that it was interagency and interdisciplinary, but it was considerably smaller and included natural resource managers and their staffs. The Team relied heavily on a Scientific Advisory Group of scientists who had participated in producing the FEMAT report to assist them in clarifying its science.

Table 2—President Clinton's Forest Plan for a Sustainable Economy and a Sustainable Environment

Forestry	Economic assistance	Agency coordination
Record of Decision Guides management of 22.1 million acres of Forest Service and Bureau of Land Management lands. **4(d) Rule** Relieves restrictions on nonfederal lands based on conservation benefits derived from federal forest management. **Habitat Conservation Plans** Establishes voluntary agreements between private land owners and regulatory agencies on land management activities that comply with Endangered Species Act.	**Northwest Economic Adjustment Initiative** Allocates $1.2 billion over 5 years. Funding made available to workers, businesses, and communities through 16 federal economic-assistance programs. **County Safety Net** Guarantees payments to counties for next 10 years. **Log Export Incentive** Repeals raw-log export tax credit. **Assisting Small Timber Businesses** Requests that ways be identified to assist small business and secondary manufacturers in the forest products industry.	Creates interagency groups nationally, regionally, locally to implement forestry and economic components of Plan.

In late July 1993, the SEIS team released the "Draft 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." Releasing the draft started a 90-day public comment period in which nearly 110,000 comments were received. In addition, Clinton Administration officials held three public hearings in Olympia, Washington; Salem, Oregon; and, Redding, California.

Changes based on public comment and new information were incorporated into a "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." The final document was released in February 1994; with that release, an additional 30-day public comment period began.

On April 13, 1994, Acting Secretary of Agriculture Richard Romminger and Secretary of Interior Bruce Babbitt signed the "Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl" (ROD 1994). With these signatures, the new forest allocations, watershed analysis, watershed restoration, and other nontimber guidelines could be immediately implemented and the federal forest management Plan could be submitted to Judges Dwyer, Jones, and Frye with a request to lift their
injunctions on timber sales.

The Record of Decision allowed the government to present a unified position on federal forest management to the public and the courts. Although challenges would result, the immediate effect was the dissolution of the three injunctions. Judge Jones lifted his injunction on Bureau of Land Management sales in April 1994. The government satisfied the terms of Judge Jones' injunction on Bureau of Land Management sales in May 1994, but litigation on whether the Bureau of Land Management could proceed on those sales was not completed until January 1995. In June 1994, Judge Dwyer lifted his injunction prohibiting timber sales on Forest Service lands across the region.

For the first time in three years, the land management agencies were permitted to propose new timber management activities in the region. Yet, for reasons discussed in chapter 5, an additional year passed before any significant timber-sale program was operating.

Implementing the economic plan was more straightforward. Little controversy existed about the proposed economic assistance program; in fact, this part of the Plan was supported by divergent interests. Implementing the economic assistance program progressed along two tracks. The Clinton Administration and the Congress worked together to support $256 million in appropriations for fiscal year 1994 that would be spread among 16 federal agencies. In addition, the Congress terminated, at the request of the Administration, the tax-incentive program for raw log exports in the Omnibus Budget Reconciliation Act (1993). The savings from forgone tax incentives were used to fund payments that provided a safety net to the counties that receive 25 to 50% of gross federal timber receipts in lieu of the taxes they would receive if those lands were privately owned. Without such a safety net, these payments would drop substantially as a result of reductions in the federal timber harvest.

Finally, three memoranda of understanding were signed to institutionalize the agency-coordination efforts called for in the Plan. On the forestry side, a memorandum of understanding (MOU 1993a) outlined the processes to be used in coordinating the region's forestry programs. On the economic development side, a memorandum provided funding commitments and outlined the process for implementing a Northwest Economic Adjustment Initiative (Interagency MOU 1993). Another memorandum (Federal-State MOU 1993) was signed by the Governors of Washington, Oregon, and California and the federal department heads; it outlined the state and federal relations that would help guide implementation of the Initiative. With these efforts, the Northwest Economic Adjustment Initiative began in December 1993.

Legal Challenges

For all practical purposes, the Administration, Congress, and federal and state agencies had developed and implemented a comprehensive forestry program in 14 months that complied with the nation's environmental laws and attempted to provide a transition for people affected by reduced federal timber harvest. The Initiative has moved forward without any legal challenges, but opposition to the federal Forest Plan still existed. Eight lawsuits were filed that challenged the Plan on its merits and the manner in which it was developed.

Challenges to the Design of the Forest Plan

Northwest Forest Resource Council v. Espy (D.D.C., Judge Jackson). Court ruled that participation of nonfederal scientists on the Forest Ecosystem Management Assessment Team violated the Federal Advisory Committee Act, and that the government had not complied.

Seattle Audubon Society v. Lyons (W.D. Wash., Judge Dwyer). Continuation of the litigation that led to the 1992 injunction after it had been lifted. Amended complaint by 13 environmental groups challenged the 1994 Forest Plan. Court upheld the 1994 Forest Plan against all legal challenges, and its decision was affirmed by the Ninth Circuit Court of Appeals.

Save the West v. Lyons (W.D. Wash., Judge Dwyer). Complaint by environmental group challenging the 1994 Forest Plan. Consolidated with Seattle Audubon Society v. Lyons.

Native Forest Council v. Babbitt (W.D. Wash., Judge Dwyer). Complaint by environmental group challenging the 1994 Forest Plan. Consolidated with Seattle Audubon Society v. Lyons.

Sierra Club v. Espy (W.D. Wash., Judge Dwyer). Complaint by environmental group challenging the 1994 Forest Plan. Consolidated with Seattle Audubon Society v. Lyons.

Northwest Forest Resource Council v. Thomas (D.D.C., Judge Jackson). Complaint by timber industry association challenging the 1994 Forest Plan. Court granted government's request to transfer case to Judge Dwyer in Seattle, but case was withdrawn before transfer. Claims were decided in the government's favor, as were government's cross-claims in Seattle Audubon Society v. Lyons.

Northwest Forest Resource Council v. Dombeck (D.D.C., Judge Jackson). Complaint by timber industry association challenging the 1994 Forest Plan. In May 1996, the Court dismissed the case deferring to the Western Washington District Court and Ninth Circuit Court of Appeals' decision in Seattle Audubon Society v. Lyons.

Association of O & C Counties v. Babbitt (D.D.C., Judge Jackson). Complaint by Oregon counties and others challenging the 1994 Forest Plan. Court stayed the case pending resolution of the Seattle litigation. In May 1996, the Court dismissed the case deferring to the Western Washington District Court and Ninth Circuit Court of Appeals' decision in Seattle Audubon Society v. Lyons.

TEXT BOX 4

Challenges to Implementing the Plan

Seattle Audubon Society v. Lyons (W.D. Wash.; Judge Dwyer): Environmental groups filed an amended complaint challenging the application of the Forest Plan to the Mather Memorial Highway Project, which removed 18 acres of old growth. Judge Dwyer upheld the Plan's implementation.

Native Forest Council v. U.S. Forest Service (D. Oreg.; Judge Ashmanskas): Environmental groups challenged the application of the Forest Plan to 11 timber sales in Oregon. The timber sales were found to comply with the Forest Plan and applicable laws.

National Wildlife Federation v. Agpaoa (D. Oreg.): Environmental groups challenged the application of the Forest Plan to suction-dredge mining on the Siskiyou National Forest. The issues were resolved and the case dismissed before a hearing.

Sierra Club v. U.S. Forest Service (D. Oreg.; Judge Hogan; on appeal to Ninth Circuit): Environmental groups challenged the Warner Creek Fire Recovery Project's compliance with the Forest Plan. Outcome superseded by salvage provisions in the 1995 Rescissions Act.

TEXT BOX 5

The first lawsuit was filed before the Plan was finalized. U.S. District Court Judge Thomas Jackson held that the participation of five nonfederal university scientists in the Forest Ecosystem Management Assessment Team violated the Federal Advisory Committee Act, but he left the consequences of that judgment to other cases.

After the injunctions were lifted, 13 environmental groups amended their original complaint before Judge Dwyer to challenge the Plan on how it was put together and whether it provided adequate environmental protection to comply with the nation's environmental laws. Four additional lawsuits were filed in Judge Dwyer's court by environmental groups for similar reasons and were consolidated with the amended complaint. Two forest products industry complaints and one complaint from the O&C County Association were filed in Judge Jackson's court on both process and substantive grounds. Judge Jackson allowed the government to transfer one of the industry cases to Judge Dwyer and stayed the other two cases pending the resolution in Judge Dwyer's court, but the industry withdrew the complaint before it was transferred. Judge Dwyer then allowed the government to make a claim against the industry plaintiffs claims that were withdrawn so that all the issues could be decided at once.

In addition to satisfying the terms of the injunctions discussed earlier, Judge Dwyer upheld the Plan against all these new legal challenges on December 21, 1994. In upholding the Plan, Judge Dwyer rejected challenges both from environmental groups who contended that the Plan did not adequately protect old-growth forests and salmon stocks, and from timber industry groups who contended that the Plan unlawfully preferred environmental concerns over timber supply. The decision validated the use of an ecosystem management approach as the means to both meet the requirements of the environmental laws and make the timber resource available to the public. The Court also held that the public process used by the government for the environmental impact statement adequately remedied the failure to open up the Forest Ecosystem Management Assessment Team process found unlawful by Judge Jackson.

Separate appeals of this decision were taken by the industry and two environmental groups. On April 10, 1996, the Ninth Circuit Court of Appeals upheld Judge Dwyer's opinion. In upholding Judge Dwyer's decision, the Ninth Circuit Court of Appeals noted that the Plan was

designed to bring "much needed coherence to the management of federal forests in the region." Judge Jackson's subsequent dismissal of the challenges pending in his District Court underscores that fact. Environmental groups have challenged, four times, individual agency actions that implement the Plan. The government has prevailed on or resolved all four cases. Of all the litigation affecting the Plan and its implementation, the federal government has prevailed on eight cases, negotiated one case, and lost one case.[3]

While these legal challenges were being resolved, the federal agencies were free to move forward in implementing all aspects of the Plan (table 3). These legal challenges certainly contributed to a sense of uncertainty that was felt by all parties in 1994, though the injunctions had been lifted. Would another injunction be put in place? Would the Plan have to be re-written? The previous three years had suggested that the agencies would have to start again. They have not had to do so.

Table 3—Key events in designing and implementing the Northwest Forest Plan

Date	Forest management	Economic assistance
1993		
April	■ Forest Conference ■ Forest Ecosystem Management Assessment Team organized	■ Forest Conference ■ Economic Assistance [illegible]
July	■ President's Forest Plan released ■ Draft Supplemental Environmental Impact Statement released to guide federal forest management ■ Ninety-day public comment period begins	■ President's Economic Assistance Plan released
August	[illegible]	■ Budget reconciliation [illegible] repeals log export [illegible] incentive [illegible] uses savings [illegible] payments to states
September	■ Public hearings held in WA, CA, and OR	
October	■ Draft Supplemental Environmental Impact Statement public comment period ends ■ Federal cooperation memorandum of understanding signed	■ Federal cooperation memorandum of understanding signed
November		■ Federal and federal-state cooperation memoranda of understanding are signed
December		■ FY 1994 appropriations bills that contain economic assistance funding commitments signed. Northwest Economic Adjustment Initiative is operational

[3]These numbers reflect challenges to the Plan and its implementation independent of those based on the salvage provisions included in the Rescissions Act (1995).

Table 3—Continued

Date	Forest management	Economic assistance
1993		
February	■ Final Supplemental Environmental Impact Statement released 30-day public comment period begins	
April	■ Public comment period on final Supplemental Environmental Impact Statement ends ■ Record of Decision released ■ New forest management activities begin (except for timber sales) ■ Judge Jones lifts injunction on Bureau of Land Management timber sales	
May	■ Terms of Judge Frye's injunction on Bureau of Land Management timber sales are satisfied	
June	■ Judge Dwyer lifts injunction on Forest Service's regional timber sales ■ Forest Plan is completely operational ■ New legal challenges filed on Forest Plan on its merits and in manner it was developed	
December	■ Judge Dwyer upholds the Forest Plan on all accounts	

CHAPTER 4

INTERAGENCY COOPERATION AND PUBLIC PARTICIPATION

Because the Northwest Forest Plan addresses both federal forest management and economic programs of many federal agencies, the decision process was designed to be as broad, inclusive, and integrated as possible. It aims to bring people together across the borders that separate governments, jurisdictions, and sovereignty, and to create bridges within the federal government between departments, agencies, and responsibilities.

COORDINATION AMONG FEDERAL AGENCIES: A HISTORICAL PERSPECTIVE

Various federal laws and executive orders have historically encouraged or directed agencies to work together to implement environmental laws. In 1976, for example, the National Forest Management Act (1976) directed the Secretary of Agriculture to coordinate planning on National Forests "with the land and resource planning of other agencies" and the Federal Lands Policy and Management Act (1976) directed the Secretary of the Interior to coordinate "land use inventory, planning, and management activities...with the land use planning processes of other Federal departments and agencies...." In 1982, the Reagan Administration emphasized interagency coordination by calling for each agency responsible for implementing the National Environmental Policy Act to cooperate with a designated lead agency, and to provide staff and funds as necessary (OMB 1982).

Even with these and other directives, achieving interagency coordination has been elusive and difficult for a variety of reasons; a major one is the way agencies were established and structured under law. Each department has different legislative mandates, with various laws, actions, and responsibilities delegated to only one or a few agencies. Each agency has its own budget, accounting, procurement, and management policies and procedures that may be incompatible with those of other agencies. These institutional factors alone can limit interagency coordination and collaboration.

Each agency's mission may overlap with those of other agencies or have completely different objectives. For example, land management agencies such as the Forest Service and the Bureau of Land Management share similar missions to manage federal lands for resource uses and to protect the environment; regulatory agencies, such as the National Marine Fisheries Service and the Fish and Wildlife Service, share responsibility for enforcing the Endangered Species Act on federal land.

Because of the unique ways departments and agencies are established, structured, and funded by law, most have tended to concentrate on their own mandates and responsibilities, generally viewing their missions as independent and of little concern to other government agencies. Even in this context, the federal agencies sometimes sought public participation, coordination with other agencies, or communication with state, local, and tribal governments either because it was

required by laws such as the National Environmental Policy Act, as a short-term response to emergencies such as forest fires, as the result of personal relations between agency staffs, or simply as professional courtesy.

Evolving Conflicts

Although early consultation and coordination between federal agencies were rare on programs like timber-sale planning, interagency cooperation was by no means absent in the region. Agencies came together effectively during crises and emergencies, such as the eruption of Mount St. Helens and forest fires. Agency field offices have worked together and pooled resources, such as when the Forest Service and the Bureau of Land Management jointly managed and staffed local visitor centers and office buildings. Also, agencies have worked closely together on public education, recreation programs, and other projects.

As conflicting demands on natural resources increased and became more rooted in each agency's mission, their professional pride, cultures, and lack of trust in each other began to create conflict, inefficiency, and delays. The problems caused by lack of interagency coordination and trust were especially acute between agencies after the northern spotted owl was listed as a threatened species in 1990.

Before the owl was listed, the Forest Service and the Bureau of Land Management were not required to consult with the Fish and Wildlife Service about potential effects of management actions on owl habitat. After the listing, however, the agencies were required to consult, and the Fish and Wildlife Service often found that the Forest Service or the Bureau of Land Management had failed to adequately consider or address the habitat needs of listed species in their timber-sale plans. Depending on the complexity of the issues that needed to be addressed, the adjustments and revisions that the two land management agencies undertook could delay the offering of a timber sale for months or even years.

After the Interagency Scientific Committee developed and released a unified strategy to protect the habitat of the northern spotted owl—an example of agency cooperation—the Bureau of Land Management released its own proposal to protect the owl's habitat. The Bureau was challenged by environmental groups for not first consulting with the Fish and Wildlife Service while developing its strategy. In fact, opinions differed about whether the strategy actually was a plan that the Service could be consulted about. Nevertheless, the Bureau's strategy played a key role in a federal judge's decision to place an injunction on the Forest Service's timber-sale program. Even though the Forest Service's plan to protect owl habitat was based on the Committee's approach, the court ruled that the Forest Service failed to consider what effects the Bureau's strategy could have on spotted owl habitat. The lack of interagency coordination was one of the factors that led to the court injunctions that essentially shut down the region's federal timber sales.

How to break the impasse caused by the court injunctions became a highly emotional, polarizing issue. But virtually all parties agreed on two major issues: federal agencies should work toward better coordination, efficiency, and improved communication; and the states, tribes, local governments, and members of the public should have the opportunity to better share their concerns, issues, and ideas directly with federal decision makers on how the forests should be managed. Leaders in the federal agencies themselves agreed with these views, stating that the lack of

coordination among the various federal agencies was a major factor in creating the impasse in the region (DSEIS 1993). The need to coordinate activities of government agencies in the region thus became a goal of both the Clinton Administration and the federal professionals themselves.

The Forest Conference

The first step toward creating stronger interagency cooperation was taken on April 2, 1993, when nearly all of the relevant departmental Secretaries and administrators joined President Clinton and Vice President Gore in attending the Forest Conference in Portland, Oregon. The need for the federal government to find new ways of doing business, which was mentioned by many participants, was clearly articulated by Margaret Powell of the Hoopa Valley Indian Tribe of California (Forest Conference 1993):

> *... it will take a cooperative effort on the part of the management agencies, the timber industry, and environmental groups to achieve the balance that everyone is striving to achieve. It will not be acceptable for one group or agency to stop the work or efforts of the others. We have seen some very productive and constructive models developed between previously opposing groups when reasonable people sit down to develop reasonable solutions.*

As the Forest Conference ended, the President pledged a course of action for the departments and agencies to begin the process of government collaboration and streamlining:

> *I want each of our cabinets to look within the departments to determine which policies are at odds with each other. It is true, as I've said many times, that I was mortified when I began to review the legal documents surrounding this controversy to see how often the departments were at odds with each other, so there was no one voice for the United States. I want the cabinet members to talk with each other to try to bring these conflicts to an end which, at their extreme, we've had our own agencies suing one another in court, often over issues which are hard to characterize as monumental.*

The Administration was directed to craft a balanced, comprehensive, long-term policy that would require all levels of government to work together. Not since President Theodore Roosevelt established the Forest Service nearly 90 years ago had a President been so personally involved in a controversial forestry issue. Because of that special attention, expectations of what might result from the Forest Conference and the Administration differed widely.

Most people welcomed the opportunity for improved working relations and appreciated that their concerns were receiving attention from the highest levels of the federal government. Some people had high expectations that the new Administration would be more supportive of environmental laws than were previous Administrations, but others had equally high expectations for a return to previous forest management policies. American Indian tribes were encouraged by having a seat at the conference table so their concerns could be heard. Because of their status as sovereign nations, however, many tribes expected the Administration to deal with them as one government to another.

Although expectations were generally positive, the years of frustration and the inability to find a solution created a general mood of skepticism about whether the federal government could indeed resolve the stalemate, protect forest resources, and create new economic opportunities.

The Northwest Forest Plan: A Model for Interagency Coordination

Implementing the Northwest Forest Plan would require the unprecedented coordination of 7 departments and 16 agency programs across 3 states. The Plan thus provides an ideal opportunity to serve as a model of how government agencies could work together to become more efficient, responsive, and effective.

Cooperation and Coordination for Forest Ecosystem Management

Federal agencies in the region recognized that existing organizational structures and institutional cultures did not foster interagency coordination (figure 2). In a joint working group on agency coordination, regional and national career professionals from the federal agencies identified seven factors that contributed to the lack of interagency cooperation (DSEIS 1993):

- Lack of an agreed-upon mission;
- Land management incentives based on timber production;
- Inability to adapt rapidly to change;
- Inconsistent statutory mandates;
- Technological constraints;
- Structural problems with respect to agency budgets; and
- Lack of trust between federal agencies and within individual agencies.

To address these factors, the regionwide forest management strategy would require unprecedented long- and short-term changes. This task is complex, mostly because of the organizational structure of the federal government itself. Each individual department and agency is set up as a linear series of units with a traditional chain of command; although this vertical structure effectively maintains the internal operations and decision processes for large organizations, it can limit an agency's flexibility to work horizontally with other agencies.

In addition to the challenge of coordinating the actions of agencies, the government had to consider how to increase involvement with the public, the tribes, and state and local governments in federal forest management decisions.

Federal agencies included in the Plan were directed to come together in new interagency committees (figure 3). Because the list of the various committees and their acronyms resembled an alphabet soup of new bureaucratic organizations, it helped feed perceptions among some people that the Plan was creating a new bureaucracy and more jobs for staff and administration. In reality, it simply created a process that streamlined the existing 7 departments and 16 agency programs into focused, coordinated interagency committees. These committees allow each agency to retain their traditional decision authority, but require them to do so with a better understanding of other agencies' responsibilities and the effect of those responsibilities.

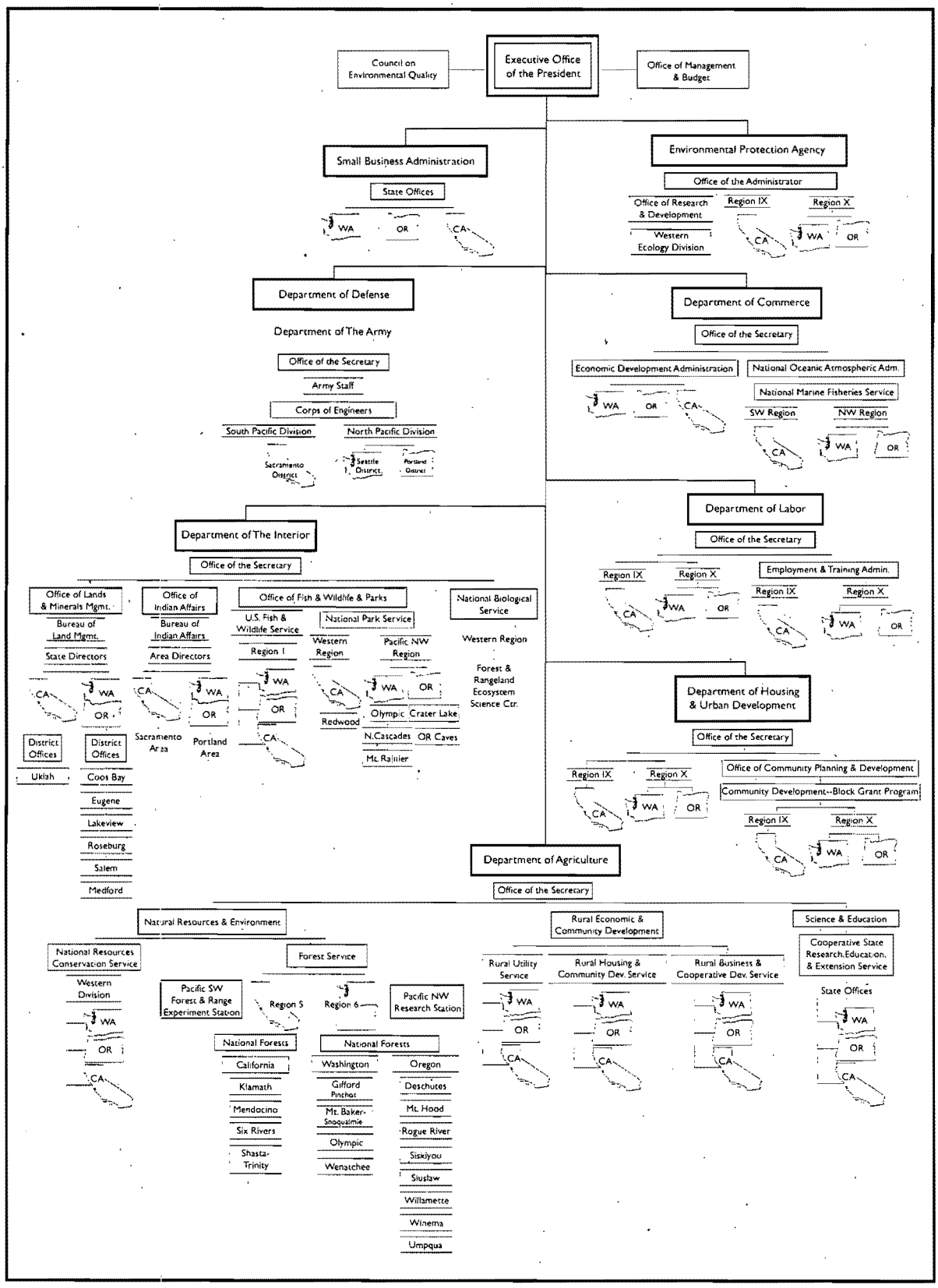


Figure 2—Formal organizational chart of federal agencies involved with the Northwest Forest Plan.

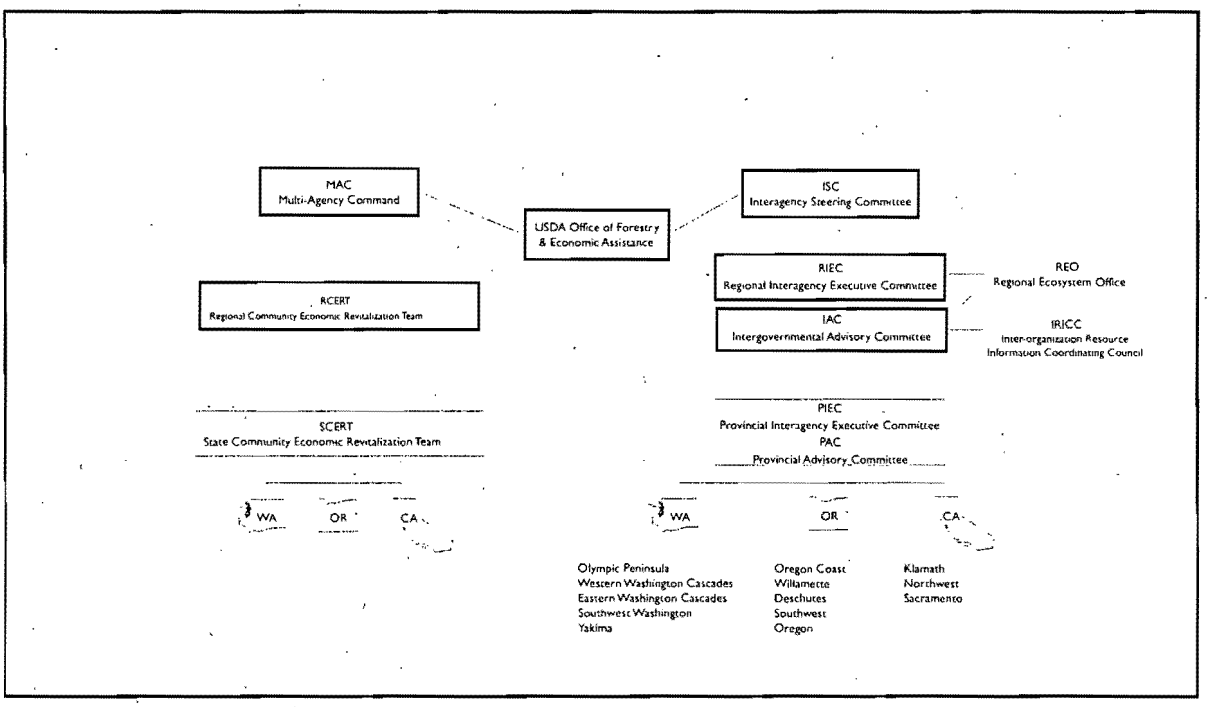


Figure 3—Interagency cooperative structure under the Northwest Forest Plan.

