



# NORTHWEST FOREST PLAN

THE FIRST 10 YEARS (1994–2003)

## Socioeconomic Monitoring Results Volume I: Key Findings

Susan Charnley, Ellen M. Donoghue, Claudia Stuart, Candace Dillingham, Lita P. Buttolph, William Kay, Rebecca J. McLain, Cassandra Moseley, Richard H. Phillips, and Lisa Tobe



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# Socioeconomic Monitoring Results

## Volume I: Key Findings

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### Northwest Forest Plan—The First 10 Years (1994–2003): Socioeconomic Monitoring Results

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## **Abstract**

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The socioeconomic monitoring report addresses two evaluation questions posed in the Northwest Forest Plan (the Plan) Record of Decision and assesses progress in meeting five Plan socioeconomic goals. Volume I of the report contains key findings. Volume II addresses the question, Are predictable levels of timber and nontimber resources available and being produced? It also evaluates progress in meeting the goal of producing a predictable level of timber sales, special forest products, livestock grazing, minerals, and recreation opportunities. The focus of volume III is the evaluation question, Are local communities and economies experiencing positive or negative changes that may be associated with federal forest management? Two Plan goals are also assessed in volume III: (1) to maintain the stability of local and regional economies on a predictable, long-term basis and, (2) to assist with long-term economic development and diversification to minimize adverse impacts associated with the loss of timber jobs. Progress in meeting another Plan goal—to promote agency-citizen collaboration in forest management—is evaluated in volume IV. Volume V reports on trends in public values regarding forest management in the Pacific Northwest over the past decade, community views of how well the forest values and environmental qualities associated with late-successional, old-growth, and aquatic ecosystems have been protected under the Plan (a fifth Plan goal), and issues and concerns relating to forest management under the Plan expressed by community members. Volume VI provides a history of the Northwest Forest Plan socioeconomic monitoring program and a discussion of potential directions for the program.

Keywords: Northwest Forest Plan, socioeconomic monitoring, timber and nontimber resources, rural communities and economies, collaboration, social values and forest management.

## Preface

This report is one of a set of reports produced on this 10-year anniversary of the Northwest Forest Plan (the Plan). The collection of reports attempts to answer questions about the effectiveness of the Plan based on new monitoring and research results. The set includes a series of status and trends reports, a synthesis of all regional monitoring and research results, a report on interagency information management, and a summary report.

The status and trends reports focus on establishing baselines of information from 1994, when the Plan was approved, and reporting change over the 10-year period. The status and trends series includes reports on late-successional and old-growth forests, northern spotted owl population and habitat, marbled murrelet population and habitat, watershed condition, government-to-government tribal relationships, socioeconomic conditions, and monitoring of project implementation under Plan standards and guidelines.

The synthesis report addresses questions about the effectiveness of the Plan by using the status and trends results and new research. It focuses on the validity of the Plan assumptions, differences between expectations and what actually happened, the certainty of these findings, and finally, considerations for the future. The synthesis report is organized in two parts: Part I—introduction, context, synthesis, and summary—and Part II—socioeconomic implications, older forests, species conservation, the aquatic conservation strategy, and adaptive management and monitoring.

The report on interagency information management identifies issues and recommends solutions for resolving data and mapping problems encountered during the preparation of the set of monitoring reports. Information issues inevitably surface during analyses that require data from multiple agencies covering large geographic areas. The goal of this set of reports is to improve the integration and acquisition of interagency data for the next comprehensive report.

The socioeconomic status and trends report is published in six volumes. Volume I (this volume) of the report contains key findings. Volume II addresses the evaluation question, Are predictable levels of timber and nontimber resources available and being produced? The focus of Volume III is the evaluation question, Are local communities and economies experiencing positive or negative changes that may be associated with federal forest management? Volume IV assesses the Plan goal of promoting agency-citizen collaboration in forest management. Volume V reports on public values regarding federal forest management in the Pacific Northwest. Volume VI provides a history of the Northwest Forest Plan socioeconomic monitoring program, and a discussion of potential directions for the program.

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## Chapter 1: Introduction

In the early 1990s, controversy over harvest of old-growth forests led to sweeping changes in management of federal forests in western Washington, Oregon, and northwest California. These changes were prompted by a series of lawsuits in the late 1980s and early 1990s that effectively shut down federal timber harvest in the Pacific Northwest. In response, a Presidential summit was held in Portland, Oregon, in 1993. This summit led to issuance by President Clinton of a mandate for federal land management and regulatory agencies to work together to develop a plan to resolve the conflict. The President's guiding principles followed shortly after the summit in his *Forest Plan for a Sustainable Economy and Sustainable Environment* (Clinton and Gore 1996), now called the Northwest Forest Plan (the Plan).

Immediately after the summit, a team of scientists and technical experts were convened to conduct an assessment of options (FEMAT 1993). This assessment provided the scientific basis for the environmental impact statement and record of decision (ROD) (USDA and USDI 1994) to amend Forest Service and Bureau of Land Management planning documents within the range of the northern spotted owl (*Strix occidentalis caurina*).

The ROD, to be implemented across 24 million federal acres (9.7 million hectares), put in place a whole new approach to federal land management. Key components of the ROD included a new map of land use allocations—late-successional reserves, matrix, riparian reserves, adaptive management areas, and key watersheds. Plan standards and guidelines provided the specific management direction regarding how these land use allocations were to be managed. In addition, the Plan put in place a variety of strategies and processes to be implemented. These included adaptive management, an aquatic conservation strategy, late-successional reserve and watershed assessments, survey and manage procedures, an interagency organization, social and economic mitigation initiatives, and monitoring.

Monitoring provides a means to address the uncertainty of our predictions and compliance with forest management laws and policy. The ROD clearly states that monitoring is essential and required:

Monitoring is an essential component of the selected alternative. It ensures that management actions meet the prescribed standards and guidelines and that they comply with applicable laws and policies. Monitoring will provide information to determine if the standards and guidelines are being followed, verify if they are achieving the desired results, and determine if underlying assumptions are sound.

Finally, Judge Dwyer reiterated the importance of monitoring in his 1994 decision declaring the Plan legally acceptable (Dwyer 1994):

Monitoring is central to the [Northwest Forest Plan's] validity. If it is not funded, or done for any reason, the plan will have to be reconsidered.

The ROD monitoring plan provided a very general framework to begin development of an interagency monitoring program. It identified key areas to monitor, initial sets of questions, types and scope of monitoring, the need for common protocols and quality assurance, and the need to develop a common design framework. In 1995, the effectiveness monitoring program plan (Mulder et al. 1995) and initial protocols for implementation monitoring (Alegria et al. 1995) were approved by the Regional Interagency Executive Committee (RIEC)<sup>4</sup>. Approval of the effectiveness monitoring plan led to the formation of technical teams to develop the overall program strategy and design (Mulder et al. 1999) and monitoring protocols for late-successional and old-growth forests (older forests) (Hemstrom et al. 1998), northern spotted owls (Lint et al. 1999), marbled murrelets (*Brachyramphus marmoratus*) (Madsen et al. 1999), tribal (USDA and USDI 2002), and watershed condition (Reeves et al. 2004). Socioeconomic monitoring protocols continue to be tested.

Periodic analysis and interpretation of monitoring data is essential to completing the monitoring task. This important step was described in the overall monitoring strategy

<sup>4</sup>The RIEC is responsible for ensuring the prompt, coordinated, and successful implementation of the Northwest Forest Plan at the regional level, and also oversees the Northwest Forest Plan monitoring program and adaptive management process. An inter-governmental advisory committee advises the RIEC.

(Mulder et al. 1999) and the regional interagency executive committee approved a 5-year interpretive reporting cycle. This 10-year report is the first comprehensive analysis and interpretation of monitoring data since the ROD.

## **Socioeconomic Monitoring: Introduction and Report Overview**

The socioeconomic monitoring report addresses two evaluation questions posed in the Plan ROD. The first question pertains to use of natural resources: Are predictable levels of timber and nontimber resources available and being produced? (USDA and USDI 1994: E-9). Volume II of the socioeconomic monitoring report analyzes trends in Forest Service (FS) and Bureau of Land Management (BLM) data for timber harvest, special forest products, livestock grazing, mineral extraction, and recreation to respond to this monitoring question. The second evaluation question concerns rural economies and communities: Are local communities and economies experiencing positive or negative changes that may be associated with federal forest management? (USDA and USDI 1994: E-9). Volume III of the socioeconomic monitoring report focuses on this evaluation question.

These questions are rooted in concerns that prevailed in the early 1990s about how cutbacks in federal timber harvesting under the Plan would affect local forest communities in the Pacific Northwest.<sup>2</sup> Many of these communities had residents who worked in the timber industry as loggers, mill workers, secondary wood products manufacturers, and transporters of wood and wood products. In the early 1970s, timber industry employment in the Plan area (fig. 1) stood at about 6 percent of total employment in Washington, almost 12 percent in Oregon, and 31 percent in California (FEMAT 1993: VII-53). By the late 1980s, the relative importance of timber employment in each of these regions had declined by 50 percent (FEMAT 1993: VI-25).

Any reduction in federal timber harvest volumes had the potential to incur additional social and economic impacts on timber workers and their families in the region,

<sup>2</sup> We follow Danks (2003) in defining forest communities as those having economic, social, and cultural ties to nearby forests.

especially on those depending on federal forest lands.<sup>3</sup> These workers were already being squeezed by global competition for wood and wood products markets, labor-saving technologies leading to increased mechanization in mills, and the economic recession that occurred in the early 1980s. Not only were jobs at stake; timber workers were an important part of many rural forest communities, contributing to their social and economic vitality. Logging, milling, and timber work formed the basis for a way of life in some communities. This way of life, and the cultural values and practices associated with it, were also threatened.<sup>4</sup>

Given the need for forest habitat and the need for forest products, President Clinton requested “a balanced and comprehensive strategy for the conservation and management of forest ecosystems, while maximizing economic and social benefits from the forests” (USDA and USDI 1994: E-1). The Plan sought to provide “...a sustainable level of human use of the forest resource while still meeting the need to maintain and restore the late-successional and old-growth forest ecosystem” (USDA and USDI 1994: 26–27). Thus, one socioeconomic goal of the Plan was to “produce a predictable and sustainable level of timber sales and nontimber resources that will not degrade or destroy the environment” (USDA and USDI 1994: 3). Volume II of this report evaluates progress in achieving this Plan goal during the first 10 years.

One assumption of the Plan was that by producing a predictable level of timber sales and nontimber resources, a second socioeconomic goal would be met: to maintain the stability of local and regional economies on a predictable, long-term basis (Haynes and Perez 2001, Mulder et al. 1999: 4, Tuchmann et al. 1996, USDA and USDI 1994: 26).

The need for forest products from forest ecosystems is the need for a sustainable supply of timber and other forest products that will help maintain the stability of local and regional economies, and

<sup>3</sup> On average, 30 percent of the timber produced in western Oregon and Washington each year between 1970 and 1990 came from Forest Service and BLM lands (Warren 2003).

<sup>4</sup> See Haynes and Grinspoon (in press) for a more thorough discussion of changes in the Pacific Northwest forestry sector since the 1940s and how it affected rural communities.





Figure 1—The range of the northern spotted owl and the Northwest Forest Plan area.

contribute valuable resources to the national economy, on a predictable and long-term basis [USDA and USDI 1994: 26].

Volume III of this report evaluates progress in meeting this Plan goal.

In identifying principles that would guide development of a management plan to protect old-growth ecosystems and produce a sustainable level of timber, President Clinton said, “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” (USDA and USDI 1994: 3). A third socioeconomic goal of the Plan was: where timber sales cannot proceed, assist with long-term economic development and diversification to minimize adverse impacts associated with job loss (Mulder et al. 1999: 4, Tuchmann et al. 1996, USDA and USDI 1994: 3). Volume III of the socioeconomic monitoring report also evaluates progress in meeting this goal during the first 10 years of the Plan.

The Plan aimed to usher in a new collaborative approach to federal forest management. In particular, federal agencies would coordinate and collaborate with one another in managing federal forests in the Pacific Northwest (Tuchmann et al. 1996: 6, 44–48). Interagency collaboration was expected to increase efficiency, improve communication and information sharing, eliminate duplication, build trust, and reduce conflict between agencies (Tuchmann et al. 1996: 6–7). There would also be greater collaboration in forest management between agencies and citizens (Danks and Haynes 2001: 54, Tuchmann et al. 1996: 41, 60–61). Two formal institutions established under the Plan promoted

agency-citizen collaboration in forest management: provincial advisory committees and adaptive management areas. A more collaborative approach to forest management was expected to improve relationships between agencies and the public, better link the Plan’s economic and environmental objectives by integrating forestry and economic assistance, and reduce conflict over forest management. Thus, a fourth socioeconomic goal of the Plan was to promote interagency collaboration and agency-citizen collaboration in forest management. The socioeconomic monitoring team did not monitor interagency coordination and collaboration because

of a lack of resources. Instead, we focused on agency-citizen collaboration. Our evaluation of progress toward meeting this goal is contained in Volume IV of this monitoring report.

The Plan codified a shift in forest management away from the intensive timber management practices of the 1970s and 1980s toward ecosystem management. One of the goals in doing so was to protect the forest values and environmental qualities associated with late-successional, old-growth, and aquatic ecosystems. These forest values include amenity values (such as scenic quality, lifestyle), environmental quality values (such as clean air and water), ecological values (such as sustainability, biodiversity), public use values (recreation), and spiritual and religious values (Donoghue 2003: 334, Stankey and Clark 1992). Other Plan monitoring is designed to collect and analyze biophysical data that will be used to assess how well the Plan has achieved the goals and expectations associated with protecting older forest habitat, associated species (northern spotted owls and marbled murrelets), and aquatic and riparian ecosystems. The socioeconomic monitoring team addressed the topic of forest protection from the social perspective.

Protecting forest values and environmental qualities associated with older forest and aquatic ecosystems is a social value. Changing societal values are among the things that can trigger the adaptive management process (USDA and USDI 1994: E2). It is important to monitor how public attitudes, beliefs, and values relating to forest management change over time so that managers can be responsive. Volume V of the socioeconomic monitoring report contains a literature review that evaluates trends in public values regarding forest management in the Pacific Northwest between the early 1990s and the early 2000s.

People's perceptions of whether or not agencies are managing federal forests in ways that are consistent with their values, and of the effectiveness of agency management policies, can influence their behavior and their attitudes toward the agencies. Although public perceptions may not always be "accurate" from the scientific standpoint, they matter. The monitoring team interviewed community

members from 12 case-study communities and agency employees from 4 case-study forests and documented their perceptions of how well the Plan had protected forest values and environmental qualities associated with older forests and aquatic ecosystems on federal forest lands. The team also documented community residents' issues and concerns relating to forest management under the Plan. The results of these interviews are contained in Volume V of this report.

The socioeconomic monitoring 10-year report is based on monitoring work that was conducted during 2003 and 2004 in the third phase of the module's development (which began in 1999). Phase III is considered a pilot phase of the socioeconomic monitoring program. The Regional Interagency Executive Committee has not officially incorporated socioeconomic monitoring into the Pacific Northwest Interagency Regional Monitoring Program. Nor is there a formal, published protocol for socioeconomic monitoring. As stated in the ROD, "The monitoring plan will be periodically evaluated to ascertain whether the monitoring questions and standards are still relevant, and will be adjusted as appropriate. Some monitoring items may be discontinued and others added as knowledge and issues change with implementation." (USDA and USDI 1994: E-1). Volume VI of this report evaluates the socioeconomic monitoring plan in the ROD; evaluates whether the questions, goals, and monitoring items are still relevant 10 years later; and assesses future options for the module to ensure that agencies have the socioeconomic information they need to support adaptive management in the Plan area. It is designed to help the RIEC decide the future of Plan-related socioeconomic monitoring.

The following tabulation summarizes the evaluation questions and Plan goals that are the topic of the socioeconomic monitoring 10-year report and the report volumes that present and discuss the monitoring questions, expectations, data, and conclusions associated with each of them. Volume I does not contain any monitoring data; rather, it summarizes the monitoring team's findings and conclusions.

<b>ROD evaluation question/Plan goal</b>	<b>Report volume</b>
Q1: Are predictable levels of timber and nontimber resources available and being produced?	Volume II
Q2: Are local communities and economies experiencing positive or negative changes that may be associated with federal forest management?	Volume III
Goal 1: Produce a predictable and sustainable level of timber sales and nontimber resources that will not degrade or destroy the environment.	Volume II
Goal 2: Maintain the stability of local and regional economies on a predictable, long-term basis.	Volume III
Goal 3: Where timber sales cannot proceed, assist with long-term economic development and diversification to minimize adverse impacts associated with job loss.	Volume III
Goal 4: Promote interagency collaboration and agency-citizen collaboration in forest management.	Volume IV
Goal 5: Protect the forest values and environmental qualities associated with late-successional, old-growth, and aquatic ecosystems.	Volume V
New question: Are the socioeconomic evaluation questions, goals, and monitoring items still relevant?	Volume VI



## Chapter 2: Methods

The information in this interpretive report is largely the result of retrospective monitoring. No socioeconomic monitoring program was established early in the Northwest Forest Plan (the Plan) period. Thus, there was no opportunity to formulate monitoring questions, identify appropriate indicators for answering those questions, and gather monitoring data associated with the indicators over the course of a decade, to compile and evaluate in this interpretive report. To a large extent, the monitoring team had to rely on existing data from secondary sources to answer the evaluation questions in the record of decision (ROD) and to evaluate success in meeting Plan socioeconomic goals. These data and their associated indicators were not always adequate for the task; data limitations are discussed in each report volume.

The monitoring team used a combination of quantitative and qualitative methods. The baseline year for the socioeconomic monitoring program was 1990. We chose 1990 as the baseline for several reasons. First, we use social and economic indicators from the U.S. census to assess community-scale socioeconomic change over time. The census happens once every 10 years (1990 and 2000). Second, although the Plan was implemented in 1994, the spotted owl (*Strix occidentalis caurina*) listing occurred in 1990, and was quickly followed by court injunctions against harvesting federal timber. Thus, the impacts of reduced federal timber harvesting began around 1991; the Plan was an attempt to restore the flow of federal timber. Finally, to evaluate the effects of the Plan on Pacific Northwest communities, it is helpful to compare what conditions were like before and after the Plan was implemented. It was not possible to obtain data as far back as 1990 for some indicators, however, so not all of the analyses begin with that year.

To answer the first evaluation question (Are predictable levels of timber and nontimber resources available and being produced?), we obtained data on timber sales, special forest products, grazing, mining, and recreation from Forest Service (FS) and Bureau of Land Management (BLM) databases and resource specialists. All of the monitoring teams associated with the Pacific Northwest Interagency Regional Monitoring Program were directed to obtain agency data from corporate databases, publications, or other sources

available from agency national, regional, or state offices, rather than request data from individual FS and BLM field units (unless warranted by special circumstances). This approach imposed a set of limitations associated with data availability and data quality. Our team obtained most of the regional-scale resource and recreation data from FS regional and BLM state office specialists.

Our team asked for indicator data for 22 forest units in the Plan area (table 1). We aggregated the unit-scale data to obtain regionwide trends. Combining FS and BLM data was often impossible at the regional scale either because the agencies track different variables (indicators) for each resource, because data were not available for the same years, or both. Thus, most of the regional-scale indicator data are presented and analyzed by agency.

**Table 1—Forest Service and Bureau of Land Management units included in calculations of resource and recreation outputs**

State	Unit	
Forest Service	Washington	Okanogan <sup>a</sup>
		Wenatchee <sup>a</sup>
		Mount Baker-Snoqualmie
		Gifford Pinchot
		Olympic
	Oregon	Mount Hood
		Willamette
		Siuslaw
		Deschutes <sup>a</sup>
		Umpqua
California	Winema <sup>a</sup>	
	Rogue River	
	Siskiyou	
	Klamath	
Bureau of Land Management	Oregon	Six Rivers
		Shasta-Trinity
		Mendocino
		Medford
		Roseburg
	Salem	
	Eugene	
	Coos Bay	

<sup>a</sup> Although these forests are only partially within the range of the northern spotted owl, data from the entire forest are analyzed in this report, unless otherwise indicated.

The analytical framework adopted by this module calls for showing that changes reflected by the trend data were caused by management actions under the Plan, or for providing alternative theories that could explain the changes observed. The team investigated links between trends in resource and recreation outputs, management actions under the Plan, and other explanatory variables by using a case-study approach. We selected four forests from four planning provinces in the Plan area for detailed study: the Olympic National Forest, the Mount Hood National Forest, the Klamath National Forest, and the Coos Bay BLM District (fig. 2). Case-study forests were chosen to represent one national forest in each of the three states that lie within the Northwest Forest Plan area, and one BLM unit in Oregon. They were also chosen to represent different provinces (the Plan area is broken up into 12 planning provinces). Because the monitoring effort was considered a pilot program, we wanted to conduct it on forests that were interested in participating and making use of the resultant information, so we used a nonrandom selection process. Two of the four case-study national forests volunteered to participate, and we approached the third because it was previously a high timber-producing forest. The Coos Bay District was chosen because the BLM Oregon State office recommended it. Team members interviewed a total of 78 agency employees from the four case forests and discussed trends in the indicator data for each resource area with program specialists, asking their perspectives on the reasons behind the trends observed, and the role of the Plan in influencing them.

The second evaluation question has two components: Are local communities and economies experiencing positive or negative changes, and are these changes associated with federal forest management? To assess whether local communities and economies were experiencing positive or negative changes, the team delineated 1,314 communities in the Plan area and used social and economic indicators from the U.S. census to analyze change in the communities between 1990 and 2000. The team also developed a community socioeconomic well-being index and analyzed differences in well-being between 1990 and 2000 and between communities located within 5 miles of a federal forest and farther than 5 miles away.

Finding direct connections between changes in forest management policy and socioeconomic change is difficult. To assess whether social and economic change in local communities and economies was associated with the Plan, the team examined trends in socioeconomic benefits from federal forests that potentially affect the well-being of forest communities. These benefits included jobs and income associated with forest resources and recreation, agency jobs, and procurement contracting opportunities. We examined regional-scale trends in these forest benefits for the period 1990–2003 by using quantitative data from agency databases and other secondary sources. We also examined local-scale trends in these benefits in four sample case-study areas. Other benefits from federal forests that contribute to the well-being of local communities include ecosystem services (such as clean air and water) and amenity values (such as scenic quality and wildlife). The team did not monitor this set of benefits because indicator data were not available at the required scale or because methods for quantifying and monitoring indicators of these values and services are poorly developed.

In addition, we evaluated the success of Plan mitigation measures designed to support rural communities and economies dependent on jobs in the wood products industry during a period of economic transition. These mitigation measures included (1) integrating forestry and economic development goals by creating new jobs in ecosystem restoration; (2) providing economic assistance to workers and their families, businesses, and communities through the Northwest Economic Adjustment Initiative; and (3) providing safety net payments to counties to help compensate for the loss of revenue sharing based on timber receipts.

To supplement the quantitative monitoring data, the team employed a community case-study approach to gather and analyze qualitative data that provide a more detailed understanding of (1) the social and economic conditions and trends described by the quantitative data, (2) how changes in the flow of forest benefits had contributed to change in local communities, and (3) how the Plan had affected the flow of socioeconomic benefits from federal forests. Interviews with 223 members of 12 communities

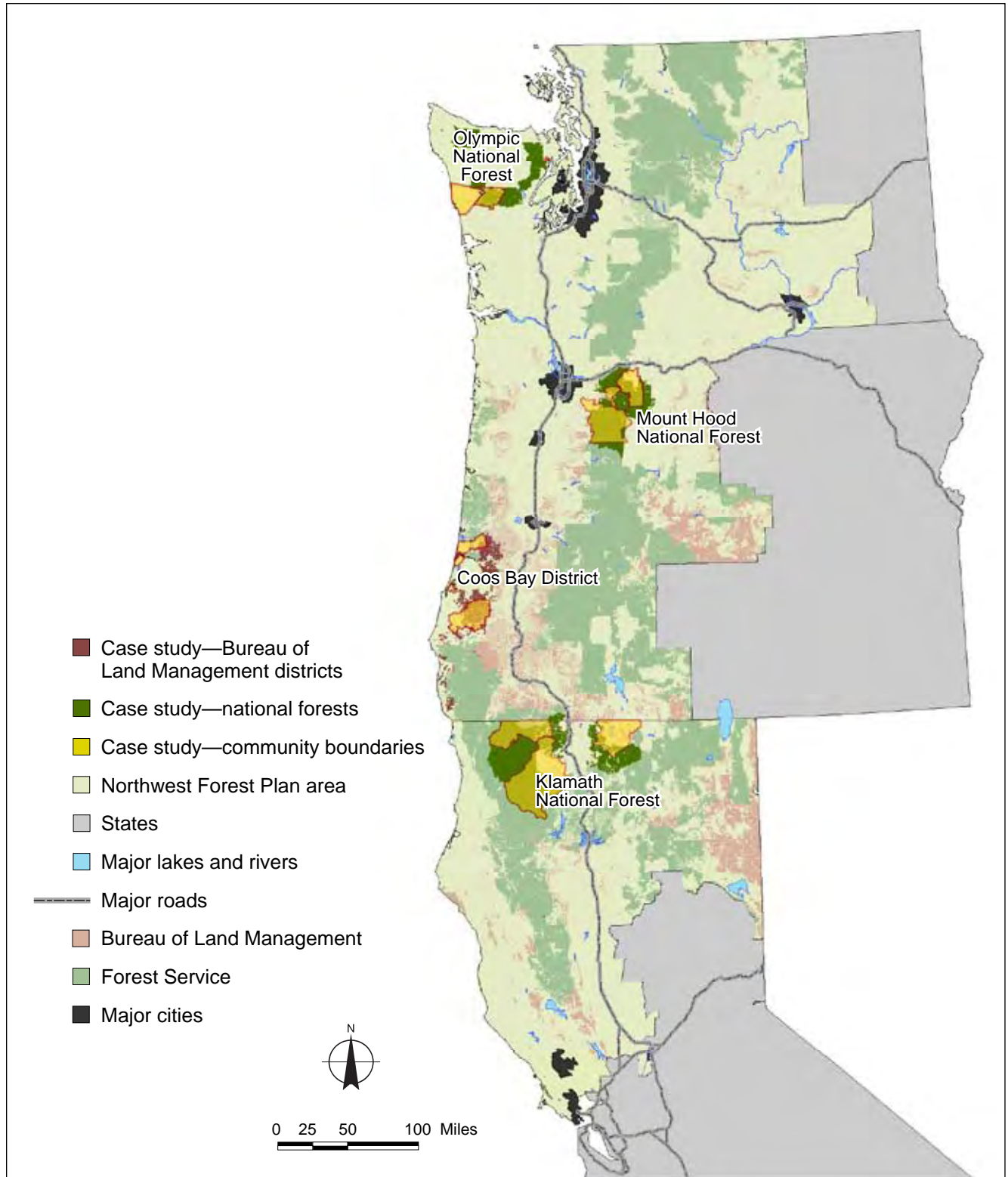


Figure 2—Case-study forests and associated communities. The case-study communities were the following: Olympic National Forest—Quinault Indian Nation, Lake Quinault Area, Quilcene. Mount Hood National Forest—Upper Hood River Valley, Villages of Mount Hood between Brighton and Rhododendron, Greater Estacada. Klamath National Forest—Butte Valley, Scott Valley, Mid-Klamath. Coos Bay District—Greater Reedsport, Greater Myrtle Point, Greater Coos Bay.

associated with the sample forests, and 82 agency employees working on the four forests were the source of these qualitative data. Three communities within 10 miles of each forest were randomly selected for monitoring. These data describe the social and economic effects of the Plan on local communities, and how agency efforts to mitigate Plan effects did or did not help communities adapt to change. We identify key patterns, themes, and insights that emerge from

the cases and use them to advance our understanding of how federal forest management policy is linked to socio-economic well-being in forest communities. These interviews are also the main source of data for evaluating progress in agency-citizen collaboration under the Plan, and evaluating how effective the Plan has been in protecting forest values and environmental qualities associated with older forest and aquatic ecosystems.



## Chapter 3: Key Findings

### Predictable Levels of Timber and Nontimber Resources

Were predictable levels of timber and nontimber resources produced during the first decade of the Northwest Forest Plan (the Plan)? The answer to the evaluation question differs by resource area. The amount of timber produced did not meet the probable sale quantity (PSQ) volumes anticipated during the first decade of the Plan, nor were timber sales offered at predictable levels. The average annual PSQ estimate for the first 9 years of the Plan (1995–2003) was 776 million board feet, taking into account the downward adjustments made to PSQ during that period, and the expectation that production would be under PSQ in the first 2 years. On average, about 526 million board feet of timber was offered for sale each year between 1995 and 2003. The average annual PSQ volume produced was about 421 million board feet. Timber sale levels were reasonably predictable between 1995 and 1998; between 1999 and 2003 they were not. The PSQ estimates were based on the expectation that most of the harvest volume would come from regeneration harvest of old forest stands in matrix and some adaptive management areas. This harvest expectation was not met. The Forest Ecosystem Management Assessment Team (FEMAT 1993) report acknowledged that it would be difficult to produce a predictable supply of timber under the Plan.

The best indicator for which agency data were available for assessing whether predictable levels of special forest products were produced was the quantity of products sold. This indicator is inadequate for answering the evaluation question because, for most products, the extent to which the quantity of products sold was determined by supply or by harvester demand is unknown. Moreover, the indicator reflects permitted harvest only. The quantity of convertible (can be converted to board feet) special forest products sold declined for both agencies, except for poles and posts on Bureau of Land Management (BLM) lands. Trends for nonconvertible products were mixed, and differed by agency. The declines that occurred in the quantity of fuelwood and some nonconvertible products sold were expected because of harvest restrictions in the reserves, and decreased timber harvesting.

Grazing declined on Forest Service (FS) lands during the first decade of the Plan. Data indicate that grazing also declined on BLM lands during the period, but to what extent this decline was real, or an artifact of changes in agency reporting practices, is uncertain. Some decline in grazing was expected under the Plan because of management constraints in the reserves. The Plan is only one of several factors likely to be responsible for reduced grazing on federal forests, however. Although the Plan caused some restrictions in riparian areas, other causes unrelated to the Plan (such as drought and the Endangered Species Act) reportedly had a bigger effect on grazing activity.

Minerals production was analyzed separately for leasables, locatables, and saleables, and for the FS only. No leasable minerals were produced during the first 10 years of the Plan, and the number of mineral leases was stable. The agencies do not track locatable minerals production, so we do not know whether predictable levels of locatable minerals were produced. Other indicators associated with locatable minerals show a decline in activity on the national forests during the decade, which was expected. The volume of salable minerals produced on National Forest System lands dropped, which was not expected. We do not know to what extent production trends were the result of the Plan or factors related to demand. The Plan was not believed to have been much of a constraint on minerals production during the first decade.

Our ability to determine whether predictable levels of recreation opportunities were reached during the monitoring period was limited by the shortage of regional-scale agency recreation data for the years before 1999. The data that are available indicate that some kinds of recreation opportunities decreased, some remained stable, and some increased. Opportunities to experience designated wilderness areas, to maintain a recreation residence, and to go downhill skiing appear to have remained stable or increased since the early 1990s. Opportunities to participate in roaded recreation and to access FS and BLM lands by passenger car decreased. Opportunities to experience unroaded and nonmotorized recreation settings increased. Regional-scale FS data for number of developed recreation sites indicate current status only. The number of developed recreation

sites on BLM lands has been stable since 1999. Data for ski area visitation, visitation on BLM lands, and number of outfitter and guide permits indicate that demand for recreation on Plan-area forests grew during the decade.

The monitoring results show that progress toward meeting the Plan goal of producing predictable levels of timber sales and nontimber resources has been mixed. For some resources, the existing data are inadequate for evaluating the goal. For some resources, production remained stable or increased. Production levels declined for other resources, and some declines were expected. Plan-related causes were the main reason that predictable levels of timber sales were not produced. The Plan was only one of several factors influencing trends for other resources.

## **Effects of Forest Management Policy on Local Communities**

Did local communities and economies experience positive or negative changes that may be associated with federal forest management? What progress was made in maintaining the stability of local and regional economies on a predictable, long-term basis and in assisting with long-term economic development and diversification in communities affected by cutbacks in federal timber harvests?

The monitoring team examined trends in socioeconomic benefits from federal forest lands between the early 1990s and the early 2000s, and the ways in which the Plan may have contributed to these trends. The team also examined socioeconomic mitigation measures designed to offset some of the adverse effects of cutbacks in federal timber harvest, how effective they were, and why they were not effective in some cases. In addition, we examined social and economic change in Plan-area communities at the regional scale and in a sample of 12 forest communities to identify links between Plan implementation, the mitigation measures, and community change. Our main conclusions follow.

We began by taking a regional look at social and economic change in 1,314 communities in the Plan area. We analyzed 12 social and economic indicators from the U.S. census for the years 1990 and 2000, and also used U.S. census data to develop a community socioeconomic well-being measure that would help us evaluate change in community

socioeconomic well-being over time. Our analysis of the census data found that communities in the Plan area are changing. The population is growing, educational attainment and household income are increasing, and poverty is decreasing. At the same time, the manufacturing sector of the economy is declining in many communities. Socioeconomic well-being increased for more than a third of the communities in the region, and decreased for about the same number between 1990 and 2000.

Almost 5 million people lived in communities in the Plan area in 2000, and just over 2 million of these lived within 5 miles of federal forest lands. Using a socioeconomic well-being index we developed, we found that 40 percent of the communities within 5 miles of FS- or BLM-managed lands had decreases in socioeconomic well-being between 1990 and 2000, compared with a 33-percent decrease for communities farther than 5 miles from federal forest lands. Generally, Plan-area communities with lower socioeconomic well-being tended to be those within 5 miles of FS and BLM lands, composing 71 percent of all communities that scored low or very low in socioeconomic well-being in 2000. Forty-three percent of the communities that received high or very high scores, however, were also within 5 miles of federal forest lands. Although some communities within 5 miles had relatively high socioeconomic well-being, income inequality also has increased there. Drivers of socioeconomic change, such as increasing income inequality, migration, shifts in dominant industry sectors, and aging populations all affect community socioeconomic well-being.

## **Maintaining the Stability of Local and Regional Economies**

### **Jobs and Income From Resources and Recreation on Federal Forests**

In the early 1990s, residents of forest-based communities expressed concern over the uncertainty around the timing and quantity of federal timber sales (FEMAT 1993: VII-70). Communities wanted stability, predictability, and certainty in timber supplies (FEMAT 1993: VII-77). Many people believed that if federal agencies produced a stable, even flow of timber, social and economic stability in rural forest communities would be assured (see sources cited in Richardson

1996). The Plan socioeconomic goal of maintaining the stability of local and regional economies on a predictable, long-term basis by producing predictable levels of timber sales, nontimber resources, and recreation opportunities reflects this thinking.

Volume II, chapter 2 of this report states that predictable levels of timber sales were not produced during the first decade of the Plan. Trends in special forest products sold, mining, and recreation opportunities were mixed, and grazing declined. In chapter 3 Volume III, we report that it was not possible to measure jobs and income associated with grazing, mining, and harvesting special forest products on federal forest lands in the Plan area because of lack of data. It was possible to measure jobs and income associated with timber harvest and recreation; however, for recreation the only available data pertained to current status on FS lands. In the early 2000s, recreation opportunities provided by FS lands in the Plan area supported about 17,500 direct jobs, and 25,500 total jobs.

The main adverse social and economic effects of the Plan were expected to be associated with the loss of jobs and income from reduced federal timber harvests. Federal timber supplies dropped over the course of the 1990s, and federal agencies did not produce anticipated PSQ volumes. Thirty thousand direct timber industry jobs were lost between 1990 and 2000 in the Plan area (compared to Plan expectations of 25,000 jobs lost). Most of this job loss was in nonmetropolitan counties, with Oregon being the hardest hit of the three states. About 19,000 of these jobs were lost between 1990 and 1994, and the main cause was reduced timber supplies across ownerships. Roughly 11,400 of the lost jobs can be attributed to cutbacks in federal harvests triggered by the listing of the northern spotted owl and subsequent injunctions on timber sales. Timber supplies across all ownerships in the Pacific Northwest were relatively stable during the last half of the 1990s. Nevertheless, about 11,000 of the 30,000 timber industry jobs lost during the 1990s were lost in the last half of the decade. About 400 of the 11,000 jobs lost since 1994 can be attributed to a net reduction in federal timber harvesting. The remaining 10,600 job losses occurred during a period of

increased log availability to local mills, and are the result of less efficient mills closing, and mills continuing to invest in labor-saving technologies. This timber industry restructuring was in response to reductions in timber log supplies from the levels at the start of the decade and the shift to harvesting smaller diameter trees. The contribution of federal timber to the total timber supply dropped in the Plan area from about 25 percent in 1990 to 10 percent in 1995 to less than 5 percent by 2000.

Although stable timber supplies may contribute to economic stability, they do not ensure it. This finding is consistent with research undertaken in the 1990s that shows how assuming community stability depends on nondeclining, even flows of timber from federal forests can be misleading (see sources cited in Kusel 1996, Richardson 1996). Many factors can influence the stability of forest-based communities (USDA FS 2000: 3-326–3-329). Demand for wood and commodity prices fluctuates; alternative sources of supply are available; some firms prefer locating close to large labor markets rather than in geographically isolated areas; mills compete for timber supply; communities compete for jobs; wood products manufacturing technology changes; and other federal and state policies affecting the business climate change. All of these forces can affect jobs in the timber industry, and neither agencies nor communities have much influence over them. Consequently, the concept of community stability has come to be replaced by the concept of community resiliency—the ability of communities to respond and adapt to change in positive, constructive ways to mitigate the effects of change on the community (Harris et al. 2000: 6).

The expectation that the Plan would provide predictable levels of resource outputs and recreation opportunities, which would in turn provide predictable levels of employment, was not achieved with respect to timber supply. The timber projections for FS and BLM lands in the Plan area were not realized and there was a lot of variation across the years since the Plan was implemented. However, increased harvests from other ownerships and the redirection of logs from the export market to local processing industries have mitigated some of these impacts.

## Agency Jobs and Offices

Agency jobs can also affect community stability. The five western Oregon BLM districts lost 166 full-time equivalents (FTEs) between 1993 and 2002, or 13 percent of their workforce. No BLM district or resource area offices closed during this period, however, meaning that there was a continued presence of agency decisionmakers in local communities. National forests in the Plan area lost 3,066 FTEs between 1993 and 2002, representing a 36-percent decline in the workforce. This loss was more than expected, and it led to a consolidation of field offices. The number of FS offices containing forest supervisors declined by two, and the number of offices containing district rangers dropped by 20 during the period, representing a 23-percent reduction in the number of communities housing FS offices that contained a line officer. Some of these offices closed completely; others persisted, but with greatly reduced staffing. The FS job loss was most severe among units in Oregon and Washington.

The FS and BLM are often two of the few sources of quality jobs in forest-based communities, and their employees often make an important contribution to community well-being. Agency jobs help to maintain the presence of community members who contribute leadership skills, invest in improving their communities, and substantially enhance community capacity. The FEMAT report recognized that the presence of FS and BLM offices in small, isolated communities enhances community capacity, and that office closures could devastate some of these communities. Not only displaced timber workers, but FS employees moved out of their communities in the 1990s as they retired or went to work elsewhere, contributing to the loss of productive community members. The negative effects of these changes are described for some of the case-study communities (Volume III, chapter 8). The loss of agency jobs was largely tied to declines in agency budgets associated with reduced timber harvesting under the Plan.

## Agency Budgets

Between 1993 and 2003, western Oregon BLM unit total budgets rose by 22 percent. In contrast, Plan-area FS unit budgets declined by 35 percent. These trends

can be compared to national-scale trends in agency budget appropriations. Between 1993 and 2003, total FS agency appropriations grew by 41 percent, and total BLM agency appropriations grew by 79 percent.

The 35-percent decline in FS unit budgets occurred at the same time that FS field-unit budget allocations for fire and fuels management rose from 7 to 29 percent of the total. Excluding fire and fuel management funding, FS budgets for all other activities dropped 50 percent during the decade. This meant that the FS had much less funding for conducting non-fuel-related forest management activities in 2003 than in 1993. We were unable to obtain data for earlier years; however, agency budget specialists interviewed stated that budget declines began around 1990. The BLM field units received a smaller proportion of fire and fuel management dollars. Nevertheless, excluding fire rehabilitation and fuel management money, BLM unit budgets still rose by 12 percent, providing additional money for accomplishing non-fire-related forest management work.

The decline in FS budgets between 1993 and 2003 can largely be attributed to the decline in timber receipts during the period. Although BLM timber sales also decreased during the decade, BLM funding was not as heavily dependent on trust and permanent operating accounts derived from timber receipts. The BLM units lost staff despite budget increases, but rising funding levels allowed them greater flexibility in selecting among potential means of accomplishing needed work (such as partnerships, Jobs-in-the-Woods, contracting). The BLM managers also had relatively wide latitude in directing investments among programs within the Oregon and California railroad lands (O&C) allocation, which composed the majority of the BLM Plan-area unit budgets. In the early 1990s, BLM realigned about 20 percent of the O&C funding away from timber management activities and toward other forest management activities more consistent with Plan goals (Priebe 2004). Although O&C funding declined slightly during the period, BLM funding was not as sensitive to trust and permanent operating accounts derived from timber receipts as FS allocations were. Although O&C funding declined during the period, allocations to all other BLM program accounts grew. These increases were mostly attributable to additional funding

for the timber and recreation pipelines, for the forest health initiative, for fire rehabilitation and fuel management, and for the management of land and resources.

### **Procurement Contracting for Ecosystem Management Work**

Procurement contracting is another way in which agencies create jobs that local communities potentially benefit from. Although contract work associated with intensive timber management (forestry services) was expected to decrease under the Plan, contract work in ecosystem restoration was expected to increase, helping to offset job loss in both the forestry services and timber sectors.

This expectation was not met. Although there was a proportional shift in work types away from labor-intensive contracting associated with intensive timber management and toward technical and equipment-intensive work associated with ecosystem restoration, this shift occurred in the context of an overall decline in contract spending. This decline can be attributed to a reduction in FS procurement contracting. The BLM contract spending remained fairly constant between the early 1990s and the early 2000s, averaging just under \$20 million per year. Forest Service spending declined throughout the period, dropping from \$103 million in 1991 to \$33 million in 2002.

We attribute these differences in agency contract spending primarily to the differences in agency budget trends during this period. The FS did not have the money to invest in procurement contracting, and local managers sometimes chose to accomplish work in-house to keep people employed, rather than to invest in contracting. Thus, FS procurement contracting did not help offset economic decline in the Plan area during the first decade of the Plan. Added to this problem, the Plan did not contain adequate provisions for targeting local community residents with procurement contracting opportunities. Only about one-quarter of the agencies' contract value in the early 1990s and the early 2000s was awarded to contractors from rural communities (communities having populations under 5,000), though the value awarded by the BLM increased to one-third of the total by the 2000s.

From the local perspective, community case-study results indicate that anticipated jobs in forest restoration never really materialized. Procurement contract spending for ecosystem management on the four case forests varied annually and was driven in part by natural disasters. There was an overall decline in contract spending between 1990 and 2002 on all four case forests, ranging from 15 to 78 percent. Only a handful of case-study community residents reported that they or people they knew had obtained agency contracts to do forest restoration work. Those that had, viewed them as a supplemental, rather than a stable, form of income owing to their sporadic nature and the short season of work entailed. Our findings indicate that to date, there have not been sufficient resources to provide full-time, year-round employment in forest restoration work on the case-study forests for more than a few people. Moreover, contract work is often linked to natural disasters such as fires and floods, which are unpredictable.

### **Community Effects of Plan Implementation**

What were the effects of this declining flow of socioeconomic benefits from federal forests on rural communities and economies? Our analysis of U.S. census indicators revealed that 40 percent of the communities within 5 miles of federal forest lands decreased in socioeconomic well-being between 1990 and 2000, 37 percent increased, and 23 percent showed little change. The census data do not reveal why, however. We monitored a sample of case-study communities, and interviewed community members in order to identify these effects. Socioeconomic well-being scores rose in two, dropped in four, and showed little change in six of the communities between 1990 and 2000. As was expected, not all communities were affected the same way, or to the same extent, by the Plan.

All of the case-study communities we monitored showed changes over the last two decades. Although timber was one of the major economic sectors in all of these communities in the 1970s and 1980s, the timber sector had become minor or negligible in many of these communities by 2003. Federal forest management policy was just one

of many variables shaping the nature of change in these communities, and the extent of its effects varied considerably. These effects depended on the relative strength of the timber sector in each community around 1990, the extent to which wood products harvested on federal forest lands supported that sector, and the degree to which local residents depended on FS employment. For example, the timber sector was an important component of the economy in the Quinault Indian Nation in 1990, but tribal and private forest lands largely supported that sector. Hence interviewees from that community did not report any major effects from changes in federal forest management policy. In contrast, communities such as Quilcene, Upper Hood River Valley, and the Mid-Klamath participated heavily in the wood products industry until the late 1980s. Loggers worked mainly on national forest lands, and local mills obtained most of their wood from federal forests. These communities were hard hit by the reduced federal timber supplies. Although the timber industry was of secondary importance in the Villages of Mount Hood in 1990, many FS employees lived there. The decline in agency jobs associated with reductions in FS timber programs strongly affected the Villages of Mount Hood and several other case communities, just as the loss of timber sector jobs did.

The Plan was not the only variable causing the Pacific Northwest timber economy to change. The timber sector in some communities—such as Greater Coos Bay—had been declining since the early 1980s because of an economic recession, domestic and international competition, changes in market demand for wood products, industry restructuring, mechanization and technological advances, and environmental regulations—and the Plan added to these pressures. Other case-study communities, such as the Mid-Klamath, seemed to be relatively buffered from the changes that affected the industry during the 1980s. Interviewees there perceived the halt of federal timber production around 1990 as the beginning of the end.

Some communities were sustained through the transitional period of the 1990s by having a substantial agricultural sector, being near a major transportation corridor, or being close to a popular recreation and tourism destination.

Other communities experienced an influx of retirees, commuters, mobile or self-employed workers, second-home owners, immigrants, or low- and fixed-income populations. Some that had been goods and services centers expanded their role as regional centers. And tribes, where present, played an important role in contributing to community development through the growth of tribal businesses, administration, and social and environmental services. Tribal forest lands also helped sustain local timber economies in some areas.

### **Assistance With Long-Term Economic Development and Diversification**

Did Plan mitigation measures assist with the transition, and promote long-term economic development and diversification in communities affected by cutbacks in federal timber harvests? Procurement contracting for forest restoration was not an effective mitigation measure at the regional scale, as discussed above. The Northwest Economic Adjustment Initiative and safety-net payments to county governments were the primary mitigation measures intended to help with the economic transition.

#### **Northwest Economic Adjustment Initiative**

The Northwest Economic Adjustment Initiative (NEAI) had five objectives: provide immediate relief for distressed timber communities; create an environment for long-term economic development; develop new mechanisms for delivering assistance; emphasize partnerships with states and the critical role of local governments; and emphasize the use of performance-based standards for funding. The BLM and the FS had three primary community economic assistance programs designed to provide short-term relief and long-term economic diversification through the Initiative: Jobs-in-the-Woods (JITW), Rural Community Assistance (RCA), and the Old-Growth Diversification Fund (OGDF). These programs were relatively small in terms of total initiative dollars.

Regarding short-term mitigations, many view the initiative programs as too little, too late. Timber industry restructuring and timber supply changes were occurring, to a large degree, before the initiative dollars became available

in 1994. The OGDF provided loans to retain existing businesses, and was viewed as successful. Local jobs for ecosystem management activities were targeted through JITW, and some short-term jobs were created. The RCA program provided grants to the private sector for projects related to forest management, which helped. The initiative did not deliver on agency and public expectations to provide immediate help to displaced timber workers and their families, however, and many believe that the dollars that were available were out of proportion to the magnitude of the effects.

Regarding long-term mitigations, it can be argued that it is too soon to assess the success of the initiative's long-term economic diversification projects. The OGDF, a revolving loan fund providing grants and loans to small businesses to promote expansion and diversification, still provides a long-term sustainable source of capital for resource-related businesses and is considered highly successful. Community-based planning was a focus of the RCA program. Projects to improve community capacity—such as leadership development, community-based planning, and technical assistance to help communities write grants—were aimed at helping communities help themselves. In reviews of the initiative these “soft infrastructure” projects were considered vital to the success of initiative projects. The RCA program also supported economic diversification, funding projects such as market and feasibility studies and business plans; whether these were generally successful is debatable. The initiative also helped communities and businesses by funding hard infrastructure development projects (such as business parks and water and sewer systems). Although many communities have improved their infrastructure and are better poised for economic development opportunities, these opportunities had yet to materialize in most of the communities we studied.

Jobs-in-the-Woods has been characterized as the most complex component of the initiative because it requires “simultaneous and innovative consideration of forest ecosystem management, workforce development and employment, community economic needs, interagency coordination (within the federal government), and federal-nonfederal collaboration with relevant partners” (Tuchmann et al. 1996: 201). The BLM JITW program met with such

success that it persisted as an annual budget appropriation. Although BLM funding for community economic assistance through JITW dropped somewhat when the NEAI ended, it has been stable since 1999. Despite the BLM's successes, to many, JITW has been the greatest disappointment of all of the components of the initiative because public expectations regarding the quality and number of jobs that would be created to offset job losses in the timber industry were never realized.

Another objective of the initiative was to design new ways for federal agencies to conduct business in collaboration with nonfederal and community partners. The Community Economic Revitalization Teams (CERTs) developed organizational ground rules and incorporated “one-stop-shop” and “lead agency” techniques to streamline program delivery. Collaborative groups identified, prioritized, and greatly leveraged available funds. The RCA program provided technical assistance to small, remote, unincorporated communities to enable them to organize and compete for funding. The program also had the flexibility for managers to provide “gap” funding for identified critical projects to fill in where other agencies couldn't. Criteria for program funding emphasized new and sustainable resource-based businesses and jobs in resource-dependent communities. The JITW and RCA program managers developed expertise within the agencies to coordinate and integrate complex community and agency needs and community-based programs. Assessments of the innovative aspects of these programs in promoting collaboration between agencies and partners to deliver assistance rate them as highly successful.

The 12 case-study communities we monitored received vastly different amounts of initiative money. Many of the case communities reported benefiting from initiative-supported projects, particularly those involving physical infrastructure development. These did not always succeed in attracting new businesses or industries, however. It is too soon to tell what the long-term benefits of some of these projects will be. Other successes were reported in the areas of community planning and small business loans. Initiative-supported efforts to develop alternate wood products sectors that use federal timber have largely failed to materialize yet. And, the majority of community members we interviewed

believed the initiative had done little to help displaced timber workers. One exception was the Coos Bay JITW program, which was viewed as a success, though it created only a few jobs.

What the initiative largely failed to do was to create sustainable local jobs during the first 10 years of the Plan comparable to the number and quality of those lost because of reductions in federal timber harvest. Economic shifts evolve over long periods, and expecting new jobs to be created instantly is unreasonable. Moreover, many rural resource-based communities have relatively slow growth and are subject to fluctuations owing to national and international economic forces beyond their control. Although the transition is not over, the initiative is. A focus on local job creation as a long-term goal is still needed in the context of new programs and sources of money. Forest Service funding for community economic assistance has returned to about what it was before the Plan. The JITW and RCA programs are no longer funded by Congress, the administration, or the agency. A number of new programs are emerging, however, with many of the same long-term objectives and community-based, collaborative designs contained in initiative-supported programs. Experience implementing the NEAI resulted in lessons that can be applied to future efforts by federal government agencies to provide community economic assistance.

### Payments to Counties

The Omnibus Budget Reconciliation Act of 1993 and the Secure Rural Schools and Community Self-Determination Act of 2000—designed to stabilize payments to county governments in the face of declining revenues from the timber receipts generated by federal forest lands—have generally mitigated the effects of declining timber receipts. The initial payments-to-counties legislation (the Omnibus Budget Reconciliation Act) generally mitigated Plan effects for the 48 counties covered by the legislation. The counties in other parts of the Plan area (in eastern Washington, Oregon, and other parts of California) did not fare as well until the Secure Rural Schools Act extended these payments to all of the eligible counties in the region and across the United States.

Some of the intent behind the Omnibus Budget Reconciliation Act of 1993 was to provide a transition to a lower rate of assistance. The transitional path downward was replaced by a much higher rate of revenue support under the Secure Rural Schools Act.

The goal of the payments to counties legislation was clearly met. The legislation has replaced past dependence on timber-harvest revenues and has generally mitigated the lost revenues associated with the declines in federal timber harvest in the region. It is not known how the owl safety-net payments have affected overall county financing. In the short term, a guaranteed amount is likely to have a stabilizing effect. The Secure Rural Schools legislation, however, sunsets on September 30, 2006. The long-term stability of the payments is uncertain.

Without new congressional action, counties in the Plan area will need to address a projected \$270 million in revenue shortfall. Congressional hearings are expected in 2005 to address the possibility of reauthorization of the Secure Rural Schools legislation. Rural communities continue to rely on stabilized payments to counties. The lack of secure funding for schools, transportation, and other social services produces a great deal of uncertainty in communities that depend on this income, especially given a climate of declining revenues from other sources. Land management agencies do not have decisionmaking authority over legislation on payments to counties. Long-term legislation to address the issue would be a major contribution, however; the Forest Counties Payment Committee has developed recommendations for what such legislation might contain (<http://www.countypayments.gov/>).

### Plan Effects on Community Well-Being

Rural communities and economies underwent both positive and negative changes during the first decade of the Plan. The Plan contributed to negative changes in some communities, primarily because of reduced federal timber harvests and the loss of associated jobs and income, substantial decreases in the number of agency jobs, and declines in procurement contract spending. The Plan may have contributed to positive changes in some communities by enhancing natural amenity values on federal forest lands



such as natural-looking landscapes, recreation opportunities, older forest habitat, fish, and clean water. Natural amenities attract tourists, new residents, and businesses that stimulate local economic development. We do not have enough evidence to assess the Plan's contributions to positive change, however. Nor could we evaluate to what extent recreation was sustaining communities that were formerly timber based. Interview results indicated that recreation and amenity values played a role in drawing new residents to communities around federal forests that lost timber workers and FS employees in the 1990s. Recreation and tourism also played an important and evolving role in contributing to the economies of some communities. Several interviewees from the case communities viewed recreation and nature-based tourism as the natural-resource-based sectors holding the greatest potential for local economic development, and several communities are working with the agencies to promote recreation and tourism locally.

One Plan-related change made apparent from the local-scale monitoring results was that communities are finding it increasingly difficult to sustain themselves in a manner that links their local economy and culture to the natural resources that surround them, and to federal forest lands in particular. Although some communities still had a wood products industry, federal timber played a minor, if any, role in supporting that industry. Many interviewees reported that the lack of forest-based, family-wage jobs in their communities was one of the biggest issues of concern relating to federal forest management. And the fact that a declining number of community members make a living from federal forest lands means that relations between local residents and FS and BLM personnel are becoming more distant. Some local people have been less interested in forest management issues.

## Collaboration

The monitoring team investigated whether relations between federal land management agencies and local communities, and agency-citizen collaboration in forest management improved under the Plan. We reviewed the literature on collaboration in adaptive management areas (AMAs) and provincial advisory committees (PACs). We

also interviewed forest employees and community members in the case-study areas about collaborative relations between the FS, the BLM, and the public.

Adaptive management areas represent a significant agency investment in collaborative innovation, making up 6 percent of the Plan area in subregions known to be socially and economically affected by declining timber harvest. A primary social objective of the AMAs was to provide opportunities for the agencies, citizens, communities, landowners, and other local groups to work together and develop innovative approaches to forest management that would help sustain forest communities (USDA and USDI 1994: D-4). Timber harvest under the Plan is expected only in the matrix land allocation and some AMAs. The literature reports that most of the AMAs have failed to meet Plan expectations for collaboration.

Initial collaboration with local communities showed promise. The potential for success was diminished early in the period, however, when adjudication and the Federal Advisory Committee Act (FACA) chartering forced federal participants to withdraw temporarily, severely affecting local trust in this new form of collaboration. In some cases, conflict among polarized interests also caused collaboration to collapse, forcing federal officials to work with disparate groups rather than in a unified partnership.

Internal agency issues further impaired the ability of AMA managers to collaborate effectively, including a lack of demonstrated, long-term agency commitment to AMA staffing and funding; a lack of incentives to guide and support local AMA managers in shouldering risk; and an unwillingness or inability among the regulatory agencies to consider localized adaptive management—and its potential for small-scale experimental failures—as a legitimate approach for improving larger-scale conservation knowledge and techniques.

Despite the cumbersome membership requirements also imposed upon them by FACA, PACs have been more successful in engaging local communities. Because of this success, these committees were rechartered in 2003 and continue to operate. They have provided a forum for ongoing, multiparty discussion of forest management issues among decisionmakers and local stakeholders. In this

capacity, they represent an important step forward over project-scale “scoping” as defined under the 1969 National Environmental Policy Act (NEPA). They have also been successful in completing regionwide, multiparty compliance monitoring. Provincial advisory committee monitoring efforts have fulfilled requirements for implementation monitoring under the Plan.

Progress toward achieving the collaboration goal in less formal institutional settings across all case-study forests and communities was mixed. The Plan has had direct and indirect, positive and negative effects on collaborative forest stewardship on the case-study forests and communities. The Plan’s ecosystem focus and emphasis on interagency collaboration encouraged interactions among public and private landowners and broadened the range of stakeholders and opportunities for collaborative processes. A variety of groups, together with forest agencies, are pooling resources—such as time, labor, finances, and ideas—to achieve mutually held forest stewardship objectives. Faced with challenges of decreased budgets and staffs, the forests have been able to maintain viable, productive, and multibeneficial collaborative projects and programs. The volunteer programs are good examples of programs that are evolving and seeking new collaborative opportunities in the face of administrative and budgetary constraints.

Lower timber harvest rates and lower budgets and staff, which have both direct and indirect ties to the Plan, have influenced trends in collaboration in two key yet paradoxical ways. With decreasing human and financial resources for forest management activities, the forests have expanded and developed partnerships with groups that share similar resource management goals. The paradox is that, as budget declines serve as an incentive for innovation and expansion of collaborative processes to achieve forest stewardship objectives, they simultaneously constrain and potentially jeopardize collaborative efforts. Agency interviewees expressed concern that reducing staff and resources has made managing collaborative processes more difficult.

Increased diversity and innovation in collaboration, however, has coincided with a decrease in communication and collaboration with a once-prominent forest stakeholder, namely the timber community. The disconnect between

timber-based communities and forest managers and how that would affect collaborative relations were unanticipated consequences of reducing timber harvests under the Plan. In general, collaborative activities with members of the case-study communities were minimal, with some exceptions, such as tribal collaboratives.

New connections have yet to replace old timber ties in some communities. Interviewees from former timber-based communities tended to feel disassociated from, or unaware of, current forest policies and practices or they had little direct concern with forest management. And yet, some former timber-industry employees who remained in their communities felt that their skills, knowledge, and experience in forest management could serve contemporary forest management practices but were not being used. Other factors that affected the participation of community residents in collaborative resource management beyond the necessity of a shared mutual interest or stake included shortages of residents with skills to do the work, residents with the time to participate, consistent players and participation, organized groups with resources, and residents who are struggling to make ends meet.

Forest units appear to rely increasingly on partnerships, volunteers, and collaborative forest stewardship efforts to get their work done because they lack the budgets and staff to accomplish the work themselves. The success of these efforts depends on the capacity of communities to engage in them. Community capacity, in turn, is partially a function of the presence of organized and active civic groups, people with leadership skills, and so on. By providing local communities with forest benefits, agencies are building community capacity. In return, one payoff will be communities that are more able and motivated to engage with forests to conduct forest stewardship activities and collaborative forest management. If local residents see federal forests as a source of community benefit, ties will more likely develop that can help communities and forests sustain one another.

Some new collaborative mechanisms are achieving important successes and providing good models. A well-defined avenue for giving input related to decisionmaking is a strong incentive for community members to begin to actively engage in collaborative forest management and forest

stewardship activities. Some models of collaboration that provide members of the public with resources (like money) and a decisionmaking role (such as how to spend that money) to promote both forest and community benefits seem to have strong public support and serve as good models for collaboration. Although they are relatively new, resource advisory committees provide one such model. Resource advisory committees receive money through Title II of the Secure Rural Schools and Community Self-Determination Act. As time and experience provide insight into their success, perhaps some lessons can be learned from them as to how to better engage in agency-citizen collaboration. Multiparty monitoring, as conducted by PACs, is another potential model.

### **Forest Management Values and Issues of Concern**

The forest management paradigm that prevailed in the Pacific Northwest following World War II emphasized high-yield timber production by using techniques such as clearcutting, removal of logs and snags, slash burning, thinning, and planting single-species stands on harvested areas (FEMAT 1993: II-2-3). The agencies assumed that forests managed in this way could be harvested on a sustained-yield basis at 40- to 80-year intervals without negatively affecting other resources such as water quality, fish, soils, and wildlife. Studies conducted in the 1970s and 1980s made it apparent that this approach to forest management was not going to adequately protect the biodiversity of late-successional forests and associated aquatic ecosystems (FEMAT 1993: II-2-3). The forest management paradigm embraced in the 1990s under the Plan focuses on ecosystem management objectives that aim to sustain the underlying ecological processes of the forest (Johnson et al. 1993). Agencies are placing more emphasis on managing for forest restoration, recreation, and other noncommodity values. Was this paradigm shift supported by public attitudes, beliefs, and values regarding forest management in the Pacific Northwest, and do members of the public still support this management approach today?

A literature review we conducted of studies that document public views of forest management in the Pacific

Northwest between 1990 and 2002 showed that the answer to both questions is “yes.” Between 1990 and 2002 there has been surprisingly little change in Pacific Northwest residents’ views of how Pacific Northwest forests should be managed. Throughout this period, research findings indicate that people support forest management to provide a broad set of multiple uses and both economic and environmental benefits. Nevertheless, there has consistently been a pro-environment leaning, with the majority favoring environmental over economic management objectives when asked to make a choice between them. Continued support for timber production from federal forests has likely been tied to a belief that the wood products industry is important to the regional economy and to concern for the health of rural communities. Whereas place of residence was not found to be a significant factor influencing people’s attitudes, beliefs, and values about forest management prior to the Northwest Forest Plan, recent studies find that urban residents tend to be pro-environment, with rural residents having more evenly split views on forest management issues.

Throughout the study period, the belief that active forest management improves forest health has predominated. However, clearcutting has consistently been unpopular, and the majority have favored old-growth protection. Forestry techniques that are not intensive (such as thinning and selective harvesting) are favored by most people surveyed.

Have federal land managers been doing a good job of protecting the forest values and environmental qualities people care about under the Plan? Our literature review did not provide extensive evidence for answering this question. The evidence that does exist suggests that opinion is fairly evenly divided. Some people have favorable views of the job forest managers are doing, and others believe that forest managers need to improve their performance.

We interviewed community residents in the 12 case-study communities and asked them whether they believed the Plan had protected forest values and environmental qualities associated with late-successional, old-growth, and aquatic ecosystems. These interviews showed that many local residents had sophisticated perceptions of complex ecological processes and relations. Interviews also showed

that most community members care deeply about nearby forests and their ecological integrity. Members of the public interviewed perceived that the Plan had had mixed results to date for forest protection.

The most positive Plan effects were believed to be associated with the protection of aquatic ecosystems. Many interviewees commented that decreases in logging, road decommissioning, the provisions of the aquatic conservation strategy, the riparian reserve system, and the emphasis placed on watershed management and restoration under the Plan had protected and improved water quality. Some also perceived that fish populations had increased.

Most interviewees did not distinguish Plan effects on older forests from those on forest ecosystems more generally. Although the Plan brought an end to earlier forest management practices that many considered ecologically destructive, most people interviewed did not believe federal forests were currently healthy. Like many Pacific Northwest residents surveyed in other studies, they believed silvicultural activity was necessary for keeping forests healthy, and that not enough had occurred during the first decade of the Plan. This led to concerns about fire, insects, and disease and to frustration that needed forest work was not creating local jobs.

Timber harvest, forest health, and forest-based jobs were among the biggest issues of concern to community interviewees. The other main issues of concern were recreation and forest access, also tied to the issue of jobs. Interviewees overwhelmingly believed that the Plan had emphasized forest protection over community well-being. Yet most also believed that healthy forest ecosystems and healthy community economies can and should be linked and that those links are currently weak.

One of the foremost issues of concern relating to forest management expressed by community members interviewed for this study was the lack of family-wage jobs in their communities, especially jobs that are tied to forest resources.

Our monitoring results show that local communities are in some ways becoming less “forest-based” as their economic ties to nearby forests change. Rather than being a place of work for community members, federal forests are

evolving into places that attract tourists, recreationists, and amenity migrants, and passers-through who local residents hope will spend money in their communities. The communities we monitored were becoming places of residence for people seeking the amenity values they offer, but who commute or live elsewhere to make a living, who no longer need to work, or who don’t work. Young people were finding it difficult to live in the rural communities they were raised in because employment options were lacking. Thus, federal forest lands are becoming more backdrops to life in rural communities and places to recreate around them, rather than sources of sustainable rural livelihoods—and the character of these communities is changing. These changes are consistent with a broader trend in the American West, where rural logging, ranching, and farming communities are struggling to make a living off the land and to persist as a part of sustainable, working landscapes.

Federal forest management policy was only one of several variables that contributed to job loss in the natural-resource-based sectors of the study communities. Nevertheless, our monitoring results indicate that increasing federal-forest-based employment opportunities would make an important contribution to community well-being. The desire for forest-based, family-wage jobs remains a top priority in the case-study communities, especially those not located near regional centers or urban areas that provide commuting options.

The Plan aimed to provide “... a sustainable level of human use of the forest resource while still meeting the need to maintain and restore the late-successional and old-growth forest ecosystem” (USDA and USDI 1994: 26). Our findings suggest that this goal has not been met from the human-use perspective, and that it remains one of the most important challenges of federal forest management today in the Plan area.

## **Institutional Capacity**

The FEMAT (1993) report recommended that the units implementing the Plan be supported with stable staffing and budgets to support the new approach to ecosystem management:

Pending additional fiscal analysis, we emphasize that the options selected should not be hastily coupled with reductions in funding and personnel based on the inappropriate assumption that ecosystem management is somehow cheaper than traditional commodity production-focused Plans (FEMAT 1993: VIII-41).

This recommendation was not met for the FS. That BLM funding rose and staffing dropped slightly during the first decade, while FS funding and staffing dropped by more than one-third, provides an opportunity to examine differences in the institutional capacity of the agencies to be effective in achieving the Plan's socioeconomic goals.

Regarding resource and recreation outputs, no important differences emerged from the data regarding the production of predictable levels of timber, nontimber forest products, and recreation by the agencies, although the case-study results found that the BLM was more successful than the FS in developing new recreation opportunities. Timber sales and associated jobs and income declined for both agencies.

Otherwise, the BLM was generally more effective than the FS in providing socioeconomic benefits during the first decade of the Plan. As described in this volume, agency job loss was much more severe for the FS than for the BLM (36 percent for the FS, 13 percent for the BLM). Nearly one-quarter of the FS offices in the Plan area closed or shrank in size with the loss of Forest Supervisors and District Rangers, while no BLM offices closed or lost line officers. The BLM procurement contracting held steady while FS contracting declined 68 percent. The BLM still maintains a JITW program, while FS community economic assistance funds have returned to pre-Plan levels.

Although many factors have likely contributed to these differences, a driving force behind these changes was differences in agency budget trends. The BLM Plan-area unit budgets increased by 22 percent between 1993 and 2003 (while total agency appropriations for BLM rose 79 percent at the national scale). Meanwhile, FS Plan-area unit budgets decreased 35 percent (while total FS appropriations rose 41 percent at the national scale). The Pacific Northwest Region

(Region 6) had sharper declines in both budget and staffing than did the Pacific Southwest Region (Region 5), with several Region 6 units losing 50 to 60 percent of their budgets and FTEs during this 10-year period. These differences played an important role in influencing agency capacity to provide community benefits under the Plan. This reduction in agency capacity occurred at the same time that the Plan added new and sometimes complicated procedural and analytical requirements that both agencies had to comply with in undertaking projects on the forests. These new requirements used resources that the agencies might have invested in other ways.

Local-scale monitoring found that the BLM district in our sample—Coos Bay—was able to invest in ecosystem management activities aligned with Plan goals (such as habitat restoration, recreation, fish and wildlife, and environmental education), while the timber and roads programs declined. If the other four units are similar, BLM units were prepared to undertake ecosystem management activities consistent with Plan goals and to invest in programs and collaborative efforts that would help provide local communities with socioeconomic benefits.