Implementing the Agency Coordination Work Group's recommendations began in July 1993, when the regional executives of the Bureau of Land Management, Forest Service, National Marine Fisheries, Environmental Protection Agency, and the Fish and Wildlife Service, on their own initiative, took action and created their own Interagency Implementation Team. The team was established to enhance relations between the agencies, and it served as a jump-start for implementing the Plan.

Interagency coordination officially began on October 8, 1993, with the signing of the *Memorandum of Understanding for Forest Ecosystem Management* (MOU 1993a). Its purpose was "to establish a framework for cooperative planning, improved decision making, and coordinated implementation of the forest ecosystem management component of the President's Forest Plan...." The document created several interagency groups that would be responsible to "develop, monitor, and oversee the implementation of the comprehensive forest management strategy for federal forests within the range of the northern spotted owl." The memorandum was signed by the Director of the White House Office of Environmental Policy, the Secretaries of the Interior and Agriculture, the Administrator of the Environmental Protection Agency, and the Under Secretary of Commerce for Oceans and Atmosphere. The interagency groups established by the memorandum were the:

- Interagency Steering Committee,
- Regional Interagency Executive Committee, and their staff work-group, the Regional Ecosystem Office,
- Research and Monitoring Committee, and
- 12 Provincial Teams.

Northwest Forest Plan Committees

The Interagency Steering Committee (ISC) establishes policies for the Northwest Forest Plan. It is chaired by the White House Council on Environmental Quality. This committee, based in Washington, DC, includes subcabinet representatives from the Secretaries of the Interior, Agriculture, Commerce, and the Administrator of the Environmental Protection Agency.

The Regional Interagency Executive Committee (RIEC) serves as the senior body of line managers responsible for implementing the Northwest Forest Plan and coordinating and communicating policies with agencies in the Plan's region. The committee includes the regional executives of the Forest Service, Bureau of Land Management, Fish and Wildlife Service, National Park Service, the Bureau of Indian Affairs, the National Marine Fisheries Service, and the Environmental Protection Agency.

The Intergovernmental Advisory Committee (IAC) serves as the lead advisory body to the Regional Interagency Executive Committee. The 20 members include one official from local, state, and tribal governments in Washington, Oregon, and California, plus federal officials from each participating agency in the region.

The Provincial Interagency Executive Committees (PIECs). The region is divided into 12 provinces with distinct land, ecosystem, and climatic qualities unique to their subregion. These committees are made up of the federal agency directors who oversee the management of federal public lands for each province.

The Provincial Advisory Committees (PACs) serve as the lead advisory bodies to the Provincial Interagency Executive Committees. They have up to 29 members, including representatives from federal, state, county, and tribal governments, the timber industry, environmental groups, recreation and tourism organizations, and up to five other public-at-large members.

Adaptive Management Areas (AMAs) are designed as community-based forums to work with federal land managers, encouraging development of innovative forest management techniques within their designated land area. Participation by any interested party is encouraged.

The Regional Ecosystem Office (REO) serves as the staff and advisory office to the Regional Interagency Executive Committee and the Intergovernmental Advisory Committee. It provides support for their efforts, and provides independent scientific, technical, and other review and support to help resolve differences in implementing the Northwest Forest Plan. Staff of the office are detailed from each of the federal agencies responsible for forest management in the region.

The Interorganization Resource Information Coordinating Council (IRICC) coordinates and shares data and other information concerning natural resource issues from federal and state agencies. The council is chartered as a subcommittee of the Intergovernmental Advisory Committee.

The Research and Monitoring Committee (RMC) provides scientific and research information to the Regional Interagency Executive Committee. It consists of scientists and managers from different agencies representing a wide variety of research disciplines.

TEXT BOX 6

A federal interagency group that includes state government agencies is the Interorganization Resource and Information Coordinating Council. The memorandum of understanding that created the council was signed by the federal regional leaders of the Forest Service, Bureau of Land Management, Fish and Wildlife Service, National Marine Fisheries Service, Bureau of Indian Affairs, National Park Service, Soil Conservation Service, Environmental Protection Agency, and the Geological Survey, as well as representatives from the state governments of Oregon, Washington, and California (MOU 1994).

In addition to the national and regional bodies, Oregon, Washington, and northern California were divided into 12 provinces to focus on how land management activities would address the unique ecological characteristics for each subregion or physiographic province (ROD 1994). The boundaries were designed around common local ecosystem characteristics, such as climate, aquatic systems, and terrestrial qualities. Each province is being guided by a Provincial Interagency Executive Committee of federal agency representatives who oversee the implementation of the Plan in that province.

Cooperation and Coordination for Economic Assistance

The Northwest Economic Adjustment Initiative makes funds available to provide both immediate and long-term relief for the people, communities, and businesses affected by changes in the timber industry and federal forest management. Formal commitments, including principles to guide the participating federal agencies, objectives of the assistance effort, responsibilities of the agencies, and a coordination structure are described in the *Interagency Memorandum of Understanding for Economic Adjustment and Community Assistance* (1993). The *Interagency Memorandum* was signed by the Secretaries of the Interior, Agriculture, Commerce, Labor, Housing and Urban Development; the Administrators of the Environmental Protection

Economic Adjustment Initiative Committees

The Multi-Agency Command (MAC) is responsible for policy and oversight of the Northwest Economic Adjustment Initiative. The committee, based in Washington, DC, includes representatives from the departments of the Interior, Agriculture, Commerce, Labor, and Housing and Urban Development; the Environmental Protection Agency; the Office of Management and Budget; the Small Business Administration; and the presidential advisors on economic, domestic, and environmental policy.

The Regional Community Economic Revitalization Team (RCERT) is composed of the executives of regional federal agencies responsible for awarding grants and loans. It includes representatives from the state, local, and tribal governments of Oregon, Washington, and northern California, American Indian tribes, and regional representatives from the Forest Service, Bureau of Land Management, Small Business Administration, Farmers Home Administration, the Departments of Labor and Environmental Protection Agency, and Housing and Urban Development.

The State Community Economic Revitalization Teams (SCERTs). The Oregon, Washington, and California teams are chaired by a state official chosen by the respective Governor. The state teams bring together all of the federal agencies responsible for allocating federal grants and loans in each state. Although each team includes representatives from federal, state, and local governments plus American Indian tribes, the states were allowed to define what type of representation would best serve the needs of their workers, families, and communities, so the membership and representation differs with each team. The Washington and Oregon teams chose to include representatives from the general public, and the California team's membership consists only of governmental representatives.

TEXT BOX 7

Agency and Small Business Administration; the Deputy Director of the Office of Management and Budget; the Assistants to the President for Economic Policy and Domestic Policy; and the Director of the Office on Environmental Policy. The *Interagency Memorandum* covered fiscal years 1994-96; it was extended by consent of the signatories in August 1996 for two more years.

Coordinating bodies for the Initiative were established nationally, regionally, and by the states. These groups include the:

- Multi-Agency Command,
- Regional Community Economic Revitalization Team, and
- Oregon, Washington, and California State Community Economic Revitalization Teams.

Community Economic Revitalization Team (CERT)

The Multi-Agency Command was charged with the responsibility of entering into an agreement with the Governors of Oregon, Washington, and California to carry out the provisions of the Initiative as a partnership of federal, state, tribal, local, and other parties. The *Federal-State Memorandum of Understanding for Economic Adjustment and Community Assistance* (1993) was executed between the chair of the Multi-Agency Command, the three Governors, and three county officials representing affected communities in each of the states.

The existing authorities and statutory obligations of the participating federal and state agencies and officials are not affected by the agreements in either the *Interagency* or the *Federal-State Memorandum*.

Coordination and Oversight Through the U.S. Office of Forestry and Economic Development

Once the framework for interagency cooperation was in place, the next step was to begin coordinating the 7 federal departments and 16 agency programs in the 3-state region in implementing the Plan. To help ensure a smooth transition, a United States Office of Forestry and Economic Development was created to oversee and coordinate the implementation of the Plan for two years. As the administration's representative in the region, the office served as a focal point for Plan activities, coordinating interagency and intergovernmental efforts, and serving as a communications link from the region to Washington, DC. The office was created at the request of the White House by the Secretaries of Agriculture, Interior, Labor, Commerce, and Housing and Urban Development; and the administrators of the Small Business Administration and the Environmental Protection Agency (MOU 1993b). The office closed in February 1996.

With the interagency committees established, implementing the Northwest Forest Plan began to move forward. The various committees began meeting regularly, creating new channels of communication, coordination, and cooperation between the agencies and with state, local, and tribal governments and the public.

Public Participation and the Federal Advisory Committee Act

Public participation has been a legislatively required part of federal agency efforts since 1970. Such participation includes formal and informal opportunities for interested individuals and organizations to work with and comment on federal plans and actions. The Plan retains these opportunities, but it also attempts to bring those who are most interested in forest management and economic assistance into partnership groups that will seek to help federal agencies reach consensus. Originally, these groups were envisioned to be part of the coordination groups described above, but issues related to the Federal Advisory Committee Act prevented this arrangement.

In late 1993 and early 1994, as the interagency coordination groups were established and the Northwest Forest Plan began to move forward, the process that created the Plan itself was challenged in court. On March 21, 1994, a federal district court determined that the Forest Ecosystem Management Assessment Team was in violation of the Federal Advisory Committee Act (Northwest Forest Resource Council v. Espy 1994). The Act, which was passed by Congress in 1972, was created to reduce the influence of special interests, to open public access to government decision makers, and to control costs of advisory committees. It defines an "advisory committee" as any committee or group established or used by the President or any federal agency for advice or recommendations, and whose membership includes people who are not full-time federal employees (Federal Advisory Committee Act 1972).

The Forest Ecosystem Management Assessment Team was a group of more than 100 scientists and other experts brought together by the Administration to develop the ecosystem management options that eventually served as the basis for the Northwest Forest Plan. Although nearly all of the Team's members were federal employees, five were professors from regional universities. The court determined that the Team was an advisory committee as defined by the Act because, even though the five professors were under contract to work for the federal government, they were still technically state employees.

The court also said that the Team should have been chartered as an advisory committee, which under the Act would have required a statement outlining the committee's objectives; defining who the committee would report to; estimating costs associated with operating the committee; establishing a date for terminating or reviewing the committee; having a membership representing a balance of interests; publishing notices of meetings in the Federal Register; and keeping minutes of meetings and making documents available for public inspection. The Team did not meet all of these requirements.

Although the court determined that the Team's membership violated the Federal Advisory Committee Act, it declined to enjoin the Administration. The ultimate penalty could have been prohibiting use of the Team's considerable scientific findings while developing the Environmental Impact Statement for the Northwest Forest Plan. Had the court ordered such a prohibition, the Plan would have had to be redone, and the planning process would have had to start all over again.

Other Court Decisions Related to the Federal Advisory Committee Act

To provide a clearer understanding of the government's subsequent actions and responses to the lawsuits, the Forest Ecosystem Management Assessment Team's court case needs to be put in perspective with two other similar legal cases in 1993 that also addressed challenges to the federal committees' compliance with the Federal Advisory Committee Act.

A court case in Alabama focused on whether four scientists who were advising federal officials on the possibility of listing a sturgeon as an endangered species constituted an advisory committee under the Federal Advisory Committee Act (Alabama-Tombigbee Rivers Coalition v. Department of the Interior 1994). The four scientists worked independently, and they originally intended to independently submit their findings about the sturgeon to the Fish and Wildlife Service. Instead, they chose to give direct recommendations in a joint report. A federal court determined that the four scientists were technically an advisory committee under the Act. And, like the Forest Ecosystem Management Assessment Team, because they were not officially chartered, they were found in violation of the law. Unlike in that case, however, the government was barred from using the Alabama scientists' studies and recommendations, which meant their information and scientific data about the sturgeon could not be considered by government policy makers.

Another highly publicized advisory committee case focused on the President's Task Force on National Health Care reform headed by First Lady Hillary Rodham Clinton. As in the other cases, the issue centered on the membership of the task force. The dispute was whether the First Lady was a private citizen or a government employee. If she was a private citizen, her participation on the all-federal- employee task force would have been a violation of the Federal Advisory Committee Act. The government contended that the First Lady was a federal employee, and therefore the task force was not an advisory committee. A federal district court ruled that the First Lady was a private citizen, and thus her membership on the task force was a violation of the Act. Later, an appeals court overturned the lower court's decision, saying that the First Lady was a "functional equivalent of an officer or employee of the federal government," and thus, the task force was legal and not an advisory committee as defined under the law (Association of American Physicians and Surgeons, Inc., v. Clinton 1993).

Because of the high visibility of these cases, federal officials throughout the nation were under intense scrutiny by the public and interested parties on how they received advice and information from individuals and groups outside of the federal government. These legal opinions and implications were taken very seriously, and together they focused the agencies' efforts to assure that all future advisory processes would strictly comply with the law.

The Effects of the Federal Advisory Committee Act on Public Participation

Before the Forest Ecosystem Management Assessment Team case, many federal officials in the region were beginning to make progress working with state and local governments, tribal officials, and with various partnership and community groups. Just as federal officials were creating new lines of communication and building trust with numerous officials and groups, the court's decision on the Forest Ecosystem Management Assessment Team's compliance with the Federal Advisory Committee Act impaired these relations.

While legal experts analyzed the effects of the rulings and were deciding the best course to take to comply with the Act, questions arose about the involvement of federal agency officials in the many committees, partnerships, and other organizations that included nonfederal officials. Federal agencies and officials were advised to take a very conservative approach in their interactions and participation with groups outside the federal government. The concern was that the newly established legal precedents could allow nearly anyone to disrupt or derail agency actions, simply by claiming unfair representation because he or she was not part of a group and someone else was. Therefore, federal agency officials who were participating in nonchartered committees and organizations were advised to stop until a process was developed to comply with the Act.

The sudden removal of agency involvement with the public and representatives of other governments stalled the positive momentum many federal officials in the field had already established with local partnership groups, bioregional councils, and other community-based organizations throughout the region. This abrupt change led to uncertainty, frustration, and misunderstandings from the public and federal officials alike. For example, the Applegate Partnership, in southwestern Oregon and northern California, is a watershed-based community organization that was hailed by local and federal officials as a model for how partnerships could successfully bring together divergent interests and work together on local land management issues. Through the group's patience, hard work, and local leadership, a high degree of understanding and trust was formed between the community leaders, industry representatives, environmental groups, and federal officials participating with the partnership. The federal officials and the other members of the partnership were equally disappointed when federal participants were required to resign from the partnership's board of directors. The resulting frustration and tension led some people to lose trust and goodwill towards the federal government.

The decision to limit the participation of federal officials also significantly affected all of the interagency and intergovernmental committees that were just beginning operation. For example, the Regional Interagency Executive Committee, the lead body of federal officials implementing the Plan, was beginning to build working relations with state and tribal representatives through its regularly held meetings. After the ruling, the Committee reluctantly chose to continue with its meetings but not to include representatives from state governments and tribes. Again, this decision dampened the positive relations being established and replaced them with frustration and tension between the agencies and the tribes and state governments.

Advisory committee questions also stalled the full implementation of the 10 Adaptive Management Areas. These areas were designed to be prototypes of how forest communities might be sustained by providing opportunities for federal land management and regulatory agencies, other government entities, nongovernmental organizations, local groups, land owners, communities, and citizens to work together to develop innovative management approaches (FSEIS 1994).

Whether the public involvement methods used by the Adaptive Management Areas would fall under the Federal Advisory Committee Act's definition of being federal advisory committees was

uncertain. For the Adaptive Management Areas, partnerships, and other community and public groups, federal involvement was put on hold until solutions that would comply with the letter, spirit, and intent of the Federal Advisory Committee Act could be worked out.

Although the forest management efforts were slowed as federal legal experts worked on ways to comply with the Act, the Plan's economic assistance programs progressed along a different track. The Community Economic Revitalization Teams decided to limit their efforts to sharing information with federal officials, not directly advising them; the Federal Advisory Committee Act thus had little effect on their ability to meet, and they were able to proceed without interruption.

Chartering Advisory Committees Under the Federal Advisory Committee Act

Within four months of the decision on the Forest Ecosystem Management Assessment Team, the government created a new process to give nonfederal officials and the public interested in natural-resource issues the opportunity to have a say on how the region's federal forests will be managed. Several advisory committees were established, not only to comply with the Federal Advisory Committee Act but to help ensure that representatives from local, state, and tribal governments, as well as the general public, could share information and formally advise federal decision makers responsible for managing and regulating activities on the region's forests.

Because the advisory committees' charters placed a legal limitation on the number of people and groups that could participate on the committees, the government was challenged to find alternatives that would allow partnerships and other organizations to advise the government, while complying with the Federal Advisory Committee Act. Four possible options (right) were outlined.

Thirteen advisory committees were formally created on September 30, 1994, when the Intergovernmental Advisory Committee and the Provincial Advisory Committees were officially established by two separate charters (USDA 1994). The Intergovernmental Advisory Committee, whose 20 members include one official each from local, state, and tribal governments in Washington, Oregon, and

Opportunities for Complying With the Federal Advisory Committee Act

Public Involvement: "Use existing public participation methods and techniques," which are basically any public participation avenue available to the general public such as public meetings, hearings, seminars, workshops, letters, one-on-one meetings, and other communications.

Subcommittees: "Establish AMA groups and/or partnerships as subcommittees under a federally-chartered provincial advisory committee." A chartered committee can establish working groups or subcommittees which could "be community-based groups that would provide advice and recommendations to the committee on federal land management issues."

Charter: "Charter separate advisory committees for AMA or partnership groups," which would clearly comply with the Act. The paper noted, however, receiving approval for advisory committee charters may be questionable given the President's earlier mandate of reducing the number of federal advisory committees by one-third.

Contract: "Contract AMA or partnership groups," where the government could offer a competitive contract with various groups for advice on specific plans and options for land management.

TEXT BOX 8 Source: Office of Forestry and Economic Development, 1994

California, serves as the lead advisory body to the Regional Interagency Executive Committee. The Committee has designated the Inter-Organization Resource Information Coordinating Council as its subcommittee.

The Provincial Advisory Committees serve as key advisory bodies to the 12 Provincial Interagency Executive Committees, whose members are responsible for land management activities within each province (figure 4). The Provincial Advisory Committees have up to 29 members, including representatives from federal, state, county, and tribal governments, the timber industry, environmental groups, recreation and tourism organizations, and up to five other public-at-large members.

These advisory committees marked an important step forward for both interagency and intergovernmental coordination and are creating new ways to involve local governments, tribes, and the public in managing the region's forests. The committees allow a wide representation of interests to be heard by federal policy makers while still complying with the requirements of the Federal Advisory Committee Act. The law requires that the membership of the advisory committees represent a balance among various groups, communities, and people interested in natural resources, and that the number of seats on the committees should be limited to a workable size.

Notwithstanding the charter of these teams, several partnership and community-based groups, objected to the classifications of interests required by the Federal Advisory Committee Act's

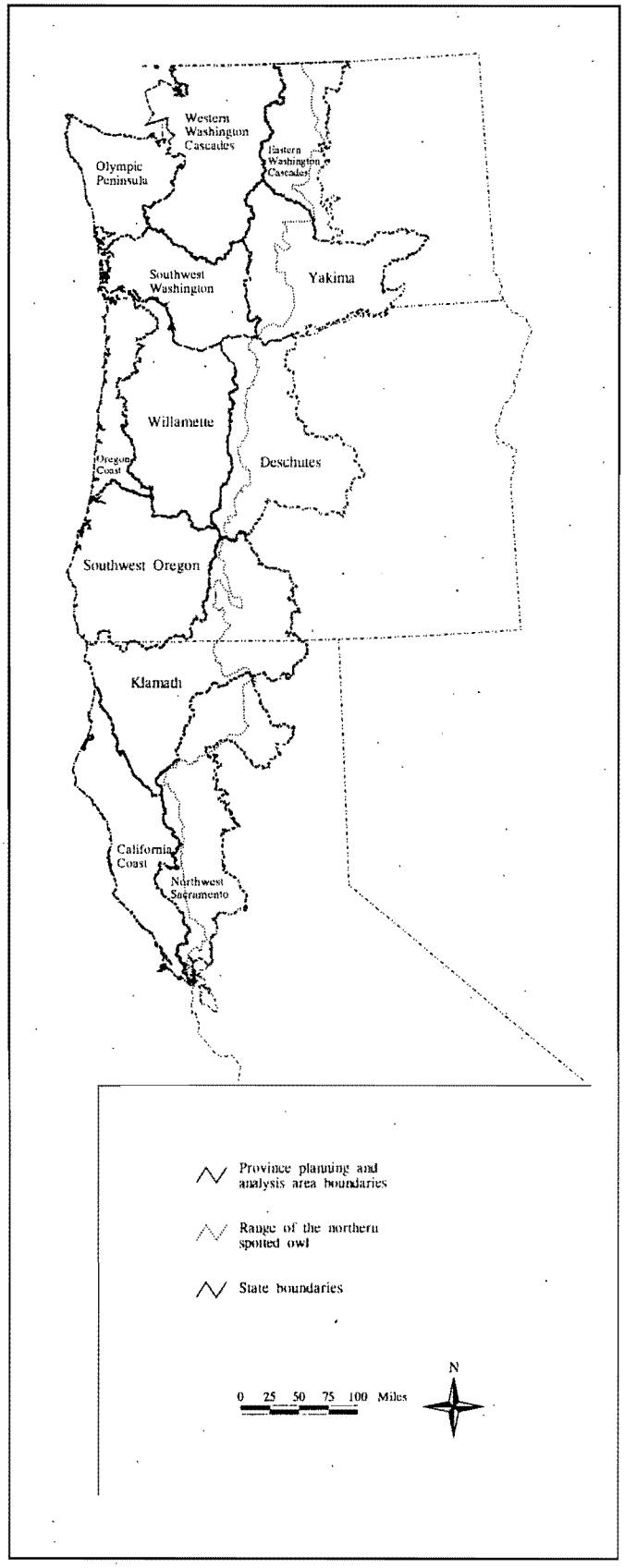


Figure 4—Province planning and analysis areas.

California Coast Provincial Interagency Executive Committee

advisory committee structure. The Provincial Advisory Committees' charter outlined membership requirements for the committees that included representatives of the environmental community, the forest products industry, recreation and tourism, and others interested in natural resources issues. Some partnerships, community organizations, and timber industry associations, however, felt they represented their entire community and did not feel comfortable being classified into such specific categories. One group's concerns reflected the feelings of several in California when they said

> *The classification of representatives to the Advisory Committee as "representatives of environmental interests," "representatives of the forest products industry," [and] "representatives of the recreation and tourism sectors" is a return to the days of confrontation. [We have] gone beyond labels to focus on better coordination of forest management activities among federal and nonfederal entities* (Shasta-Tehama Bioregional Council 1994).

These groups were formed to focus on ecosystems across jurisdictional boundaries, and because their forums included more than just federal lands, they objected to the federal advisory committees' focus on federal lands only. Also, they thought that because they were already organized and functioning in their area, the new advisory committees were redundant and unnecessary.

California Coast Adaptive Management Area field trip

Partnership groups in the region are not alone in their concern about the Federal Advisory Committee Act. The legal precedents of 1993 and 1994 have affected partnership groups throughout the nation.

Interagency Coordination and Public Participation: Observations and Opportunities

The Forest Plan has been viewed by many as an opportunity for reinventing government. Within the broad context of reinvention, partnerships have developed, members of the public have participated, and new ways of incorporating public input have been developed as a result of concerted efforts to comply with the Federal Advisory Committee Act.

Interagency Cooperation

Observations

The goals of interagency cooperation and public participation were cited by participants at the Forest Conference as essential tools to help break the impasse that engulfed the region. Given the long-standing differences and polarization that persist, achieving these goals has been a genuine challenge.

Agencies working together

Three years later, most of the Plan's goals of increasing interagency cooperation are moving forward. Interviews and discussions with agency professionals throughout the region have indicated widespread agreement with an observation made by the Forest Service's Ward Hoffman on the Olympic National Forest: "While developing effective coordination has sometimes been halting and difficult, there is no doubt that agencies are working more closely together and understanding each other more fully. This cannot but reap benefits that go far beyond the scope of the Northwest Forest Plan."

- All of the Plan's proposed coordinating committees were established and continue to operate.
- Most federal agency professionals believe that working together has greatly improved relations between agencies, believe the importance of working together cannot be overemphasized, and do not want to return to the old ways of doing business.

- Management and regulatory agencies have built cooperative relations and have a much better sense of and respect for each other's missions, cultures, and mandates.
- Interagency information-sharing leads to more unified and supportable decisions from management, legal, and public perspectives.
- Interagency decisions take more time up front, but they generally lead to better decisions that save time in the long run.
- Unified decisions allow the agencies to proceed along the same implementation path. For example, after a five-month process, all the regulatory and management agencies agreed on one watershed analysis process for the region that continues to be implemented two years later. The process was also supported by nonfederal governments and has withstood subsequent court challenges, allowing management decisions to move forward.
- Coordination allows agencies to educate each other on their missions and perspectives, thus creating buy-in on eventual decisions even if they are made unilaterally.
- The agencies have started to sign joint direction to the field where appropriate. Doing so helps assure consistent field interpretation and re-enforces positive relations between the agencies.

Benefits of interagency cooperation

Among the benefits of interagency cooperation cited most often by the agencies were

- Permitting agencies to leverage funds more effectively;
- Coordinating and applying research results;
- Creating common data bases and standards and guidelines;
- Coordinating resources, meetings, field trips, and discussions; and
- Maximizing limited agency resources.

Issues and concerns about Plan structure

Although most federal officials in the region support the Plan's coordination structure, some view the Plan as a burdensome shift in their traditional methods of operation. The issues and concerns they have raised differ widely, but in general they have viewed interagency cooperation as a new bureaucracy, citing a variety of reasons such as:

- Decisions being removed from local Districts and Forests;
- New committees and responsibilities adding to an already "full plate of work";
- Limited staff, funding, and resources being available for the new committee work;
- Decisions made at one level sometimes not being followed through at another;
- Cultures, funding, interests, and missions differing from one agency to another;
- Inability, unwillingness, or both of some staff professionals to adapt to change;
- Forest units being micromanaged by national and regional offices;
- Lack of standardized data and information collection; and
- The goal of consensus not always being attainable.

Internal management still an issue

Many agency professionals believe that internal management issues provide one of the most important components of Plan implementation that has not been adequately addressed in either the Plan or subsequent implementation.

- Although the timber sale rate has been reduced, the amount of staff and financial effort to re-establish the new program is comparable to what was needed to run the full timber program.
- The agencies' communication, organizational, and operational structures do not lend themselves to efficient coordination.
- A balanced skill mix is essential to meet the various commitments in the Plan and downsizing required for deficit reduction is impeding the agencies' operations.