In contrast, the FS units we sampled had trouble accomplishing routine forest management activities and infrastructure maintenance under the Plan, much less providing socioeconomic benefits to communities. Interviewees commonly identified budget and staffing shortfalls as critical factors limiting their ability to meet Plan objectives. Although FS managers tried to implement the Plan's measures and to achieve Plan goals with their substantially reduced resources, they had limited success. Many community interviewees acknowledged the FS efforts to meet Plan goals and recognized that they were unable to do so because of institutional constraints.

## **Future Monitoring**

We find that the Plan goals are still relevant and are consistent with the broader missions and strategic goals of the FS and the BLM, although some could be reworded. We also find that the ROD evaluation question that has received most of the socioeconomic monitoring program's attention

to date—Are local communities and economies experiencing positive or negative changes that may be associated with federal forest management?—could be revised. We recommend focusing monitoring on the links between land management agencies, federal forests, and rural communities and economies that produce positive outcomes for community well-being and forest ecosystem health.

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Many individuals contributed to the development and implementation of this monitoring program and to analyzing and writing up the results. Most important have been the members of the core monitoring team. One member not listed as an author on this report is Lynnae Sutton (Resource Information Specialist, USDA Forest Service, Pacific Northwest Research Station, Portland, OR).

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## Metric Equivalents

When you know:	Multiply by:	To find:
Miles	1.609	Kilometers
Acres	.405	Hectares
Board feet, log scale	.0045	Cubic meters
Board feet, lumber scale	.0024	Cubic meters

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# NORTHWEST FOREST PLAN

THE FIRST 10 YEARS (1994–2003)

## Socioeconomic Monitoring Results Volume II: Timber and Nontimber Resources

Susan Charnley



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Cover photographs: (left) Bob Szaro; (upper right) Erika Mark McFarlane, (lower right) USDA Forest Service.

# Socioeconomic Monitoring Results Volume II: Timber and Nontimber Resources

Susan Charnley

Northwest Forest Plan—The First 10 Years  
(1994–2003): Socioeconomic Monitoring Results

Susan Charnley, Technical Coordinator

U.S. Department of Agriculture, Forest Service  
Pacific Northwest Research Station  
Portland, Oregon  
General Technical Report PNW-GTR-649 Vol. II  
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## **Abstract**

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One of the evaluation questions posed in the Northwest Forest Plan (the Plan) record of decision (ROD) concerns use levels of natural resources: Are predictable levels of timber and nontimber resources available and being produced? To answer this question, Volume II of the socioeconomic monitoring report analyzes trends in Forest Service (FS) and Bureau of Land Management (BLM) data for timber harvest, special forest products, livestock grazing, mineral extraction, and recreation, as specified in the ROD. The answer to the evaluation question differs by resource area. The level of timber produced did not meet the probable sale quantity volumes anticipated during the first decade of the Plan, nor were timber sales produced at predictable levels. Trends for special forest products were mixed, and differed by agency. Grazing declined on FS land during the first decade of the Plan, and data indicate that grazing also declined on BLM land during the period. For the FS, the number of mineral leases was stable; there was a decline in locatable minerals activity; and the volume of salable minerals produced dropped. Some kinds of recreation opportunities decreased, some remained stable, and some increased.

Keywords: Northwest Forest Plan, socioeconomic monitoring, timber, special forest products, grazing, minerals, recreation.

## Preface

This report is one of a set of reports produced on this 10-year anniversary of the Northwest Forest Plan (the Plan). The collection of reports attempts to answer questions about the effectiveness of the Plan based on new monitoring and research results. The set includes a series of status and trends reports, a synthesis of all regional monitoring and research results, a report on interagency information management, and a summary report.

The status and trends reports focus on establishing baselines of information from 1994, when the Plan was approved, and reporting change over the 10-year period. The status and trends series includes reports on late-successional and old-growth forests, northern spotted owl population and habitat, marbled murrelet population and habitat, watershed condition, government-to-government tribal relationships, socioeconomic conditions, and monitoring of project implementation under Plan standards and guidelines.

The synthesis report addresses questions about the effectiveness of the Plan by using the status and trends results and new research. It focuses on the validity of the Plan assumptions, differences between expectations and what actually happened, the certainty of these findings, and finally, considerations for the future. The synthesis report is organized in two parts: Part I—introduction, context, synthesis, and summary—and Part II—socioeconomic implications, older forests, species conservation, the aquatic conservation strategy, and adaptive management and monitoring.

The report on interagency information management identifies issues and recommends solutions for resolving data and mapping problems encountered during the preparation of the set of monitoring reports. Information management issues inevitably surface during analyses that require data from multiple agencies covering large geographic areas. The goal of that report is to improve the integration and acquisition of interagency data for the next comprehensive report.

The socioeconomic status and trends report is published in six volumes. Volume I of the report contains key findings. Volume II (this volume) addresses the evaluation question, Are predictable levels of timber and nontimber resources available and being produced? The focus of Volume III is the evaluation question, Are local communities and economies experiencing positive or negative changes that may be associated with federal forest management? Volume IV assesses the Plan goal of promoting agency-citizen collaboration in forest management. Volume V reports on public values regarding federal forest management in the Pacific Northwest. Volume VI provides a history of the Northwest Forest Plan socioeconomic monitoring program, and a discussion of potential directions for the program.

## Summary

One of the evaluation questions posed in the Northwest Forest Plan (the Plan) record of decision (ROD) concerns use levels of natural resources: Are predictable levels of timber and nontimber resources available and being produced? (USDA and USDI 1994b: E-9). To answer this question, Volume II of the socioeconomic monitoring report analyzes trends in Forest Service (FS) and Bureau of Land Management (BLM) data for timber harvest, special forest products, livestock grazing, mineral extraction, and recreation, as specified in the ROD. Volume II also contains an evaluation of agency progress toward meeting one of the Plan’s socioeconomic goals. As stated by President Clinton, this goal was to “produce a predictable and sustainable level of timber sales and nontimber resources that will not degrade or destroy the environment” (USDA and USDI 1994b: 3).

The monitoring questions and indicators monitored for each resource were the following:

<b>Resource</b>	<b>Monitoring question</b>	<b>Indicators monitored</b>
Timber	(1) During the first decade of the Plan, did the agencies produce the probable sale quantity (PSQ) volumes anticipated?  (2) Have predictable levels of timber sales been produced under the Plan?	Volume of timber offered for sale PSQ volume offered for sale
Special forest products	Have predictable levels of special forest products been produced under the Plan?	Quantity of special forest products sold
Grazing	Have predictable levels of livestock grazing been produced under the Plan?	Forest Service: No. of active allotments No. of active allotment acres No. of grazing permittees No. of authorized animal unit months (AUMs)  Bureau of Land Management: No. of grazing leases No. of AUMs
Minerals	Have predictable levels of minerals been produced under the Plan?	Forest Service: Leasables No. of leases of record  Locatables No. of new mining claims located No. of new plans of operation approved  Salables Volume removed
Recreation	Have predictable levels of recreation opportunities been produced under the Plan?	Forest Service: Acres of wilderness Miles of roads Number of recreation residences



Ski area visitation  
Number of outfitter and guide permits  
Developed sites  
Visitor use

Bureau of Land Management:  
Acres of wilderness  
Miles of roads  
Trail miles  
Developed sites  
Number of outfitter and guide permits  
Visitation

The monitoring team used quantitative monitoring data obtained mainly from agency databases to compare expected and actual trends in the production of resource and recreation opportunities by the agencies during the first decade of the Plan. The team gathered qualitative monitoring data to investigate the role of the Plan in contributing to the observed trends. The findings are summarized below.

## Plan Expectations

### **Timber—**

During the first 2 years of the Plan, timber sale volumes would be less than PSQ. After that, for the FS, the average annual timber volume offered for sale from matrix lands and adaptive management areas (AMAs) over the period of a decade would be consistent with PSQs. For the BLM, annual volume offered for sale from matrix and AMAs would be consistent with PSQs. Late-successional forest in the matrix and the AMAs was expected to contribute about 90 percent of the total PSQ volume in the first three to five decades of the Plan. In the first decade, about 50 percent of the harvest was expected to come from forest over 200 years old. Regeneration harvest was expected to be the main harvest method used in the matrix. Partial removal techniques were expected to be the main harvest methods in the reserves.

### **Special forest products—**

Harvest opportunities would continue, consistent with management goals of the different land use allocations. Resource values, special status plants and animals, and resource sustainability would be protected. Harvest restrictions in late-successional reserves (LSRs) could occur to prevent adverse effects. Fuelwood gathering was highly restricted in LSRs and managed late-successional areas. Fuelwood cutting in riparian reserves was prohibited, unless required to attain aquatic conservation strategy objectives.

### **Grazing—**

Grazing would continue, consistent with land use allocation management objectives. Modification of grazing practices in riparian reserves was expected. Some sites would be protected from grazing if specific plant and animal species occurred there. Grazing could be adjusted or eliminated in reserves if it would retard or prevent attaining management objectives. New livestock handling and management facilities would be located outside of

riparian reserves. Existing facilities could be relocated if they prevented attaining aquatic conservation strategy (ACS) or LSR objectives. Modifications to grazing practices were expected to have consequences for individual ranchers.

**Minerals—**

Mining would continue, with modifications to ensure consistency with land use allocation management objectives. Effects on minerals would be linked to development constraints and mitigation measures designed to protect late-successional and old-growth ecosystems and riparian reserves. No effects were expected for salable minerals. The cost of extracting minerals from the reserves could increase, causing a decrease in mining there.

**Recreation—**

Recreation use would continue, consistent with land use allocation management objectives. Recreation areas would be managed to minimize disturbance to species protected by the survey and manage program. Some recreation activities could be adjusted to permit attainment of LSR and ACS objectives. New recreation developments in reserves would be approved if adverse effects could be minimized and mitigated. Ski area expansions would be reviewed for effects on late-successional and riparian habitat. Primitive and semiprimitive recreation opportunities could improve with the elimination of roads for watershed restoration. The Plan would foster natural-looking landscapes.

## Monitoring Results

**Timber—**

The total volume of timber offered for sale from all land use allocations met Plan expectations between 1994 and 1998. After Plan startup, a fairly predictable supply of timber was produced. A large drop in volume offered occurred in 1999, and since then, sale volumes have not been predictable. Overall, the volume of timber offered for sale by the FS and BLM declined during the first decade of the Plan. This decline was not expected.

The average annual PSQ estimate for the first 9 years of the Plan was 776 million board feet. On average, the agencies offered about 421 million board feet of PSQ volume for sale each year during this period. The PSQ volume produced did not meet Plan expectations. The PSQ estimates were based on the expectation that most of the harvest volume would come from regeneration harvest of late-successional and old-growth stands in matrix and AMAs. This harvest expectation was not met. Harvest methods defined as partial removal—not regeneration harvest—were the primary harvest techniques during the first 9 years of the Plan, contrary to expectations. Agency interviewees gave many reasons for the failure to meet timber harvest expectations, and most were related to Plan implementation.

**Special forest products—**

The quantity of special forest products sold—though currently the best indicator for which data are available—is inadequate for assessing whether predictable levels of special forest products were produced under the Plan. This indicator reflects some combination of harvester demand for the product, harvester behavior, and opportunities to harvest products

provided by the agencies. The Plan is only one factor that influences harvest opportunities on federal forests—others being weather, harvest pressure, and physical access to the resource. The quantity of convertible products sold (fuelwood, Christmas trees, poles and posts) declined except for poles and posts on BLM lands. This was expected for fuelwood because of Plan restrictions and reduced timber harvesting. Trends for nonconvertibles were mixed, differing by product and agency. Harvest restrictions for some products (such as mushrooms, moss, Christmas trees) exist in reserves on some forests, as expected. Plan-related changes in forest habitat (less early-seral-stage forest and more late-successional forest) will likely alter product availability over the long term.

#### **Grazing—**

Monitoring data indicate that declines in grazing activity occurred on FS lands since the Plan was adopted. Declines also appear to have occurred on BLM lands, although the available data are less reliable. A drop in grazing activity on Plan-area forests was expected based on ROD standards and guidelines. The Plan was only one of several factors contributing to the decline, however, and was not considered the main factor by agency grazing specialists interviewed.

#### **Minerals—**

The analysis is for the FS only. No production of leasable minerals occurred and the number of leases remained stable. The available indicator data for locatable minerals are inadequate for answering the monitoring question. Locatable minerals activity declined, but it is unknown whether the decline was associated with a decrease in production. A decline in production was expected in the reserves. The volume of salable minerals produced declined. This decline was not expected. Interview data suggest that to date, the Plan has played a minor role in influencing minerals production on Plan-area forests.

#### **Recreation—**

The available data limit our ability to answer the monitoring question because for most recreation indicators, data were not available at the regional scale for the years before 1999 (BLM) or 2000 (FS). The only indicators for which reliable data were available starting in 1994 were designated wilderness acres, number of recreation residences, and annual number of downhill skier days (reflecting demand, not supply). Opportunities to experience wilderness, to maintain a recreation residence, and to go downhill skiing remained stable or increased under the Plan. Opportunities to participate in roaded recreation and to access FS and BLM lands by passenger car decreased between 1998 and 2003, and a downward trend in system road miles since 1994 is likely. The decline in road miles was expected. Opportunities to experience unroaded and nonmotorized recreation settings increased. For the other indicators, data were only available for current status or for recent years. Demand for recreation opportunities on Plan-area forests appears to be growing. Some restrictions on recreation activities were reported in riparian areas and environmentally sensitive areas. Ski area expansions have become more complicated, costly, and cumbersome under the Plan, as was expected.

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## Chapter 1: Introduction

One of the evaluation questions posed in the Northwest Forest Plan (the Plan) record of decision (ROD) concerns use levels of natural resources: Are predictable levels of timber and nontimber resources available and being produced? (USDA and USDI 1994b: E-9). To answer this question, the ROD specifies that timber harvest, special forest products, livestock grazing, mineral extraction, recreation, scenic quality, and commercial fishing be monitored. Volume II of the socioeconomic monitoring report analyzes trends in Forest Service (FS) and Bureau of Land Management (BLM) data for five of these resource areas to respond to this monitoring question. The socioeconomic monitoring team (the team) did not monitor scenic quality or commercial fishing; appendix A explains why.

The results of this analysis also make it possible to evaluate agency progress toward meeting one of the Plan's socioeconomic goals. As stated by President Clinton, this goal was to "produce a predictable and sustainable level of timber sales and nontimber resources that will not degrade or destroy the environment" (USDA and USDI 1994b: 3).

The ROD, the Forest Ecosystem Management Assessment Team (FEMAT) report (FEMAT 1993), and the final supplemental environmental impact statement for the Plan (FSEIS) (USDA and USDI 1994a) do not define what is meant by "predictable." They do, however, contain expectations associated with timber sales and producing nontimber resources. These expectations were expressed as specific quantitative outputs for timber sales only.

Without a definition of predictability and without explicit quantitative measures for resources other than timber, I interpreted President Clinton's intent as that of producing a steady supply of timber sales, nontimber forest resources, and recreation opportunities from federal forests that could be sustained over the long term (USDA and USDI 1994b: 3-4). This interpretation is supported by the following statement from the ROD (USDA and USDI 1994b: 26):

The need for forest products from forest ecosystems is the need for a sustainable supply of timber and other forest products that will help maintain the stability of local and regional economies, and contribute valuable resources to the national

economy, on a predictable and long-term basis. At the Forest Conference President Clinton spoke of "the human and the economic dimensions" of the problem, and asked for a plan that would "produce a predictable and sustainable level of timber sales and nontimber resources."

The approach adopted in this volume is to use the monitoring data to compare actual and expected trends in resource and recreation outputs under the Plan, and to evaluate how predictable these outputs have been. Assessments of whether predictable levels of timber, nontimber resources, and recreation opportunities were available on federal forest lands, and whether they were produced sustainably (at rates that do not degrade or destroy the environment) were beyond the scope of the socioeconomic monitoring program.<sup>1</sup>

### Methods

The Plan was adopted in 1994, but no effort was made to address the ROD evaluation question regarding use of natural resources until late 2002. For purposes of this interpretive report, the team had to rely on existing agency data pertaining to timber, nontimber, and recreation resources. Thus, our ability to answer the monitoring question (Are predictable levels of timber and nontimber resources available and being produced?) and to evaluate the Plan goal (produce a predictable and sustainable level of timber sales and nontimber resources) was limited by the availability and quality of agency data. These limitations are discussed by chapter for each data set, and are explained in more detail in appendix B. For some resource indicators (such as much of the recreation data), we could obtain status but not trend data. We report the status data to provide a baseline for future monitoring. In some cases (such as minerals and special forest products), the resource data tracked by the

<sup>1</sup> The monitoring team was composed of social scientists rather than subject matter experts from agency timber, special forest products, grazing, minerals, and recreation programs. The team determined that it did not have the expertise or the time to thoroughly evaluate whether predictable amounts of resources and recreation opportunities were available on FS and BLM lands, and whether they were being produced sustainably. This determination should be made by agency subject matter experts.

agencies did not serve as adequate indicators for answering the monitoring question directly. We believe that providing some information about trends in these resource areas is better than providing no information at all. Thus, we made the most of the available data, assessing what we could learn related to the monitoring question and goal.

The team obtained data on timber sales, special forest products, grazing, mining, and recreation from FS and BLM databases and resource specialists. All of the monitoring teams associated with the Pacific Northwest Interagency Regional Monitoring Program were directed to obtain agency data from corporate databases, publications, or other sources available from agency national, regional, or state offices, rather than requesting data from individual FS and BLM field units (unless warranted by special circumstances). This approach imposed a set of limitations associated with data availability and data quality. Our team obtained most of the regional-scale resource and recreation data from FS regional and BLM state office specialists.

Our team asked for indicator data for 22 forest units in the Plan area (unless otherwise indicated in the following chapters) (table 1). We aggregated the unit data to obtain regionwide trends. Combining FS and BLM data was often impossible at the regional scale either because the agencies track different variables (indicators) for each resource, because data were not available for the same years, or both. In some cases, aggregating FS data from Regions 5 and 6 (Pacific Southwest and Pacific Northwest Regions, respectively) was also impossible for the same reasons. Thus most of the regional-scale indicator data are presented and analyzed by agency. The baseline year for the socioeconomic monitoring program is 1990; however, it was not possible to obtain indicator data for some resources as far back as 1990. I show timber trends since the 1970s to illustrate the effects of the spotted owl listing and the Plan on federal timber production.

The analytical framework adopted by this module entails showing that changes reflected by the trend data were caused by management actions under the Plan or providing alternative theories that could explain the changes observed. The team investigated links between trends in resource and recreation outputs, management

**Table 1—Forest Service and Bureau of Land Management units included in calculations of resource and recreation outputs**

State	Unit	
Forest Service	Washington	Okanogan <sup>a</sup>
		Wenatchee <sup>a</sup>
		Mount Baker-Snoqualmie
		Gifford Pinchot
		Olympic
	Oregon	Mount Hood
		Willamette
		Siuslaw
		Deschutes <sup>a</sup>
		Umpqua
		Winema <sup>a</sup>
	California	Rogue River
		Siskiyou
Klamath		
Six Rivers		
Bureau of Land Management	Oregon	Shasta-Trinity
		Mendocino
		Medford
		Roseburg
		Salem
	Eugene	
	Coos Bay	

<sup>a</sup> Although these forests are only partially within the range of the northern spotted owl (*Strix occidentalis caurina*), data from the entire forest are included in this volume, unless otherwise indicated.

actions under the Plan, and other explanatory variables by using a case-study approach. We selected four forests from four different planning provinces in the Plan area for detailed study: the Olympic National Forest, the Mount Hood National Forest, the Klamath National Forest, and the Coos Bay BLM District (fig. 1). The forests were not chosen randomly. See appendix C for an explanation of the methods used to choose case-study forests.

Team members interviewed a total of 82 agency employees from the four case forests. These included specialists working in the five resource areas of concern. Many of these specialists had worked on their units since at least 1994. Team members discussed trends in the indicator data for each resource area with resource specialists. They asked the specialists to provide their own perspectives on



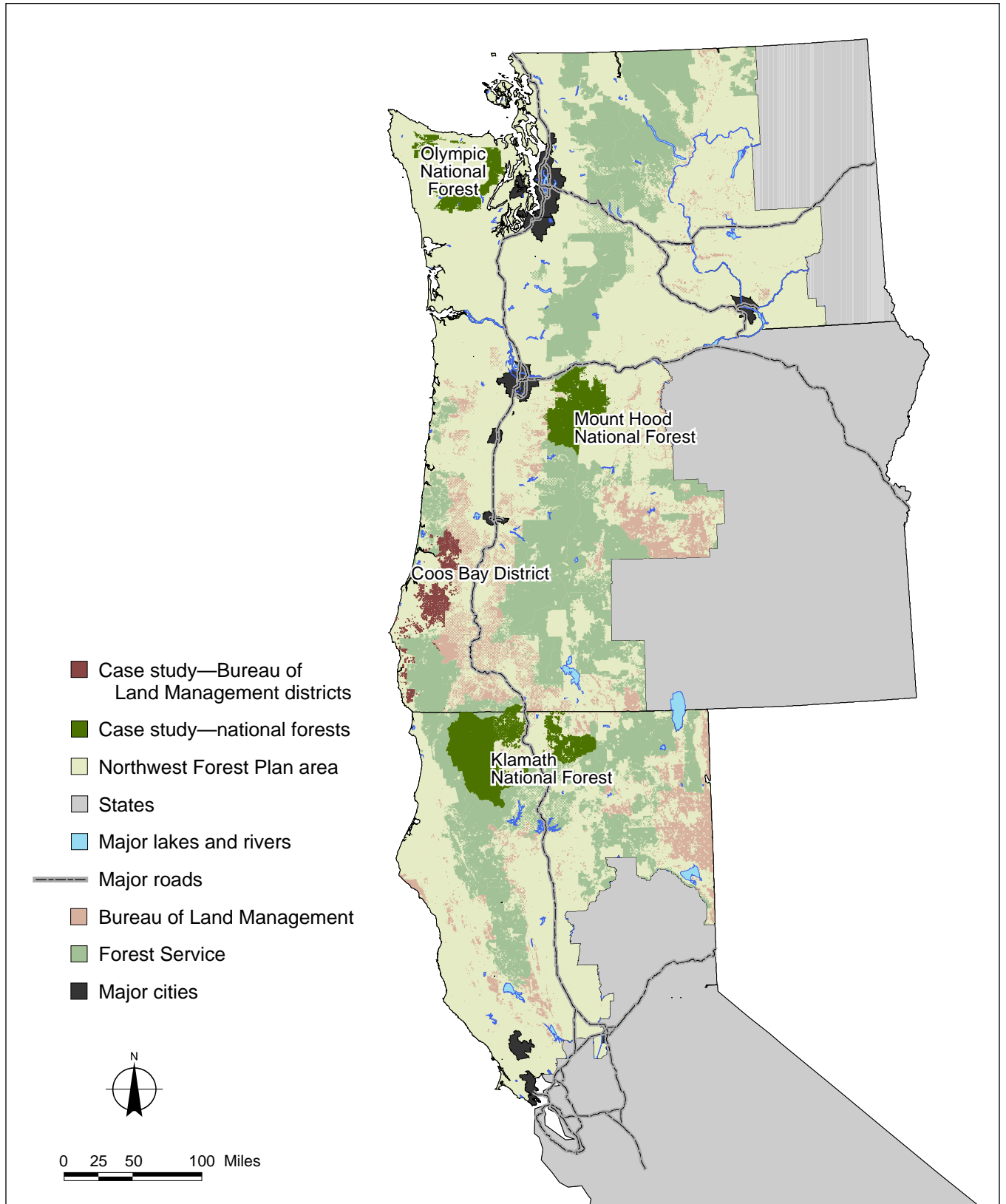


Figure 1—Case-study forests.

the reasons behind the trends observed and the role of the Plan in influencing them. Appendix D lists the people interviewed on each forest and contains the interview guide used in discussions with them. Some regional FS and BLM resource specialists were also asked to provide their views on how the Plan had contributed to the trends. The results of these interviews are summarized for each resource area.<sup>2</sup>

Fully researching the causes of trends in resource and recreation outputs from federal forest lands since the Plan was adopted was beyond the scope of our monitoring program. But the interview results provide a starting point for developing and testing hypotheses about how the Plan has affected the ability of the FS and BLM to produce predictable quantities of timber sales and nontimber resources. Our team believes that understanding how the Plan has contributed to the observed trends is necessary for making informed policy decisions that address undesirable trends.

We obtained some resource and recreation data from the four case-study forests. We sometimes found differences between these data and that obtained from corporate databases. In these instances, we used the data from forest units for our analysis, assuming they were correct.

This volume also provides an inventory of agency data on timber sales, special forest products, grazing, minerals, and recreation for the Plan area available from FS and BLM

corporate databases, and the Region 5, Region 6, and BLM Oregon state offices. In addition, it evaluates whether the agencies have the data to answer the evaluation question posed in the ROD. This evaluation will help agencies decide what actions are needed to improve socioeconomic monitoring over the next 10 years.<sup>3</sup> I do not provide explicit recommendations about the indicators that should be monitored to adequately determine whether predictable levels of timber and nontimber resources are available and being produced, because the socioeconomic monitoring module has not been formally adopted by the agencies, and its future is uncertain.

## Organization

The next five chapters of this volume discuss timber, special forest products, grazing, minerals, and recreation. Each chapter poses a monitoring question(s) that was developed by the team and is directly tied to the ROD evaluation question that is the focus of this volume. The monitoring question is followed by a statement of expectations from the ROD, FSEIS, and FEMAT report about how the Plan would affect each resource area. Next, I discuss the indicator data I used to address the monitoring question, and their limitations. I then present and discuss the regional-scale results. This is followed by a discussion of monitoring results from the four case-study forests, which provides insight into potential links between the Plan and the monitoring trends. I conclude by answering the monitoring question posed at the start of the chapter.

The concluding chapter of this volume uses the information presented in chapters 2 through 5 to address the question, Are predictable levels of timber and nontimber resources available and being produced? It also assesses whether progress in meeting the Plan goal of producing a predictable and sustainable level of timber sales and nontimber resources was consistent with expectations.

<sup>2</sup>For a more detailed discussion of resource trends for the case-study forests, see the following:

Buttolph et al. (in press).

McLain et al. (in press).

Charnley, S.; Dillingham, C.; Stuart, C.; Moseley, C.; Donoghue, E.M. Manuscript in preparation. Northwest Forest Plan—the first 10 years (1994–2003): socioeconomic monitoring of Klamath National Forest and three local communities. On file with: S. Charnley, Forestry Sciences Laboratory, 620 SW Main, Suite 400, Portland, OR 97205.

Kay, W.; Donoghue, E.M.; Charnley, S.; Moseley, C. Manuscript in preparation. Northwest Forest Plan—the first 10 years (1994–2003): socioeconomic monitoring of Mount Hood National Forest and three local communities. On file with: S. Charnley, Forestry Sciences Laboratory, 620 SW Main, Suite 400, Portland, OR 97205.

<sup>3</sup>See Palmer et al. (in press) for additional discussion of data issues.

## Chapter 2: Timber

Much of the discussion about whether the Northwest Forest Plan (the Plan) has met its socioeconomic goals has focused on the issue of timber production. During the 1980s, the probable sale quantity (PSQ) from the national forests and Bureau of Land Management (BLM) districts in the Plan area averaged 4.5 billion board feet of timber annually (USDA and USDI 1994a: 3&4-264). In contrast, the Plan's final supplemental environmental impact statement estimated an average annual PSQ of 958 million board feet (USDA and USDI 1994a: 3&4-265).<sup>1</sup> The agencies have revised this estimate several times since 1994 to reflect more accurate site-specific information. It dropped to 868 million board feet in 1995; 811 million board feet in 1999; and to 805 million board feet in 2001, where it stood in 2004 (Baker et al., in press).

The Plan aimed to address "...the need for a sustainable supply of timber and other forest products that will help maintain the stability of local and regional economies, and contribute valuable resources to the national economy, on a predictable and long-term basis" (USDA and USDI 1994b: 26). Timber production under the Plan was to be sustainable: "...the Plan should produce a predictable and sustainable level of timber sales and nontimber resources that will not degrade or destroy the environment" (USDA and USDI 1994b: 3). The Plan identified matrix lands and adaptive management areas as containing lands suitable for producing a predictable and sustainable supply of timber. Predictability in supply would be achieved by offering timber sales at the estimated PSQs. This chapter focuses on the question of whether predictable timber supplies were produced during the first decade of the Plan; see Baker et al. (in press) for a discussion of whether sustainable timber volumes were available and produced.

A second objective for timber harvest under the Plan was to use it as a tool for managing vegetation to achieve ecosystem management objectives, such as promoting development of late-successional and old-growth (older forest)

habitat in late-successional and riparian reserves. The Plan did not quantify the amount of timber harvest that would result from treatments undertaken to achieve these objectives in the reserves. Agencies have completed many late-successional reserve assessments that examine reserve conditions, however, and they can now better estimate the acreage in which harvesting would play a role in promoting late-successional forest habitat. Scientific research produced over the past decade can also be used to determine how best to accelerate late-successional forest development by using harvest treatments. Timber volume produced through treatments in the reserves would not constitute a long-term, sustainable supply of timber, however, and timber harvested in the reserves does not count toward PSQ volume (USDA and USDI 1994a: 3&4-263). But it does contribute to the total volume of timber offered for sale by the agencies, and is therefore important from a socioeconomic standpoint. See Baker et al. (in press) for more discussion of timber harvest outside of matrix and adaptive management areas.

The concept of predictability, as it applies to timber production on federal forest lands, has both a long- and a short-term perspective. Long-term predictability is linked to producing a sustainable timber flow, which, in turn, is tied to the concept of a "regulated forest" (Crim 2004). That is, given a set of management prescriptions and a stable timber base, it is possible to predict with some confidence that the amount of timber produced from the forest will flow in a predictable and sustainable way in perpetuity. If the prescriptions change, or the timber base is altered, then the harvest level will also change. The PSQ estimates represent the anticipated flow of timber from this regulated forest as a decadal average. For the Forest Service (FS), the annual offering of PSQ volume may fluctuate, as long as the decadal average does not exceed it (Crim 2004). In contrast, the BLM is required to meet annual PSQ estimates (Cadwell 2004).

A shorter term perspective on predictability in timber supply focuses on annual accomplishments, which is relevant from the socioeconomic perspective because it is linked to the concept of community stability. What matters to people employed in the wood-products industry is whether an even flow of timber would come from federal forests annually to

<sup>1</sup> Probable sale quantity = an estimate of timber sale levels likely to be achieved. It represents neither a minimum harvest level that must be met, nor a maximum level that cannot be exceeded, but rather, a rough approximation of average annual timber sales over a decade (Baker et al., in press).

support stable employment. From this perspective, whether the volume of timber offered for sale by the agencies represents PSQ volume or volume produced from a treatment in a late-successional reserve would be less important. Although the source of the volume may not matter to most people, the source affects whether the volume can be sustained on a short-term versus a long-term basis. For example, thinning in reserves may produce volume over the short term, but it will not sustain long-term production.

In this chapter, I evaluate whether predictable levels of timber sales were produced during the first 10 years of the Plan from both perspectives. That is, I look at trends in the total volume of timber offered for sale by the agencies, and at trends in the PSQ volume produced. I also investigate some of the reasons for the observed trends. The monitoring team did not have the resources to monitor specific features of timber sales that are also relevant to predictability from the community perspective—such as size of sales, type of sales, and who qualified to bid on them—for purposes of this monitoring report.

## Monitoring Questions

- During the first decade of the Plan, did the agencies produce the PSQ volumes anticipated?
- Have predictable levels of timber sales been produced under the Plan?

## Expectations

During the first 2 years of the Plan, the volume of timber sales from Plan-area forests would differ from the PSQ because the agencies needed time to complete the surveys and assessments required by the Plan, and to prepare new sales consistent with Plan standards and guidelines (USDA and USDI 1994a: 3&4-269). In 1995, agencies were expected to offer for sale 60 percent of the estimated PSQ (USDA and USDI 2004: 221). In 1996, agencies were expected to offer for sale 80 percent of the estimated PSQ. After that, the average annual timber volume offered for sale from matrix lands and adaptive management areas on FS lands over the

period of a decade would be consistent with PSQ levels. For the BLM, the annual volume offered for sale from matrix lands and adaptive management areas would be consistent with the PSQs. This volume was expected to come from timber-suited lands in matrix and adaptive management areas (Johnson et al. 1993). If the standards and guidelines in a forest's land management plan for matrix lands were more restrictive than those of the Northwest Forest Plan for matrix lands, the forest's plan would apply.

In the matrix and the adaptive management areas there are 1.1 million acres of late-successional forest (14 percent of the total) (USDA and USDI 2004: 220).<sup>2</sup> These acres were expected to be the main source of harvest to support PSQ in the first three to five decades of the Plan, contributing about 90 percent of the total (USDA and USDI 2004: 220). Close to 50 percent of the harvest was expected to come from forest more than 200 years old in the first decade (Johnson et al. 1993: 22). Regeneration harvest was expected to be the main harvest method in the matrix (Baker et al., in press). Partial removal techniques were expected to be the main harvest methods in the reserves.<sup>3</sup> In the Pacific Northwest Region (Region 6), most of the PSQ volume was expected to come from four forests: the Gifford-Pinchot, the Mount Hood, the Umpqua, and the Willamette (Johnson et al. 1993: 22).

The Forest Ecosystem Management Assessment Team (FEMAT) noted that achieving predictable and sustainable timber sales from federal forests under the Plan would be difficult, if not impossible (Johnson et al. 1993: 23). In the past, a main objective of forest management in the owl region was to offer a similar level of timber sales each year, assuming that sustained yields of timber would sustain underlying forest processes. That assumption was questioned

<sup>2</sup>Late-successional forests = forest stands that exhibit increasing stand diversity, patchy multilayered canopy, trees of several age classes, large standing dead trees, large woody debris, and species that represent the potential natural community. These forest stands consist of trees and structural attributes, and support biological communities and processes, that are associated with old growth and mature forests (USDA and USDI 2004: 256).

<sup>3</sup>Partial-removal techniques include density management, selection cut, improvement cut, sanitation cut, and special cut.

in the early 1990s, and the goal of forest management shifted to one of sustaining the underlying ecological processes of the forest, largely measured through protecting habitat for late-successional species and fish. Given this change, "...uncertainty will cloud the preparation of timber sales prepared under the direction of the FEMAT Report for the foreseeable future" (Johnson et al. 1993: 23). New planning processes, extensive project surveys, and modification or abandonment of sales in response to the presence of species would make difficult achieving predictable supplies of timber from federal forest lands in the Plan area. Moreover, achieving PSQ volumes depended mainly on harvesting older forest. "How publicly acceptable this policy will be remains to be seen" (Johnson et al. 1993: 22).

## Data Analysis

The FS and BLM create corporate timber-volume reports in three ways: volume of timber offered for sale, volume of timber sold, and volume of timber harvested.<sup>4</sup> Volume offered is the amount of timber that the federal agencies make available for sale in a given fiscal year. Not all timber sales that agencies offer are purchased; volume of timber sold represents the timber that actually receives a bid from a qualified purchaser. In the Pacific Northwest, most of the volume offered for sale has sold, historically (Haynes 2004). A backlog of sales now exists, however, that have not been awarded because of litigation (Werner 2004). Once sales are awarded, they generally take 2 to 3 years to harvest. As a result, the volumes sold and harvested in a given year are rarely the same. Volume harvested is the measure generally used in socioeconomic analyses, because it represents the actual timber-related value that enters the economy.

In this chapter, I use volume of timber offered for sale as an indicator of production by the agencies. Volume offered measures all volume made available for sale by the agencies, including volume offered from late-successional and riparian reserves, and volume not meeting forest

utilization standards. The PSQ volume refers to the timber offered for sale only from matrix lands and adaptive management areas.

To calculate the PSQ volume, the volume offered for sale must be known by land use allocation, but the FS Pacific Northwest Region (Region 6) office does not usually report volume offered by land use allocation (Baker et al., in press). The FS Pacific Southwest Region (Region 5) office reported volume offered by land use allocation between 1995 and 2000. The BLM District Annual Program Summaries do report volume sold by land use allocation (Baker et al., in press). To determine what proportion of volume offered was PSQ volume, I used estimates provided by FS and BLM timber-program specialists.

The FS data on the volume of timber offered for sale, sold, and harvested have been tracked in corporate databases by forest since the mid-1970s. Volumes harvested and sold are published in the FS cut and sold reports. Obtaining data by forest for the years before the mid-1970s was too difficult, but I include timber data for the years before 1990 to show trends in agency timber programs in the years leading up to the Plan. These data also demonstrate the striking contrast between timber harvest activity before and after the ROD. The volume figures are expressed in terms of long logs.<sup>5</sup>

The BLM timber data for the years prior to the Plan are not available from the Oregon state office by district (although they are available from individual district offices). They are available from the state office in aggregate form for the western Oregon districts, beginning in the year 1950. The BLM data are for volume of timber sold, which was the same as the volume of timber offered for sale (Werner 2004). They are expressed as short logs.<sup>6</sup> I refer to these data as volume offered in the rest of this chapter.

<sup>4</sup>The FS stores timber data in the Automated Timber Sale Accounting System. The BLM stores timber data in the Timber Sale Information System.

<sup>5</sup>Long log = logs scaled to 32 feet for timber volume measurement. Conversion factor = 0.825 times the BLM 16-foot short-log volume.

<sup>6</sup>Short log = logs scaled to 16 feet for timber-volume measurement.

## Results

### Volume Offered for Sale

The total volume of timber harvested and sold by national forests in the Plan area since fiscal year 1978 is shown in figure 2.<sup>7</sup> The total volume of timber offered for sale on western Oregon BLM districts since fiscal year 1970 is shown in figure 3. Timber volumes sold dropped dramatically after 1990, following the Endangered Species Act listing of the northern spotted owl (*Strix occidentalis caurina*), when injunctions against timber sales on federal forests in the owl's range were issued. Volume harvested tapered off more gradually in the early 1990s because timber that had already been sold could be harvested over the following years.

The volume of timber offered for sale by both agencies since October 1994, 6 months after the Plan went into effect, is shown in figure 4 and compared with PSQ. A fairly predictable supply of just over 800 million board feet was produced on average from 1996 through 1998 after Plan startup, as was expected. A large drop in volume offered occurred in 1999, with a low for the period at 148 million board feet in 2000. Since then, sale volumes have gradually increased, but they have not yet returned to 1996–98 volumes. The volume of timber offered for sale by both the FS and the BLM declined during the first decade of the Plan (fig. 5).

Were timber sales during the first 9 years of the Plan more or less predictable than they were in the decade leading up to the Plan? The volume of timber sold by the FS between 1980 and 1989 averaged 4.448 billion board feet per year, with a coefficient of variation of 17.87 percent (standard deviation [SD] = 795 million

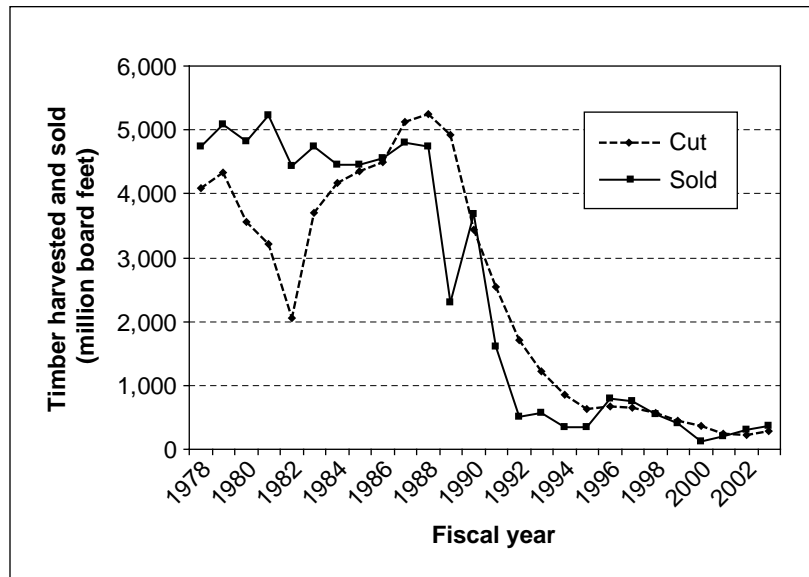


Figure 2—Timber harvested and sold on Plan area national forests, fiscal year 1978–2002 (long log). Source: Forest Service cut and sold reports.

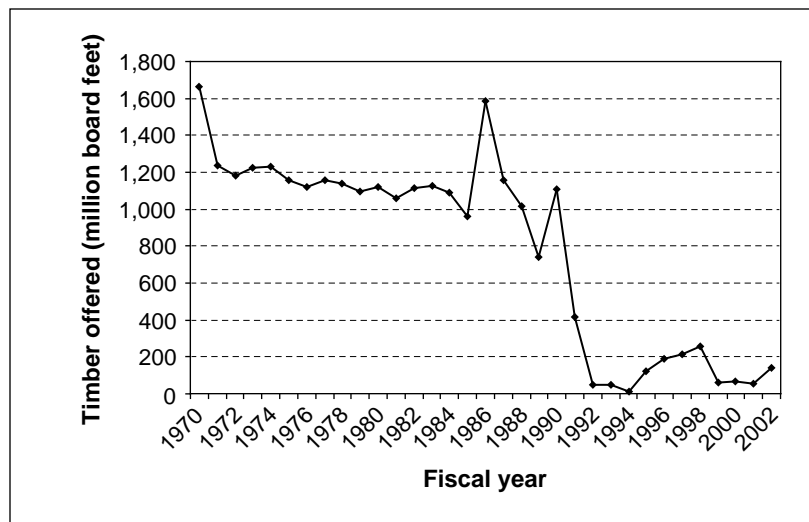


Figure 3—Timber offered for sale on western Oregon Bureau of Land Management (BLM) districts, fiscal years 1970–2002 (short log). Includes Klamath Falls portion of the Lakeview District. Source: BLM Facts (1970–97), Timber sale information system reports (1998–2002).

board feet). The volume of timber sold by the BLM between 1980 and 1989 averaged 1.097 billion board feet, with a coefficient of variation of 19.12 percent (SD = 210 million board feet). Between 1995 and 2003, the average annual volume offered for sale by the FS was 404 million board feet, with a coefficient of variation of 53.94 percent (SD = 218 million board feet). For the BLM, the annual average was 122 million board feet, with a coefficient of variation

<sup>7</sup>I do not show historical volumes of timber offered for sale by national forests because I was unable to obtain those data from the Pacific Southwest Region.

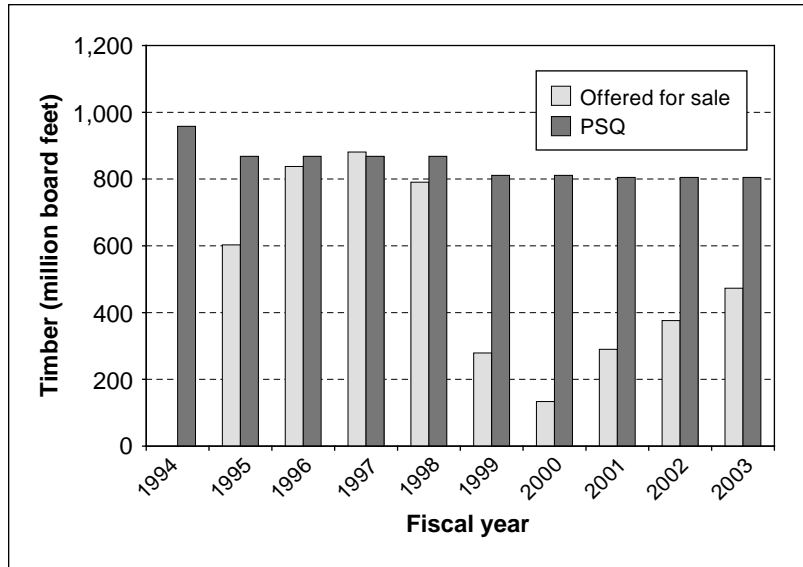


Figure 4—Timber offered for sale vs. probable sale quantity (PSQ), Forest Service (FS) and Bureau of Land Management (BLM), 1995–2003 (long logs). For the BLM, this figure includes data from the California BLM districts and the Klamath Falls, Oregon Field Office of the Lakeview District. For the FS, this figure includes data from all national forests entirely within the Northwest Forest Plan area, and for those portions of the Deschutes, Winema, and Okanogan-Wenatchee within the Plan area. Source: Baker et al., in press.

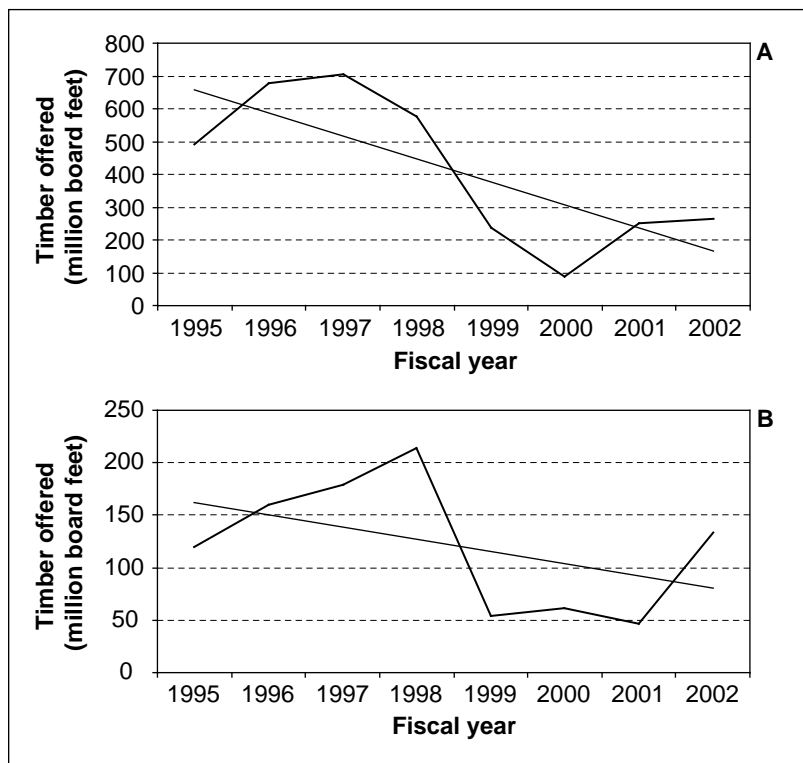


Figure 5—Timber offered for sale by (A) the Forest Service, and (B) the Bureau of Land Management, fiscal years 1995–2002 (long logs). Straight line is the linear regression.

of 47.77 percent (SD = 58 million board feet). Differences in the coefficients of variation between the two periods indicate that timber sale volumes in the 1980s were more predictable than they were following Plan implementation.

### The Probable Sale Quantity Volume

Between 1995 and 2003, the PSQ was adjusted from 958 million board feet to 805 million board feet. This adjustment, together with expectations that agencies would only offer a percentage of PSQ in the first 2 years of the Plan, meant that the average annual PSQ estimate for the first 9 years of the Plan was 776 million board feet (Baker et al., in press). The total volume of timber offered for sale by the agencies between 1995 and 2003 was about 4.736 billion board feet; 3.633 billion board feet by the FS and 1.103 billion board feet by the BLM. On average, about 526 million board feet of timber was offered for sale each year.

Eighty percent of this volume offered was estimated to have come from matrix and adaptive management area lands, and can therefore be counted toward PSQ volume. The remaining 20 percent is estimated to have come from timber sales in the reserves. Thus, the average annual PSQ volume produced between 1995 and 2003 was about 421 million board feet (Baker et al., in press). The agencies did not produce the anticipated PSQ volumes during the first decade of the Plan, although they came close to meeting timber sale objectives between 1995 and 1998 (fig. 4).

### Discussion

What accounts for the inability of the agencies to meet estimated PSQ volumes and to produce a predictable level of timber sales? Shortfalls in timber-sale volumes offered since 1998 are believed to be related primarily to

(1) implementing the survey and manage species standards and guidelines after a lawsuit brought by the Oregon Natural Resources Council; (2) the Pacific Coast Federation of Fishermen’s Associations et al. v. National Marine Fisheries Service lawsuit, which constrained timber sales that required biological opinions and limited harvest in watersheds with Endangered Species Act–listed anadromous fish; and (3) protests and appeals on individual timber sales (USDA and USDI 2004: 221–222). Both lawsuits caused numerous timber sales to be enjoined. And the contentious issue of logging old growth has caused appeals and litigation over proposed sales that include old growth (Dombeck and Thomas 2003, Thomas 2003).

Lawsuits, the implementing of survey and manage species standards and guidelines, protests, and appeals led to a major drop in regeneration harvest timber sales in late-successional stands beginning in 1999 (USDA and USDI 2004: 223). Harvest methods defined as partial removal were used on 84.5 percent of the acres harvested during

the first 9 years of the Plan (Baker et al., in press), contrary to expectations.

Avoidance behavior has also contributed to the drop. When predisturbance surveys indicated the presence of numerous survey and manage species sites, potential timber-sale areas were often abandoned in favor of sites less likely to contain survey and manage species (younger stands) because of the added costs in time and money of trying to complete a sale (USDA and USDI 2004: 223–224).

The monitoring team conducted interviews with timber program specialists and line officers on four case-study forests (the Olympic, Mount Hood, and Klamath National Forests, and Coos Bay BLM District) (see app. C) to gain insight into what had caused shortfalls in timber production on those forests. The annual volume of timber offered for sale on these forests was also highly variable during the first decade of the Plan (fig. 6). The team asked interviewees the following questions pertaining to the volume of timber offered for sale on the forests where they work:

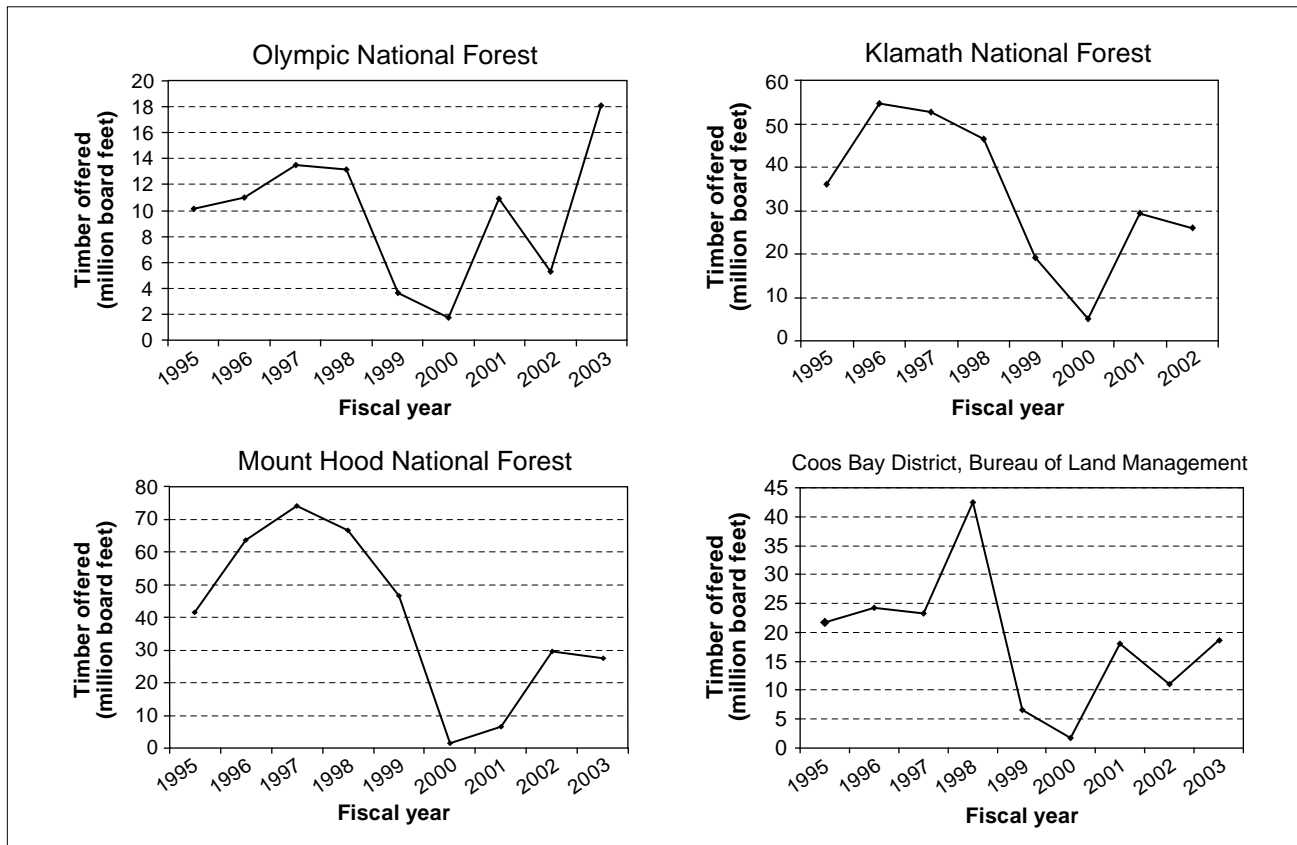


Figure 6—Timber offered for sale, case-study forests, 1995–2003. Note: Coos Bay data are short log.



- Please explain why you think these trends have been going up or going down over time.
- To what extent do you believe implementing the Plan is responsible for these trends? Why? What other factors might be causing them?
- One of the goals of the Plan was to “produce a predictable and sustainable supply of timber.” Do you believe this goal has been met on your forest since the Plan was implemented? If so, how have you been able to achieve this goal? If not, why not? What has prevented this from happening?

We found that the interviewees had a variety of perspectives, and that the reasons they gave differed somewhat by case-study forest. Their explanations are detailed below, by forest. These cases contribute to an understanding of how factors both related and unrelated to the Plan affected the agencies’ abilities to produce timber over the last decade on specific forests. Although the explanations pertain to four forests only, they provide insights that can be used to develop and test hypotheses about what kept the agencies from meeting PSQ estimates and offering a predictable level of timber sales regionwide.

At the time the team conducted fieldwork, survey and manage species considerations were still in place, as were the original provisions of the aquatic conservation strategy. Survey and manage guidelines were removed from the Plan in 2004, in part because they were preventing the agencies from producing predictable and sustainable levels of timber sales (USDA and USDI 2004: 6). The BLM Special Status Species policies and the FS Sensitive Species policies continue to apply (USDA and USDI 2004: 45–46). Former survey and manage species that were eligible to be included in these special status species programs are now managed under each agency’s policies. The agencies expect that removing survey and manage guidelines will help restore their ability to achieve the timber outputs established under the Plan (USDA and USDI 2004: 6). In 2005, however, the removal of survey and manage guidelines was found by the U.S. District Court, in Seattle, Washington, to be in conflict with the National Environmental Policy Act. The 2004 ROD regarding survey and manage has been set aside; as of this writing, Plan-area forests are again required to conduct

survey and manage procedures for all logging and other ground-disturbing activities, including those planned and approved since the 2004 ROD was issued.

In 2004, the wording of the aquatic conservation strategy was amended to clarify language pertaining to how it should be interpreted in the context of proposed projects. Agencies also expect this action to make land managers more successful in planning and implementing projects under the Plan (USDA and USDI 2003: 51).

### Klamath National Forest<sup>8</sup>

Commercial timber production on the Klamath is a central management objective on matrix lands and in the Goose-crest Adaptive Management Area, which together comprise 423,500 acres, or about 20 percent of the forest. Commercial timber harvest in other land use allocations may be a byproduct of forest management activities to promote ecosystem health objectives. Currently, most commercial timber sales on the forest are thinning projects.

#### Availability—

The land-use allocation system established under the Plan reduced the forest land base that could be managed for commercial timber production because of the late-successional and riparian-reserve system. Of the matrix lands initially available for commercial timber harvest, many were subject to subsequent executive, legislative, and judicial constraints (such as roadless areas). These additional constraints affected the land base available for commercial timber production.

#### Harvest methods—

The Northwest Forest Plan and the Klamath Forest Plan call for most commercial timber production on the forest to use regeneration harvests with green-tree retention on small areas as a tool to achieve several multiple-use goals. These goals include promoting healthy ecosystems, provisions for resilience to fire and disease, as well as wildlife and scenery. Focusing intensive harvest practices in small areas minimizes ground disturbance, and therefore minimizes the

<sup>8</sup>The Klamath Land and Resource Management Plan adopted the forest’s PSQ as its ASQ (allowable sale quantity). I use the term PSQ in this discussion for the sake of consistency with the rest of the section.

area subject to survey and manage species needs and other procedural requirements. Some interest groups, however, view regeneration harvesting negatively because it is similar to clearcutting. They have appealed or litigated timber sales that included this method. Consequently, most timber production on the forest has been the result of thinning, which is extensive rather than intensive. Thinning only produces 10 to 30 percent of the yield per acre that regeneration harvest does (Barber 2004). Consequently, more acres had to be treated for the same volume, meaning that more area had to be examined for survey and manage species, leading to lower relative outputs.

#### **Survey and manage—**

The Plan had several requirements that called for new procedural processes associated with ground-disturbing activities, including timber harvest. These needs added to an already existing set of requirements that had to be followed when timber sales are undertaken. One of the most onerous of these on the Klamath National Forest was for the survey and manage species. The Klamath is the second most biodiverse national forest in the United States (USDA FS 1994). Survey and manage began to be implemented on the Klamath in 1996 and, by 1998, up to 60 species had to be surveyed for and managed. The cost and timing requirements of the surveys and the amount of time required to meet the procedural requirements were a deterrent to producing timely timber sales. Furthermore, the presence of survey and manage species on the forest imposed harvest restrictions in some areas, further reducing the land base available for timber sales. Survey and manage needs also added difficulty to producing timber from areas of the forest affected by fire, blowdown, and drought-related mortality. Getting through the procedural requirements associated with timber sales took so long that once completed, the products no longer had commercial value. One of the reasons that timber harvest from the forest shifted from the west to the east side was that fewer survey and manage species lived there.

#### **Economics—**

Most commercial timber sales on the Klamath were originally expected to be in matrix lands. Instead, most

commercial timber production on the forest occurred to promote ecosystem management objectives. The timber produced usually had relatively low economic value. Timber sales were expensive to prepare because of the analytical and procedural requirements the forest had to follow. It cost from \$35 to \$115 per acre to survey for survey and manage species, raising the unit cost of the timber program substantially. Sometimes the result was uneconomical sales that timber industry purchasers would not buy; imported wood was often cheaper. Added to this, the number of buyers has dwindled because of the dramatic loss of timber-industry infrastructure in Siskiyou County since 1990. Those who remained developed suppliers of wood more reliable than the national forests. Because these buyers no longer depend on federal forests for their supply, they only buy timber sales offered for a good price.

Interviewees stated that before the Plan was adopted, 35 percent of the cost of a timber sale was associated with its planning, and 65 percent was related to timber-sale preparation. Since the Plan was adopted, 70 percent of the costs have been for planning, and 30 percent for timber-sale preparation. As described above, the heavy burden of procedural requirements resulted in decreased outputs, making the per-unit cost of timber output on the Klamath National Forest higher than on Plan-area forests in California. The Klamath National Forest timber-sale program has been costing more than the revenue since 1999. This shortcoming in economic efficiency, combined with a regional climate of tightening budgets and a change in administration, has in recent years caused the FS to redirect timber-program money that once went to the Klamath National Forest to other, non-Plan-area forests where it can “get more bang for the buck.” Declines in both the forest budget and staff numbers add to this problem. Having a smaller timber program budget on the forest makes it harder to produce the expected volumes.

#### **Appeals and litigation—**

Because the Plan has so many procedural requirements associated with timber harvest, many opportunities exist for those who do not support proposed sales to file appeals or lawsuits. People can find ways of opposing sales because many grounds are available on which to do so, given

the extensive and complex requirements of the Plan. Local environmental groups are particularly opposed to sales that include old-growth trees, that are in key watersheds, or that are on steep slopes. Appeals and lawsuits have stopped several timber sales on the forest.

**Risk aversion—**

Under the Plan, commercial timber harvest on the forest has been more highly scrutinized by some stakeholders, and become more politically sensitive. Because the procedural requirements associated with timber sales are so expensive and time consuming, decisionmakers have been reluctant to propose sales with a high risk of appeal.

Interviewees also cited other factors unrelated to the Plan that had prevented the forest from offering more volume: some members of the public find commercial logging, regeneration harvesting, and harvesting old-growth on federal lands unacceptable, leading to litigation and appeals; and requirements imposed by other legislation, such as the Endangered Species Act and the Clean Water Act.

**Olympic National Forest**

The Olympic National Forest has no “matrix” lands (the Plan land use allocation that allows commercial timber harvest, regeneration harvest, and the harvest of late-successional stands). Matrix lands were not assigned to the forest because of the highly fragmented status of older forests on the Olympic Peninsula. Much of the Olympic Peninsula—including the Olympic National Forest and private, state, and Indian reservation lands—has been clearcut over the past 80 years (FEMAT 1993). In addition, the rapidly growing urban population in the Puget Sound area further separated and isolated northern spotted owl populations in the Cascade Range. As a result, a high priority was placed on protecting what remained of owl habitat on the Olympic National Forest under the Plan. Although commercial timber harvest, regeneration harvest, and harvest in late-successional stands is permitted in the adaptive management areas, the Olympic must keep the intent of these areas in mind when planning harvest activities.

About 66 percent of the forest is in late-successional reserves (420,000 acres), about 20 percent is in adaptive management areas (125,000 acres), and the remaining 14

percent (90,000 acres) is in Congressionally withdrawn areas (wilderness areas and the Quinault Research Natural Area). Of the 125,000 acres of adaptive management area land, only about 51,000 acres is available for timber harvest. The remaining acreage is designated as riparian reserves (65,000 acres), forest plan administrative withdrawals (2,000 acres), and areas unsuitable for timber harvests (7,000 acres) (Olympic National Forest Web site). The Olympic’s average annual PSQ is 10 million board feet.

In the late-successional reserves, about 14 percent of the land was previously established under the Olympic Forest Plan as administratively withdrawn and cannot be harvested. The remaining 357,000 acres are open to commercial and precommercial thinning on stands less than 80 years old to promote older forest stand structure. Wood removed through commercial thinning in the reserves contributes to volume offered, but it is not part of the PSQ calculation. Although the acreage available for timber harvests is limited in the adaptive management areas and only stands less than 80 years of age can be thinned in reserves, the forest has been relatively successful in offering volume for sale. One factor contributing to this success has been the relatively small number of appeals and lawsuits because of the forest’s emphasis on commercial thinning of young stands rather than regeneration harvesting. This, combined with strong efforts made by forest staff to work closely with environmental groups, has allowed sales to flow smoothly.

Despite the relative success at achieving the forest’s average annual volume, some factors prevented the forest from attaining desired harvest rates.

**Insufficient funding and staffing—**

Forest budget and staffing have declined dramatically since the mid-1980s, particularly in the forest’s timber program. Despite the decline in workforce, the workload has increased for employees because of the increased complexity of work associated with implementing the Plan (USDA FS 2000). Tens of thousands of acres of precommercial- and commercial-age stands have gone untreated because of the lack of staff and funding to identify, analyze, and prepare thinning projects. The failure to conduct precommercial thinning can limit future stand-development options,

leading to overstocked, stagnant stands that halt or slow development of late-successional stand structure and features, and limit future timber production options on adaptive management area lands (USDA FS 2000).

#### **Access—**

Another factor contributing to the lack of precommercial thinning and limiting some commercial thinning was reduced access to sites. Roads washed out by floods in the late 1990s and early 2000s became overgrown, poorly maintained, or decommissioned. The process of repairing washed-out roads has been slow because Endangered Species Act requirements limit the period in which ground-disturbing activities can be done. Money to undertake road repairs has also been scarce and came mainly from the Emergency Relief for Federally Owned Roads program. Many forest roads are poorly maintained because maintenance dollars are lacking (the road program was tied to the timber program, which has dwindled). Poorly maintained roads are more likely to wash out during storms, exacerbating the problem. The forest has decommissioned roads as a strategy for restoring watershed health, a goal emphasized by the Plan. For example, the forest is trying to reduce the number of roads in key watersheds, but reduced access means reduced ability to harvest timber.

#### **Survey and manage species—**

The most abundant survey and manage species on the Olympic National Forest were mollusks, lichens, and bryophytes. Extensive survey requirements for some species prior to implementing projects caused delays with timber sales and harvests. One species in particular—the warty jumping slug (*Hemphillia glandulosa*)—delayed several timber sales on the forest in 1999 and 2000. This slug was listed as a survey and manage species because it was thought to be rare on the Olympic Peninsula. After extensive surveying, the slug was found to be fairly abundant, and it was removed from the survey and manage list on the Olympic National Forest in 2001. This delisting allowed timber sales and other activities to proceed without having to protect all of the sites where the slug had been found, although management would still be done to provide habitat for these and other mollusks.

Apart from the warty jumping slug, survey and manage species requirements did not significantly affect timber harvest activity.

#### **Mount Hood National Forest**

About 19 percent (204,000 acres) of the Mount Hood National Forest is available for scheduled timber harvests, although 484,350 acres of the total 1,063,450 is officially designated as matrix land (USDA FS 2003a). Matrix lands contain nonforested areas, as well as areas technically or administratively unavailable for commercial timber production. The Mount Hood is one of four forests in FS Region 6 that together were assigned 68 percent of the region's PSQ volume (Crim 2004). The forest has had a difficult time meeting its average annual PSQ estimate. Forest timber program specialists and line officers interviewed cited several reasons for this shortfall.

#### **Appeals and litigation—**

Achieving the PSQ on the Mount Hood depended on regeneration harvest of late-successional stands (Crim 2004). Litigation and threats of litigation have been major problems on the forest, with many timber sales protested or litigated. For instance, half of the volume offered for sale in 2004 was in litigation before the calendar year began. Cases in which a purchaser was awarded a contract and all parties thought the sale would proceed turned out to have the sale unexpectedly caught up in litigation. As a result, fewer and fewer buyers are willing to deal with the risks, time, and energy of bidding on a sale that may be litigated. The uncertainty over whether a sale will go through affects business planning. Moreover, some potential buyers find walking through a group of protesters into the forest office a deterrent to bidding on sales. Sales diverted by litigation add to the forest's budget problem because national leadership prefers to direct resources to the regions producing timber.

#### **Budget—**

The forest timber program budget has been insufficient to meet harvest volume expectations. The cost of planning and preparing timber sales increased under the Plan while funding for accomplishing sales decreased. Funds decreased for two reasons: a decrease in the Region 6 share of appropriated funds, and bankruptcy of the salvage-sale fund. Decisions

relating to the allocation of appropriated funds are made at the Washington office. The salvage-sale fund decreases were caused by a decrease in fund inflow and by the region's increasing reliance on the fund to cover the higher costs of doing business under the Plan. Salvage sales were previously based on treatments of dead and dying trees and windthrow with high market value; under the Plan they shifted to low-value, low-volume treatments that did not yield significant collections. Using salvage-sale funds to help meet the cost of achieving PSQ at a time when collections had dropped led to bankruptcy of the fund. The Mount Hood National Forest has not been funded at 100 percent of its PSQ since 2001. The forest was funded at 38 percent of its PSQ in 2002, at 30 percent in 2003, and at 28 percent in 2004.

In addition, budget procedures associated with "primary purpose" have created confusion over which forest programs should pay for planning timber sales. For example, timber harvesting may be to improve wildlife habitat, suggesting that the wildlife program should pay for some of the planning costs. But these other forest programs are equally short on funds and cannot afford to contribute.

#### **Survey and manage species—**

When survey and manage species requirements were first implemented, they imposed new analysis and planning requirements that increased the timing and cost of timber sales. Initially an impediment to achieving harvest volumes, recently—particularly with some species being removed from the list—survey and manage species became less of an obstacle relative to other obstacles. Some species, like the Malone jumping slug (*Hemphillia malonei*) that had held up timber harvest projects, were removed from the survey and manage list. Thus, the survey and manage species have not been a major procedural obstacle to achieving PSQ in recent years.

#### **Aquatic Conservation Strategy—**

The Mount Hood National Forest is highly dissected by riparian areas, which is typical in the western Cascade Range. Thus, the Plan's aquatic conservation strategy provisions placing restrictions on timber harvest in riparian areas were widespread, making it more difficult to conduct

timber sales than originally anticipated. Commercial timber sales in these highly-fragmented matrix lands became impractical. The watershed analyses required by the aquatic strategy have been useful for planning at larger scales, however.

#### **Decisionmaking constraints—**

Forest managers deciding what projects to implement on the forest consider a host of factors relating to the Plan, such as procedural requirements, and the associated costs (in time, labor, and money) of doing a project. In light of reduced budgets and staffing, managers consider carefully whether to invest in projects that may get stalled by procedural and administrative quagmires.

#### **Coos Bay BLM District**

Under the Plan and subsequent Coos Bay District Resource Management Plan (USDI BLM 1995), the Coos Bay BLM District is divided into six land management allocations. Since 1994, roughly 80 percent of the district (248,000 acres) has been in reserve status, where timber management objectives are to promote the development of late-successional forest, rather than to produce commercial timber. In comparison, 80 percent of the district was managed for timber production before the Plan. Most timber harvest is limited to the 20 percent (62,000 acres) of the district categorized as general forest management areas (matrix), or connectivity or diversity blocks.