- Retaining consistent management direction for the 10-year life of the Plan will allow the agencies to better meet their commitments and make improvements based on adaptive management. Changes that are intended to speed processes often end up taking more time to think through and implement.
- Many agency personnel that are not involved in implementing the Plan, especially in national headquarters, look at the Plan as a special regional project rather than a new way of doing business. This perception makes resolving issues nationally difficult for regional offices.
- Funding, budget development, budget direction, and accountability for how federal funds are used has not been overhauled to facilitate the Plan's ecosystem approach.

Opportunities

Opportunities for interagency cooperation could include

- Improving communication to and from all committee levels, both top down and bottom up. Direction and information could be communicated throughout the region by newsletter, electronic mail, and workshops.
- Requesting sufficient funding and staffing for committee responsibilities as a formal component of the agencies' budget requests.
- Restructuring the budget process by coordinating interagency budget requests, creating functional line items, building new performance measures into budget direction, and creating new measures of accountability that recognize the ecosystem approach.
- Identifying and promoting successful projects—such as watershed analysis, watershed restoration, and timber sales—will provide examples for others to learn from and reward those who are moving forward.
- Developing and building interagency coordination objectives into national, regional, and local performance measures.
- Continuing to create regionwide methods and standards for collecting, reporting, and recording data.

- Continuing to develop respect and trust in each agency for the roles and authority of other agencies.
- Increasing agency and staff willingness to share and yield some of their responsibilities to other agencies that are responsible for the same objectives.

Partnerships and Public Participation

Observations

Doing business differently

The Plan's goals for public participation focuses on the use of partnership groups and represents an unprecedented change in how federal agencies work with nonfederal representatives. These new partnerships require agencies to aggressively adopt new ways of doing business based on the input from their partners.

- Agency leaders generally stress that they highly value the input and advice that partnership groups have to offer, and they continue to strongly support and encourage everyone's participation in the various methods and vehicles available.
- Partnerships are not the only opportunities for public involvement on federal land management issues. For decades, agencies have been required to hold public meetings, open comment periods, and other methods to gather information on a variety of issues, including activities to assess effects of management activities on the environment. These opportunities continue.
- The opportunities for public and intergovernmental participation created by the Northwest Forest Plan have opened new channels of communication, understanding, and working relations between government officials and the people and communities throughout the region. Even some of the dissatisfaction is beginning to dissolve. Some in northern California were originally opposed to chartering committees. Two years later, two northern California Provincial Advisory Committees requested that their charters be renewed.
- Some nonfederal participants believe the partnerships do not lead to timely decision making.

Opportunities for the public and private sectors

Partnership groups provide new opportunities for the public and private sectors to actively participate and advise federal decision makers.

- Trust and understanding is increasing between people who are actively working within partnerships and the organizations they represent.
- Personal relations and mutual respect serve as the foundation for successful partnerships. Partnership groups within the Plan area generally have very good relations; however, relations remain polarized outside these groups.
- Partnerships with the best track record for having their agreements supported outside the partnership and on the ground include a mix of nonfederal and federal representatives and people who live in a local community and those who represent interests outside the immediate community who have an influence on the outcome. Conversely, partnership groups that do not include such representation are often viewed as special interests themselves and have a difficult time achieving results.
- Some partnerships make recommendations without understanding or considering if an agency can legally, financially, or professionally carry them out.
- The coordination structure of the Plan creates a positive climate for change and for future implementation.
- Partnerships have internal stresses that are related to many factors. They include the personality of individuals, the desire of agencies and representatives to control events within their missions, and the unwillingness of participants to think and act in nontraditional ways.
- Many of the interagency coordination observations also apply to partnerships and public participation. Notably, participants generally agree that the advisory committees have increased understanding, and information sharing between the agencies, departments, and the various public and nonfederal government committee members.

Role of staff

Partnership groups such as the Interagency Advisory Committee and certain state Community Economic Revitalization Teams that are formally staffed are more effective in delivering on partnership group proposals than are those partnerships without staff.

- Federal and nonfederal representatives at partnership tables often do not have the time to follow up on their agreements.
- Partnerships who have chosen not to or cannot staff their efforts can still play a valuable role. Implementing agencies find information sharing particularly helpful in better understanding and responding to public concerns.
- Some nonfederal partners believe staffing partnership groups increases the size of the federal government and would prefer that those funds be spent on economic assistance.
- The Regional Ecosystem Office, in particular, has served an invaluable role in assuring that agency decisions are delivered, interagency differences are resolved, and the Plan's standards and guidelines are complied with.

Conflict management

Although not as far along as agency cooperation, acceptance of partnership groups as a conflict-management tool is increasing.

- People who are not at the table may be unaware of or choose not to support partnership agreements.
- Although consensus is the ultimate goal, partnerships provide decision makers with a valuable conflict-management mechanism in the absence of consensus. More specifically, they require all perspectives to be laid out on the table and discussed. Where agreement can be reached, management actions can move forward. When agreement cannot be reached, the decision maker can make a decision based on the best information available.

Working with FACA

Early in the process, federal court decisions about the Federal Advisory Committee Act stalled the progress, energy, and goodwill that was being developed with the public and state, local, and tribal governments. In spite of this setback, federal officials developed means for partnerships to move forward that met the spirit and letter of the Act.

- Federal officials have worked to reassure partnerships that establishing an advisory committee neither precludes the establishment of, nor serves as a substitute for, the bioregional councils, watershed groups, or any previously established organization or structure.
- The ability of federal officials to meet with nonfederal government officials was clarified in the Unfunded Mandates Reform Act (1995). The provision exempted certain types of communications between federal officials and local government and tribal elected officials, or their designated employees, from the provisions of the Federal Advisory Committee Act. The act still applies for partnerships that include public representatives, however.
- Chartered advisory committees may actually create more opportunities for partnership groups by providing a central forum to offer advice, comments, and suggestions. In addition, expenses associated with participating in chartered groups is reimbursable.
- Even with the efforts by the government to meet the letter, spirit, and intent of the Federal Advisory Committee Act, and yet be as flexible as possible to meet a variety of individual concerns, some people are still not satisfied with the public involvement process that has been set up to comply with the law.

Effects of the salvage provisions

The salvage provisions of the Rescissions Act which prohibited administrative appeals and limited citizens' ability to successfully challenge timber sales based on their compliance with environmental laws in 1996, pressured the partnership process.

- Environmental representatives withdrew from several unchartered partnerships, but most groups continue to operate as originally established.
- Many credit the relations that had been built up before the law's passage as allowing groups to operate under the Rescissions Act's provisions in a manner that still complies with the Plan.

Opportunities

Partnership and public participation opportunities could include

- Implementing partnership agreements as a top funding and staffing priority of land-management and economic-assistance agencies. Partnerships and the public need to know what progress and achievements were accom-plished as a result of their efforts.
- Assuring that the national context within which local decisions are made is considered, to assure that agencies can implement partnership proposals.
- Focusing partnerships on general policy issues instead of bogging down on individual agency actions.
- Developing means to link the local and regional partnership groups in a manner that communicates the value that each bring to the forestry and economic-assistance programs.
- Developing means for successful partnerships to have more visible roles in the communities where they operate.
- Commissioning an independent analysis to assess how partnerships are working and how they could be improved.
- Combining committees where they appear to have the same functions.

CHAPTER 5

TOWARD A SUSTAINABLE ENVIRONMENT: MANAGING FOREST RESOURCES

THE REGION'S FORESTS[4]

The Pacific Northwest and northern California include a variety of distinctive forests from dense old-growth trees to open stands of young tree seedlings. The kinds of forests in the region are determined by weather, climate, geology, disturbance, and other qualities of each subregion. The most striking differences are between the forests near the Pacific Ocean and those east of the Cascade Range.

Forests close to the ocean receive an average of 115 inches of precipitation per year. These wet forests, in places such as Washington's Olympic Peninsula and Oregon's Coast Range, are dense and massive, dominated by a mixture of Sitka spruce, western hemlock, Douglas-fir, and western redcedar. When mature, these forests may have complex, multilayered canopies, with centuries-old trees that can tower to heights of more than 250 feet.

Inland forests in the rain shadow of the coastal mountains have less rainfall than their coastal counterparts. Generally in valleys, such as Oregon's Willamette and Umpqua, these forests are a mixture of trees, including Oregon white oak, Douglas-fir, and madrone.

The Cascade Range in Oregon and Washington rises from the valley floors, serving as the climatic center of the region. In the lower elevations of the Cascades' western slopes, the forests are similar to but less dense than those on the Pacific coast, with a combination of western hemlock, Douglas-fir, and western redcedar. Above 3,000 feet, the Douglas-fir and hemlock forests give way to forests dominated by true firs, such as silver fir and, as the elevation increases, eventually mountain hemlock and subalpine fir.

Across the ridge of the Cascades to the eastern edge of the Northwest Forest Plan's region, the mountains keep the rain on the west side. Forests farthest east in this subregion receive 15 inches or less precipitation per year. They are drier, sparser, and contain smaller trees than on the west side and are dominated by pines and firs. These conditions render the east side more prone than other subregions to frequent fires, which have played a major role in the structure, composition, and character of east-side forests.

Differences in the forests between the north and south extremes of the region are more gradual than between east and west. In the north, where the climate is cool and moist, forests are dominated by western hemlock, red alder, western redcedar and Douglas-fir. Farther south, the climate and forests eventually become drier and have more conifer species; the Klamath subregion in southern Oregon and northern California contains one of the most diverse native conifer forests on Earth.

[4]Much of the discussion in this section was provided by Tom Spies, research ecologist, Pacific Northwest Research Station, Corvallis, Oregon.

The Forests' Natural Process of Change

Scientific studies indicate that the composition of the region's forests in the mountains and the climate have changed little over the past 6,000 years. On a time line of geologic history, the forests are very young. Although the mix of tree species may be relatively unchanged, the forests themselves are constantly changing in structure and composition, both at local sites and over the landscape. Each forest has been, and will continue to be, shaped and influenced by weather; diversity of soils, water, plants, wildlife, and other ecosystem qualities; catastrophic events such as fire, storms, and volcanic activity; and the effects of people's many demands on the forests.

Change can happen quickly in a forest from disturbances such as wildfires, floods, and logging that cause immediate and dramatic changes to the forest landscape. Change can also take years or even centuries, such as when fallen trees decay or the number of shade-tolerant trees gradually increases over time. The gradual change of plants and animals on a site over time is called succession.

Most ecologists agree that succession proceeds somewhat predictably as forests increase in size and complexity; often, it is measured by changes in the structure of the forest. For the region's forests, the most obvious structural change is in tree size; others include the patchiness of vegetation, thickness of the forest floor, and increasing diversity of canopy layers—the umbrellas of shade created by the higher limbs of trees that overlap. Older forests are distinguished by the accumulation of very large dead wood and litter. The forests of this region are distinctive for the degree of structural change from young to old growth and for the length of time required for some of these structural changes.

Structural changes can profoundly affect both wildlife and ecosystem processes. Wildlife, wildlife habitat, and biological functions such as forest regeneration, microclimate, and carbon storage are particularly sensitive to changes in structure. Dramatic changes in the region's forests, such as the decline of late-successional and old-growth forests, reduce the biological diversity of the region's ecosys-

tems. Wildlife species, their habitat, and the balance of ecosystem functions in older, more mature, and biologically complex (late-successional) forests face the greatest risk from deterioration of diversity in this region.

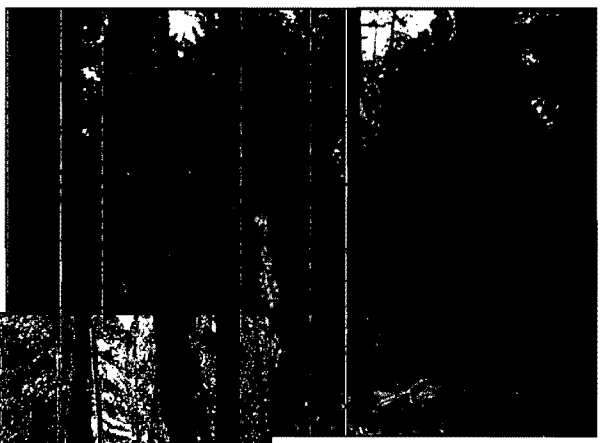
Roles of Natural and Presettlement Human Disturbances

Understanding the influence of disturbances such as fire, wind, insects, disease, and human activity is critical to achieving the goals of the Northwest Forest Plan. Without the effects of these disturbances, biological diversity created by young, mature, late-successional, and old-growth forests might cease to exist. The biological diversity of the forest—the array of plant and animal species that live there—is the product of two opposing forces: gradual growth and development; and the disturbances that destroy forest structure, restarting development.

Fire is the major force or source of disturbance in the region's forest history. Evidence of fire over the last 40,000 years is repeatedly found. Millions of acres in the region have been burned by wildfires, started by natural causes such as lightning or set by American Indians.

American Indians influenced the region's forest dynamics, primarily through setting fires. These fires, which were often set annually in dry valleys, tended to clear out shrubs and tree regeneration, creating mosaics of forests and meadows. The early use of fire in drier areas, such as the oak woodlands of the Willamette Valley, is well documented. Although some of these fires probably burned out of the valleys and into the mountains, no evidence suggests that American Indians played a major role in the disturbance regimes of the cooler, moister mountainous areas. Early explorers have recorded widespread evidence of fire. In the last century, in part because modern efforts suppress fire, the absence of low-intensity fires in dry forests has created conditions very different from the forests viewed by European settlers.

East-side ponderosa pine



Overstocked, fire-suppressed ponderosa pine

Old-growth ponderosa pine

In the drier eastern and southern parts of the region, fire was frequent with light to moderate intensity. In the cooler, moister areas where droughts are infrequent but fuels such as dead trees and vegetation can build up, fires were less common, but more severe than those in drier areas. Also, average intervals between major fires in the region were anywhere from 50 to more than 500 years. All of these factors indicate that no single prescription for fire management can be applied to the entire region, and these differences were recognized by the Northwest Forest Plan.

Wind disturbances are primarily in coastal areas; however, individual trees and small groups of trees are broken or uprooted by winds every year throughout the region. In forests with thick, closed upper canopies, wind often creates gaps in the canopy that promote the seeding and growth of trees. From an ecological standpoint, these small patches of destruction are important to forests in all stages of development but especially in old growth. Small gaps in the canopy typically favor the growth of shade-intolerant trees, create dead wood, help move forests along toward late-successional conditions, and help maintain and enhance soil productivity through uprooting trees. When the trees uproot, they churn and aerate the soil. Uprooting also creates an opening, allowing light and precipitation to directly influence the plants and animals of the forest floor. These disturbances help maintain the productivity and diversity of the forest.

Insects and disease are also common and widespread causes of disturbance in forest ecosystems. Fungal diseases are particularly common and diverse in moist forests. Some species of root rot may infect large areas in the Coast Range. Although injurious insects are common in all parts of the region, they rarely reach outbreak populations in the moist western areas. Outbreaks are more common in the drier parts of the region, where the trees are under greater stress and the conditions favor buildup of insect populations. Wind often acts in concert with disease and insects to break and uproot weakened trees. In general, disturbances caused by insects and disease are a normal part of forest ecosystem dynamics and not necessarily an indicator of unhealthy forests.

In many steep, forested, mountain slopes and streams, landslides, floods, and debris flows are common and important parts of aquatic ecosystems. These disturbances add important structural diversity to aquatic systems in the form of sediments, boulders, large woody debris, and fine organic matter.

Defining Old Growth and Other Forest Classifications

Although forest succession is both continuous and diverse, forests can be classified generally into different stages of development. The Forest Ecosystem Management Assessment Team report defined "late-successional forests" as those in which the biggest, oldest, and most dominant trees create a maturing canopy with shade-tolerant trees occupying and flourishing on the forest floor.

"Old-growth" forests were defined in the Team's report as the mature, diverse final stage of late-successional forests; old growth is distinguished by structural features such as a significant population of large, dominant tree species; dead trees that are still standing or downed; and with multiple canopy layers abundant. Many tree species, Douglas-fir for example, can live more than 700 years; most old-growth forests in the region currently contain trees between 300 and 500 years old.

Specifying exact age ranges for late-successional and old-growth forests is impossible because of variations in climate, soil quality, disturbances, and numerous other factors. The general rule

that the Team used in its report to define these forest stages was trees at least 80 years old are the beginning of late-successional forests, and old-growth forests are a subset of late-successional forests with trees aged 200 years or older.

Amounts of Late-Successional and Old-Growth Forests

Considerable debate appears in the popular press over the historical amounts of late-successional and old-growth forests in the region. Differences in estimates frequently depend on definition, method, land base, and reference period. Early estimates of the extent of old-growth forests before European settlement of Oregon and Washington were 60 to 70% (excluding the interior valleys and woodlands). Several recent scientific studies, however, indicate that the pre-European settlement amounts probably ranged from 40 to 80%, depending on location in the region. More old-growth forest would be expected in the northern part of the region, where fires were infrequent, and less expected in drier areas where fire was more frequent.

Recent estimates show that the current extent of old-growth forests in Washington, Oregon, and California is less than half of what existed in the 1930s. Currently, about 10 million acres of old-growth forests are estimated on all ownerships in the region including the larger east-side forest types such as ponderosa pine. This amount represents about 18% of the total productive land (Bolsinger and Waddell 1993).

Of the 24.4 million acres of federal land in the region, late-successional forests are estimated to account for about 8.5 million acres. (This number cannot be strictly compared to the estimates for old growth on all lands in the three states because of different methods of estimating.) Of those 8.5 million acres, about 4.5 million could fit the definition of old-growth forests based on tree age and multiple canopy layers. Therefore, about 35% of the federal lands are currently covered by late-successional forests, and up to 19% of all federal lands meet the structural definition of old-growth forests. For comparison, the percentage of late-successional forests **on all forest lands** within the region, including all public, private, and tribal ownerships, is about 24% (excluding California), and about 13% falls under the definition of old growth. These numbers are only estimates based on satellite imagery, and actual amounts could vary depending on definitions, methods, and estimates of presettlement conditions (Bolsinger and Wadell 1993).

Past Forestry Practices

Forestry in the Pacific Northwest has been in a continuous state of evolution since it began in the 1800s. Forests were initially cleared for agriculture during the mid 1800s, when immigrants began to settle and farm the interior valleys. With time, logging for wood production increased and began moving up into the lower elevations of the mountains. Cutover lands were left to reforest naturally, and many did so.

Early logging typically cut only the largest and commercially valuable tree species, usually the conifers, leaving the smaller trees standing. Forests regenerated naturally on some sites, but on others the vegetation changed into hardwood forests or shrub lands that were resistant to invasion by conifers.

Streams were also affected by early logging activities. Most of the early removal of timber was at low elevations, along estuaries and large rivers. As logging moved into the mountains, streams and rivers became natural transportation routes for logs. Splash dams were constructed on many

streams to transport logs, and the resulting surges of water and wood scoured out channels and stream banks, clearing them of gravel and woody debris. Later, log transportation by railroad and by trucks over a network of roads reduced the need to use smaller rivers to transport logs, but log rafting on larger rivers continued and increased well into the 1970s.

In the late 1800s and early 1900s, fire control efforts and the first attempts at reforestation began. These early practices had limited success, and large wildfires and regeneration problems were extensive until after World War II. In the early 1950s, gas-powered chain saws came into use, transportation networks and logging engineering systems improved, and logging activities and timber production on federal lands increased. Between the 1950s and 1970s, improved forest management practices and new policies were developed for reforestation and protecting watersheds and wildlife. Although reforestation became even more successful, some of the new efforts to protect wildlife habitat had limited success, and others, though well-intentioned, are now known to have been misguided, such as the practice of removing all slash and large wood from streams.

Effects of Past Forestry Practices

During the 40 years after World War II, the forests of the Pacific Northwest have produced tremendous social benefits. More than 600 billion board feet of timber has been produced—enough to build almost 40 million average-sized homes. In the 1970s, the coastal Douglas-fir area produced more than 25% of the total softwood production of the United States. Millions of acres of forest land were successfully replanted to conifers.

Tax revenues from timber sales helped local governments build schools and roads, and also contributed to forestry education and research. Other nontimber benefits include establishing and building trails, ski areas, and campgrounds, which provide the public access to prime hunting and fishing areas, plus opportunities for many other kinds of recreational activities.

Scenic, recreational, and ecological resources were also protected, through designating and establishing wilderness, natural, scenic, and habitat-management areas. Watershed, riparian, and stream protection practices have also been implemented, and road construction and logging practices have greatly improved.

Under forest plans written during the 1970s and 1980s (before the Northwest Forest Plan), timber harvesting on federal lands was dominated by the even-aged management practice of clearcutting. Forest patches of 30 to 50 acres were clearcut in a pattern that dispersed the cuts across the forest on rotations of about 80 years. Much larger areas were clearcut on nonfederal lands. This practice provided for ease of regeneration, slash disposal, and road development. Forest regeneration techniques were refined and became generally successful during this period.

Clearcutting benefited early successional stages and edge habitats. Total species richness probably increased under these management plans because species favoring early-successional forest conditions (many of them non-native) could find habitats in the disturbed areas of the forest. The increase of edge habitats and open areas of the early stages of succession also favored some game species, such as deer and elk, that use edges and open areas for grazing and the nearby forests for cover. These changes were and still are generally viewed as desirable in moderation; however, these practices also had negative effects. Clearcutting increased soil erosion, destabilized

slopes, negatively affected late-successional wildlife habitat. As these effects became recognized, many people wanted new practices developed to maintain and restore aquatic systems and old-growth habitat types—and the species dependent on them.

Although the timber and nontimber benefits of Northwest forest harvests have been tremendous, they have not come without cost. The total volume of softwood available for harvest on federal and private industry timberlands declined in the late 1980s to 30% of the volume available in the early 1950s (Powell and others 1992). On private industry land, this decline is largely a result of converting high-volume old-growth stands to young plantations that produce smaller logs. On federal lands, the decline was a combination of stand conversion and the effects of designating wilderness and other reserves.

Effects on Species Associated With Late-Successional Forests

The drop in the region's late-successional habitat may be accompanied by declines in the important indicators of the forest's biological diversity and environmental quality. These indicators include the northern spotted owl, marbled murrelet, native salmon and trout stocks, and the quality of the remaining old-growth ecosystem.

Northern spotted owl

The northern spotted owl is strongly associated with late-successional, usually old-growth, forests. The owl nests in the cavities and platforms of trees and hunts in structurally diverse forests for a variety of forest-dwelling mammals, birds, and insects. These habitat attributes are predominantly in old-growth forests and rarely found in the uniform young forests managed for timber production by use of traditional, even-aged silvicultural systems. In some areas, such as northern California, the owl uses forests that are relatively young but have the structure of old-growth forests. The birds have a life span of 15 years, and pairs will often spend their entire adult lives in territories about one to two miles apart. The total population of the owl is 8,000 to 10,000, mostly found on federal lands. Based primarily on the continued loss of its preferred habitat, the northern spotted owl was federally listed in 1990 as a threatened species.

Marbled murrelet

Less is known about the life history of the marbled murrelet than about the spotted owl. The murrelet is an elusive seabird, about the size of a robin, that nests within 50 miles of the ocean in the tops of large-limbed trees. So far, most of their nests have been found in late-successional forests. Unlike most birds, the murrelet does not make its own nest by gathering twigs, mud, and other material; instead, it exclusively uses accumulations of moss found on large limbs and treetops. And, unlike the spotted owl, which meets all of its needs for habitat and feeding from the forest, murrelets only nest in forests; they gather their food from the ocean.

Although the murrelet population in the region is estimated to be about 15,000 birds, fewer than 40 nest sites have been found in Washington, Oregon, and California. In 1992, the marbled murrelet was listed as a threatened species because of the loss of its nesting habitat and, to a lesser extent, from deaths caused by gill-net entanglement.

Salmon

The life histories and factors affecting salmon are complex. Salmon begin life in the headwaters of rivers, streams, and tributaries throughout the region, hatching from eggs buried in gravel and heavy sand. As the fish mature to the smolt stage, they begin migration downstream that ends in the Pacific Ocean; depending on the species of salmon, the trip could cover more than a thousand miles. During the migration, the salmon transform from freshwater fish to saltwater fish. Scientists call fish with this unique characteristic "anadromous."

Depending on species, the salmon spend several years maturing and migrating thousands of miles in the ocean and then begin the long journey back to the waters of their birth to spawn and die. The salmon that do complete this cycle of life are the rare survivors.

Many factors have contributed to the decline of the species, including agricultural activities, dams, drought, climatic changes, mining, water pollution, fish harvest, urbanization, and forest practices. Each one of these factors can substantially affect the salmon population, and knowledge of the relative importance of any single factor is limited, but forest practices are one of the important ones. Among the forest practices that have contributed to degradation of salmon habitat are environmentally insensitive timber harvesting, road building, and stream modifications, such as splash damming and removing large woody debris. Large pieces of dead wood left in streams are vital for salmon because they trap sediments and create pools and riffles that are characteristic of natural salmon habitat.

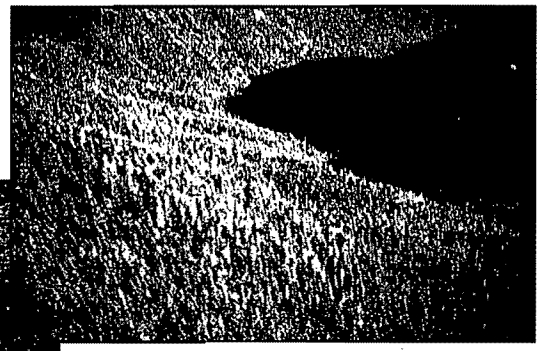
Stocks of anadromous salmon and trout in the region have been listed or are now under consideration for listing as threatened or endangered species under the Endangered Species Act. Pacific salmon have disappeared from about 40% of their historical breeding ranges in Washington, Oregon, Idaho, and California over the last century, and many remaining populations are severely reduced in areas where they were formerly abundant.

Late-successional forest ecosystems

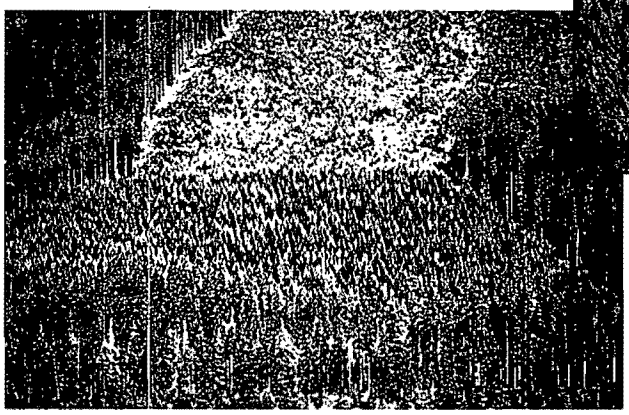
The survival of spotted owls, marbled murrelets, and native stocks of anadromous fish are known to be threatened by the loss of late-successional and old-growth forests, but they may be only a few of the species that depend on this forest ecosystem. Hundreds of bird, mammal, amphibian, reptile, plant, and invertebrate species define the forests' biological diversity. Scientists have reported that some 30 vertebrate species (not including fish) and vascular plants might also be at risk if the forest management practices of the past are allowed to continue, and that an additional 135 to 155 species could be at risk—and no one knows how many invertebrates and nonvascular plants might also be at risk.