Douglas-fir (*Pseudotsuga menziesii* (Mirb.) Franco) is by far the most widespread timber species of significant commercial value on the district. In 1994, 16 percent of Coos Bay District land was classified as having old-growth stands. These stands were highly fragmented because of past clearcutting practices and the checkerboard landownership pattern characteristic of the district. Almost half of the district's land was in early- or midseral forest conditions. Fire suppression policies also affected the district, increasing stand densities and fuel loading in older forest stands.

Under the Plan, the timber harvest program on the Coos Bay District aimed to produce 85 percent of the volume harvested on matrix by using regeneration techniques, and 15 percent through commercial thinning (Cadwell 2004). According to interviews with the district forester and the

district silviculturalist, since 1994, timber sales have been predominantly in general forest management areas. They noted that substantial plantations of young trees are within late-successional reserves, however, because the district had previously managed them for intensive commercial timber production. They also indicated concern that unless the district expands its density management activities in these areas (such as thinning), the young stands in late-successional reserves would not develop older forest characteristics.

Timber program specialists interviewed on the Coos Bay District gave the following reasons for the difficulty in meeting PSQ estimates:

**Watershed analysis and late-successional reserve assessments—**

As anticipated, the Plan's requirements that agencies conduct watershed analysis and late-successional reserve assessments before planning and implementing timber sales made it difficult to meet the district's PSQ in the first few years of the Plan. Timber program employees spent much of their time working on watershed analyses and late-successional reserve assessments, and trying to figure out what kinds of silvicultural practices could be used in late-successional and riparian reserves. Once these assessments were complete, they no longer posed an impediment to timber sales.

**Survey and manage species—**

District employees reported that the Plan's survey and manage species requirements had a major and lasting effect on the district's ability to produce expected timber volumes. The district staff needed time to conduct survey protocols for listed category-two species (those for which predisturbance surveys were required); implementing the survey and manage species process before sales was cumbersome and greatly slowed them down; and, if a survey and manage species was found, the planned sale had to be revised. Survey and manage species requirements thus both slowed the timber program to a near halt, and added a great deal of uncertainty to it.

**Aquatic Conservation Strategy—**

Many of the employees interviewed said that the Aquatic Conservation Strategy played a major role in slowing down timber sales. They cited two primary obstacles relating to aquatic strategy requirements. First, the Plan was vague about how the agencies could meet timber project guidelines in riparian reserves. Second, people both inside and outside the agency had a hard time accepting the notion that timber could be harvested in reserves at all.

**Appeals and litigation—**

Many of the Coos Bay District's timber sales have been appealed. The district has also been sued over its implementing of the survey and manage species provisions, timber harvest under the 1995 Recissions Act,<sup>9</sup> and management of Port-Orford-cedar root rot (*Phytophthora lateralis*). This disease spread on the district in part because of the extensive network of log haul roads there. Litigation and appeals have had a strong effect on the district's ability to meet the PSQ.

**Conclusions**

The PSQ volumes anticipated during the first decade of the Plan were not produced, and timber sales were less predictable than they were during the 1980s. Plan expectations came close to being met between 1995 and 1998, but did not come close after that. The agencies' abilities to achieve PSQ rested on the assumption that most of the harvest in matrix and adaptive management areas would come from older forest stands, and from using regeneration harvest techniques. Contrary to expectations, partial removal techniques, not regeneration harvest, were the main harvest methods used. Stand age is not an attribute collected in the FS corporate databases that track volume and acres treated (Baker et al., in press). Oregon BLM regeneration-harvest timber sales sold between fiscal years 1999 and 2001 represented a reduction of 89 percent, compared to

<sup>9</sup>The 1995 Recissions Act allowed the district to go forward with sales offered in 1989–91, but not awarded because of litigation at the time. Under the act, the district prepared replacement volume sales for units where biologists had identified northern spotted owl or marbled murrelet (*Brachyramphus marmoratus*) activity.

the volume of regeneration-harvest timber sales sold between fiscal years 1995 and 1999; and regeneration harvest sales of stands more than 200 years old were reduced by 88 percent between the two periods (USDA and USDI 2004: 223). The 1995 to 1998 regeneration-harvest timber sales were already 22 percent below what was expected under the Plan. And harvest in late-successional forests with requirements for survey and manage species was largely avoided

between 1997 and 2003 (Baker et al., in press). Thus, the expectations that formed the basis for agency PSQ estimates were not met. This outcome is not surprising, however; the FEMAT team noted in 1993 that producing a predictable level of timber sales from Plan-area forests would be difficult or impossible, given the assumptions associated with PSQ, the prevailing social climate, and the new planning and procedural requirements associated with the Plan.





## Chapter 3: Special Forest Products

More than 200 species of special forest products are harvested on private and public lands in the Pacific Northwest (Alexander and Fight 2003: 283-384). Interest in special forest products has grown since the late 1980s because of increases in consumer demand (both at home and abroad), increases in volumes harvested, growing recognition of their ecological importance, and the decline in the timber industry with associated job loss (Lynch and McLain 2003: 5-6).

Many special forest products have long been important to tribes for subsistence, medicine, cultural uses, construction, art, and trade (Lynch and McLain 2003: 4, Weigand 2002: 57-58). Special forest products are still valued by many people for cultural, recreational, subsistence, and commercial uses. Among the most important wild and edible species in the Pacific Northwest are huckleberries and mushrooms, particularly morels, chanterelles, boletes, and matsutake. Pacific yew (*Taxus brevifolia* Nutt.) is an important medicinal plant. Floral greens are of major economic importance, especially salal (*Gaultheria shallon* Pursh), evergreen huckleberry (*Vaccinium ovatum* Pursh), Oregon grape (*Mahonia nervosa* (Pursh) Nutt.), western redcedar (*Thuja plicata* Donn ex D. Don), western swordfern (*Polystichum munitum* (Kaulfuss) K. Presl), beargrass (*Nolina* Michx.), pine cones, mosses, and coniferous boughs such as noble fir (*Abies procera* Rehd.) (Alexander and McLain 2001: 61-63, Weigand 2002).

Although most commercial harvesters in the Pacific Northwest do not rely on special forest products for their sole source of income, these products do provide important supplemental or seasonal sources of income that contribute to household economies. They also provide important economic opportunities for Southeast Asian and Latino immigrants to the Pacific Northwest, whose numbers have increased significantly over the last decade, and who face limited employment opportunities (Brown and Marin-Hernandez 2000, Lynch and McLain 2003: 6).

### Monitoring Question

Have predictable levels of special forest products been produced under the Northwest Forest Plan (the Plan)?

### Expectations

Harvest opportunities were expected to continue under the Plan, consistent with the management goals of different land use allocations. Resource values, special status plants and animals, and resource sustainability would be protected, with use restrictions in areas designated for northern spotted owl (*Strix occidentalis caurina*) habitat and protected areas (USDA and USDI 1994a: 3&4-277). Plan standards and guidelines call for evaluating the effects of harvest activities on late-successional reserve objectives (USDA and USDI 1994b: C-18). Harvest restrictions in late-successional reserves could be implemented to prevent adverse effects. Fuelwood gathering was highly restricted in late-successional reserves and managed late-successional areas (USDA and USDI 1994b: C-16). Fuelwood cutting in riparian reserves was prohibited, unless required to attain Aquatic Conservation Strategy objectives (USDA and USDI 1994b: C-31–C-32).

### Data Analysis

The special forest products data are reported and discussed separately for the Forest Service (FS) and the Bureau of Land Management (BLM). Each agency categorizes and measures individual special forest products differently, and tracks them for different periods, so the data were not combined. The BLM data are for Oregon and Washington as a whole. The FS data are for Plan-area national forests. See appendix B for additional metadata relating to the special forest products data included in this report.

### Forest Service

The FS tracks data relating to special forest products in a database called the Automated Timber Sale Accounting System. These data come from permits and contracts that the agency issues to allow members of the public to harvest special forest products on FS-managed lands. Three measures are tracked in the database: quantity of product sold, value of product sold, and number of permits issued for each product. We used the quantity of product sold as the best monitoring indicator. See appendix B for a discussion of the two indicators not chosen.

Quantity of product sold has limitations as an indicator. The quantity sold is not necessarily the same as the amount actually harvested. It refers to the maximum amount of harvest permissible under a permit and is based on agency estimates of the amount people will harvest during the life of the permit. Not all harvesters obtain permits, in spite of regulatory requirements. Agency data do not reflect harvest activity by people without permits, which could be substantial.

The FS data reported here are for those products that agency specialists considered to be the most important ones in the Plan area: Christmas trees, firewood, poles and posts, mushrooms and other fungi, mosses, limbs and boughs, foliage, grasses, cones (both green and dry), and transplants. Although ferns and berries are also important, the data available for these products were insufficient for analysis and reporting.

Products such as firewood, Christmas trees, and poles and posts that can be measured in units that relate to dimension lumber (board feet, cubic feet, cords) are called convertible products. Those products that cannot be measured in such terms are called nonconvertible products. Before 1996, the FS did not track data relating to nonconvertible products by product category; they were lumped into one category: nonconvertibles. Thus, we could not track the quantity of individual nonconvertible products sold for the years before 1996. Our analysis of FS data for nonconvertibles begins in 1996 and continues through 2002, the most recent year for which we were able to obtain data. Convertible products were tracked by product category prior to 1996. Our analysis of trends in firewood, poles and posts, and Christmas trees sold begins with 1994.

All of the FS data reported in this chapter are by calendar year.

### Bureau of Land Management

The BLM tracks special forest products in the Timber Sale Information System (TSIS), and summarizes those data in a publication called *BLM Facts*. Data are available for several categories of convertible and nonconvertible products for 1987–2002. Although data are also available by district, we did not request data from districts. The data reported here

are for the entire states of Oregon and Washington but are believed to reflect special forest product harvest activity mainly from the five western Oregon BLM districts in the Plan area and on the Prineville District (Roche 2004). Very little special forest product harvesting occurs on BLM districts east of the Cascades. What is done in eastern Oregon and Washington is likely to be captured in the category “corral poles,” which are not included in this analysis (Roche 2004).

The BLM special forest products discussed here are Christmas trees, poles and posts, fuelwood, mushrooms, boughs, floral and greenery, mosses, and cones. Data are available for the amount and value of the product sold, but I report only amount. The data reported here begin with the year 1994. For some products such as ferns, greens, bear-grass, and huckleberry brush, data are readily available from the early 1990s but not for 1995 onward (although they may be available in TSIS). These important products are not discussed here because I had no data for the Plan period.

All of the BLM data reported in this chapter are by fiscal year.

### Results

The volume of fuelwood and Christmas trees sold by both the BLM and the FS declined (figs. 7 and 8). The poles and posts data show contrasting trends: substantial increases in board feet sold by the BLM since 1998, and a slow but steady decline for the FS since 1994. The BLM data could be influenced by the inclusion of activity for Oregon and Washington as a whole, or the data for recent years may include other wood products not previously tracked under this category (Gordon 2004).

The amount of greenery and foliage sold by the agencies has increased since the Plan was adopted (figs. 9 and 10). The BLM bough sales also increased. The FS limb and bough data from 1997 and 1998 are greatly out of proportion to the data for the other years. This raises questions of data quality, making the trend line questionable. The quantity of mushrooms sold by the BLM increased between 1994 and 2002 (fig. 11). Although the quantity of mushrooms sold by the FS declined overall, it has risen

since 2000 (fig. 11). The quantity of moss sold by the FS (fig. 12) varied by year, but was basically stable over time; moss sold by the BLM declined. The number of cones sold on FS lands rose but declined on BLM lands (fig. 13). Sales

of transplants declined on FS lands (fig. 14) and increased somewhat on BLM lands, with two high years in 1999 and 2000. The amount of grass sold on FS lands rose steadily (fig. 15).

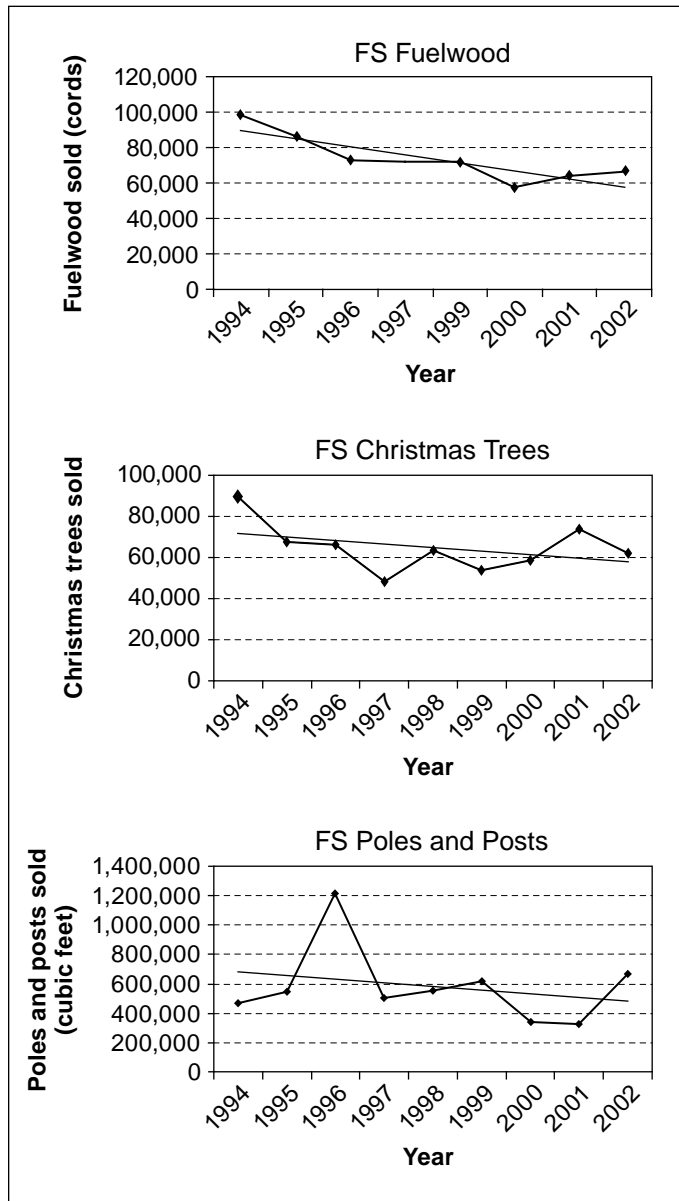


Figure 7—Convertible products sold, Forest Service (FS), 1994–2002. Straight lines are the linear regressions. For fuelwood, thousand board feet  $\times$  2.5 = cords; cubic feet  $\div$  80 = cords. For poles and posts, thousand board feet  $\times$  200 = cubic feet; linear feet  $\times$  0.3 = cubic feet; pieces  $\times$  1.1 = cubic feet.

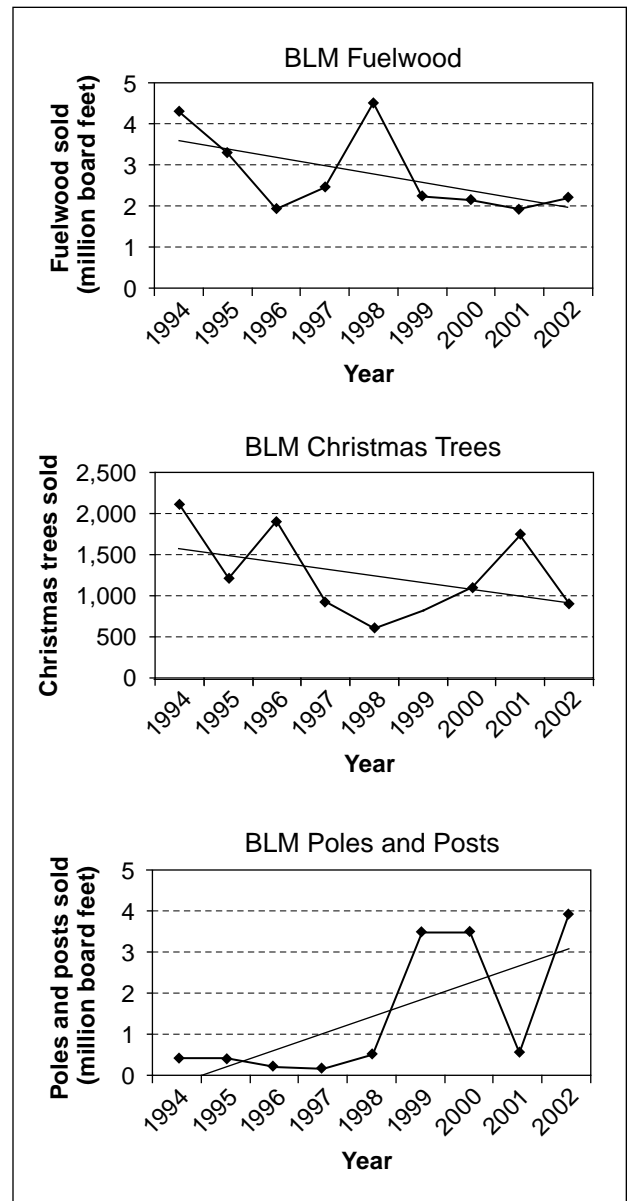


Figure 8—Convertible products sold, Bureau of Land Management (BLM), 1990–2002. Straight lines are the linear regressions.

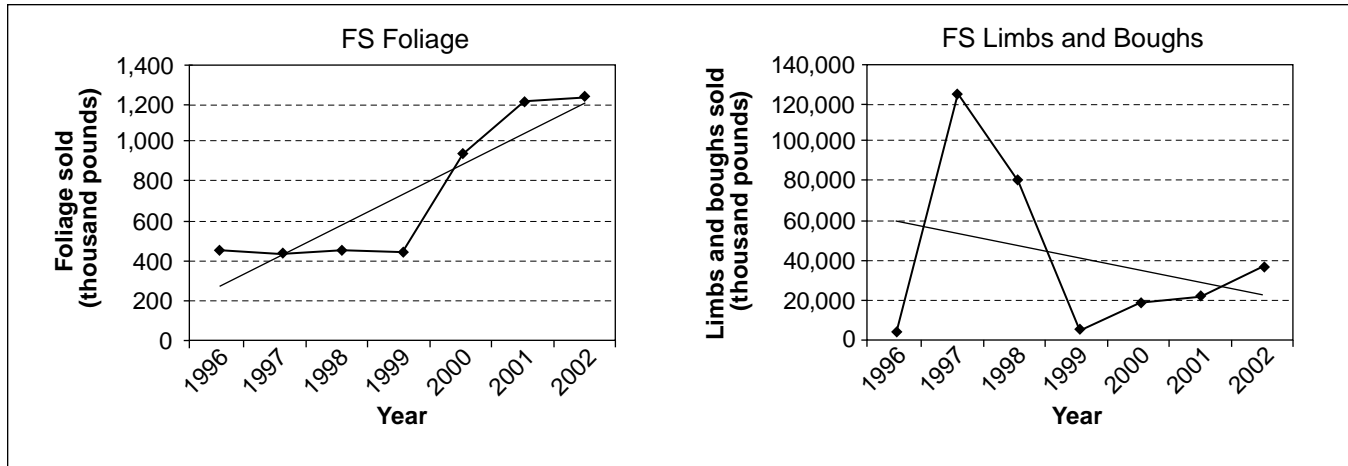


Figure 9—Foliage, limbs, and boughs sold, Forest Service, 1996–2002. Straight lines are the linear regressions. No foliage data were available from California forests before 2000; inclusion of the California data for 2000–2002 may be responsible for the increase.

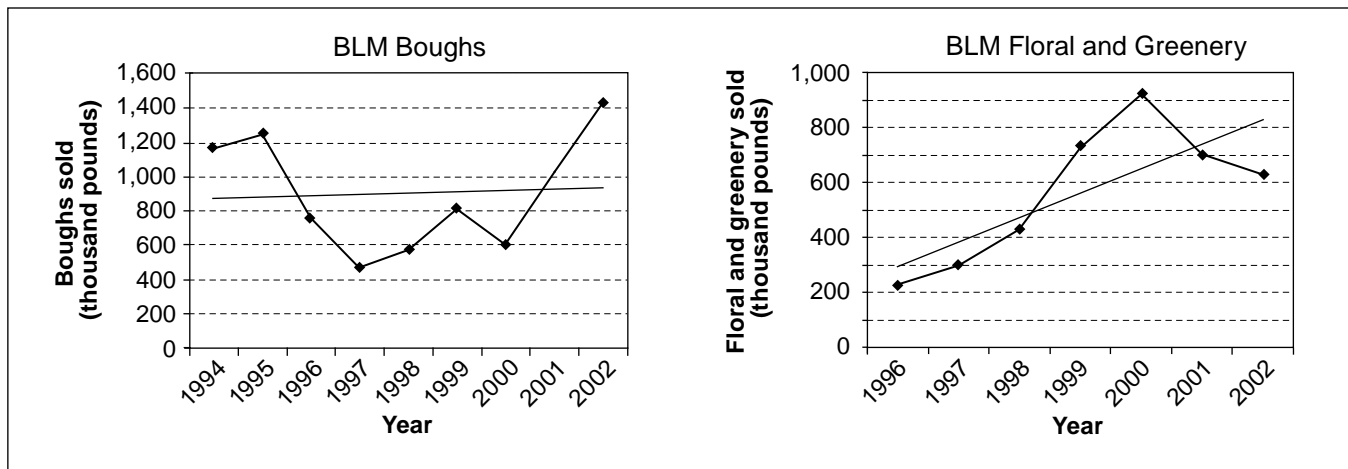


Figure 10—Boughs and floral and greenery sold, Bureau of Land Management (BLM), 1990–2002. Straight lines are the linear regressions. No floral or greenery data were available for 1990–95.

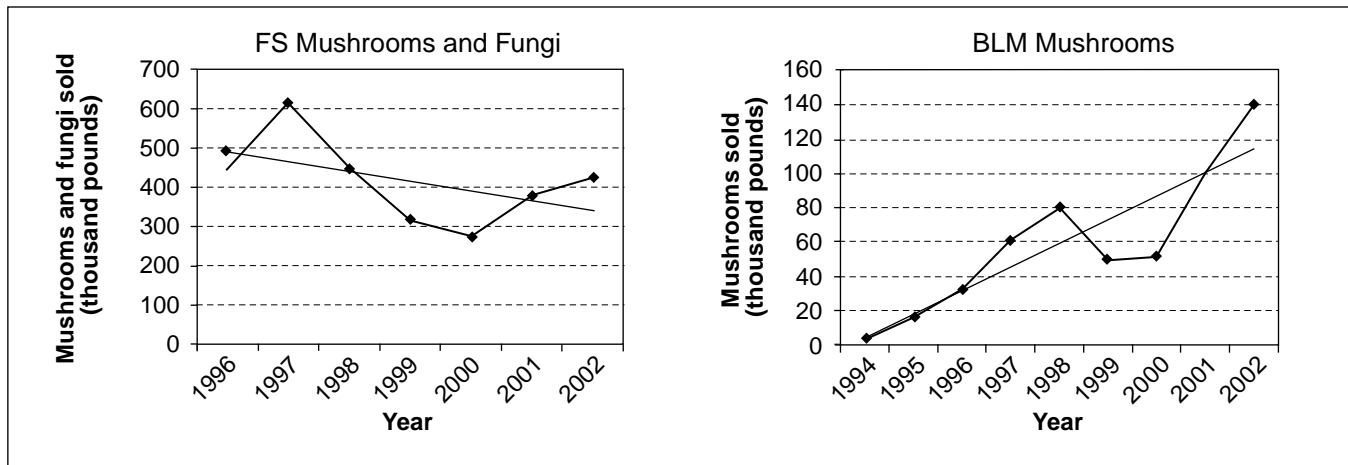


Figure 11—Mushrooms sold, Forest Service (FS) and Bureau of Land Management (BLM). Straight lines are the linear regressions.

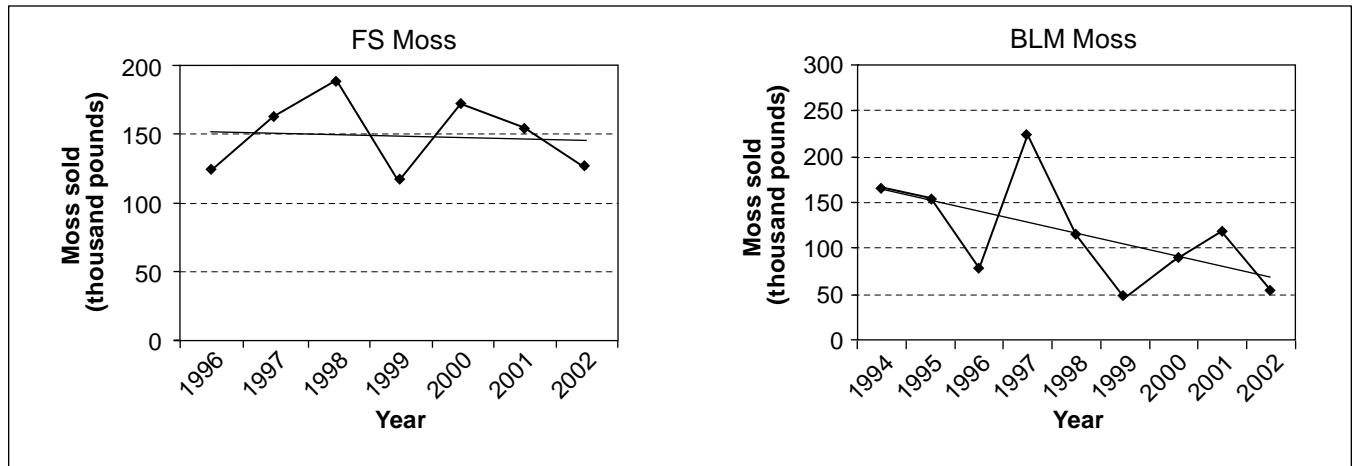


Figure 12—Moss sold, Forest Service (FS) and Bureau of Land Management (BLM). Straight lines are the linear regressions. There were no FS moss data for California.

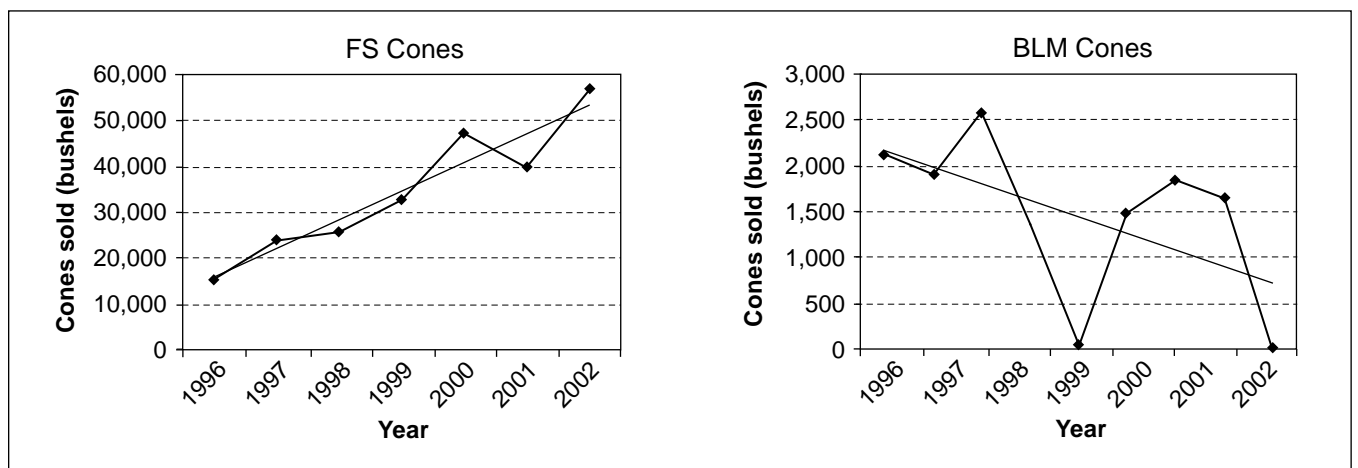


Figure 13—Cones sold, Forest Service (FS) and Bureau of Land Management (BLM). Straight lines are the linear regressions.

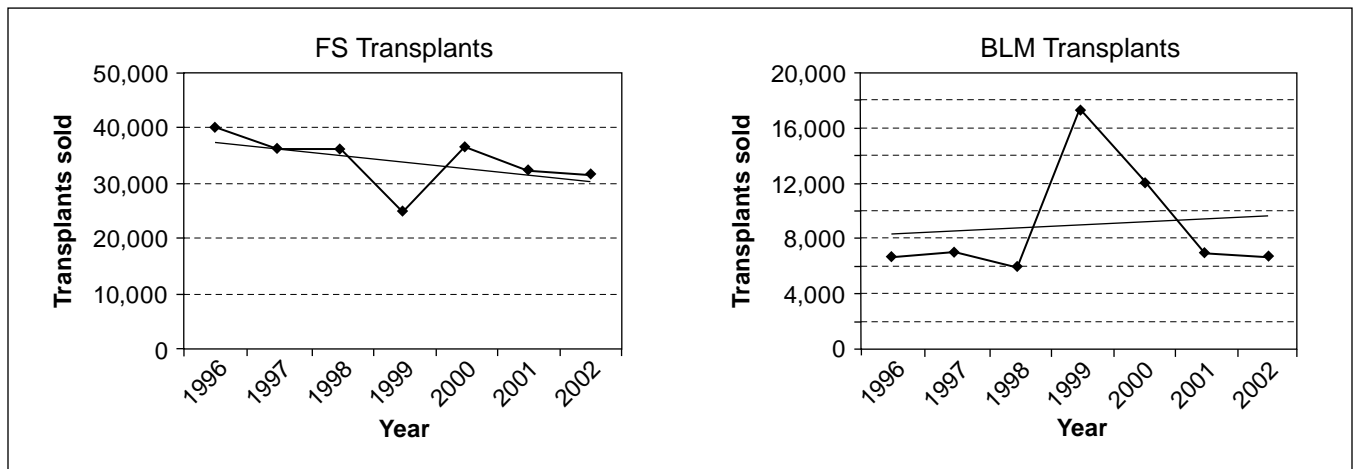


Figure 14—Transplants sold, Forest Service (FS) and Bureau of Land Management (BLM). Straight lines are the linear regressions. FS transplant data were available for California only for 1999–2001.

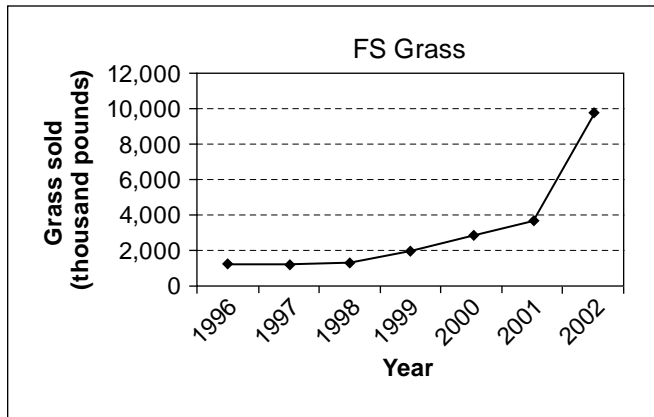


Figure 15—Grass sold, Forest Service (FS). There were no data for California.

## Discussion

The aggregate regional-scale data show a mix of trends in the quantity of special forest products sold by the agencies. Permitted harvesting of convertible special forest products declined in all cases, except for poles and posts on BLM lands. Trends in the permitted harvest of nonconvertible products differed by product and agency. Regional-scale data obscure trends at the forest scale, which may differ from regional trends. Without FS permit data for nonconvertible products for the years before 1996, comparing the quantity of nonconvertible special forest products sold before and after the Plan's adoption was not possible.

Many factors influence availability and harvest activity of special forest products. These factors include changes in harvest opportunities on federally managed forest lands, and changes in demand for products by harvesters. Both affect trends in sales of special forest products by the agencies.

Changes in harvest opportunities on federal forest lands can be caused by decreases in product availability from heavy harvest pressure, weather, or both. Changing habitat conditions on forests also affect product availability. For example, fire suppression policies may negatively affect species (like beargrass) that thrive in burned areas or are associated with early-seral-stage forests. In contrast, many commercially valuable floral greens prefer mid- to late-seral-stage forests and semiclosed canopies, which are

avored under the Plan (FEMAT 1993: VI-12). Decreased product availability may also be caused by reduced forest access from road closures or lack of road maintenance. Reduced road access to forests keeps people away from harvest sites. Finally, harvest opportunities can be constrained by management decisions to restrict the harvest of some products on parts or all of a forest.

Changes in harvester demand for special forest products from federal forests can be caused by shifts in market demand for the product, commodity prices, the availability of alternate supplies, and changing consumer preferences (e.g., switching from wood stoves to electric or gas heaters to heat homes).

Moreover, apparent changes in harvester demand may be due to increased enforcement efforts on some forests. Increasing trends in the quantity of a product sold could reflect an increase in harvester numbers and activity, or an increase in the number of illegal harvesters opting to obtain permits (with little change in actual activity).

Because many variables influence trends in the quantity of special forest products sold on federal forest lands, quantity sold—although currently the best indicator for which data are available—does not by itself adequately reflect whether or not the agencies have been producing a predictable level of special forest products. All it can tell us is whether or not agencies have been selling a predictable quantity of these products. The quantity of special forest products sold indicates some combination of harvester demand for the product, opportunities to harvest products provided by the agencies, and harvester behavior.

To gain insight into how the Plan has affected special forest product harvest opportunities locally, the monitoring team interviewed special forest products specialists from the four case-study forests (the Olympic, Mount Hood, and Klamath National Forests and the Coos Bay BLM district) (see app. D). Interview results are summarized below for products about which we obtained information.

## Fuelwood

Trends in fuelwood harvest on the four case-study forests were consistent with regional trends: downward (table 2).

**Table 2—Trends in convertible special forest products harvested on case-study forests, 1990–2002**

Location	Fuelwood			Christmas trees			Poles and posts		
	1990	2002	Trend	1990	2002	Trend	1990	2002	Trend
	--- Cords ---			--- Pieces ---			-- Cubic feet --		
Forest Service:									
Olympic	2,792	1,571	↓	3,944	1,315	↓	13,696	278	↓
Mount Hood	14,326	3,886	↓	56,851	4,465	↓	24,599	255	↓
Klamath	7,612	4,682	↓	7,714	2,310	↓	7,670 <sup>b</sup>	10,994 <sup>c</sup>	↑
Plan area			↓			↓			↓
Bureau of Land Management:									
Coos Bay <sup>a</sup>			↓	601	155	↓			
Plan area			↓			↓			↑

<sup>a</sup>Fuelwood is combined with salvage wood harvest figures in the Coos Bay District annual reports. Interviewees reported that firewood harvest had dropped since 1990, but we do not have the quantitative data to support that statement. The volume of salvage wood and fuelwood harvested together dropped from an average of 164,000 cubic feet per year between 1987 and 1991, to an average of 42,000 cubic feet per year between 1996 and 2002.

<sup>b</sup>Data were for 1991, not 1990.

<sup>c</sup>Data were for 2001, not 2002.

Notes: To see the full special forest products trend data for case forests, refer to the individual case study reports (Buttolph et al., in press; Charnley et al., in press; Kay et al., in press; McLain et al., in press). Where no data entries are recorded for a forest, no good data for the product were available; this absence does not necessarily mean that the product was not harvested.

According to interviewees, the Plan has probably affected fuelwood gathering more than any other special forest product harvest activity. Under the Plan, fuelwood harvest is highly restricted in late-successional and riparian reserves. Restrictions apply to the kind of wood removed, and where and when it can be removed. These restrictions have reduced access to fuelwood in the reserves.

Fuelwood gathering was historically linked to forest timber programs. It was typically from areas recently harvested through timber sales. Under the Plan, many fewer timber sales happened, reducing the availability of fuelwood.

### Christmas Trees

Trends in Christmas tree harvesting dropped on all four case-study forests, consistent with regional trends (table 2). Under the Plan, the Coos Bay District limited the harvest of Christmas trees from late-successional reserves to areas near existing roads. On the Mount Hood National Forest, the special forest products program manager linked Christmas tree supplies to the presence of young regeneration forests, which contain trees appropriate for Christmas trees. She

expects continuing declines in Christmas tree harvest as these stands age, and little timber harvest activity and replanting take place. On some national forests, access to high-elevation areas where preferred Christmas tree species such as noble fir grow, road closures and lack of road maintenance (a partial result of the Plan) have reduced access to Christmas trees (Duran 2004).

### Limbs and Boughs

The harvest of limbs and boughs dropped on the Olympic and Klamath National Forests (table 3). On the Olympic National Forest, bough harvesting had harmed trees, and theft was a problem, so the forest shut down the bough program in 2002. We did not obtain information about the cause of decline on the Klamath National Forest. Under the Plan, the Coos Bay District restricted bough harvesting in late-successional reserves to areas along or close to roads. Nevertheless, harvest on the district has increased substantially.

One interviewee stated that the reduced forest acreage in regeneration harvest under the Plan could reduce the supply of boughs available. Harvesters often gather boughs

**Table 3—Trends in nonconvertible special forest products harvested on case-study forests, 1996–2002**

Location	Mushrooms and other fungi			Limbs and boughs			Foliage and floral greens					
	1996	2002	Trend	1996	2002	Trend	1996	2002	Trend			
	--- Pounds ---			---- Pounds ----			---- Pounds ----					
National Forest:												
Olympic	19,642	13,800	↓	111,200	400	↓			↑ <sup>a</sup>			
Mount Hood	887	4,883	↑	7,115	386,985	↑	500	8,500	↑			
Klamath	2,278	19,505	↑	17,098	8,143	↓						
Plan area			↓			↓			↑			
Bureau of Land Management:												
Coos Bay	8,600	52,000	↑	6,450	52,730	↑	46,400	129,600	↑			
Plan area			↑			↑			↑			
Location	Moss			Cones			Transplants			Grass		
	1996	2002	Trend	1996	2002	Trend	1996	2002	Trend	1996	2002	Trend
	-- Pounds --			-- Bushels --			-- Number --			---- Pounds ----		
National Forest:												
Olympic	35,624 <sup>b</sup>	104	↓	50	20	↓	281	190 <sup>c</sup>	↑			
Mount Hood	51	0	↓	400	150 <sup>c</sup>	↑	1,105	571	↓	172,300	282,790	↑
Klamath				480	230	↓						
Plan area			↔			↑			↓			↑
Bureau of Land Management:												
Coos Bay	2,000	0	↓	994 <sup>b</sup>	150 <sup>d</sup>	↓	936 <sup>e</sup>	343	Variable			
Plan area			↓			↓			↑			

<sup>a</sup>Olympic National Forest interviewees reported a substantial upward trend in foliage harvest, especially salal; however, we were unable to obtain data on foliage for the Olympic National Forest.

<sup>b</sup>Data are for 1997.

<sup>c</sup>Trend was upward, but 2002 was a low year.

<sup>d</sup>Data are for 2001.

<sup>e</sup>Data are for 1995.

Notes: To see full special forest products trend data, refer to the individual case-study reports (Buttolph et al., in press; Charnley et al., in press; Kay et al., in press; McLain et al., in press). Where no data entries appear for a forest, no reliable data were available; this absence does not necessarily mean that the product was not harvested.

from young stands in areas of regeneration harvest. As stands mature and fewer new plantings take place, opportunities to collect boughs are likely to decrease.

### Transplants

Trends in the number of transplants sold differed among the case-study forests (table 3). Digging up transplants can be a significant ground-disturbing activity. The Mount Hood National Forest typically issued permits to remove transplants only from areas that had already undergone survey and manage procedures because the forest did not have the

means to survey solely for the purpose of a single personal-use permit. The added coordination and communication required to identify areas suitable for transplant removal may have contributed to the downward trend in the quantity of transplants sold on the Mount Hood.

### Moss

The data show a downward trend in amounts of moss sold on the case-study forests (table 3). The Olympic National Forest ended the legal harvest of moss for two reasons: monitoring showed that moss needed time to grow back,



and the presence of important moss-associated species, including potential species of concern under the Plan, required evaluating the effects of moss harvest on these species. Without methods and sufficient funding to evaluate them, the forest ended the moss harvest. The Coos Bay District also eliminated access to moss under the Plan. Moss on the district is mainly in riparian reserves. The district's Resource Management Plan, directly tied to the standards and guidelines of the Plan, directs managers to limit the harvest of riparian species.

### Mushrooms and Other Fungi

The case-study data reflect mixed trends in amounts of mushrooms and other fungi sold (table 3). Interviewees attributed trends in mushroom harvesting on FS lands to weather, market demand, and pricing. For example, matsutake mushrooms were harvested in large quantities on FS lands during the mid-1990s, when prices were high (matsutake are not nearly as abundant on BLM lands in western Oregon) (McLain 2004). In the late 1990s, the price for matsutakes dropped sharply as the Japanese market declined. This drop, coupled with an increase in the price of a matsutake permit, caused many pickers to drop out of the industry (McLain 2004). This shift in market conditions could help explain the downward trend in amounts of mushrooms and other fungi sold between 1997 and 2000.

The increase in amounts of mushrooms sold on BLM lands may be linked to the issuance of BLM's handbook on special forest products in 1994 (Gordon 2004). The BLM handbook established procedures for the sale and harvest of mushrooms, which had been overlooked until then, and may have triggered enforcement of a more formal permitting process for mushrooms than had existed previously (Gordon 2004). Thus, the rise in mushroom sales may partially reflect permit purchases by harvesters who previously harvested without them.

The Plan has also had an influence on mushroom harvesting. Some national forests (including the Willamette, the Deschutes, and the Siuslaw) prohibited commercial mushroom harvesting in at least some late-successional reserves after the Plan was adopted (McLain 2004). This

action shut down parts of these forests to legal picking, causing harvesters to shift to other areas, including BLM lands. The BLM, in contrast, did not shut down most of its late-successional reserves to mushroom harvesting. This decision, however, was subject to late-successional reserve assessments and evaluations of the effects of harvesting on the reserves.

More generally, interviewees noted that changes in forest composition associated with reduced timber harvesting under the Plan will affect some special forest products. Species associated with disturbance and early seral-stage forests (like salal or boughs) are likely to become less common, and those associated with later seral-stage forests (like matsutake, swordfern, or moss) are likely to become more available.

The survey and manage procedures were apparently not a major constraint on special forest product harvesting. Instead, the land use allocation component of the Plan—especially management objectives associated with late-successional and riparian reserves—has caused program managers to curtail the harvest of certain species on parts of the forests. The degree to which restrictions have been implemented on forests in the Plan area differs, depending in part on how individual forests have interpreted Plan guidelines.

Finally, interviewees reported that the Plan has affected the administration of special forest products programs on federal forests. For the FS, these programs were historically funded by forest timber programs. The drop in timber harvest led to a drop in forest timber-program budgets. The results were fewer staff and less funding to manage and administer special forest products programs, and to monitor the effects of harvest activities. The BLM special forest products programs were also funded by the agency's timber program historically. Although program budgets have remained flat, increasing costs and decreasing staff numbers have deterred accomplishing all of the work required to administer the program.

## Conclusions

Have predictable levels of special forest products been produced under the Plan? Convertible special forest products sold declined regionwide during the monitoring period,

except for posts and poles on BLM lands. This finding was expected for fuelwood because fuelwood harvest was highly restricted in the reserves under record of decision standards and guidelines (USDA and USDI 1994b). The trends for nonconvertibles were mixed, and they differed by agency and case-study forest.

Attributing trends in special forest product sales to agency management actions under the Plan versus other factors is difficult, making this an inadequate indicator for assessing whether the agencies have produced predictable levels of special forest products. For example, declining trends may reflect lack of harvester demand or weather conditions unfavorable for product availability (like mushrooms) and may have little to do with agency actions that limit harvest opportunities. Furthermore, the available data pertain to permitted activity only; we were unable to monitor harvest activity by people lacking permits.

Nevertheless, interviews with agency special forest product specialists provided some insights into how the Plan has affected the production of special forest products on individual forests. According to interviewees, the Plan probably affected fuelwood gathering more than any other harvest activity because of harvest restrictions in the reserves and the links between fuelwood harvest and forest timber programs. This finding was expected. Harvest restrictions for other special forest products (like mushrooms, moss, Christmas trees, cedar) exist in late-successional reserves and riparian reserves on some forests. This finding was also expected. The aging of young forest stands and the decline of regeneration harvesting under the Plan could reduce the availability of some products, such as Christmas trees and boughs. Over the long term, changes in forest habitat caused by developing older forest characteristics and decreasing early seral-stage forests are likely to alter product availability.

## Chapter 4: Grazing

Grazing on federal forests in the Northwest Forest Plan (Plan) area (mostly west of the Cascade Range) is minor compared to grazing on federal lands in eastern Oregon and Washington and northeastern California. The Forest Service (FS) units in the Plan area with the most grazing activity were the Okanogan-Wenatchee, Rogue-Siskiyou, and Klamath National Forests. The most grazing activity on Plan-area Bureau of Land Management (BLM) districts was on the Medford District. Grazing on the other four BLM districts is minimal to nonexistent.

### Monitoring Question

Have predictable levels of livestock grazing been produced under the Northwest Forest Plan?

### Expectations

Grazing was expected to continue with modifications to ensure consistency with the management objectives for the land use allocations. Modification of grazing practices in riparian reserves was expected (USDA and USDI 1994a: 3&4-276). In all allocations, sites where known and newly discovered populations of 10 mollusk species or subspecies and 1 vascular plant species listed in the record of decision (ROD) were to be protected from grazing (USDA and USDI 1994b: C-6). Grazing could be adjusted or eliminated in riparian and late-successional reserves if grazing would retard or prevent attaining reserve and Aquatic Conservation Strategy (aquatic strategy) objectives (USDA and USDI 1994b: C-17, C-33). New livestock handling or management facilities would be located outside of riparian reserves (USDA and USDI 1994b: C-33). Existing facilities could be relocated if they would prevent attaining aquatic strategy or reserve objectives (USDA and USDI 1994b: C-17, C-33). Modifications to grazing practices were expected to have consequences for individual permittees (USDA and USDI 1994a: 3&4-276).

### Data Analysis

The number of grazing allotments or leases, allotment acres, grazing permittees, and animal unit months (AUMs) are potential indicators of livestock grazing on federal forest lands. The FS and BLM track the number and acres of active and vacant grazing allotments. The Oregon BLM also tracks the number of grazing leases but does not report the number of acres leased. For the FS, the monitoring team used number of active allotments and number of active allotment acres as monitoring indicators. Allotments currently vacant were not included as most are being phased out. For the BLM, the team monitored number of grazing leases.

For the FS, the team also monitored number of grazing permittees. A grazing permittee or lessee is any entity that has a grazing permit or lease for one or more allotments, such as an individual or a cooperative with several members (Forest Service Manual [FSM] 2230.5).

The team also monitored animal unit months (AUMs) as an indicator of range use. One animal unit month equals the amount of forage a mature cow (of 1,000 pounds) and calf consume in a 30-day period (about 780 pounds of dry weight) (Mitchell 2000: 64–65). Both the FS and BLM track AUMs. We used data for authorized use (as opposed to permitted use), which represents the amount of use authorized by the agencies for that year. Authorized use can fluctuate annually, depending on forage supply, special restrictions, and other variables. Authorized (or active) use is specified on the annual bill of collection (FS) or grazing bill (BLM), and verified by a permittee's or lessee's payment of fees.

Our grazing data came from the implementation monitoring report (Baker et al., in press) and from two forest units.<sup>1</sup> Data in that report came from agency databases (INFRA and RAS), annual agency accomplishment reports, and personal interviews with agency specialists. The data are for two periods: one pre-Plan (1992–94) and one recent (2001–03). Appendix B contains a discussion of data-quality issues and grazing indicators that the team did not monitor.

<sup>1</sup> Data obtained from the FS regional offices for the Okanogan-Wenatchee and Klamath National Forests were either incomplete or incorrect and so were not used.

## Results

Regional-scale grazing data for the national forests and BLM districts in the Plan area are shown in tables 4 and 5. The FS data (table 4) indicate a drop in grazing activity since the Plan was adopted. The number of active allotments, number of active allotment acres, number of permittees, and number of authorized AUMs all declined between 1993 and 2002.

**Table 4—Grazing on national forest units in the Northwest Forest Plan area, 1993–94 and 2001–03<sup>a</sup>**

Year <sup>b</sup>	Active allotments		Permittees	Authorized
	Number	Acres		AUMs
1993–94	224	4,208,447	216	124,662
2001–03	191	3,415,138	158	85,412

<sup>a</sup>Data for the Okanogan, Deschutes, and Winema National Forests are for the ranger districts in the Plan area; they are not for the entire forest.

<sup>b</sup>For the pre-Plan period, this chart contains Pacific Northwest Region data from 1993 combined with Pacific Southwest Region data from 1994. For the post-Plan period, the forest-scale data came from 2001, 2002, or 2003, depending on the forest. The Shasta-Trinity data used were of questionable quality.

AUMS = animal unit months.

Source: Baker et al., in press, Okanogan-Wenatchee National Forest, Klamath National Forest.

The number of BLM grazing leases dropped by about half between 1993 and 2002 (table 5), and AUMs decreased slightly. When grazing is measured in AUMs alone, it appears that grazing opportunity on BLM lands remained reasonably stable since the Plan was adopted. Nevertheless, the number of authorized AUMs does not necessarily reflect actual use (Mackinnon 2005). The number of animals actually grazed may be well below the number authorized. The number of leases on BLM lands dropped substantially during the period.

In the FEMAT report (FEMAT 1993: VI-11), the BLM was reported to have provided some 23,000 AUMs, and the FS was reported to have provided about 213,000 AUMs on their lands in the northern spotted owl (*Strix occidentalis caurina*) region historically. If so, then recent figures indicate a sharp reduction in grazing on Plan-area forests.

**Table 5—Grazing on Bureau of Land Management units in the Northwest Forest Plan area, fiscal years 1993 and 2002**

Year	Leases	AUMs
FY 1993	114	10,645
FY 2002	54	9,944

AUMs = animal unit months.

Source: Baker et al., in press.

Differences in the grazing data between the two periods may partially be due to different ways of calculating and reporting the data. The BLM grazing specialists thought that the 1993 data may represent the number of active and vacant leases combined, whereas the 2002 data may represent the number of active leases only. This reporting difference could account for the drop in number of BLM grazing leases reported during the period; but grazing specialists could not verify this reporting difference. Thus, we cannot say with certainty that the changes observed were entirely due to on-the-ground changes in livestock grazing.

## Discussion

A drop in grazing activity on Plan-area forests was predicted in the Plan’s environmental impact statement (USDA and USDI 1994a), and expected based on ROD standards and guidelines. The ROD directs managers to adjust or eliminate grazing in reserves to meet the objectives of the aquatic strategy and late-successional reserves. Nationwide, the number of grazing permittees and AUMs on FS- and BLM-managed lands also decreased during the 1990s (Charnley and Langner 2001: 31, Mackinnon 2005). Thus, declines in grazing trends likely cannot be attributed to the Plan alone.

The monitoring team interviewed grazing program specialists on three of the four case-study forests where forest-scale monitoring was conducted<sup>2</sup> (the Mount Hood and Klamath National Forests and the Coos Bay BLM District) to investigate how the Plan may have contributed to declines in grazing locally (see app. D). Interview results are reported by agency in the following discussion.

<sup>2</sup>Grazing on the Olympic National Forest over the past decade was negligible, involving one permittee and, at most, 12 cattle. In 2003, the forest discontinued this permit.

Forest Service

Grazing on the Mount Hood and Klamath National Forests remained reasonably stable between 1993 and 2002 (table 6). Program managers reported little change in their grazing programs and minor effects from the Plan. The drop in the number of permittees on the Klamath could be due to a consolidation of permits. When allotments and their associated permits become open, other existing permittees often take over the permits. As a result, the number of allotments remains the same, but the number of permittees decreases.

Both forests noted greater attention to grazing effects in riparian reserves to meet aquatic strategy objectives. For example, on the Mount Hood, permittees have been asked to change some of their grazing practices in riparian areas, and to move their cattle more frequently to prevent overgrazing.

Managers on the Klamath National Forest attributed the 15-percent decline in authorized AUMs primarily to the prolonged drought the area has experienced on the west side of the forest. The Plan has had some effects, however. Under the Plan, grazing practices must be consistent with the Aquatic Conservation Strategy. This has meant reviewing and sometimes imposing restrictions on grazing in riparian areas. For example, cattle may not be allowed to enter riparian areas until the ground has fully dried in late spring, and must be removed before they overgraze, which shortens the use period. The Plan also reportedly caused the NEPA (National Environmental Policy Act) analysis associated with permit renewal to become more rigorous. In short, since the Plan went into effect, the forest has increased its scrutiny over the impact of livestock on the forest, particularly in riparian areas, and made some adjustments. The

drought has been a big factor, with shrinking water sources that require increasing protection and cattle management. The overall effects are small, incremental declines in forage availability and increased requirements for permittees.

Survey and manage requirements associated with the renewal of grazing permits under the Plan was not seen as having an effect on grazing, but the Endangered Species Act was viewed as having the potential to affect grazing. Grazing in late-successional reserves still occurs, but has been adjusted for location and timing so as to minimize ecological impacts, also shortening the season and reducing the number of animals.

After drought, the second largest factor that managers reported as contributing to reduced forage availability on the Klamath National Forest was the dramatic reduction in timber program activity incorporated into policy with the Plan. This has resulted in much less early-seral-stage forest habitat that is productive for grazing.

All of these forces have contributed to a small decline in the grazing program on the Klamath National Forest since 1994. Overall, the program is viewed as relatively stable with little turnover in permittees and good relations

**Table 6—Grazing on the case-study forests, 1993–2004**

Unit	Year	Active	Allotment	Permittees	Authorized
		allotments/leases			AUMs <sup>a</sup>
		<i>Number</i>	<i>Acres</i>	<i>----- Number -----</i>	
National Forest:					
Olympic	1993	1	644	1	193
	2004	0	0	0	0
Mount Hood	1993	5	159,787	8	5,282
	2002	5	152,564	8	5,052
Klamath	1994	51	707,369	52	29,134
	2002	55	759,330	42	24,630
Bureau of Land Management:					
Coos Bay	1994	7	439		270
	2002	6	No data		124 <sup>b</sup>

<sup>a</sup> AUMs = animal unit months.

<sup>b</sup> Inconsistent reporting: the source text also reported a figure of 496; we made an educated guess that the number 124 was more accurate.

Sources: The 1993 data for the national forests came from Baker et al. (in press), as did the 2002 data for the Klamath. Mount Hood data came from the Mount Hood National Forest grazing specialist. The 2004 data from the Olympic National Forest came from the forest planner. The 1994 data for the Klamath National Forest are from the Implementation Monitoring module, except the number of permittees is an estimate based on information provided by the forest grazing-program specialist. For Coos Bay, 1994 data are from USDI BLM 1994: 3–111, and 2002 data are from USDI BLM 2003: 85.

between managers and ranchers. Interviewees from both forests said grazing outside the reserves does not currently conflict with management objectives, so little has changed there.

### Bureau of Land Management

Cattle were grazing on the Medford, Coos Bay, Roseburg, and Eugene BLM Districts in 1993. By 2002, only the Medford and Coos Bay Districts still had grazing leases, and only 6 of the 54 were on Coos Bay District land.

The regional decline in the number of leases on BLM lands could reflect a consolidation of leases (Minor 2004), or it could reflect a phasing out of many small leases on BLM districts after the Plan was adopted (Baker 2004, Lint 2004). The Medford District, which has larger blocks of land where grazing can occur, did not phase out small leases (Minor 2004). In contrast, many of the other western Oregon BLM lands are checkerboards, with mile-square sections of BLM land alternating with mile-square sections of private land. Riparian corridors continually cut across ownerships, impeding aquatic conservation practices (such as fencing streams). Efforts to meet Aquatic Conservation Strategy objectives on these districts would likely be ineffective if adjacent landowners did not adopt the same practices. The difficulty in managing grazing in compliance with the aquatic strategy's objectives given such constraints may have led the BLM to cancel some of its small leases held by people who graze a small number of livestock (Baker 2004, Lint 2004, Mackinnon 2005). Another reason for canceling small and scattered leases was that it was not economical to manage them (Hackett 2005, Mackinnon 2005).

The change in the number of leases on the Coos Bay District between 1993 and 2002 (from seven to six) was due to a discontinuation of one short-term lease (McLain et al., in press). In 2003, two of the six remaining leases were converted to cooperative management agreements. These agreements were established with lessees in an attempt to manage grazing on the district in a manner that was consistent with the Aquatic Conservation Strategy and to protect threatened and sensitive species living in an area of critical environmental concern. The complicated land

ownership pattern in the Coos Bay checkerboard makes fencing sensitive riparian and wetland habitat impractical. Cooperative management agreements enable the BLM and adjacent landowners to collaborate in addressing grazing management to achieve ecosystem health, and allow the BLM to regulate unauthorized grazing on the land it manages (USDI BLM 2001). Under the agreements, both the BLM and private landowners coordinate in fencing off sensitive riparian zones on their lands, and designate alternative areas where grazing on BLM lands is acceptable. There are no cooperative management agreements on the Medford District (Hackett 2005).

The Coos Bay case suggests that the Plan contributed to new ways of doing business in the grazing program that promoted collaborative resource management to achieve aquatic strategy objectives. It also suggests that the substantial decline in the number of grazing leases on Oregon BLM lands between 1993 and 2001 might in part be explained by changes in the nature of grazing agreements between the agency and ranchers. Some former lessees may still graze livestock on BLM lands in the absence of formal leases, which could account for the small drop in AUMs.

The decline in timber sales under the Plan (compared with pre-1990 levels) may affect grazing. Later seral-stage forest does not offer the quality and abundance of livestock forage found in early seral-stage habitat (Mackinnon 2005, Phelps 2003). In the absence of logging, there is less transitory range, meaning less forage for livestock. Habitat change could lead to reductions in permitted AUMs, or a higher concentration of cattle in riparian areas and meadows (Minor 2004).

Although the Plan may have contributed to the decline in grazing on FS and BLM lands between 1993 and 2002, agency grazing specialists reported that other factors unrelated to the Plan have had a greater effect. These include prolonged drought, Endangered Species Act (1973) requirements relating to anadromous fish in streams on allotments, and the viability of ranching. Some permittees and lessees have experienced social and economic pressures that have undermined the viability of ranching, and have either reduced or discontinued their use of FS and BLM lands for grazing.

## **Conclusions**

Agency data indicate that livestock grazing on FS and BLM lands in the Plan area decreased between the early 1990s and the early 2000s. Some decreases were expected because of management constraints in late-successional and riparian reserves under ROD standards and guidelines. Predictable (stable) levels of livestock grazing were not produced on FS-managed lands under the Plan at the regional scale. When measured by AUMs alone, grazing levels on BLM lands were fairly stable at the regional scale, declining only slightly. However, two of four districts discontinued grazing during the Plan period, and the number of leases regionwide dropped by about half. It is unknown whether the drop in number of leases was due to a change in reporting practices between the two periods, actual change, or both.

The Plan is only one of several factors likely to be responsible for reduced grazing on federal forests in the owl

region. The FS grazing specialists interviewed by the monitoring team said that the Plan had little effect on grazing opportunity apart from causing some restrictions in riparian areas. Weather and Endangered Species Act requirements pertaining to anadromous fish in streams on allotments also constrained grazing activity. And, social and economic factors causing the viability of grazing operations to decline meant use had dropped on some units. In addition, the BLM interviewees said that managing grazing in a manner consistent with the Aquatic Conservation Strategy's objectives was difficult where district lands are in checkerboards. This contributed to canceling some leases and converting others to cooperative management agreements. Investigating the relative contributions of each of these variables to the decline in grazing was beyond the scope of the monitoring program.





## Chapter 5: Minerals

Mining on federal forests in the Northwest Forest Plan (the Plan) area is a minor land use. For leasable minerals (oil, gas, geothermal), the Cascade Range in Oregon and Washington and parts of the northern California forests may contain valuable geothermal resources (USDA and USDI 1994a: 3&4-274-275). There has been little geothermal exploration or development in the Plan area to date, and what has been done was localized. Some federal forest lands in Oregon and Washington may contain oil and gas resources, but they have not yet been explored and developed for production. The four California forests have no oil or gas.

Some parts of the Plan area have known deposits of locatable minerals (gold, silver, copper, molybdenum, chromium) and areas with high potential for discovery of mineral deposits (FEMAT 1993: VI-11). Josephine and Jackson Counties in Oregon contain known mineral deposits. The Cascade Range has high potential for the discovery and production of locatable minerals.

Salable minerals (gravel, stone, sand) occur throughout the Plan area. They are used by the managing agencies, other government and commercial entities, and private individuals mainly for construction and road building.

### Monitoring Question

Have predictable levels of minerals been produced under the Plan?

### Expectations

Mining was expected to continue, with modifications to ensure consistency with the management objectives of the land use allocations. The Plan's final supplemental environmental impact statement (FSEIS) (USDA and USDI 1994a: 3&4-275) predicted that Plan effects on minerals would be linked to development constraints and mitigation measures designed to protect late-successional and old-growth (older forest) ecosystems. No effects were expected for salable minerals (USDA and USDI 1994a: 3&4-276). The effects of mining in late-successional reserves and managed late-successional areas would be assessed. Restrictions and mitigation measures would be implemented to minimize negative effects on late-successional habitat (USDA and

USDI 1994b: C-17). The record of decision (ROD) contains several guidelines for minerals management in riparian reserves (USDA and USDI 1994b: C-34-C-35). These guidelines pertain to road building, support structures and facilities, and waste materials, and they are designed to ensure consistency with the objectives of the aquatic conservation strategy. The ROD also contains standards and guidelines for plans of operation, reclamation plans and bonds, inspection, and monitoring in riparian reserves. These standards and guidelines could increase the cost of extracting minerals from the reserves, and decrease mining activity there (USDA and USDI 1994a: 3&4-276).

### Data Analysis

Minerals production only on national forest lands is assessed here, because the Bureau of Land Management (BLM) did not provide the monitoring team with minerals data.

Finding good indicators for mining proved challenging. The indicators differ by mineral class, as do the years for which data are available. I report locatable and salable minerals data for the Forest Service (FS) Pacific Northwest Region (Region 6) and Pacific Southwest Region (Region 5) forests separately because they are available for different years in each region.

### Leasable Minerals

The monitoring team used number of leases of record (leases) as an indicator of leasable minerals activity. The BLM is responsible for recording and issuing leases for leasable minerals. Leases are normally issued for a 10-year period. It is not possible to tell how many of the existing leases are active. The Region 6 data were available for fiscal years 1995 and 2000. Annual data for fiscal years 1990 onward were available for the California forests. Only the 1995 and 2000 data are reported for Region 5.

The Minerals Management Service tracks the production of leasable minerals. No production reports for leasable minerals are available for the Plan area because no leasable minerals were produced there during the monitoring period.

### Locatable Minerals

The FS does not track the volume of locatable minerals removed. This information is proprietary, and the government does not charge users any royalties or payments (other than income taxes) on the basis of volume removed (Gusey 2003). In the absence of production data, the best available indicators pertain to public participation in mining activity. Number of mining sites is one such indicator. However, many mining sites are abandoned, and agency databases do not distinguish between abandoned and active sites, making this a poor indicator. Instead, the team monitored the number of new mining claims located and the number of plans of operation approved each year. Total annual numbers of mining claims and plans of operation would be better monitoring indicators, but these data were not available.

A mining-claim location may indicate a person’s intent to mine in a given area. A plan of operation describes how a user intends to develop the mining site. The plan of operation must be approved before the user can start mining on a claim. The number of plans of operation submitted to a forest may be higher than the number approved. We do not know what percentage of plans submitted actually get approved.

Data for the number of new mining claims located were available for the years 1990–2003. Data for the number of new plans of operation approved were available for most years between 1995 and 2003.

### Salable Minerals

Volume of salable minerals removed is the indicator used for salable minerals production. The FS tracks three categories of use: FS use, free use, and contract use. The FS removes salable minerals mainly for road construction and reconstruction. The agency issues free-use permits to members of the public and government agencies. Users wishing to remove salable minerals for commercial purposes obtain contracts of sale.

The Region 6 salable minerals data are for fiscal years 2000–2003. No data are available for volume removed under free-use permits or contracts of sale for Region 6 before 2000. During the 1990s, Region 6 estimated the volume of

salable minerals removed for FS use on the basis of miles of road constructed and reconstructed, which was not considered accurate. The Region 5 data were available for the years 1990–1995 and 2000–2003.

## Results

### Leasable Minerals

The number of leases of record held on Plan-area forests in 1995 and 2000 are shown in table 7. These data indicate virtually no change in leasable minerals activity on FS lands since the Plan was adopted. The only California forest with leases of record was the Klamath, with 43 in each period. Most leases in Region 6 were on the Deschutes National Forest. No leasable minerals were produced during the monitoring period (Gusey 2003).

**Table 7—Leasable minerals activity in Northwest Forest Plan-area national forests, fiscal years (FY) 1995 and 2000**

Location	Number of leases of record	
	FY 1995	FY 2000
Region 5	43	43
Region 6	88	87
Total, Plan area	131	130

Sources: For Region 5: Forest Service annual report; for Region 6: mineral leasing report December 1995 and December 1997, Region 6 Recreation, Lands, and Minerals staff spreadsheet January 1999.

### Locatable Minerals

Figures 16 and 17 contain indicator data for locatable minerals. The number of new claims located and new plans of operation waned over time. Region 6 forests accounted for most of the new claims of record. The Okanogan-Wenatchee, Mount Baker-Snoqualmie, and Siskiyou National Forests had the most new mining claims located. Most of the new plans of operation came from two Region 5 forests (the Klamath and Shasta-Trinity), possibly reflecting the high rate of recreational mining there. In Region 6, the Okanogan-Wenatchee had the highest number of new plans of operation.

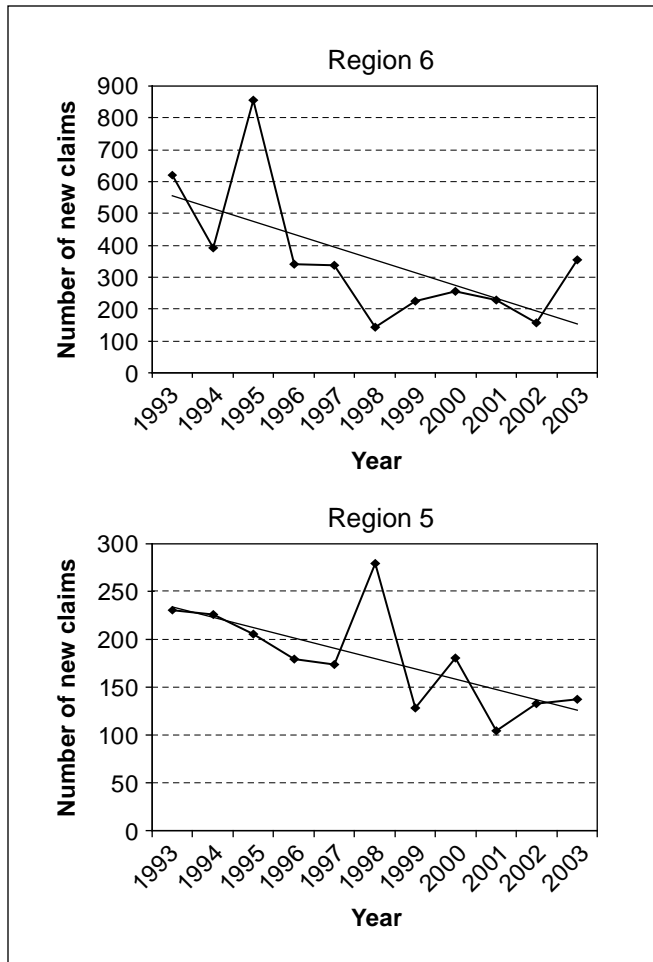


Figure 16—New mining claims located on Plan-area national forests, 1993–2003. Straight lines are the linear regressions. Source: Bureau of Land Management LR2000 report.

### Salable Minerals

The volume of salable minerals removed in Region 6 fluctuated, with a downward trend since 2000 (fig. 18). The decline can be attributed to drops in the amount of FS and commercial use (table 8). The volume removed by the FS declined steadily between 1990 and 2003. In Region 5, the volume removed under contract fluctuated, and the volume removed under free use dropped sharply (table 8). As in Region 6, FS use declined steadily.

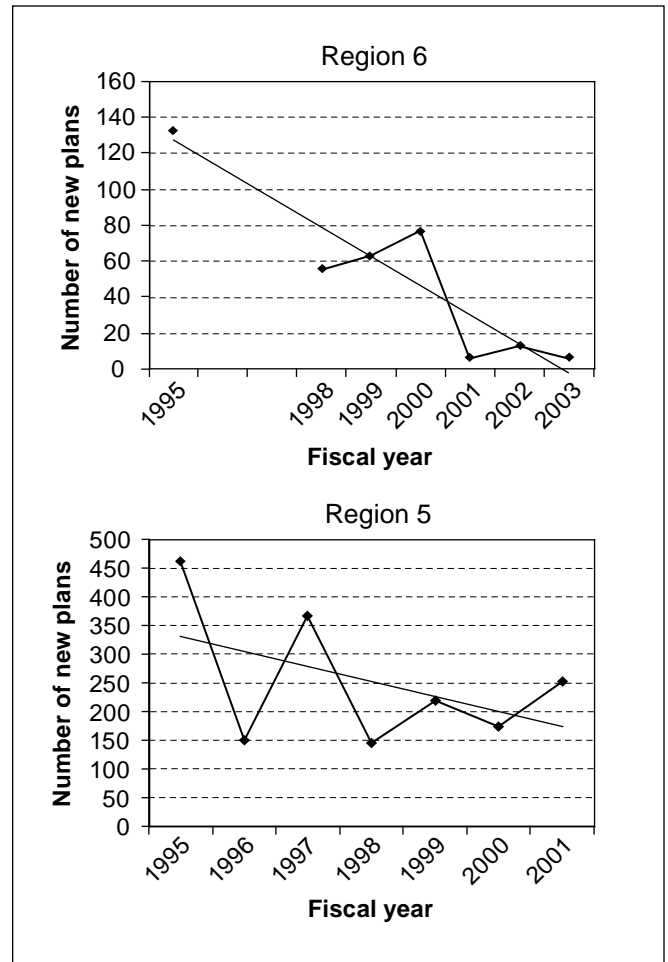


Figure 17—New plans of operation approved, fiscal years 1995–2003, Forest Service. Straight lines are the linear regressions. Sources: Region 5: Management attainment reports (MAR). Region 6: MAR attainment FY95; FY98 MAR item 84.2; FY99 NFMG (minerals budget code) final program budget advice; FY00 accomplishment report and mineral material production reports; FY01-03 MAR item MG-BNE-OP-PR (bonded, nonenergy operating plans processed to a decision).

### Discussion

For leasable minerals, the number of leases of record remained stable over the monitoring period, and production was nonexistent. We do not know how many of the leases are currently active. For locatable minerals, we do not know whether the decline in new mining claims located and new plans of operation approved was associated with a decrease in the production of locatable minerals over time, because

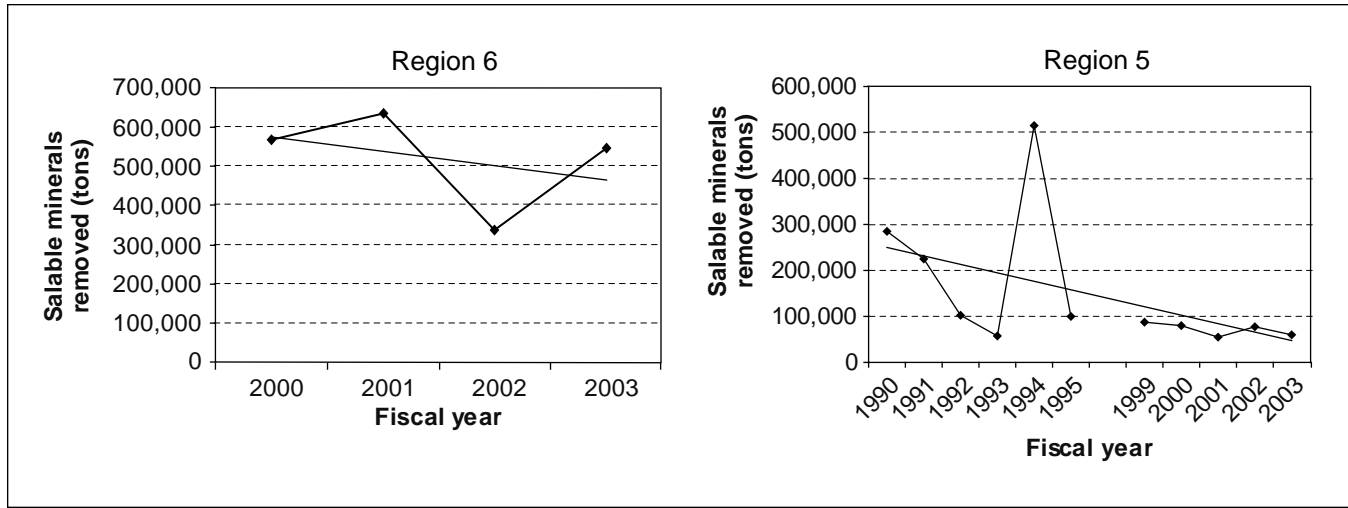


Figure 18—Salable minerals removed from Plan-area national forests, fiscal years 1990–2003. Straight lines are linear regressions. Sources: Region 5: Forest Service Annual Production Reports; Region 6: Mineral Material Production Reports.

**Table 8—Salable minerals removed from Northwest Forest Plan-area national forests; 1990, 1995, and 2000**

Fiscal year	Forest Service Region 5				Forest Service Region 6 <sup>a</sup>			
	Contracts	Free use	FS use	Totals	Contracts	Free use	FS use	Totals
	<i>Tons</i>							
1990	8,297	169,848	107,528	285,673			676,500	
1995	5,328	18,410	76,245	99,983			369,520	
2000	53,150	1,495	26,023	80,668	212,836	212,826	142,026	567,688
2003	32,539	10,147	18,166	60,852	48,149	383,634	113,843	545,626

<sup>a</sup>The 1990 and 1995 data for Region 6 Forest Service use are of questionable accuracy.

no production data were available. A decrease in locatable minerals production was expected in the reserves. The volume of salable minerals produced declined. This decline was not anticipated in the FSEIS.

To gain insight into how the Plan has affected minerals production at the forest scale, we interviewed agency specialists knowledgeable about the minerals program on four case-study forests (the Olympic, Mount Hood, and Klamath National Forests and the Coos Bay BLM District) (see app. D). The interview results are summarized below by mineral class. For a more detailed discussion of mining on these forests see Buttolph et al. (in press), Charnley et al. (in press), Kay et al. (in press) and McLain et al. (in press).

### Leasable Minerals

The Coos Bay BLM District and the Klamath National Forest have some mineral leases, but they are mostly inactive. Activity was influenced more by energy prices than by the Plan. The Coos Bay District reported that Plan restrictions have kept some potential operators from bidding on mineral leases.

### Locatable Minerals

Locatable minerals activity can be highly variable, depending on market demand, global supply, and prices. In 1993, the BLM began to assess miners that have 10 or more claims an annual mining claim fee of \$100 per

claim. This fee may have contributed to the decline in new claims of record on FS lands; the charge could deter miners who do not intend to actively work their claims (Gusey 2004).

Recreational gold mining with suction dredges occurs on the Klamath National Forest and the Coos Bay BLM District. The Klamath has experienced major growth in recreational mining since the late 1980s, when a recreational mining club established itself locally. The club has more than 60 miles of claims along the middle Klamath River and its tributaries. Instream mining activity has been curtailed over the last decade by the Endangered Species Act (1973) and state regulations that increased protection for anadromous fish, shortening the period in which suction dredge mining could take place. No Plan effects on recreational mining were reported.

### Salable Minerals

The volume of salable minerals extracted from a forest can vary widely from year to year. Agency use declined on all four case-study forests because of a drop in road building associated with the decrease in timber sales.<sup>1</sup> Salable minerals are used for construction aggregate (Gusey 2004). Individuals remove rocks for personal use, such as landscaping. Requests from road contractors and state transportation departments were sporadic. An interviewee from the Mount Hood National Forest stated that survey and manage species requirements had delayed the expansion of some rock quarries there.

Because there has been little in the way of large-scale minerals extraction on the case-study forests, the Plan has not been much of a constraint on mining there. An exception is the increased scrutiny over mining activity in riparian reserves. Miners who wish to operate in riparian

reserves are subject to Plan analysis requirements and mitigations before a plan of operation can be approved. These requirements increase the time and cost needed to obtain a plan of operation. One forest minerals program specialist and one miner interviewed said this increase has had a disproportionate effect on small-scale operators, deterring them from mining in reserves.

### Conclusions

To determine whether predictable levels of minerals have been produced under the Plan, minerals production must be tracked. The Minerals Management Service tracks the production of leasable minerals. The FS tracks the removal of salable minerals. The agencies do not track locatable minerals production.

No leasable minerals were produced during the first 10 years of the Plan, and the number of mineral leases remained stable. Thus, a predictable level of leasable minerals was produced.

The lack of production data for locatable minerals makes it impossible to determine with certainty whether predictable levels of locatable minerals were produced. The available indicator data do show a decline in locatable minerals activity. A decline in production was expected under Plan standards and guidelines. The reasons for the decline in activity are not fully known, but the Plan was probably a minor contributing factor.

The volume of salable minerals produced during the monitoring period dropped. This drop was not expected. Interview data suggest, however, that this drop was due more to a lack of demand by users than to management constraints imposed by the Plan. The decline in volume removed by the FS reflects a decrease in road building on FS lands.

<sup>1</sup>See chapter 6 for a discussion of trends in forest road miles.



## Chapter 6: Recreation

Demand for recreation and tourism has grown in the Pacific Northwest over the last decade (OTC 2003, USDA FS 2003b, WOTED 2003). Many federal forests in the Northwest Forest Plan (the Plan) area are increasingly used for recreation. The Forest Service (FS) is the biggest supplier of dispersed recreation in the United States, and a significant market segment for dispersed recreation exists in the Pacific Northwest (Slider 2004). Many communities near federal forests view forest-based recreation and tourism as providing opportunities for economic development and diversification. By providing a stable or increasing supply of recreation opportunities on federal forest lands, the agencies are contributing to this development.

### Monitoring Question

Have predictable levels of recreation opportunities been produced under the Plan?

### Expectations

Recreational use of federal forests was expected to continue, consistent with the management objectives of the land use allocations. Recreation areas would be managed to minimize disturbance to species protected through survey and manage standards and guidelines in all land allocations (USDA and USDI 1994b: C-6). Some recreation activities could be adjusted to attain late-successional reserve and Aquatic Conservation Strategy objectives (USDA and USDI 1994b: C-18, C-34). New recreation developments in the reserves could be approved if adverse effects could be minimized or mitigated (USDA and USDI 1994b: C-19, C-34). Ski area expansions would be reviewed case-by-case for effects on late-successional and riparian habitat (USDA and USDI 1994a: 3&4-279). Primitive and semiprimitive recreation opportunities could improve with the elimination of roads for watershed restoration. The Plan would also foster natural-looking landscapes (USDA and USDI 1994a: 3&4-279).

### Data Analysis

Recreation data available from the agencies pertain to either the supply of or the demand for recreation opportunities on federal forest lands.<sup>1</sup> The monitoring team focused on supply to assess whether predictable levels of recreation opportunities have been produced under the Plan. The team did not monitor the nature or quality of users' recreational experiences, or the ability of sites to provide specific types of recreational experiences. After a thorough review of the available data, the team chose the following indicators to monitor: acres of wilderness, road miles, number of recreation residences, ski-area visitation, miles of trail, number of outfitter-guide permits, and number and capacity of developed sites (such as picnic sites and campgrounds).<sup>2</sup> For most of these indicators, we could only obtain status as opposed to trend data, or data for recent years. I also report recreation visitation (an indicator of demand), although the data available only reflect status (FS) or recent trends (Bureau of Land Management [BLM]). Appendix B contains a more detailed discussion of the quality and availability of agency recreation data and our choice of indicators.

Most of the data are presented and discussed by agency because the FS and BLM track recreation differently, and have data available for different years. The FS began keeping recreation data in the INFRA database in 1999. Most recreation data for earlier years are unreliable, or must be obtained from individual forests. The exceptions are noted below. The BLM has maintained recreation data in the Recreation Management Information System (RMIS) in electronic form since 1999. Data for earlier years were on paper hardcopy and were not retained by the Oregon state office. Our ability to answer the monitoring question is limited by the fact that pre-1999 recreation data were unavailable for most of the indicators. The following sections address data sources and limitations more fully.

<sup>1</sup> I use "demand" to refer to recreation use and "supply" to refer to the different types of recreation opportunities spread across the spectrum of federal forest lands.

<sup>2</sup> Capacity refers to the number of people a site is designed to accommodate at one time, times the number of days each year a site is in operation ("people at one time" days).

## Results

### Wilderness

The amount of wilderness on federal forest lands increased slightly during the monitoring period, from 4,715,000 acres in 1994 to 4,735,000 in 2004 (table 9). The 20,000 acres of wilderness added in the Pacific Northwest Region (Region 6) between 1994 and 2004 resulted from the designation of Opal Creek in Oregon as wilderness (Connelly 2004).

**Table 9—Designated wilderness in the Northwest Forest Plan area**

Location	1994	2004
	<i>Acres</i>	
BLM (Oregon and Washington)	14,000	14,000
FS Region 5	1,136,000	1,136,000
FS Region 6	3,565,000	3,585,000
Totals	4,715,000	4,735,000

These numbers do not include other congressionally designated areas such as national monuments and national recreation areas.

Sources: For Region 5—Regional Ecosystem Office internal files; for Region 6—R6 GIS files; for Bureau of Land Management (BLM) Oregon and Washington—Oregon State office internal files.

### Roads

Roads provide access to national forests and BLM districts. According to the National Survey on Recreation and the Environment (USDA FS 2003b), driving for pleasure through natural scenery is one of the most popular outdoor recreation activities in the United States. Agency road systems have many uses, and they are key to providing recreation opportunities for the public. “The presence or absence of roads is one of the most critical aspects of a landscape that affects peoples’ recreation experience” (USDA and USDI 1994a: 3&4-278).

The team monitored total “system” road miles on FS and BLM lands. System road miles are those that the agencies include in their inventories and are responsible for maintaining. National forests also have “unclassified” roads, which are not managed as a part of the forest transportation system (36 Code of Federal Regulation [CFR] 212.1). They include unplanned roads, abandoned travel ways, and off-road vehicle tracks that the agency has not designated and managed as a trail. They also include those roads that

were once under permit or other authorization and were not decommissioned on the termination of the authorization. We did not monitor unclassified roads because they are not intended for public use.

The FS and BLM maintain system roads at five levels. Level 1 includes roads closed to traffic year-round. Level 2 roads are maintained for high-clearance vehicles. Level 3, 4, and 5 roads are maintained for passenger car access, although they provide different amounts of convenience and passenger comfort.

For the FS, we obtained road accomplishment reports for Pacific Southwest Region (Region 5) and Region 6 for fiscal years (FY) 1998 through 2002. Between FY 1998 and FY 2002, the FS road system on Plan-area forests decreased by 821 miles (table 10), from 71,068 to 70,247 miles (a decrease of 1 percent of total system road miles). The bulk of this decrease (790 miles) was on the Region 6 forests. Level 1 and 2 roads increased in mileage over time, while miles of level 3 through 5 roads declined. These trends are consistent with those in Region 6 as a whole. Between FY 1990 and FY 2003, total road mileage in Region 6 decreased by 1,943 miles. At the same time, level 1 roads (which are closed to the public) increased by 7,241 miles, and level 3 through 5 roads decreased from 21.7 percent of the system to 15.8 percent (Erkert 2004). To what extent are these changes a result of inventory adjustments versus new road construction, reconstruction, or decommissioning?

Road accomplishment reports indicate that between FY 1998 and FY 2002, Plan-area national forests in Region 6 constructed 128 miles of new roads, reconstructed 2,471 miles of roads, and decommissioned 909 miles of roads. Decommissioning is typically of level 1 and 2 roads (Freel 2004). However, level 1 and 2 roads on Region 6 forests increased by 1,080 miles during this same period (table 10). This increase implies that, to some extent, changes in the road-system inventories are due to factors other than road work performed on the ground.

Between FY 1998 and FY 2002, the FS changed its methods of inventorying roads (Freel 2004). The newer, geographic information system–based methods are more accurate and may have caused adjustments to the earlier inventories. The agency also cleaned up and clarified its roads



**Table 10—Total Northwest Forest Plan-area Forest Service and Bureau of Land Management system road miles**

Plan area	Fiscal year	Levels 1–2	Levels 3–5	Total
<i>Miles</i>				
Forest Service <sup>a</sup>				
Pacific Southwest Region	1998	12,259	3,890	16,149
	2002	12,735	3,383	16,118
Pacific Northwest Region	1998	43,172	11,747	54,919
	2002	44,252	9,877	54,129
Totals	1998	55,431	15,637	71,068
	2002	56,987	13,260	70,247
Bureau of Land Management <sup>b</sup>	1999	6,011	11,772	17,783
Oregon	2003	7,760	6,916	14,676

<sup>a</sup>Source: Road Accomplishment Reports and Management Attainment Report target reporting.

<sup>b</sup>Source: Dick Bergen, Bureau of Land Management Oregon State office.

Note: Data represent miles of system roads as of the end of the fiscal year.

data during this period as it started to put them into the INFRA database. These changes in inventory methods may account for some of the changes in road mileage.

Roads also get reclassified over time. For example, a forest may decide to drop a level 3 road down to a level 2 road so that it does not have to be maintained to Highway Safety Act standards for passenger cars, which is very expensive (Eckert 2004). This changes the number of miles in levels 1 and 2 versus levels 3 through 5 maintenance categories. In general, the FS is adding very few new miles to its road system. More roads are being reconstructed than are being built. Road decommissioning is ongoing and proceeds as funds become available. Over time, road mileage on national forest lands has decreased; more miles of road are decommissioned than are built. Level 1 and 2 road miles have increased with an associated decrease in level 3 through 5 road miles, so fewer miles are accessible to passenger cars. The increase in level 1 and 2 miles occurred because the loss of funding from appropriated sources and the loss of work done by timber-sale operators mean the agency does not have the budget to maintain as many of its roads to higher standards (Eckert 2004). Resource constraints relating to fish and wildlife may also be a contributing factor.

The BLM roads data came from the Oregon BLM state office. They are stored in the FIMMS database. The data begin in FY 1999, because no reliable data for earlier years

were accessible at the state level owing to a database revision (Bergen 2004). Roads on BLM districts decreased by 3,107 miles between FY 1999 and FY 2003, from 17,783 to 14,676 miles (table 10). This 17.5-percent decrease districtwide represents a much more rapid drop than occurred on the national forests. As with FS lands, level 1 and 2 roads increased in mileage while level 3 through 5 roads decreased in mileage. The major factors contributing to the reduction of roads on BLM lands were declining road maintenance budgets, Plan standards and guidelines for species protection, and Plan management objectives for late-successional and riparian reserves (including the Aquatic Conservation Strategy) (Dowlan 2004).

#### Additional BLM Recreation Data

The number of trail miles, developed recreation sites, outfitter-guide permits, and visitors on the five Oregon BLM districts in the Plan area for FY 1999 and FY 2002 are shown in table 11. In FY 2002, the five Oregon BLM districts in the Plan area reported more than 4.9 million visits, 60 developed recreation sites, 277 miles of trails, and 162 outfitter and guide permits issued. Between FY 1999 and FY 2002, the number of trail miles and developed recreation sites remained constant, while visits and outfitter and guide permits increased. Increasing visitation and commercial recreation use on BLM lands appears to

**Table 11—Recreation indicators, Bureau of Land Management (BLM), fiscal years (FY) 1999 and 2002**

Indicator	FY 1999	FY 2002
Miles of maintained trails	277	277
Outfitter and guide permits	139	162
Developed recreation sites	60	60
Recreation visits	4,119,000	4,908,000

Miles of maintained trails = total trail miles on BLM land (Wolf 2004). These data are for the five western Oregon units and do not include Lakeview.

Source: BLM Recreation Management Information System database for trails, permits, and sites data; for visitation data (Wolf 2003).

be consistent with the general growth in demand for recreation opportunities in the Pacific Northwest. These data show that recreation opportunities on BLM lands remained stable or increased between FY 1999 and FY 2002. Whether recreation opportunities on BLM lands have increased, decreased, or remained the same since 1994 is impossible to say without gathering data from individual districts.

**Additional FS Recreation Data**

Additional FS recreation data were obtained for recreation residences, ski areas, outfitter and guide permits, number of developed sites, and recreation visitation.

**Recreation residences—**

The BLM has no recreation residences. The monitoring team obtained data on FS recreation residences for FY 1991 through 1994 from FLUR (forest land use report database), which were only available in hardcopy. The team obtained data for FY 2000 through FY 2002 from INFRA. Because very little variation in the data was found within periods, I only report on 2 years—one pre-Plan and one recent. The INFRA data are available by forest, making it possible to calculate the number of recreation residences in the Plan area. The earlier FLUR data, however, are available at the regional scale only, so it is not possible to compare change in the number of recreation residences in the Plan area over time. I report FS Region 5 and Region 6 totals for FY 1992 and FY 2002, and the number of recreation residences in the Plan area for FY 2002 only.

There was a slight increase in the number of recreation residence authorizations in FS Regions 5 and 6 as a whole between FY 1992 and FY 2002 (table 12). In FY 2002, recreation residences on Plan-area forests in Region 6 accounted for most of the Region 6 total. Plan-area forests in Region 5 composed a minor part of that region’s total. The Wenatchee and the Mount Hood National Forests had the most recreation residences in the Plan area, together accounting for roughly half of all authorizations in FY 2002.

**Table 12—Recreation residence authorizations, Forest Service Pacific Southwest Region (Region 5) and Pacific Northwest Region (Region 6), FY 1992 and FY 2002**

Location	FY 1992	FY 2002
Region 5	6,452	6,542
Region 6	2,725	2,816
Total (Regions 5 and 6)	9,177	9,358
Plan area Region 5		107
Plan area Region 6		2,533
Total Plan area forests		2,640

One authorization generally equals one recreation residence, but not always. The authorization is the number of recreation residences administered at one time, which does not necessarily represent the actual number of residences. Authorizations are closed when a residence is sold, and pending when the agency works to issue a new authorization to a new holder—the numbers here represent the number of authorizations in the database the day that the data were pulled.

Source: 1992—FLUR database; 2002—INFRA database.

Although it is not possible to determine whether the number of recreation residence authorizations for Plan-area forests actually increased, an increase is likely given that most recreation residences in Region 6 are in the Plan area. However, new recreation residence tracts were not created, and the national trend reflects a slight decrease in the number of recreation residences (Hearst 2004). Existing residences are sometimes destroyed by catastrophic events such as fires and floods and not rebuilt, or are included in land exchanges. Thus, it is questionable whether an increase in the number of recreation residences really occurred. As FLUR data were entered into the INFRA database,

the records may have been validated and cleaned up, which could have increased the number of authorizations.<sup>3</sup> Alternatively, the earlier data may represent the number of authorizations actually in place, and the later data may represent the number of authorizations being administered (including issued, pending, and closed) within a given year (Hearst 2004). Given concerns about data accuracy, I conclude that the number of recreation residences remained stable rather than increased during the monitoring period.

#### Ski areas—

Ski areas draw many winter recreation visitors to FS-managed lands. In the Plan area, 17 major ski areas occupy roughly 0.15 percent of FS land (Lowe 1996). All are in Region 6, and most of them are in the Cascade Range. The number of ski areas remained the same between 1990 and 2002, although at least one of the areas expanded the number of lifts and runs it offered during the study period. The BLM has no ski areas on lands it manages in the Plan area.

The monitoring team also tried to obtain data on ski-area capacity as a measure of recreation opportunity, but never received it despite requests. The data the team did receive were for number of visitors only (a demand measure). Appendix B lists the ski areas included in the data set.

The number of skier days on Plan-area forests increased between 1989 and 2002 (fig. 19) from 2,446,763 in the 1989–90 season to 3,452,550 during the 2001–02 season, an increase of 41 percent. Low snow years reduce the number of visitors and probably explain dips in the trend. An increase in the popularity of snowboarding over the last decade may have contributed to growth.

<sup>3</sup>For example, a recreation specialist on the Mount Hood National Forest, which has one of the highest numbers of recreation residences in the Plan area, stated that our data for Mount Hood were incorrect. These data show that the number of recreation residences increased from 544 to 589 between 2000 and 2002. According to her, there was no increase.

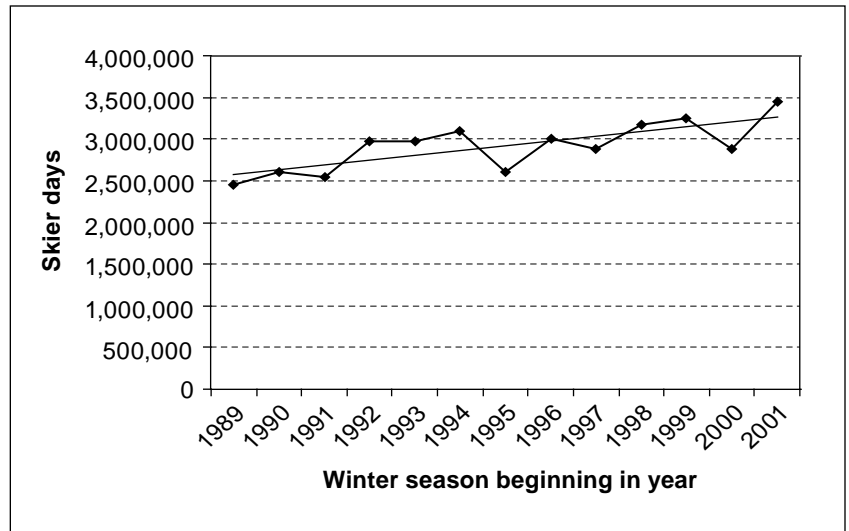


Figure 19—Skier days at Plan area national forest ski areas, 1989–2002. Straight line is the linear regression. The number of visits reported in this table represent the number of people who bought lift tickets. It underestimates use because some people buy season passes and make numerous visits, but their season pass is only counted as one visit. A significant number of people visit as nonskiers but are not recorded in these numbers. The data do not include ski areas that explicitly have snowcat skiing or heli-skiing. Source: Records kept by individual ski resorts.

In the years right after the signing of the Plan's record of decision (ROD), the ski industry expressed concern about the effects the Plan would have on ski-area operations. Specific concerns pertained to long-term special use permits and investments by the industry in operating, developing, and expanding ski area facilities (Lowe 1996). The ROD assumed that existing and permitted ski areas would continue under their existing permit terms and that development in existing permit boundaries would be possible. The agencies, however, expected that more time would be needed to respond to proposals for improving, developing, and expanding ski areas and to bring projects to fruition because of the additional analysis requirements of the Plan (Lowe 1996). In addition, ski-area expansion into late-successional reserves could be hampered if the expansion was deemed to adversely affect management objectives.

We did not monitor ski-area expansions. The upward trend in the number of skier days during the decade, combined with no change in the number of ski areas, indicate that opportunities to ski likely remained stable or increased. We did not monitor how the nature of the skiing opportunity (the recreation experience) may have changed.

**Outfitter and guide permits—**

The number of outfitter and guide permits authorized by the FS rose over time, from 793 in FY 2000 to 947 in FY 2002 (table 13). Outfitter and guide permits reflect opportunities on FS-managed lands for organized recreational activities led or facilitated by experienced and trained guides. Such recreational experiences might not be possible in the absence of an outfitter or guide, who accompanies participants and provides any necessary recreational equipment. The growth in outfitter and guide permits authorized by both the FS and BLM reflects increased demand and opportunities for organized recreational experiences.

**Table 13—Outfitter and guide permits authorized by the Forest Service, FY 2000 and FY 2002**

Authorizations	Region 5	Region 6	Total
FY 2000	282	511	793
FY 2002	325	622	947

Source: Forest Service INFRA database.

**Developed sites—**

Only current-status information was available for developed recreation sites on Plan-area national forests. The FS tracks the number of developed sites by site type. The number of developed sites by FS region in FY 2003 is shown in table 14. The table does not include a complete inventory of developed site types for which data were available, but only the ones the team believed were most used. It also includes capacity measures, a measure of recreation opportunity. Family campgrounds and trailheads are the most abundant developed sites, and they have the highest capacity. We did not monitor changes in the spatial distribution of developed sites, which may have been affected by the Plan.

**Visitor use—**

The recreation visit data were generated by the National Visitor Use Monitoring program between 2000 and 2003, and are from English (2003) and Kocis et al. (2004a, 2004b). The program produced individual reports documenting recreation visits on every national forest in the Plan area.

Refer to those documents for more detailed information by forest. The visitor use monitoring program has completed one round of recreation monitoring to date. Thus, I report only current-status information for visitor use. Earlier FS recreation-visit data are available but unreliable because they were not gathered by using a defined scientific process, and are therefore not reported here. The National Visitor Use Monitoring program was intended to produce forest visitation estimates that could be aggregated into regional and national visitation estimates (English 2005). Sampling was designed to achieve a sample size where the width of the 80-percent confidence interval was equal to about 15 percent of the forest’s total visitation estimate.

For some forests, this target was not achieved and for others, it was exceeded.

More than 26 million visits were made annually to the 17 national forests in the Plan area in the early 2000s (table 15). The most visited forest was the Mount Baker-Snoqualmie, with slightly more than 5 million annual visits, followed by the Mount Hood, with just over 4 million visits per year. The Mendocino and the Winema National Forests each had fewer than 300,000 annual visits.

Each national forest visit consists of one or more site visits. In total, Plan-area forests had nearly 33 million site visits per year. Regionally, almost half of the site visits were to general forest areas (table 16). About 9 million were in developed, day-use sites, mostly in downhill ski areas. Wilderness areas were the least-visited recreation sites.

Data from the forests surveyed in the first 2 sample years (8 of 17) showed that local users (those whose home ZIP codes lie within 35 straight-line miles of the forest) accounted for about 40 percent of all visits. The average length of a visit by local users was 11.2 hours; for nonlocals, the average was about 22.6 hours. Roughly 65 percent of the visitors were male, and 35 percent were female. About 90 percent were white.

The most popular recreation activities forest visitors engaged in were nature and wildlife viewing, hiking or walking, and general relaxation (table 17). Downhill skiing and snowboarding were also very popular.

**Table 14—Developed sites on Plan-area national forests, FY 2003<sup>a</sup>**

	Region 5		Region 6		Total	
	Sites	PAOT days	Sites	PAOT days	Sites	PAOT days
Unidentified	4	89,425	1		5	89,425
Boating sites	27	1,703,740	84	1,248,379	111	2,952,119
Family campgrounds	173	3,912,564.5	644	17,798,094	817	21,710,658.5
Family picnic sites	30	452,825	103	1,825,902.5	133	2,278,727.5
Group campgrounds	12	299,270	41	914,405	53	1,213,675
Group picnic sites			2	1,825	2	1,825
Horse camps	3	17,175	26	353,339	29	370,514
Trailheads	41	59,021.5	1,242	13,044,747.5	1,283	13,703,769
Miles of trail <sup>b</sup>	3,470		17,071		20,541	
Administrative interpretive sites			12	134,812	12	134,812
Interpretive sites, major	2	15,330	13	1,641,635	15	1,656,965
Interpretive sites, minor	3	24,455	68	633,556.5	71	658,011.5
Total PAOT days						44,770,502

Notes: PAOT (people at one time) days = the capacity of a site (how many people it is designed to accommodate at one time, times the number of days each year a site is in operation). Region 5 = Pacific Southwest Region, Region 6 = Pacific Northwest Region.

<sup>a</sup>The FS also tracks other categories of developed sites that are not included here.

<sup>b</sup>Miles of trail data for Region 6 are from FY 2004. They have not yet been migrated into INFRA and were obtained from Regional Office Recreation Program spreadsheets. The Region 5 trails data were derived from competitive sourcing studies and obtained from the Regional Office.

Source: INFRA.

**Table 15—Recreation visits on national forests and 80-percent confidence interval, early 2000s**

Forest	National forest visits		Site visits	
	Total	Confidence interval	Total	Confidence interval
	<i>Thousands</i>	<i>Percent</i>	<i>Thousands</i>	<i>Percent</i>
Deschutes	2,784.7	8.9	3,793.4	10.3
Gifford Pinchot	1,810.2	14.8	2,978.7	13.5
Klamath	415.4	23.4	519.6	25.5
Mendocino	257.1	10.9	342.1	9.7
Mount Baker-Snoqualmie	5,006.8	19.1	5,379.4	17.6
Mount Hood	4,076.1		4,981.3	
Okanogan	399.0	29.0	460.9	25.6
Olympic	455.9	17.9	512.8	16.3
Rogue River	508.3	34.2	617.4	28.2
Shasta-Trinity	2,213.4	11.7	2,969.4	10.9
Siskiyou	648.6	20.2	764.8	20.4
Siuslaw	2,013.4	21.9	2,633.2	21.2
Six Rivers	415.4		504.7	
Umpqua	738.0	21.8	1,172.2	21.5
Wenatchee	2,532.6	14.0	2,726.7	12.9
Willamette	1,494.8	12.8	2,142.2	15.9
Winema	297.2	13.2	331.3	12.5
Total	26,067.0	5.8	32,830.2	5.2

**Table 16—Site visits on national forests in the Northwest Forest Plan area, early 2000s**

Forest	Developed day-use sites	Developed overnight sites	General forest areas	Wilderness
	<i>Thousands</i>			
Deschutes	1,288	537	1,879	85
Gifford Pinchot	1,328	118	1,497	16
Klamath	53	27	416	24
Mendocino	62	39	211	4
Mount Baker-Snoqualmie	3,681	167	830	701
Okanogan	73	54	293	33
Olympic	156	96	219	42
Rogue River	272	61	278	3
Shasta-Trinity	447	261	2,198	56
Siskiyou	54	99	607	5
Siuslaw	540	166	1,887	26
Umpqua	231	267	652	21
Wenatchee	578	504	1,312	301
Willamette	519	218	1,342	45
Winema	8	50	176	8
Total	9,291	2,662	13,799	1,367

Note: Does not include the Six Rivers or the Mount Hood National Forests.

**Table 17—Recreation activity participation on national forests, early 2000s**

Activity	Survey respondents who:	
	Participated in activity	Chose this as their primary activity <sup>a</sup>
	<i>Percent</i>	
Camping in developed sites (family or group)	14.3	5.4
Primitive camping	5.7	1.1
Backpacking, camping in unroaded areas	5.5	3.2
Resorts, cabins, and other accommodations on Forest Service lands (private or operated by Forest Service)	4.1	.9
Picnicking and family day gatherings in developed sites (family or group)	11.4	1.9
Viewing wildlife, birds, fish, etc. on National Forest System lands <sup>b</sup>	44.2	2.2
Viewing natural features such as scenery, flowers, etc. on National Forest System lands <sup>b</sup>	50.5	9.2
Visiting historic and prehistoric sites/area	5.8	1.2
Visiting a nature center, nature trail, or visitor information services	8.7	1.2
Nature study	5.5	.3
General/other—relaxing, hanging out, escaping noise and heat, etc.	41.9	8.2
Fishing—all types	15.0	8.7
Hunting—all types	5.7	4.8
Off-highway vehicle travel (fourwheelers, dirt bikes, etc.)	5.6	3.8
Driving for pleasure on roads	19.0	4.6
Snowmobile travel	2.4	1.8
Motorized water travel (boats, ski sleds, etc.)	5.3	2.0
Other motorized land/air activities (plane, other)	.4	.1
Hiking or walking	34.9	12.2
Horseback riding	.8	.5
Bicycling, including mountain bikes	3.7	1.5
Nonmotorized water travel (canoe, raft, etc.)	3.0	1.2
Downhill skiing or snowboarding	23.5	22.8
Cross-country skiing, snow shoeing	5.7	4.8
Other nonmotorized activities (swimming, games, and sports)	7.8	2.3
Gathering mushrooms, berries, firewood, or other natural products	5.0	1.5

<sup>a</sup>This column totals over 100 percent because some visitors selected more than one activity.

<sup>b</sup>Does not include data from the Mount Hood and Six Rivers National Forests.

## Discussion

The shortage of corporate recreation data from before 1999 makes it difficult to assess recreation trends at the regional scale for the first decade of the Plan. Obtaining historical data at the forest scale from individual forest units is easier. To gain a better understanding of how recreation opportunities have changed since the Plan was adopted and how the Plan contributed to that change, the monitoring team investigated recreation trends on four case-study forests (the Olympic, Mount Hood, and Klamath National Forests and the Coos Bay BLM District). The team also interviewed recreation specialists on the case-study forests about the effects of the Plan on forest recreation opportunities (see app. D). I summarize the case-study results here because they provide information not available by looking at the regional-scale data.<sup>4</sup>

The recreation programs on the four case-study forests were quite different. The Mount Hood is the second-most-visited national forest in the Plan area because it is so close to Portland, Oregon, and has five ski areas. It also has by far the most recreation residences in the region. In contrast, the Klamath National Forest is remote, being a 5-hour drive from the major metropolitan areas of Portland and San Francisco. As a result, it is one of the less-visited forests in the Plan area. The Olympic National Forest is somewhere in between; it has a high potential for drawing recreation visitors and tourists because it surrounds Olympic National Park, and it is within 1 to 2 hours of the Seattle metropolitan area. The Coos Bay District, although somewhat remote, has made a major investment in recreation and tourism development over the last decade.

Recreation programs on all but the Mount Hood were small and received minor attention during the 1980s when the agencies focused their management activities on timber production. By the late 1980s, change was clearly on the horizon. The Plan embodied a shift in emphasis away from timber and toward multiple-use values, with recreation

playing an increased role. At the same time, many forest-based communities seeking to diversify their natural-resource-related economies identified recreation and tourism as an avenue for economic diversification and development.

The Coos Bay District responded by engaging with local communities and actively helping them build a nature-based recreation and tourism economy on Oregon's south coast. In the early 1990s, the district worked with local stakeholders to develop a vision of what infrastructure development was needed to realize that goal. The 1990s saw the Coos Bay District's recreation program grow from managing a few campgrounds to becoming a full-fledged program and a key player in regional community-based tourism and environmental education.

This shift was supported by the district's upper-level management, who encouraged adapting management priorities to changing economic conditions, and who wished to help communities create a diversified natural-resource-based economy. The district improved the existing, and developed new, special recreation management areas (those that receive the most use); acquired four new environmentally and culturally significant properties; took a lead role in regional recreation and tourism planning; built a 30-mile network of hiking, mountain biking, and interpretive trails; and created an interpretive and environmental program staffed by professionals. Some of these changes are reflected in table 18.

The district's capacity to expand its recreational facilities was enhanced also by the emergence of several new sources of funding for the recreation program. Since 1998, special "recreation pipeline" funding associated with guidance in the 1996 Omnibus Consolidated Recession and Appropriations Act has been available to the BLM's western Oregon districts. This funding and other special funds, such as Job-in-the-Woods, helped fund recreation projects on the Coos Bay District. Access to these special funding opportunities may explain some of the differences in conditions between the Coos Bay District and the three Forest Service case studies.

<sup>4</sup> See Buttolph et al. (in press), Charnley et al. (in press), Kay et al. (in press) and McLain et al. (in press) for a more detailed discussion of the case-study forest recreation programs.

**Table 18—Recreation, Coos Bay District**

Year	Recreational visits	Recreation use fees	Permits	Maintained trails	Estimated trail visits	Managed sites	System road
		<i>Dollars</i>		<i>Miles</i>			<i>Miles</i>
Pre-1995	673,900			0.5		11	
1995						11	
1996						11	
1997						10 <sup>a</sup>	
1998	702,570			9.0		12	
1999	691,351	114,941	11,217	18.3	5,377	12	2,986
2000	1,018,163	106,220	10,467	26.3	8,388	15	2,988
2001	832,159	120,240	12,739	26.3	9,293	15	1,923
2002	824,750	126,557	13,043	22.3	9,477	15	2,114

<sup>a</sup>One campground closed for repairs owing to storm damage.

Sources: Coos Bay District annual program reports; USDI Bureau of Land Management (BLM) Coos Bay District 1994; Roads data from Dick Bergen, BLM Oregon state office.

In addition, the district's cultural resources program played an important role in developing interpretive sites, collaborating with local tribes to help manage cultural resources and develop a museum, and enhancing education and understanding about historical and prehistoric cultural lifeways in the region. Greater emphasis on recreation and cultural resource programs has been possible in part because of a reduction in the workload associated with recreation and cultural staff support to the district's timber program.

The Coos Bay District has encountered some local opposition to its recreation development plans from residents who are afraid these plans could change their quality of life as more tourists visit the area. But the program has met with great success. Key to this success has been the district's extensive reliance on community volunteers and partnerships.

The case-study national forests did not invest in recreation the way the Coos Bay District did. On the Olympic National Forest, many trails and developed recreation sites deteriorated because of a shortage of funding and employees. The forest, however, made an effort to build trails, improve campsites, and maintain facilities in the areas that draw the most visitors, for example around Lake Quinalt. This growth is reflected in table 19. Improvements were made possible by funds collected through the Northwest Forest Pass fee demonstration program, with support from volunteers, and through partnerships. The Olympic National

Forest has a strong base of volunteers and partners that help maintain trails and build recreation facilities.

The Mount Hood receives a diversity of recreation uses and has far more recreation developments than the other case-study forests (table 20). It has also seen steadily increasing winter recreation visits at its ski areas (fig. 20). The recreation infrastructure on the Mount Hood was for the most part already in place before the Plan, and little recreation development has occurred since the Plan was adopted.

Since 1990, the Mount Hood National Forest has shifted away from directly providing recreation services to the public in favor of delivering these services via other entities such as concessionaires and permittees. For example, concessionaires currently operate 75 to 90 percent of all campgrounds on the forest. The reason for this change is lack of personnel and funds to undertake recreation management activities. Nor can the forest afford to improve its recreation infrastructure. The recreation budget has been flat, and an increasing proportion of that budget covers forest overhead costs because of the decline of the timber program.

The Mount Hood has one of the largest volunteer programs in the Nation, however. Volunteers and partners come mainly from the Portland metropolitan area. They accomplish work that would otherwise remain undone for lack of recreation staff. Volunteers do trail work, act as wilderness stewards, and educate recreationists about management rules and practices. They also provide interpretation.



**Table 19—Recreation, Olympic National Forest**

Recreation indicator	1990 <sup>a</sup>		2000–2003 <sup>b</sup>	
	Number	Daily capacity	Number	Daily capacity
Annual forest visits			456,000 <sup>c</sup>	
Campgrounds	20	2,285	25	2,730
Picnic sites <sup>d</sup>	1	15	2	45
Trails (1990), trailheads (2003)	81		88	
Miles of trails	226.7		270.6 <sup>e</sup>	
Miles of roads	2,600		2,254 <sup>f</sup>	
Recreation residences	68		68 <sup>g</sup>	
Hotel/resorts	1	416	1	416
Acres of wilderness	88,265		88,265	

<sup>a</sup> Data taken from Olympic National Forest Land and Resource Management Plan Final Environmental Impact Statement.

<sup>b</sup> Data taken from INFRA for the year 2003, unless otherwise noted.

<sup>c</sup> National Visitor Use Monitoring Data, 2000.

<sup>d</sup> Does not include picnic sites located within campgrounds.

<sup>e</sup> Northwest Forest Pass Fee Demo Program FY 2002 Accomplishments Report.

<sup>f</sup> Olympic National Forest Final Access and Travel Management Plan Summary Report, 2003.

<sup>g</sup> Olympic National Forest Facts ([http://www.fs.fed.us/r6/olympic/aboutonf/onf\\_facts.htm](http://www.fs.fed.us/r6/olympic/aboutonf/onf_facts.htm)).

**Table 20—Recreation, Mount Hood National Forest**

Recreation indicator	1989–90 (unless otherwise noted)	2001–2003
Annual forest visits		4,076,119 <sup>a</sup> (2003)
Developed campgrounds <sup>b</sup>	There are over 100 developed campgrounds and picnic sites	95 <sup>c</sup> (2003)
Picnic sites		18 <sup>c</sup> (2003)
Number of trailheads		131 <sup>c</sup> (2003)
Miles of trails	1,200 <sup>b</sup>	
Miles of system roads <sup>d</sup>	3,858 (1989)	3,430 (2001)
Recreation residences <sup>c</sup>	544 (2000)	589 (2002)
Acres of wilderness	186,200 <sup>b</sup>	189,200 <sup>e</sup>
Number of outfitter/guide permits <sup>c</sup>	53 (2000)	89 (2002)
Number of downhill ski areas	5 <sup>b</sup>	5 <sup>f</sup>
Lodges/hotels		3 <sup>c</sup> (2003)

<sup>a</sup> Source: Kocis et al. 2004a.

<sup>b</sup> Source: USDA Forest Service (FS) Mount Hood National Forest 1990.

<sup>c</sup> Source: FS INFRA database. The Mount Hood recreation program officer stated that the recreation residence data reported here are inaccurate, and that the number of recreation residences did not change between 2000 and 2002.

<sup>d</sup> Source: Erkert 2004.

<sup>e</sup> Source: <http://www.fs.fed.us/r6/mthood/>.

<sup>f</sup> Source: Records kept by individual ski resorts.

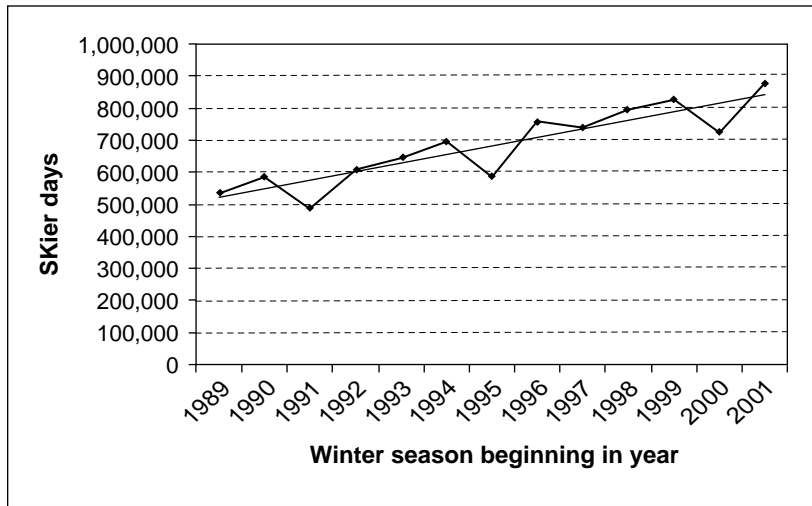


Figure 20—Ski area visitation, Mount Hood National Forest. Straight line is the linear regression.

The Klamath National Forest, being remote and in an area where population growth is static, experienced little change in demand for recreation over the last decade. Thus, it has invested little in recreation development, working instead to maintain existing recreation sites and facilities. A small increase in recreation facilities but a decrease in trail miles is shown in table 21. The Klamath has had little money to invest in recreation because the program budget has been flat and the staff decreased. Community recreation stakeholders interviewed reported deteriorating trails, campgrounds needing improvements, and too few employees on the ground to address recreation management problems.

The forest did develop snowmobile trails and facilities on the east side with funding from the California State Green Sticker program. Otherwise, the forest has focused on expanding accessibility opportunities for people with mobility impairments. With national and regional direction, emphasis, and funding, this effort focuses on ensuring that at least one fully accessible recreation opportunity is available for each of the Klamath’s major recreation activities. Between 1994 and 2004, the forest made numerous improvements on existing sites to meet this goal. Accessibility enhancements provide greater access and recreational opportunity for people with disabilities, and families with elders and children, significantly extending recreational services and experiences on the forest.

## Conclusions

Our ability to determine whether predictable levels of recreation opportunities were produced on federal forest lands during the first decade of the Plan is limited by the lack of regional-scale agency recreation data for the years before 1999. The only indicators for which reliable data were available from 1994 onward were number of designated wilderness acres, number of Forest Service recreation residences, and number of skier days. Opportunities to experience wilderness, to maintain a recreation residence, and to go downhill skiing remained stable or increased under the Plan. We did not monitor whether

and how the quality of the recreation experience changed.

Opportunities to participate in roaded recreation decreased between 1998 and 2003, as did opportunities to access FS and BLM lands by passenger car. A downward

**Table 21—Recreation, Klamath National Forest**

Recreation indicator	1994 <sup>a</sup>	2001–2003
Annual forest visits		415,400 <sup>b</sup> (2001)
Developed campgrounds		
	30	32 <sup>c</sup> (2003)
Picnic sites	2	3 <sup>d</sup> (2003)
Number of trailheads	9	14 <sup>d</sup> (2003)
Miles of trails	1,330 (west side only)	1,129.5 <sup>d</sup> (2002 east and west sides )
Miles of system roads <sup>e</sup>	4,685 (end of FY 1997)	4,177 (end of FY 2002)
Recreation residences	21	22 <sup>d</sup> (2002)
Miles of wild and scenic river	152	152 <sup>f</sup> (2003)
Acres of wilderness	381,000	381,000
Number of outfitter/guide permits	64 (whitewater guides only)	106 <sup>d</sup> (2002)

<sup>a</sup> Source: USDA Forest Service (FS) 1994.

<sup>b</sup> Source: English 2003.

<sup>c</sup> Source: FS INFRA database. Note: Klamath NF Web site says there are 28 developed campgrounds.

<sup>d</sup> Source: FS INFRA database.

<sup>e</sup> Source: FS Annual Forest Road Accomplishment Reports.

<sup>f</sup> Source: <http://www.fs.fed.us/r5/klamath/>.

Notes: Data include the Ukonom District.

trend in total system road miles since 1994 is likely. All four case-study forests reduced their system road mileage during the study period. These declines were expected. Fewer road miles decreases access to federal forests for recreation by members of the public. It increases recreation opportunities for some people, however, such as mountain bikers, who enjoy biking on old roads or on roads closed to vehicles. It also increases opportunities for users who prefer unroaded and nonmotorized recreation settings.

Interviewees from the case-study forests said that the Plan had contributed to reduced road mileage on Plan-area forests. Contributing factors included a lack of dollars for road construction, reconstruction, and maintenance, which previously came from the timber program; a lack of demand for roads associated with timber sales; the Plan's emphasis on watershed restoration; and restrictions on road construction, reconstruction, and maintenance in late-successional and riparian reserves.

Declining road mileage is a national trend on national forest lands consistent with the FS Transportation Policy, and it is not solely a result of the Plan. The BLM manages its Northwest forest transportation system in accordance with the Plan, which calls for reducing road mileage in key watersheds. Other BLM roads are managed to minimize adverse effects to natural resources, which includes reducing road miles when feasible.

The regional-scale data available for developed recreation sites indicate status rather than trends on FS lands. For the FS, the case-study data show a small amount of growth in developed sites. The FS recreation specialists interviewed said some new recreation sites had been developed, particularly in high-use areas that attract the most visitors. But for the most part, the FS has done little in the way of new recreation development since 1994 because of flat or declining recreation budgets and staffing.

The BLM regional-scale data for developed sites go back to the year 1999. The number of developed recreation

sites and trail miles on BLM lands remained constant between FY 1999 and FY 2002, indicating predictable levels of developed recreation opportunities since 1999. The team conducted fieldwork on only one of the five BLM districts in the Plan area, so determining whether Coos Bay is typical of all BLM recreation programs is not possible. The Coos Bay District recreation program underwent a major expansion in the decade after the Plan. The district developed new recreation sites, built new trails, upgraded existing facilities, and engaged with local communities to help build a regional recreation and tourism sector. This finding suggests that developed recreation opportunities on BLM lands have increased since 1994.

The data for ski areas, outfitter-guide permits, and visitation on BLM lands suggest that demand for recreation on Plan-area forests grew during the decade. General FS visitation data indicate current status only.

The Plan was reported to have had some effects on recreation opportunities. Some recreation specialists interviewed said that Aquatic Conservation Strategy objectives have resulted in greater restrictions on new and existing recreational activities and facilities in riparian areas, which was expected. The FS closed some dispersed campsites in riparian areas or moved them elsewhere. Plan standards and guidelines have also limited or excluded recreation activities in environmentally sensitive areas. People whose recreation residences are in riparian reserves will have to comply with Aquatic Conservation Strategy requirements to renew their permits, which could be controversial.

Otherwise, recreation specialists interviewed indicated that the Plan has not been a major constraint on FS recreation programs because few major developments that would trigger plan requirements and procedures have been proposed. One exception is the ski area expansions, which have reportedly become more complicated, costly, and cumbersome under the Plan, as was expected.



## Chapter 7: Overall Conclusions

Volume II of the socioeconomic monitoring report addresses the record of decision evaluation question, Are predictable levels of timber and nontimber resources available and being produced? It also evaluates the Plan goal of producing “a predictable and sustainable level of timber sales and nontimber resources that will not degrade or destroy the environment.” Monitoring results for five resource areas are reported: timber, special forest products, grazing, minerals, and recreation. I focus on whether predictable levels of resources were produced from federal forest lands during the first decade of the Plan, and do not address the topics of availability or sustainability.

The answer to the evaluation question differs by resource area. The level of timber produced did not meet the probable sale quantity (PSQ) volumes anticipated during the first decade of the Plan, nor were timber sales produced at predictable levels. The average annual PSQ estimate for the first 9 years of the Plan (1995-2003) was 776 million board feet, taking into account the downward adjustments made to PSQ during that period, and the expectation that production would be lower in the first 2 years. On average, a total of about 526 million board feet of timber were offered for sale each year between 1995 and 2003, of which about 421 million board feet fell in the categories predicted by PSQ. The remainder (105 million board feet) came from treatments in reserve areas. Timber sale levels were reasonably predictable between 1995 and 1998; between 1999 and 2003, they were not. The PSQ estimates were based on the expectation that most of the harvest volume would come from regeneration harvest of late-successional and old-growth (older forests) stands in matrix and some adaptive management areas. This harvest expectation was not met. The Forest Ecosystem Management Assessment Team (FEMAT) report acknowledged that it would be difficult to produce a predictable supply of timber under the Plan.

The best indicator for which agency data were available for assessing whether predictable levels of special forest products were produced was the quantity of products sold. This indicator is inadequate for answering the evaluation question because, for most products, the extent to which the quantity of products sold was determined by supply or

by harvester demand is unknown. Moreover, the indicator reflects permitted harvest only. The quantity of convertible special forest products sold declined for both agencies, except for poles and posts on BLM lands. Trends for nonconvertible products were mixed, and differed by agency. The declines in the quantity of fuelwood and some nonconvertible products sold were expected because of harvest restrictions in the reserves and decreased timber harvesting.

Grazing declined on Forest Service (FS) land during the first decade of the Plan. Data indicate that grazing also declined on Bureau of Land Management (BLM) land during the period, but to what extent this decline was real or an artifact of changes in agency reporting practices was uncertain. Some declines in grazing were expected under the Plan because of management constraints in the reserves. The Plan is only one of several factors likely to be responsible for reduced grazing on federal forests, however. Although the Plan caused some restrictions in riparian areas, other causes unrelated to the Plan (such as drought and the Endangered Species Act) reportedly had a bigger effect on grazing activity.

Minerals production was analyzed separately for leasables, locatables, and saleables. No leasable minerals were produced on FS-managed lands during the first 10 years of the Plan, and the number of mineral leases was stable. The agencies do not track locatable minerals production, so we do not know whether predictable levels of locatable minerals were produced. Other indicators associated with locatable minerals showed a decline in activity on the national forests during the decade, which was expected. The volume of saleable minerals produced on national forest lands dropped, which was not expected. It is unknown to what extent production trends were the result of the Plan or factors related to demand. The specialists interviewed did not think the Plan was much of a constraint on minerals production during the decade.

Our ability to determine whether predictable levels of recreation opportunities were produced during the monitoring period was limited by the shortage of regional-scale agency recreation data for the years before 1999. The data that are available indicated that some kinds of recreation

opportunities decreased, some remained stable, and some increased. Opportunities to experience designated wilderness areas, to maintain a recreation residence, and to go downhill skiing appear to have remained stable or increased since the early 1990s. Opportunities to participate in roaded recreation and to access FS and BLM land by passenger car decreased. Opportunities to experience unroaded and non-motorized recreation settings increased. Regional-scale FS data for number of developed recreation sites indicate current status only. The number of developed recreation sites on BLM land has been stable since 1999. Data for ski area visitation, visitation on BLM land, and number of outfitter and guide permits indicate that demand for recreation on Plan-area forests grew during the decade.

The monitoring results show that progress toward meeting the Plan goal of producing predictable levels of timber sales and nontimber resources has been mixed. For some resources, the existing data are inadequate for evaluating the goal. For other resources, production remained stable or increased. Production declined for other resources, and some declines were expected. Plan-related causes were the main reason that predictable levels of timber sales were not produced. The Plan was only one of several factors influencing trends for other resources.

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## Metric Equivalents

<b>When you know:</b>	<b>Multiply by:</b>	<b>To find:</b>
Feet	0.305	Meters
Miles	1.609	Kilometers
Cubic feet	.028	Cubic meters
Acres	.405	Hectares
Board feet, log scale	.0045	Cubic meters
Pounds	.454	Kilograms
Tons	.907	Megagrams

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## Appendix A: Resources Not Monitored

### Scenic Quality

The socioeconomic monitoring team did not monitor scenic quality or commercial fishing, as called for in the Northwest Forest Plan (the Plan) Record of Decision. It did not monitor scenic quality because the available data were limited. When national forests first developed forest land and resource management plans, they conducted one-time scenery inventories following the guidelines of the Forest Service Visual Management System (VMS). Forests inventoried various aspects of landscape character such as visual condition, quality, and amount of disturbance. It is possible to obtain these data for the years prior to the Northwest Forest Plan. However, these data must be gathered forest by forest, because there is no corporate database that makes them accessible at the regional level. The monitoring program had a policy of not making data requests from individual forest units.

The scenic quality inventories will be repeated and updated when national forests revise their management plans by using the Scenery Management System (the new version of VMS). A few national forests in the Plan area have begun the Plan revision process. However there are not yet recent regionwide data regarding scenic quality that can be used to assess change in landscape character on the national forests over time. Because of the effort required to collect data at the forest level, and because there are no current data that make it possible to compare change over time, the module did not monitor status or trends in scenic quality for purposes of this interpretive report. Once the new inventories are complete, data from the two periods can be compared to monitor change in scenic quality.

The Bureau of Land Management (BLM) also conducts visual inventories of scenic quality following the guidelines of its Visual Resource Management classification system. Districts undertake these inventories as a part of the land use planning process. The inventory data must be obtained from individual districts, as they are not input into a central

database that is accessible at the state level. Because of the time investment required to obtain these data district by district, the policy of not making data requests from individual forest units, and because the module did not monitor scenic quality on Forest Service (FS) lands, it did not monitor scenic quality on BLM lands.

### Commercial Fishing

Commercial fishing does not take place on federal forest lands except by tribes having off-reservation treaty rights. However, federal forest lands provide important spawning habitat for commercially valuable anadromous fish species such as salmon and steelhead (*Oncorhynchus* spp.) that have great commercial value. Thus federal forest management practices influence fish populations and commercial fisheries. So do a number of other factors that are outside the control of the FS and BLM, such as dams, ocean conditions, commercial fishing regulations and practices, and forestry practices on private lands.

It is possible to monitor commercial fishing activity. But because commercial fishing is affected by a broad range of factors, the socioeconomic monitoring team determined that it was not possible to meaningfully evaluate how the Plan has influenced commercial fishing. Rather, we defer to the Aquatic and Riparian Effectiveness Monitoring Program (AREMP), another part of the Pacific Northwest Interagency Regional Monitoring Program, to address this issue (Gallo et al. 2005). The AREMP module is monitoring watershed conditions, upslope processes that affect watershed health, riparian processes, and inchannel processes on federal forest lands. These data will be used to evaluate whether the Aquatic Conservation Strategy is achieving the goal of providing high-quality water and habitat for fish species on federal forest lands. The AREMP module is not monitoring commercial fishing. Nevertheless, its findings will provide insight into how FS and BLM land management practices may be contributing to trends in commercial fisheries.

## Appendix B: Agency Resource and Recreation Data— Supplemental Information Regarding Indicator Choices and Quality

### Special Forest Products

The Forest Service (FS) and Bureau of Land Management (BLM) document the number of permits and contracts issued for several categories of special forest products, the dollar value of the permits and contracts issued, and the amount of product sold, on an annual basis by administrative unit. The monitoring team gathered data on these three indicators for a number of special forest products that are important in the Northwest Forest Plan (Plan) area.

The FS data for monitoring special forest products during the life of the Plan came from the Automated Timber Sale Accounting System (ATSA). We obtained records generated electronically through several searches from the national FS database in Fort Collins, Colorado, and hard-copy records from the Pacific Northwest Region (Region 6) office in Portland, Oregon. The BLM data were extracted from the TSIS (Timber Sale Information System), which tracks timber sales and special forest product sales for BLM. The TSIS data are summarized in *BLM Facts* (a publication in which annual program information is summarized). We obtained the BLM special forest products data from David Roche, District Forester, BLM Medford District.

After assessing the relevance of the indicators to the monitoring question, the team decided to use quantity of product sold as a monitoring indicator. Product value (the amount of money the agency charges for issuing a collection permit or a contract) is based on fair market value for the product, and generally represents 10 percent of the wholesale value of the product. Because fair market value for forest products is subject to annual fluctuation (depending on market conditions), product value is an unreliable indicator of supply.

The number of permits issued may reflect trends in demand and in use, but is also an unreliable indicator of supply because sometimes, permits are “batched” for reporting purposes. For example, if a vendor is selling Christmas tree tags on behalf of the agency, the agency representative may only periodically collect the tag receipts from the vendor.

All of the tags from that period could be transferred into the reporting system under one permit entry, rather than as one permit entry for each tag/tree sold. The permit data are therefore unreliable indicators of actual activity.

Furthermore, the FS Timber Sale Preparation Handbook (Forest Service Handbook [FSH] 2409.18) provides specifications for when a contract vs. a permit may be used. With the exception of large complex timber sales,<sup>1</sup> smaller contracts, permits, or free use are allowed at the discretion of the unit (FSH 2409.18, exhibit 53-01), provided certain caveats are observed (e.g., value is not over \$300.00, or does not exceed a period of 1 year, etc.) (FSH 2409.18, 53.5.3). Thus, some units may permit special forest products, whereas others may prepare contracts or provide for free use. Within any single ranger district or forest, permit vs. contract vs. free use patterns of administration may have changed from year to year. Because contract/permit/free use may change over time, a more accurate unit of measure is the standardized ATSA reporting unit (e.g., pounds or tons).

Receipts from the administration of all permits are returned back to the respective agency (see FSH 2409.18, 53.5). Convertible and nonconvertible products cannot be included on the same permit. If the use is to be by permit, both the FS and BLM may use the same permit system for a joint venture. For both contracts and permits, the data (buyer, quantity, etc.) are entered into TIM (Timber Information Manager), which generates the contract or permit.

Within the FS, Christmas tree or fuelwood permits may also be summarized and entered into the system as one permit, rather than as individual permits (FSH 2409.18, 53.5.3). As noted above, consolidation of these permits may lead to some discrepancy when the number of permits is used as a measure of units collected/sold. There is less summarization of permits for commercial products (because TSIS is an accounting system) and more summarization for free uses.

<sup>1</sup> Contract form does not provide for a standard or special provision for nonconvertible forest products.

Prior to 1996, all nonconvertible products were lumped into a single category, which was subdivided only by tree species in accordance with the ATSA accounting system categories (FSH 6509.17, Ch 20). Beginning in 1996, the ATSA reporting system began to define subcategories of special forest products and defined standardized units of measure. However, these categories have been further refined since 1996. Although the categories were listed and given names and codes, there was no definitive description of what products were included in each category.

To determine which category a specific product should be classified as, the rule of common sense was applied. The correct category was selected by the process of elimination, based on biological properties. Thus, “bear grass” would be considered a grass but not a “limb or bough.” Limited overlap might have occurred between the two categories “mushrooms” and “fungi,” with mushrooms possibly being recorded as fungi. However, it is less likely that fungi (e.g., conks collected for artistic or medicinal purposes) would have been recorded as mushrooms, limiting the possible sources of confusion.

For the BLM TSIS system, categories of nontimber forest products have also evolved. Data on bear grass were not collected until approximately 1993. Around 1996, categories were changed to consolidate some former categories into the category “floral and greenery.” With the exception of these few changes, BLM has collected more categories of special forest products data than the FS, for a longer period.

In approximately 1996, the ATSA system expanded from a simpler convertible/nonconvertible system (with nonconvertibles listed only by tree species) to a more complex system, tracking nonconvertible forest products in new and more specific categories (e.g., mushrooms). Comparison between the pre-1996 data and the post-1996 data is difficult because the categories are not the same. This is not the case for BLM data, where the TSIS system has tracked consistent categories across time and the data both pre- and post-Plan are comparable.

Mushrooms may have been recorded under mushrooms or fungi. However, a consolidated count of both mushrooms and fungi added together should approximate the

total amount for both categories, since mushrooms were not likely to have been recorded in any other category. Significant overlap between categories is not expected to occur elsewhere.

Because a definitive description of what products are included in each category tracked has not been established for the ATSA system, some national forests developed their own definitions of what should be included in these categories. These categories may not be consistent between forests, but they are not expected to conflict with ATSA categories because all forests must report data by using the standardized national ATSA system. Using these individual forest categories would not be more reliable for Plan monitoring, except when monitoring a single forest (e.g., a case-study forest).

The quality of data from both the BLM TSIS and FS ATSA system are considered complete and reliable for the categories of products collected, as both systems are accounting systems as well as program management systems. The data are consistent with national standards, except where the categories themselves have changed over time. The TSIS and ATSA are used nationally, standardized, automated, and are both administratively supported at all levels of the agencies to ensure consistent data collection and entry. They existed in some form for at least 20 years prior to the Plan.

Nevertheless, there were clearly some anomalous data points in the FS data set. And some special forest products program specialists from the case-study forests questioned the data we obtained for their forest from the national database. The anomalous data points may be due to mistakes made in the data entry process. However, we did not know the real cause of the questionable data points. Those that we judged to be completely unrealistic we dropped from the analysis. Where we were uncertain, we included them in our analysis. When forest specialists questioned the accuracy of the national data and gave us unit-scale data to replace it, we used those data instead.

In some cases, agencies measured the quantity of special forest products sold by using different units in different years. To compare trends across time when different units

of measure were recorded for a single product, we used the conversion factors below. These conversion factors were provided by Richard Haynes, USDA Forest Service, Pacific Northwest Research Station, and are based on Hartman et al. (1975).

1,000 board feet = 200 cubic feet

2 cunits (1 cunit = 100 cubic feet) = 1,000 board feet

1 cord = 80 cubic feet = 4 feet by 4 feet by 8 feet stack of wood

1 cord = 4,500 pounds or 2.25 tons

2.5 cords = 1,000 board feet

1 post or pole, averaging 20 feet in length = 6 cubic feet

1 linear foot = 0.3 cubic feet

1 piece = 1.1 cubic feet

1 Christmas tree = 7 linear feet or 1.5 board feet or 0.3 cubic feet or 16.9 pounds

## Grazing

Forest Service (FS) grazing data are stored in the INFRA database. Bureau of Land Management (BLM) grazing data have been stored in the Rangeland Administration System since the early 2000s; they were previously stored in the Grazing Authorization and Billing System (Mackinnon 2005). The monitoring team requested data on the number of grazing allotments, area of grazing allotments, number of grazing permittees, and number of animal unit months (AUMs) for each FS unit in the Plan area for the years 1990–2002. The team also requested data on the number of grazing leases and number of AUMs for each Oregon BLM unit in the Northwest Forest Plan (the Plan) area for the years 1990–2002. The BLM does not report acres of active allotments or number of permittees.

It proved difficult to obtain these data. Program specialists believed the historical data, in particular, were of poor quality. The FS regional office specialists in range management reviewed the grazing records and found that they often contained estimates based on data from previous years, making them unreliable. Therefore, they constructed a data set for one pre-Plan and one recent period by using

data they believed were based on actual measures. Data sources included agency databases, annual agency accomplishment reports, and personal interviews conducted by Tim Tolle from the Implementation Monitoring program. Activity levels based on agency records for individual forest units were aggregated up to the regional scale, by agency. The Socioeconomic Monitoring team obtained the final grazing indicator data from the Implementation Monitoring program.

The data quality problem prevented the team from monitoring annual trends in grazing indicators. Instead, we compare indicators from the two periods. The pre-Plan data for field units came from one of three years (1992–94). The post-Plan data also come from one of three years (2001–03).

When the monitoring team showed grazing specialists on individual case-study forests the grazing data for their forest that were obtained from the Implementation Monitoring module, they found that these data were not always the same as those maintained by the case forests. In this report, I use grazing data obtained from the Implementation Monitoring module for the regional-scale analysis to be consistent with that module (tables 4 and 5). However, when I report grazing data for individual case-study forests (table 6), I use data provided by those forest units, assuming that they are correct.

The agencies maintain grazing data that the monitoring team chose not to use for monitoring purposes. The agencies track AUMs, and the FS also tracks head months as measures of range use. One AUM equals the amount of forage a mature cow (of 1,000 pounds) and calf consume in a 30-day period (about 780 pounds of dry weight) (Mitchell 2000: 64–65). Head months are the equivalent of one month's use and occupancy of the range by one animal (a cow, bull, steer, heifer, horse, mule, or burro), or by five goats or sheep (Forest Service Manual [FSM] 2230.5). The Forest Service tracks head months for billing purposes. The monitoring team used AUMs as a measure of range use on federal forest lands.