The late-successional and old-growth forests are more than just a home to hundreds of species; they are a vital, interacting ecosystem. The large canopy trees create a continuous supply of live and dead material that many organisms depend on for shelter or food, as well as provide shade, reduce erosion, and cause other microclimate effects. Streams that flow through the forest depend on the supply of organic material, shade, and other forest dynamics for their biological functions. The forests are also valued for their ability to convert nitrogen gas into forms useful for plant and soil productivity, to store carbon, and to provide a relatively stable environment for

Recent forest practices



Unfragmented old-growth forest



Fragmented forest showing old-growth, mature, and establishment stages

slow-growing organisms. The loss of these forests reduces the ability of the entire forest landscape to provide important ecological functions.

The amount of late-successional forest has declined greatly compared to the estimated presettlement amounts, with most of the remaining late-successional forests existing solely on federal lands. In addition to the decline in acreage, the remaining old-growth forest habitat is frequently fragmented into small patches or islands of forest isolated from other old forests, with edge effects that reduce habitat quality for deep-woods-dependent plants and animals. If the management activities in the region continue to comply with the Northwest Forest Plan, many functions of late-successional and old-growth forests are likely to be restored and maintained.

Even though many late-successional and old-growth forests on federal lands were protected through Congressional set asides and administrative designation, the eventual result of pre-Plan management practices would be loss of more late-successional and old-growth forest ecosystems. These declines would add to the cumulative effects of the past 100 years of forestry practices that, though providing good forest regeneration, have eliminated millions of acres of late-successional and old-growth forests, and created an abundance of early-successional forests.

Strategies for Maintaining Biological Diversity

To maintain and restore late-successional and old-growth ecosystems, three approaches are being widely studied and implemented: species-based, reserve-based, and active management. Although these strategies appear mutually exclusive, in reality many on-going conservation efforts, including the Northwest Forest Plan, contain elements of all three in differing degrees.

Species-based conservation

Species-based conservation and management efforts are designed to protect individual species that collectively make up an ecosystem. A species is targeted for protection because its population is declining, because it serves as an indicator of environmental or ecosystem degradation, because it has popular public appeal, or for a combination of these reasons. In the Pacific Northwest, the northern spotted owl is relatively unusual because it qualifies under all three reasons: it is at risk, it is an indicator species, and people are concerned about the owl's longevity.

The benefits of a species-based conservation approach are that it relates to the needs of a particular organism; it may be the most effective way to ensure the viability of a species; and people can relate better to conserving a single species than to the more abstract concepts of conserving biological diversity or ecosystems.

The disadvantages of a species-based conservation approach are that it requires detailed information about the life history of a species, which is lacking for most species; the information and resources needed to develop separate plans for all species of concern is not available; having one species serve as an indicator for other species or ecosystem degradation is, at best, only a crude indicator of the condition of an entire ecosystem; managing for a single species ignores needs of other species that share the same habitat; the cumulative effects of habitat protection for many species can often shut a forest down for all other uses; and it is usually not a cost-effective use of public resources.

Reserve-based conservation

The aim of a reserve-based system is to maintain a diversity of existing ecosystems in a planned landscape. This approach may be the best way of retaining ecosystem characteristics in the face of imperfect knowledge and in landscapes where intensive management has greatly reduced the amount of a successional stage. A basic assumption with this approach is that the major qualities that define an existing ecosystem are maintained in various allocations. The environment in these allocations will be managed to maintain different ecological characteristics across the landscape. These allocations recognize different management intensities based on the management objectives of a particular allocation.

The advantages of a reserve-based conservation approach are that it does not require detailed knowledge of all the species present, so it can be used where little is known about individual organisms; it allows ecosystem processes as well as species to be conserved; and it maintains a network of existing high-quality habitats without reliance on untested silvicultural methods.

The limitations of this approach are that some species may slip through the habitat screen, so a species-based focus may still be required; it assumes that a widely accepted habitat or ecosystem

classification system exists; it requires that a particular classification be developed, though communities and ecosystems are always changing, so that countless ecosystem types could be identified; and it may not provide for management flexibility, particularly if forest conditions in reserves are changing in undesirable ways, for example, because of fire exclusion.

Active management

The third approach to ecosystem management does not assume that natural processes will create and maintain the desired stand and landscape structures; it encourages various intensities of active management across the entire landscape. Silviculture would be used to achieve various successional stages, and trees would grow on long rotations to allow development of late-successional and old-growth structures.

The advantages of this approach include the ability to restore desired conditions; an opportunity to achieve the desired conditions sooner than with other approaches; and the potential to produce greater commodity and ecological outputs. The disadvantages include the high cost of intensive management and long rotations; the uncertainty and inexperience in using silviculture to achieve biological diversity and ecosystem goals; and the risks associated with entry into or harvesting some of the remaining high-quality, old-growth stands.

Ecosystem management

The Northwest Forest Plan's ecosystem approach blends various aspects of the three management perspectives in an evolutionary process. By focusing on forest allocations with different management intensities, the Plan attempts to blend species, reserve, and active management conservation strategies into an integrated and comprehensive forest management system. To increase efficiency and flexibility in implementation, these allocations can be adjusted to differing degrees, watershed by watershed.

Although late-successional reserves are a major component of the Northwest Forest Plan, it does not rely solely on reserves to protect and enhance late-successional and old-growth forests. Of the estimated 8.5 million acres of late-successional and old-growth forests on all federal lands, about 2 million acres are in matrix or adaptive management areas outside of the reserves. The Plan also contains elements of the active management approach by allowing limited use of silvicultural techniques, such as thinning, to restore the developmental processes of old-growth forests in reserves, after scientific review.

Like an ecosystem itself, the Plan's ecosystem management approach is more complex than forest management strategies of the past. The sweeping changes it requires have just begun to be implemented, but measurable progress in meeting ecosystem goals is being made. The broad scope and multiple approaches of ecosystem management should increase the chances of maintaining a wider array of forest values in the future under a changing physical and social climate.

Implementing the Northwest Forest Plan

The forest resource component of the Northwest Forest Plan provides new direction for managing more than 24.4 million acres[5] of public land administered by the Forest Service and Bureau of Land Management in western Washington, Oregon, and northern California in the range of the northern spotted owl. The Plan encompasses 18 National Forests and 7 Bureau of Land Management Districts.

The federal agencies prepared an Environmental Impact Statement and Record of Decision that reflect an ecosystem approach. Land allocations and management direction and requirements in the Record of Decision were incorporated into forest plans prepared by the Forest Service and Bureau of Land Management in Oregon, Washington, and northern California. This approach was designed to:

- Comply with requirements of federal law;
- Be based on the best available science and be ecologically sound;
- Protect the long-term health of the federal forests;
- Provide a steady supply of timber and other resources that can be sustained over the long term without degrading the health of the forest or other environmental resources; and
- Commit the federal agencies to work together.

New standards and guidelines describe in detail how the ecosystem management plan should be implemented. "Standards and guidelines" are the rules that guide federal land managers in making management decisions. They also specify the environmental conditions to be achieved and maintained. Some apply to all lands, others to a specific land allocation. More than one set of standards and guidelines may apply in some areas; if so, a hierarchy of standards and guidelines applies. For example, one area of land could be riparian reserve, within a late-successional reserve, and also contain parts of a key watershed.

The key principles of the Northwest Forest Plan's ecosystem management strategy are included in the Record of Decision in five elements. The Plan encourages a comprehensive approach for managing federal lands that maintains and restores late-successional forests and their dependent species and recognizes the importance of the forests to the economy and jobs in the region. Each of the key elements is summarized below:

- An aquatic conservation strategy was included in the Plan to restore and maintain the ecological health of watersheds and the aquatic ecosystems within them. It includes riparian reserves and key watersheds, requires watershed analysis in key watersheds before most management activity can take place, and emphasizes the restoration of degraded aquatic habitats. The strategy also serves as the basis for developing project-specific proposals and monitoring in watersheds.
- The region will provide a supply of timber, recreational opportunities, and other resources that

[5]Although the Plan considers all federal lands within the region, including those managed by the National Park Service, Fish and Wildlife Service, and Department of Defense, the management allocations and directions only apply to the 22.1 million acres of Forest Service and Bureau of Land Management lands.

will help maintain the stability of local and regional economies and contribute valuable resources to the national economy, predictably over the long term. Timber offered for sale is expected to reach about 1.1 billion board feet in fiscal year 1997.

- The Plan provides a well-distributed system of reserves to protect existing large blocks of late-successional and old-growth forests and to grow maturing stands into old growth. The reserves are intended to provide terrestrial and aquatic habitat for species that depend on these forests. Reserves were also located in key watersheds to serve the dual objectives of efficiency and resource protection. The reserves will help provide a healthy forest ecosystem with habitat that will support populations of native species and protect riparian areas and waters.

  The reserve strategy, in combination with the Aquatic Conservation Strategy, was also intended to restore and maintain enough habitat to protect species that may be listed in the future without additional protections being applied. For example, when the Umpqua cutthroat trout was proposed for listing in August of 1996, no additional conservation measures were required. The listing did require, however, that formal consultation take place when management and regulatory agencies differed on whether 24 of 155 ongoing actions adequately complied with the Plan's direction.

- An important element of the ecosystem management strategy is the requirement to adapt to new information. The Plan provides for adaptive, flexible management that can be applied, site specifically, to all land allocations. Adaptive management allows an array of strategies for achieving ecosystem goals to be applied in the context of the standards and guidelines. Learning is one of the principal goals of adaptive management. It relies heavily on monitoring and provides feedback on what works and what does not, as a basis for determining the need to change strategies.

  Monitoring provides information to determine if the standards and guidelines are being followed (implementation monitoring), verify if they are achieving the desired results (effectiveness monitoring), and determine if underlying assumptions are sound (validation monitoring). The process includes identifying new information, evaluating its importance and relevance, and—based on review and analysis of the new data—deciding whether land management plans should be altered. In addition, 10 adaptive management areas were established to test new, creative approaches to management, based on alternative scientific approaches and input from the surrounding communities.

- An ecosystem management strategy means looking across ownership boundaries while respecting individual ownership objectives. When an action takes place on federal forests, it may cause direct, indirect, or cumulative effects on nonfederal lands; the opposite is also true. Nonfederal forests in the region are generally in early- and mid-successional stages of development, with many at or approaching ages and sizes that are economically ready for harvest. Nonfederal forests are expected to continue to provide habitat primarily for species associated with these age classes. When nonfederal and federal lands are considered together, they are expected to provide a mix of successional stages and a diversity of habitat representing the region's ecosystems. The Plan recognizes that federal and nonfederal ownerships—state, tribal, corporate, and nonindustrial—provide different economic and environmental benefits based on land owner objectives. Nonfederal lands are not guided by the Plan's federal standard and guidelines, and no powers are added to federal agencies by the Plan. The agencies are encouraged to work with nonfederal land owners to seek voluntary cooperation for actions consistent with the Plan.

Land Allocations Under the Plan in the Range of the Northern Spotted Owl

Congressionally Reserved Areas: 7.3 million acres, 30% of the federal land. These lands have been reserved by acts of Congress for specific land uses such as Wilderness Areas, Wild and Scenic Rivers, National Parks, and other lands with Congressional designations.

Late-Successional Reserves: 7.4 million acres, 30% of the federal land. These reserves, in combination with the other allocations and standards and guidelines, are designed to restore a functional, interactive, late-successional and old-growth forest ecosystem over time. They also serve as habitat for terrestrial and aquatic species that depend on these old-growth characteristics. Not all of the reserves are currently in old-growth condition, pending scientific oversight and approval, some silvicultural treatment is allowed to enhance their development in stands less than 80 years old and where fire played a dominant role in their development.

Managed Late-Successional Reserves: 100,000 thousand acres, 1% of the federal land. These lands are either mapped to protect areas where spotted owls are known to exist, or they are unmapped protection buffers. Protection buffers are designed to protect certain rare and endemic species.

Adaptive Management Areas: 1.5 million acres, 6% of the federal land. Ten areas were identified to develop and test innovative management approaches to integrate and achieve ecological, economic and other social and community objectives. Each area has a different emphasis, such as maximizing the amount of late-successional forests, improving riparian conditions through silvicultural treatments, or maintaining a predictable flow of harvestable timber and other forest products. Each area considers learning a principle product of their adaptive management activities.

Administratively Withdrawn Areas: 1.5 million acres, 6% of the federal land. These areas are identified in current Forest and District plans and include recreation and visual areas, back country, and other areas where management emphasis does not include scheduled timber harvest.

Riparian Reserves: initially 2.6 million acres, 11% of the federal land (acreage subject to change after watershed analysis). Riparian reserves are areas along all streams, wetlands, ponds, and lakes, and on unstable and potentially unstable lands vital to protecting and enhancing the resources that depend on the unique characteristics of riparian areas. These areas also play a vital role in protecting and enhancing terrestrial species. Riparian reserve acreage is calculated after all other areas have been designated. As a result, the acreage shown reflects only that portion of riparian reserves that is interspersed throughout the matrix.

Matrix: 4.0 million acres, 16% of the federal land. The matrix includes all federal lands not falling within one of the other categories. Most of the scheduled timber harvested will be from matrix lands. They include nonforested as well as forested areas that may be technically unsuited for timber production.

TEXT BOX 9

Managing federal lands for late-successional forests also provides more management flexibility for nonfederal land owners. Because of the conservation benefit on federal lands, a new rule to ease restrictions on timber harvest related to the northern spotted owl from certain nonfederal lands has been proposed under Section 4 of the Endangered Species Act. State and nonfederal timberland owners are also encouraged to voluntarily develop habitat conservation plans under Section 10 of the Endangered Species Act. Section 10 allows land owners to take individuals of a threatened or endangered species in exchange for a commitment to a long-term plan that helps conserve that species.

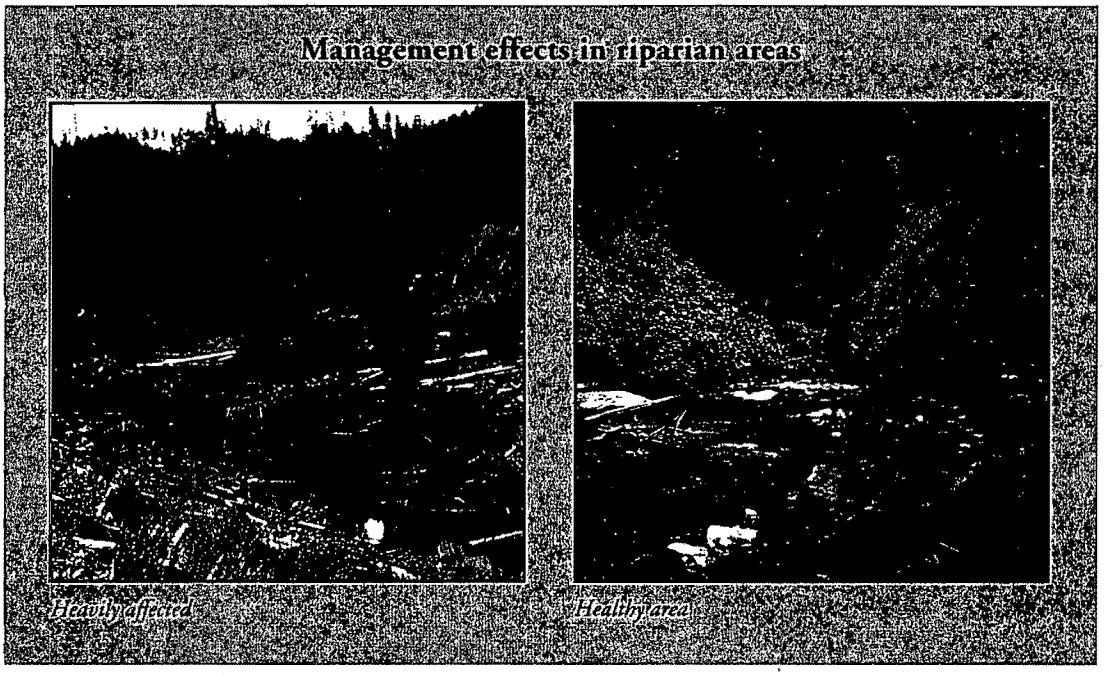
The following pages summarize how the region's ecosystem management strategy is being applied through the Record of Decision, accomplishments over the past two years, and observations and opportunities for the future. The specific standards and guidelines and their effectiveness are not discussed, though such an analysis, forest by forest, would be useful during the next agency planning cycles.

Aquatic Conservation Strategy

The Aquatic Conservation Strategy (the Strategy) has four components: riparian reserves, key watersheds, watershed analysis, and watershed restoration. These components work together to maintain and restore the productivity and resiliency of riparian and aquatic ecosystems. The Strategy focuses on watersheds as the fundamental building block of federal forest management. It encourages agencies to work together, across administrative boundaries, to manage resources on a watershed basis. By following this Strategy, the agencies will help maintain and restore water quality and availability, and runs of anadromous fish and other terrestrial and aquatic species dependent on water quality and quantity.

The Strategy provides a forum for regulatory and management agencies to work together. Because it provides a common reference, standardizing the information from which each agency makes decisions, it gives regulatory agencies greater confidence in evaluating management actions. Although support for the Strategy by management and regulatory agencies is almost universal, some managers are still uncertain about their ability to meet both habitat and production requirements.

A brief description of each component of the Strategy follows. For a complete description, see pages B-12 through B-34 of the Record of Decision.



Riparian Reserves

Riparian reserves are portions of watersheds where riparian-dependent resources receive primary emphasis and where special standards and guidelines apply. A riparian area contains an aquatic ecosystem, such as a stream, lake, river, pond, or wetland, plus adjacent upland areas that directly affect it. Riparian reserve standards and guidelines limit or prohibit activities that would retard or prevent meeting the goals of the Strategy.

The agencies have historically managed riparian areas as "streamside management units": the stream and adjacent area of varying width where practices that might affect water quality, fish, and other aquatic resources were modified to meet water-quality goals for each class of stream. Management actions were prescribed case by case, considering the cumulative downstream effects from individual, tributary streams. The streamside management unit concept did not imply management restrictions from all activities near streams but stressed the need for applying special care in management and gave preferential consideration to riparian-dependent resources when conflicts among land-use activities arose. To meet streamside management goals, activity was severely restricted along some streams where the potential for unacceptable effects was high. Special treatment was given to land and vegetation for about 100 feet from the edges of all perennial streams, lakes, and other bodies of water. Special attention was also given to adjacent terrestrial areas to assure adequate protection for the riparian-dependent resources.

Under the Aquatic Conservation Strategy in the Plan, the riparian-reserve standards and guidelines are designed to maintain and restore riparian structures and functions of intermittent or nonpermanent streams, benefit riparian-dependent and forest-based species other than fish, enhance habitat conservation for organisms dependent on the transition zone between upslope and riparian areas, and improve travel corridors for many land-based animals and plants in the watershed. The riparian reserves may also serve as corridors that connect late-successional reserves.

Riparian Reserve Widths

Riparian reserve widths for each category of stream are as follows:

Fish-bearing streams—Riparian reserves consist of the stream and the area on each side of the stream extending from the edges of the active stream channel to the top of the inner gorge, or to the outer edges of the 100-year floodplain, or to the outer edges of riparian vegetation, or to a distance equal to the height of two site-potential trees[1], or 300 feet slope distance (600 feet total, including both sides of the stream channel), whichever is greatest.

Permanently flowing nonfish-bearing streams—Riparian reserves consist of the stream and the area on each side of the stream extending from the edges of the active stream channel to the top of the inner gorge, or to the outer edges of the 100-year floodplain, or to the outer edges of riparian vegetation, or to a distance equal to the height of one site-potential tree, or 150 feet slope distance (300 feet total, including both sides of the stream channel), whichever is greatest.

Constructed ponds and reservoirs, and wetlands larger than 1 acre—Riparian reserves consist of the body of water or wetland and the area to the outer edges of the riparian vegetation, or to the extent of seasonally saturated soil, or the extent of unstable and potentially unstable areas, or to a distance equal to the height of one site-potential tree, or 150 feet slope distance from the edge of the wetland greater than 1 acre or the maximum pool elevation of constructed ponds and reservoirs, whichever is greatest.

Lakes and natural ponds—Riparian reserves consist of the body of water and the area to the outer edges of the riparian vegetation, or to the extent of seasonally saturated soil, or to the extent of unstable and potentially unstable areas, or to a distance equal to the height of two site-potential trees, or 300 feet slope distance, whichever is greatest.

Seasonally flowing or intermittent streams, wetlands less than 1 acre, and unstable and potentially unstable areas—This category applies to features with high variability in size and site-specific characteristics. At a minimum, the riparian reserves must include the extent of unstable and potentially unstable areas (including earthflows), from stream channel to the top of the inner gorge, the stream channel or wetland and the area from the edges of the stream channel or wetland to the outer edges of the riparian vegetation, and from the edges of the stream channel to a distance equal to the height of one site-potential tree, or 100 feet slope distance, whichever is greatest.

Intermittent streams are defined as any nonpermanent-flowing draining feature having a definable channel and evidence of annual scour or deposition. This definition includes what are sometimes referred to as ephemeral streams if they meet these two physical criteria.

[1] A site-potential tree height is the average maximum height of the tallest dominant trees (200 years or older) for a given site class.

TEXT BOX 10

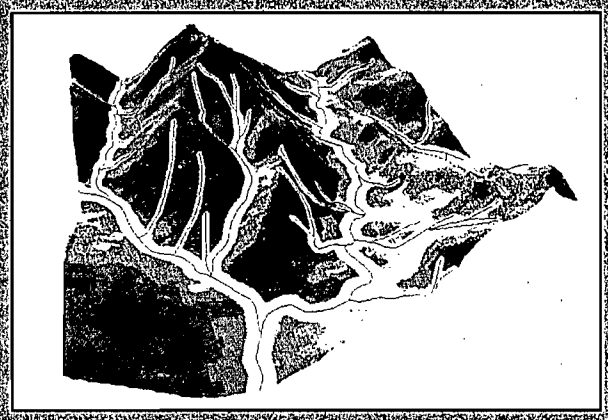
The riparian-reserve strategy differs from those of many nonfederal land owners in the region, in that federal reserves are established for the needs of terrestrial as well as aquatic species. This difference has resulted in reserves that vary in width and are sometimes wider than those necessary to meet specific Aquatic Conservation Strategy objectives.

Implementation of this provision has been straightforward: riparian reserves are being universally applied across the region. Reserve modifications are being undertaken individually; however, very few reserves have been adjusted. The agencies, through the Regional Ecosystem Office, developed guidance in fiscal year 1996 to assist field personnel in revising riparian-reserve widths.

Key Watersheds

Key watersheds—those that are either providing or are expected to provide high-quality fish habitat and water quality—have been identified throughout the region; 164 key watersheds are identified for maintaining and recovering habitat for at-risk stocks of anadromous salmonids (salmon and steelhead) and resident fish species. Key watersheds with existing high-quality aquatic and riparian habitat will serve as anchors for the potential recovery of depressed stocks. Watersheds with low-quality habitat and a high potential for restoration are expected to become future sources of high-quality habitat through a comprehensive restoration program.

Riparian reserves: Drainages with various stream coverage



Light stream coverage

Medium stream coverage

Dense stream coverage

The Strategy includes two designations of key watersheds. Tier 1 key watersheds were selected to directly contribute to the conservation of anadromous salmonids and bull trout and other resident fish species. Tier 2 key watersheds were selected as sources of high-quality water and may not contain at-risk fish stocks.

Although watershed analyses are generally required on federal lands in key watersheds before resource management activities can take place, minor activities may proceed before a watershed analysis is completed if they are consistent with the Strategy and consider standards and guidelines for key watersheds.

The Record of Decision states that the extent of existing roads in key watersheds should be reduced. For each mile of new road constructed, at least 1 mile of road should be decommissioned. Where Northwest Forest Plan prescriptions do not allow roads in inventoried roadless areas, no new roads should be built and existing roads reduced, with priority given to those that pose the greatest risks to riparian and aquatic ecosystems. If funding is insufficient to implement reductions, no net increase in the amount of roads is allowed.

The agencies have a legal obligation to provide access across federal lands to nonfederal land, however. In addition, ownership of many roads in the federal system is shared with nonfederal land owners. These integrated ownership objectives may limit the ability of federal land management agencies to decommission roads because the agencies may not make unilateral decisions.

Like riparian reserves, key watersheds have been designated throughout the region. The agencies issued joint direction on April 7, 1995, which clarified the policy for road construction in the region. The land-management agencies will focus on reducing federal road mileage in key watersheds and working with nonfederal land owners who request access across federal lands. To minimize effects of such access, road managers will:

- Reduce federal road mileage within key watersheds;
- Provide monetary incentives for on-site mitigation; and
- Attempt to obtain an adequate interest in the agreement rights to attain the goals of the Plan.

If no alternatives exist to allowing third-party access through a roadless area in a key watershed, the effects will be mitigated to the fullest extent possible.

Watershed Analysis

Watershed analysis serves as the foundation for understanding the health of a watershed and an ecosystem itself. It considers everything that contributes to the health of a watershed, analyzes the current condition, and makes general recommendations for improving it. Watershed analysis is an information-gathering process that systematically characterizes the aquatic, riparian, terrestrial, and human features of a watershed. The information is used to, among other things, guide timber management activities, plan and monitor programs, refine riparian-reserve boundaries, and identify potential restoration projects. Watershed analysis is required in key watersheds and roadless areas before management actions can proceed and before riparian reserve widths can be changed; it is recommended in all other watersheds. It is intended for non-key watersheds as a basis for ecosystem planning and management.

Watershed analysis is a new process. Because the agencies had not prepared watershed analyses on a large scale in the past, they developed direction for their field offices to assure consistency across the region. In December 1993, the Regional Interagency Executive Committee approved a program for watershed analysis. The program was spearheaded by an interagency Watershed Analysis Coordination Team that drafted and refined *A Federal Agency Guide for Pilot Watershed Analysis* (Regional Ecosystem Office 1994). The program was designed to:

- Provide a systematic, rigorous approach that would test and further develop the watershed analysis process;
- Explore ways to increase interagency and intergovernmental cooperation; and
- Demonstrate that ecosystem-based management can produce commodities while minimizing environmental risks.

In March 1994, the Regional Interagency Executive Committee established the Pilot Program for Watershed Analysis. It identified 15 key watersheds around the region to serve as pilot projects. A primary goal was to develop new models of participation by regulatory agencies. By concentrating resources in a few watersheds, these agencies, some of which had limited technical staff, were able to participate in developing watershed analysis techniques for use on federal lands. The field offices of the land management agencies also prepared analyses in other watersheds, following the Federal Guide.

While the analysis process was being developed, Watershed Restoration Assessments were allowed for fiscal year 1994 restoration projects in key watersheds and riparian reserves. These assessments allowed management projects to move forward in 1994 and 1995 while pilot analyses were prepared. Assessments differed from analyses in that existing data could be used to assure that the projects would not preclude management options in the future, were consistent with direction in the Record of Decision, and posed minimal risk to the health of the watershed. The Record of Decision stated that during the transition period, watershed analyses could be less detailed and project-focused than those prepared after fiscal year 1996.

As pilot and interim analyses were completed and reviewed, the agencies amended the initial Federal Guide. A revised document, *Ecosystem Analysis at the Watershed Scale: Federal Guide for Watershed Analysis, version 2.2,* was approved in July 1995 (Regional Ecosystem Office 1995).

The *Revised Federal Guide* is based on direction from the Regional Interagency Executive Committee, recommendations from the Intergovernmental Advisory Committee, and comments from a broad group of agencies, governments, organizations, and other interested parties, as well as the experience of field personnel who prepared analyses in 1994. As a result of the breadth of involvement, the *Revised Federal Guide* has been improved over its predecessor in many ways. For example, the analysis now includes seven core topics to ensure that all analyses demonstrate a basic understanding and knowledge of the watershed. The process has been simplified; it now includes six concise and understandable steps that follow a more direct logic path. The *Revised Federal Guide* is general enough that it is not limited to the geographic area considered in the Plan; it can be applied anywhere that a landscape approach to watershed analysis is desired.

Section II of the Guide, "Analysis Methods and Techniques," is a technical supplement to Section I. It provides a tool box of optional analytical methods and techniques to address core topics and questions, as well as other pertinent issues identified by watershed analysis teams. Section II is intended to meet Northwest Forest Plan goals, ensure scientific credibility, provide "methods and techniques," and provide for cooperation and coordination with other watershed analysis processes. It is not a comprehensive set of methods and techniques, and teams are encouraged to continue to use standard analysis methods that are widely accepted by local resource specialists and that are appropriate to analyze issues in their watersheds.

Analysis Steps and Core Topics for Watershed Analysis

Analysis steps

1. Characterization of the watershed—Identify the dominant physical, biological, and human processes or features of the watershed that affect ecosystem functions or conditions. Establish the relations between these functions. Identify the most important land allocations, plan objectives, and regulatory constraints that influence resource management.

2. Identification of issues and key questions—Focus the analysis on the key elements of the ecosystem that are most relevant to the management questions and objectives, human values, or resource conditions within the watershed.

3. Description of current conditions—Develop information relevant to the issues and key questions identified in step 2. Document current range, distribution, and condition of the relevant ecosystem elements.

4. Description of reference conditions—Explain how ecological conditions have changed over time as a result of human influence and natural disturbances.

5. Synthesis and interpretation of information—Compare existing and reference conditions of specific ecosystem elements and explain significant differences, similarities, or trends and their causes. Evaluate the capacity of the system to achieve key management-plan objectives.

6. Recommendations—Bring the results of steps 1 to 5 to conclusion; focus on management recommendations that are responsive to watershed processes identified in the analysis. Link issues and key questions with synthesis and interpretation of ecosystem understanding. Identify monitoring activities.

Core topics

The core topics are intended to provide the framework for focusing the basic analysis. They represent the major and common ecological elements and their interrelations in all watersheds. They are purposely broad and general, encouraging a watershed-scale perspective of the system as opposed to site- or project-scale perspectives. They will help ensure that analyses are sufficiently comprehensive to develop a basic understanding of the watershed. An understanding of the basic ecological conditions, processes, and interactions should be demonstrated by addressing the following core topics through the 6-step process: erosion processes; hydrology; vegetation; stream channel; water quality; species and habitats; and human uses.

TEXT BOX 11

In fiscal year 1994, the Forest Service and Bureau of Land Management's target was to complete 15 pilot watershed analyses and to analyze other watersheds necessary to complete critical projects. In 1995, the Forest Service planned to analyze more than 4 million acres, and the Bureau of Land Management more than 500,000 acres. In 1994 and 1995, the agencies completed the 15 pilot watershed analyses and additional watershed analyses on more than 8 million acres, which represents more than 51% of the land in matrix, adaptive management areas, and late-successional reserves (including riparian reserves). Federal agencies completed analyses on another 3.2 million acres in 1996 and plan to complete 2.5 million acres in 1997. The *Revised Federal Guide* will continue to be adjusted as necessary, with knowledge gained as more analyses are completed.

Watershed Restoration

The watershed restoration program has dual goals: economic health and watershed health. The economic goal is to provide meaningful, family-wage jobs for local displaced timber workers. The watershed health or resource management goal is to work to restore the region's aquatic, riparian, and terrestrial habitats. Chapter 6 describes the economic component of watershed restoration in more detail.

The Record of Decision states that restoration activities should focus on protecting anadromous fish habitat, restoring riparian vegetation, and restoring in-stream habitat complexity. Forest management treatments may be used as a restoration tool if they are intended to restore large conifers in riparian reserves. In-stream structures may be used to help restore stream channel complexity in the short term.

Restoration Strategy

An *Interagency Watershed Restoration Strategy for Fiscal Year 1994* (Regional Ecosystem Office 1993) was developed in December 1993 to guide design and selection of watershed restoration projects in fiscal year 1994. Key features of the *Restoration Strategy* included a preliminary watershed restoration assessment process for coordinating restoration efforts with other agencies, the state Community Economic Revitalization Teams, and other public stakeholders. The *Restoration Strategy* emphasized that managers should respond to obvious, urgently needed restoration while providing needed employment for local communities. The *Restoration Strategy* also features local interagency teams of resource specialists to identify potential projects, criteria for identifying priority watersheds, and an assessment process. In addition, Congress directed the Forest Service to spend restoration funds primarily on projects that had benefits for anadromous fish and projects with long-term benefits. The Bureau of Land Management did not receive the same direction; therefore, it was able to use its funds on a broader range of projects, not limited to projects in anadromous fish habitat.

Based on restoration and analysis experiences in fiscal year 1994, an interagency working group revised the *Restoration Strategy* in October 1994. It was distributed to the agencies for implementation in 1995 and beyond. Improvements were made to:

- Link watershed analysis and restoration projects;
- Emphasize monitoring and reporting;
- Clarify roles of Provincial Interagency Executive Committees, state Community Economic Revitalization Teams, and technical teams;

- Encourage early interagency coordination and involvement; and
- Improve coordination with state, tribal, and other governmental restoration efforts.

Endangered Species Act consultation

The management agencies also worked together to improve the process of consulting with the regulatory agencies under the Endangered Species Act and to reduce seasonal restrictions on restoration activities because of disturbance.

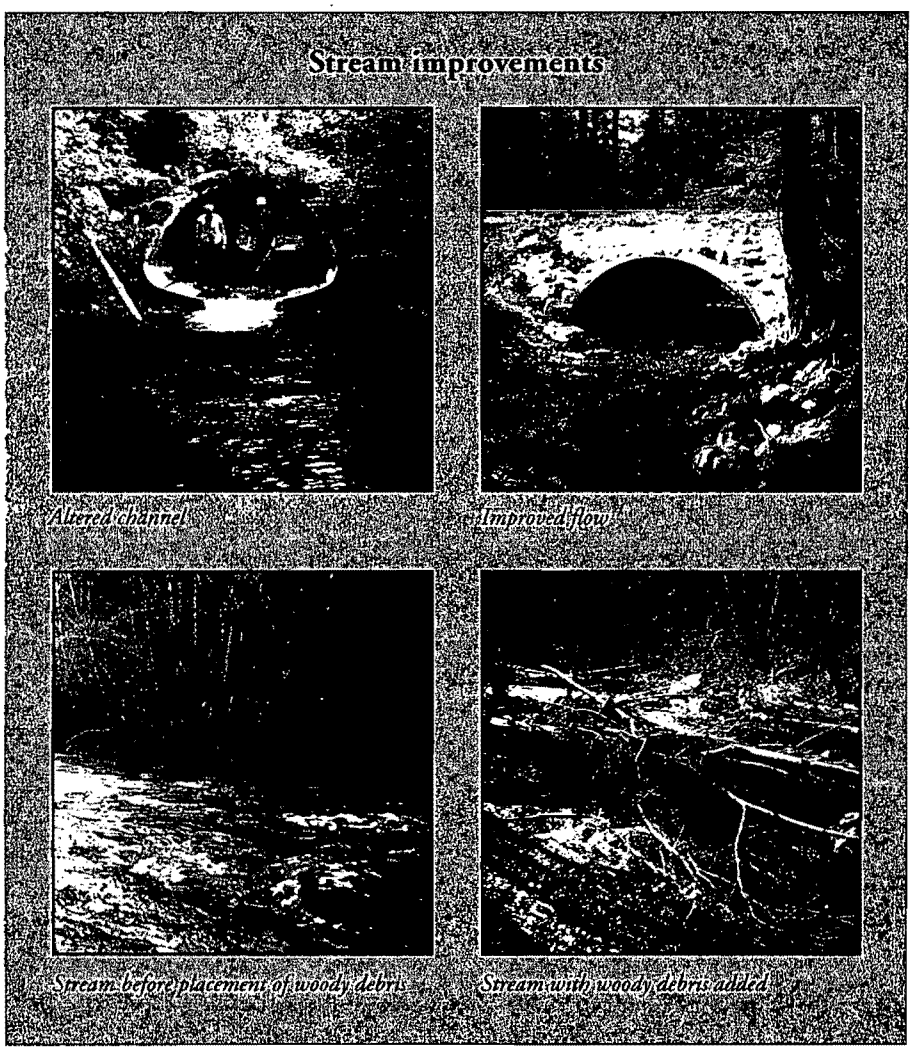
In fiscal year 1994, many projects were not scheduled until after early August to minimize effects on listed species, water quality, anadromous fish, and other resources. This timing did not meet the goal of providing year-round employment for displaced timber workers. In response, the Forest Service, Bureau of Land Management, and Fish and Wildlife Service worked together to plan projects to meet both the resource restoration and economic goals of the program in 1995. Efforts were focused at reducing time for regulatory reviews and planning needs. The land management agencies shared staff and prepared interagency biological assessments, where possible. The Fish and Wildlife Service committed to expediting section 7 consultation under the Endangered Species Act and working with the land management agencies as projects were planned, so that the projects would affect listed species as little as possible.

Job creation

To shorten the time between planning and starting a project, contracting was reduced to less than one-third of historical spans by developing and publicizing one advanced notice to potential contractors in only the economically affected area. This process was facilitated by the use of a "public interest" waiver authorized in the Federal Acquisition Regulations by the Secretaries of Agriculture and Interior. In addition, advance joint briefings were held for local contractors by the Small Business Administration, Forest Service, Bureau of Land Management, National Park Service, and Natural Resource Conservation Service, working as a team. As a result, the agencies reviewed more than 1,000 restoration projects, facilitating creation of jobs that were available from June through December, partially meeting the goal of providing year-round employment opportunities.

Federal, state, local, and nonfederal sectors came together in two places in 1994 to provide classroom training in designing and constructing watershed restoration projects and on-the-job experience at family-wage rates for displaced timber workers through the Jobs in the Woods program. The graduates of these training programs will become part of the ecosystem management workforce of the future.

An example of the successful ecosystem management and Jobs in the Woods training program took place in Sweet Home, Oregon, where 10 displaced timber workers were enrolled through an effort by a team of people from Oregon's Economic Development Department, Willamette National Forest, Oregon Department of Forestry, the University of Oregon, and Oregon State University Extension Service. Projects designed by Forest Service and Bureau of Land Management resource professionals were intended to give the enrollees exposure to the wide variety of technical tasks required for watershed restoration. At the same time, university and extension specialists provided valuable classroom training in a range of subjects that will enable the program's participants to become contractors, subcontractors, or technicians qualified to perform similar work in the future.



A comparable approach was taken on the Olympic Peninsula, where the local private industry council, Forest Service, and Department of Labor job-retraining resources were combined to give 10 displaced timber workers the necessary training and experience at family-wage rates to perform the complex technical work needed to restore the region's watersheds. Most of the funds obtained to perform the restoration work were used to pay the wages and benefits of the enrolled workers; the balance was spent on vehicle rentals for the crews, equipment, supplies, and fuel, with a small amount going to accounting expenses to track the project.

In 1995 and 1996, the region expanded on what was learned in Sweet Home and Olympia to an additional seven sites in Oregon, one large project in Washington containing five demonstration sites, and four northern California sites.

For fiscal year 1996, the agencies sought to maintain existing job-training sites and continue to monitor the consultation process to keep it as efficient as possible. For example, they combined projects so workers can be employed for longer periods with each contract. The research branches of the agencies will support the restoration program by helping managers develop meth-

ods and protocols to assess restoration needs, provide technical support for restoration activities, and design methods to evaluate the effects of restoration strategies.

Projects completed by the agencies include installing culverts, stabilizing cut banks, and constructing a limited number of in-stream structures. These projects were chosen for the ecological benefits they could provide. Although the long-term ecological benefits of these restoration projects cannot be assessed with any accuracy after only two years, biologists report that the actions are clearly beginning to improve the health of the watersheds. The true success will be measured over time through effectiveness and validation monitoring.

In 1994, 593 watershed restoration projects were contracted, 602 in 1995, and 480 in 1996 (table 4). A contract could include one or a group of smaller projects. In 1996, a concerted effort was made by the agencies to aggregate projects into contracts to better provide long-term employment. Although the number of contracts was reduced, ecological benefits were maintained and employment benefits enhanced.

Table 4—Watershed restoration projects (projected 1996)

Activity	Measure	Number
Culverts	Fish passage	104
Roads	Miles treated	2,533
Instream	Miles improved	643
Vegetation	Acres treated	8,740

Source: USDA Forest Service

Aquatic Conservation Strategy: Observations and Opportunities

Riparian Reserves

Observations

The reserve system is being universally applied and appears to be working as intended, protecting the habitat of aquatic and terrestrial species. The 100- to 300-foot buffers were established with the intent that they could be adjusted as needed to meet conditions in the field. Adjustments can be made if information gained through watershed analyses suggest that the agencies do so.

Limited adjustments to reserves

- The first round of analyses did not lead to many changes in riparian-reserve widths because they lack information on effects to terrestrial species.
- The analyses have provided information to support certain management actions within reserve areas that are consistent with Strategy objectives.
- Some specialists in the agencies consider the initial widths as a required minimum, rather than viewing them as open to change after appropriate analyses at the watershed and site scales.

Adjusting reserves

Opinions differ between managers and specialists as to the amount of scientific rationale needed to adjust riparian reserves.

- Many managers believe watershed analyses that address ecosystem conditions at the habitat scale provide an adequate basis for change.
- Many specialists believe more scientific certainty is needed on individual species before changes are made.

More protection than envisioned

The reserves cover more area than was originally modeled on most units. As the Forest Service and Bureau of Land Management began to identify riparian reserves on the ground, all but two units found more land that qualified as reserve areas than was modeled in the Final Supplemental Environmental Impact Statement. This increase is reducing the percentage of land available for resource use in matrix.

- Riparian reserves are intended to connect late-successional reserves, but in some checkerboard ownerships they are not effectively doing so.
- In blocked ownership, especially along the Coast Range, riparian reserves can be so extensive that the islands of matrix surrounded by reserves become difficult or uneconomical to access for timber harvest.

Opportunities

Riparian reserve opportunities could include

- Developing a riparian-reserve module in the watershed analysis guide to provide information and a simplified process to address aquatic and terrestrial species to clarify how and when reserve boundaries can be modified in the future.
- Conducting an analysis to determine whether and how riparian reserves might be modified to maintain species viability as established by the Plan and meet management commitments for matrix areas affected by current reserves.
- Recognizing that more riparian protections exist than were originally modeled.
- Expanding the type of research being conducted by the Olympia Forestry Sciences Laboratory, where reference sites are being established for riparian ecosystem research in western Washington. The sites, including federal, state, and nonfederal lands, will be monitored for a minimum of five years to determine the effects of various management practices on riparian ecosystems.
- Clarifying that riparian reserves are special management zones for aquatic and terrestrial species dependent on riparian habitat, but they are not always "no touch" zones if watershed analyses shows otherwise.

Key Watersheds

Observations

The concept of key watersheds is being used throughout the region. No requests for modification have been made. Although strong support for decreasing road densities continues, awareness is increasing that some roads may be needed to provide access for watershed restoration and forest protection activities.

Opportunities

Key watershed opportunities could include

- Analyzing when, where, and how roads are needed to maintain or restore the health of a watershed.

Watershed Analysis

Observations

The examination of a watershed's aquatic and terrestrial components serves as the basis for the Plan's ecosystem approach by providing a fuller understanding of how the ecosystem functions in the surrounding area. It also helps identify the limitations that exist and potential enhancements that could be undertaken within a watershed. Among the benefits from this approach are

Watershed analysis benefits

- Greater ability to set priorities for work and projects;
- Development of a comprehensive, shared, standardized information base for use by all agencies and the public; and
- Development of criteria for decisions on land management activities such as timber sales and watershed restoration projects; for instance, many decision makers believe that watershed analysis helps them focus on methods and options for laying out projects to meet long-term ecosystem objectives.

Watershed analysis as a tool

The new *Watershed Analysis Guide* is an effective, useful tool. Other comments about the Guide include

- Early in the process, agency staff professionals faced tight deadlines and were on a steep learning curve to develop an expedited method to analyze watersheds, which led to some concerns in 1994 and to a lesser extent in 1995.

- A streamlined process served as the foundation for the new *Watershed Analysis Guide,* which was used to identify which watersheds required priority attention for restoration work and further analysis.
- The new *Watershed Analysis Guide* is an easily understood and concise document that has gained acceptance by the agencies throughout the region. It is now being used as a model for similar guides in Alaska and on the Columbia River basin assessment project. With each completed analysis, the agencies are becoming more efficient and producing better documents.

Cooperation on analyses

Watershed analysis teams provide opportunities for cooperation and understanding between agencies and the public. Where staffing and funding allowed, the agencies gained several benefits from working together on the analyses. For example, the agencies have found that by sharing information, they increase their understanding of the issues; improve relations as they continue to work together and make better decisions as a result. Other benefits from the interaction include

- The analysis process works best when research staff and regulatory agencies participate at the beginning of the process.
- The nonfederal land-owner sector is beginning to recognize the value of conducting watershed analyses and incorporating them into their own management regimes.
- Involving research scientists during the analysis resulted in more comfort with and opportunities for active management.

Start-up difficulties

Although the process is being effectively implemented throughout the region, implementing watershed analysis—as with any new process—posed some new challenges. Among some of the issues were

- Requiring a full watershed analysis for actions that have only minor effects on the watershed were inefficient and bureaucratic; therefore, the agencies developed criteria for the types of activities for which a watershed analysis was not necessary.

- Applying watershed analysis across so many administrative units and acres was new, and developing the process was time consuming. The nature of the process contributed to the frustration at the beginning. As it was developed, new information required clarifying direction that the agencies' leadership has provided in a timely manner.
- The agencies disagreed on which watersheds were to be analyzed first and whether analyses should be driven by proposed projects or by the need to restore the resource.
- Some agency staff and members of the public had trouble distinguishing watershed analysis from an environmental analysis prepared under NEPA. The difference was clarified in that a watershed analysis is not a NEPA document but contains information helpful in preparing the NEPA document.
- Data standards are not the same among the agencies, so some inefficiencies existed as watershed analyses were prepared.

Workforce overload

The workload and desire of the agencies to complete analyses didn't always fit the workforce available. The most frequently cited problems were

- Regulatory agencies didn't have enough staff to participate.
- Management agencies were under pressure to produce both timber and restoration projects with very little lead time.
- Some field offices are concerned about whether staffing and resources will be adequate to prepare analyses in future years and for doing additional iterations of the initial analyses.

Unresolved questions

Although the process is well accepted and the information is being used in making decisions, a few questions remain that are yet to be resolved.

- Cultural, social, economic, and terrestrial components are included in analyses at different scales across the region. Consensus is lacking on amount of detail and information that should be considered. The Guide states that the responsible official should balance the number and scope of issues addressed and decide what core topics should be

addressed for each watershed, based on recommendations by the local watershed analysis team. This potential for lack of consistency makes some agencies uncomfortable.

- Only a few units have included public input to the process. Initially, most watershed analysis teams were faced with the simultaneous responsibilities of learning what they had to do and also working with the public; most chose to first figure out what watershed analysis was and then involve the public in later analyses.
- Some field units question whether watershed analysis is needed in areas where federal ownership is less than 10%.
- Watershed analysis is providing information that supports various management actions, but direction from policy makers is needed on the amount of detail and kind of information they require to make management decisions in a watershed.

Raised expectations

Expectations were unreasonably high on what watershed analysis could achieve. Some expected an increased ability to extract resources, and others expected all environmental questions to be answered before management decisions were made. The reality is somewhere in between, depending on the amount of data available in the initial analyses, and the complexity and condition of each watershed.

- The 15 pilot watershed analyses were helpful in developing a new watershed analysis process and provided valuable information for completing the Guide and for project planning, but most of them took too long to complete and were too expensive.
- Even though pilot analyses were supposed to experiment with different approaches and methods being encouraged, their results were criticized for lacking consistency. Agencies have differences of opinion on whether consistency is necessary, realistic, or even desirable.
- Watershed analysis is raising questions but not providing answers to all of them, especially in the initial analysis. Some people anticipated that detailed information on a site-specific scale would be collected, such as maps of the riparian-reserve network, maps of intermittent streams,

and data on fish distribution throughout a watershed. But collecting such specific data for a whole watershed proved financially and technically infeasible.

- The information gathered in a watershed analysis may be used to modify practices under the standards and guidelines, but no process has been developed to do so.

Opportunities

Watershed analysis opportunities could include

- Allowing adequate time for watershed analysis teams to refine their work process. The learning curve is beginning to level off, and the teams are feeling more confident with each completed analysis.
- Requiring early participation by all agencies and interested nonfederal partners, at least in analysis design. Recognizing and accepting that the general public may not want to participate in the analysis but may be more interested in participating during the NEPA process.
- Continuing peer review of watershed analysis by professionals in other agencies to improve the product and build trust. Giving direction to reviewers on elements to look for.
- Conducting training seminars for watershed analysis teams to share information and good examples.
- Addressing the challenge of conducting a watershed analysis where federal ownership is 10% or less, and evaluating the amount of detail and data necessary, based on conditions of a specific watershed.
- Encouraging local project and line managers, in an interagency context, to provide better direction to project teams so that objectives and issues are clear from the start.
- Tying watershed analysis with implementation and effectiveness monitoring. Analyses provide opportunities to develop baseline information to measure the effectiveness of management actions.
- Being realistic about funds, staffing, and skills. Watershed analysis will have to be done with fewer resources in the future, and agencies must find ways to reduce the costs. In addition, expectations and the degree of detail that was included in the pilot analyses need to be reduced.

- Recognizing that, based on the availability of funds, multiple iterations of analysis in a watershed may provide the best opportunity for understanding ecosystem conditions over time.
- Clarifying the role of the regulatory agencies and the ability of management and regulatory agencies to share staff in light of their staff limitations.

Watershed Restoration

Observations

The watershed restoration program was aggressively applied throughout the region.

Restoration program applications

- Some forests reported that restoration projects had immediate positive results, with fish, for example, spawning where pools had been created only a year before.
- Regionally, however, it will take a decade to understand the long-term ecological effectiveness of the program's current work.

Flood effects from 1996

Watershed restoration projects were affected to varying degrees by the 1996 floods in Oregon and southern Washington.

- All projects that withstood the floods in early 1996 are functioning as planned.
- The road and upslope projects withstood the 1996 floods most effectively, and the survival of instream structures varied with location, severity of flooding, and whether the structure spanned the entire or only part of the channel.
- The agencies are continuing to assess what worked and what did not, adjusting the program as necessary.

Integrating jobs and the environment

The workforce demonstration projects provided the best example of integrating jobs with environmental protection.

- The pilots demonstrated a critically important model for future restoration that could be significantly expanded.
- Some concerns were expressed that the work could be done less expensively with agency employees, but that strategy would not have met the goal of assisting and retraining displaced timber workers.

- The extra time and expense to use job-training crews were acknowledged as necessary for the first few years.

Restoration as a priority

Watershed restoration became a priority management objective for all agencies. Among the benefits of this increased focus were

- Restoration projects were accomplished that would not have been possible without targeted funding.
- In some communities, restoration contracts helped ease the economic effects of reduced timber sales in the region.
- The contract waiver provisions helped the agencies to expedite restoration contracts to local businesses and workers familiar with the region's forests.
- Restoration projects provided a laboratory for testing interagency cooperation and an opportunity to demonstrate success quickly.

Funding availability and flexibility

Funding in the future and the lack of flexibility in funding distribution are still concerns.

- Only 20% of the funds could be used to prepare and administer contracts. Nearly all of the Forest Service and Bureau of Land Management offices found this amount inadequate to actually lay out the projects.
- Funding is inadequate for out-year project planning. Projects are planned a year or two before a contract can be let, but planning funds are very limited. Agencies worry that, as other budgets go down, the program cannot be maintained unless planning funds are available.
- More opportunities for restoration have been identified than available funds and skills can cover, especially on nonfederal lands.

Nonfederal lands

Fish and Wildlife and Forest Service Stewardship funds that could have assisted restoration on nonfederal lands were limited. In areas of mixed ownership, restoring nonfederal and public lands at the same time is most effective, and restoring federal land in some areas could be futile unless nonfederal land is also restored.

Congressional direction

Restoration was originally intended to benefit both aquatic and terrestrial habitat. Congressional budget direction for the Forest Service, however, shifted the emphasis away from terrestrial habitat and directed the Forest Service to focus on anadromous fish habitat in 1994, which left less flexibility for choosing projects to meet social and ecological goals.

Opportunities

Watershed restoration opportunities could include

- Clarifying the social and economic goals for the region and how watershed restoration can be used to address those goals. From an ecological standpoint, the need for restoration to continue throughout the region is strong. Consistent and reliable public and private investment will be needed to achieve the Plan's restoration goals.
- Designing a 10-year restoration program and evaluating the agencies' ability to fulfill that program with existing and out-year funding.
- Returning to the original intent of the restoration program to restore both aquatic and terrestrial habitat.
- Gaining approval for contract waiver authority permanently to increase flexibility and benefit communities. Devising methods to ensure that local workers can compete for employment opportunities will build ownership and support for the program.
- Developing innovative collaboration opportunities—for example, through watershed councils—to complement federal restoration with nonfederal land owner restoration on a watershed basis.

- Funding the Fish and Wildlife Service, Forest Service Stewardship, and the Natural Resource Conservation Service to encourage nonfederal land owner participation.
- Eliminating the 20% and establishing a realistic limitation on expenses for planning and administering contracts and separate training costs.
- Increasing support so an aggressive restoration program could be an important part of the agencies' efforts for many years.
- Creating a watershed restoration project pipeline similar to that of the timber-sale program.
- Authorizing use of "stewardship" or "end-result" contracting to encourage private-sector investment in restoration.

TIMBER RESOURCE

The American Forest Council (1991) reported that about 80 billion board feet (bbf) of timber was harvested annually across all ownerships throughout the nation in the 1980s. Nonindustrial, nonfederal forest lands provided about half this volume, and nonfederal industrial forest lands provided 30%. The remaining 20% originated from various local, state, and federal lands, with 13% coming from federal forests.