The FS tracks AUMs and head months in terms of authorized (active) use and permitted use. The BLM tracks only permitted use. Permitted use is the number of AUMs

or head months specified on the grazing permit or lease as being allowed to graze for the duration of the permit or lease (FSM 2230.5). This number is allocated with guidance from applicable land use plans. A permit or lease is usually valid for 10 years (FSM 2231.03). Authorized (or active) use is the use specified on the annual bill of collection (FS) or grazing bill (BLM), and verified by a permittee's payment of fees. It represents the level of use that is authorized each year. Authorized or active use and permitted use are not always the same. Authorized use can fluctuate annually, depending on forage supply, special restrictions, and other variables. Although authorized use can be more or less than permitted use, in general it is less. Authorized AUMs is the best indicator of grazing opportunity on federal forest lands (Preece 2004).

## Recreation

### Bureau of Land Management (BLM)

The BLM recreation data in this report came from a corporate database called the Recreation Management Information System (RMIS). Since 1984, RMIS has been the official record for outdoor recreation information on BLM lands. Prior to 1984 and RMIS, all BLM recreation records were paper based and it is unlikely that comprehensive records still exist anywhere. The Public Lands Statistics, which has summarized state and national totals for each fiscal year since the mid-1960s, is the best record of BLM recreation statistics prior to 1984.

Until September 1999, RMIS data were retained in the form of paper records. The most recent version of the database (RMIS 3.0) was deployed in September 1999, replacing RMIS 2.4. RMIS 3.0 is a Web-based electronic system, making the data more standardized and consistent than they were previously. Access to RMIS is currently on the BLM intranet. Pre-1999 RMIS records in hardcopy may exist at the district level; they have not been retained at the State level in any of the Western States. Only 50 percent or fewer of the district offices are likely to have retained these hardcopy records, according to an informal estimate. Because data prior to 1999 are difficult to obtain and not as accurate, the BLM recreation data we used for monitoring begin with the year 1999.

## Forest Service

### Developed sites—

The FS began keeping recreation data pertaining to developed sites in the INFRA database in 1999. It is difficult to obtain these data for earlier years. The FS historically kept developed-site information in the Recreation Information Management (RIM) system. The agency stopped using RIM in about 1984–85. The records were hardcopy. In the Pacific Northwest Region (Region 6), these records have reportedly been retained as paper records, which were subsequently disposed of during a move of offices. The records were 5 to 10 years old at that point. The RIM system was replaced by the Recreation Resource Information System (RRIS) in about 1993–94. The RRIS was a Data General-based system with standardized fields for entering inventory data for developed sites. The RRIS was the precursor for INFRA. Units did an inconsistent job of entering data, but where the data were complete, they should be reliable. In the late 1990s, RRIS was migrated from the Data General system to an IBM windows environment. In about 2001, cost data from the old Applix software were migrated to INFRA, but much of the data were lost in the migration.

Concurrent with the development of RRIS, the agency implemented “Meaningful Measures,” a system for integrating performance inventories, standards, and costs, including the cost of managing the inventory, and of determining the distribution of budget allocations to meet standards. Monitoring to determine what actually happened was also required. The system used Applix spreadsheets for inventories, and standardized formulas to determine the cost of meaningful measures.

In 2000, the developed-sites information from RRIS and the inventory and formulas from Meaningful Measures were to be migrated to INFRA. Legacy data from RIM and RRIS may have been migrated to INFRA, or may still be retained for future migration to INFRA in the Washington office. Both RIM and RRIS information for Region 6 were disposed of in the move to a new office building. The RIM and RRIS data existed in hardcopy only at that point.

The Capital Improvement Program tracked projects funded in a given year, but not the total number of sites. It

cannot be used as an indicator of the number of developed sites because not all sites had projects in any given year.

INFRA has a column called “Year Established.” This column may be used to record the date that a data record was established, rather than the date a recreation facility was established. Almost all of the sites were established before the year indicated in the database. Thus INFRA data cannot be used to obtain any historical information.

The FLUR reports cannot be used to estimate facilities because they track facilities with permits or concessions but not those both owned and operated by the FS.

The 1984–85 data from RIM could be used to provide a baseline for the number of recreation facilities on Plan area forests, as little change occurred in the number of developed sites between the death of RIM and the birth of RRIS. However, as indicated above, the RIM data cannot be located and may have been disposed.

**Visitor use—**

RIM data are not likely to provide a good measure of visitor use because the FS estimated the number of visitors and did not base the estimate on real data. For example, according to the first year’s data, annual visitation to national forests nationwide was estimated at 852 million when the population of the United States was about 300 million.

The FS began monitoring national forest visitation by using a scientifically defensible protocol in 2000 to obtain reliable measures of recreation visitation to support forest planning (the National Visitor Use Monitoring, or NVUM program). Twenty-five percent of the national forests will be monitored each year, with monitoring on each individual forest taking place on a 4-year rotation cycle. The NVUM program staff aggregated NVUM data for the national forests in the Plan area in response to a special request by the socioeconomic monitoring team. See English et al. (2001) for full documentation of the methods used to obtain the NVUM data.

**Ski areas—**

Data regarding the number of ski areas and ski area visitation in the Plan area came from hardcopy, hand-written records kept by individual ski resorts, which maintain them in order to report to ski associations. The ski area visitation data reported in chapter 6 are for the following:

Forest	Ski area
Mount Hood	Cooper Spur Mount Hood Meadows Mount Hood Ski Bowl Summit Timberline
Willamette	Hoodoo Willamette Pass
Deschutes	Mount Bachelor
Rogue River	Mount Ashland
Mount Baker-Snoqualamie	The Summit at Snoqualmie Crystal Mountain Mount Baker Stevens Pass
Okanogan-Wenatchee	Leavenworth Loup Loup Mission Ridge
Gifford Pinchot	White Pass

**Indicators Not Monitored**

**Recreation opportunity spectrum—**

The FS uses the Recreation Opportunity Spectrum (ROS) to classify national forest lands in terms of the outdoor recreation environment or setting, activities, and experiences that are likely to occur there. There are six categories that describe the ROS: primitive, semiprimitive nonmotorized, semiprimitive motorized, roaded natural, rural, and urban (USDA FS 1982). The ROS provides a way of monitoring the supply of different portions of the recreation spectrum that FS lands provide over time. The national forests inventoried how much land they had in each ROS category when they prepared forest plans. The agency recently drafted a national protocol for undertaking ROS class inventories on



National Forest System lands. As forests revise their forest plans, they will update their ROS inventories. This has yet to take place on forests within the Plan area. Because the only ROS data currently available regionwide are from the first round of forest planning that occurred prior to the Plan, and because there is no corporate database that contains these data (they have to be collected individually at the forest level), we decided not to monitor ROS at this time. Once new ROS inventories have been completed, it will be possible to compare results from the two periods for monitoring purposes.

**Total trail miles—**

Historical data were obtained for the BLM but not the FS. Data regarding the total miles of existing trails on each national forest have not yet been migrated to a corporate database. In Region 6 these data are available for the years 2000–2004 from spreadsheets. In the Pacific Southwest Region, these data are available for 2003. It was possible to obtain miles of trails maintained each year (i.e., the number of miles of trails on which maintenance was performed in a given year), but we did not consider this to be a good indicator of recreation opportunity, so did not include it.

## Appendix C: Methods for Choosing Case-Study Forests

Case-study forests were chosen to represent one national forest in each of the three states that lie within the Northwest Forest Plan area, and one Bureau of Land Management (BLM) unit in Oregon, the only place that the BLM manages significant land holdings inside the Northwest Forest Plan area. They were also chosen to represent different provinces (the Plan area is broken up into 12 planning provinces). The monitoring program sent a letter to all of the national forests and BLM districts in the Plan area asking for volunteers to participate in socioeconomic monitoring. We took this approach because the monitor-

ing effort was considered a pilot program, and we wanted to conduct it on forests that were interested in participating and making use of the resultant information. Two of the four case-study forests volunteered to participate, and were chosen for that reason (the Olympic and the Mount Hood National Forests). The Klamath National Forest was chosen because it was previously a high timber-producing forest, and the forest supervisor was supportive of social science work. The Coos Bay District was chosen because the BLM Oregon State Office recommended it.

## Appendix D: Forest Interviewees and Interview Guide

### Forest Interviewees

#### Olympic National Forest

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**Respondent's position**

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Engineering Program Representative (3)  
Forestry Program Representative (4)  
District Ranger (2)  
Economic Development Representative  
Public Service Representative  
Forest Planning Representative  
Forest Supervisor  
Aquatics Program Representative  
Ecosystems/Natural Resources Program Representative  
Wildlife Biology Program Representative  
Fire and Aviation Program Representative  
Operations Staff Representative  
Timber Contracting Representative  
Botany/Forest Ecology Program Representative  
Recreation Program Representative  
Information Specialist  
Tribal Relations Representative  
Computer/mapping specialist

#### Mount Hood National Forest

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**Respondent's position**

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Forest recreation, planning, public affairs staff officer  
Forest planner, forest hydrologist  
Forest geologist  
Range program manager  
Forest Youth Conservation Corps and hosted and senior volunteer coordinator  
Forest volunteer program coordinator  
Fire and aviation management program manager  
Forest silviculturist  
Forest supervisor  
Zigzag district ranger  
Forest natural resources staff officer  
Forest special forest products coordinator  
Public affairs officer, rural community assistance coordinator  
Forest engineer  
Vegetation management specialist  
District and forest recreation program managers (group interview) (5)  
Clackamas River district ranger

## Klamath National Forest

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### **Respondent's position**

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Forest landscape architect  
Forest resource staff officer (fisheries, noxious weeds, earth sciences, timber, wildlife)  
District ranger, Scott/Salmon Ranger Districts  
Deputy forest supervisor  
Forest silviculturist  
District resource staff (recreation, range, noxious weeds, archaeology, minerals)  
District archaeologist  
Forest timber management officer and contracting officer, Shasta Trinity National Forest  
Forest earth science and fisheries program manager  
Forest administrative staff officer (contracting, community assistance program, volunteer programs)  
Forest environmental coordinator  
District recreation, lands/minerals staff  
Forest fire management staff officer  
Forest assistant engineer  
Wildlife biologist

## Coos Bay District

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### **Respondent's position**

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District manager  
Resource area manager—Umpqua Resource Area  
Resource area manager—Myrtlewood Resource Area  
Noxious weeds program coordinator  
Timber sales administrator  
Silviculturalist  
Watershed analysis coordinator  
Small sales administrator—Myrtlewood Resource Area  
Small sales administrator—Umpqua Resource Area  
Volunteer coordinator  
Cultural resources program manager  
Recreation specialist  
Recreation specialist  
Fish biologist  
Wildlife biologist  
Fire program manager  
District geologist  
Watershed restoration coordinator  
Public affairs officer  
Road engineer—Umpqua Resource Area  
Road engineer—Myrtlewood Resource Area  
Interpretive specialist

**Interview Guide for Forest Service/  
Bureau of Land Management Employees  
PROGRAM SPECIALISTS<sup>1</sup>**

July 3, 2003

Interviewer \_\_\_\_\_  
 Forest \_\_\_\_\_  
 Date \_\_\_\_\_  
 Name of Interviewee \_\_\_\_\_  
 Title \_\_\_\_\_  
 Unit/Location \_\_\_\_\_  
 How long in present position \_\_\_\_\_  
 How long working on this forest \_\_\_\_\_

**Notes:**

If one of the interviewees is new in their position, and their predecessor is an old timer who is still accessible, you may want to interview both. Or you may want to interview people from the same program but on different ranger districts/resource areas together.

You may want to have a map of the forest laid out during the interview in case they want to reference specific places with regard to resource activities.

I use the term “forest” here but in most cases if you’re working on a BLM district, substitute the term “district.”

**Section I**

Northwest Forest Plan Implementation:

- X = the name of a program/resource area
- Y = the name of a forest or district

*Intro:*

The Northwest Forest Plan called for a number of changes in forest management, including land use allocations into late-successional and riparian reserves, matrix areas, and adaptive management areas; a host of standards and guidelines regarding forest management; and a number of new procedural requirements, such as survey and manage,

watershed analysis, and late-successional reserve assessments. I’m interested in understanding how the NWFP has been implemented on (Forest Y) since 1994, and the ways in which the management of Forest Y has changed under the NWFP. Please answer the following questions as they pertain to the specific resource or program area that you manage.

*Questions:*

- (1) First, would you please describe the overall nature of your program on Forest Y. How has the program evolved over the last decade or so?
- (2) How has the NWFP changed the way in which program X on this forest is managed, overall? Specifically:
  - a. How did the creation of different land use allocations (late-successional reserves, riparian reserves, matrix, adaptive management areas) affect the management of (X) on your forest? For example, have some areas been closed to this use; has this use been restricted or altered in some way; has habitat for this use improved or deteriorated; etc.
  - b. Did the NWFP Standards and Guidelines pertaining to (X) bring about a change in its management here? How so? (cite what the S&Gs said about management of the resource area you are discussing)
  - c. Have the new procedural requirements—survey and manage, watershed analysis, LSR assessments—had an effect on the way in which (X) is managed or carried out here? How so?
  - d. Are there any other aspects of the NWFP and its implementation on Forest Y that brought about changes in the way X is managed on Forest Y?
- (3) (If not adequately covered in the responses to the above), How has the NWFP changed public access to the forest and specific use areas for (X)? Please comment on whether and how changes in forest management under the NWFP have affected:
  - a. Peoples’ physical ability to get to use areas (i.e., access routes);
  - b. Their ability to use forest areas for (X) from the regulatory standpoint (have some places been opened or closed for use, are people still allowed to go there, have uses been modified?);

<sup>1</sup>Three different questionnaire guides were used with agency employees, depending on their position. The one included here was used with program specialists, who were the main source of the interview information contained in volume II. Some of the interview information contained in volume II came from line officers. Although we used a different questionnaire guide for line officers, the questions we asked about trends in resource production on the forest were essentially the same as those contained in this guide.

- c. Ecological conditions in use areas, making them either more or less productive for (X);
- d. The economic feasibility of conducting (X);
- e. The presence of facilities or infrastructure for conducting (X).

## Section 2

### Trends in Resource Outputs From Forests

#### *Intro:*

Our team obtained data on trends for specific indicators relating to (Program Area X) from your forest between 1990 and 2002 (or whatever years are available). These data came from (database Z). I'd like to show you the results of our trend analysis for (X) and discuss them. (You will probably need to walk them through the charts and summarize what they show, so it's clear what they mean). I'd like to understand what accounts for the trends in these indicators on (Forest Y) since 1990.

**Note:** Some of this may be available in annual monitoring reports!

The following questions relate to this/these chart(s).

- (1) Are the trends shown for these indicators consistent with your own perception of what has been happening in program (X) over the last decade or so? If not, how do you perceive it differently? How would you account for the differences between your perceptions and the data?
- (2) Please explain why you think trends in these indicators are going up/going down/staying the same over time.
- (3) To what extent do you believe implementation of the Northwest Forest Plan is responsible for these trends? Why? What other factors might be causing these trends?
- (4) One of the goals of the NWFP was to "produce a predictable and sustainable supply of timber and non-timber forest products and recreation opportunities." Do you believe this goal has been met on your forest with regard to (X) since the plan was implemented? If so, how have you been able to achieve this goal? If not, why not? What has prevented this from happening?

- (5) What do you anticipate will be the trends in the output of/opportunities for (X) over the next 5 years? Will they increase, decrease, or stay the same? Why? Does the NWFP have anything to do with it?

## Section 3

### Impacts of Forest Management on People

#### *Intro:*

You've now described changes in forest management under the NWFP with regard to your program area, and explained trends in (X indicators). I'd like to discuss how you think changes in forest management under the NWFP, and the production of (X) over time, have affected the public.

#### *Questions:*

- (1) Please tell me how you think changes in the management of, and production/availability of (X) have affected people who use (Forest Y) for (X). What do you think have been the economic impacts, social impacts, cultural impacts on these user groups?
- (2) Please tell me how you think changes in the management and production/availability of (X) have affected residents of communities surrounding the forest. What do you think have been the economic impacts, social impacts, cultural impacts on local residents (understanding that local community residents may also be forest users, but not necessarily), if any?
- (3) Are there any other stakeholder groups that you think have been affected by changes in the management and production/availability of (X) that have not already been mentioned? Who? What do you think have been the economic impacts, social impacts, cultural impacts on these stakeholders?

## Section 4

### Forest Budgets, Staffing, and Organization

#### *Intro:*

Because the FS and BLM can be an important source of quality jobs in rural communities, and because forest budgets and staffing levels affect your ability to manage the forest, and to interact with the public, we are interested in understanding whether or not the NWFP has had an impact on forest budgets, staffing levels, and organizational structure.

Show the interviewee the trend analysis we have performed for the total annual budget and number of employees on their forest since 1990, and focus on the budget for their program area if we have the data.

*Questions:*

- (1) On budgets (refer to the trend chart):
  - a. How has your program area been affected by the trends in annual forest budgets since 1990? Are certain activities receiving more or less funding than they did a decade ago?
  - b. What do you believe has caused the trends observed in your annual program budget over the last decade or so? Would you attribute these trends to NWFP implementation at all, and if so, what's the connection?
- (2) On staffing levels (refer to the trend chart):
  - a. How have jobs in your program area been affected by the trends in FTEs since 1990?
  - b. What do you believe has caused the trends observed in the number of forest employees over the last decade or so? Would you attribute these trends to NWFP implementation at all, and if so, what's the connection?
- (3) Effects on management:
  - a. How have trends in your program budgets and staffing levels affected your ability to manage and carry out your program?
  - b. How have they affected your relations with the public, if at all?
  - c. Has there been any impact on local communities?

**Section 5**

**Contracting**

(Unfortunately, we won't have the results of the contracting study in by the time we interview folks, so won't know what the contracting trends are.)

*Intro:*

Contracting and procurement to achieve ecosystem management objectives provide forest-based employment opportunities. One expectation of the NWFP was that although jobs in the timber sector would be lost due to declining federal

timber harvests, new opportunities for forest work relating to ecological restoration, scientific surveys, fuels reduction, road decommissioning, etc. would emerge. Researchers have found that agency contracting to achieve ecosystem management on forests represents an important potential source of jobs for local communities. I'd like to discuss trends in contracting and procurement for ecosystem management purposes on forest Y with respect to your program area.

*Questions:*

- (1) To what extent do you rely on contracting and procurement actions to accomplish ecosystem management objectives relating to your program area? What kinds of work activities do you most often contract out to accomplish? Can you estimate what percentage of work in your program area gets done this way?
- (2) Do you think the trend in contracting to achieve ecosystem management objectives within your program area has been increasing or decreasing over the last decade or so? (We'll know once we get the trend data!) Please explain trends in contracting and procurement—why are you doing more/less contracting over time?
- (3) Does contracting/procurement represent an effective way to get work on the forest done? What are the benefits (incentives) /the drawbacks (disincentives) of contracting for forest stewardship activities in your program?
- (4) Do you believe that residents of local communities are receiving employment benefits from your contracting practices, and does your program make any special efforts to target local contractors/local workers to do work on the forest? If not, why not? What are the barriers? Do you view it as being important to try to promote local contracting?
- (5) One of the goals of the NWFP was to contribute to socioeconomic well-being in forest-based communities. Do you think your program area, as it has been managed since the NWFP has been doing this? How so? Please explain.

## Section 6

### Collaboration with Communities in Forest Stewardship Activities

#### *Intro:*

We are interested in how your program area engages the public in discussions about resource management. In particular, we are interested in how your program collaborates with communities and local groups in on-the-ground forest stewardship activities, and how these types of collaborations have changed over the past decade.

I want to talk specifically to collaborative forest stewardship activities between the forest/your district/your program and groups or communities. These would be activities that stem from a pooling of resources (e.g., money, labor, information) by your forest/district/program and other groups to achieve mutual objectives from which all parties will benefit. The groups might include community groups, volunteers, and other types of groups or organizations. Thus, I am not referring to standard public input processes, but instead projects that are designed and implemented in collaboration between the Forest Service and a group, and that have tangible on-the-ground outputs that benefit all participants in the collaborative.

#### *Questions:*

- (1) What types of on-the-ground collaborative forest stewardship activities does your Program engage in with community groups or other groups?
- (2) Who do these groups tend to be, and where are they from generally (local vs. nonlocal)?
- (3) In what ways, if at all, do collaborative forest stewardship activities help your program fulfill its forest management objectives?
- (4) What other motivations are there for collaboration?
- (5) How has the way your program engaged groups or communities in on-the-ground forest stewardship activities changed since the early 1990s?
- (6) To what do you attribute these changes?
- (7) Can you think of ways in which the NWFP has influenced these changes in collaborative activities?
- (8) Has the “leadership” on your forest/district pertaining to collaborative forest stewardship changed in the past decade? By “leadership,” we mean the ways in which leaders create vision, enable, and empower employees, deliver messages, demonstrate commitment, learn from past experiences, and pass on

knowledge related to collaborative forest stewardship.

a. How?

- (9) Are employees in your program who engage in collaborative forest stewardship activities acknowledged, rewarded, or promoted by upper management? How?
- (10) What are the biggest barriers to collaborative forest stewardship activities that your program faces, if any? (include here budget, staffing, skills, other...)
- (11) One of the goals of the NWFP was to improve relationships between federal land management agencies and local communities, and promote collaborative forest management and joint forest stewardship activities.
  - a. Do you believe progress in meeting this goal has been made with respect to Forest Y and local communities around the forest since the NWFP was implemented?
  - b. Why or why not?

#### **To Conclude:**

Do you have any final thoughts, points you want to emphasize, summary remarks, or things you want to add now regarding the impact of the NWFP on your program area, and associated effects on forest users and local communities?

Are there any questions you would like to ask me?

Thank you so much for your time and thoughts!

Program Specialists: Could be forest/district or district/resource area level

- Range
- Minerals
- Timber
- Silviculture
- Heritage
- Scenery
- Nontimber forest products
- Fire
- Roads
- Fisheries (with a focus on links to recreational and commercial fishing activities)
- Wildlife (with a focus on links to hunting and wildlife viewing activities)
- Recreation



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# NORTHWEST FOREST PLAN

THE FIRST 10 YEARS (1994–2003)

## Socioeconomic Monitoring Results Volume III: Rural Communities and Economies

Susan Charnley, Ellen M. Donoghue, Claudia Stuart, Candace Dillingham,  
Lita P. Buttolph, William Kay, Rebecca J. McLain, Cassandra Moseley,  
Richard H. Phillips, and Lisa Tobe



The **Forest Service** of the U.S. Department of Agriculture is dedicated to the principle of multiple use management of the Nation's forest resources for sustained yields of wood, water, forage, wildlife, and recreation. Through forestry research, cooperation with the States and private forest owners, and management of the national forests and national grasslands, it strives—as directed by Congress—to provide increasingly greater service to a growing Nation.

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# Socioeconomic Monitoring Results Volume III: Rural Communities and Economies

Susan Charnley, Ellen M. Donoghue, Claudia Stuart, Candace Dillingham,  
Lita P. Buttolph, William Kay, Rebecca J. McLain, Cassandra Moseley,  
Richard H. Phillips, and Lisa Tobe

## Northwest Forest Plan—The First 10 Years (1994–2003): Socioeconomic Monitoring Results

Susan Charnley, Technical Coordinator

U.S. Department of Agriculture, Forest Service  
Pacific Northwest Research Station  
Portland, Oregon  
General Technical Report PNW-GTR-649 Vol. III  
April 2006

## Abstract

**Charnley, Susan; Donoghue, Ellen M.; Stuart, Claudia; Dillingham, Candace; Buttolph, Lita P.; Kay, William; McLain, Rebecca J.; Moseley, Cassandra; Phillips, Richard H.; Tobe, Lisa. 2006.** Socioeconomic monitoring results. Volume III: rural communities and economies. In: Charnley, S., tech. coord. Northwest Forest Plan—the first 10 years (1994–2003): Socioeconomic monitoring results. Gen. Tech. Rep. PNW-GTR-649. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 206 p.

This volume focuses on the Northwest Forest Plan (the Plan) record of decision (ROD) evaluation question, Are local communities and economies experiencing positive or negative changes that may be associated with federal forest management? It also assesses how well two of the Plan’s socioeconomic goals were met during the first decade: (1) to maintain the stability of local and regional economies on a predictable, long-term basis; and, (2) where timber sales cannot proceed, to assist with long-term economic development and diversification to minimize adverse effects associated with job loss. The monitoring team examined trends in socioeconomic benefits from federal forest lands between the early 1990s and the early 2000s, and the ways in which the Plan may have contributed to these trends. The team also examined socioeconomic mitigation measures designed to offset some of the adverse effects of cutbacks in federal timber harvest, how effective they were, and why they sometimes were not. In addition, we examined social and economic change in Plan-area communities at the regional scale and in a sample of 12 forest-based communities to identify links between Plan implementation, the mitigation measures, and community change.

Some key findings from this volume are:

- In the 72 counties within the Plan area, about one-fifth of the population (2 million people) lives within 5 miles of a federal forest. Based on a socioeconomic well-being score developed from U.S. Census indicators, socioeconomic well-being between 1990 and 2000 dropped for about 40 percent of the communities within 5 miles of a forest, increased for 37 percent, and stayed about the same for the remaining 23 percent. The extent to which the Northwest Forest Plan contributed to these changes is difficult to quantify, because other variables were also at play. Plan effects on communities varied, depending on the strength of the timber sector there in 1990, the extent to which timber from federal forest lands supported that sector, and the number of agency employees resident there.
- Thirty thousand direct timber industry jobs were lost between 1990 and 2000 in the Plan area. About 19,000 of these jobs were lost between 1990 and 1994, and the main cause was reduced timber supplies across ownerships. Roughly 11,400 of the lost jobs can be attributed to cutbacks in federal harvests triggered by the listing of the Northern Spotted Owl and subsequent injunctions on timber sales. About 11,000 of the 30,000 timber industry jobs lost during the 1990s were lost in the last half of the decade. About 400 of the 11,000 jobs lost since 1994 can be attributed to a net

reduction in federal timber harvesting. The remaining 10,600 job losses occurred during a period of increased log availability to local mills, and are the result of less efficient mills closing, and mills continuing to invest in labor-saving technologies.

- Forest Service field units in the Plan area lost over one-third of their budgets and their workforce over the decade, and about one-quarter of the field offices closed or consolidated. In contrast, the BLM field units in the Plan area did not experience similar declines.
- Forest Service spending on contracts for ecosystem management work, which can create local jobs, dropped nearly 70 percent. BLM contract spending for ecosystem management work held steady.
- The Northwest Economic Adjustment Initiative was largely unsuccessful in creating sustainable, forest-related local jobs comparable to the number and quality of those lost.
- Payments-to-counties legislation, adopted to mitigate the decline in timber receipts to county governments, was largely successful.
- Social and economic ties between communities and forests changed during the decade as timber workers and agency employees moved out, and new residents attracted to the amenity values associated with federal forests moved in. Communities are adapting to change in many ways, including focusing on agriculture, investing in recreation and tourism, using nearby major transportation corridors to attract business and to commute where possible, expanding as regional centers, and depending on the growth of tribal business, administration, and services.
- Many community members interviewed for this study hope there will be future opportunities to link the biophysical and socioeconomic goals of the Plan by creating local jobs associated with maintaining and restoring forest ecosystems.

## Preface

This report is one of a set of reports produced on this 10-year anniversary of the Northwest Forest Plan (the Plan). The collection of reports attempts to answer questions about the effectiveness of the Plan based on new monitoring and research results. The set includes a series of status and trends reports, a synthesis of all regional monitoring and research results, a report on interagency information management, and a summary report.

The status and trends reports focus on establishing baselines of information from 1994, when the Plan was approved, and reporting change over the 10-year period. The status and trends series includes reports on late-successional and old-growth forests, northern spotted owl population and habitat, marbled murrelet population and habitat, watershed condition, government-to-government tribal relationships, socioeconomic conditions, and monitoring of project implementation under Plan standards and guidelines.

The synthesis report addresses questions about the effectiveness of the Plan by using the status and trends results and new research. It focuses on the validity of the Plan assumptions, differences between expectations and what actually happened, the certainty of these findings, and finally, considerations for the future. The synthesis report is organized in two parts: Part I—introduction, context, synthesis, and summary—and Part II—socioeconomic implications, older forests, species conservation, the aquatic conservation strategy, and adaptive management and monitoring.

The report on interagency information management identifies issues and recommends solutions for resolving data and mapping problems encountered during the preparation of the set of monitoring reports. Information issues inevitably surface during analyses that require data from multiple agencies covering large geographic areas. The goal of that report is to improve the integration and acquisition of interagency data for the next comprehensive report.

The socioeconomic status and trends report is published in six volumes. Volume I of the report contains key findings. Volume II addresses the evaluation question, Are predictable levels of timber and nontimber resources available and being produced? The focus of Volume III (this volume) is the evaluation question, Are local communities and economies experiencing positive or negative changes that may be associated with federal forest management? Volume IV assesses the Plan goal of promoting agency-citizen collaboration in forest management. Volume V reports on public values regarding federal forest management in the Pacific Northwest. Volume VI provides a history of the Northwest Forest Plan socioeconomic monitoring program, and a discussion of potential directions for the program.



## Summary

The Volume III monitoring questions, indicators monitored, Northwest Forest Plan expectations, and monitoring results are summarized in the tables below, by chapter.

### Chapter 2: Socioeconomic Conditions and Trends for Communities

Monitoring question	Indicators monitored
How did social and economic conditions change in Plan-area communities between 1990 and 2000?	<ul style="list-style-type: none"><li>• Total population</li><li>• Population change</li><li>• Population density</li><li>• Age</li><li>• Race</li><li>• School enrollment</li><li>• Educational attainment</li><li>• Employment by industry</li><li>• Median household income</li><li>• Income distribution</li><li>• Percentage of unemployment</li><li>• Percentage of poverty</li><li>• Socioeconomic well-being<sup>1</sup></li></ul>

#### Plan expectations—

Not all communities would be affected the same way or to the same extent by the Plan. Some communities would experience severe adverse effects; some would be relatively unaffected; others could benefit. Rural and timber-dependent communities would experience the greatest social and economic effects.

#### Monitoring results—

We analyzed 12 social and economic indicators from the U.S. Census for the years 1990 and 2000 and also used U.S. census data to develop a community socioeconomic well-being measure that would help us evaluate change in community socioeconomic well-being over time.

Our analysis of the census data showed that communities in the Plan area are changing. The population is growing, educational attainment and household income are increasing, and poverty is decreasing. At the same time, the manufacturing sector of the economy is declining in many communities. Socioeconomic well-being increased for more than a third of the communities in the region, and decreased for about the same number between 1990 and 2000.

Almost 5 million people lived in communities in the Plan area in 2000, and more than 2 million lived within 5 miles of federal forest land. Using a socioeconomic well-being index we developed, we found that 40 percent of the communities within 5 miles of federal forest land decreased in socioeconomic well-being between 1990 and 2000, compared

<sup>1</sup> Socioeconomic well-being is composed of six indicators: diversity of employment by industry, percentage of population with bachelor's degree or higher, percentage of unemployment, percentage of poverty, household income inequality, and average travel time to work.

with a 33 percent decrease for communities farther than 5 miles from federal forests. Generally, Plan-area communities with lower socioeconomic well-being tended to be those within 5 miles, comprising 71 percent of all communities that scored low or very low in socioeconomic well-being in 2000. Forty-three percent of the communities that received high or very high scores, however, were also within 5 miles of federal forest land. Although some of these communities had relatively high socioeconomic well-being, income inequality has also increased there. Drivers of socioeconomic change, such as increasing income inequality, migration, shifts in dominant industry sectors, and aging populations, affect community socioeconomic well-being.

### Chapter 3: Jobs and Income

Monitoring question	Indicators monitored
How did levels of federal timber and nontimber resource outputs, and recreation opportunities, affect jobs and income in the Plan area?	<ul style="list-style-type: none"> <li>• Primary solid wood products employment</li> <li>• Primary pulp and paper processing employment</li> <li>• Income from primary solid wood products manufacturing</li> <li>• Income from primary pulp and paper manufacturing</li> <li>• Timber harvest by ownership</li> <li>• Employment in forestry products</li> <li>• Employment in range-fed cattle</li> <li>• Employment in commercial fishing</li> <li>• Employment in agriculture, forestry, and fishing services</li> <li>• Employment in minerals mining and processing</li> <li>• Jobs and income from recreation</li> </ul>

#### Plan expectations—

Predictable levels of resource outputs and recreation opportunities from Forest Service (FS) and Bureau of Land Management (BLM) lands would provide predictable levels of employment. The permanent reduction in timber supply would cause an initial loss of about 25,000 direct jobs in the timber industry compared to 1980s levels. After adjusting to this change, Plan implementation would provide a stable flow of timber, supporting predictable rates of timber industry employment. There were no expectations for jobs and income associated with nontimber resources or recreation.

#### Monitoring results—

Over the period 1990 to 2000, primary-wood-products employment in the Plan area decreased by 30,000 jobs. This loss includes 5,000 jobs lost owing to lower levels of FS and BLM timber supply than originally projected. About 19,000 of these 30,000 jobs were lost between 1990 and 1994, and the main cause was reduced timber supplies across ownerships. Roughly 11,400 of the lost jobs can be attributed to cutbacks in federal harvests triggered by the listing of the northern spotted owl and subsequent injunctions on timber sales. About 11,000 of the 30,000 jobs were lost after 1994. About 400 of the 11,000 jobs lost since 1994 can be attributed to a net reduction in timber harvesting on federal lands.

The remaining 10,600 job losses occurred during a period of increased log supply, and are the result of less efficient mills closing and mills continuing to invest in labor-saving technologies. This analysis found the original Forest Ecosystem Management Assessment Team (FEMAT) estimates of employment loss to be reasonably accurate.

The contribution of federal timber to the total timber supply dropped in the Plan area from about 25 percent in 1990 to 10 percent in 1995 to less than 5 percent by 2000.

The expectation that the Plan would provide predictable levels of resource outputs and recreation opportunities, which would in turn provide predictable levels of employment, was not achieved with respect to timber supply. The timber projection for FS and BLM lands in the Plan area were not realized and there was a lot of variation across the years since the Plan was implemented. However, increased harvests from other ownerships and the redirection of logs from the export market to local processing industries have mitigated some of these impacts. The Plan's effect on jobs and income associated with nontimber resources and recreation opportunities was either minimal or not readily discernable.

#### Chapter 4: Agency Jobs, Unit Reorganizations, and Budgets

Monitoring questions	Indicators monitored
(1) How has the number and type of FS and BLM jobs changed on Plan-area forest units since the Plan was adopted?	<ul style="list-style-type: none"> <li>• Number of permanent and other (part-time, temporary) FS and BLM full-time-equivalent (FTE) positions</li> </ul>
(2) How did the number and geographic distribution of agency offices containing unit-level decisionmakers change between 1990 and 2004?	<ul style="list-style-type: none"> <li>• Number of agency offices containing line officers (agency decisionmakers)</li> </ul>
(3) How did total budget allocations to Plan units change during the Plan period?	<ul style="list-style-type: none"> <li>• Budget allocations to Plan-area forests</li> </ul>

#### Plan expectations—

- (1) Communities in the Plan area could lose up to 2,000 Forest Service jobs. No estimates of job loss were made for the BLM.
- (2) There were no expectations for Plan effects on the number and distribution of agency offices.
- (3) The budget process was expected to change to facilitate integrated resource management.

#### Monitoring results—

The five western Oregon BLM districts lost 166 FTEs between 1993 and 2002, or 13 percent of their workforce. No BLM district or resource area offices closed during this period, however, providing a continued presence of agency decisionmakers in local communities. National forests in the Plan area lost 3,066 FTEs between 1993 and 2002, representing a 36-percent decline in the workforce. This loss was more than expected, and it led to a consolidation of field offices. The number of FS offices with forest supervisors declined by two, and the number of offices with district rangers dropped by 20 during the period,

representing a 23-percent reduction in the number of communities housing FS offices with a line officer. Some of these offices closed completely; others persisted, but with greatly reduced staffing. The FS job loss was most severe among units in Oregon and Washington. The loss of agency jobs was tied to declines in agency budgets associated with reduced timber harvest under the Plan.

Between 1993 and 2003, western Oregon BLM unit total budgets rose by 22 percent. In contrast, Plan-area FS unit budgets declined by 35 percent. These trends can be compared to national-scale trends in agency budget appropriations. Between 1993 and 2003, total FS agency appropriations grew by 41 percent, and total BLM agency appropriations grew by 79 percent. The decline in FS budgets between 1993 and 2003 can largely be attributed to the decline in timber receipts generated during the period. Although BLM timber sales also decreased during the decade, BLM funding was not as heavily dependent on trust and permanent operating accounts derived from timber receipts.

## Chapter 5: Procurement Contracting

Monitoring questions	Indicators monitored
(1) How much and what kind of ecosystem management work did the FS and BLM contract between 1990 and 2002?	<ul style="list-style-type: none"> <li>• Total procurement spending</li> <li>• Number and value of contracts</li> <li>• Procurement spending by work type</li> </ul>
(2) Who received economic benefits from FS and BLM contracting?	<ul style="list-style-type: none"> <li>• Location of contractors</li> <li>• Contract awards to rural communities and affected counties</li> </ul>

### Plan expectations—

Work in the forestry services sector would decline. Work in ecosystem restoration, surveys, assessments, and inventories would increase, creating about 7,000 jobs per year during the first 3 years of the Plan. Jobs in ecosystem restoration would help offset job loss in the timber sector.

### Monitoring results—

The expectation that contract work in ecosystem restoration would increase, helping to offset job loss in both the forestry services and timber sectors, was not met. Although a proportional shift in work types turned away from labor-intensive contracting associated with intensive timber management and toward technical and equipment-intensive work associated with ecosystem restoration, this shift was in the context of a general decline in contract spending. This decline can be attributed to a reduction in FS procurement contracting. The BLM contract spending remained fairly constant between the early 1990s and the early 2000s, averaging just under \$20 million per year. The FS spending declined throughout the period, dropping from \$103 million in 1991 to \$33 million in 2002.

We attribute these differences in agency contract spending primarily to the differences in agency budget trends during this period.

## Chapter 6: Community Economic Assistance

Monitoring questions	Indicators monitored
How did agencies assist with long-term economic development and diversification in rural communities affected by cutbacks in timber harvest on federal forest lands and what were the outcomes?	<ul style="list-style-type: none"><li>• BLM Jobs in the Woods</li><li>• FS Rural Community Assistance</li><li>• FS Old-Growth Diversification Fund</li></ul>

### Plan expectations—

The agencies expected the Northwest Economic Adjustment Initiative to accomplish five specific objectives:

- (1) Provide immediate relief for distressed timber communities.
- (2) Create an environment for long-term economic development consistent with and respectful of the character of communities and their natural resources.
- (3) Develop new mechanisms for delivering assistance.
- (4) Emphasize equal partnership with the states and the critical role of local governments in economic development.
- (5) Emphasize the use of performance-based standards for funding (outcomes based on creating new opportunities and sustainable jobs) over traditional standards for funding, which were based on programmatic eligibility.

### Monitoring results—

Many people view the short-term mitigations of the Northwest Economic Adjustment Initiative programs as too little, too late. Timber industry restructuring and timber supply changes were already going on, to a large degree, before the initiative dollars became available in 1994. The initiative did not deliver on agency and public expectations to provide immediate help to displaced timber workers and their families, and many believe that the dollars available were out of proportion to the magnitude of the effects.

Some people argue that it is too soon to assess the success of the initiative's long-term economic diversification projects. The Old-Growth Diversification Fund, a revolving loan fund providing grants and loans to small businesses to promote expansion and diversification, still provides a long-term sustainable source of capital for resource-related businesses, and it is considered highly successful. Community-based planning was a focus of the Rural Community Assistance program. Projects to improve community capacity—such as leadership development, community-based planning, and technical assistance to help communities write grants—were aimed at helping communities help themselves. In reviews of the initiative, these “soft infrastructure” projects were considered vital to the success of initiative projects. The program also supported economic diversification, funding projects such as market and feasibility studies and business plans; whether these projects were generally successful is debatable. The initiative also helped communities and businesses by funding hard infrastructure development projects (such as business parks and water and sewer systems). Although many communities have improved their infrastructure and are better poised for economic development, these opportunities had yet to materialize in most of the communities we studied.

The BLM Jobs-in-the-Woods program met with such success that it persisted as an annual budget appropriation. Despite the BLM's successes, to many, Jobs-in-the-Woods has been the greatest disappointment of all of the initiative's components because public expectations for the quality and number of jobs created to offset job losses in the timber industry were never realized.

Another objective of the initiative was to design new ways for federal agencies to conduct business in collaboration with nonfederal and community partners. Assessments of the innovative aspects of these programs in promoting collaboration between agencies and partners to deliver assistance view them as highly successful.

## Chapter 7: Payments to States

Monitoring question	Indicators monitored
Did payments to states legislation stabilize payments to county governments and compensate for payments traditionally tied to timber receipts?	<ul style="list-style-type: none"> <li>• Payments to counties without legislative mitigations</li> <li>• Payments to counties with legislative mitigations</li> <li>• Payments in lieu of taxes</li> </ul>

### Plan expectations—

Payments to states mitigation measures were expected to offset the effects of reduced federal timber-harvest receipts on county governments through a transition period.

### Monitoring results—

The initial payments-to-counties legislation has generally mitigated the effects of declining timber receipts for the 48 counties covered by the legislation. The counties in other parts of the Plan area (in eastern Washington, Oregon, and other parts of California) did not fare as well until the Secure Rural Schools Act extended these payments to all of the eligible counties in the region and across the United States.

Some of the intent behind the Omnibus Budget Reconciliation Act of 1993 was to provide a transition to a lower rate of assistance. The transitional path downward was replaced by a much higher rate of revenue support under the Secure Rural Schools Act.

The goal of the payments to counties legislation was clearly met. The legislation has replaced past dependence on timber-harvest revenues and has generally mitigated the lost revenues associated with the declines in federal timber harvest in the region. It is not known how the owl safety net payments have affected overall county financing. In the short term, a guaranteed amount is likely to have a stabilizing effect. The Secure Rural Schools legislation, however, sunsets on September 30, 2006. The long-term stability of the payments is uncertain. Without new congressional action, counties in the Plan area will need to address a projected \$270 million in revenue shortfall. Congressional hearings are expected in 2005 to address the possibility of reauthorization of the Secure Rural Schools legislation.

## Chapter 8: Plan Effects on Forest-Based Communities

Monitoring questions	Indicators monitored
(1) Are local communities and economies experiencing positive or negative changes that may be associated with federal forest management?	<ul style="list-style-type: none"> <li>• Census indicators relating to population, employment, education</li> <li>• Socioeconomic well-being scores</li> <li>• Agency jobs</li> </ul>
(2) Have the FS and BLM helped maintain the stability of local and regional economies on a predictable, long-term basis?	<ul style="list-style-type: none"> <li>• Procurement contracting opportunities</li> <li>• Community economic assistance</li> </ul>
(3) Have the agencies assisted with long-term economic development and diversification to minimize adverse impacts associated with job loss?	<ul style="list-style-type: none"> <li>• Payments to county governments</li> </ul>

### Plan expectations—

The main adverse social and economic effects of the Plan would be associated with the loss of jobs and income caused by reduced federal timber harvests. These cutbacks were predicted to threaten the economic vitality of many communities that had depended on them in the past. Not all communities were expected to be affected the same way, or to the same extent. Loggers, mill owners and workers, small businesses, and their families were expected to experience significant, long-lasting effects that would be difficult to overcome. In some communities, the impacts of the Plan would be very noticeable; in others, they would not be visible. The communities most negatively affected would be the relatively small and isolated communities that were closest to federal forest land, lacked economic diversity, were dependent on public timber harvests, and had low leadership capacity. Communities with the highest capacity to adapt to Plan-related change would be those having good access to transportation, markets, and raw materials, a high degree of economic diversification, and quality leadership.

Communities dependent on amenity, recreation, or other environmental quality resources could be positively affected by the Plan. Nevertheless, nonconsumptive forest activities and recreation were not expected to sustain those communities whose economies had been timber based

Some rural communities would experience the effects of reductions in Forest Service employment. The environmental impact statement forecast the loss of up to 2,000 FS jobs. Payments to county governments in lieu of taxes would drop as timber sale receipts dropped. Employment in the “forestry services” sector (such as reforestation, timber stand improvement) would also decline.

The negative effects of the Plan on forest-based communities and economies were expected to be partially offset by Plan-related mitigations. A number of ecosystem restoration activities on federal forests could create 7,000 jobs per year between 1994 and 1997.

So-called “owl guarantee payments,” which began in 1991, would provide a safety net for county governments and make up for some lost timber revenues. In addition, a community economic assistance program was proposed that would provide \$1.2 billion to help workers and their families, businesses and industries, and communities cope with change induced by the Plan.

**Monitoring results—**

Twelve case-study communities were monitored to assess whether social and economic change there since 1990 was associated with federal forest management. All of the case-study communities showed changes over the last two decades. Although timber was one of the major economic sectors in all of these communities in the 1970s and 1980s, the timber sector had become minor or negligible in many of them by 2003. Federal forest management policy was just one of many variables shaping the changes in these communities, however, and the extent of its effects varied considerably. These effects depended on the relative strength of the timber sector in each community around 1990, the extent to which wood products harvested on federal forest lands supported that sector, and the degree to which local residents depended on FS jobs. The decline in agency jobs associated with reductions in FS timber programs strongly affected several case communities, just as the loss of timber sector jobs did.

The Plan was not the only variable causing the Pacific Northwest timber economy to change. The timber sector in some communities had been declining since the early 1980s because of an economic recession, domestic and international competition, changes in market demand for wood products, industry restructuring, mechanization and technological advances, and environmental regulations—and the Plan added to these pressures. Other case-study communities seemed to be relatively buffered from the changes that affected the industry during the 1980s. Interviewees there perceived the halt of federal timber production around 1990 as the beginning of the end.

Some communities were sustained through the transitional period of the 1990s by having a substantial agricultural sector, being near a major transportation corridor, or being close to a popular recreation and tourism destination. Other communities had an influx of retirees, commuters, mobile or self-employed workers, second-home owners, immigrants, or low- and fixed-income populations. Some communities that had been goods and services centers expanded their role as regional centers. And tribes, where present, played an important role in contributing to community development through the growth of tribal businesses, administration, and social and environmental services. Tribal forest lands also helped sustain local timber economies in some areas.



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# Chapter 1: Introduction

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One of the evaluation questions in the Northwest Forest Plan (the Plan) record of decision (ROD) concerns rural economies and communities: Are local communities and economies experiencing positive or negative changes that may be associated with federal forest management? (USDA and USDI 1994b: E-9). The ROD lists key items to monitor: demographics, employment, government revenues, facilities and infrastructure, social service burden, federal assistance programs, business trends, and taxes.<sup>1</sup> Volume III of the socioeconomic monitoring report focuses on this evaluation question.

The question is rooted in concerns that prevailed in the early 1990s about how cutbacks in federal timber harvesting under the Plan would affect local, forest-based communities in the Pacific Northwest.<sup>2</sup> Many of these communities had residents who worked in the timber industry as loggers, mill workers, secondary wood-products manufacturers, and transporters of wood and wood products. In the early 1970s, timber industry employment in the Plan area stood at about 6 percent of total employment in Washington, almost 12 percent in Oregon, and 31 percent in California (FEMAT 1993: VII-53). By the late 1980s, the relative importance of timber employment in each of these regions had declined by 50 percent (FEMAT 1993: VI-25).

Any reduction in federal timber harvest volumes could incur additional negative social and economic effects on timber workers and their families in the region, especially on those depending on federal forest lands.<sup>3</sup> These workers were already being squeezed by global competition for wood and wood-products markets, labor-saving technologies leading to increased mechanization in mills, and the economic recession in the early 1980s. Not only were jobs at stake, but timber workers were an important part of many rural, forest-based communities, contributing to their social and economic vitality. Logging, milling, and timber

services formed the basis for a way of life in some communities. This way of life, and the cultural values and practices associated with it, were also threatened.<sup>4</sup> Thus, President Clinton requested “a balanced and comprehensive strategy for the conservation and management of forest ecosystems, while maximizing economic and social benefits from the forests” (USDA and USDI 1994a: E-1).

The final supplemental environmental impact statement (FSEIS) associated with the Plan (USDA and USDI 1994a) contained several expectations about the effects of the Plan on rural communities and economies.<sup>5</sup> The major adverse social and economic effects were expected to be associated with the loss of jobs and income caused by reduced federal timber harvests (USDA and USDI 1994a: 3&4-320). These cutbacks were predicted to threaten the economic vitality of many communities that had depended on them in the past. Not all communities were expected to be affected the same way, however, or to the same extent. The FSEIS predicted that the Plan’s effects would be intense and debilitating for some forest-based communities and some people employed in the wood-products industry, and would provide a challenge and an opportunity for change to others (USDA and USDI 1994a: 3&4-310). Unlike temporary, historical downturns in the timber industry, these effects would last longer than a firm’s or worker’s ability to “wait it out” (USDA and USDI 1994a: 3&4-311). Thus, loggers, mill owners and workers, small businesses, and their families were expected to experience significant, long-lasting effects that would be difficult to overcome. In some communities, the effects of the Plan would be very noticeable; in others, they would be invisible (USDA and USDI 1994a: 3&4-308). The FSEIS predicted that the communities most negatively affected would be the relatively small and isolated ones closest to federal forest lands that lacked economic diversity, depended on public timber harvests, and had low leadership capacity (FEMAT 1993: VII-9, USDA and USDI 1994a: 3&4-301).

<sup>1</sup> Appendix A explains which of these indicators were monitored, and why others were not.

<sup>2</sup> We follow Danks (2003) in defining forest-based communities as those having economic, social, and cultural ties to nearby forests.

<sup>3</sup> On average, 30 percent of the timber produced in western Oregon and Washington each year between 1970 and 1990 came from FS and BLM lands (Warren 2003).

<sup>4</sup> See Haynes and Grinspoon (in press) for a more thorough discussion of changes in the Pacific Northwest forestry sector since the 1940s and how it affected rural communities.

<sup>5</sup> The effects of alternative 9 (the preferred alternative adopted by the Plan) were not analyzed in detail.

Communities with the highest capacity to adapt to Plan-related change would be those with good access to transportation, markets, and raw materials; a high degree of economic diversification; and high-quality leadership. For example, coastal communities were predicted to adapt better and experience fewer negative consequences from the Plan (FEMAT 1993: II-68).

The agencies also predicted that communities depending on amenity, recreation, or other environmental quality resources could be positively affected by the Plan (FEMAT 1993: VII-9). For example, recreation-related employment in coastal communities could expand as a result of improved salmon and trout runs associated with watershed restoration (USDA and USDI 1994a: 3&4-288). Nevertheless, nonconsumptive forest activities and recreation were not expected to sustain those communities whose economies had been timber based (USDA and USDI 1994a: 3&4-309).

Additional negative effects of the Plan were also predicted. Some rural communities would experience the effects of reductions in Forest Service (FS) employment. The FSEIS forecast the loss of up to 2,000 FS jobs (USDA and USDI 1994a: 3&4-311). Payments to county governments in lieu of taxes would drop as timber sale receipts dropped (USDA and USDI 1994a: 3&4-309). Employment in the “forestry services” sector (such as reforestation, timber stand improvement) would also decline (USDA and USDI 1994a: 3&4-291). In evaluating whether local communities experienced positive or negative changes associated with federal forest management during the first decade of the Plan, we compare our findings with this set of expectations from the FSEIS and the Forest Ecosystem Management Assessment Team (FEMAT) report.

The negative effects of the Plan on forest-based communities and economies were expected to be partially offset by Plan-related mitigations. For example, several ecosystem restoration activities on federal forests were expected under the Plan (USDA and USDI 1994a: 3&4-308). Investments would be made in assessments, surveys (such as northern spotted owl [*Strix occidentalis caurina*], marbled murrelet [*Brachyramphus marmoratus*], and survey and manage species), inventories, and watershed restoration on Plan-area

forests that could create 7,000 jobs per year between 1994 and 1997 (USDA and USDI 1994a: 3&4-291). So-called “owl guarantee payments,” which began in 1991, would provide a safety net for county governments and make up for some lost timber revenues (USDA and USDI 1994a: 3&4-298). In addition, a community and economic assistance program was proposed to provide \$1.2 billion to help workers and their families, businesses and industries, and communities cope with change induced by the Plan (USDA and USDI 1994a: 3&4-313–314). We evaluate how effective these mitigation measures were at the local and regional scales in this volume.

In volume III we also evaluate two of the Plan’s socioeconomic goals: to maintain the stability of local and regional economies on a predictable, long-term basis (Haynes and Perez 2001; Mulder et al. 1999: 4; Tuchmann et al. 1996; USDA and USDI 1994a, 1994b: 26); and, where timber sales cannot proceed, to assist with long-term economic development and diversification to minimize adverse effects associated with job loss (Mulder et al. 1999: 4; Tuchmann et al. 1996, USDA and USDI 1994b: 3). These goals were based on President Clinton’s desire for the Plan to address the human and economic dimensions of forest management in the Pacific Northwest (USDA and USDI 1994b: 26):

The need for forest products from forest ecosystems is the need for a sustainable supply of timber and other forest products that will help maintain the stability of local and regional economies, and contribute valuable resources to the national economy, on a predictable and long-term basis.

Where timber sales could not go forward, President Clinton sought to provide new economic opportunities for year-round, high-wage, high-skill jobs that would mitigate job loss in the timber sector associated with reductions in federal timber harvest (USDA and USDI 1994b: 3).

Our focus is explicitly on rural communities having ties to nearby federal forest lands, as directed by the ROD (USDA and USDI 1994b: E-9), and consistent with the Plan assessment report (FEMAT 1993) and EIS (USDA

and USDI 1994a). Rural and timber-dependent communities were expected to experience the greatest social and economic effects from Plan implementation (USDA and USDI 1994a: 3&4: 306). The team did not evaluate the effects of the Plan on all forest users, on nonlocal communities with few, if any, ties to federal forest lands, or on stakeholders from metropolitan areas.

## Monitoring Approach

The baseline year for monitoring in this report is 1990. We chose 1990 as the baseline for several reasons. First, we use social and economic indicators from the U.S. Census to assess community-scale socioeconomic change over time. The census happens once every 10 years (1990 and 2000). Second, although the Plan was implemented in 1994, the spotted owl listing occurred in 1990, quickly followed by court injunctions against harvesting federal timber. Thus, the impacts of reduced federal timber harvesting began in 1991; the Plan was an attempt to restore the flow of federal timber. Finally, in order to evaluate the effects of the Plan on Pacific Northwest communities, it is helpful to compare what conditions were like before and after the Plan was implemented. It was not possible to obtain data as far back as 1990 for some indicators, however, so not all of the chapter analyses begin with that year. We discuss data issues in each chapter.

The ROD evaluation question has two components. First, are local communities and economies experiencing positive or negative changes? Chapter 2 provides a broad overview of community-scale change in the 1,314 communities the team delineated in the Plan area. The period of analysis is 1990–2000. The methods used to delineate communities and assess socioeconomic change there are described in detail in chapter 2.

The second component of the evaluation question asks whether the changes in rural communities and economies are associated with federal forest management. Addressing this question requires an understanding of how socioeconomic conditions in rural communities are linked to federal forests and their management. Federal forests and the agencies that manage them provide several benefits that

can contribute to socioeconomic well-being in local communities. These benefits include jobs and income associated with producing forest resources (timber, special forest products, livestock forage, minerals) and recreation; jobs working for the FS and the Bureau of Land Management (BLM) (permanent, seasonal, and temporary); agency procurement contracts for ecosystem management work; community economic assistance programs that provide funding for local economic development and diversification projects; and revenues to county governments that support roads, schools, and other general purposes. Chapters 3 through 7 of this volume examine trends in the production of these socioeconomic benefits from lands managed by the FS and BLM between the early 1990s and the early 2000s for the Plan area as a whole. Most of the results are reported by agency.<sup>6</sup> In addition to documenting regional-scale trends, we investigate how the Plan has influenced those trends. Our methods are described in each chapter.

As Cronon (2004: xii–xiii) observes, laws find their ultimate expression when they are enforced locally. The complexity of their effects cannot be understood from a “bird’s-eye view”; instead, what matters is their effects on the ground. Similarly, understanding the seemingly abstract effects of larger systems and processes, requires grounding them in local places where they become real (Cronon 2004: xii–xiii). Thus, to understand how the Plan as a management policy affected rural communities and economies in the Pacific Northwest, we had to look at how it was implemented on specific national forests and BLM districts; at how Plan implementation affected the flow of socioeconomic benefits from federal forests to local communities; and at how this changing flow of benefits affected specific local communities. The team selected four case-study forests and three communities associated with each forest to investigate these relations at the local scale (fig. 1-1).

<sup>6</sup>The FS and BLM often tracked different measures related to the same indicator, or had data available for different years, making it hard to combine data sets.

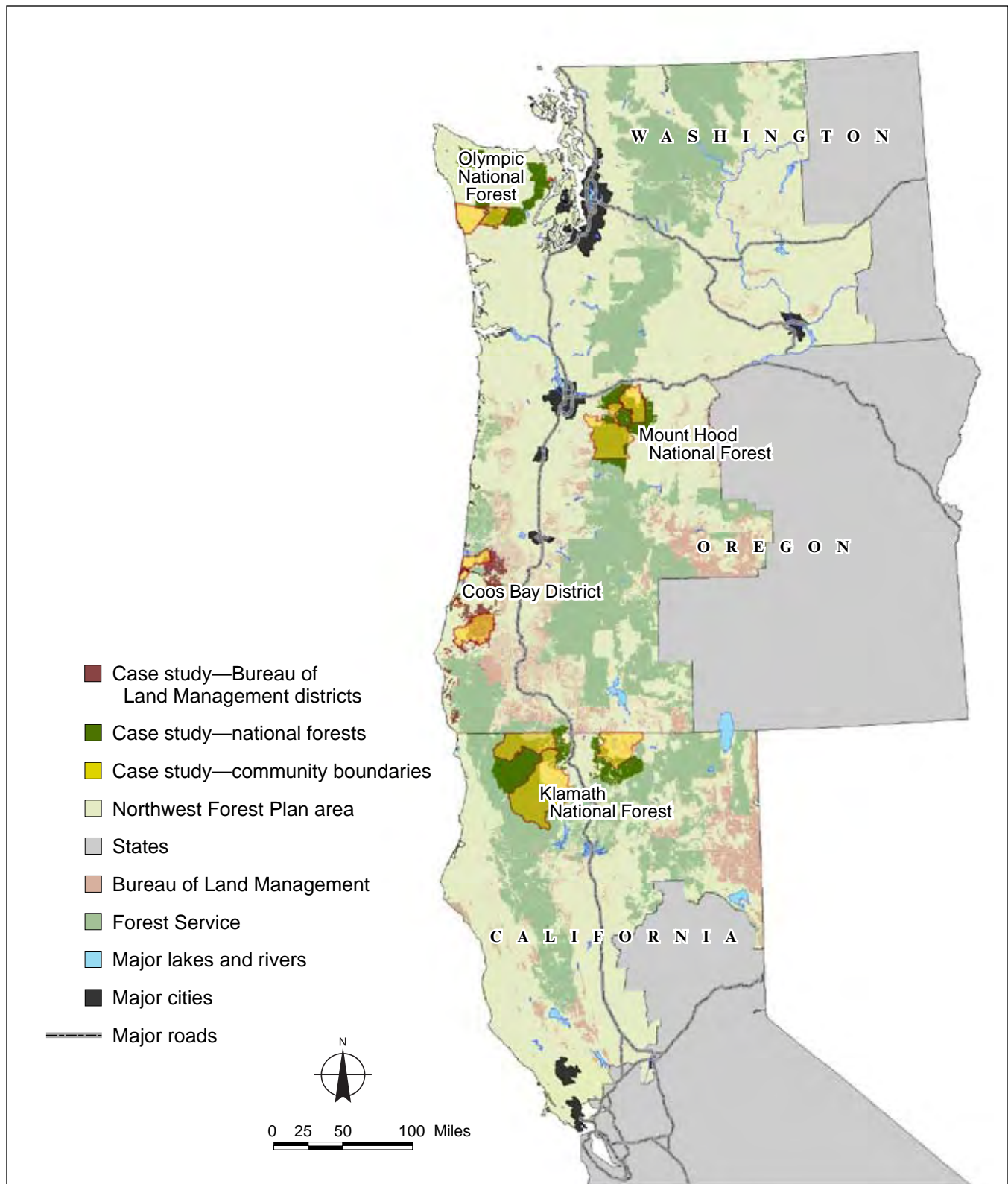


Figure 1-1—Case-study forests and communities.



### Case-study forests and communities

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#### Olympic National Forest

Quinalt Indian Nation  
Lake Quinalt Area  
Quilcene

#### Mount Hood National Forest

Upper Hood River Valley  
Villages of Mount Hood from Brightwood to Rhododendron  
Estacada

#### Klamath National Forest

Scott Valley  
Butte Valley  
Mid-Klamath

#### Coos Bay BLM District

Greater Coos Bay  
Greater Reedsport  
Myrtle Point

The methods used to choose the case-study forests and communities are described in chapter 8 and appendix B. The results of the case-study analysis are presented and discussed in chapter 8.

The ROD states that the complexity of relations and the number of factors involved in socioeconomic monitoring mean that setting specific or definite thresholds or values, which would cause a reevaluation of Plan goals, strategies, standards, and guides is impossible (USDA and USDI 1994b: E-9). Neither the ROD, the FSEIS, nor the FEMAT report provide any measures against which to judge “success” or lack thereof in achieving Plan socioeconomic goals. Alternatively, success may be measured against the standard of a desired condition (USDA and USDI 1994b: E-6). The desired condition in the ROD is the same as the Plan goals: to maintain the stability of local and regional economies (USDA and USDI 1994b: 26) and to assist with long-term economic development and diversification by offering new economic opportunities for year-round, high-wage, high-skill jobs (USDA and USDI 1994b: 3).

In chapter 9 we use the results of the analyses from the preceding chapters to respond to the ROD evaluation question to the best of our ability. We report trends in socioeconomic conditions and forest benefits and how the Plan may have contributed to those trends. We compare the monitoring trends with the expectations set out in the FSEIS

and FEMAT report. We also evaluate how effective Plan-associated mitigation measures were, and how well Plan goals were met.

The team used a combination of qualitative and quantitative research methods in monitoring to address the evaluation question. We obtained quantitative data from existing secondary sources; we did not collect any primary quantitative data. These data enabled us to measure change, make comparisons, and aggregate information to produce broad, generalizable results for the Plan area as a whole. As Albert Einstein observed, however, “Not everything that can be counted counts, and not everything that counts can be counted” (Patton 2002: 12). The limitations of the quantitative data were that readily available socioeconomic data from secondary sources were often unavailable at the community scale (an important unit of analysis for socioeconomic monitoring), the readily available data were often not relevant for answering the evaluation question, and quantitative data only indicate status and trends—they do not explain them. Without understanding what the status and trends mean and their causes, undertaking adaptive management actions is difficult.

To supplement the quantitative monitoring data, the team used a community case-study approach to gather and analyze qualitative data relevant for answering the evaluation question. The 12 case studies do not serve the purpose of generalizability to the Plan area as a whole; rather, they are instructive for the way in which they illustrate how the Plan affected some rural communities around federal forest lands, and the ways in which agency efforts to mitigate Plan effects did or did not help communities adapt to change. Much can be learned from them. These qualitative data provide a more detailed understanding of the social and economic conditions and trends described by the quantitative data, the meanings people associate with the trends in the quantitative data, and insights into what caused them. In short, they describe the social and economic effects of the Plan on a sample of communities. We identify key patterns, themes, and insights that emerge from the cases and use them to advance our understanding of how federal forest management policy is linked to socioeconomic well-being in communities, the subject of the evaluation question.

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## Chapter 2: Socioeconomic Conditions and Trends for Communities in the Northwest Forest Plan Region, 1990 to 2000

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This chapter assesses the status and change of socioeconomic conditions for communities in the Northwest Forest Plan (the Plan) area between 1990 and 2000. We examine community socioeconomic status and change from a regional perspective to address the question: How did social and economic conditions change in communities in the Plan region between 1990 and 2000? To speak to the community level, we first define “communities” in the Plan area. We then provide information on community socioeconomic conditions and trends for communities in the Plan region. We also introduce a composite measure of socioeconomic well-being and present results on this measure for the Plan region and for two types of communities, characterized by proximity to Forest Service (FS) and Bureau of Land Management (BLM) lands.

### Approach

The first step in conducting a regional analysis of community conditions is to define the unit of analysis, the community. The concept of community is a sociological phenomenon that continues to be shaped by differing interpretations of social structures, processes, relations, actions, and change related to human groupings. Understanding the relational and territorial dimensions of community life (Gusfield 1975) as part of defining the community unit of analysis may be important, but it rarely is used in large social assessments because resources are lacking. Social interactions contribute to defining a community as much as, or arguably more than, the place itself (Kaufman 1959, Luloff 1998, Wilkinson 1991), but such interactions are difficult to measure in a single community case study let alone hundreds of communities in a regional assessment. Thus, broad-scale social assessments often rely on secondary data sources with predefined boundaries of communities and limited socioeconomic measurements.

We defined place-based communities, rather than communities of interest (groups of like-minded people who gain strength from their relations and associations). We recognize that place-based communities are not the only form of community affected by changes in resource management, but agree it may be an appropriate unit of analysis for assessing the effects of landscape-scale resource management on local people (Force and Machlis 1997). Assessments that address the conditions and trends of other forms of community, such as mobile communities and other communities of interest, are important but are beyond the scope of this part of the report.

In the United States, social science research at the small scale is influenced by the availability of census and other secondary data. Secondary data influence how the geographic boundary of the unit of analysis is defined and what indicators and measures are used to assess socioeconomic conditions and processes. One of the most commonly used designations of communities in social assessments is a census place. Census places include incorporated places and census-designated places, which are unincorporated communities that meet criteria defined by the U.S. census. Census places only represent a portion of the population, however. Although this limitation may not be problematic for some social science research, it may be problematic for socioeconomic monitoring, particularly when the objective is to better understand relations between rural communities and the management of public lands. The high population of rural residents in the Plan region who do not live in census places, but live close to public lands prompted us to develop our own delimitation of communities in the region (Donoghue 2003).

### Defining Communities in the Plan Region

Many people in the Plan region live in unincorporated localities near public forest lands. Large-scale monitoring and social assessment projects that examine the relations between forest management and communities may need to pay particular attention to defining the unit of analysis so that people living in rural, unincorporated places with

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close connections to public lands are represented. Had we chosen a frequently used designation of community for our analysis, namely census places, many communities in rural areas would have been left out of the analysis.

Thus, we developed our own definition of communities to represent **all communities and all people in the Plan region**. To aggregate the census block groups into communities, we modified an approach used in the social assessment for the Sierra Nevada Ecosystem Project (Doak and Kusel 1996). We developed a process for aggregating 7,776 block groups from the 1990 census into 1,314 communities and 10 metropolitan areas in the region. An expanded discussion of the methods and procedures for aggregating the census block groups can be found in appendix C and Donoghue (2003), although a brief overview is presented here.

To aggregate the census block groups, we combined geographic information system analyses with a considerable amount of visual verification to aggregate the census block groups into meaningful units of analysis. This verification included information about roads, school districts, population size, public lands, census designations, and other spatial and demographic features, including a geographic names information system list of populated places. Some distinct advantages accrue from using census block groups as building blocks for defining communities. They are the smallest unit for all census summary statistics, including short-form data (100 percent of the population) on population and housing characteristics, as well as long-form data (sample of population) that includes social characteristics, such as education and ancestry, and economic characteristics, such as income, employment, place of work, and public assistance. Block-group boundaries, particularly in rural areas, follow along roads, telephone lines, fences, streams, and other geographic features and do not necessarily coincide with socially meaningful geographic places. Fortunately, block groups are small enough that they can be aggregated into something more representative of a community, but not so small that aggregating them creates an unruly data management task.

In general, when the criteria to aggregate did not point to an obvious aggregation of block groups, we tended not to aggregate.<sup>2</sup> Thus, numerous, relatively small communities are in this analysis. The boundaries of the communities were not “ground truthed” by community residents. Such a process was beyond the scope of this work, given the size of the region. Fieldwork related to the Plan socioeconomic monitoring project (see other volumes of this report) revealed that, for some communities, local residents perceived their community to have different boundaries than those provided through the block group aggregation. Local residents and officials of the 12 case-study communities concluded that four communities coincided with the original block group aggregation, seven required additional aggregation to better reflect the boundary of the community, and one required dividing the original block group aggregation into two communities. Although this fieldwork suggests that further aggregation may have more accurately reflected some communities, we believe that using the original 1,314 communities in a regional analysis will provide an adequate perspective of socioeconomic change for a large and diverse set of populations and may reveal differences among smaller localities that otherwise would be masked if additional aggregation was done.