Timber harvest across all ownerships in the Northwest Forest Plan area averaged 12.95 bbf per year between 1980 and 1989. Federal lands contributed an average of 4.5 bbf; northern California contributed 0.5 bbf, Oregon 3.0 bbf, and Washington 1.0 bbf. Between 1990 and 1992, federal harvests declined to 2.39 bbf, partly because of the recession but also because of court-ordered injunctions resulting from several environmental lawsuits filed in three separate federal district courts.

Historically, regional timber operators could be fairly certain about the federal timber supply: the program was prepared in advance with a 3- to 5-year supply of timber being prepared in a pipeline to be sold. Purchasers then had 3 to 5 years to cut the volume under contract at their discretion. So, though the harvest fluctuated based on market conditions, the federal sales for the region did not vary much from year to year (figure 1, page 15).

Starting in the early 1980s, however, sales and harvest rates took some unusual turns as a result of markets, legislation, and litigation. The recession during the early 1980s resulted in a large accumulation of uncut volume under contract because lumber prices were depressed and purchasers held sales with high stumpage prices. The accumulation peaked at more than 20 bbf in 1983. Between 1985 and 1989, a significant drop in uncut volume under contract was largely the result of the timber buyback legislation, where the government bought back uncut sales from timber purchasers who had paid prices that could not be recovered at then current market conditions. The drop also resulted from contract rule modifications that required a larger down payment and limited the contract to three years. In 1989, the first of Judge Dwyer's regional injunctions on timber sales was issued; it continued the steady decline in volume under contract because of the limited number of new sales contributing to the timber program. By the time the Northwest Forest Plan was announced in 1993, the uncut volume under contract had decreased to about 2.5 bbf.

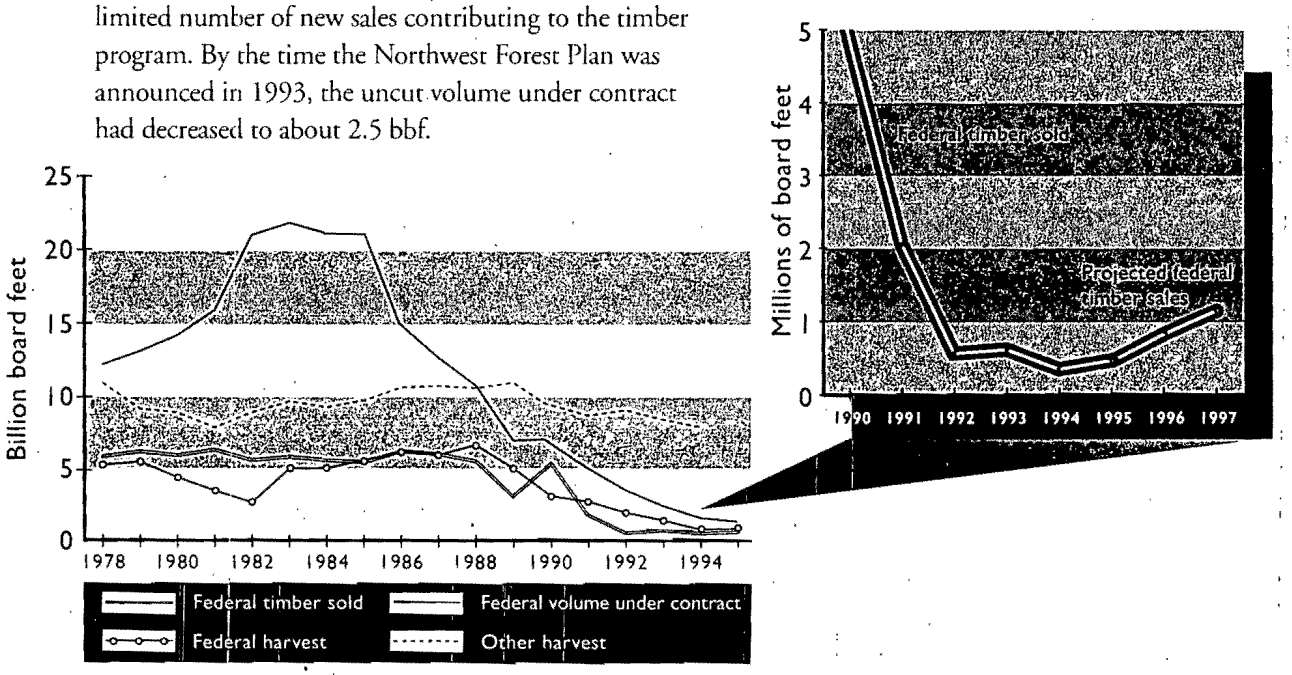


Figure 5—Historical and future projections for federal timber sales.

Over the three-year life of the injunctions, the number of new timber sales offered rapidly decreased and then virtually stopped (figure 5). As a result, federal timber sales, harvest, and uncut volume under contract are now nearly the same, which results in a system that is much more sensitive to fluctuations in federal sale rates.

The Plan attempts to once again provide a stable timber-sale program, albeit at lower rates. An average annual regional supply of 9.5 bbf is expected across all ownerships in the next decade, representing a 26% drop from 1980s rates. Over the 10-year life of the Plan, federal lands should contribute about 1.1 bbf per year—a 76% reduction from 1980s rates. Because of the time required to prepare timber sales, the agencies committed in the spring of 1994 to completing 60% in 1995, 80% in 1996, and 100% in 1997, assuming adequate funding and staff.

The change in availability of federal timber was anticipated to affect regional forest-product prices and spur increases in harvest from nonfederal and other public lands, with variations by state. A more detailed description of the federal and nonfederal timber supply situation and economic effects can be found in the FSEIS (1994, chapters 3 and 4, p. 263-274) and chapter 6 of this report.

Sustainable Harvests

Under the National Forest Management Act (1976) and the Federal Land Policy and Management Act (1976), the first-decade sustainable harvest was referred to as the "allowable sale quantity" or ASQ. The allowable sale quantity is based on all land suitable and designated for timber production and reflects the standards and guidelines established in individual forest plans. The allowable sale quantity is the estimated upper-limit of volume that can be harvested in the decade from a given National Forest or Bureau of Land Management District, sustained in perpetuity in accordance with the management plans of each agency. This limit is based on timber inventory attributes to assure that harvest cannot exceed growth. Nontimber attributes are deemed as constraints on allowable sale-quantity calculations.

In the 1980s, research indicated that the needs of the northern spotted owl were greater than previously thought and, therefore, that then-planned harvest rates could compromise the owl's existence. Scientific knowledge about the owl rapidly increased, resulting in recommendations to increase the size and number of locations of habitat areas necessary to preserve the species. As the assumptions on which the forest plans were based changed, the amount of land available for harvest changed, and the allowable sale quantity began to decrease. For example, the Forest Service's Region 6 plans proposed reducing harvest by about 30%, but, by the time the plan's were finalized the program had already been enjoined because they had not gone far enough. By the early 1990s, new information about the owl and other old-growth species such as the marbled murrelet was being generated so quickly that by the time it was incorporated into the plans, it was affected by still newer information.

To attempt to get a handle on this situation, and to provide some certainty for both habitat protection and timber harvest, the Forest Ecosystem Management Assessment Team and the Supplemental Environmental Impact Statement Team reevaluated the land base and recalculated the amount of habitat necessary for all species' viability while maintaining the more restrictive allocations defined in existing forest plans. In this way, sustainability evolved from focusing primarily on timber growth and harvest to an emphasis on the kind and amount of habitat needed to assure the long-term viability of aquatic and terrestrial species.

The Northwest Forest Plan acknowledged the uncertainties in determining what would actually be available for harvest. The agencies would need to apply the land allocations, conduct necessary analyses, and evaluate effects of riparian reserves before an accurate land base could be used to calculate the available harvest. To reflect the uncertainties in the amount of harvest that could be sustained, the Record of Decision refers to "probable sale quantity" as an alternative to allowable sale quantity.

Probable sale quantity depends on acres available for harvest and expected acre yields and standards and guidelines. As implementation continues, probable sale-quantity volume may be adjusted from that listed in the Record of Decision, based on new information from applying, on the ground, the requirements in the Record of Decision, which could change acres, yields, or other pertinent factors. The Bureau of Land Management and the Forest Service in northern California have already made such adjustments to their management plans, resulting in a decrease of about 90 mmbf. The Forest Service in Oregon and Washington is making these adjustments in fiscal year 1997 (table 5). Nonetheless, the agencies expect to meet the average annual probable sale-quantity goals over the 10-year life of the Plan because the volume that wasn't offered during the first three years of the Plan, as the agencies were reestablishing the program, can be offered over the remaining seven years.

The probable sale quantity is based only on lands considered suitable for producing programmed, sustainable timber yields. Timber-suitable lands do not include lands designated for forest uses considered incompatible with programmed timber harvests. Timber-suitable lands under the Plan are only in the matrix or in adaptive management areas. Lands designated as administratively withdrawn, late-successional reserves, and riparian reserves are all considered unsuitable for programmed timber yields, although they can provide for limited harvesting. Timber removed from reserves was not included in calculating the probable sale quantity (FSEIS 1993, p. 263).

Table 5—Probable sale quantity (PSQ) for the Northwest Forest Plan[1] in millions of board feet

Source	Total PSQ	+10% other wood	Adjusted in final forest plans	+10% other wood
National Forest-Washington	120	132	*	*
National Forest-Oregon	413	454	*	*
National Forest-Region 6 (Wash. and Ore.)	533	586	*	*
National Forest-Region 5 (N. California)	224	246	161	177
National Forest-Region 5 & 6	757	832	*	*
Bureau of Land Management (BLM)	201	221	174	191
National Forest-Region 5 & 6 and BLM	958	1,053	*	*

[1] The probable sale quantity in forest plans in Oregon and Washington have not yet been adjusted to account for the changes in the Northwest Forest Plan.

Table 6—Steps in timber-sale planning[1]

Timber-sale planning	Time frame and range	Average
Watershed analysis (Forest plan standards and guidelines, PacFish)[2]	0 - 6 months	3 months
Project scoping (NEPA) Alternative development (NEPA) Selection of preferred alternatives (NEPA)	2 - 12 months	3 months
FS biological evaluation (ESA) FWS/NMFS biological opinion (ESA)	30 - 60 days	1 month
Decision notice (NEPA)	3 months	3 months
Sale layout and contract preparation	4 - 12 months	6 months
Advertisement	10 - 60 days	1 month
Award	0 - 60 days	1 month
Total	**10 - 49 months**	**18 months**
Monitor (post-sale activity)	0 - 2+ years	2 years

1 Regional Ecosystem Office reviews, such as for silvicultural activities or salvage in late-successional reserves, Regional Ecosystem Office arbitration, and Endangered Species Act or other surveys and protocols (survey and manage species, for example).

2 Once a watershed analysis has been completed, the manager has the option to use the original watershed analysis or modify it based on new information.

Timber Sales

Timber-sale planning under the Plan differs in several ways from sale planning of the past: it requires watershed analyses in key watersheds before any activity can take place; revised standards and guidelines for laying out timber sales, such as marking additional riparian reserves and meeting guidelines for green-tree and snag retention; and increased involvement, at early stages of planning, by the regulatory agencies and other interested parties (table 6).

In resuming the timber-sale program, the Bureau of Land Management and Forest Service have been working to meet the 1.1 bbf goal, but the task has been difficult. When the injunctions on timber sales were imposed, sale planning and preparation in federal forests essentially stopped for three years. Because of prior years' sales, the industry initially had a couple of years of volume under contract to sustain higher harvest, but after three years of few sales being offered, the amount of federal timber under contract gradually decreased and hovered around 1 bbf.

The shortage of sales is a direct result of the injunctions because the pipeline of sales prepared for the years ahead has essentially run dry. In other words, the agencies had been preparing sales based on locations and prescriptions in their old forest plans. When the Northwest Forest Plan was adopted, it redefined both where and how trees could be harvested.

No sales could be legally prepared based on these new criteria before the Plan was completed. Thus, a transition time was needed to redesign sales already being planned and prepare new sales

based on the new criteria. The time and effort spent learning how to incorporate the new criteria used planning and preparation dollars and staff previously devoted to filling the pipeline with sales for the future. In addition, the agencies faced annual reductions in staff (for example the Mount Baker-Snoqualmie National Forest staff has been reduced from 440 to 185 people between 1992 and 1996), decreased budgets, and severe fire seasons in 1994 and 1996, which further diverted skills and resources from preparing sales.

Land Allocations and Timber Harvest

Congressionally Reserved Areas—Timber harvest is normally precluded.

Late-Successional Reserves—Harvest is precluded unless it enhances the late-successional characteristics of timber stands; salvage is allowed if it is neutral or beneficial to late-successional reserve characteristics. Thinning or other silvicultural treatments are subject to review by the Regional Ecosystem Office. No harvest is allowed in stands more than 80 years old west of the Cascade Range. Stands up to 80 years old may be thinned. More flexibility is included for harvest in stands affected by past fire suppression efforts. East of the Cascades and in northern California, thinnings can mimic historical fire frequency and intensity and will reduce the risks of catastrophic fire or insect outbreaks.

Managed Late-Successional Reserves—Harvest is subject to review by the Regional Ecosystem Office. Some silvicultural treatments and fire-hazard reduction is allowed to help prevent complete stand destruction from large catastrophic events, such as fire or insect outbreaks.

Adaptive Management Areas—Timber harvest is consistent with the specific direction for each Area. Rates and method of harvest will be determined Area by Area. Innovation is encouraged.

Administratively Withdrawn Areas—Scheduled timber harvest is normally precluded unless otherwise indicated in forest land management plans.

Riparian Reserves—Timber harvest and vegetation management are prohibited except where catastrophic events result in degraded riparian conditions or if necessary to meet riparian objectives. Salvage and fuel-wood cutting are allowed if necessary to attain Aquatic Conservation Strategy objectives. Trees are salvaged where watershed analysis determines that coarse woody debris requirements are met. Silvicultural practices are applied to control stocking, reestablish and manage stands, and acquire vegetation characteristics needed to attain Aquatic Conservation Strategy objectives.

Matrix—Harvest is allowed after watershed analysis in key watersheds. Most of the scheduled timber harvest will be from matrix lands.

TEXT BOX 12

Table 7—Volume offered in fiscal years 1994, 1995, and 1996

Forest Service	1994	1995	1996	Total to date
Oregon and Washington	156	393	516	1,065
Northern California	67	100	165	332
Forest Service total	223	493[a]	681	1,397
Bureau of Land Management	18	127	180	325
Total	241	620	861	1,722

[a] The Forest Service estimates this figure includes about 428 mmbf of chargeable volume and 65 mmbf of nonchargeable volume. Preliminary estimates of the percentage of various products in the Forest Service's cut and sold reports are: 77% saw timber; 14% pulp and other non-saw-timber products; 0.5% posts, poles, and pilings; 7% fuelwood, and 1.5% cull material. The Bureau of Land Management reports only saw timber.

Source: USDA Forest Service Region 5 and Region 6, USDI Bureau of Land Management, Oregon State Office.

The agencies offered 241 mmbf in fiscal year 1994 and 620 mmbf in fiscal year 1995 and 861 mmbf in fiscal year 1996. Doing so met their commitment to meet 60% of the probable sale quantity in 1995 and 80% in 1996 (table 7).

Other Effects on Timber Supply

Endangered Species Act consultation

Before any timber sale moves forward in habitat occupied by a listed, threatened, or endangered species, the management agency is required by section 7 of the Endangered Species Act to consult with a regulatory agency. In the past, consultation with the Fish and Wildlife Service and National Marine Fisheries Service was a source of frustration for both the regulatory and land management agencies. Consultation could be lengthy and, on occasion, antagonistic, taking anywhere from 30 to 135 days. The Fish and Wildlife Service and National Marine Fisheries Service were scheduled to come into the process at the end of project planning, which would often result in their request that a project be reworked. Some sales were reworked several times to address various issues and changing protocols. Some differences were substantive, but most were a result of ineffective communication early in the planning process, between the management and regulatory agencies, about what was needed to meet the requirements of the Endangered Species Act.

The agencies jointly developed a new process to streamline consultation under the Endangered Species Act that will be part of all future timber sales and other projects, according to direction dated May 31, 1995, from the regional executives. The new process will use existing information and prior consultations on major regional planning documents. The approach requires significant up-front input by agencies' staffs, but it ultimately results in less paperwork and allows a better analysis of cumulative effects. The agencies will monitor the process and adjust it as necessary over the next several years. Three training sessions were held in the region to explain the new process to field employees.

Early results of the streamlined process are viewed as positive. Interagency teams have been established in the field, and the agencies are working together regularly. The agencies consulted on hundreds of timber sales, and watershed restoration, recreation, and silvicultural treatments. The time necessary for formal consultation was reduced by 70%, averaging 34 days, as opposed to averaging 114 days for formal consultation in the past. On the Olympic National Forest, the Fish and Wildlife Service created one programmatic biological assessment that allows all the Forest's timber, watershed restoration, and other programs to be cleared through consultation for two years.

FY 1995 Rescissions Act

Another effect on timber supply is the timber salvage provisions of the Rescissions Act, which became law on July 27, 1995. The law prohibited administrative appeals and included sufficiency language (see text box on page 23) for the land management agencies' national salvage sale program and green sale program under the Plan. The law also intended to release, as originally configured, the last of the sales that had been suspended for spotted owl or marbled murrelet concerns within the geographic area of National Forest units and Bureau of Land Management districts that were subject to Section 318 of the fiscal year 1990 Interior Appropriations Bill (see page 27).

The President directed the agencies to implement the timber provisions of the Rescissions Act in an expeditious and environmentally sound manner, in accordance with the Plan, other existing forest and land management policies and plans, and existing environmental laws, except as prohibited by the Rescissions Act. Doing so assured that green sales that were prepared under the Plan would continue to comply with it.

Issues related to the Section 318 provisions were more complex. A total of 122 sales containing 552 million board feet were originally identified as potentially meeting the provision's definitions. At issue was whether moving forward with these sales as originally sold would require a supplemental analysis to determine their effects on the environmental baseline of the Plan. Several lawsuits were filed, challenging the Administration's reading of this provision, to limit the number of old, environmentally problematic sales from moving forward. As a result of these lawsuits and working with individual purchasers to mitigate the sales' effects, about 48 sales needed further evaluation for their effects on the Plan's environmental baseline. These sales contain about 219 million board feet and affected 0.02% of the late-successional reserve acres, 0.03% of riparian reserve acres, and 0.04% of key watershed acres.

Timber Resource: Observations and Opportunities

Timber Resources

Observations

The agencies' timber-sale programs are being planned on 22% of the federal land base that is available for regeneration harvest. An additional 47% of the federal land base is available to limited thinning of stands, pending scientific oversight to assure such thinnings will enhance late-successional and old-growth forest habitat.

Timber sales on track

The agencies are on track in offering the timber volumes estimated in the Record of Decision adjusted for reconciliation with the District and Forest plans. The Bureau of Land Management and Forest Service met their fiscal year 1995 and 1996 targets and plan to offer 100% of the probable sale quantity in 1997.

- Timber and other resource personnel in the region have spent considerable time working on litigation related to the Rescissions Act and requirements of the resulting court orders. This unplanned workload affected the final accomplishments for fiscal year 1996, and their ability to prepare sales for 1997.
- The timber industry is concerned that these sales do not provide historical amounts of saw timber.

Timber-sale planning changes

The agencies have changed the way sales are prepared. Although much of fiscal years 1994 and 1995 were spent modifying old sales to comply with the new standards and guidelines, the agencies worked effectively to get timber sales out and started preparing new sales under the requirements of the Plan. Some of the new requirements were challenging at first, but most field offices are incorporating the changes with more ease now. Some of the benefits include

- A more balanced approach to timber-sale planning, focusing on outcomes, rather than species-by-species effects. The result is a better job on the ground.
- Timber sales are better protecting aquatic and terrestrial habitat and are put in context by watershed analyses.

- Some units are using innovative techniques, such as service contracts for marking, cutting, decking, and sorting timber before selling it.
- Some Bureau of Land Management offices thought that the performance agreement on timber sales between the state Director and the national Director helped them focus on getting the job done.

Endangered Species Act consultation

Much of the improvement in the Endangered Species Act consultation process is due to the consistency and predictability provided by the Plan.

- The agencies have worked closely to expand the streamlined approach so that it is the regular way of doing business for the entire region and other regions, as well.
- The new section 7 consultation process is working and has resulted in a better product, faster.
- Individual consultations have decreased as programmatic consultations have been developed. This change reduces the time Fish and Wildlife Service and National Marine Fisheries Service staff spend on reviewing biological assessments and the time Forest Service and Bureau of Land Management staff spend re-doing biological assessments.
- The consultation process has increased coordination and provided a consistent approach for the Fish and Wildlife Service and the National Marine Fisheries Service.
- Input from the public and other agencies has been favorable and helpful. Trust between agencies has improved and outputs are less controversial.

Timber-sale planning more complex

Existing and additional project-planning steps assure environmental protection but make timber-sale planning more complex, time consuming, and expensive. Although the field units are becoming more efficient with each sale, sales are taking longer to prepare and unit costs are rising. Among the challenges are

- More matrix was affected by riparian reserves than was originally estimated on most Districts and Forests.

- On timber-suitable lands, active management is often made difficult and expensive because the sites can be isolated fragments between riparian reserves.
- Irregular riparian reserve lines conflict with logging system requirements from both an engineering and safety standpoint.
- The percentage of thinning sales to total sales is much higher than in the past. These sales require more time and resources to lay out.
- Even though the consultation process has been significantly improved, some managers still believe that the new habitat protections are not adequately recognized by biologists during consultation on regeneration harvest in the matrix. Conversely, some biologists believe that managers only look at standards and guidelines for sale layout and not at the broader requirements of the Plan, including the aquatic conservation strategy, road requirements, and cumulative affects.
- The green-tree retention requirements make timber harvest more complex than in the past.
- Initial watershed analyses, late-successional reserve assessments, and Adaptive Management Area plans are added process steps; however, on completion, the analyses can greatly expedite project planning, Endangered Species Act consultation, and the NEPA process.

Staff and funding concerns

Concerns about the adequacy of agency resources in the future have been expressed.

- After four years of downsizing, with more to come, the field offices have fewer staff working on a more complex timber-sale program.
- Although the timber-sale program has been reduced, the need for staff foresters, engineers, and hydrologists is still strong.
- Funding is still distributed in narrow line items and doesn't easily allow design of sales to treat all resource concerns or needs across the landscape.

- As long as line items exist, funding the Endangered Species Act consultation, planning, analysis, and monitoring programs will be as important as will funding the timber-sale programs becaue they are integral to each other's success.
- Thinning sales in late-successional reserves cost more because of layout, method of harvest, and access, but the budget does not reflect the increased unit costs.
- Staff and funding requirements to release sales under the Rescissions Act diminished opportunities to put new green sales in the pipeline for future years.

Complications in meeting timber commitments

Meeting timber commitments is more complicated than anticipated. Among the concerns are

- Critical habitat designated under the Endangered Species Act is in the matrix and constraining timber operations there. Even though the Plan's land allocations are thought to obviate the need for such interpretations, some biologists are firm in maintaining critical habitat designations until late-successional reserve designations are determined to be adequate for spotted owl needs.
- Some late-successional reserves may benefit from thinning or salvage sales; however, the requirements in the Record of Decision and lack of targeted funding limit the ability to plan silvicultural treatments in these areas.
- The tension between those who favor a landscape approach and those who favor a species approach continues. On forests with east-side characteristics, some people believe cutting less in existing matrix areas and more as small-diameter thinnings from late-successional reserves may be more appropriate to promote healthy stands. This tradeoff is difficult to make now because the Record of Decision directs certain harvest intensities to different land allocations. Other people believe that this approach to promote healthy forests may not be beneficial to some individual species. Some biologists believe they are being pressured into accepting management proposals in late-successional reserves, even if they affect a listed species.

- On many forests, reaching agreement between agencies and the public on thinnings in riparian reserves and late-successional reserves has been easier than on regeneration harvests in matrix lands.
- Some forests are staying away from sensitive zones (that is, roadless areas) even if they are in the matrix timber base. This approach may be appropriate in the short term to garner trust, but it will limit the ability to meet the probable sale quantity if not changed in the long run.

Miscellaneous concerns

A variety of miscellaneous concerns have also been expressed.

- The new sales program requires the industry to adjust how it estimates bids. Many of the sales require different equipment or practices than were usually used in the past.
- The Plan does not currently recognize management opportunities in primarily coastal forests that contain many even-age second-growth stands that are 80 to 150 years old.
- Batching sales for consultation was efficient for the agencies but sometimes it slowed the process for the sale operators because they had to wait until sales were batched and sent to the Fish and Wildlife Service for consultation, rather than each sale being sent when it was ready.
- The economic viability of salvage sales under the Plan's standards and guidelines is more tenuous than normal. The Plan's process requirements, however, have not substantially slowed the salvage sale program.
- The ability to sell salvage and forest health-treatment sales is very sensitive to market price fluctuations. The cost per acre is high and the trees carry less value. Therefore, several sales have gone without bids.

Opportunities

Timber resource opportunities could include

- Clarifying relations between reserves and matrix.
- Further exploring ways to resolve the tension between habitat and species approaches exhibited by those who think some kind of management is needed across an entire landscape and those who believe in management by allocation. Perhaps experimentation could be more aggressively pursued in Adaptive Management Areas.
- Resolving the issue of spotted owl critical habitat in matrix in the context of the reserves that have already been established.
- Streamlining process requirements for sales in matrix areas by acknowledging these areas were designated for timber harvest and assumed so in the Record of Decision.
- Clarifying expectations between protection and timber activities in each land allocation. This process should be coordinated between the regulatory and management agencies and then reflected in agreed-upon management decisions.

Realigning management operations to facilitate an ecosystem approach.

- Committing to an ecosystem management funding approach at the Congressional and Departmental levels to fund work required in the Record of Decision and Forest plans.
- Allowing the Forest Service's 1994 ecosystem approach budget, which was partially adopted, to serve as a foundation for reassessing opportunities to adequately fund the timber-sale program.
- Creating incentives for regulatory agencies to share responsibility with management agencies to meet targets, as management agencies are now required to share responsibility for meeting environmental goals. Including Plan goals in annual performance standards for all upper managers in all agencies.

- Looking at creative ways to prepare and offer sales, such as stewardship or end-result service contracts to mark, cut, deck, and then offer timber for sale (within limits of the Davis-Bacon Act). This process could optimize return to the treasury because the agencies can charge a premium for high-quality logs, as opposed to selling high- and low-quality logs and getting an average price.
- Reviewing timber-sale planning steps and associated performance measures that continue from before the Record of Decision to determine if any of the steps are no longer needed.
- Clarifying how accomplishing the probable sale quantity should be reported. The Forest Service reports all chargeable volume (saw timber and other wood) offered from lands identified as suitable for harvest in the Plan, but the Bureau of Land Management reports all saw timber offered for sale, whether it is from suitable lands or not. Both methods have merit for different reasons, but the two figures are not comparable and may cause continuing confusion.

Enhancing the ability to offer safe and economical timber sales:

- Continuing to develop new ways to lay out and sell timber and mitigate their effects. For instance, allowing cable corridors to cross riparian reserves if soil effects can be eliminated or mitigated.
- Continuing to work closely with Research to find ways to make engineering and mitigation systems economically viable under current standards and guidelines.
- Analyzing opportunities to improve operability of timber sales in riparian reserves, with a focus on intermittent streams, since reserves cover more land areas than originally modeled.