Throughout this chapter, the descriptor “communities in the Plan region” refers to the 1,314 communities that exist in 72 counties of western Washington, western Oregon, and northern California, as defined through a process of aggregating census block groups. The region includes the lands in the range of the northern spotted owl (*Strix occidentalis caurina*) and counties that were eligible for economic assistance through the Northwest Economic Adjustment Initiative. We do not assess change in the 10 metropolitan areas identified through the aggregation process because the direction from the Record of Decision was on rural communities (USDA and USDI 1994).<sup>3</sup>

<sup>2</sup> Given the application of this work for other social science research, we determined that it would be easier to further aggregate block groups rather than disaggregate communities.

<sup>3</sup> The 10 metropolitan areas include San Francisco, Santa Rosa, and West Sacramento, California; Portland, Eugene, and Salem, Oregon; and, Bremerton, Richland-Kennewick-Pasco, Seattle, and Tacoma, Washington.

Data from the 1990 and 2000 censuses were used to examine socioeconomic change at the community scale, as defined by the aggregations of census block groups. The data from 1990 and 2000 were not immediately comparable, however. The U.S. census modified the 1990 block group boundaries for the 2000 census to reflect changes in population and boundary revisions resulting from local input. For instance, the 53 community block group aggregations that we identified in the Olympic Peninsula area in Washington contained 124 block groups in 1990. The boundaries for about 33 percent of those block groups changed in the 2000 census. To make community socioeconomic data comparable from one year to the next, we developed an approach that approximated the spatial allocation of population and housing by estimating the proportion of population in the 2000 block groups that overlapped with the 1990 block groups. Proportions were calculated for each of the 2000 census block groups that overlapped the 1,314 community aggregations. They were developed by calculating the proportion of the population or housing of each 2000 block (the smallest census geography containing on average 100 people) found in each community. The 2000 community block populations were grouped and totaled by block group, producing 2000 block group populations within the communities. The community populations were divided by the total block group populations, producing the proportion of the 2000 population in each community. A similar procedure was completed for households and house units to produce housing proportions. These proportions were used as multipliers for 2000 socioeconomic data so that these data approximated the same 1,314 community boundaries defined by aggregating the 1990 block groups.

For analytical purposes, each community has been spatially represented as a polygon and a point. The community polygons are contiguous and span the entire region (fig. 2-1). As such, the boundaries of many communities contain public lands. Some communities relatively small in population may appear geographically large. Also, many polygons contain several centers of populations or small localities. One community point was located in each polygon to reflect the largest population center, but it should not be interpreted to reflect the only location of population in a community.

Block group aggregation allowed us to examine socioeconomic data for all residents in the region. To illustrate, in 1990, 517 census places (nonmetropolitan) existed in the Plan area, comprising approximately 2.5 million people. By comparison, because we aggregated census block groups into meaningful communities, we were able to reflect the socioeconomic conditions of more than 4.0 million people (1,314 communities) in the Plan region.

## Socioeconomic Conditions and Trends for Communities

This section describes socioeconomic conditions and trends for the communities in the Plan region by examining aggregate community data. The socioeconomic indicators discussed in this report were derived from 1990 and 2000 census data and reflect population, education, employment, income, and other sociodemographic indicators. Data were derived from the long-form census survey, which went to a sample of about one in six households during each census.<sup>4</sup> The U.S. census uses data from the sample to produce estimates for different units of analysis, such as block groups. To arrive at one measure for the region, averages were taken of the socioeconomic data at the community scale.

### Northwest Forest Plan Region

#### Population—

Total population for the entire United States increased between 1990 and 2000 by 13.2 percent, with the highest increase in the West (20 percent) and South (17 percent) and the lowest increases in the Midwest (8 percent) and Northeast (6 percent). Combining the communities in the Plan region with the 10 metropolitan areas in the region, the total population in the Plan area went from 8.57 million in 1990 to 10.26 million in 2000, an increase of 19.8 percent. The total population of communities in the Plan region—the 1,314 communities—went from 4.13 million in 1990 to 4.98 million in 2000, an increase of 20.6 percent. The population of communities in the Plan region ranged

<sup>4</sup>Each person whose usual residence is in the United States is included in the decadal census, regardless of the person's legal status or citizenship. Migrant agricultural workers who did not report a usual residence elsewhere were counted as residents of the place where they were on census day (U.S. Census Bureau 2004).

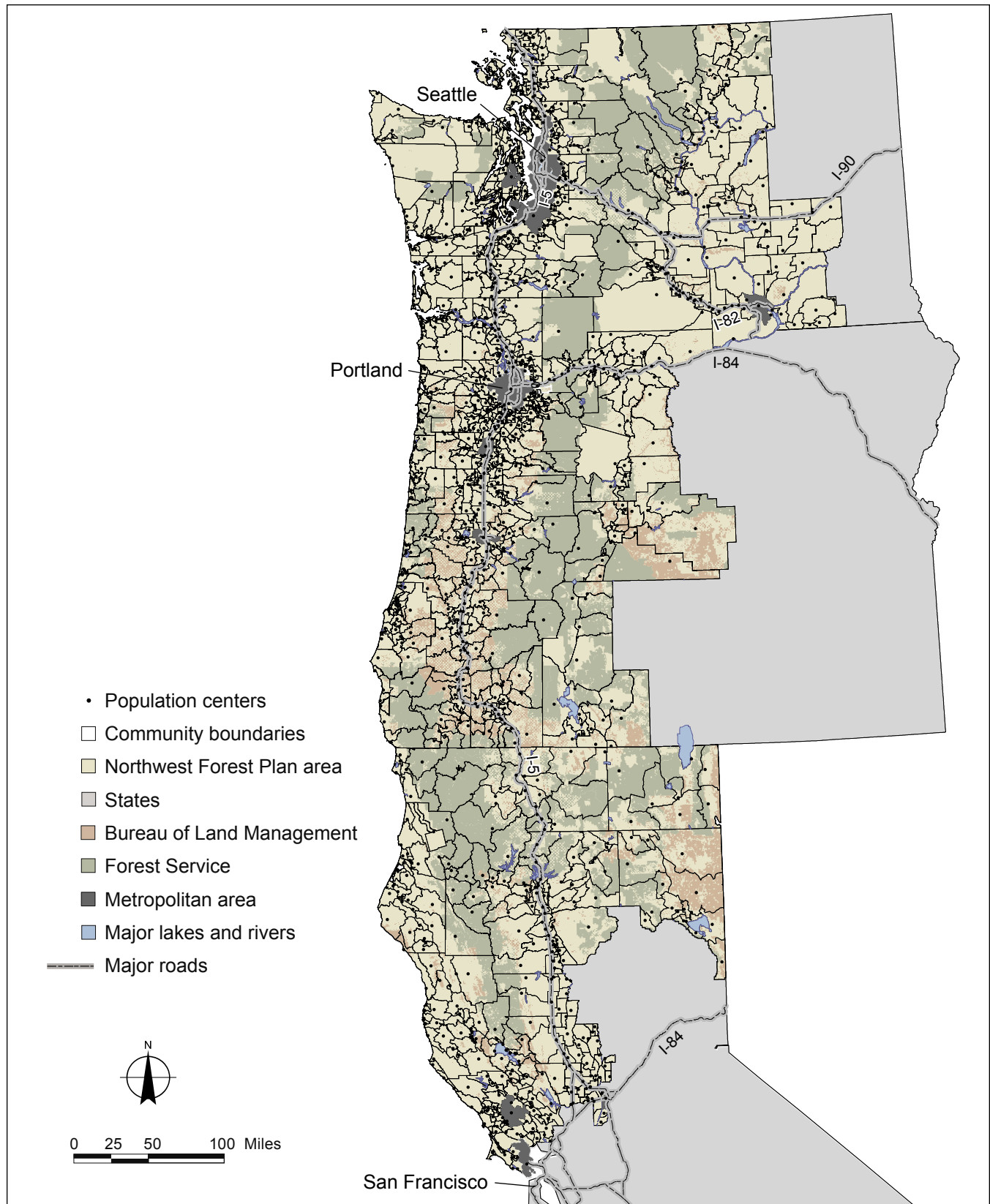


Figure 2-1—Community boundaries and community population centers for the Plan region.

from 75 to 114,806 in 1990, and 88 to 144,306 in 2000, with the majority of communities having between 501 and 2,000 people (fig. 2-2). The average population in the communities in 1990 was 3,141 and in 2000 was 3,790. The population for the 1,314 communities in 2000, using the point associated with each community polygon as a reference, is shown in figure 2-3.

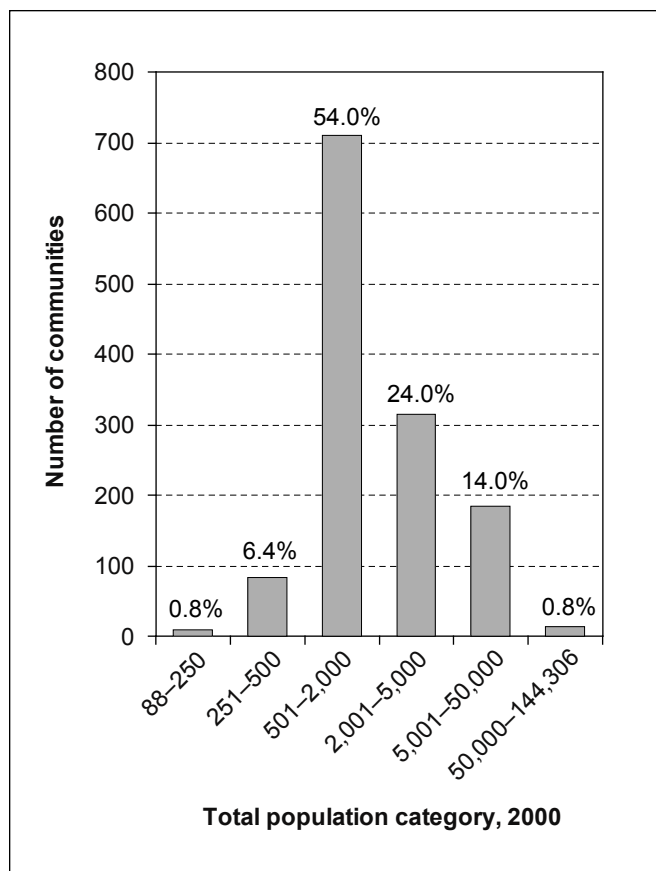


Figure 2-2—Number of communities by total population categories, 2000.

**Population change—**

Changes in population and population density are important because of the possible effects on land use planning and quality of life. Although population is increasing in the region, about one-fifth of the communities (21 percent) had a negative change in population (up to -74 percent) between 1990 and 2000 (fig. 2-4). The communities that lost population in 2000 tended to be fairly small, 16 percent with

populations between 88 and 500 people, 68 percent with populations between 500 and 2,000 people, and 14 percent with between 2,001 and 5,000 people. About 40 percent of the communities had population increases at lower rates than the region as a whole (between 0.01 and 20 percent). The range of population sizes for communities with a lower than average population increase is consistent with the distribution of community sizes for the region. The remaining 40 percent of communities had population increases from 20 to over 200 percent between 1990 and 2000. This group had proportionately more communities in the larger population-size categories, namely the 2,000–5,000 and 5,001–50,000 categories. Thus, the bigger communities tended to have faster rates of population increase, and the communities losing population tended to be relatively smaller.

**Population density—**

Population density for 2000 is shown in figure 2-5. Population density is calculated as the total community population divided by the area of the community polygon not including acres of public lands. Public lands are FS, National Park Service, BLM, U.S. Fish and Wildlife Service, state lands, and military lands. Population density measures, such as those for the counties, often include public lands, however. Such measures provide a sense of rurality that an area might have, but do not provide information about limits to growth in rural areas. The contribution of public open spaces to a sense of rurality is important, and can be interpreted from land ownerships displayed on the map. Our measure of density does not include public lands. Community boundary polygons reflect the census protocol to make block group boundaries contiguous and thus include both public and private lands. However, community development does not occur on public lands. Removing public lands from our measure of population density reflects how much a community can grow within the boundaries of private lands. For instance, some communities may have high percentages of public lands and only limited developable lands, but they may be near metropolitan areas and experiencing high population growth, resulting in a higher population density than areas with more developable land.

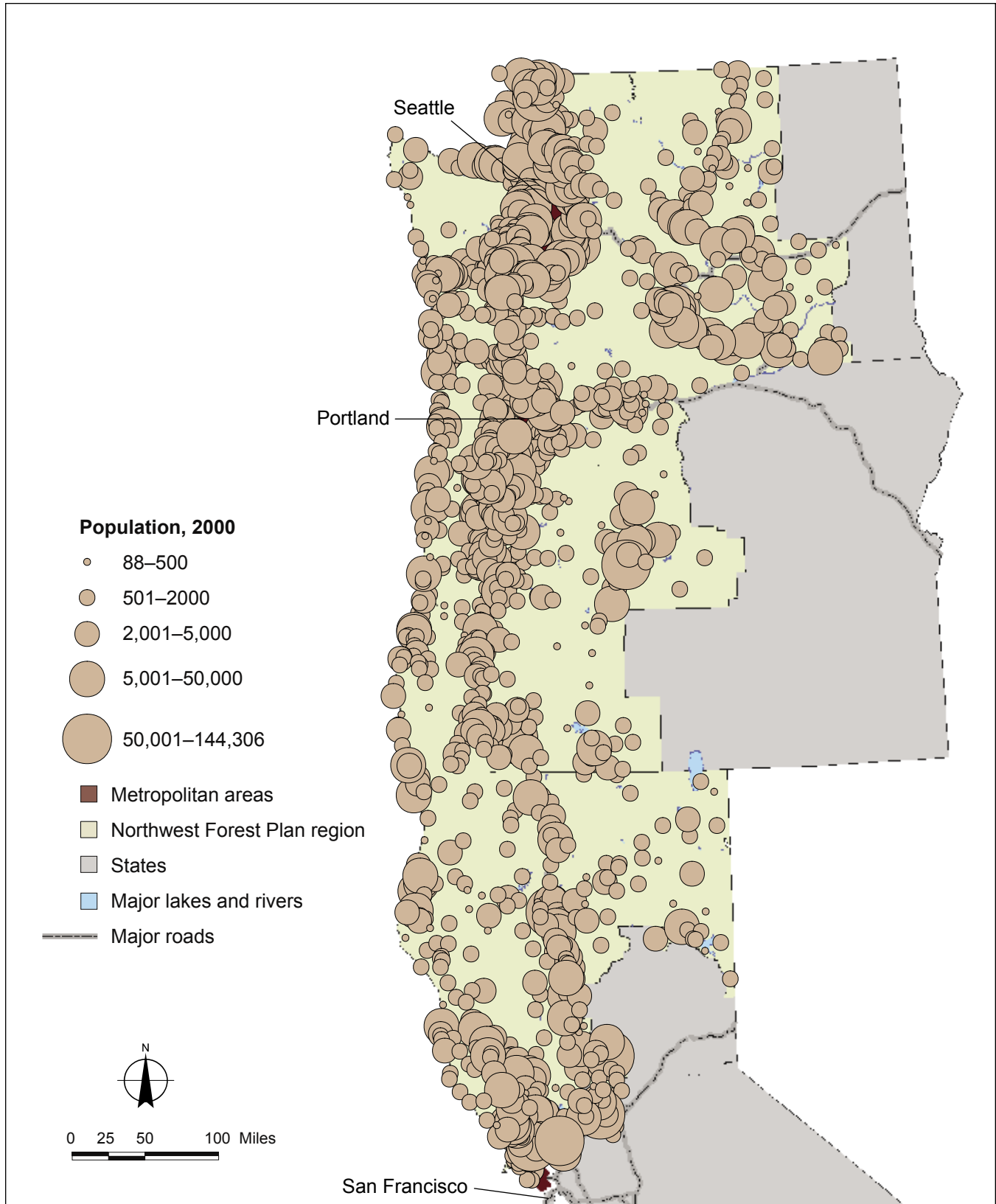


Figure 2-3—Community population, 2000.



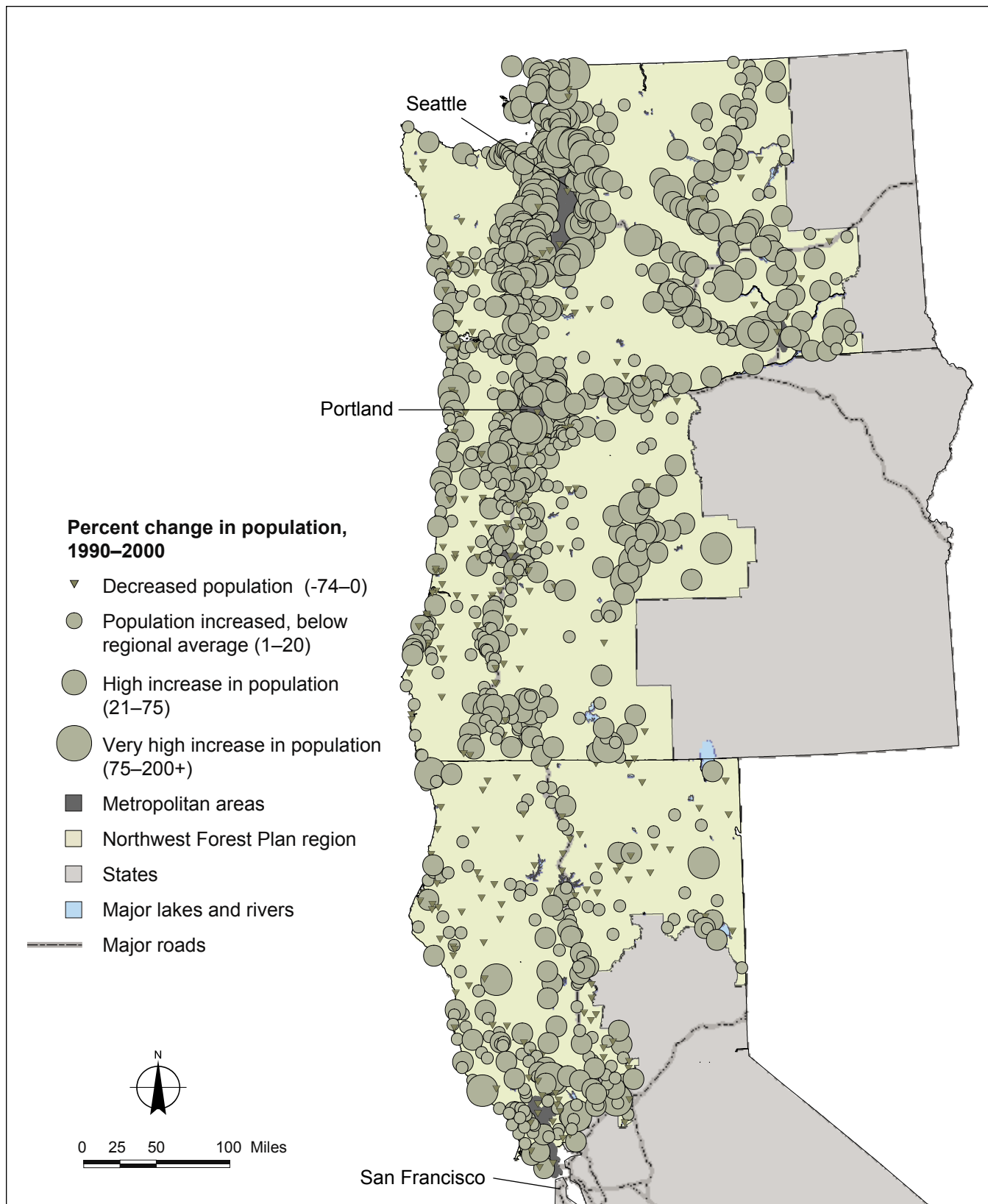


Figure 2-4—Change in community population, 1999–2000.

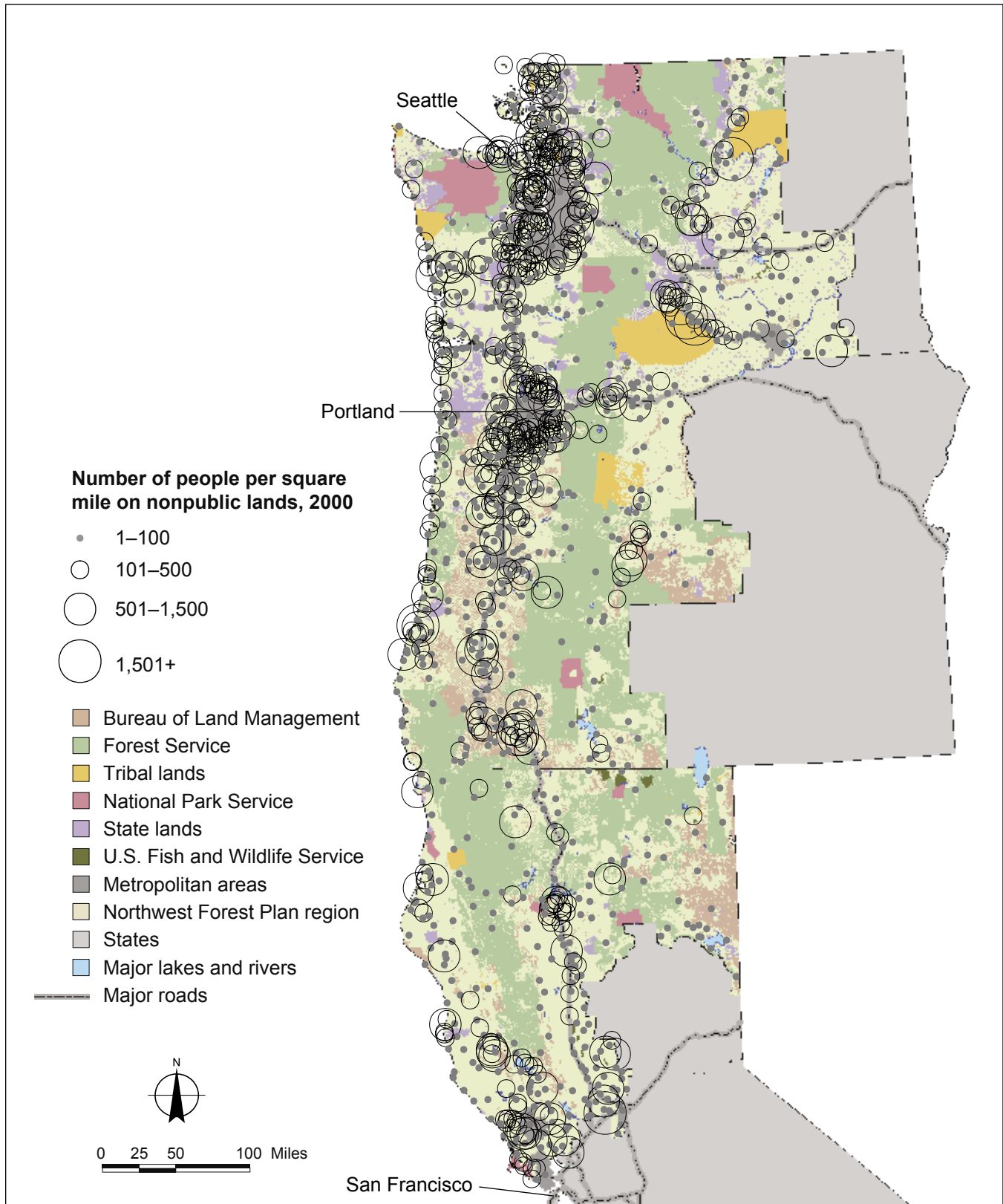


Figure 2-5—Community population density on nonpublic lands, 2000.

The majority of communities in the region (58.9 percent) had between 1 and 100 people per square mile on nonpublic lands. About one-third of the communities (30.9 percent) had between 101 and 500 people per square mile. And 8.9 percent had between 501 and 1,500 people, and 1.3 percent of the communities had between 1,501 and 5,381 people per square mile. The smaller communities tended to have lower population densities, although there were some communities in the 505–2,000 people per square mile category that had relatively high population densities. Most of the larger communities (>5,000 people) also had higher population densities, though exceptions were found. However, of the communities with a population increase greater than 20 percent between 1990 and 2000 (20 percent to more than 200 percent), half (49.5 percent) had the lowest population density in 2000 (1 to 100 people per square mile). More than one-third (36.3 percent) had densities in 2000 between 101 and 500 people per square mile. Although the fast-growing communities tended to have higher population densities than the slower-growing communities, the density data suggest that some of the fast-growing communities had relatively lower densities (<500 people per square mile) and were relatively small (501–2,000 people). Although no notable statistical correlation was found between the percentage change in population and population density (year 2000), a positive correlation was found between population density (year 2000) and community population in 2000 (Pearson  $r = 0.51$ ,  $p < 0.0001$ ). This correlation suggests that larger communities tended to have higher densities. Comparison of the three population maps shows relations between location of public lands and changes in population. For instance, some communities adjacent to large areas of public lands had high percentage increases in population and had relatively high density.

**Age distribution—**

As is true throughout the United States, the aging of the population in the 1,314 communities in the region reflects the aging of the baby-boomer generation. The average median age for all communities in the Plan region in 1990

was 36.4 years, but rose in 2000 to 40.0 years,<sup>5</sup> putting it higher than the median age for the United States, which rose from 32.9 years in 1990 to 35.3 years in 2000. Trends in age distribution are also similar for the Plan region and for the entire United States. For instance, in the Plan region, the 45-to-64-year-old cohort increased by 53 percent, on average, for all communities between 1990 and 2000, which was by far the largest percentage increase (figure 2-6). An aging population has implications on the demand for the health care and other social services, social security benefits, and employment opportunities for older workers.

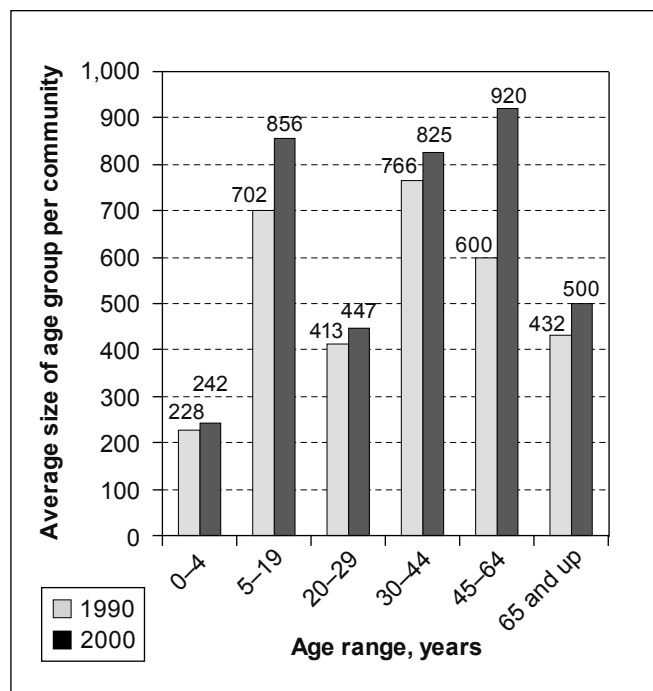


Figure 2-6—Community age distribution, 1990 and 2000.

**Race—**

Change in ethnicity cannot be reported from census data because information on race was collected differently in the 1990 and 2000 censuses. Race in the Plan region for 2000 was based on averages of all communities in the Plan region (figure 2-7). Compared to the Nation, communities in the Plan region have higher percentages of White (86.04 percent) and American Indian people (2.08 percent), and lower

<sup>5</sup>Data throughout this chapter are reported as an average of all communities in a data category, unless otherwise noted.

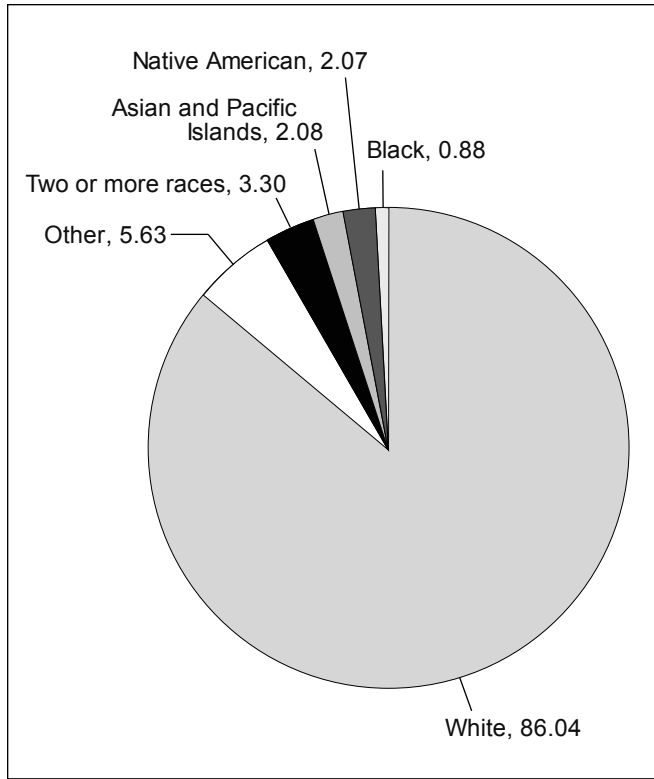


Figure 2-7—Percentage of the population by race in communities in the Plan region, 2000.

percentages of Black (0.88 percent) and Asian and Pacific Islands (2.08 percent) people. The percentages among races for the United States in 2000 were White 75.10 percent, Black 12.21 percent, Native American 0.87 percent, Asian and Pacific Islands 3.75 percent, other 5.49 percent, and two or more races 2.58 percent.

The census asked similar questions pertaining to Spanish, Hispanic, and Latino origin in 1990 and 2000, thus comparisons can be made. On average, for all communities in the Plan region, the population of Hispanic or Latino origin was 5.8 percent in 1990 and 9.0 percent in 2000, an increase of 46 percent. For the United States, the percentage of the population of Hispanic or Latino origin was 9.0 percent in 1990 and 12.5 percent in 2000, an increase of 38 percent.

**Educational attainment and school enrollment—**

Data on three education indicators are shown in table 2-1. Although school districts and counties may have more

**Table 2-1—Community averages for educational achievement and school enrollment**

Educational indicator	1990	2000	Percentage change
Completed high school (percent)	77.6	82.8	6.7
Bachelor’s degree or higher (percent)	15.4	19.3	25.3
School enrollment (persons)	621	811	30.6

accurate and periodic data on indicators of education, the census asked about school enrollment and educational attainment in comparable ways from one decade to the next. On average for communities in the region, there was a moderate increase in the percentage of the population 25 years and older who had completed high school and a more sizable increase in the percentage of the population that had bachelor’s degrees or higher. These data also reflect that school enrollment in the region went up by 31 percent between 1990 and 2000, which is higher than the national increase in school enrollment of 26 percent. This increase in enrollment is consistent with the higher than average increase in population in the region.

**Employment by industry—**

Employment by industry is a measure that shows the kind of business conducted by the organization where the person taking the census is employed, but does not necessarily represent the kind of work a person performs. For example, a person could be an accountant for a clothing manufacturer, and this measure would denote clothing manufacturing not accounting. Also, the actual place of employment may be outside the community. The measure provides a sense of the types and diversity of knowledge, skills, and abilities of the members of a community, based on the type of businesses where they work, as well as the types of opportunities that may be available for individuals to use their skills and make a living. The average percentage for communities in the Plan region of employment, by industry, for 11 industry sectors between 1990 and 2000 is shown in figure 2-8. The entire working population is represented in the 11 sectors provided by the census.

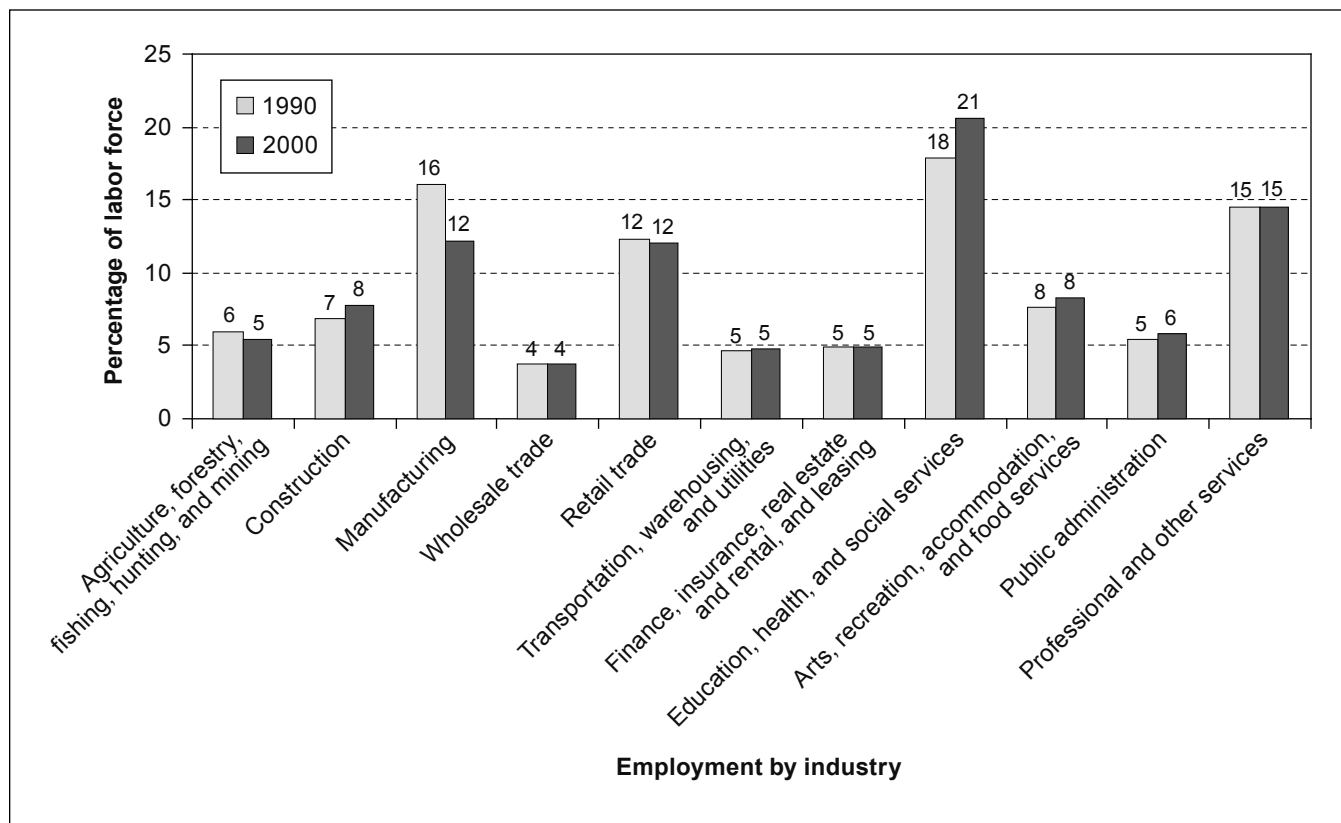


Figure 2-8—Employment by industry, 1990 and 2000.

The census modified the sector categories in 2000 to be consistent with economic classifications used by the North American Industry Classification System, which replaced the U.S. Standard Industrial Classification system to provide comparability in statistics about business activity across North America. For instance, in 1990 the subcategory of logging was under the manufacturing sector, but it was under the agriculture, forestry, fisheries, and mining sector in 2000. Although category names are similar, actual comparison of categories between 1990 and 2000 is only possible if a proportions crosswalk program provided by the census is applied to the data. The result of applying the proportions crosswalk to the 1990 data and producing employment by industry data that are comparable from 1990 to 2000 is shown in figure 2-8. Thus, logging appears under the agriculture, forestry, fishing, hunting, and mining sector for both years. Wood product manufacturing, including sawmills and other millwork, falls under the manufacturing sector.

The four industry sectors with the highest percentage of people employed on average across the Plan region communities for 1990 and 2000 were education, health, and social services; professional and other services; manufacturing; and retail trade. The manufacturing sector, however, which includes mills and millwork, had the highest percentage decrease of any sector: a 25-percent decrease from 16 percent to 12 percent. And education, health, and social services had the greatest increase of any sector: an increase of 17 percent from 18 percent to 21 percent of the employed labor force in a sector. All other employment by industry sectors remained largely the same between 1990 and 2000. Agriculture, forestry, fishing, hunting, and mining—the sector that includes logging—decreased from 6 to 5 percent.

#### **Income, poverty, and unemployment—**

Data on income, poverty, and unemployment are shown in table 2-2. Income data provided by the census are often criticized because of suspected underreporting of income

**Table 2-2—Community economic indicators**

<b>Economic indicator</b>	<b>1990</b>	<b>2000</b>	<b>Change</b>
	<i>2000 dollars</i>		<i>Percent</i>
Median household income	35,214	42,351	20.3
			<i>Percent</i>
Unemployment	7.3	7.3	0.0
Poverty	12.9	11.8	-8.5

by census takers. Nonetheless, the census asks several questions that encourage people to account for their many forms of income when they report their total household income. The average median household income (adjusted for inflation to 2000 dollars) for communities in the region went up 20.3 percent, from \$35,214 to \$42,351. This change is higher than the change in national median household income that was \$37,300 in 1990 and \$41,994 in 2000, an increase of 12.6 percent. Average unemployment for communities was about the same in 1990 as in 2000, although this lack of change does not reflect the likely yearly fluctuations. The percentage of the population in a community living in poverty decreased from 12.9 percent in 1990 to 11.8 percent in 2000, a decrease of 8.5 percent. The United States had slightly higher poverty rates (13.1 percent in 1990 and 12.4 percent in 2000) and a slightly lower percentage decrease in poverty (5.3 percent).

Changes in income distribution between 1990 and 2000 are difficult to report because, after the changes are adjusted for inflation, the income categories cannot be compared from one decade to the next. Although lower-income brackets changed slightly ( $\pm 2$  percent) between 1990 and 2000 for the Plan region, the most notable changes are in the higher income brackets. In 1990, 13 percent of the population in communities reported incomes between \$62,051 and \$93,077 (adjusted to 2000 dollars), but, in 2000, 20.5 percent of the population reported incomes between \$60,000 and \$99,000. Similarly, in 1990, 6.3 percent of the population reported adjusted incomes of greater than \$93,077, but, in 2000, 9.8 percent reported incomes greater than \$100,000.

## Community Socioeconomic Well-Being

One of the overarching goals of the Plan was to balance the need for forest protection with the need to provide a steady and sustainable supply of timber and nontimber resources to benefit rural communities and economies. This broad-scale, multifaceted goal does not lend itself to convenient methods for measuring progress toward achieving it. One way to address the goal is to assess how social and economic conditions have been changing in communities under the Plan. Are communities better or worse off? This section offers a regional perspective on how socioeconomic conditions for Plan-region communities have been changing. We developed a composite measure to serve as a proxy for community socioeconomic well-being. We then examined this composite measure at the regional level and also based on the proximity of communities to FS and BLM lands.

The notion of “well-being” has been widely discussed by social scientists, but it has not been rigorously defined at either conceptual or operational levels. Well-being is a normative concept based on how “the good life” is defined. It often reflects the general conditions of people’s lives, or the state of a social system that may include many dimensions of community life. Well-being has been defined on the basis of capabilities and achievements of individuals (Sen 1985) and on the social, cultural, and psychological needs of people and communities (Wilkinson 1991). Well-being is often used to represent general community welfare (Richardson and Christensen 1997) and has been assessed through measures of socioeconomic status and community capacity (Doak and Kusel 1996). Studies of community well-being have focused on understanding the contribution of the economic, social, cultural, and political components of a community in maintaining itself and fulfilling the various needs of local residents (Christakopoulou et al. 2001, Kusel and Fortmann 1991).

How to measure complex sociological constructs, such as socioeconomic well-being, is often debated. Although no definitive conceptual or operational definition of community socioeconomic well-being exists, it is an accepted notion that measures of socioeconomic well-being should represent multiple dimensions of the human community,

such as social, economic, and human concerns (Force and Machlis 1997). Also, social scientists increasingly emphasize the need to combine secondary data with primary data from fieldwork in communities to fully understand the relations between socioeconomic indicators and community well-being (Beckley 1995, Kusel 1996, Parkins 1999). We agree with the importance of a multimethod approach for understanding complex processes at the community scale. We suggest that this regional perspective on community socioeconomic well-being complement data and findings provided in the community case studies and other parts of this report in assessing the progress toward achieving the Plan's socioeconomic goals.

### **Measuring Socioeconomic Well-Being for Communities in the Plan Region**

Because we wanted to examine change in community socioeconomic well-being for hundreds of communities in a large region where collecting primary data was not feasible, we relied on census data to develop a composite measure (index) that served as a proxy for community socioeconomic well-being, and was comparable between the 1990 and 2000 censuses. Developing an index enabled us to reduce a large data set of socioeconomic indicators to a convenient single numeric score, while still retaining the meaning of underlying variables.

We conducted principal component analysis on about 50 socioeconomic variables to reduce the data set to factors and variables that contributed to high variation in the data set. We then examined a list of about a dozen variables and looked for those that not only reflected the economic health of community members, such as unemployment, poverty, and income, but also indicators that reflected other dimensions of community life. In particular, we wanted to include variables that might provide some insight into how equipped the communities were to deal with social and economic change. The intent was to identify measures that reflect dimensions of a social construct commonly referred to as community capacity.

Social, human, and physical capital are dimensions of community capacity that are difficult to approximate by using secondary data, such as from the census. Census data

do not provide useful approximations for the amount of physical capital in a community, for example. But some indicators may approximate some dimensions of human capital, such as the skills and abilities of residents of a community. For instance, employment diversity may reflect the diversity of workforce skills in a community. The assumption is that a more diverse workforce will be better able to deal with changes in the economy. Other indicators, such as poverty and education, may also reflect amounts of human capital in a community. Diverse skills in a community may also contribute to social capital, which includes the ability of a community to come together, solve problems, and make decisions. In contrast, residents who spend a lot of time commuting may have less time to commit to civic activities, thus reducing the social capital of a community. An income inequality ratio provides insight into community well-being that a single measure, such as median household income, does not. The assumption of the income inequality measure is that social equality contributes to community well-being. When income is concentrated among a small proportion of residents, issues of equality and the distribution of benefits detract from general well-being (Beckley and Burkosky 1999, Parkins and Beckley 2001).

Our basic assumption of the concept and measure of community socioeconomic well-being is that it can be enhanced or reduced. Thus, indicators must clearly contribute in a positive or negative way to community socioeconomic well-being. Although secondary data are sometimes perceived as useful in social science research because they are generally easy to collect, not based on perception, and generally understandable, secondary data also have many limitations (Diener and Suh 1997). For census data, many indicators are not measured in the same way from one census to the next, and complex procedures to make data comparable are only available for some indicators. Also, some census data may reflect characteristics of community life, such as age or ethnicity, that would help us differentiate among communities, but changes in such indicators may not clearly indicate enhanced or reduced community socioeconomic well-being.

The index of community socioeconomic well-being was calculated for each of the 1,314 communities in the Plan region. The index consists of six indicators derived from U.S. Census data: diversity of employment by industry, percentage of population 25 years and older with bachelor’s degree or higher, percentage unemployed, percentage of persons living below the poverty level, household income inequality, and the average travel time to work.

The community socioeconomic well-being (SEWB) index is the summation of standardized and normalized

equally weighted socioeconomic indicators and was calculated as  $SEWB = EmD + Ed - PUn - PP - InIn - ATT$  (see table 2-3 for definitions). Two indicators, diversity of employment by industry and percentage of the population with bachelor’s degree or higher, positively contribute to the socioeconomic well-being index. The other four indicators, percentage unemployed, percentage in poverty, household income inequality, and average travel time to work, are thought of as negatively contributing to the socioeconomic well-being index. The assumption is that higher amounts

**Table 2-3—Indicators included in socioeconomic well-being index**

<b>Indicator</b>	<b>Indicator name</b>	<b>Description</b>
EmD	Diversity of employment by industry	Employment by industry relates to the kind of business conducted by the organization where the person is employed. Diversity of employment by industry is a single measure of diversity, or variety, of industries that employ people from the community (the actual place of employment may be outside the community). This measure was generated for each community by using a Shannon-Weaver index. The diversity index varies from a value of 0 (least diverse) for communities with only a single employment industry to 1 (most diverse) for communities having equal employment among all of the reported employment industries.
Ed	Percentage of population 25 years and older having bachelor’s degree or higher	Persons with a bachelor’s degree or higher are those who have received a bachelor’s degree from a college or university, or a master’s, professional, or doctorate degree. These data include only persons 25 years old and over.
PUn	Percentage of the population unemployed	All civilians 16 years old and over are classified as unemployed if they (1) were neither “at work” nor “with a job but not at work” during the reference week, and (2) were looking for work during the last 4 weeks, and (3) were available to start a job. Also included as unemployed are civilians who did not work at all during the reference week but were waiting to be called back to a job from which they had been laid off and were available for work except for temporary illness. (For more information on census unemployment data, see <a href="http://www.census.gov">http://www.census.gov</a> .)
PP	Percentage of persons living below the poverty level	Number of persons below poverty threshold divided by total population for whom poverty status is determined. Total population for whom poverty status is determined does not include people in institutions, military group quarters, or college dormitories, and unrelated individuals under 15 years old. (For more information on census poverty data, see <a href="http://www.census.gov">http://www.census.gov</a> .)
InIn	Household income inequality	Ratio of total household income of the 50 percent of households earning the highest income to total household income of the 50 percent of households earning the lowest income. Higher ratios indicates greater income inequality. Calculations used group data.
ATT	Average travel time to work	Average travel time to work (in minutes) for workers ages 16 years and older. Calculations used group data.



of education and employment diversity in a community indicate higher socioeconomic well-being, but higher unemployment, poverty, income inequality, and commute time indicate lower socioeconomic well-being.

To assess change in community socioeconomic well-being, we categorized the 1990 well-being data and treated them as a baseline. We transformed the raw data for both years to a range of 0 to 100. Using the boundaries for the 1990 categories, we fitted the 2000 data into them, allowing us to see, on a scale of 0 to 100, how communities increased or decreased relative to each other in socioeconomic well-being between the two decades.

To create the baseline categories, the socioeconomic well-being scores for all communities in 1990 were standardized and graphed as a histogram. Based on the distribution of the data, the scores were divided into five categories that reflect levels of community socioeconomic well-being. The categories are based on standard deviations from the 1990 baseline mean (table 2-4). Because the 1990 socioeconomic scores used in creating the categories are standardized by using z-scores and normally distributed, roughly the same number of communities were in the very low and very high categories, and the low and high categories for both years. The medium category contains the largest number of communities, reflecting that most of the community scores fall somewhere near the mean.<sup>6</sup> For additional information on methods, see appendix A.

### Community Socioeconomic Well-Being at the Regional Scale

Socioeconomic well-being has changed for many communities in the Plan region between 1990 and 2000, with a few communities changing scores by more than 40 points

**Table 2-4—Community socioeconomic well-being categories, 1990 and 2000**

Community socioeconomic well-being categories	Standard deviations from the mean (67.2)	Socioeconomic well-being score range
Very low	<-1.5	0 to 48.72
Low	-1.5 to -0.51	48.73 to 61.07
Medium	-0.5 to 0.49	61.08 to 73.36
High	0.5 to 1.49	73.37 to 85.58
Very high	≥1.5	85.59 to 100.00

**Table 2-5—Change in community socioeconomic well-being score between 1990 and 2000**

Community socioeconomic well-being change	Change in score (scale of 0 to 100)	Communities	
		Number	Percent
Decrease	-51 to <-3	484	37
Little change	-3 to 3	353	27
Increase	>3 to 44	477	36

(again, scores are on a 0 to 100 scale) (table 2-5). The locations of communities and their respective socioeconomic well-being scores for 1990 are shown in figure 2-9. The very low and low categories were combined, as well as the high and very high categories. The 2000 socioeconomic well-being scores and whether the scores increased, decreased, or stayed roughly the same are mapped for western Washington (fig. 2-10), western Oregon (fig. 2-11), and northern California (fig. 2-12).<sup>7</sup> The number of communities in each of the socioeconomic well-being categories for 1990 and 2000 are shown in table 2-6. A Stewart Maxwell statistical test for overall marginal homogeneity was not significant ( $p = 0.0520$ ), suggesting that the proportion of communities in each category did not change from one year to the next, which likely reflects the use of standardized z-scores to define the categories.

<sup>6</sup>See also Donoghue, E.M.; Sutton, N.L. [In prep.]. Strategies and methods for measuring socioeconomic well-being at multiple spatial and temporal scales as part of socioeconomic monitoring of the Northwest Forest Plan. Gen. Tech. Rep. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station.

<sup>7</sup>An analysis of a histogram of change in well-being scores shows that several communities (27 percent) had only slight changes in scores between 1990 and 2000 ( $\pm 3$  percent). We added this characterization—communities with little change—to our analysis and spatial displays. Other communities were classified as decreasing by more than 3 percent or increasing by more than 3 percent.

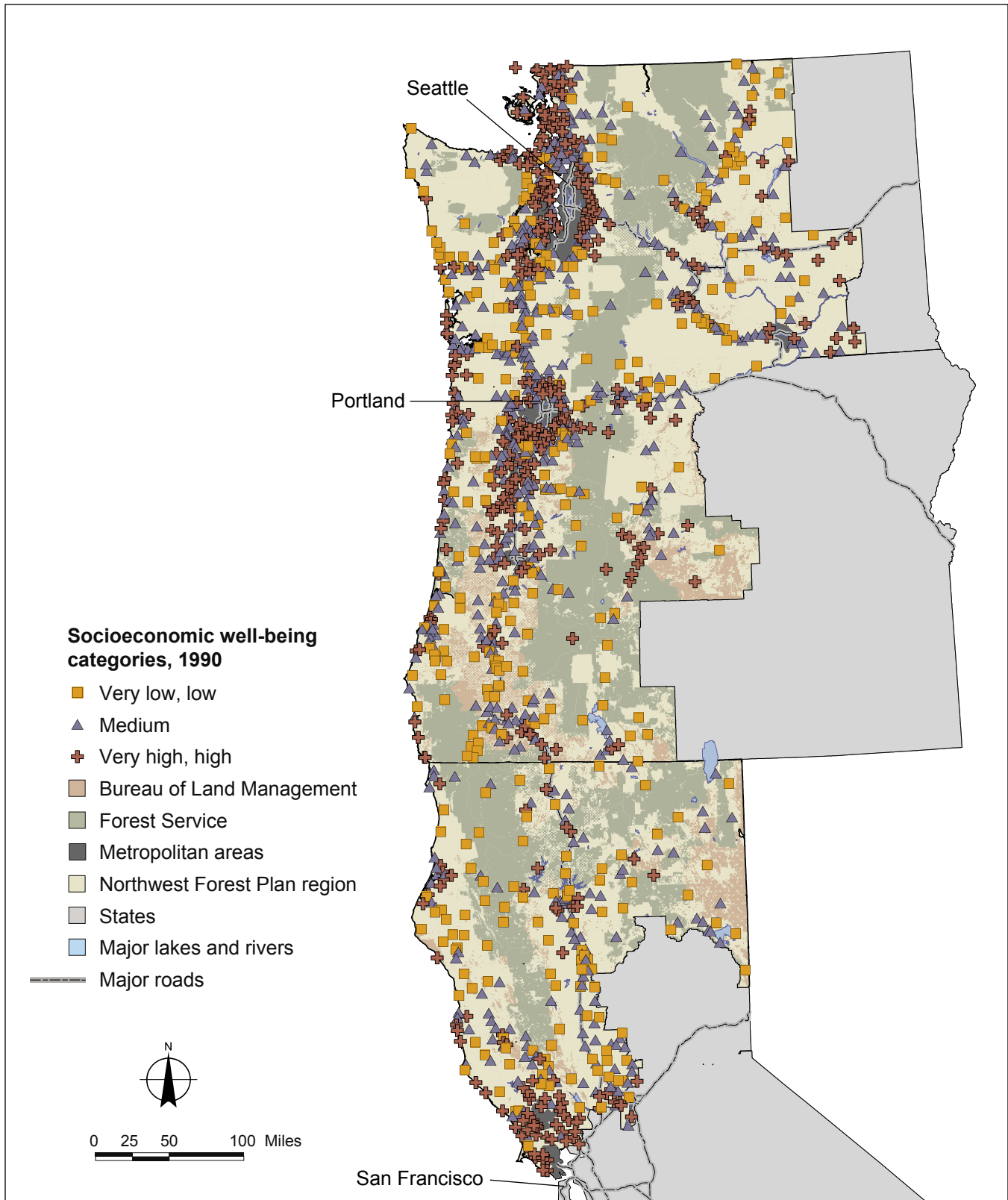


Figure 2-9—Community socioeconomic well-being, 1990.

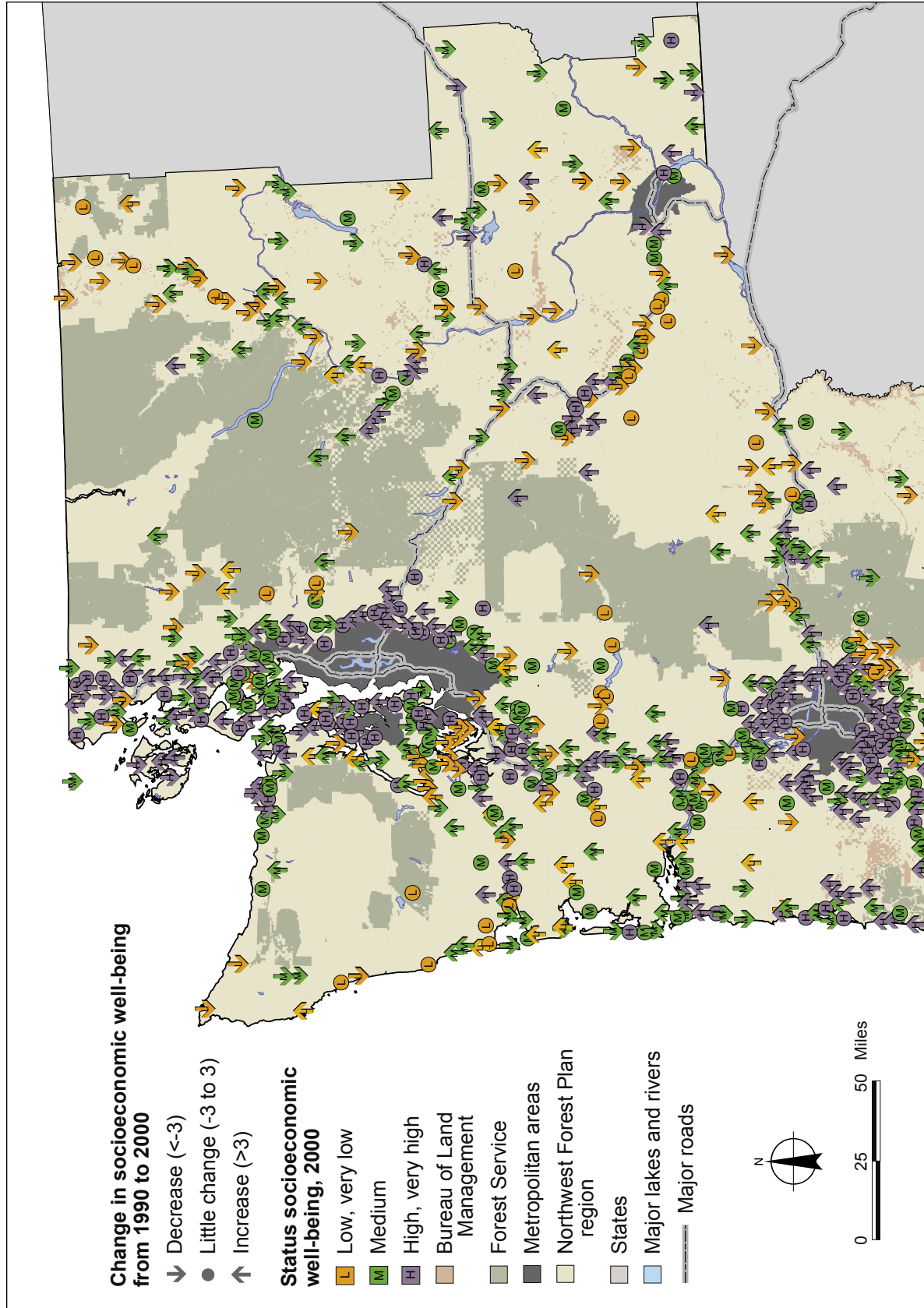


Figure 2-10—Change in community socioeconomic well-being, western Washington.

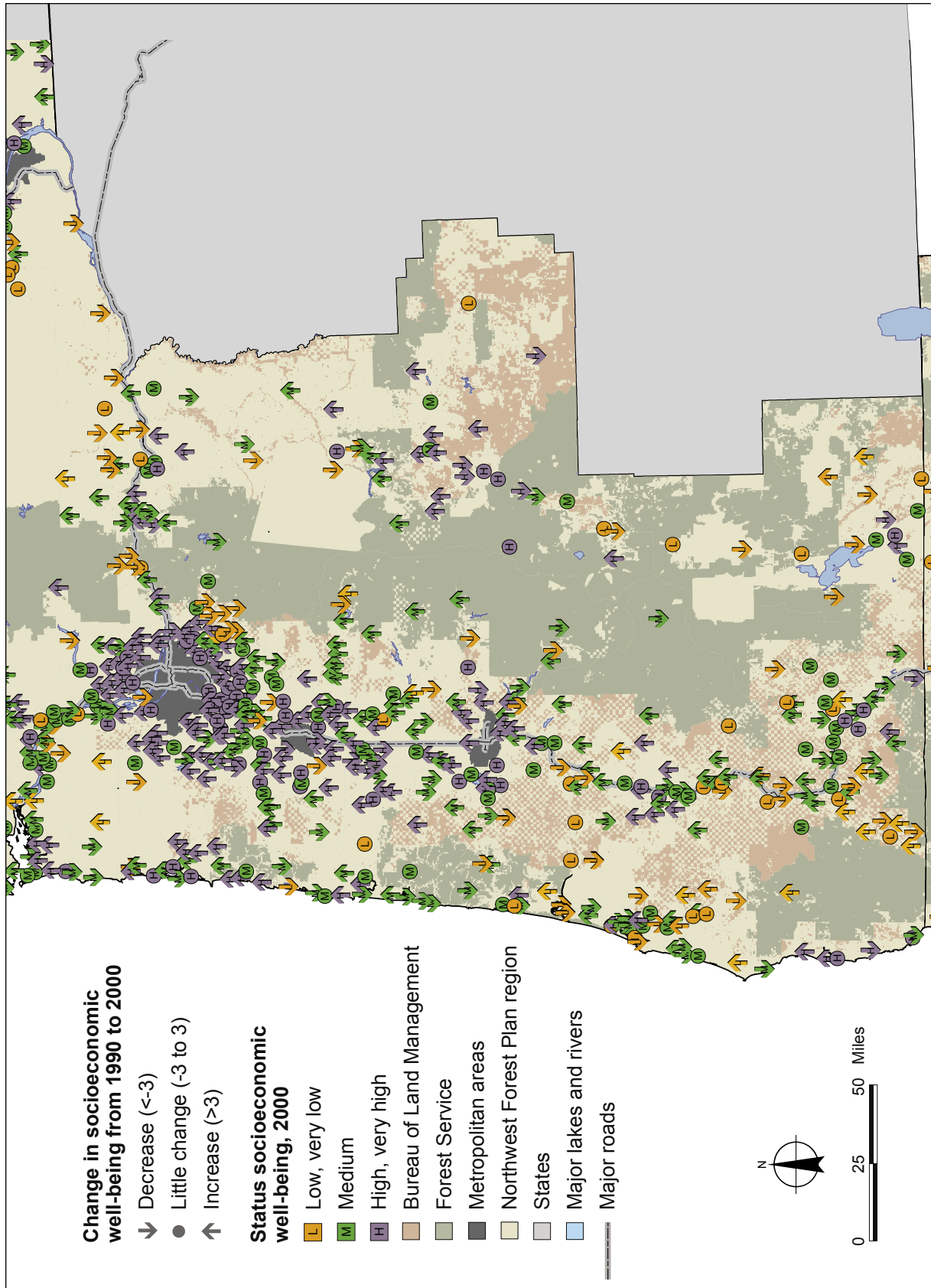


Figure 2-11—Change in community socioeconomic well-being, western Oregon.

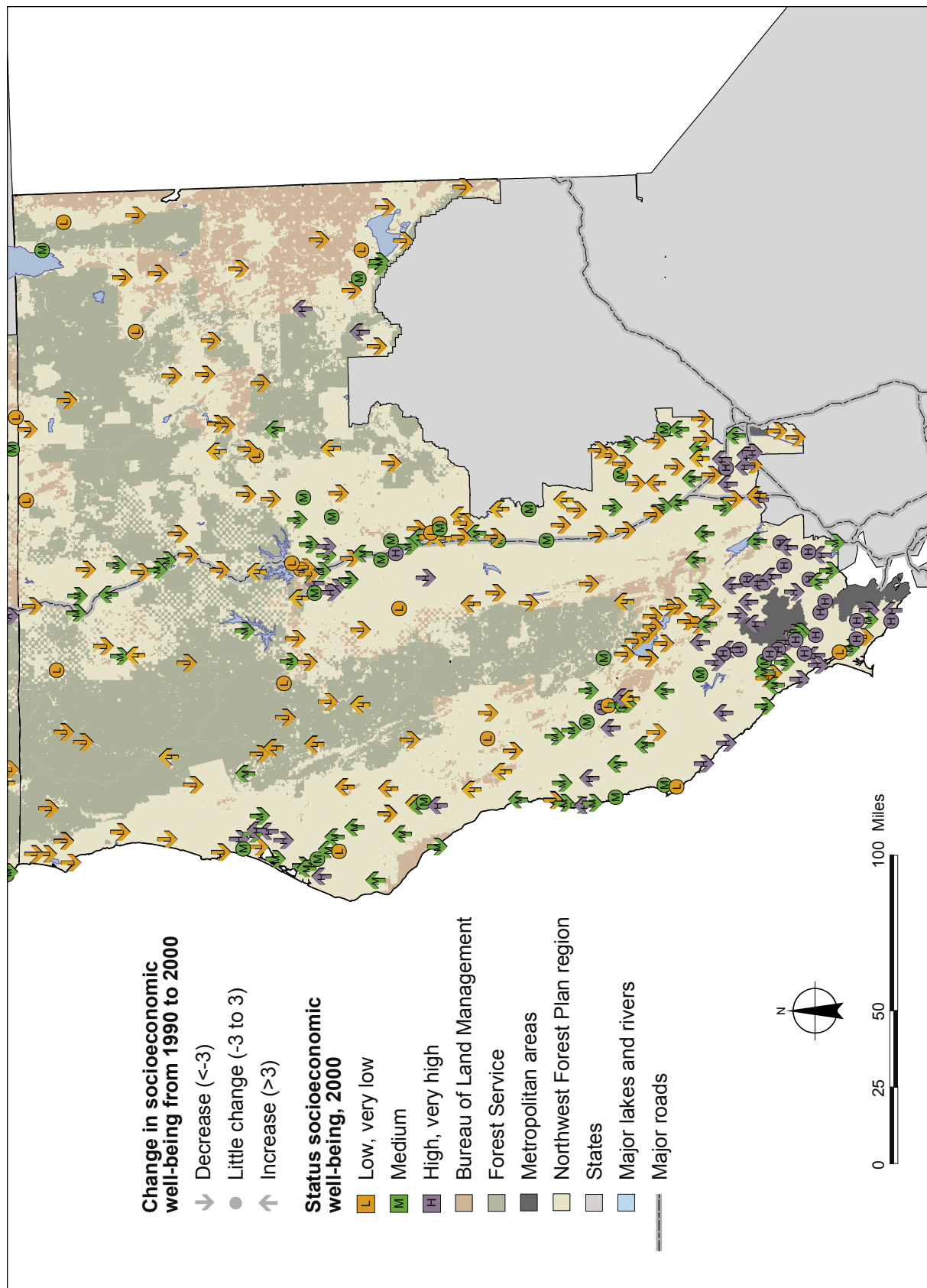


Figure 2-12—Change in community socioeconomic well-being, northern California.

**Table 2-6—Communities in socioeconomic well-being categories, 1990 and 2000**

Socioeconomic well-being category	2000					Total	Percent
	Very low	Low	Medium	High	Very high		
1990							
Very low	40	34	17	7	2	100	7.6
Low	42	100	91	16	1	250	19.1
Medium	26	121	272	115	9	543	41.3
High	6	10	111	202	39	368	28.0
Very high	0	0	4	28	21	53	4.0
Total	114	265	495	368	72	1,314	
Percent	8.7	20.1	37.7	28.0	5.5	100	100

Movement of individual communities across categories was considerable, however. About 50 percent of the communities increased their socioeconomic well-being scores between 1990 and 2000, and 50 percent decreased. Specifically, 42 communities went from low to very low, 26 communities went from medium to very low, 121 communities went from medium to low, 6 communities went from high to very low, 10 communities went from high to low, 111 communities went from high to medium, 4 went from very high to medium, and 28 went from very high to high. On the positive side, 34 communities moved from very low to low, 17 moved from very low to medium, 7 moved from very low to high, 2 moved from very low to very high, 91 moved from low to medium, and 16 moved from low to high, 115 communities went from medium to high, 9 went from medium to very high, and 39 went from high to very high.

A t-test was performed to compare means for the overall regional average socioeconomic well-being scores for communities in 1990 and 2000; it showed no statistically significant difference between the means. This finding was to be expected, given that the index consisted of normalized values of the distance of each community score from the mean community

score. Statistically significant differences are evident, however, when we consider how the communities in each of the five 1990 socioeconomic well-being categories changed between 1990 and 2000 (table 2-7). Socioeconomic scores for the 350 communities that in 1990 had very low or low scores increased between 1990 and 2000 ( $p < 0.001$ ), and socioeconomic well-being for the 964 communities that had medium, high, and very high scores in 1990 decreased between 1990 and 2000. Additionally, t-tests for comparing means between 1990 and 2000 for each of the six indicators of the socioeconomic index were statistically significant ( $p < 0.001$ ) for all indicators except unemployment. The tests showed that, at a regional scale, the percentage of the population in communities with bachelor's degree or higher went up, the percentage of the population in poverty went down, and employment diversity increased slightly. Income inequality and average commute time to work increased, however.

**Table 2-7—Communities organized by 1990 socioeconomic well-being categories and their change in average socioeconomic well-being score between 1990 and 2000**

1990 socioeconomic well-being category	Well-being score			
	Number of communities	1990	2000	Difference
Very low	100	40.5	53.0	12.5*
Low	250	55.9	58.8	2.9*
Medium	543	67.7	66.2	-1.5*
High	368	78.3	75.8	-2.5*
Very high	53	89.5	84.3	-5.2*

\* Significant at  $p < 0.05$  level.

### Population and Community Socioeconomic Well-Being

Empirical and theoretical work in rural sociology suggest that complex, interdependent factors shape communities, and that interactions among residents, not just the physical place, define a community (Carroll 1995, Machlis and Force 1988, Wilkinson 1979). Nonetheless, the size of a community is often considered an important factor influencing whether a community has the institutional structure to meet the needs of its residents (Wilkinson 1991). Population and population density have been used as proxies for civic infrastructure and have been included in composite measures of socioeconomic resiliency, viability, and adaptability (Haynes 2003, Horne and Haynes 1999). Recent regional social assessments have concluded that the higher the population in a rural community, the greater the infrastructure and the higher the socioeconomic resilience (Harris et al. 2000).

In the Plan region, the average population size for communities in the very low and low socioeconomic well-being categories was less than those in the medium, high, and

very high categories for 1990 and 2000 (fig. 2-13). What is notable, however, is that communities in the very high category were not communities with the highest average population, suggesting that population size may not be the best proxy for socioeconomic well-being or other related constructs, such as community resiliency.

The number of people living in communities in the very low or low categories almost doubled between 1990 and 2000, an increase well above the average 20.6 percent increase in population for the region (table 2-8). In 1990 and 2000, about 80 percent of the population was living in communities that had medium, high, or very high socioeconomic scores. Considering only those people living in Plan-area communities (i.e., not counting the metropolitan population), in 1990, 13.1 percent of the population was in communities with very low and low well-being scores, and 39.4 percent of the population lived in communities with high and very high scores. In 2000, 21.0 percent of the population was in the very low and low categories, and 37.5 percent of the population lived in communities in the high and very high categories.

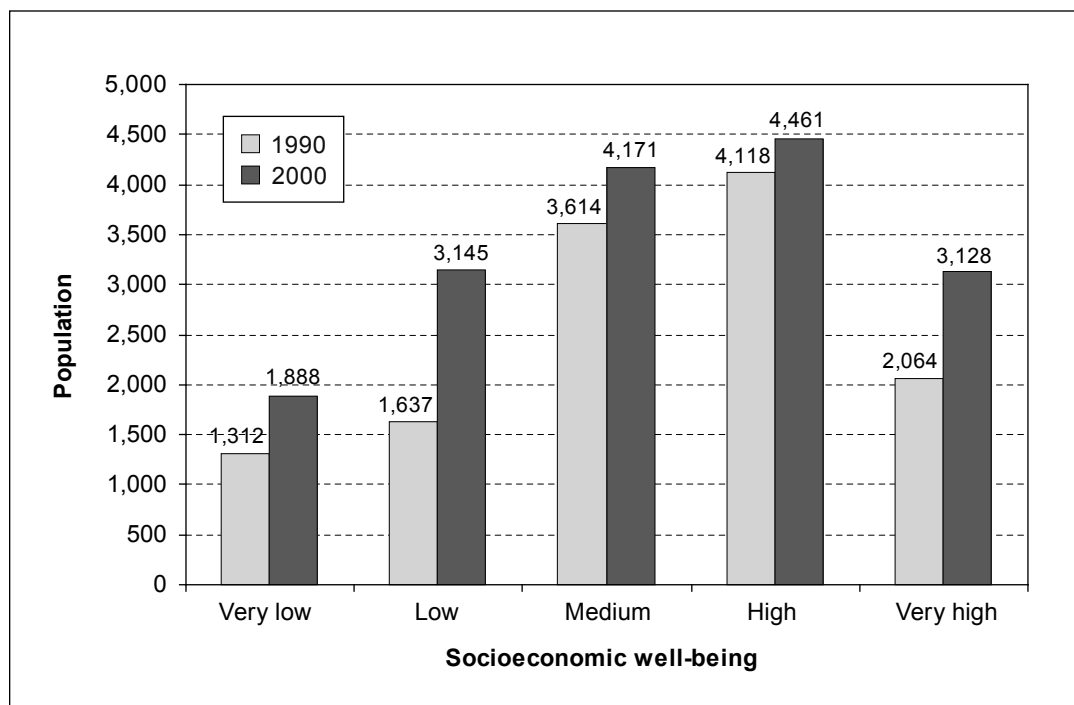


Figure 2-13—Average size of community population by socioeconomic well-being category, 1990 and 2000.

**Table 2-8—Regional population in socioeconomic well-being categories, 1990 and 2000**

Socioeconomic well-being category	1990 population		2000 population	
	<i>Number</i>	<i>Percent</i>	<i>Number</i>	<i>Percent</i>
Very low	131,211	3.2	215,191	4.3
Low	409,336	9.9	833,340	16.7
Medium	1,962,201	47.5	2,064,668	41.5
High	1,515,526	36.7	1,641,515	33.0
Very high	109,385	2.7	225,197	4.5
Total	4,127,659	100	4,979,911	100

## Proximity to Public Forest Lands and Community Socioeconomic Well-Being

### Evolving Concept of Forest-Based Communities

We were interested in how socioeconomic well-being of communities in the Plan region differed for those communities that were close to public forest land compared to those communities that were farther away. We begin by briefly discussing the concept of forest-based communities. The past two decades have seen an evolution of terms used to depict communities that have distinct connections to forest resources: community stability, forest dependence, forest based, community capacity, community resiliency, and the recent emphasis on sustainable forest management (Montréal Process Working Group 1998), community viability and adaptability. This evolution of terms shows a growing emphasis on the complex, dynamic, and interrelated aspects of rural communities and the natural resources that surround them. The earliest terms dealt with the limits between forest management and stable communities achieved through stable employment in the forest sector. By the late 1980s, however, the notion of community stability as reflecting sustained-yield timber management was being called into question (Lee 1990, Schallau 1989). Although the use of the term “stability” continued to endure in policy debates, concern was raised about the lack of a clear definition of stability and how it might be measured (Fortmann et al. 1989, Lee 1989, Machlis and Force 1988, Richardson 1996). Some researchers began looking beyond employment indicators to other aspects of community life to assess community well-being (Doak and Kusel 1996, Kusel and

Fortmann 1991). In addition to economic measures, indicators for poverty, education, crime, and other sociodemographic measures have been used to assess conditions in communities.

Concurrent with discussions about stability and community well-being were discussions about the term “forest dependence.” Forest and timber dependence were initially defined in terms of commodity production as well. Research has suggested, however, that

communities are more complex than traditional measures of timber dependency would imply (Haynes et al. 1996). Most communities have mixed economies, and their vitality is often linked to other factors besides commodity production. Some communities thought of as timber dependent have been confronted with economically significant challenges, such as mill closures, and displayed resilient behavior as they have dealt with change. The term “forest dependence” has since evolved in recognition that some economic ties that communities have to forests are not wood-product based, but result from recreation and other amenities (FEMAT 1993, Kusel 1996). And the term has also evolved to reflect the noneconomic connections to forests, such as the symbolic living traditions that people have with the forested places in which they live—the sense of place (Hiss 1990, Kusel 1996, Stedman 2003, Tuan 1993).

Although commonly used, the word “dependence” may not sufficiently reflect all connections between communities and forests, suggesting that the term “forest dependence” may not be appropriate. Dependence tends to be unidirectional—a community depends on a forest—but does not reflect ways that forests depend on nearby communities. For example, in fire-prone areas, forests may depend on fire-wise behavior and preparedness by local residents. Thus, the term “forest-based” community is increasingly being accepted as reflecting the complex, multidimensional, and multidirectional connections between communities and forests. A community may be forest based, but will have social and economic links to geographic scales larger than the community. Because of the scale of this project, we were limited in how we could characterize the connections that



communities have to nearby forests. We concur with the perspective that many communities in the region maintain diverse, dynamic, and multiscale connections to nearby forests.

### Socioeconomic Well-Being and Proximity to FS and BLM Lands for the Plan Region

Recognizing that communities not immediately adjacent to public forest lands may have connections to the forests, we thought it would be informative to characterize the 1,314 communities based on proximity to FS and BLM lands and compare socioeconomic well-being scores. We chose proximity as a means to characterize the communities because census data that reflect connections between community members and forests were limited and because collecting and analyzing primary data to assess the relations all communities in the region had to forests was beyond the scope of the project. Proximity to FS and BLM lands in the plan region was one way to examine, at a regional scale, some of the relations that communities have to forests.

Accepting that we were limited to spatial analysis, we defined proximity to FS and BLM lands by creating 5-mile buffers around the lands. Community points that fell within the 5-mile buffer were considered close to FS and BLM lands. Community points that fell outside the 5-mile buffer were considered farther away from FS and BLM lands. We tried many different buffer sizes. Five miles was chosen because during discussions with FS managers, in preparation for the case-study component of this project, the managers concluded that communities 10 miles away from a particular FS or BLM unit, in general, were not considered as having primary connections to a particular forest. Some communities greater than 5 miles from FS and BLM lands have connections to the forest, such as through watersheds, or regional recreation or forest-product economies. However, because of the high percentage of public lands in the Plan region, buffers much larger than 5 miles captured a high percentage of communities in the region, which limited our ability to use

proximity as a way to characterize communities in the region.<sup>8</sup>

Thus, this analysis of community socioeconomic well-being is based on two types of communities, determined by the proximity to FS and BLM lands ( $\geq 5$  miles,  $< 5$  miles). Of the 1,314 communities in the Plan region, 750 of them—or about 2.26 million people in 2000—were within 5 miles of FS or BLM lands, which is just under half the population of communities in the Plan region (48 percent in 1990, and 47 percent in 2000). Of these communities close to public forest lands, 71 percent had relatively low population density (0 to 100 people per square mile on nonpublic lands). Indeed, many of the communities in the Plan region (59 percent) were in this low-population-density category. In general across the region, smaller communities (less than 2,000 people) tended to have lower densities, and tended to have lower than average increases in population or declines.

The socioeconomic well-being scores in 2000 for communities that were close to public forest lands (within 5 miles of FS and BLM lands) and farther away ( $\geq 5$  miles) are shown in table 2-9. A greater percentage of communities close to these public lands had scores in the very low or low categories (36 percent) compared to the communities that were farther away from the public lands (19.3 percent). In contrast, a greater percentage of communities farther away

<sup>8</sup> When a buffer of 10 miles was placed around FS and BLM lands, 963 communities, or 66 percent of the population of communities in the Plan region in 2000, were within 10 miles of FS and BLM lands.

**Table 2-9—Community socioeconomic well-being and proximity to Forest Service (FS) and Bureau of Land Management (BLM) lands, 2000**

Socioeconomic well-being category, 2000	Communities within 5 miles of FS or BLM land		Communities farther than 5 miles from FS or BLM land	
	Number	Percent	Number	Percent
Very low	87	11.6	27	4.8
Low	183	24.4	82	14.5
Medium	291	38.8	204	36.2
High	156	20.8	212	37.6
Very high	33	4.4	39	6.9
Total	750	100	564	100

from FS and BLM lands had scores in the high or very high category (44.5 percent) compared to communities close to FS and BLM lands (25.2 percent).

Of the communities that had high or very high scores in 2000, 43 percent (189 of 440) were located farther than 5 miles from FS and BLM lands. In contrast, of the communities with very low or low socioeconomic well-being scores in 2000, 71 percent (270 of 379) were close to FS or BLM lands. With respect to population, of the 1 million people in communities in the Plan region that had very low or low socioeconomic well-being scores in 2000, 61 percent were living close to FS and BLM lands.

Similar to the regional comparison of average community socioeconomic well-being scores between 1990 and 2000, no statistical difference was found between years for average socioeconomic well-being scores for either communities close to FS and BLM lands or communities farther away. Individual community scores increased and decreased between the years, however, and there was a difference in how the two types of communities changed. For instance, 40 percent of communities close to FS and BLM lands (within 5 miles) decreased in socioeconomic well-being, compared to 33 percent of the communities farther away.

A closer examination of the five socioeconomic well-being categories (very low, low, medium, high, and very high) reveals other differences between the two types of communities. For both community types, average socioeconomic scores for communities in the very low and low categories increased between 1990 and 2000, but the scores of communities in the medium, high, and very high categories decreased. However, although the trends are similar for both types of communities, in all categories, communities close to FS and BLM lands consistently had lower socioeconomic scores across the five categories than communities farther away. Although the average score for the very low and low communities, in both community types, increased between the years, some communities had decreased scores. In particular, of the communities close to FS and BLM lands in the very low and low categories in 1990, 22 percent decreased in socioeconomic well-being scores, but only 11 percent of the communities farther away

(in the same category) had decreases in scores. Conversely, most of the communities in high and very high categories in 1990, for both community types, decreased, although a small percentage increased. Of the communities close to FS and BLM lands in very high and high categories in 1990, 16 percent increased, whereas 21 percent of the communities farther away had increases in these categories.

Examination of the six indicators composing the socioeconomic well-being index showed that changes were similar for communities close to and farther way from FS and BLM lands, with one exception. Both types of communities had increases in the percentage of population with bachelor's degrees or higher, decreased poverty, increased employment diversity, and an increase in travel time to work (t-test,  $p < 0.05$ ) between 1990 and 2000 (change in the unemployment indicator was not statistically significant). Change in income inequality, however, was not statistically significant for communities greater than 5 miles away. In contrast, income inequality increased for communities close to FS and BLM lands ( $p < 0.001$ ). This finding suggests that the regional increase in income inequality appears to be driven by increases in income inequality in communities close to public forest lands.

Several differences emerge between the two types of communities when socioeconomic scores are compared within a single year. Two-sample t-tests for comparing means (assuming unequal variance) were performed to assess socioeconomic well-being scores for communities close to FS and BLM lands compared to communities farther away. For both 1990 and 2000 data, the difference in the means was statistically significant ( $p < 0.001$ ). On average, communities farther away had higher socioeconomic well-being scores than did communities close to FS and BLM lands.

Also, means were compared for each of the six indicators for both community types. Means were statistically different ( $p < 0.001$ ) for all indicators for both 1990 and 2000 data, except for diversity of employment by industry in 2000, suggesting that, on average, communities that were farther away had a higher percentage of the population with bachelor's degrees or more, less poverty, less unemployment, less income inequality, and higher 1990 diversity of

employment by industry. Communities farther away from FS and BLM lands also had higher commute times. However, for all communities, we found a positive correlation between average travel time and median household income in both 1990 and 2000 ( $r = 0.26$  in 1990,  $r = 0.32$  in 2000,  $p < 0.0001$ ), indicating that the higher the average travel time, the higher the median income. We also found that the lower the average travel time in a community, the higher the percentage in poverty ( $r = -0.23$  in 1990,  $r = -0.28$  in 2000,  $p < 0.0001$ ).

## Summary

In general, communities in the Plan region experienced change in socioeconomic conditions between 1990 and 2000. Total population in the region grew at a faster rate than in the rest of the United States (20.6 percent in 2000). Almost 5 million people lived in communities in the Plan region in 2000.<sup>9</sup> And many of these communities were relatively small. In 2000, more than 60 percent of the 1,314 communities identified through the block group-aggregation process had between 250 and 2,000 people, for a total of 857,000 people, or 17.2 percent of the total population of communities in the Plan region. Although the population is increasing in the region as a whole, about one-fifth of the communities lost population between 1990 and 2000. These communities tended to be fairly small, about 80 percent of them having populations between 250 and 2,000 in 2000. Almost a half million people in the region live in these communities. Smaller communities, in general, also tended to have lower population densities. Communities with the highest percentage increase in population between 1990 and 2000 span the spectrum of small and large communities, and low and high densities.

The population in the Plan region is aging in ways similar to the rest of the United States, with the baby-boomer cohort (born 1946 to 1964) showing the greatest percentage increase in age. Although the racial composition of Plan communities cannot be compared between 1990

and 2000, the census does collect information on Hispanic or Latino origin that can be compared: the percentage of Hispanics and Latinos in Plan region communities increased from 5.8 percent to 8.5 percent, although the overall percentage remains less than in the United States as a whole (12.5 percent in 2000).

Plan communities have had sizable increases in the percentage of the population with bachelor's degrees or higher between 1990 and 2000. Poverty has decreased at a higher rate than the rest of the United States, with a lower percentage of the population in poverty (11.8 percent in 2000 for the Plan region and 12.4 percent for the United States). The lower poverty measures in the region are consistent with the increase in median household income and the increases in the percentage of the population in the highest income brackets. Median household income increased 20.3 percent between 1990 and 2000 to \$42,351, just above the national median household income of \$41,994 in 2000.

The four industry sectors that remain dominant in 1990 and 2000 among community residents in the Plan region were education, health, and social services; professional and other services; manufacturing; and retail trade. The manufacturing sector, however, had the highest percentage decrease of any sector, and the education, health, and social services sector had the greatest increase.

Twenty-seven percent of the communities in the region had little change in socioeconomic well-being, but 37 percent increased and 36 percent decreased. The indicators making up the socioeconomic well-being index showed that, for the communities in the region, the percentage of the community population with a bachelor's degree or more increased, the percentage of the population in poverty decreased, and employment diversity increased slightly. Income inequality and average commute time to work increased, however. Although smaller communities in the Plan region tended not to be doing as well as before, based on the socioeconomic well-being index, some relatively small communities were doing quite well. Twenty-one percent of the population of communities in the Plan region (1.05 million people) lived in communities with very low or low socioeconomic well-being in 2000, compared to 13 percent of the population (0.54 million people) in 1990.

<sup>9</sup> Again, "communities in the Plan region" refers to the 1,314 communities identified through the census block group aggregation process and that exist in 72 counties of western Washington, western Oregon, and northern California. The report does not focus on the 10 metropolitan areas (listed elsewhere) in the region.

This 94 percent increase is 4.6 times the regional average increase in population of 20.6 percent. In contrast, 37 percent of the population (1.8 million people) lived in communities with relatively high socioeconomic well-being in 2000. Communities with very high socioeconomic scores were not, on average, communities with the highest average population. The low correlation between population size and socioeconomic well-being scores suggests that population may not be a useful proxy for socioeconomic well-being or for related constructs such as resiliency and adaptability.

Because of the high percentage of FS and BLM lands in the Plan region, it is not surprising that many people live close to public lands. What may be less apparent, however, is that about 2 million people, or just under half of the total population of communities in the Plan region (47 percent) in 2000, live in communities within 5 miles of FS and BLM lands. Most of the communities (70 percent in 1990, 71 percent in 2000) with very low or low socioeconomic well-being scores in 1990 and 2000 were communities within 5 miles of FS and BLM lands. With respect to population, of the 1.05 million people living in Plan-area communities with very low or low socioeconomic well-being scores in 2000, about 61 percent were living close to public forest lands. Forty-three percent of the communities that received high or very high socioeconomic well-being scores, however, were also close to FS and BLM lands. Thus, some communities close to public forest lands were doing very well relative to other communities in the region. Although the specific social and economic connections that these communities have with nearby forests (recreation, tourism, wood products, retirement amenities) were not determined for this report, understanding the social and economic connections of these communities to the forests may provide useful information for other forest-based communities. Socioeconomic well-being measures are limited, however, and do not adequately address the abilities of a community to take advantage of social and economic development opportunities and meet the needs of residents. In general, communities farther away from FS and BLM lands had higher socioeconomic well-being.

## Conclusions

Are communities in the Plan region doing better or worse since the Plan was implemented? Although finding direct connections between changes in forest policy and changes in socioeconomic conditions is difficult, we have provided information on status and change of a variety of indicators at several scales, including one that focuses specifically on proximity to FS and BLM lands. The socioeconomic data confirm that communities in the Plan region are changing. At a regional scale, the population is growing, educational attainment and household income are increasing, and poverty is decreasing. At the same time, the manufacturing sector of the economy is declining in many communities in the Plan region.

Socioeconomic well-being increased for more than a third of the communities in the Plan region and decreased for about the same percentage. Between 1990 and 2000, however, 40 percent of communities within 5 miles of FS and BLM lands decreased in socioeconomic well-being, whereas only 33 percent of communities farther away decreased in well-being. Generally, communities with lower socioeconomic well-being tended to be close to public forest lands. Some communities close to FS and BLM lands had relatively high socioeconomic well-being, but income inequality also increased for many of these communities. Drivers of socioeconomic change, such as increasing income inequality, immigration, shifts in dominant industry sectors, and aging populations, affect community socioeconomic well-being. From the data available to us, we were unable to determine how much public forests contribute to these drivers of socioeconomic change. What we know from this report is that over 2 million people live in communities close to FS and BLM lands in the Plan region. Many of these communities maintain unique social, economic, cultural, environmental health, aesthetic, and other connections to the forests that surround them. Changes in forest policy and changes in ways that people relate to forests likely interact with other forces of change to affect the socioeconomic well-being of forest-based communities.

## Metric Equivalents

When you know:	Multiply by:	To find:
Miles	1.609	Kilometers
Square miles	2.59	Square kilometers

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## Chapter 3: Jobs and Income Associated with Resource and Recreation Outputs

*Richard Phillips*

The Pacific Northwest is naturally endowed with vast forest resources. Federal public lands are an important part of this forest base, providing a variety of commodities, uses, and services. Forest resources support consumptive and non-consumptive, and commercial and noncommercial uses that also provide for a mix of employment opportunities. From the perspective of regional economic development, timber production has been one of the largest economic drivers in the Pacific Northwest over the past century, and it remains an important economic component in many parts of the Northwest Forest Plan (the Plan) area.

The relative importance of forest resource-related employment and income in the Plan area's economy has changed over time, as has the contribution of forest products from the Forest Service (FS) and Bureau of Land Management (BLM) lands to this mix. Between 1990 and 2000, employment grew by 29 percent in the 72 counties in the Plan area. During the same period, manufacturing grew by 3 percent, compared to 56 percent employment growth in the services sector. Most of the other major industries grew at rates varying between 23 and 32 percent (fig. 3-1). Exceptions were mining (16 percent) and agriculture (4 percent). The low growth in manufacturing meant that this sector went from providing 13 percent of total employment in 1990 to 11 percent in 2000. Meanwhile, the services industry increased from 25 to 30 percent of total employment during this same period. The employment shift from manufacturing to services was consistent with nationwide shifts.

Income changes between 1990 and 2000 followed a similar pattern. Manufacturing wage income made up 20 percent of all income in 1990 and dropped to 15 percent by 2000. Wage income in the services sector was 26 percent in 1990, and grew to 29 percent by 2000. In 2000, average annual wages in manufacturing were \$55,000 compared to \$37,000 in services.

Factors that affect the region's industrial makeup and associated rates of employment and income over time include technological change in industries, industry diversification and growth, regional competitiveness, changes in product demand, and the supply of raw materials. The land management agencies directly influence one of these factors: the supply of raw materials, including timber, recreation opportunities, forage, minerals, wildlife, fish, water, and other nontimber forest products. The supply and use of these resources have direct effects on the industries involved in their primary production and conversion, and indirect effects on the businesses and workers that support these industries.

In the years leading up to the Plan, discussions about the effects of ecosystem protection and restoration on socioeconomic well-being was often presented as a simple choice between owls and jobs. Although the supply of timber and employment in the wood products industry are directly related, such over-simplification of the issues masks the complex social and economic changes in the

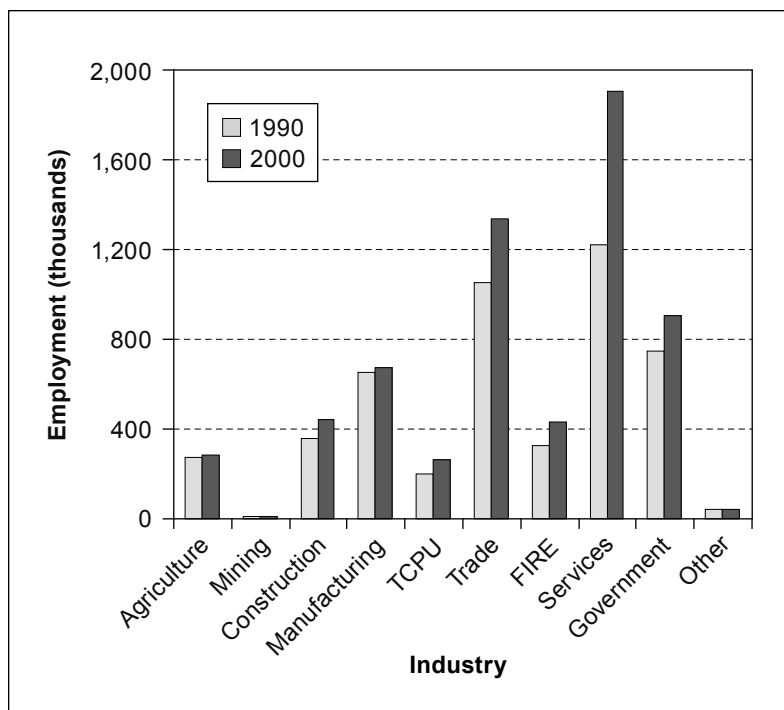


Figure 3-1—Employment by major industry, 1990 and 2000. TCPU = trade, communications, and public utilities; FIRE = finance, insurance, and real estate.

Pacific Northwest over the last three decades. High rates of population growth in the region, especially in the urban areas along the Interstate 5 corridor, brought new people to the Pacific Northwest who had different value sets about the appropriate uses of federal lands. At the same time, existing residents along with the rest of the Nation began to question whether public forest lands should be managed for intensive timber production (FEMAT 1993). Federal forests were becoming highly valued for recreation, visual quality, and the protection of water, wildlife, and fish. The regional economy was also maturing. Agriculture and industries based on the extraction of forest resources showed little growth. The percentage of people in the region whose livelihood was based on the extraction of goods and services from federal lands shrank. New business and employment opportunities fueled by the needs of the expanding population were primarily in the trade and services sectors.

In the next section, I look at the role that forest resources from FS and BLM lands have played in the economy of the Plan area. Because of data limitations, I focus mainly on changes between 1990 and 2000.

## Monitoring Question

How did levels of federal timber and nontimber resource outputs, and recreation opportunities, affect jobs and income in the Plan area?

## Expectations

Predictable levels of resource outputs and recreation opportunities from FS and BLM lands were expected to provide predictable levels of employment.

The Plan fixed average annual planned harvest levels to 1.1 billion board feet. This amount was adjusted downward during the first few years of the Plan to 0.8 billion board feet. Compared against FS and BLM planned annual harvest levels of 4.5 billion board feet during the 1980s, the new planned harvest levels were over 80 percent less.

Initial projections documented by the Forest Ecosystem Management Assessment Team (FEMAT 1993) indicated that the permanent reduction in timber supply would result in an initial loss of about 25,000 direct jobs or 17 percent of total timber industry employment. After adjusting to

this change, Plan implementation was expected to provide a stable flow of timber from federal lands and support predictable rates of employment in the timber industry.

Data associated with nontimber resources and recreation outputs were scarce. During the development of the Plan, the agencies did not know the effect of the Plan standards and guidelines on nontimber commodity and noncommodity products, uses, and services derived from the region's forests. They needed to clarify the short- and long-term effects expected on municipal and nonfederal water systems, grazing, minerals, special forest products, recreation residences, and recreation facilities (Tuchmann et al. 1996).

## Methods

Employment and income data are available from a variety of sources and at different levels of aggregation. The employment and income data used here were developed by the Minnesota Implan Group (<http://www.implan.com/>) and cover the years 1990 through 2000. The Implan data are organized by industry or industry group and use the Standard Industrial Classification (SIC) system. More recent Implan data are not used owing to a conversion to the North American Industrial Classification System in 2001, and the lag in data development. I selected this data set because it interprets data from a variety of published government sources to fully disclose employment and income for individual counties to identify primary and secondary processing sectors in the Plan area's 72 counties (table 3 -1). The Implan data also include estimates for the self-employed, which are especially important in the logging industry. I used Christensen et al. (2000) to identify whether the counties are metropolitan or nonmetropolitan. These 72 counties together constitute the unit of analysis for the discussions in this chapter.

The amounts of resource outputs and uses for estimating employment and income associated with FS and BLM resources in this chapter are taken from volume II of this report except for timber. The timber harvest data used here are taken directly from state harvest reports that identify timber harvest by county and by ownership class. The timber data from the state reports are used because

**Table 3-1—Counties in the Northwest Forest Plan area**

State, county, designation	State, county, designation
California, Colusa County (nonmetropolitan)	Oregon, Polk County (metropolitan)
California, Del Norte County (nonmetropolitan)	Oregon, Sherman County (nonmetropolitan)
California, Glenn County (nonmetropolitan)	Oregon, Tillamook County (nonmetropolitan)
California, Humboldt County (nonmetropolitan)	Oregon, Wasco County (nonmetropolitan)
California, Lake County (nonmetropolitan)	Oregon, Washington County (metropolitan)
California, Lassen County (nonmetropolitan)	Oregon, Yamhill County (nonmetropolitan)
California, Marin County (metropolitan)	Washington, Adams County (nonmetropolitan)
California, Mendocino County (nonmetropolitan)	Washington, Benton County (metropolitan)
California, Modoc County (nonmetropolitan)	Washington, Chelan County (nonmetropolitan)
California, Napa County (metropolitan)	Washington, Clallam County (nonmetropolitan)
California, Shasta County (metropolitan)	Washington, Clark County (metropolitan)
California, Siskiyou County (nonmetropolitan)	Washington, Cowlitz County (nonmetropolitan)
California, Sonoma County (metropolitan)	Washington, Douglas County (nonmetropolitan)
California, Sutter County (metropolitan)	Washington, Franklin County (metropolitan)
California, Tehama County (nonmetropolitan)	Washington, Grant County (nonmetropolitan)
California, Trinity County (nonmetropolitan)	Washington, Grays Harbor County (nonmetropolitan)
California, Yolo County (metropolitan)	Washington, Island County (metropolitan)
Oregon, Benton County (nonmetropolitan)	Washington, Jefferson County (nonmetropolitan)
Oregon, Clackamas County (metropolitan)	Washington, King County (metropolitan)
Oregon, Clatsop County (nonmetropolitan)	Washington, Kitsap County (metropolitan)
Oregon, Columbia County (metropolitan)	Washington, Kittitas County (nonmetropolitan)
Oregon, Coos County (nonmetropolitan)	Washington, Klickitat County (nonmetropolitan)
Oregon, Crook County (nonmetropolitan)	Washington, Lewis County (nonmetropolitan)
Oregon, Curry County (nonmetropolitan)	Washington, Mason County (nonmetropolitan)
Oregon, Deschutes County (nonmetropolitan)	Washington, Okanogan County (nonmetropolitan)
Oregon, Douglas County (nonmetropolitan)	Washington, Pacific County (nonmetropolitan)
Oregon, Hood River County (nonmetropolitan)	Washington, Pierce County (metropolitan)
Oregon, Jackson County (metropolitan)	Washington, San Juan County (nonmetropolitan)
Oregon, Jefferson County (nonmetropolitan)	Washington, Skagit County (nonmetropolitan)
Oregon, Josephine County (nonmetropolitan)	Washington, Skamania County (nonmetropolitan)
Oregon, Klamath County (nonmetropolitan)	Washington, Snohomish County (metropolitan)
Oregon, Lane County (metropolitan)	Washington, Thurston County (metropolitan)
Oregon, Lincoln County (nonmetropolitan)	Washington, Wahkiakum County (nonmetropolitan)
Oregon, Linn County (nonmetropolitan)	Washington, Walla Walla County (nonmetropolitan)
Oregon, Marion County (metropolitan)	Washington, Whatcom County (metropolitan)
Oregon, Multnomah County (metropolitan)	Washington, Yakima County (metropolitan)

they provide a consistent data source for timber harvest amounts from all ownerships and incorporate other owner responses to the changing timber supply from federal lands. These reports are available from the Oregon Department of Forestry publications section (<http://www.odf.state.or.us/>), the Washington Department of Natural Resources publications section (<http://www.dnr.wa.gov/>), and the California Board of Equalization property-tax section (<http://www.boe.ca.gov/>). California data identify only one category for

government, which includes federal, state, and local; I used the government component as a proxy for federal harvests. California data for all ownerships for 1990 through 1992 are not available. I used the 1993 values for nongovernment harvests for 1990 through 1992, and I modified the government harvest amounts to reflect FS and BLM harvest data for those years.

Trends in timber-industry employment and income in the Plan area are generated directly from Implan data sets

for 1990 through 2000 for the 72 counties. The aggregated data for the region are compared to the trends in timber harvest from all ownerships in the Plan area. The division of timber industry employment and income by the volume of logs consumed by those industries provides an estimate of the direct employment response to timber harvest. The amount of FS- and BLM-supported timber industry direct employment is a ratio based on the amount of the agencies' timber harvest to the total amount of logs consumed by mills. Drawing conclusions about timber harvest and employment data for individual counties is inappropriate and not considered because of economic leakages (Sommers 2001). One of the most important leakages is log flows to timber mills across county boundaries.

A change in timber industry output generates changes in purchases from supporting industries and expenditures by employees, known as indirect and induced effects. To estimate timber-related indirect and induced employment and income, I built Implan impact models for the region to produce employment and income multipliers based on the effects of a final demand change in the timber industry during 1994 and 2000.

Recreation-related employment and income cannot be defined as a unique tourism industry. Instead, I generated employment and income rates by building Implan impact models for the year 2000 and identifying the direct, indirect, and induced employment and income associated with the total expenditures by the recreation users. The expenditure patterns are based on data identified in the National Visitor-Use Monitoring program. The methods to derive these data are presented in the *Spending Profiles of National Forest Visitors, 2002 Update* (Stynes and White 2004).

The following sections discuss results for timber, other forest products, and recreation. The FS and BLM employment impacts are addressed in chapter 4. The timber section is the most developed because the data identifying the status and trends in timber flows are readily available and the relationships between timber flows and employment are generally known. Little or no comparable data are available for nontimber forest products. Data for recreation use is mainly available for 1998 through 2000.

## Results

### Timber-Related Jobs and Income

Timber-related jobs and income can be divided into two manufacturing sectors. The first sector includes industries that manufacture solid wood products. These industries are included in the Standard Industrial Classification under SIC 24. The second sector includes pulp and paper industries included in SIC 26. These two sectors can also be subdivided into primary and secondary manufacturing industries.

The primary-processing industries in the solid-wood products sector are logging and logging contractors; sawmill, veneer and plywood mills; hardwood dimension and flooring mills; and special-product sawmills. Secondary manufacturing in solid-wood products includes industries such as millwork and cabinetry.

The primary-processing pulp and paper industries include pulp, paper, and paperboard mills. Secondary manufacturing in pulp and paper includes industries like production of paper bags and envelopes.

This chapter concentrates on the primary-processing industries closely tied to the supply of logs, because changes in employment and income in the secondary-processing industries are more strongly affected by shifts in consumer demand and technology than by changes in local harvest. Jobs and income in the secondary-processing components of these two industries have been increasing as a result of an expanding economy and population in the Pacific Northwest region. The possible exception to this trend in secondary processing is the millwork industry. Millwork depends on high-quality solid wood delivered at competitive prices, and it often operates like a primary-processing sawmill.

Historically, employment in solid-wood products manufacturing (SIC 24) has been volatile. To provide a time series picture of the magnitude of change in these industries, I use Oregon and Washington statewide employment data for 1965 through 2000 (fig. 3-2). Similar data for counties to portray only the Plan area were not available. The data are taken from reports by Darr (1970), Ruderman (1982), and Warren (1992, 2004). From the high of 136,000 jobs in 1978, employment dropped to 95,000 jobs 4 years later, a loss of 41,000 jobs or 30 percent. Over the entire period of

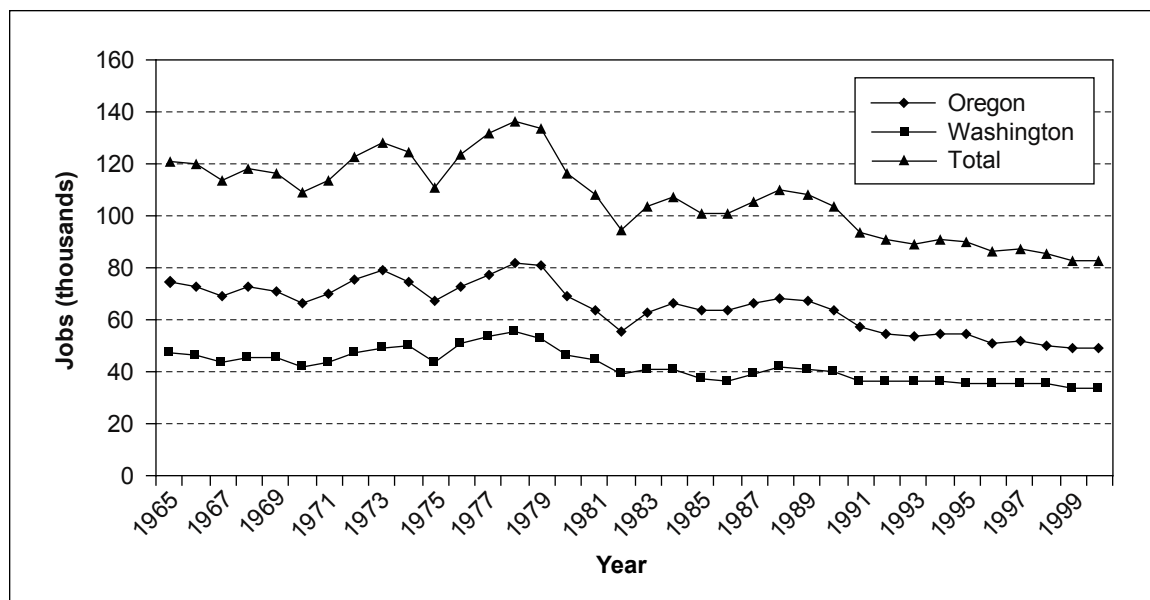


Figure 3-2—Lumber and wood products employment in Oregon and Washington, 1965–2000.

1965 through 2000, employment positively or negatively changed more than 5 percent 13 times between successive years. Since 1991, changes in employment between years have generally varied between 1 and 2 percent, with a high of a 4-percent decline in 1996.

In the Plan area during 1990, the solid-wood products primary processors made up about 73 percent of all SIC 24 employment. The rest was attributable to secondary manufacturing. In 2000, the primary-processing industries continued to make up the largest share of employment in the solid-wood products industries, although their contribution decreased to 65 percent of all SIC 24 employment. The reduced employment share for the primary-processing industries was due to employment losses in these industries rather than large gains in secondary manufacturing employment. Primary solid-wood-products employment declined by 28 percent or 25,600 jobs during the decade (fig. 3-3). The secondary industries expanded by 3 percent between 1990 and 2000 and now make up 35 percent of SIC 24 employment.

The primary pulp and paper industries made up 67 percent of SIC 26 employment during the first part of the 1990s in the Plan area, and dropped to 64 percent during the rest of the decade. Primary pulp-and-paper processing employment declined by 22 percent or 4,400 jobs (fig. 3-3).

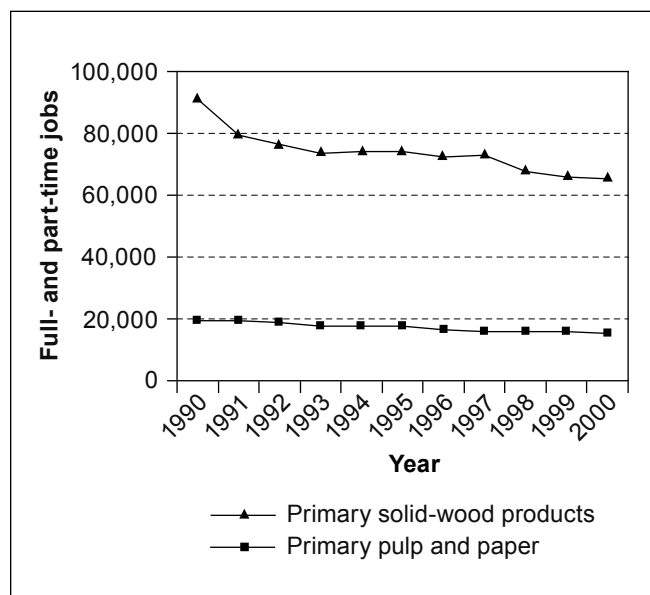


Figure 3-3—Timber industry employment, Northwest Forest Plan area, 1990–2000.

The total decline of 30,000 jobs in the primary processing industries (SIC 24 and SIC 26) is contrasted to changes in total employment across all industries in the Plan area. During the 1990s, there was an increase in total employment of 1.4 million jobs. Primary wood-products processing accounted for 2 percent of all jobs in the Plan area in 1990 and dropped to 1 percent by 2000.

Income from the primary solid-wood-product and pulp-and-paper manufacturing sectors follows trends similar to the changes in employment. Primary solid-wood-products industries (SIC 24) real total income declined by 17 percent in the Plan area between 1990 and 2000 (fig. 3-4). Real total income from primary pulp-and-paper manufacturing (SIC 26) for the same period declined 24 percent (fig. 3-4).

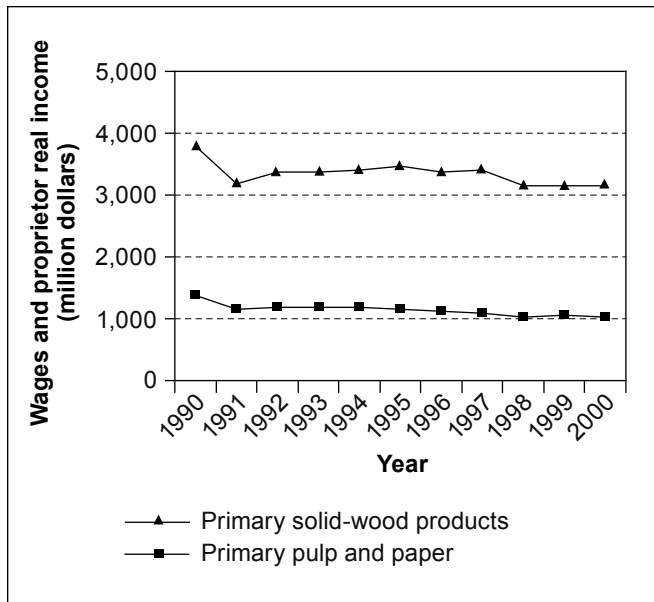


Figure 3-4—Total income from the primary wood-products processing sectors, Northwest Forest Plan area, 1990–2000. Base year is 2000.

Real income is adjusted for inflation and uses 2000 as the base year. Total income includes both the effects of changing wage rates and the number of jobs. How average wage rates adjusted for inflation have changed over time in the Plan area is shown in figure 3-5. Real wage rates across all industries in the Plan area showed general improvement over the decade, after the significant wage adjustments in the economy caused by the recession of 1990. Excluding 1990, real wages increased by 21 percent in primary wood-products during the decade. Excluding 1991 and 1992, in the primary pulp-and-paper processing industries, wages were nearly flat during the decade. Annual wage rates in the primary wood-products industries (SIC 24 and SIC 26) exceeded the average wage rates for all industries.

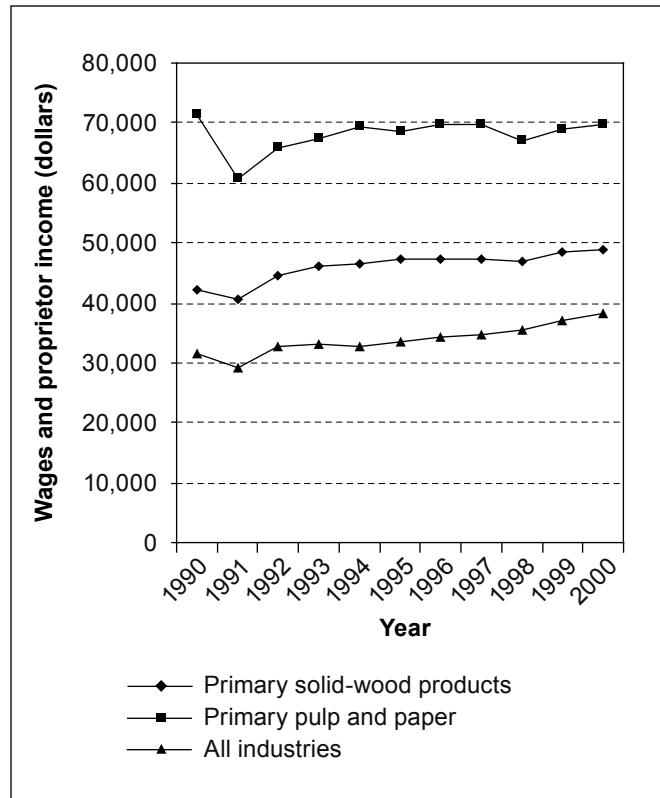


Figure 3-5—Average annual income per job from primary wood-products sectors and all industries in the Northwest Forest Plan area, 1990–2000. Base year is 2000.

But, wage rates across all industries changed more rapidly during the 1990s than timber-industry wages did, with a 32 percent increase.

The change in timber-related employment differed across the Plan area by location. To examine these differences, I analyzed change in the subregions of the Plan area as defined by state boundaries and by metropolitan and nonmetropolitan county designations (table 3-1). These delineations allow us to identify which states were most affected by the Plan and any urban and rural differences in the states (fig. 3-6 and table 3-2).

From 1990 to 2000, about 50 percent of primary solid-wood-products employment in the Plan area was in Oregon, 35 percent was in Washington, and the remaining 15 percent was in northern California. During this period, 61 percent of the 25,600 decline in jobs in the solid-wood-products industries occurred in Oregon. Washington lost 27 percent and northern California, 11 percent.

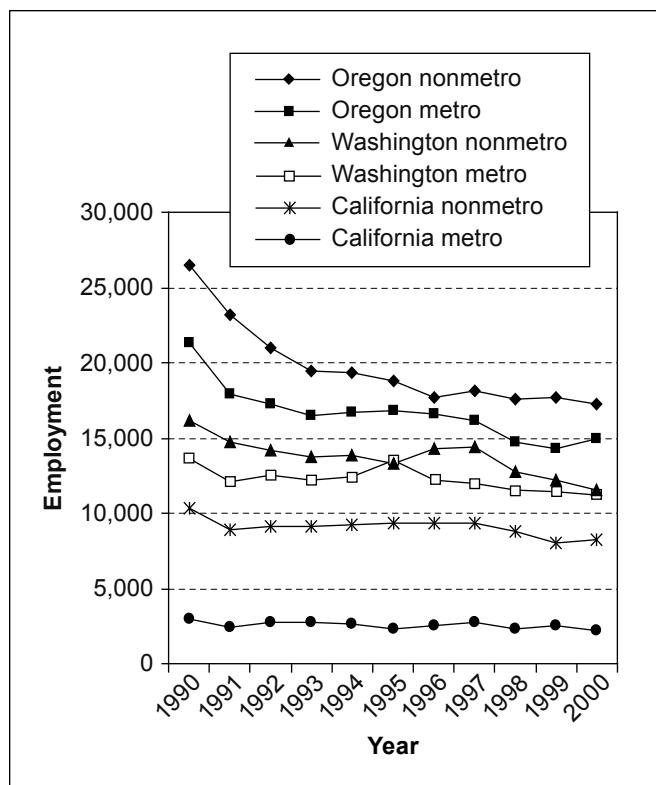


Figure 3-6—Metropolitan and nonmetropolitan primary wood-products employment by state.

**Table 3-2—Employment in primary solid-wood products, by state and metropolitan and nonmetropolitan counties in the Northwest Forest Plan area**

Area	Employment change			
	1990 to 2000		1995 to 2000	
	Number	Percent	Number	Percent
Oregon nonmetro	-9,306	-35	-1,551	-8
Oregon metro	-6,427	-30	-1,957	-12
Washington nonmetro	-4,575	-28	-1,784	-13
Washington metro	-2,407	-18	-2,283	-17
California nonmetro	-2,070	-20	-1,041	-11
California metro	-828	-27	-102	-4
Total	-25,613	-28	-8,718	-12

The primary pulp-and-paper industry employment was distributed with about 65 percent in Washington, 30 percent in Oregon, and 5 percent in California during the 1990s. In the primary pulp-and-paper industries, 65 percent of the job declines were in Washington, 21 percent in Oregon, and 14 percent in California.

The change in jobs also differed by metropolitan and nonmetropolitan classification. Most of the decline in jobs took place in nonmetropolitan counties where there were fewer employment opportunities. The rate of decline in nonmetropolitan counties slowed after the Plan was implemented. Two-thirds of the solid-wood-products job declines in nonmetropolitan areas were before 1995. Job declines in metropolitan counties were more evenly distributed across the decade than in nonmetropolitan counties.

### Forest Service and BLM Effects

To provide a historical context for broad timber supply changes and variability in the region, I evaluated data from 1965 through 1989. The data for this historical analysis only includes information from Oregon and Washington. Historical California data for the Plan area were not available during the earlier years. There was also a lack of data in 1979 for all states. All other analyses in this chapter include data for California.

Annual timber harvest amounts from national forest and BLM lands in the Plan area excluding California averaged about 4.7 billion board feet for 1965 through 1989 (fig. 3-7). Other ownership harvests averaged about 8.5 billion board feet, and the total across all ownerships was about 13.2 billion board feet. The FS and BLM contribution was about 36 percent of total timber harvest.

Large variations were found in harvest rates during this period. The slumps are typical of national economic downturns such as the large recession of the early 1980s. Excluding the 1980s recession, FS and BLM harvests in the Plan areas of Oregon and Washington ranged between 4 and 6 billion board feet until 1990. The other ownership harvests ranged between 8 and 10 billion board feet. Because economic recessions and recoveries affect all owners, the harvest level peaks and valleys generally coincided across all ownerships. The result was that total harvest levels varied between 12 and 16 billion board feet.

With the start of the 1990s, FS and BLM harvesting showed an overall decreasing trend. During 1990 through 1994, FS and BLM harvests decreased by 2.5 billion board feet from a level of about 3.3 billion board feet in 1990 in the Plan area including California. At the same time,

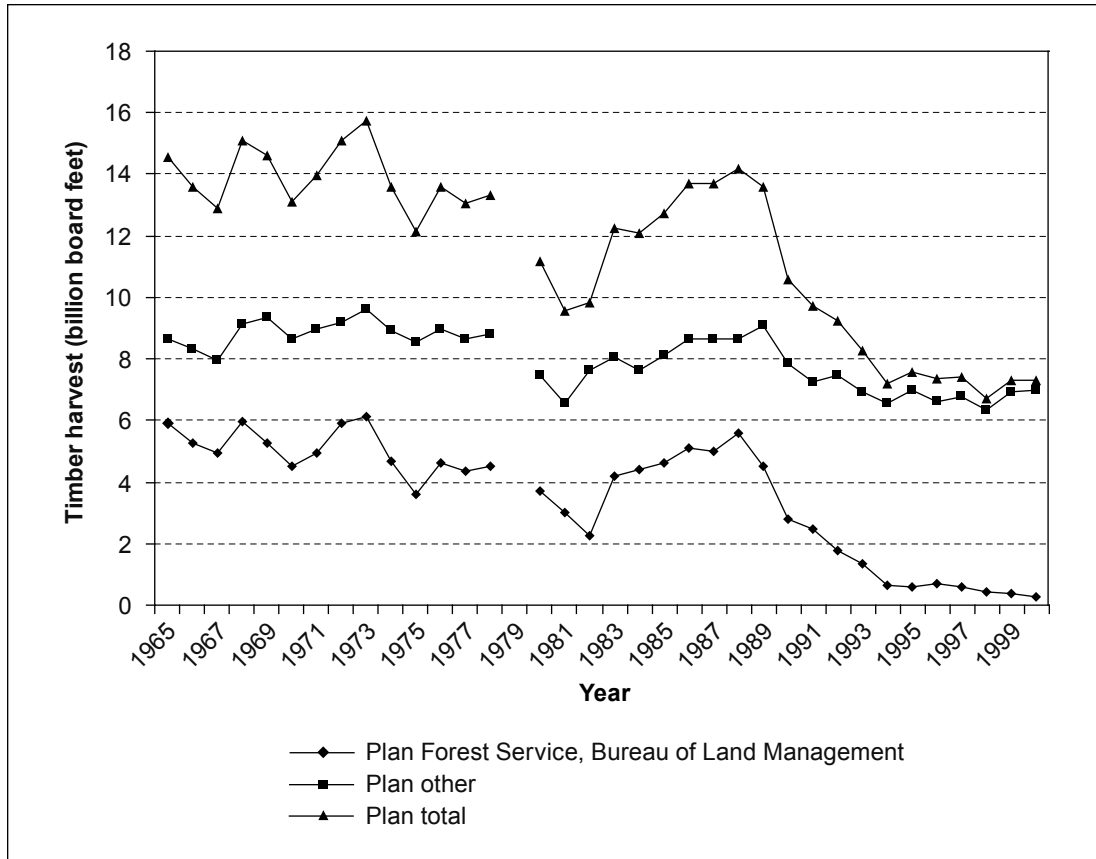


Figure 3-7—Timber harvest by general ownership class in Oregon and Washington of the Plan area, 1965–2000. Source: Oregon Department of Forestry, Washington Department of Natural Resources.

harvests on other ownerships also decreased by 1.5 billion board feet. The decrease in harvest from other ownerships was due primarily to regulation under state forest practices acts, the availability of harvestable volume, and restrictions on state land harvesting. The combined result was a total loss of 4.0 billion board feet in timber harvest over the first part of the decade from a level of 12.8 billion board feet.

From 1995 through 2000, the FS and BLM log supply declined another 0.5 billion board feet. In contrast, other ownerships increased log supply by almost 0.3 billion board feet. This resulted in a net decrease of 0.2 billion board feet over the 6-year period.

Between 1990 and 2000, timber harvest from FS and BLM lands declined 89 percent or about 3.0 billion board feet. The decrease in timber production across all ownerships totaled 33 percent or slightly over 4.2 billion board feet. Most of the declines occurred early in the decade (fig. 3-8).

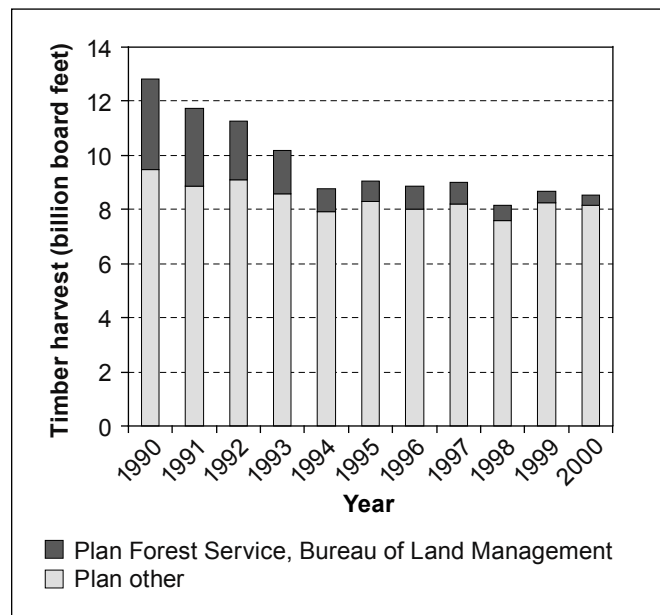


Figure 3-8—Timber harvest by general ownership class, 1990–2000. Source: Oregon Department of Forestry, Washington Department of Natural Resources, California Board of Equalization.



Although there is a strong direct cause-and-effect relationship between timber harvest levels and the number of timber industry jobs and income, this relationship was affected by industry restructuring that included adjusting the amount of logs exported and imported, the closure of less efficient mills that were unable to compete under new log supply market conditions, and technological change.

The reduction in timber harvest across all ownerships increased the prices local timber industry was willing to pay for logs making local industry competitive in the international market. The information on shifts in log exports and imports is based on data from the Seattle and Snake-Columbia Customs Districts (Warren 2004). Because the export and import data generally cover the entire Pacific Northwest, I reduced the values by 10 percent, which is the ratio of east-side harvests in Oregon and Washington to total harvest in these states. The results are displayed in figure 3-9. Over the decade, softwood log exports dropped from 2.7 billion board feet in 1990 to 0.7 billion board feet by 2000. At the same time and at a much smaller scale, imports increased from about 7 million board feet to almost 250 million board feet. The result was an overall shift in exports and imports providing about 2.3 billion board feet more to local timber processing industries in 2000 than in 1990. The redirection of logs from the export market helped timber manufacturing industries, but it negatively impacted the timber export industry.

Because timber industry employment and income is based on the amount of logs processed, I subtracted the net exports from timber harvest amounts to approximate the volume of logs available for processing by local primary wood products industries in the Plan area (fig. 3-10). In addition to the increased harvests on private lands, decreasing exports have mitigated effects of the federal harvest reductions. From 1994 through 2000, overall log supplies to timber processing industries in the Plan area increased by about 730 million board feet offsetting some of the 4.0 billion board feet loss that occurred early in the decade.

Over the period 1990 to 2000, primary-wood-products employment (SIC 24 and SIC 26) decreased by 30,000 jobs. About 11,000 of these jobs were lost since 1994. A loss in timber industry employment during a period of increasing

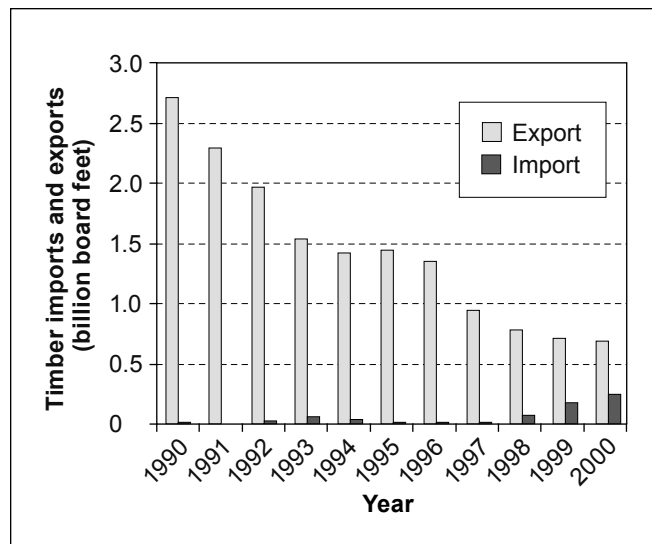


Figure 3-9—Timber exports and imports in Plan area, 1990–2000.

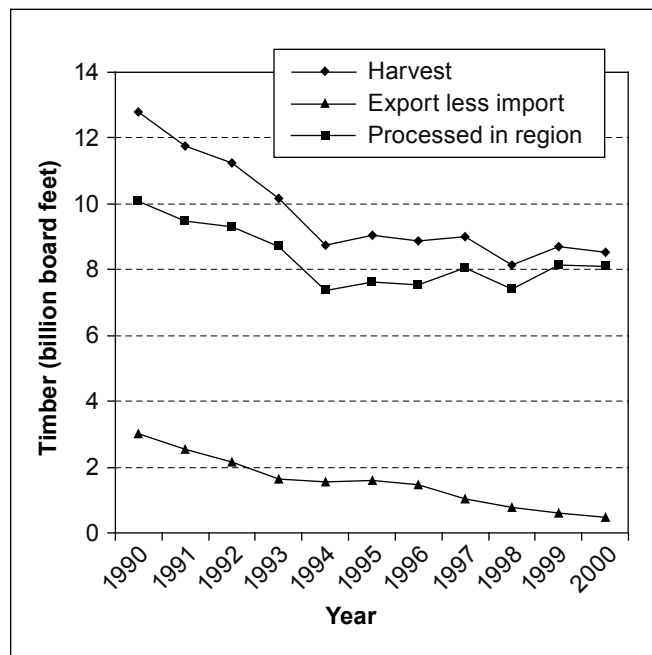


Figure 3-10—Timber harvest, net export, and volume processed in Plan area, 1990–2000.

log volume to timber processing industries indicates additional industry restructuring and technological change.

To identify these cause-and-effect relationships, I compared the employment in the primary wood products industries to the volume available to these industries. This required identifying the logging industry separately because this work is done whether or not the logs are exported.

**Table 3-3—Employment for the logging and other primary wood products industries, 1990–2000**

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
<b>Employment</b>											
Logging industry	24,786	21,562	21,971	21,126	20,048	20,103	19,964	20,069	18,475	18,261	17,292
Other primary wood industries	85,735	77,339	72,997	70,422	71,658	66,262	69,131	68,659	65,011	63,602	63,219
Total employment	110,521	98,901	94,968	91,548	91,706	86,365	89,095	88,728	83,485	81,863	80,510
<b>Harvest (million board feet)</b>											
Total harvest	12,799	11,744	11,245	10,160	8,752	9,057	8,872	8,993	8,134	8,689	8,533
Harvest not exported	10,091	9,458	9,306	8,686	7,370	7,624	7,536	8,070	7,425	8,154	8,097
<b>Jobs per million board feet</b>											
Logging industry	1.9	1.8	2.0	2.1	2.3	2.2	2.3	2.2	2.3	2.1	2.0
Other primary wood industries	8.5	8.2	7.8	8.1	9.7	8.7	9.2	8.5	8.8	7.8	7.8

Employment in the remaining primary wood products industries was compared to the volume available to these industries. These data are presented in table 3-3 and displayed in figure 3-11.

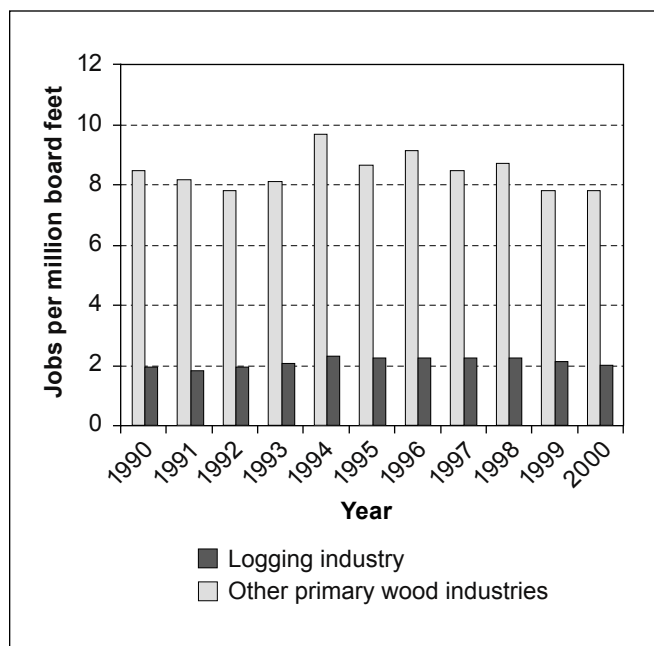


Figure 3-11—Jobs per million board feet, 1990–2000.

The comparison of direct jobs per million board feet masks significant changes in the primary wood products industry. The logs being harvested and processed in 2000 were much smaller in diameter than those processed in

1990. The equipment used to harvest and process these smaller logs was also different as were the job skills required to operate the equipment. The input and output production relationships in the timber industry have changed, but it is beyond the scope of this report to address the significance of these changes on the direct jobs-per-million-board-foot ratio.

During each year throughout the decade, direct jobs per million board feet processed by other primary wood industries ranged from about 9 jobs in 1990, to a high of 10 jobs in 1994, and to a low of 8 jobs in 2000. The decade average for these industries is about eight jobs per million board feet. This range is consistent with estimates for Oregon State reported in *Utilization of Oregon's Timber Harvest and Associated Direct Economic Effects, 1998* (Gebert et al. 2002) and with estimates made during the development of the Plan (FEMAT 1993). The logging industry employment per million board feet was relatively constant varying around two jobs. The reduction in jobs per million board feet in the primary wood industries since 1994 indicates additional industry restructuring and changes in technology. About 400 of the 11,000 jobs lost in the timber industry since 1994 were based on reductions in timber harvesting on federal lands. The remaining 10,600 job losses occurred during a period of an increased log supply and were the result of less efficient mills closing and mills continuing to invest in labor-saving technologies. It is likely that the timber industry delayed making several changes until after the

Plan was finalized. The fixed lower supply of timber forced the timber industry to make permanent adjustments, but many of the jobs losses occurring after Plan implementation were set in motion by earlier declines in timber harvest.

By 2000, FS and BLM lands provided less than 5 percent of the total timber supply. This also means that FS and BLM timber harvests supported less than 5 percent of the 80,500 jobs in the direct primary-wood-products industries (SIC 24 and SIC 26) in the Plan area.

I developed an indirect and induced multiplier of about 2.5 resulting from purchases by the primary wood-products industries, and expenditures by people employed in these industries, for the year 2000. Thus, every direct job supports an additional 1.5 jobs. This multiplier is consistent with estimates made during the development of the Plan (FEMAT 1993). Over the period 1990 through 2000, approximately 45,000 direct, indirect, and induced jobs were affected by reduced timber harvesting across all ownerships. Many, but not all, of the businesses that serve the timber industry and their employees will serve other businesses and workers in an expanding economy.

The total loss of 30,000 direct timber jobs since 1990 due to reductions in timber supplies from all ownerships and industry restructuring can be compared to the 6.3 million total jobs that were in the Plan area in 2000. This loss can also be compared to the average annual increase of roughly 130,000 jobs across the region during the 1990s. But growth in employment opportunities and losses in employment are usually not in the same places, and workers' skills were not necessarily transferable across industries. This broad regional assessment of the effects of the Plan on timber-industry employment does not capture associated changes in well-being at the subregional, community, and individual scales. Chapter 8 addresses how these effects have played out in specific communities.

Estimates of job losses made previously during the Plan's development predicted that the Plan would support about 25,000 fewer direct jobs in the wood-products-manufacturing industries (SIC 24 and SIC 26) under the selected alternative, alternative 9 (FEMAT 1993). This

projection was based on predicted harvest changes across all ownerships. Although the area and data used to calculate employment effects in the FEMAT report and in this report are not equivalent, they are similar. The major difference is the FEMAT analysis estimated that harvest levels from FS and BLM lands in the Plan area would stabilize at about 1.0 billion board feet instead of the actual level of 0.4 billion board feet. This difference is equal to about 6,000 direct timber jobs. This difference plus the original estimate of 25,000 direct timber jobs losses would bring the total initial estimate to about 31,000 jobs.

This new look at actual changes between 1990 and 2000 documented in this report found that about 30,000 timber industry jobs were lost in the Plan area during the past decade because of harvest changes across all ownerships and industry restructuring. This loss includes 5,000 jobs lost owing to levels of FS and BLM timber supply lower than those originally projected. This analysis found the original FEMAT estimates of employment loss to be reasonably accurate.

The Plan goal to provide predictable levels of employment resulting from predictable supplies of timber from federal lands was not met. Federal timber harvests continued to decline under the Plan, clearly resulting in fewer jobs associated with the federal timber harvests in the region. These declines were offset by increased harvests from other ownerships establishing a new lower timber harvest level. The redirection of log exports to Plan area mills mitigated somewhat the effects of the loss in harvesting to these mills. But the timber industry response to expectations of a permanent lower timber supply continues to result in restructuring and a loss of employment opportunities.

The contribution of federal timber to the total timber supply dropped in the Plan area from about 25 percent in 1990 to 10 percent in 1995 to less than 5 percent by 2000. The FS and BLM no longer play significant roles in the supply of timber in the Plan area as a whole. However, this does not mean federal timber is not important to individual mills and communities, levels not addressed in this assessment at the Plan-area scale.

### Nontimber and Recreation-Related Jobs and Income

The region’s forests contribute to employment and income in several industries based on both commodity and noncommodity products, uses, and services. Dispersed and developed recreation, commercial fishing, hunting, special forest products, mining, and grazing all contribute to the region’s economic health, and they are all affected by changes in federal forest management.

#### Nontimber forest industries—

Several other forest-based industries are significant to employment in the Pacific Northwest. These industries and their associated employment were discussed in the FEMAT report (1993), and they are addressed here to identify potential trends that may be associated with Plan implementation. The FEMAT report estimated that the commercial fishing industry employed about 5,000 workers in the region in the early 1990s. In addition, more than 18,000 workers were employed in mining and minerals processing statewide in Oregon and Washington at that time. Floral greens, Christmas ornamentals, and mushroom harvesting provided at least seasonal employment for some 28,000 to 30,000 workers (FEMAT 1993), and the forestry services sector, which carries out forest management activities like tree planting, supported about 6,000 jobs in the region. Substantial job opportunities could be created in pruning and other timber-stand-improvement activities, reforestation, wildlife inventory and monitoring, watershed restoration, and technical surveys and assessments on the region’s federal forest lands (FEMAT 1993). Wages, benefits, and employment conditions differ greatly between and within these industries.

Comparing jobs and income associated with the nontimber-related industries to the earlier estimates identified in the FEMAT report is impossible because of differences in reporting techniques and unknown assumptions about full-time job equivalents. For example, many forestry-related activities like gathering floral greens and mushrooms are seasonal and of short duration, so estimating comparable job figures is difficult. Data availability is also

a problem, because identifying the proportion of these industries supported by federal lands is impossible.

Instead of trying to estimate actual employment opportunities supported by federal forests in these industries, I analyzed trends in employment by using Implan data for 1994 through 2000. These data show the importance and status of these industries in the region. The data are displayed in figure 3-12. The sector “range-fed cattle” approximates trends in the livestock industry associated with open-range grazing of which public-land grazing is a component. Although this sector showed an average annual increase of 3 percent between 1994 and 2000, the public-land grazing trends have been downward (volume II chapter 4). There are multiple reasons for this downward trend, including Plan implementation. The forestry products sector includes timber tracts and gathering forest products. It showed no growth during this same period. Calculations to estimate jobs in the forest products sector in 2000 were

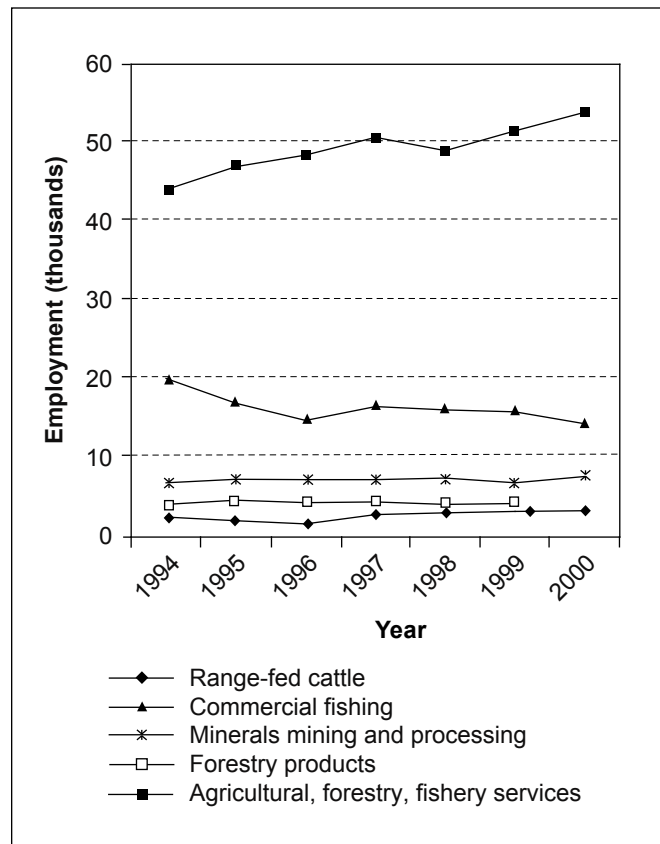


Figure 3-12—Employment trends in nontimber forest industries, 1994–2000.

not consistent with previous years and are not included. The commercial fishing sector declined by an average annual amount of 3 percent. Forestry services activities such as restoration, thinning, and planting are included in the agriculture, forestry, and fishing services sector, which grew by an average annual rate of 2 percent during 1994 to 2000. The mining and mineral processing industries grew by 1 percent. All of these industries combined represented about 1 percent of total employment in the Plan area in 2000. Only a portion of these jobs are associated with federal lands.