Building on successes in streamlining consultation by, for instance:

- Continuing to use one document rather than a separate biological evaluation, biological analysis, biological opinion, NEPA analysis, and watershed analysis,
- Sharing biologists across agencies by using an "incidental take account" from which management agencies can proceed with actions and are allowed a certain number of incidental takes of species under certain conditions. No consultation would be required if the action met the standards and guidelines.
- Requiring the management and regulatory agencies to build on the model programmatic consultation whereby forest projects are cleared for a two-year period.

Other opportunities include

- Developing a regional Coast Range strategy to determine the availability of the opportunities in mature forests for limited thinning in stands 80 to 150 years old. This approach could promote old-growth habitat in the context of acres treated and assure such stands were not treated as matrix.
- Implementing adjustments to east-side forest plans that integrate the results of the Columbia River basin planning efforts when finalized..
- Establishing an extra sale-quantity program. The probable sale quantity does not include volume offered in reserve areas. Volume harvested from reserves was intentionally left out of the probable sale quantity calculation by the FEMAT scientists because they did not want an incentive for harvest in reserves to be part of an annual, scheduled, targeted harvest; therefore, the agencies could recognize and fund treatments in reserves and achieve the goals established for those areas. The extra sale quantity could consider using "acres treated" as the measure of accomplishment for riparian and late-successional reserves, to assure that volume cut does not drive treatments in these areas.

Adaptive Management Areas

The region has 10 Adaptive Management Areas (Areas). They were selected to provide a mix of ecological conditions, land-ownership patterns, and natural resource and social characteristics. The Areas were established to allow innovative and creative resource management approaches that may be different from those outlined in the Plan. By being creative, land managers will learn new approaches to managing ecosystems in the context of the technical, social, and legal challenges before them. In addition, local public participation is emphasized in selecting and designing projects . The Areas were originally intended to allow experimental management approaches that would not affect the viability of species even if those approaches failed. Between the draft and final version of the Plan, this flexibility was tightened to shore up biological standards that were deemed not adequate to meet viability and extirpation standards. A detailed description of the Areas can be found in the Record of Decision (1993, p. D-1—D-17).

Management goals for fiscal year 1994 included appointing a Forest Service or Bureau of Land Management leader and a research coordinator for each Area; confirming professional relations across the agencies; and interacting with the community about managing the Area. The goals for 1995 were to draft plans or strategies, implement the projects already planned in the Areas that meet other priorities, and do projects in such a way that they become adaptive or learning exercises.

In 1994, the Areas generally concentrated on screening projects to assure they were within adaptive management area objectives, completing watershed restoration projects, and increasing public participation. In addition to the Hayfork and Applegate Areas, which had active participating groups before the Record of Decision, the eight other Areas created public and governmental participation opportunities through field trips, information exchanges, and other activities. Issues relating to litigation over compliance with the Federal Advisory Committee Act significantly slowed the pace at which the Areas were able to move forward. More specifically, many

Adaptive Management Areas

Applegate Adaptive Management Area, Oregon
Size: 277,500 acres
Emphasis: Developing and testing forest management practices that provide for a broad range of forest values.

Central Cascades Adaptive Management Area, Oregon
Size: 155,700 acres
Emphasis: Intensive research on ecosystem and landscape processes and its application to forest management in experiments and demonstrations at the stand and watershed scales; approaches for integrating forest and stream management objectives and managing young and mature stands to accelerate development of late-successional conditions.

Cispus Adaptive Management Area, Washington
Size: 143,900 acres
Emphasis: Developing and testing innovative approaches at stand, landscape, and watershed scales to integrate timber production while maintaining late-successional forests, healthy riparian zones, and high-quality recreational values.

Finney Adaptive Management Area, Washington
Size: 98,400 acres
Emphasis: Restoring late-successional and riparian habitat components.

Goosenest Adaptive Management Area, California
Size: 172,900 acres
Emphasis: Developing ecosystem management approaches, including use of prescribed burning for managing pine forests.

Hayfork Adaptive Management Area, California
Size: 488,500 acres
Emphasis: Developing, testing, and applying forest management practices, including partial cutting, prescribed burning, and low-impact approaches to forest harvest, which provide for a broad range of forest values.

Little River Adaptive Management Area, Oregon
Size: 91,800 acres
Emphasis: Developing and testing approaches to integration of intensive timber production with restoration and maintenance of high-quality riparian habitat.

Northern Coast Range Adaptive Management Area, Oregon
Size: 250,000
Emphasis: Managing for restoring and maintaining late-successional forest habitat, consistent with marbled murrelet guidelines noted on page D-15 of the Record of Decision.

Olympic Adaptive Management Area, Washington
Size: 150,400 acres
Emphasis: Creating a partnership with the Olympic State Experimental Forest and testing innovative approaches at the stand and landscape scales for integrating ecological and economic objectives, including restoration of structural complexity to simplified forests and streams and developing more diverse managed forests through appropriate silvicultural approaches, such as long rotations and partial retention.

Shoqualmie Pass Adaptive Management Area, Washington
Size: 212,700
Emphasis: Developing and implementing a scientifically credible, comprehensive plan for providing late-successional forest on the "checkerboard" lands.
TEXT BOX 13

of the Areas started preparing plans, but the agencies' need to pull out of the Area groups until compliance with new legal standards could be sorted out slowed down initial planning efforts.

Accomplishments in 1995 included a range of actions, such as timber sales, assessing special forest products opportunities, restoration projects, ongoing research projects, and planning. Some Areas have accomplished a great deal; others less, in response to the different emphasis and needs for each Area, and different amounts of interest in the communities. Strategic plans and socioeconomic assessments of the communities were initiated or completed in seven Areas. All of the Areas have had field trips for community members so that stakeholders could look at current management activities and discuss the types of activities that should be planned in the future. Several new partnerships with school districts, counties, and local colleges have been formed. For example, in the Hayfork Area, the Hayfork Watershed Research and Training Center developed a college-accredited retraining program in conjunction with the Forest Service, Shasta College, and the Department of Labor. The Cispus Area formed a partnership with the local school district to add monitoring to the junior high and high school curriculum. The Goosenest Area entered into an agreement with Humboldt State University and the National Aeronautic and Space Administration to provide the Area with vegetation data collected by satellite.

One of the major accomplishments was the amount of coordination and communication among all parties. Excellent communication tools were developed, from community educational newsletters to improved decision documents between agencies. The tools have allowed greater sharing of information within and among communities and agencies.

Each Area took a different approach to community assessment. For example, in the Cispus Area, people in the community wanted to do their own assessment rather than have someone tell them what to assess or how to evaluate their needs. The Forest Service facilitated the process, but the members of the community worked together to identify needs and opportunities. This innovative approach to problem solving greatly improved communication and provided the Forest Service a social context within which to manage the federal forests in the Area.

Three Areas—one each from Washington, Oregon, and California—were nominated to represent the United States in the Model Forest Network. The Model Forest Network, initiated by the Canadian government, is an international network of forest areas that emphasize sustainable development. Some model forests had been identified in Canada and in third world countries, but the first model forests selected in the United States were the Cispus, Applegate, and Hayfork Areas. The objectives of the Model Forest Network are to accelerate sustainable development in forestry and emphasize integrated resource management; develop and apply innovative concepts to forest management; and test and demonstrate the best sustainable forestry practices available.

In fiscal year 1996, adaptive management plans were developed in draft form for all but one area. Relations with surrounding communities were enhanced, and projects continued to be implemented and monitored. The research branches of the agencies focused on efforts to integrate planning, management, and research in Areas; assessed and evaluated results of management and research, development, and applications activities; and facilitated public participation in adaptive management activities. More than 270 separate projects are ongoing or were completed by the end of 1996.

Adaptive Management Areas 1995 Highlights

Applegate

- Began developing a management strategy for the Area;
- Prepared 10 timber sales;
- Made progress on 55 research and monitoring projects;
- Initiated a fire management plan for the Area;
- Conducted five watershed analyses;
- Completed an ecosystem health assessment for the Area;
- Completed an aquatic, wildlife, and special-habitat assessment;
- Completed an economic assessment for the Area; and
- Contracted for an Area assessment by an outside party.

Central Cascades

- Conducted several interagency communication efforts and field trips about the Area;
- Completed a research and learning assessment;
- Made progress on more than 100 projects ranging from timber sales to long-term research and monitoring;
- Completed two watershed analyses;
- Participated in developing a community strategic plans;
- Participated in watershed council collaboration; and
- Completed projects worth more than $250,000 by using an ecosystem workforce demonstration crew tied to jobs in the Woods objectives.

Cispus

- Completed public participation in monitoring, community assessment and community self-assessment;
- Completed Upper Cispus Rivers watershed analysis;
- Worked on 10 current and proposed research studies;
- Prepared four timber sales;
- Completed four watershed restoration projects; and
- Completed an arrangement with a local school to add monitoring to the 7th- to 12th-grade curriculum.

Finney

- Developed watershed analysis and restoration policies for the Adaptive Management Area in cooperation with Province Advisory Committee;
- Developed data and involvement processes for all ownership and interests.

Goosenest

- Began landscape analysis with interagency team;
- Worked with Humboldt State University and NASA Mission to Planet Earth to provice Landsat MSS images classifying existing vegetative communities;
- Worked on studies with Pacific Southwest Research Station scientists after completing the Adaptive Management Area plan; and
- Working on low-level georeferenced aerial videography to supplement current remote sensing data.

Haylork

- Developed a college-accredited retraining program in conjunction with Shasta College and the Department of Labor;
- Developed a computer network established within Trinity County to facilitate education about the Area and information sharing;
- Developed a method for community access to detailed maps of the Area;
- Released Draft EIS for the Pilot Creek Ecosystem Management Plan (Six Rivers NF Mad River District);
- Prepared timber sales totaling 19 million board feet.

Little River

- Completed Area assessment (watershed analysis and social assessment);
- Used retrained timber workers to conduct watershed and wildlife inventories;
- Cooperated on an anadromous fish out-migration monitoring program; and
- Developed an effective public involvement strategy for the Area.

Northern Coast Range

- Offered three timber sales totaling about 5 mmbf;
- Conducted a public involvement effort to develop the Adaptive Management Area guide; and
- Participated in an ecosystem workforce demonstration crew.

Olympic

- Made Adaptive Management Area Plan;
- Made substantial progress on Habitat Development Study;
- Completed the Adaptive Management Area Overview; and
- Established a close working relation with Province Advisory Committee.

Snoqualmie Pass

- Completed a Draft EIS/Adaptive Management Area plan providing late-successional forest and connectivity in an area with checkerboard ownership; and
- Initiated a two-year research project to determine historical ranges of old-growth stands and large woody material in the different environments.

TEXT BOX 14

Adaptive Management Areas: Observations and Opportunities

Observations

Each adaptive management area is progressing at a pace that reflects local priorities and needs.

Progress reflecting local interest

- The Little River Area began meeting with several smaller groups when the big group was polarized and not able to progress.
- The Hayfork Area treated the entire area as a research project, which improves flexibility for experimental projects and other management actions.
- Some areas have very close association with research scientists from the Forest Service and Bureau of Land Management. This association has proved to be a useful alliance in developing scientifically based decisions that can be realistically implemented on the ground. Concerns have been raised about the agency's ability to finance these positions in the future, however.

Benefits of public participation

Public participation and the opportunity to share information between the agencies and communities has generally been beneficial.

- Consensus building was generally applauded by the agencies and communities, even with the extra time required to get results.
- Working with communities that are close together has been easier than with those that are spread out over a wide area.
- In some Areas, the public did not participate in early discussions about objectives and proposals. Some members of the public prefer to let the agencies develop proposals and comment on the environmental analyses developed later in the project approval process.

Lack of flexibility

The flexibility allowed in the Record of Decision affected management actions within the Areas.

- In Areas where the Record of Decision provided flexibility and allowed some management discretion, the Forests' ability to experiment outside the standards and guidelines was greatly improved. The North Coast Area is an example where this flexibility worked well.
- In Areas where flexibility and discretion were not allowed in the Record of Decision, the principles of adaptivity and creativity were lost. The standards and guidelines limit experimentation for most of the Areas.
- Where allocations overlapped, operating in an Area is as restrictive as in a matrix area. The original intent of the Areas was clouded by lack of flexibility.

Other observations

The regulatory and management agencies differ in their opinions about the extent of management and experimentation allowed within the Areas.

Budget priorities have not emphasized the Areas. In the first two years, other functions such as preparing timber sales, watershed analysis, and watershed restoration have taken priority.

Requirements and interpretation of the Federal Advisory Committee Act slowed progress and damaged relations between communities and the agencies. This negative outcome affected personal relations as well as the agencies' ability to develop projects.

The relation between federal and nonfederal land owners is unclear in the context of managing the Areas. Federal policy focuses on federal land, yet to get the most benefit from management actions, nonfederal land owners should also participate.

Opportunities

Adaptive Management Areas opportunities could include

- Restoring the original intent of Areas as experimental, with the flexibility to look beyond the boundaries established by the Plan's standards and guidelines.
- Conducting an analysis of the effects that increased flexibility in managing these Areas would have on viability ratings for listed species and clarifying policy accordingly.
- Conducting an analysis of the effects that increased flexibility would have on the extirpation and other standards of the Endangered Species Act and clarifying policy accordingly
- Encouraging the greatest amount of experimentation possible in the Areas to identify innovative management techniques.
- Determining if the type of information and approaches of independent scientific analyses developed since the Plan's adoption can be integrated into Area management proposals.
- Clarifying the relation and involvement of nonfederal land in the Areas. Ask nonfederal land owners and other nonfederal stakeholders to voluntarily work together to participate in the process.
- Developing a public involvement process that distinguishes between public input on Area projects and priorities and public input for NEPA analyses.
- Reestablishing the Areas as a high budget priority, with management emphasis, staffing, and funds.
- Considering a pilot program that gives management agencies authority for stewardship contracting where many elements of the ecosystem can be treated under a single contract and some or all of the revenues returned to benefit the site of origin.

Adaptive Management and Monitoring

Adaptive Management

Adaptive management is the process and philosophy governing how managers learn from implementing Plan goals and adjust future actions according to what has been learned (figure 6). As a part of the larger effort to implement the Plan, an adaptive management process working group was commissioned by the Regional Interagency Executive Committee to describe a framework for using the philosophy on all federal lands covered in the Plan, not just to the Adaptive Management Areas. Adaptive management is relatively new as a means for evaluating and adjusting management practices; the process is based on monitoring and evaluation, which have been applied in varying degrees with varying success in the past (Bormann et al. 1994). Adaptive management applies scientific principles and methods to improve resource management activities incrementally as the managers, scientists, and citizens learn from experience, new scientific findings, and social changes and demands.The Plan will be implemented, monitored, and then changed as necessary to better achieve the Plan's goals. New forest management practices and variations from the standards and guidelines will be tested in the Adaptive Management Areas, but management on other lands will provide vital information as well.

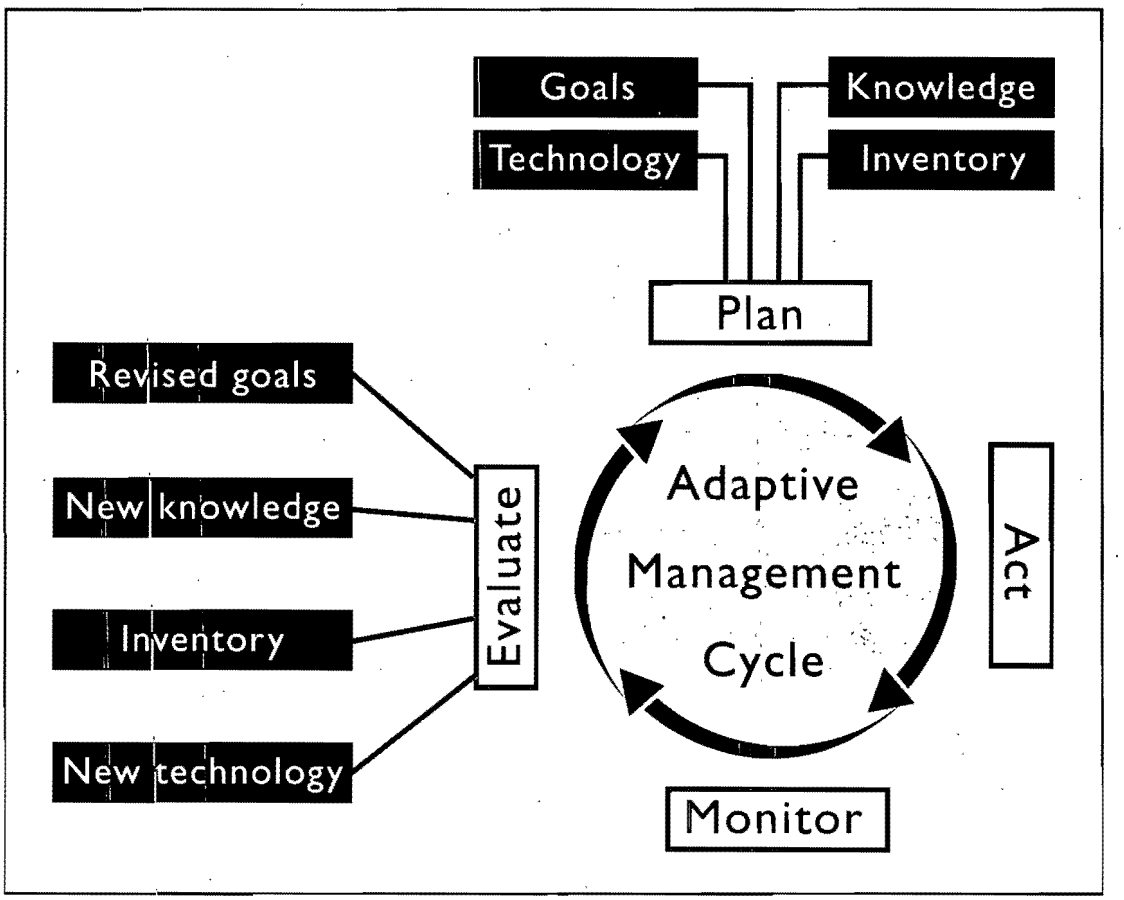


Figure 6—An adaptive management cycle, modified from FEMAT (1993).

Adaptive management begins with implementing management actions. No explicit direction was given to the field on how to apply the adaptive management concept. Over the last two field seasons, however, many of the concepts of adaptive management have been broadly applied in the region, and they have already resulted in improvements to management protocols and strategies. For example, the watershed analysis and watershed restoration guides were revised based on lessons learned during their first year. People working on the Central Cascades Adaptive Management Area have produced a research and learning assessment. In another example, the Siuslaw National Forest has begun to institutionalize adaptive management by requiring that learning objectives be added to all but a few purpose and needs statements in future NEPA documents (Bormann et al. in press). As learning becomes a central focus of NEPA activities, the importance of monitoring integrated with adaptive management becomes apparent. Learning—the cornerstone of adaptive management—provides the motivation needed to change standards and guidelines and adjust policies and management activities as needed to better manage complex ecosystems.

As the agencies implement the Plan, gather the results of initial monitoring, and "ground-truth" the standards and guidelines, they will keep track of areas where adaptation is needed at the site, forest, or regional scale.

Monitoring

Monitoring is critical to successfully implementing the Plan and was recognized by the courts as essential to keeping management actions legal over time. It plays a pivotal role, primarily to detect desirable and undesirable changes early enough that management activities can be modified to achieve the desired objectives. Monitoring is designed to:

Support management goals and needs;
Be sensitive to significant changes in ecological and social systems;
Assess trends and conditions to see if positive cumulative effects are occurring or anticipated;
Provide early warning so appropriate actions can be taken;
Provide a basis for policy decisions through analysis at various scales;
Provide for storage and manipulation of data; and
Be accessible across organizational and administrative boundaries.

Three types of monitoring are used in the Plan: implementation, effectiveness, and validation.

Implementation monitoring—Implementation monitoring determines if the standards and guidelines are being followed. It considers three components: aquatic, terrestrial, and socioeconomic. The details of these components include:

Land allocations with specific boundaries;
Standards and guidelines for managing the land allocations, including key watersheds;
Watershed analysis;
Social and economic effects; and
An adaptive management process or learning framework.

Implementation monitoring is the first monitoring plan to be fully developed and implemented. To determine if the standards and guidelines are being followed, implementation moni-

toring is organized around management activities and land allocations, including types of activities allowed and projected conditions within each allocation.

Effectiveness monitoring—Effectiveness monitoring takes implementation monitoring a step further by evaluating whether a management action achieved its desired goals. This type of monitoring will be done at various reference sites in geographically and ecologically similar areas based on a statistically valid, random-sampling design. Departures from expected conditions are not to be treated as failures but rather as new information to improve the quality of management and future decisions. Effectiveness monitoring could result in mitigation, changes in future actions, revised goals, changes in standards and guidelines, or even a Plan amendment. Changes that can be measured via effectiveness monitoring may take several years, or even decades.

Determining the specific effectiveness-monitoring approach for any issue depends on the type of information needed. For example, assessing trends requires periodically gathering baseline information. Where continuous coverage for structure and pattern is important, monitoring techniques include geographic information systems and remote sensing. When more detail and ground measurement are required, ground-based surveys are used. Successfully implementing broad-scale monitoring requires integration of all these approaches. Simultaneously, research is needed to evaluate alternative measures to improve future monitoring efforts.

Validation monitoring—Validation monitoring determines if a cause-and-effect relation exists between management activities and the indicators or resource being managed. It questions whether the underlying management assumptions are correct. Among the key set of assumptions that need to be validated is the relation between habitat conditions and populations. This validation requires a strong mix of inventory, monitoring, and research. One primary evaluation question is whether the populations of northern spotted owl, marbled murrelet, and at-risk fish stocks are stable or increasing because of the implementation of the Plan.

The monitoring program will require a long-term commitment to gather and evaluate data on environmental conditions and management actions. Each of the agencies has made this commitment, but staff and funding capacity will dictate the rate at which monitoring can progress.

The role of the Forest Service, Environmental Protection Agency, and National Biological Service research branches is to design and develop new planning tools and management processes that support an adaptive approach to ecosystem management. Researchers will also help managers define monitoring needs and design and evaluate regional monitoring strategies. Some effectiveness and most validation monitoring will be through formal research. Researchers may help develop standardized measurement and reporting protocols to assure consistency among the agencies. The agencies will also incorporate nonfederal research results as they consider changes to the Plan. Finally, the research branches will provide input to developing new standards and guidelines based on research results.

The Regional Executives directed their field offices to begin intensive implementation monitoring under the Plan in 1995, the first full year of Plan implementation. Effectiveness monitoring and validation monitoring plans were to be drafted in 1995 and 1997. The focus of the Research and Monitoring Committee's Implementation Monitoring efforts have been directed at developing information at the regional and provincial scales to evaluate the degree to which the

land management agencies are complying with the standards and guidelines established in the Record of Decision. The major principles of the approach are

- Determining the degree of compliance with all standards and guidelines for selected projects and activities;
- Evaluating stages of project and activity completion (for example, for timber sales, this stage could include design, layout, and harvest);
- Integrating existing agency tracking systems to identify projects and activities for monitoring;
- Categorizing and prioritizing projects and activities to facilitate variable amounts of sampling and review efforts; and
- Assessing and reporting results based on a statistical approach that provides provincial and regional summaries.

In addition to monitoring individual agency actions as they have in the past, the agencies have been actively progressing on developing a regional monitoring program to support the Plan. The agencies have initiated a pilot implementation-monitoring effort to conduct reviews of a statistical sample of 45 timber sales in fiscal year 1995. The review was completed in 1996. Interagency teams will do the review, and provincial advisory committees and other members of the public have had opportunities to participate. These reviews will determine compliance with relevant standards and guidelines by examining project documentation and field visits. An implementation monitoring report has aggregated the sample data base to provide summaries and assessments at the provincial and regional scales. The report also includes recommendations for the further development and expansion of the 1997 implementation monitoring efforts into the other relevant projects and activities.

In August 1995, the Interagency Research and Monitoring Committee distributed a draft effectiveness-monitoring plan to the Interagency Advisory Committee. The draft plan focused on five emphasis areas: late-successional and old-growth, northern spotted owl, marbled murrelet, survey-and-manage species, and riparian and aquatic habitat. These emphasis areas represent species, habitat associations, or both that are currently a priority for the agencies and the major focus of the Plan. The agencies consider these areas to be the first step of effectiveness monitoring, with more issues included as the process is refined. The agencies are revising the draft plan and intend to complete it for use in the 1997 field season. Pilot effectiveness-monitoring projects will be tested in 1997 for spotted owls, late-successional forests, and riparian and aquatic resources.

Monitoring: Observations and Opportunities

Observations

Implementation monitoring is being undertaken throughout the region.

- The three part monitoring program is expected to take several years to design, field test, and fully implement.
- The agencies' ability to do effectiveness and validation monitoring depends on budget allocations in the future.
- A major focus will be on maximizing the use of existing or ongoing monitoring programs instead of relying solely on new efforts.

Opportunities

Monitoring opportunities for agencies could include

- Looking for creative ways to get monitoring done, in the context of current funding, such as partnerships with each other or with state and nonfederal organizations.
- Although analyzing the effectiveness of the monitoring program would be premature, a comprehensive review could be undertaken after all three components are operational.

Forestry on Nonfederal Land

Although the Record of Decision only applies to federal lands, assisting nonfederal land owners in complying with the environmental laws—especially the Endangered Species Act—is an equally important part of the Plan. The government's ability to assist nonfederal land owners is based on conservation protections that have been placed on federal lands and the recognition that different land owners have different management objectives. The federal agencies manage for multiple uses, states often manage lands in trust for their citizens, and nongovernmental land owners often manage for maximum economic returns, although many manage for environmental benefits as well. Although some people thought the Plan should have analyzed ecosystems across ownership boundaries, the Administration chose not to do so because of its effects on local law and the concerns of state, private, tribal, and other nonfederal land owners.

Instead of dictating a plan across all ownerships, the Administration chose to place the primary conservation benefits on federal public lands. Doing so allowed the government to use provisions of the Endangered Species Act to provide nonfederal land owners with more flexibility to manage their resources while providing for the conservation of listed species.

Habitat Conservation Plans

In working to develop an appropriate balance in forestry practices in the region, the Fish and Wildlife Service and National Marine Fisheries Service are strongly encouraging state and nonfederal timberland owners to develop habitat conservation plans for their lands under section 10(a)(1)(B) of the Endangered Species Act. Their efforts focus on the issuance of incidental take permits. These permits are required by the Fish and Wildlife Service and National Marine Fisheries Service when nonfederal activities will result in individuals of a threatened or endangered species being harmed or otherwise taken. According to the Endangered Species Act, the term "take" means to "...harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct" (P.L. 93-205, section 3 (19)). "Harm" may include significant habitat modification where it actually kills or injures a listed species through impairment of essential behavior.

The agency allows incidental take of a species only if the land owner has committed to a long-term plan—called a habitat conservation plan, take avoidance plan, or conservation agreement—that helps conserve the species as a whole. Habitat conservation plans determine and minimize the take and mitigate its effects to the maximum extent practicable. Such plans may also cover unlisted species, as long as the habitat conservation plan provides sufficient conservation for both listed and unlisted species. The agencies are emphasizing multispecies plans that use an ecosystem management approach. Take-avoidance plans can sometimes be developed that obviate the need for habitat conservation plans. Take-avoidance plans describe an activity that has little or no effect on listed species. These activities are typically small-scale, low-impact actions such as small-acreage timber harvests. Land owners work with the regulatory agency to develop the plan to avoid the risk of take. The agency sends a letter of concurrence to the land owner but does not issue a permit for any incidental take. A third variation on habitat conservation planning is the conservation agreement. Conservation agreements are formally written agreements between federal and nonfederal parties to achieve the conservation of a candidate species through voluntary cooperation. It documents the specific actions and responsibilities for which each party agrees to be accountable.

Conservation planning in Northwest forests is being closely coordinated with the affected state and local governments, as well as the interested members of the nonprofit and private sectors. Where appropriate, the National Marine Fisheries Service endorses habitat conservation plans that have listed, proposed, or sensitive anadromous fish species in the planning area.

The process for obtaining a take permit and preparing a habitat conservation plan is driven by the applicant; in other words, habitat conservation plans are voluntary. Personnel from the Fish and Wildlife Service or National Marine Fisheries Service assist with technical and procedural guidance. The plan is negotiated between the land owner and the agency to gain the best results for both the land owner and the listed species. The process can require anywhere from 2 to 12 months, depending on the complexity of the issues and the land owner's preferences. The steps are:

- Develop a plan;
- Prepare an environmental analysis;
- Send the plan to the Fish and Wildlife Service and National Marine Fisheries Service for joint review and publication in the Federal Register;
- Collect public comment on the analysis;
- Review public comment and revise, if necessary; and
- Send the final plan to the Fish and Wildlife Service and National Marine Fisheries Service for final review and approval.

Although the management direction in the Northwest Forest Plan addresses conservation and recovery of threatened and endangered species only on federal lands, nonfederal lands will play a significant role. Recovering threatened and endangered species or preventing the listing of additional species may often be impossible without the contribution of nonfederal lands. Habitat conservation plans are a means by which nonfederal land owners may help provide for the conservation of listed species. Many of these nonfederal lands will be important in the recovery of species, particularly such species as salmon and riparian associates that are found throughout the rivers and streams that cross nonfederal lands.

Twenty-four habitat conservation plans, conservation agreements, or take-avoidance plans related to timber harvest have been completed as of August 1996, covering more than 1,756,000 nonfederal acres. Another 56 habitat conservation plans and conservation agreements are being prepared, under negotiation, or being considered, covering nearly 7.5 million nonfederal acres (table 8).

Following are examples of different types of habitat conservation plans that address various species and ownership sizes:

- Weyerhaeuser Company owns the 209,000-acre Millicoma tree farm in the Oregon Coast Range Province, east of Coos Bay, Oregon. This single-species plan for the northern spotted owl was signed in February 1995. Weyerhaeuser was authorized to harvest the remaining owl habitat on the ownership (up to 16,700 acres) over the course of a 50-year incidental-take permit. As mitigation, Weyerhaeuser has agreed to produce a landscape conducive to dispersing owls across its ownership within 20 years, and to maintain that landscape condition until the end of the permit period. The tree farm is strategically located among several parcels of federal land being managed as late-successional reserves under the Northwest Forest Plan, and maintaining connectivity among the reproducing populations of owls within those reserves is crucial to long-term viability. The dispersal condition on the Millicoma should facilitate this connectivity during the latter part of the permit period.

Table 8—Habitat conservation plans under section 10 of the Endangered Species Act [1]

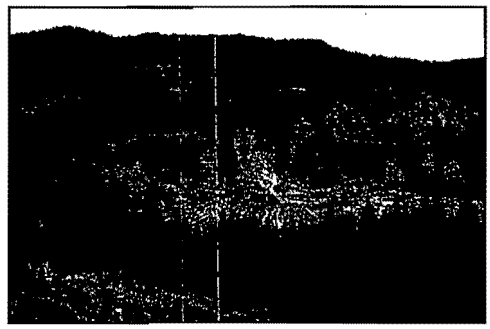
Plan or agreement	Washington		Oregon		California	
Habitat conservation plans	number	(acres)	number	(acres)	number	(acres)
Completed	5	(233,040)	3	(302,109)	2	(380,500)
Underway	11	(3,255,485)	4	(1,001,200)	12	(2,350,600)
Potential	5	(511,200)	1	(12,000+)	2	(27,000+)
Inactive	6	(260,000)	1	(unknown)	--	--
Total	**27**	**(4,259,725)**	**9**	**(1,315,309)**	**16**	**(2,758,100+)**
Conservation agreements						
Completed	1	(23)	1	(5)	--	--
Underway	3	(10,201)	1	(200)	--	--
Potential	1	(1,200)	--	--	--	--
Inactive	5	(643+)	1	(unknown)	--	--
Total	**10**	**(12,067+)**	**3**	**(205)**	**--**	**--**
Take-avoidance plans						
Completed	6	(27,577)	2	(298 acres)	4	(813,000)
Underway	1	(40)	2	(141 acres)	--	--
Potential	--	--	--	--	--	--
Inactive	--	--	--	--	--	--
Total	**7**	**(27,617)**	**4**	**(439)**	**4**	**(813,000)**

[1]Undertaken by the U.S. Fish and Wildlife Service and local land owners in the Plan region.

Source: USDI Fish and Wildlife Service, North Pacific Coast Ecoregion, and Klamath and California Ecoregions.

- The 55,000-acre Murray Pacific multispecies habitat conservation plan specifically provides for leaving at least 10% of its tree farm in nonharvest reserves for the next 100 years. The reserves, providing 100-foot buffers on most streams, will be established as a result of a watershed analysis that Murray Pacific will complete by the year 2004. All habitats on the tree farm, including rock slopes, caves, nest trees, and den sites, would be retained, and protected, and many will be enhanced. The company will leave more snags and double the green trees per acre required by Washington forest-practice rules.
- Coast Range Conifers is a small timber company in western Oregon. The habitat conservation plan provides the company with an incidental-take permit for spotted owls and marbled murrelets. The ownership contains 109 acres of suitable habitat for these species. Coast Range Conifers proposed to harvest 60 acres and place 49 acres in permanent reserve status by selling it to the Forest Service. The permit runs for 5 years.

Habitat conservation planning



Harvesting methods have left "leave trees" in clumps scattered throughout the harvested unit as a way to provide habitat. Flexibility in deciding which trees to leave, and where to leave them, is encouraged in habitat conservation planning.

Precommercial thinning and pruning to provide dispersal habitat for juvenile and "floater" adult spotted owls. Dispersal habitat consists of canopy lift and closed canopy, enabling owls to fly through the stand while protected from predators such as great horned owls.

No-harvest riparian reserve along an intermittent stream. Reserves average 50 feet wide along these streams.

The 4(d) Rule

Once the northern spotted owl was listed as a threatened species, taking the owl was prohibited on both nonfederal and federal timber lands during timber harvest, unless an incidental-take permit was secured. In light of the federal conservation benefits in the Record of Decision, the Fish and Wildlife Service reviewed the prohibitions against incidental take of the northern spotted owl on nonfederal lands. The purpose of the proposed 4(d) rule is to relieve incidental take prohibitions for owls related to timber harvest activities on nonfederal lands where such prohibitions are no longer deemed necessary or advisable for conserving the owl. The 4(d) rule identifies areas in California and Washington where prohibitions on incidental take of owls will be relieved and areas where they will be retained. The Fish and Wildlife Service is working with both states to determine how to apply this rule relative to existing state requirements and processes.

To provide for continuing conservation of the owl, the alternatives analyzed in the Draft Environmental Alternatives Analyses for the proposed 4(d) rule included special areas where restrictions on

incidental take would be retained: Special Emphasis Areas in Washington and potential California Conservation Planning Areas.

Special Emphasis Areas and California Conservation Planning Areas cover those nonfederal lands where land management activities can affect the conservation of the spotted owl by enhancing connectivity between federal late-successional reserves and, where necessary, supporting the population centers in those reserves, or by protecting important owl population centers in large areas of nonfederal ownership. Cluster Areas, where five or more owl home-range circles overlap, are designed to support larger concentrations of owls currently existing on nonfederal lands in California.

Generally, the proposed action would ease federal incidental-take prohibitions on nonfederal lands outside Special Emphasis Areas, and California Conservation Planning Areas. In all instances, however, incidental-take prohibitions would be retained within the closest 70 acres of nesting, roosting, and foraging owl habitat surrounding any owl activity center during the nesting season, unless the site is subsequently determined to be abandoned.

At the state's request, relief from takings prohibitions are not being proposed by the Fish and Wildlife Service for Oregon at this time. The agency has agreed to consider a 4(d) alternative submitted by Oregon's Governor. Work on such an alternative is on-going.

The proposed 4(d) rule for Washington and California currently includes several provisions:

- An exemption for land owners who own fewer than 80 acres in California, or 500 acres in Washington, provided such acreage is outside a 0.7-mile radius from a nest site;
- Conservation planning options to protect owl sites for land owners with more than 80 acres inside Special Emphasis Areas and California Conservation Planning Areas;
- Tribal relief from incidental-take prohibitions, except for 70 acres around nest sites;
- A safe management provision for compliance with the rule—land owners will not be prosecuted for any incidental-take violations, as long as they meet this safe management standard; and
- A sunset feature for certain designated areas. The sunset feature is for areas where prohibitions against incidental take are retained now, but take would be allowed in the future if the Fish and Wildlife Service determines that the conservation needs of the owl have been met.

A Draft Environmental Alternatives Analysis of the various 4(d) alternatives was distributed in February 1995 for public comment, along with an extended concurrent comment period on the proposed 4(d) rule for the owl, published in the *Federal Register* on February 17, 1996. The comment period, extended numerous times, closed on June 27, 1996.

Forestry on Nonfederal Land: Observations and Opportunities

Habitat Conservation Plans

Observations

The habitat conservation plan process is working. The good start is being improved as more land owners apply and work through the process. Among the observations being made are

- Section 10 of the Endangered Species Act, which authorizes habitat conservation plans, is fundamentally sound legislation.
- Although the habitat conservation plans are authorized to focus on single species, land owners are voluntarily incorporating multispecies needs through them.
- The plans are providing some sense of certainty to nonfederal land owners about how they can manage their forests in compliance with the Endangered Species Act;
- The plans are achieving more habitat protection than has been achieved under federal and state law in the past.
- The application process for section 10 incidental-take permits needs to be streamlined.
- Potential applicants are wary of the habitat conservation planning process because of NEPA concerns (public comment and disclosure) and the cost associated with preparing a plan.
- A comprehensive monitoring program is essential for understanding the long-term success of the plans.
- Developing a habitat conservation plan is an expensive undertaking that requires the financial and staff resources that only large and some midsized land owners can bear.

Opportunities

Habitat conservation plan opportunities could include

- Developing land-owner-friendly conservation planning tools such as a generic habitat conservation plan and cooperative agreements that would assist midsized and small land owners to participate in the habitat conservation planning process.

- Streamlining the public review process, while still allowing the public adequate opportunity to review habitat conservation plans. Nonfederal land owners think the current amount of redundancy in preparing the NEPA and habitat conservation plan documents is too high.
- Resolving land-owner concerns locally to build trust with local managers and to reduce the tendency to want to access higher levels in the Administration.
- Offering land owners—especialy small and midsized—financial and technical incentive packages to participate in habitat conservation. Many land owners would be willing to do more if they received a small amount of compensation.
- Working with states to develop the equivalent of a habitat conservation plan. The goal would be to have the states develop and manage the plans, and the role of the Federal government would be to approve the standards and guidelines.

The 4(d) Rule

Observations

The initial advanced notice of rulemaking was developed independent of land owner input. The easing of restrictions was viewed as placing new restrictions on many land owners within the region. Subsequent to the advanced notice of rulemaking, the Fish and Wildlife Service worked closely with land owners, agencies, and states in the early scoping effort to develop the proposed 4(d) rule.

- Extensions to the comment period were part of the Fish and Wildlife Service's continuing effort to obtain public input and gather new information pertinent to this rulemaking process.
- High interest continues among participating parties in the Fish and Wildlife Service's rulemaking to ensure a balance of conservation benefits to the northern spotted owl, relief from prohibitions for nonfederal timber managers, and continuity in further implementing the Plan.

Opportunities

The 4(d) rule opportunities could include

- Continuing to find ways to mesh state and federal regulatory processes and changes to achieve public resource-conservation goals and increase government effectiveness.
- Coordinating among several state and federal agencies and their sets of laws, regulations, and processes related to resource conservation and economic issues for which the 4(d) rulemaking process provides an additional case history.
- Establishing common intergovernmental and public goals, objectives, and time frames for completing regulatory change before beginning to develop proposed rule changes and related analysis documents for public and agency review and comment.

Other Commitments

East-Side Ecosystem Management Project

The Plan included direction to conduct an East-Side Ecosystem Management Assessment to promote the long-term health of ecosystems on the east side of the Cascade Range in Oregon, Washington, and Idaho. Substantial public input and interagency coordination have contributed to identifying issues and developing alternatives. The effort includes two Environmental Impact Statements, one for the Upper Columbia River basin, and one for the East-Side Ecosystem Management Project, and a Science Integration Team Report. The geographic area included in the areas of evaluation consists of Bureau of Land Management and National Forest lands in the continental United States tributary to the Columbia River east of the crest of the Cascade Range in Oregon, Washington, and parts of Idaho, Montana, Utah, Nevada, and Wyoming, and portions of the Great Basin and Klamath Basin in Oregon.

The Environmental Impact Statement Team for the Eastside Ecosystem Management Project and the Upper Columbia River Basin identified three broad categories of issues associated with resource management on the east side (figure 7). The first is "ecosystem health," which encompasses issues such as forest health, watershed health, sustainable communities (plant, animal, and human), clean air, scenic landscapes, and production of goods and services. These issues are being used to develop the environmental impact statement alternatives. The second category includes

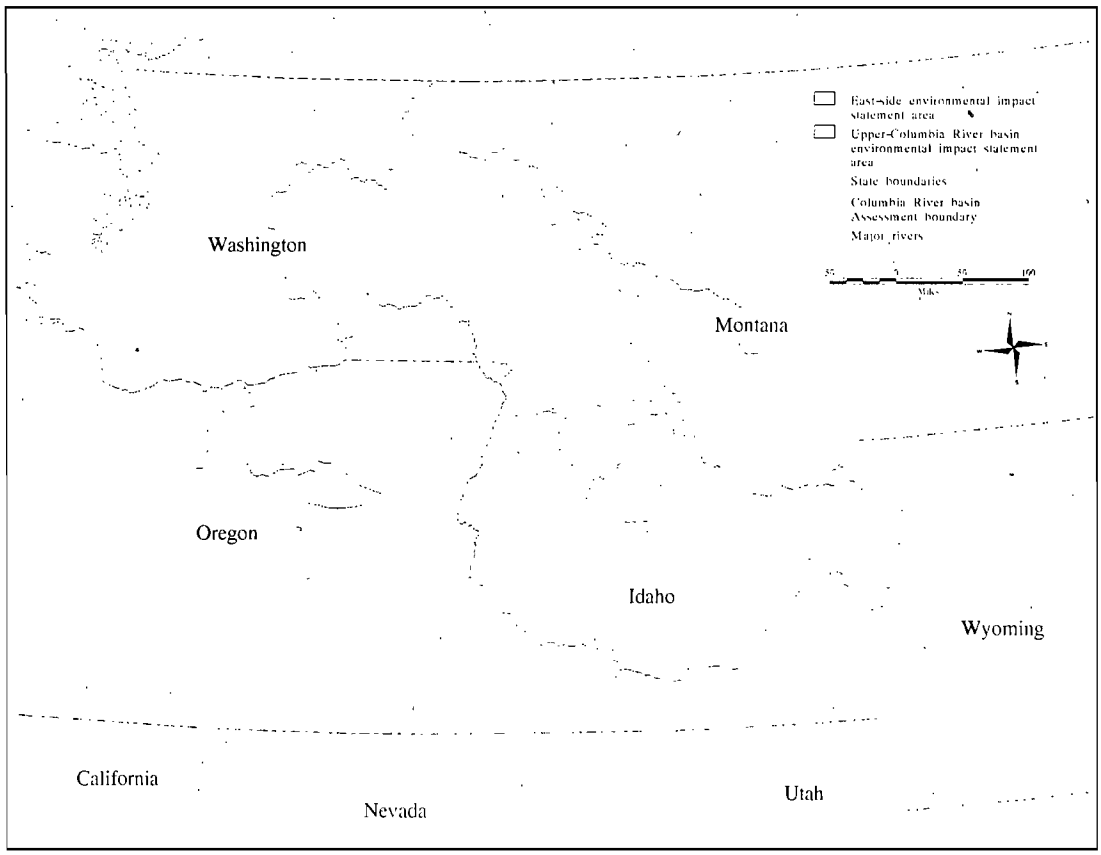


Figure 7—Boundaries of the Interior Columbia Basin Ecosystem Management Project.

issues such as public participation, consultation, and coordination. The third category includes issues that are beyond the charter for the environmental impact statement, including desired changes to existing laws, who the decision makers should be, and issues that would require analysis at scales not being addressed by the environmental impact statement.

As the west-side Plan is implemented, the agencies are learning what works and what needs improvement. The east-side assessment teams built on some of these lessons in drafting their plans. For instance, without the pressure of an injunction driving the process, tribal, local, and county governments are participating from the start. The agencies also established official advisory committees early in the process, to involve them in preparation, rather than waiting until the final document. The advisory committees and nonfederal government parties are reviewing draft material as it is completed. The final environmental impact statements are due to be released in 1997.

The Science Integration Team is developing a scientifically sound and ecosystem-based strategy for managing east-side forests. The three major products are

- A scientific framework for ecosystem management in the Interior Columbia River basin. This framework includes the principles and processes that may be used in future NEPA documents to develop management direction.
- A scientific assessment that will characterize and assess the ecosystem, social, and economic processes and functions and describe probable outcomes of continued management practices and trends.
- A scientific evaluation of the alternatives developed by the two environmental impact statement teams. Staff reports were completed and sent out for peer review in August 1995. Their review, compilation of feedback, and integration of policy questions and issues across staff areas will be incorporated into the environmental impact statements, which will be used to draft records of decision for each Forest plan in the east-side analysis area.

Expediting Timber Sales on Tribal Lands

The Plan included direction to move the backlogged volume of timber from tribal and individual trust lands to add to the timber supply in the Northwest. The rate of timber harvest on these lands was expected to play a role in assisting local timber-dependent economies affected by decreases in timber harvest on federal lands. Additional jobs could be created in primary harvesting and, with additional wood reaching mills, secondary employment could be supplemented.

In the past, inadequate staffing and funding of the Bureau of Indian Affairs forestry program resulted in many tribes being unable to harvest all the areas approved for treatment in their current forest management plans. The Northwest Forest Plan recognized the problem and called for additional funding to allow this backlogged timber to be harvested.

In fiscal year 1995, the President's budget included $1.5 million to sell backlogged tribal timber. The goal was to harvest 40 to 60 mmbf of timber in fiscal year 1995. The tribes had concerns about meeting this goal because of the late distribution of funds, the need to prepare environmental documents, and staffing problems. Eight of the twelve Bureau of Indian Affairs field offices produced 34.5 mmbf of harvested timber volume in 1995. The remaining four areas did not produce any volume in 1995.

In fiscal year 1996, $1.5 million was made available to prepare and administer backlogged tribal timber sales. The goal was to harvest 50 mmbf of timber volume in 1996. The 11 reservations participating in the Timber Harvest Initiative program in fiscal year 1996 produced more than 50 mmbf of additional harvest volume during the year. Additional volume is ready for sale but has been withheld because of locally depressed markets for some products that have been offered. Bureau of Indian Affairs projections for fiscal year 1997 volume in this program range from 45 to 60 million board feet.

Other Forest Resource Uses

The Plan focused primarily on direction for evaluating the effects of large-scale modifications to the landscape, such as timber harvesting, but federal lands throughout the region have many other uses, either existing or proposed, ranging from ski areas to municipal water systems. The agencies are being asked to clarify direction in the Plan as it applies to these uses. Some of the issues being addressed are summarized below.

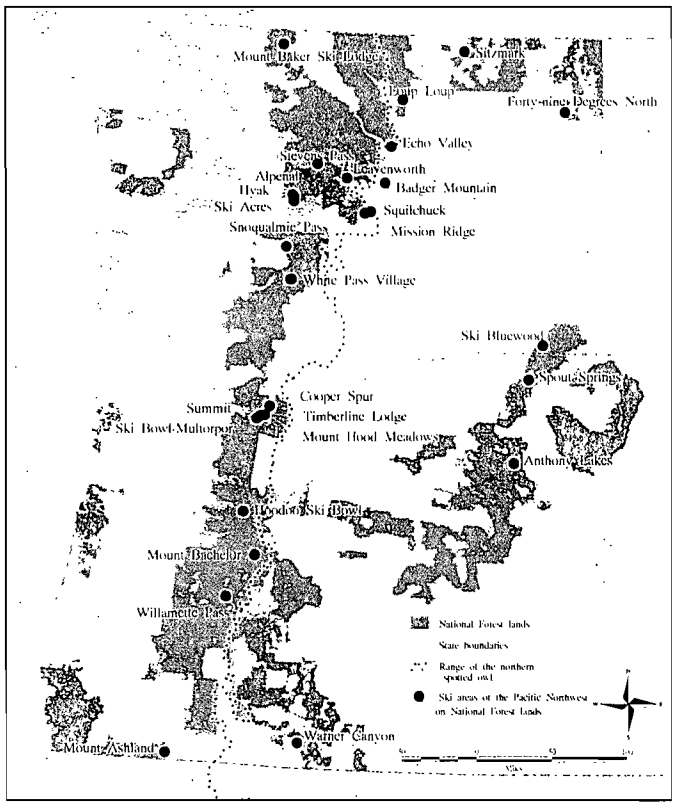


Figure 8—Ski areas of the Pacific Northwest.

Ski Areas

The Record of Decision (page 15) states, "For many ongoing activities, we expect that current permit terms will be sufficient to meet the overall goals. We presume that current existing and permitted Ski Areas will be allowed to continue under current permit terms." Clarification was sought on what this means for existing ski area operations, changes to existing operations within the ski area boundary, and changes or expansions outside the existing ski area boundary (figure 8).

The agency executives used the interagency format of the Regional Ecosystem Office to discuss the issues and prepare a policy paper. The Forest Service clarified how the Plan's standards and guidelines affected ski areas and how they should be applied. In summary, the agencies agreed that the Record of Decision allows ski areas to continue to exist and operate in their current locations and that the land allocations and standards and guidelines do apply to ski area operations. The guidance also recognized, however, that the industry only occupied 0.15% of the region's forest lands; therefore, development opportunities may differ depending on the proposed site and whether the proposal is within an existing ski area or master plan boundary or outside existing boundaries.

Small-Scale Hydroelectric Power Proposals

About 50 hydropower projects are proposed on National Forest land within the region. Because they are along streams, the projects are particularly affected by the Aquatic Conservation Strategy and late-successional reserve standards and guidelines. The Forest Service is required to evaluate whether a project is consistent with existing plans and regulations before the Federal Energy Regulatory Commission can issue a license. All of these hydropower projects were proposed before the Record of Decision.

As with the ski areas, the Forest Service has analyzed whether hydropower development can proceed under the conditions of the Record of Decision. The agency issued an interpretation after coordination with other agencies. In summary, hydroelectric power projects can exist as long as they are consistent with the standards and guidelines, or if the Forest Plan is amended to allow them. Other details of the questions considered by the agency can be found in the May 10, 1996, memo to the Forest Supervisor, Mount Baker-Snoqualmie National Forest, from the Acting Regional Forester and the accompanying discussion paper on file at the Forest Service's Region 6 office in Portland, Oregon.

The effects of a hydroelectric power project are long term because licenses are issued for 30 to 50 years. Any decisions about allowing hydropower development to proceed must be in the context of total effects on the watershed and must consider the amount of mitigation over the 30- to 50-year life of the project. In the past several years, the Forest Service has negotiated millions of dollars worth of mitigation on hydropower projects, including recreation facilities, watershed restoration work, and road obliteration and maintenance. If the mitigated projects are compatible with the standards and guidelines, benefits can be accrued for the resource through mitigation and for the public through the production of power.

Mining

Under the 1872 Mining Law, a valid mining claim is a property right owned by the claimant. The law and regulations provide for prospecting, exploring, developing, mining, or processing of mineral resources and all uses of the claim reasonably connected with these activities. A claimant does not need to receive a patent to perform these activities.

The Forest Service regulations require, where feasible, that operations be conducted to minimize environmental effects. Reclamation, where practicable, is required. The Forest Service has no authority to deny reasonable mining activities or to so condition them as to result in taking the claimant's property rights. Only where "the disturbance can be minimized using reasonable means" can the Forest Service influence the operation (36 CFR 228.4 E (3)).

Forest Service regulations allow the District Ranger to decide if mining operations will "likely cause significant disturbance of surface resources" and therefore require a plan of operations. "If the District Ranger determines that such operations will likely cause significant disturbance of surface resources, the operator shall submit a proposed plan of operations to the District Ranger" (36 CFR 228.4 (a)).

The National Wildlife Federation filed a lawsuit against the Forest Service, alleging that the management of suction dredging operations on the Siskiyou National Forest violated the Clean Water Act and Siskiyou Forest Plan riparian-reserve standard and guideline "Minerals Management-1" (part of the amendments from the Record of Decision). The standard and guideline

states that a reclamation plan, an approved plan of operation, and a reclamation bond are required for all minerals operations that include riparian reserves.

Bureau of Land Management regulations do not conflict because they are specific as to when a plan of operations is required—only if the operation will affect more than 5 acres. The Forest Service regulations give the District Ranger discretion to determine if a plan of operations is necessary. The Record of Decision states that none of the standards and guidelines are to supersede existing regulations; therefore, where the regulations are clear—as for the Bureau of Land Management—then the regulations take precedence. The lawsuit claims that in discretionary cases, the Record of Decision standards and guidelines apply and a plan of operations must be done.

A tentative settlement was reached between the government and plaintiffs in which the plaintiffs agreed to dismiss the lawsuit without prejudice (that is, the lawsuit can be refiled) and the government agreed to amend the Siskiyou National Forest Plan to clarify that not all mining operations will require a plan of operations.

Other Activities

How the standards and guidelines affect the multiple uses of federal land will also need clarification or interpretation by the agencies. These uses include recreation residences within riparian reserves, municipal or nonfederal water systems, grazing, special forest products, and developed and dispersed recreation facilities, such as campgrounds and trails.

Most of the issues arise around riparian or late-successional reserves where any construction is required. For instance, in areas where population is growing, a municipal water supply system may need upgrading. In many areas, the only alternative source of water is on federal land. A conflict may arise between the municipality's state water rights and the standards and guidelines; these issues must be resolved case by case, with community input to the interagency process.