Based on these data and the lack of direct ties to goods and services affected by implementing the Plan, conclusions about changes in employment relating to the Plan are not possible.

#### **Recreation—**

Swanson and Loomis (1993) estimated that forest-based recreation associated with the national forest and BLM lands under the Plan stood at 132.8 million visits in 1990. These visits included activities such as off-road vehicle use, sightseeing, hiking, camping, hunting, fishing, boating, rafting, bicycling, and winter sports. Measuring the number of people employed in association with these activities is not easy. But Radtke and Davis (1993) estimated that 17,000 to 23,000 full-time jobs were associated with the coastal tourism industry, and between 50,000 and 80,000 full-time-equivalent jobs were associated with recreation on federal forest lands in the region in the early 1990s. Because of the land-allocation strategies in the Plan, employment gains were expected in some of the recreation and tourism industries. Tuchman et al. (1996) concluded that not enough is known to reliably estimate the effects of Plan implementation on jobs and income associated with forest-based recreation. The finding is true today, but an analysis of current recreation data provides an indication about the importance and status of this industry in the region and a potential benchmark for future use.

The first round of visitor use monitoring on FS lands took place between 2000 and 2003. This inventory found that the average annual number of visits to Plan-area forests is 26.5 million visits (see volume II, chapter 6). Recent data

for average annual recreation use associated with BLM lands in the Plan area totaled about 4.9 million visits in 2002. I converted FS visits to party trips and used these to approximate the job and income effects of expenditures associated with recreation use (Stynes and White 2004). Currently, recreation opportunities provided by national forest lands in the Plan area support about 17.5 thousand direct jobs, and 25.5 thousand total jobs. The recreation-use-associated direct jobs make up less than 1 percent of all employment in the Plan area. The wage income generated from recreation expenditures was \$357.4 million direct, and \$629.6 million total. I was not able to estimate the job and income associated with BLM recreation use; BLM data are not provided in a format necessary for these calculations.

Comparisons with previous estimates of recreation use, jobs, and income are not possible. The dramatic differences in the number of visits reported in 1990 and 2000 are primarily because previous recreation use monitoring methods were inconsistently implemented and produced unreliable results. Some components of recreation use have been accurately reported in the past, however, like developed uses such as downhill skiing.

Almost 40 percent of all federal land recreation visitors participate in developed use activities in the Plan area. The Plan has had little, if any, effect on the existing capacity of developed uses, but future expansion in some areas has been limited, and new development in others is prevented. Changes in recreation use have been affected mostly by changes in total population and population demographics such as age and changing societal values (Cordell et al. 1999).

## **Conclusions**

The expectation that the Plan would provide predictable levels of resource outputs and recreation opportunities, which would in turn provide predictable levels of employment, was not achieved with respect to timber supply. The timber projection for FS and BLM lands in the Plan area was not realized and timber harvest varied a lot over the years since the Plan was implemented. However, increased harvests from other ownerships and the redirection of logs from the export market to local processing industries have mitigated

some of these impacts. The Plan's effect on nontimber resources and recreation opportunities was either minimal or not readily discernable.

Federal public lands continue to be an important part of the forest base in the Pacific Northwest, but the amount of forest resources, specifically timber, that support consumptive and commercial uses has lessened along with the relative importance of federal forest resource-related employment and income. Timber outputs from FS and BLM lands vary around a much lower level than before the Plan. Initial projections in the loss of timber-related employment were realized. Recreation uses of these lands will likely increase as will recreation-related employment.

Data associated with nontimber resources and recreation outputs were scarce during plan development. At that time, the agencies could not predict the effect of the Plan standards and guidelines on nontimber commodity and non-commodity products, uses, and services from the region's forests. The data are still not available, and information on relationships are generally not known. There has been little clarification of the short- and long-term economic effects expected on municipal and nonfederal water systems, grazing, minerals, special forest products, recreation residences, and recreation facilities.

Because the economic contribution of all forest resources to the regional economy of the Plan area in 2000 is small, continued implementation of the Plan will not likely change existing economic conditions and trends in the Plan area overall. But as noted earlier, resources and effects of the Plan are not evenly distributed. Subregions, individual businesses, and individuals are not affected equally.

### Metric Equivalent

Board feet log scale  $\times$  0.00453 = cubic meters

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## Chapter 4: Agency Jobs, Unit Reorganizations, and Budgets

*Claudia Stuart*

The Forest Service (FS) and Bureau of Land Management (BLM) may be among the few sources of quality jobs in rural, forest-based communities. Agency jobs are an important socioeconomic benefit associated with federal forests. Agency employees contribute substantially to community capacity in the forest-based communities where they reside. The presence of agency employees and decisionmakers plays a key role in influencing community-agency collaborative relations. Agency staffing and budgets determine how effectively forests are managed and policies are implemented. And agencies and their employees spend money in local communities, supporting local businesses.

Agency jobs generally pay well, offer benefits, have opportunities for training and advancement, and are conducted in safe working environments. The FS and BLM have historically offered many permanent full-time and seasonal or part-time jobs in local communities. Part-time jobs are especially important for young people looking for summer work, and people who engage in a number of different pursuits, providing a stable component of a broader livelihood strategy. Thus, agency jobs are an important socioeconomic benefit associated with federal forest lands in the Northwest Forest Plan (the Plan) area.

Not only are federal jobs highly valued, but federal employees and their spouses are often well educated and active in their communities. They may be volunteers in local schools, fire departments, and civic groups and serve as local political leaders. They contribute substantial human capital that enhances the capacity of forest communities.

Agency staffing levels play a critical role in shaping organizational effectiveness. The Forest Ecosystem Management Assessment Team (FEMAT) recognized this central role in formulating the Plan by stating “The greatest impact on the implementation of any plan is the availability of adequate resources (staff and budget) to carry out the expected tasks” (FEMAT 1993: VIII-40).

Improving collaborative relations with local communities was an important Plan goal. Meaningful collaboration between federal agencies and local communities requires that community members have ongoing access to federal

decisionmakers. Interactions between local people and agency employees also help build trust. Thus, local agency staffing levels, as well as the presence of local agency offices and decisionmakers, affect relationships between agencies and community members.

This chapter evaluates trends in agency jobs and agency office distribution during the first 10 years of the Plan. We identified agency budget allocations as a potential explanatory factor affecting the number of agency jobs and offices. To better understand the role played by budgets, I evaluate budget trends at several scales across the study period. I assess the role of the Plan in contributing to these trends. Table 4-1 identifies the Plan-area units included in these analyses. Appendix C contains additional information on methods used in the analyses.

**Table 4-1—Northwest Forest Plan units included in this analysis**

Agency and state	National forests/ BLM districts
Forest Service:	
Washington	Gifford Pinchot NF Mount Baker-Snoqualmie NF Okanogan NF Olympic NF Wenatchee NF
Oregon	Deschutes NF Mount Hood NF Rogue River NF Siskiyou NF Siuslaw NF Umpqua NF Willamette NF Winema NF
California	Klamath NF Mendocino NF Shasta-Trinity NF Six Rivers NF
Bureau of Land Management (BLM):	
Oregon	Coos Bay District Eugene District Medford District Roseburg District Salem District

## Agency Jobs

### Monitoring Question

How did the number and type of FS and BLM jobs change on Plan-area forest units after the Plan was adopted?

### Expectations

The final supplemental environmental impact statement (FSEIS) for the Plan estimated that rural communities in the Plan area would lose fewer than 2,000 FS jobs under the preferred alternative (alternative 9) or the other more timber-intensive alternatives. It estimated that between 2,000 and 3,000 FS jobs would be lost under alternatives producing less timber (USDA and USDI 1994: 3&4-311). Potential staffing changes were not estimated for the BLM.

### Methods

Data describing staffing of FS Plan-area units in Oregon and Washington were readily available from the Pacific Northwest Region (Region 6) Office of Budget and Financial Management in Portland, Oregon. Data describing staffing of FS Plan-area units in California were obtained from the FS Pacific Southwest Region (Region 5) Office of Human Resources in Vallejo, California. Data describing staffing among BLM Plan-area units in Oregon were obtained from the Budget Department of the BLM Oregon State Office in Portland, Oregon. The preliminary staffing analysis was returned to these offices for review.

Staffing is enumerated in full-time equivalents (FTEs). Data describing FTEs were available for all units studied for 1993–2002. The available data class FTEs as permanent full-time (PFT) or “other.” “Other” positions include full- and part-time, temporary and seasonal positions. I assessed staffing at both the Plan-area and local unit scales.

## Results

### Regional scale—

Trends in aggregate staffing differed between the FS and BLM units in the Plan area, with FS units experiencing sharper aggregate declines than BLM units (fig. 4-1). The FS units lost 3,066 FTEs, with unit-level staffing declining

from 8,431 in 1993 to 5,365 in 2002. This loss represented more than a third (36 percent) of the total staffing at the start of the period. By far the largest staffing losses were in 1993 and 1994, with 49 percent (1,516) of the decade’s losses. A gain in FS unit aggregate staffing in 2001 was mostly lost the next year.

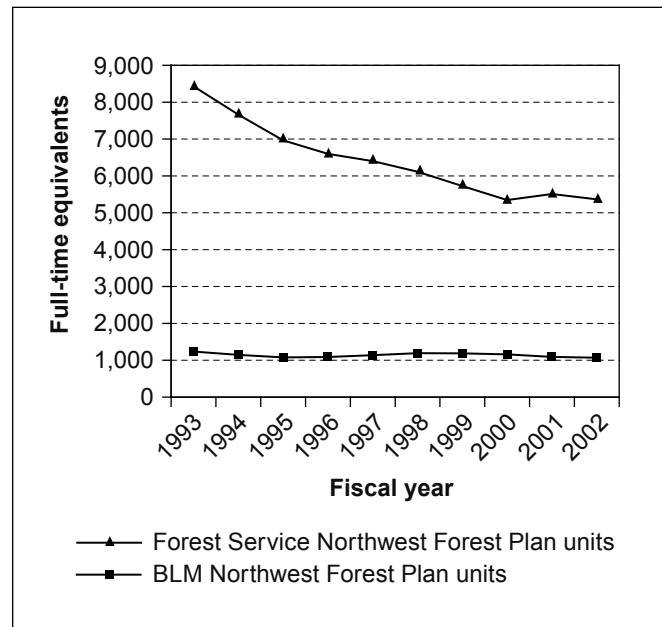


Figure 4-1—Plan-area aggregate unit staffing by agency, 1993–2002. Source: Forest Service Pacific Southwest and Pacific Northwest regional offices, Bureau of Land Management (BLM) Oregon State Office.

Although total FTEs also fell on BLM Plan-area units, staffing was cyclical, with some interim gains from 1996 through 1998. Total staffing losses were much less severe than on FS units, with a decrease of 166 FTEs (13 percent) over the period. With these losses, BLM Plan-area units went from 1,236 staff in 1993 to 1,070 in 2002.

Staffing data classified into PFT versus “other” were available for all FS units for FY 1995 to 2002 only (fig. 4-2). Trends in staffing losses for these years were less severe than in the previous 2 years. Although total PFT positions declined in all years, the proportion of total staffing in these positions increased slightly, from 65 to 67 percent. The absence of data before 1995 makes it impossible to determine whether a higher percentage of “other” positions were in the work force before the Plan was adopted.

“Other” positions lost fewer FTEs, but declined relatively more rapidly (-30 percent), decreasing from 35 percent of positions in 1995 to 32 percent of FTEs in 2002. “Other” positions increased by 13 percent in 2001, but lost more than half of this gain the following year.

Data stratifying Oregon BLM unit positions into PFT versus “other” were available for 1993 through 2002 (fig. 4-3). Both classes of positions saw losses during the period: 12 percent of PFT positions were lost, and “other” positions declined by 18 percent. The relative proportion of staffing constituted by each class remained almost unchanged, however, with PFT positions making up 81 percent of all FTEs in 1993 and 82 percent of all positions in 2002.

**Local scale—**

Unit staffing data are available for FS and BLM Plan-area units for 1993 through 2002. The data describing staffing on FS units that consolidated during this period (the Fremont with the Winema, the Rogue River with the Siskiyou, and the Okanogan with the Wenatchee National Forests) were combined for the entire period (fig. 4-4).

Staffing fell on every unconsolidated FS Plan-area unit. Declines were most severe on units in Oregon and Washington. With the exception of the Deschutes, staffing declines on these units ranged from more than one-third to more than one-half. The Gifford Pinchot saw the largest proportional decrease in staffing, with a loss of 356 FTEs (57 percent). The Mount Hood saw the largest decline in absolute numbers, with 363 FTEs (55 percent) lost. Similar declines affected the region’s smallest staffs, with the Olympic and Siuslaw units declining by 54 and 52 percent. Staffing declines on the Mount Baker-Snoqualmie, Willamette, and Umpqua were also sharp, at 48, 43, and 38 percent, respectively. In contrast, the Deschutes National Forest lost 17 percent of its staff. Although interim staffing increases were made on some of the region’s units during the study period, this gain was maintained through 2003 only on the Deschutes.

The four California forests experienced staffing declines of less than one-third, ranging from 4 to 31 percent. Of these four units, the Klamath had the largest absolute and proportional decline in staffing, with a loss of 195

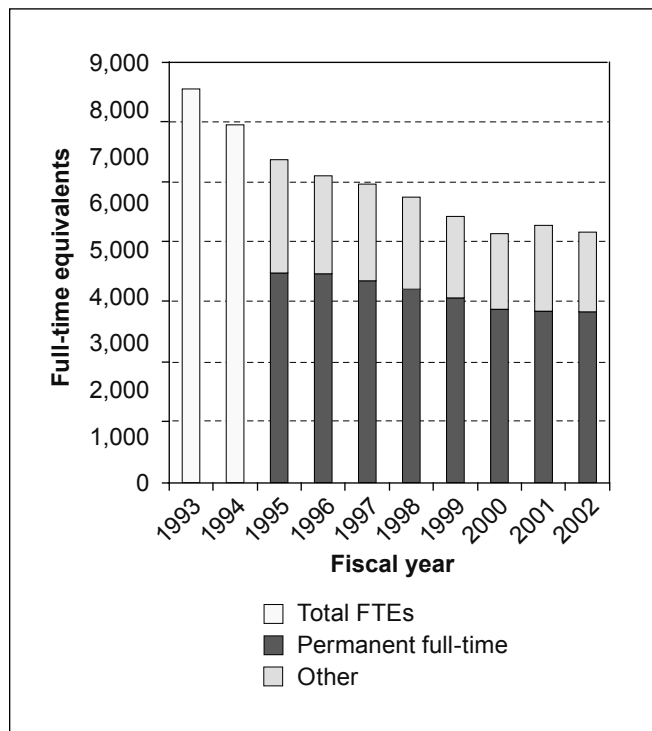


Figure 4-2—Forest Service aggregate Plan-area unit staffing composition, 1993–2002. Source: Forest Service Pacific Southwest and Pacific Northwest regional offices.

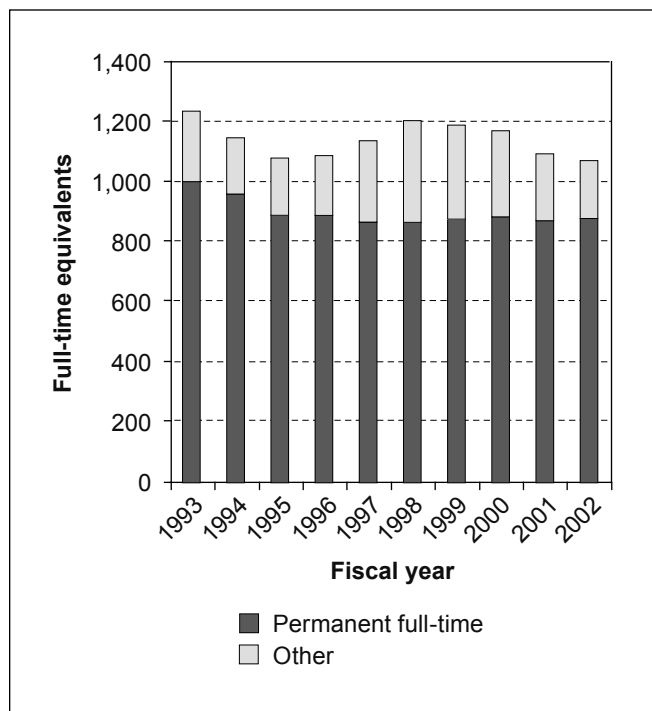


Figure 4-3—Oregon Bureau of Land Management aggregate Plan-area unit staffing composition, 1993–2002. Source: Bureau of Land Management (BLM) Oregon State Office.

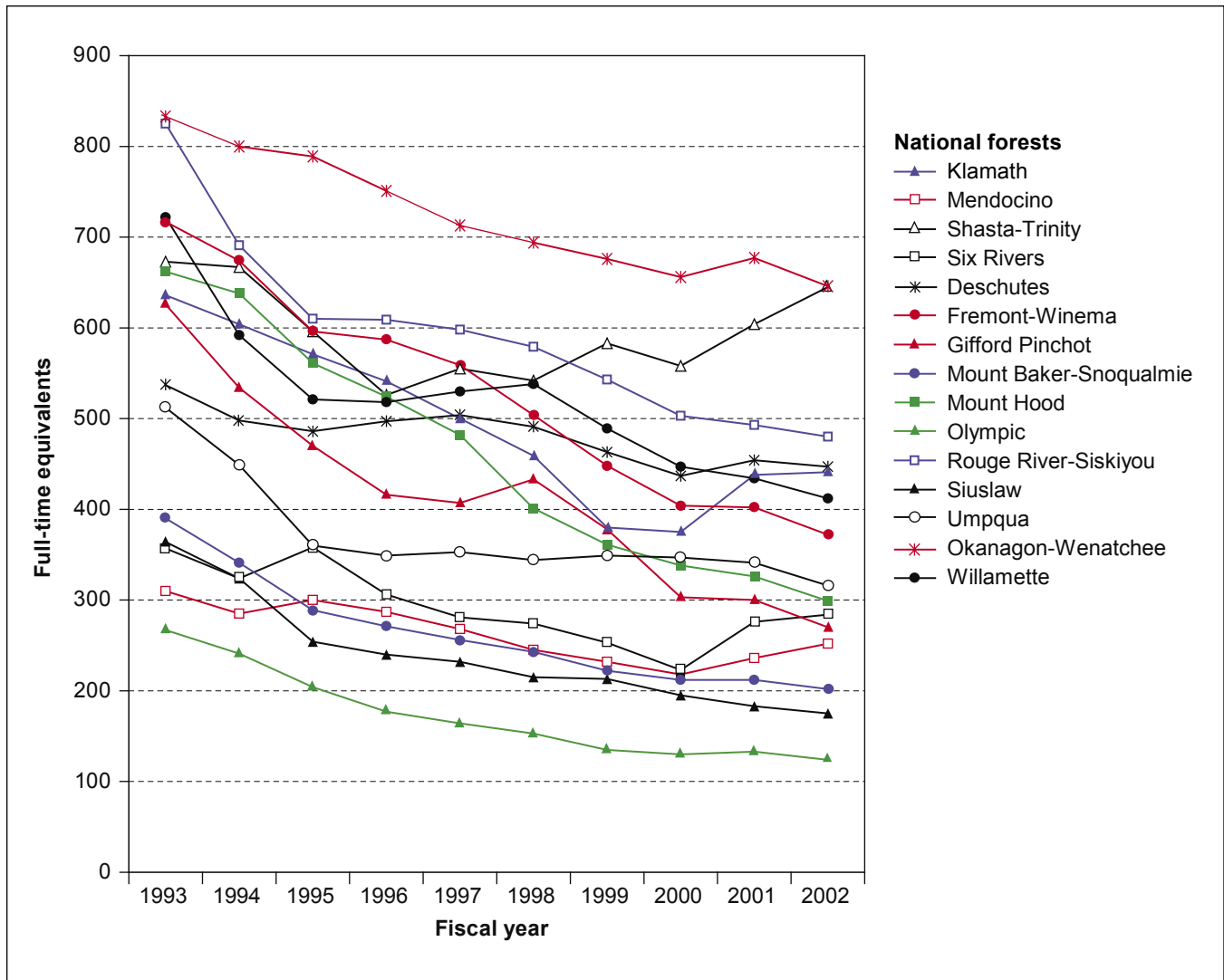


Figure 4-4—Forest Service individual Plan-area unit staffing, 1993–2002. Source: Forest Service Pacific Southwest and Pacific Northwest Regional Offices.

FTEs. The Shasta-Trinity had the smallest staffing decline of any Plan-area unit (4 percent), with all but the initial 2 years of losses offset by later gains in FTEs. On the Klamath, Mendocino, and Six Rivers units, gains in staffing were made in each of the last 2 years, pushing final staffing back to 1998 or 1999 levels.

Declines in staffing among four of the five BLM units (fig. 4-5) were comparable to those on FS California units. These BLM units had net declines over the period. Total staff size and changes were similar among the Eugene, Roseburg, and Coos Bay Districts, and the larger Salem District reflected a similar cyclical trend. The Eugene

District had the largest staffing loss, with 24 percent of positions (56 FTEs) lost. The Coos Bay District had the smallest decrease, with 15 percent (30 FTEs) lost.

The much larger Medford District staff was an exception. After losing positions from 1993 to 1995, Medford gained FTEs in 1996 through 1999 and maintained a net increase of 2 percent (5 FTEs) over the period. With its almost unchanged staffing levels in the context of declines on other BLM units, the Medford staff grew from being 25 percent larger than the next-largest district in 1993, to being 54 percent larger than any other BLM Plan-area staff in 2002.

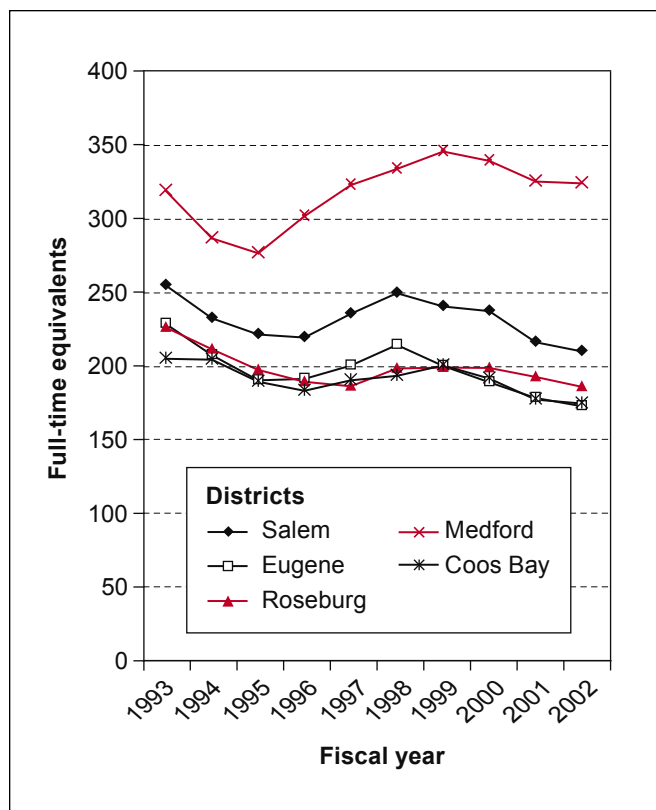


Figure 4-5—Bureau of Land Management individual Plan-area unit staffing, 1993–2002. Source: Bureau of Land Management Oregon State Office.

## Discussion

In the context of staffing losses, staffing composition between the two position classes studied (PFT and “other”) changed little across the period. The FS human resources staff believes, however, that many positions classed as “other” in the latter half of the period represent seasonal fire employment, particularly in Region 5.

Among FS units, all but one Region 6 national forest lost more than a third of staffing. The California and Deschutes National Forests lost less than a third of their staffs. Staffing declines on four BLM units were similar to those on California national forests, while the larger Medford unit increased its staffing over the period.

## Unit Reorganizations

One potential effect of reductions in agency staffing levels is office closures. I analyzed how the number of agency offices housing decisionmakers changed during the study

period, to see whether reductions in agency staffing also affected the level and type of agency presence in local communities.

## Monitoring Question

How did the total presence and geographic distribution of agency offices containing unit-scale decisionmakers change between 1990 and 2004?

## Expectations

Although the Plan projected staffing losses for the FS, it did not include expectations for a future distribution of agency offices given the forecasted downsizing. The FEMAT did, however, identify the potential for impacts from local agency office closures among rural communities (FEMAT1993: VII-72):

Workshop panels from all three states indicated that the community capacity of some isolated, small communities is enhanced by a Forest Service or Bureau of Land Management District office in their community. Removal of these offices might devastate some of these “dependent” communities.

## Methods

I selected the distribution of offices housing field-unit line officers as an indicator to measure the presence of empowered agency officials, agency employees, and job opportunities in Plan-area communities. I solicited data for 1990 and 2004 from each national forest and BLM district public affairs office within the Plan area. The assembled results were returned to these offices for confirmation and review.

## Results

In the Plan area there were 17 FS supervisor offices and 79 district ranger offices in 1990 (fig. 4-6). By 2004, these numbers had decreased to 15 forest supervisor offices and 59 district ranger offices (fig. 4-7, table 4-2). This change represented a 23 percent decrease in the number of Pacific Northwest communities with FS line officers.

In 1990, 24 line officers led local BLM Plan-area units, excluding associate district managers. In 2004,

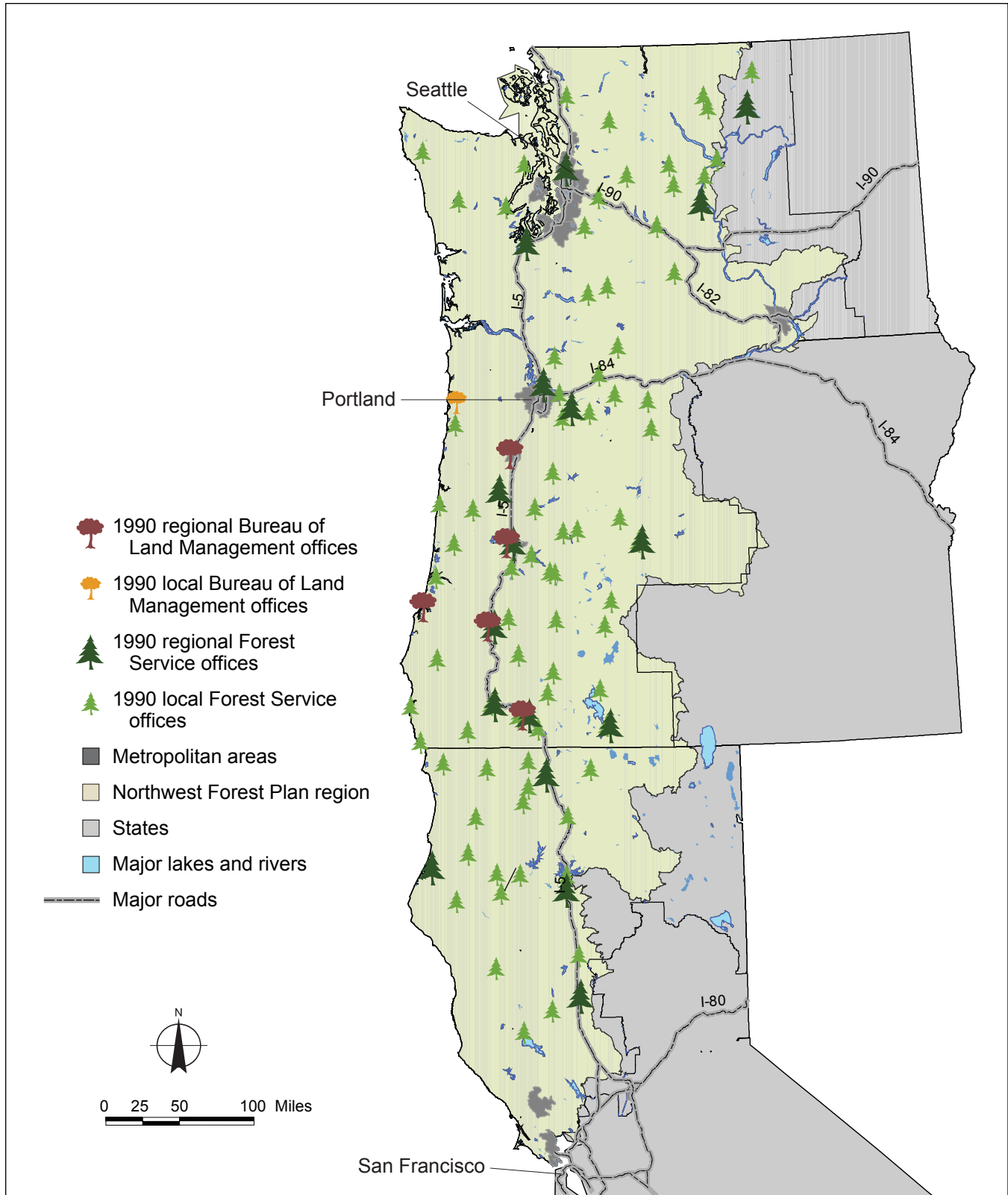


Figure 4-6—Locations of Forest Service and Bureau of Land Management line officers, 1990.

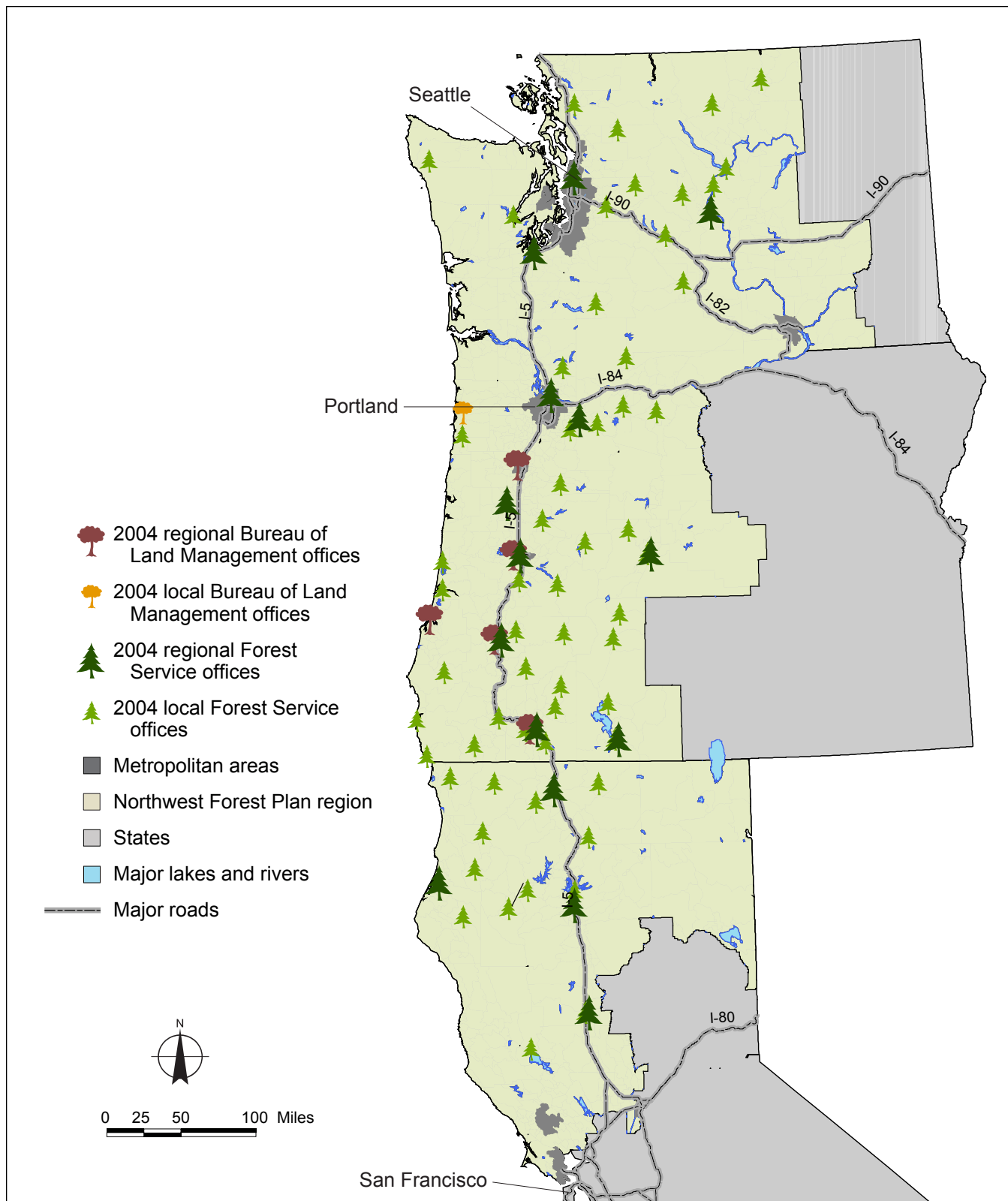


Figure 4-7—Location of Forest Service and Bureau of Land Management line officers, 2004.

**Table 4-2—Locations of Forest Service and Bureau of Land Management offices with line officers, 1990 and 2004<sup>a</sup>**

State	1990	2004
Forest Service: <sup>b</sup> Washington	<p><b>Vancouver<sup>c</sup> (Gifford Pinchot SO)</b> Randle Trout Lake (Mount Adams RD) Amboy (Mount St. Helens NM) Packwood Carson (Wind River RD)</p> <p><b>Mountlake Terrace (Mount Baker-Snoqualmie SO)</b> Sedro Woolley (Mount Baker RD) Darrington Skykomish North Bend Enumclaw (White River RD)</p> <p><b>Wenatchee (Wenatchee SO)</b> Chelan Cle Elum Entiat Lake Wenatchee Leavenworth Naches</p> <p><b>Okanogan (Okanogan SO)</b> Winthrop Twisp Tonasket</p> <p><b>Olympia (Olympic SO)</b> Hoodsport (Hood Canal RD) Quilcene Quinault Forks (Soleduck RD)</p>	<p><b>Vancouver (Gifford Pinchot SO)</b> Randle (Cowlitz Valley RD) Trout Lake (Mount Adams RD) Amboy (Mount St. Helens NM)</p> <p><b>Mountlake Terrace (Mount Baker-Snoqualmie SO)</b> Sedro Woolley (Mount Baker RD) Darrington Skykomish North Bend (Snoqualmie RD)</p> <p><b>Wenatchee (Okanogan and Wenatchee SO)</b> Chelan Cle Elum Entiat  Leavenworth (Lake Wenatchee/Leavenworth RD) Naches  Winthrop (Methow Valley RD)  Tonasket</p> <p><b>Olympia (Olympic SO)</b> Hoodsport (Hood Canal RD)  Forks (Soleduck RD)</p>
Oregon	<p><b>Bend (Deschutes SO)</b> Bend Crescent Sisters</p> <p><b>Medford (Rogue River SO)</b> Jacksonville (Applegate RD) Ashland Butte Falls Prospect</p> <p><b>Grants Pass (Siskiyou SO)</b> Brookings (Chetco RD) Grants Pass (Galice RD) Gold Beach Cave Junction (Illinois Valley RD) Powers</p> <p><b>Corvallis (Siuslaw SO)</b> Alsea Waldport (Alsea/Waldport RD) Hebo</p>	<p><b>Bend (Deschutes SO)</b> Bend Crescent Sisters</p> <p><b>Medford (Rogue River and Siskiyou SO)</b> Jacksonville (Applegate RD) Ashland Butte Falls Prospect</p> <p>Brookings (Chetco RD) Grants Pass (Galice RD) Gold Beach Cave Junction (Illinois Valley RD) Powers</p> <p><b>Corvallis (Siuslaw SO)</b>  Hebo</p>



**Table 4-2—Locations of Forest Service and Bureau of Land Management offices with line officers, 1990 and 2004<sup>a</sup> (continued)**

State	1990	2004
	Mapleton	Florence (South Zone RD)
	Reedsport (Oregon Dunes NRA)	Reedsport (Oregon Dunes NRA)
	Roseburg (Umpqua SO)	Roseburg (Umpqua SO)
	Cottage Grove	Cottage Grove
	Tiller	Tiller
	Toketee (Diamond Lake RD)	Toketee (Diamond Lake RD)
	Glide (North Umpqua RD)	Glide (North Umpqua RD)
	<b>Eugene (Willamette SO)</b>	<b>Eugene (Willamette SO)</b>
	Westfir (Oak Ridge RD)	Westfir (Middle Fork RD)
	Oakridge (Rigdon RD)	
	Lowell	
	Blue River	
	McKenzie Bridge (McKenzie RD)	McKenzie Bridge (McKenzie River RD)
	Sweet Home	Sweet Home
	Mill City/Detroit (Detroit RD)	Mill City/Detroit (Detroit RD)
	<b>Sandy (Mount Hood SO)</b>	<b>Sandy (Mount Hood SO)</b>
	Dufur (Barlow RD)	Dufur (Barlow RD)
	Maupin (Bear Springs RD)	
	Estacada (Clackamas RD)	Estacada (Clackamas RD)
	Troutdale (Columbia Gorge RD)	
	Mount Hood-Parkdale (Hood River RD)	Mount Hood-Parkdale (Hood River RD)
	Zigzag	Zigzag
	<b>Klamath Falls (Winema SO)</b>	<b>Klamath Falls (Winema SO)</b>
	Chemult	Chemult
	Chilquin	Chilquin
	Klamath Falls (Klamath RD)	Klamath Falls (Klamath RD)
California	<b>Yreka (Klamath SO)</b>	<b>Yreka (Klamath SO)</b>
	Klamath River (Oak Knoll RD)	
	Happy Camp	Happy Camp
	Etna (Salmon River RD)	
	Mount Hebron (Goosenest RD)	Mount Hebron (Goosenest RD)
	Orleans (Ukonom RD) <sup>d</sup>	
	Fort Jones (Scott River RD)	Fort Jones (2 districts—Salmon River and Scott River RDs)
	<b>Willows (Mendocino SO)</b>	<b>Willows (Mendocino SO)</b>
	Covelo	
	Upper Lake	Upper Lake (Covelo and Upper Lake RDs)
	Stonyford	Willows (Grindstone RD)
	Corning	
	<b>Redding (Shasta-Trinity SO)</b>	<b>Redding (Shasta-Trinity SO)</b>
	Big Bar	
	Hayfork (Yolla Bolla and Hayfork RDs)	Hayfork (Hayfork and Yolla Bolly RDs)
	Weaverville (Weaverville and Redding RDs)	Weaverville (Big Bar and Weaverville RDs)
	Mountain Gate/Redding (Shasta Lake RD)	Mountain Gate/Redding (Shasta Lake RD)
	Mount Shasta (Mount Shasta and McCloud RDs)	McCloud (Mount Shasta and McCloud RDs)
	<b>Eureka (Six Rivers SO)</b>	<b>Eureka (Six Rivers SO)</b>
	Orleans (Orleans RD)	Orleans (Orleans RD)
	Willow Creek (Lower Trinity RD)	Willow Creek (Lower Trinity RD)
	Bridgeville (Mad River RD)	Bridgeville (Mad River RD)
	Gasquet (Smith River NRA)	Gasquet (Smith River NRA)

**Table 4-2—Locations of Forest Service and Bureau of Land Management offices with line officers, 1990 and 2004<sup>a</sup> (continued)**

State	1990	2004
Bureau of Land Management: Oregon		
	<b>North Bend</b> (Coos Bay District Manager and 3 resource area managers)	<b>North Bend</b> (Coos Bay District Manager and 2 field managers)
	<b>Eugene</b> (District Manager and 3 resource area managers)	<b>Eugene</b> (District Manager and 2 field managers )
	<b>Salem</b> (District Manager and 4 resource area managers)	<b>Salem</b> (District Manager and 1 field manager)
	<b>Tillamook</b> (resource area manager)	<b>Tillamook</b> (field manager)
	<b>Medford</b> (District Manager and 4 resource area managers)	<b>Medford</b> (District Manager and 4 field managers)
	<b>Roseburg</b> (District Manager and 4 field managers)	<b>Roseburg</b> (District Manager and 2 field managers)

Note: SO = supervisor’s office, RD = ranger district office, NM = national monument office, NRA = national recreation area office.

<sup>a</sup> Locations of Forest Service supervisors’ offices and Bureau of Land Management district offices are distinguished by boldface.

<sup>b</sup> Forest Service data omit deputy forest supervisors and assistant district rangers.

<sup>c</sup> Place names are shown. Where place name and ranger district name differ, both are provided.

<sup>d</sup> Administration of the Ukonom RD moved from the Klamath NF to the Six Rivers NF in 1999.

although more than one-quarter of these positions had been lost (table 4-2), the number and location of offices housing line officers remained unchanged.

### Discussion

Although the number of local line officers shrank by roughly one-fifth to one-quarter for both agencies, consolidations were structured differently. The number of communities hosting FS line officers decreased significantly. In some instances, a FS office persists in these communities, although with fewer employees. In other cases, offices closed and no FS employees are working in the communities.

In general, BLM offices are in larger cities in western Oregon, with several line officers (resource area managers) at each office. Although some resource areas were consolidated or eliminated, there was no change in the number of communities hosting BLM line officers.

### Budgets

I examine budget allocations as a potential explanatory factor for the staffing and office consolidation trends identified by the monitoring effort. To understand whether the Plan was related to trends in unit budgets, I compare Plan-area allocations to agency allocations at the national scale. To

understand variation in management effectiveness between the two land management agencies, among local units, and among programs, I compare budget trends for each of these strata.

### Monitoring Question

How did budget allocations to Plan-area units change during the Plan period?

### Expectations

The FEMAT expected changing budgetary processes to accompany the Plan (FEMAT 1993: VIII-40):

The current budget process may not be compatible with integrated resource management, particularly one such as proposed here. The magnitude of the changes will require a change in the way Congress allocates budgets, particularly for the land-managing agencies who previously received funds based on an assessment of commodity and other resource-based output.

Neither FEMAT (1993) nor the FSEIS (USDA and USDI 1994) provided estimates of the funding needed by agency field units or programs to accomplish ecosystem management as envisioned under the Plan.

## Methods

I assessed agency budgets at the national, Plan region, and local unit scales. Total spending authority for both the FS and BLM was taken from the budget of the United States for fiscal years 1996 through 2005 (GPO 1996–2005). I requested data describing final, total annual allocations to Plan units from agency regional offices. This information was available for 1993 through 2003. Data describing allocations to FS units in Washington and Oregon are based on the annual Final Interior Appropriations Bill, as allocated to Region 6 by the FS Washington Office Program and Budget Advice. These data were made available by the FS Region 6 Office of Budget and Financial Management in Portland, Oregon. Data describing allocations to FS units in California were compiled for this project by the Region 5 Office of Program Development and Budget in Vallejo, California, to be comparable with the available Region 6 data. Data describing allocations to BLM units in Oregon were obtained from the Budget Department of the BLM Oregon State Office in Portland, Oregon. The preliminary analysis was returned to these offices for review.

Unit-scale data describe budget allocations to individual units by program area, budget line item, and expanded budget line item. I present these data by total allocations to individual units. I also use the data to describe aggregate allocations to each agency's Plan units, as well as aggregate allocations to Plan units by selected program.

Available data differed among FS regions, and between the FS and the BLM. The analysis of FS budgets excludes federal highway emergency relief and administration funds, as these data were not readily available for Region 6. The data were available for Region 5, however, and indicated that emergency highway funding has had a significant, although intermittent, effect on some unit budgets during the period. The case studies summarized in volume III, chapter 8 found that this type of funding also affected budgets among Region 6 units.

Regional BLM data include emergency highway relief funds, as well as line items under which other large sums of funding were intermittently allocated for items such as construction or land acquisition. Such large, intermittent bursts of one-time-only or emergency funds were

isolated in the analysis on the advice of BLM budget staff, as potentially skewing the data toward unusual expenses. Although the FS data include comparable types of funding, FS allocations for unusual or intermittent expenses did not appear to be large enough to skew results. For these reasons, although fire and fuel management is isolated in both the FS and BLM budget analyses, other unusual, intermittent, or emergency funds are isolated only within the BLM budget analysis. Funds allocated to BLM units under the Secure Rural Schools and Community Self-Determination Act, shown in BLM records for FY 2003 only, were also isolated during analysis, to enhance comparison to FS data. Overall, these exclusions affect the way funding is analyzed in two BLM program areas: "Oregon and California" allocations, and allocations under "other" appropriations.

Program scope also differs between the FS and the BLM. National Forest System activities are one component of FS budgets. National Forest System funds are authorized to support a wide range of ecosystem management programs implemented under the Plan. Several other budget components, including Research, State and Private Forestry, and Capital Improvements and Maintenance, are included in aggregate funding figures but not addressed separately. Fire and fuel management, a major agency program, has grown rapidly since the mid-1990s, indicating a potential change in investment priorities among the agencies and forests. In addition to National Forest System and fire funding, I examine change in FS permanent and trust funds, which are based in part on the assessment of timber and other commodity outputs. Permanent and trust funding levels affected, and were affected by, implementation of the Plan.

The BLM budgets are structured differently. Management of BLM land in the Plan area of western Oregon is primarily funded through the Oregon and California Grant Lands (O&C) appropriation. These funds are appropriated for expenses necessary for managing, protecting, and developing resources; and for building, operating, and maintaining access roads, reforestation, and other improvements on the revested O&C grant lands, on other federal lands in the O&C land-grant counties of Oregon, and on adjacent rights-of-way. The O&C appropriations also fund acquisition of land, including existing connecting roads on or adjacent to

O&C grant land. As with the FS, BLM also receives funds authorized by Congress for fire and fuel management. To a lesser degree, BLM also receives some funding from the management of land and resources appropriation, as well as funding from a few permanent and trust funds. I examine the role of BLM's various funding sources as they support Plan implementation.

All budget data presented here have been adjusted to constant dollars by using 2003 as the base year. Gross domestic product (GDP) deflators were provided by the FS Washington Office.

**Results**

**National scale—**

National-scale agency budget trends provide an agency-wide context for assessing change in Plan-area unit budget allocations. Data describing agency budget authorizations were readily available for 1994 through 2003 (fig. 4-8). The FS and BLM agency funding authorizations grew rapidly during this period. Total FS budget expanded by 41 percent, from \$4.2 billion to \$5.9 billion. Although smaller, BLM budgets escalated more rapidly, growing from \$1.4 billion in 1994 to \$2.4 billion in 2003, an increase of 79 percent.

Most of these increases were due to escalating funds for fire and fuel management. Net fire and fuel appropriations for the FS grew by more than \$1.4 billion (212 percent). In 1994, net fire and fuel management appropriations of \$665 million were 16 percent of the agency total. By 2003, fire and fuel appropriations had grown to \$2.1 billion, and were 35 percent of the agency's total budget authorization.

Net appropriations for BLM fire and fuel management, although smaller, grew even more quickly. In 1994, net fire and fuel management appropriations of \$137 million were 10 percent of the BLM total budget. By 2003, fire and fuel appropriations had grown to \$849 million, and, as in the FS, were 35 percent of the total agency budget.

Other budget authorizations grew more slowly, particularly within the FS. Excluding fire and fuel management, FS funding rose by 9 percent. The BLM nonfire funding grew by 29 percent.

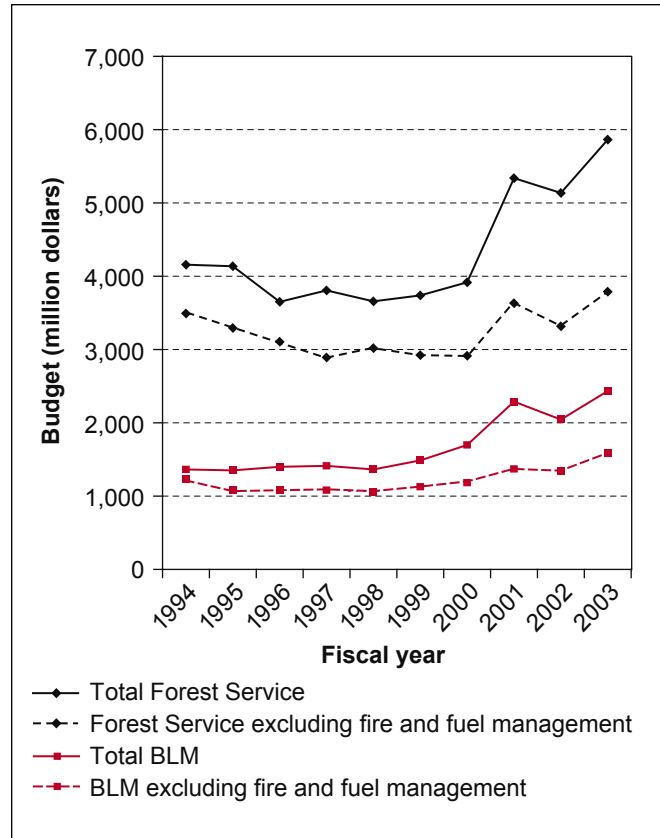


Figure 4-8—Forest Service and Bureau of Land Management (BLM) agency budget authority, 1994-2003. Base year is 2003. Source: Government Printing Office, Budget of the United States 1996–2005.

**Regional scale—**

Data describing forest unit allocations were readily available for 1993–2003 (fig. 4-9). Trends in aggregate allocations to Plan units during this period showed increasing fire and fuel costs outstripping other allocations for both agencies. Otherwise, budget trends differed widely between agencies.

Total allocations to FS field units fell by 35 percent between 1993 and 2003, from \$539 million to \$349 million. In contrast, total allocations to BLM field units rose by 22 percent during this same period, from \$85 million to \$104 million.

In both the FS and BLM, most of the congressional authorizations for fire and fuel management expenditures are spent at the national and regional scales on cost-sharing arrangements, contracts, regionally based agency firefighting teams, and other investments related to fire suppression.

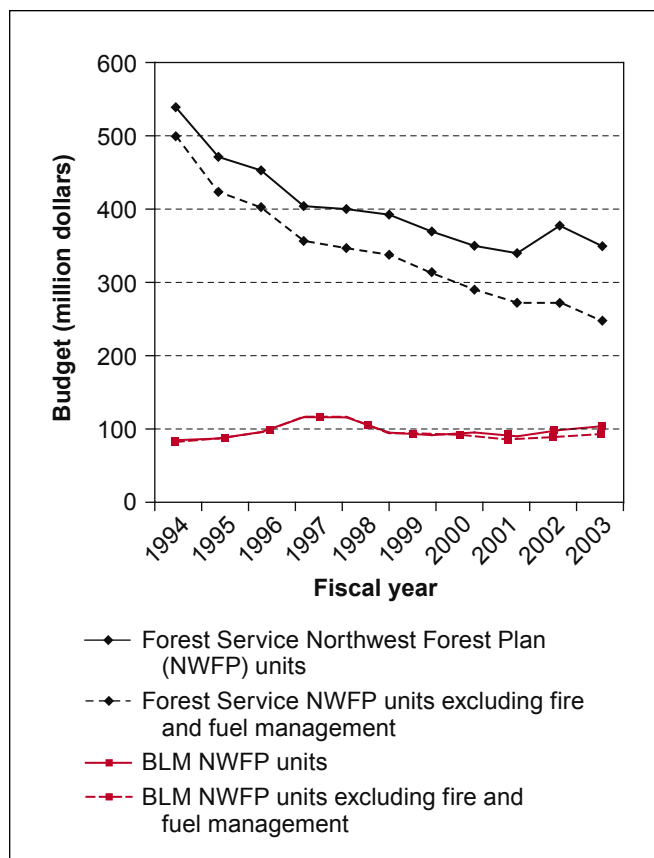


Figure 4-9—Forest Service and Oregon Bureau of Land Management (BLM) Plan-area unit budget allocations, 1993–2003. Base year is 2003. Source: Forest Service Pacific Southwest and Pacific Northwest regional offices, BLM Oregon State Office.

Thus, a relatively small proportion of total fire funding reaches field units. The BLM Oregon State Office commits nearly all the region's fire suppression dollars to a contract through which the State of Oregon handles the region's needs for protection assistance, suppression, and fire preparedness. Fire and fuel management dollars delivered to local BLM units during the period were restricted to rehabilitating burned areas, reducing hazardous fuel, and managing in the wildland-urban interface. Although FS funds for suppression are also spent at national or regional scales, fire and fuel management funding plays a more significant role in allocations to FS field units. It has been dedicated to a wider array of field-unit activities: presuppression, emergency firefighting, and fire protection, as well as fuel reduction and management.

Allocations to manage fire and fuel on FS Plan-area field units grew by 156 percent, from \$40 million to \$102 million. Although fire and fuel allocations were 7 percent of aggregate unit budgets in 1993, they grew to 29 percent of aggregate Plan unit budgets in 2003.

Excluding allocations for fire and fuel management, aggregate budgets for FS Plan-area field units dropped by 50 percent during the study period, falling from \$499 million to \$248 million.

Although relatively small, allocations to manage burned areas and fuel on BLM Plan-area units expanded more than 700 percent, from \$1.6 million to \$13 million. This change represented an increase from 2 percent of aggregate field unit budgets in 1993 to 13 percent in 2003. No funds were allocated to Plan-area BLM field units for fuel management between 1994 and 1997. Excluding fire rehabilitation and fuel management funds, aggregate allocations to BLM field units grew 12 percent, from \$83 million to \$93 million.

**Allocations by program area**—The FS regional records of funding to Plan field units generally divide allocations into six or more program areas. Fire and fuel management, National Forest System management, and permanent appropriations and trust funds were the three largest programs in constant dollars between 1993 and 2003 (fig. 4-10). Budgets for these program areas are examined here.

In the Plan area, aggregate allocations to FS units for fire and fuel management increased by 156 percent. Fire and fuel management costs surged upward while funding to other programs declined.

Aggregate National Forest System program allocations, derived from discretionary appropriations to support inventory and monitoring, recreation and wilderness management, management of vegetation, watersheds, wildlife, and fisheries, and an array of other ecosystem management activities, fell by 44 percent, from \$233 million to \$131 million. Given the general decline in unit allocations, however, the relative proportion of aggregate budgets composed of National Forest System funds declined only slightly, from 43 percent to 37 percent.

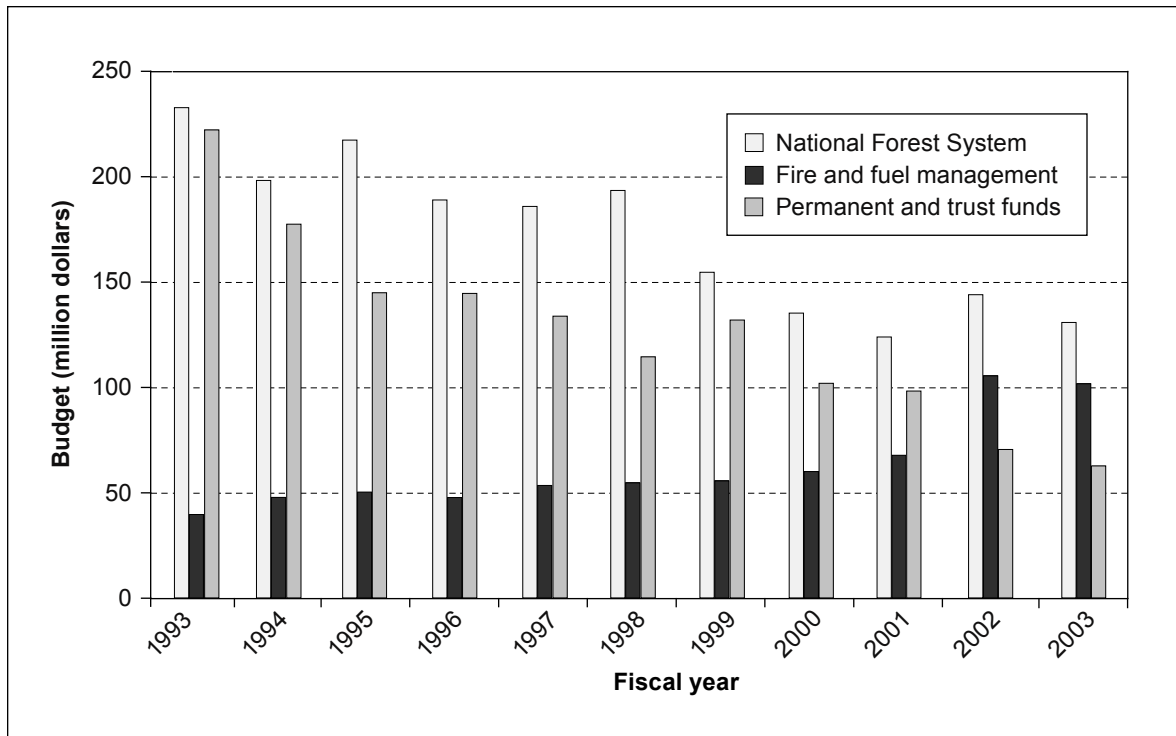


Figure 4-10—Forest Service Plan-area units, largest aggregate program accounts, 1993–2003. Base year is 2003. Source: Forest Service Pacific Southwest and Pacific Northwest regional offices.

Eleven permanent appropriations and three trust funds are also sources of funding to local FS units (USDA FS 2004). Allocations from these sources have been used primarily to fund a range of activities related to timber harvest. Budget authority for these appropriations depends on receipts—primarily timber receipts—generated and passed through by the agency. In the Plan area, FS units experienced a significant decrease in aggregate funding from permanent appropriations and trust funds between 1993 and 2003, mirroring the region’s drop in timber-generated revenues. (See volume II, chapter 2 for discussion of trends in timber harvesting on federal lands.) At the start of the period, allocations from these sources composed 41 percent of aggregate budgets, comparable to the relative proportion of National Forest System funds. Permanent and trust funds fell faster than National Forest System funds, however, dropping 72 percent from \$222 million to \$63 million. By 2003, permanent and trust funds composed just 18 percent of aggregate unit funding.

Allocations to BLM Oregon field units in the Plan area are classed into four program areas (fig. 4-11), all of which are examined here. Allocations in three of four program categories increased between 1993 and 2003. The most rapid increase was in allocations to manage burned areas and fuel on BLM units, which rose by more than 600 percent, from \$1.6 million to \$11 million. Nevertheless, total allocations for fuel management remained relatively small, rising from 2 percent of aggregate field unit budgets in 1993 to only 11 percent in 2003.

Appropriations for management of BLM land and resources are intended to support a wide array of activities under the Plan. They include managing wildlife and fisheries, threatened and endangered species, and recreation, as well as functions such as mining, administering communications sites, and administrative support of the workforce and organization. Although aggregate funds delivered to field units for these purposes more than doubled, increasing

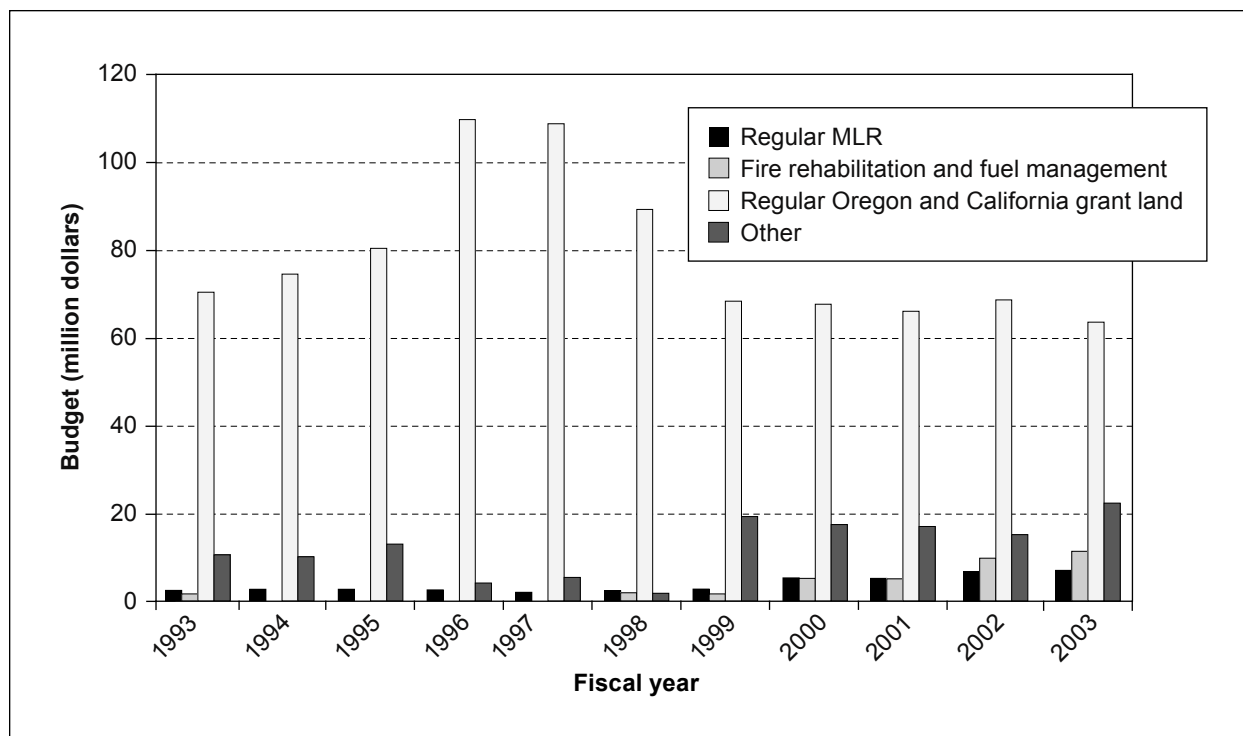


Figure 4-11—Oregon Bureau of Land Management Plan-area units, aggregate budget allocations by program account, 1993–2003. Base year is 2003. MLR = management of land and resources appropriation. Source: Bureau of Land Management Oregon State Office.

by \$4.6 million, they played a minor role in overall funding, growing from 3 percent of aggregate BLM Plan unit budgets in 1993 to 7 percent in 2003.

Funding under the O&C Land Grants Act made up most of BLM field-unit funding throughout the period. This funding decreased from \$70 million to \$64 million but declined more relative to other allocations, from 83 percent of aggregate allocations in 1993 to 61 percent of allocations in 2003. From 1996 to 1998, however, O&C funding was 94 percent of aggregate unit allocations, when more than \$30 million of O&C construction funding was allocated and carried over for several years to make emergency road repairs after an unusually large storm.

“Other” allocations to BLM Oregon units doubled from \$11 million to \$22 million, growing from 12 to 21 percent of aggregate unit budgets during the period. Funds for building, land acquisition, emergency road relief, and—in 2003 only—the Secure Rural Schools Act—are included in this account. These unusual, intermittent, stop-gap, or

emergency funds constituted an increasing proportion of the funding available under this program area. With this funding excluded (fig. 4-12), “other” allocations to BLM units were negligible early in the period, surged to \$17 million in 1999, and dropped to \$7 million by 2003. Most of the surge in “other” allocations was for the timber and recreation pipelines, or the forest health initiative.<sup>1</sup>

#### Local scale—

The Okanogan, Wenatchee, Rogue River, Siskiyou, and Winema National Forests consolidated with other field units during the period of study: the Okanogan with the Wenatchee, and the Winema with the Fremont (outside the Northwest Forest Plan area) in 2002, and the Rogue River with the Siskiyou in 2003. Results for these forests focus on the period before consolidation.

<sup>1</sup>The timber and recreation pipelines were funding allocated to restart the flow of planning for timber sales and recreation projects after timber sale receipts dwindled on Plan-area forests in the early 1990s.

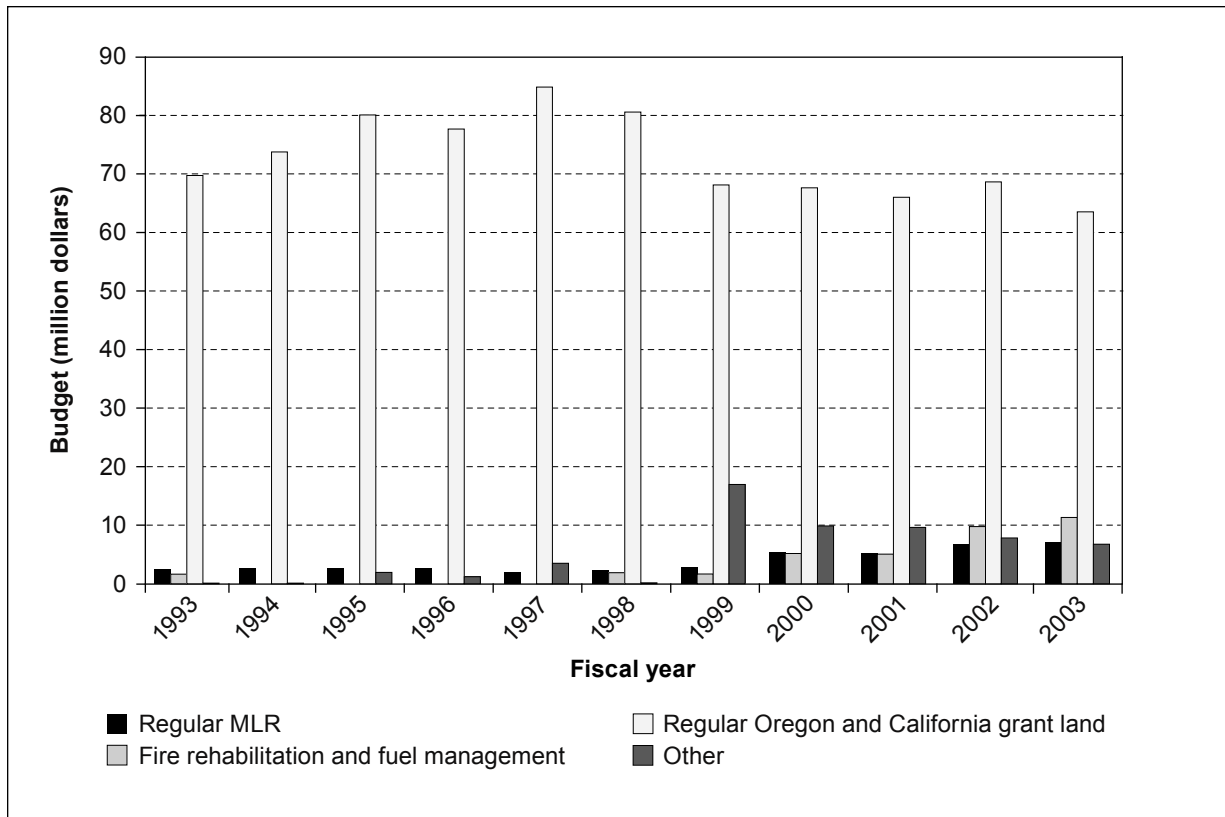


Figure 4-12—Oregon Bureau of Land Management Plan-area units, aggregate budget allocations by program account, with selected exclusions, 1993–2003. Base year is 2003. MLR = management of land and resources appropriation. Source: Bureau of Land Management Oregon State Office.

Total individual unit allocations fell between 1993 and 2003 for every unconsolidated FS unit in the Plan area (fig. 4-13). With two exceptions, declines were most severe for FS units in Oregon and Washington. These units saw budget declines ranging from 41 to 60 percent over the decade. In contrast, total allocations to individual California national forests declined more slowly, falling from 18 to 22 percent. The Deschutes National Forest saw the smallest decrease of any unconsolidated forest, with total allocations diminishing by just 2 percent. Average annual budget declines among all Plan-area units ranged from 0.2 percent on the Deschutes, to under 2 percent on the Wenatchee, Mendocino, and Klamath units, to nearly 6 percent or more on the Gifford Pinchot, Mount Hood, and Winema units (table 4-3).

Allocations for fire and fuel management were excluded from the forest unit budget data in figure 4-14. The data show that nonfire allocations dropped even more

rapidly than total allocations. Among forests that did not consolidate, the Gifford Pinchot and Mount Hood units saw the greatest relative decrease in nonfire budgets (-63 percent), while the Deschutes experienced the smallest relative decline (-30 percent). Nonfire budgets fell within this range for California units, where budgets other than fire and fuel funds decreased between 40 and 50 percent. Among all units, the Deschutes, Wenatchee, and Shasta-Trinity National Forests experienced the smallest annual decline in funds excluding fire and fuels (-3.0, -3.9, and -4.0 percent, respectively), while the Siskiyou, Winema, Gifford Pinchot, and Mount Hood units saw the most rapid annual declines in these funds (-6.7, -6.6, -6.3, and -6.3 percent) (table 4-3).

Individual BLM Plan-area units experienced varying budget trends (fig. 4-15) Total budgets for these units increased between 1 and 65 percent. The Medford District budget saw particularly large growth, primarily associated with fuel treatment work, expanding from \$23 million to



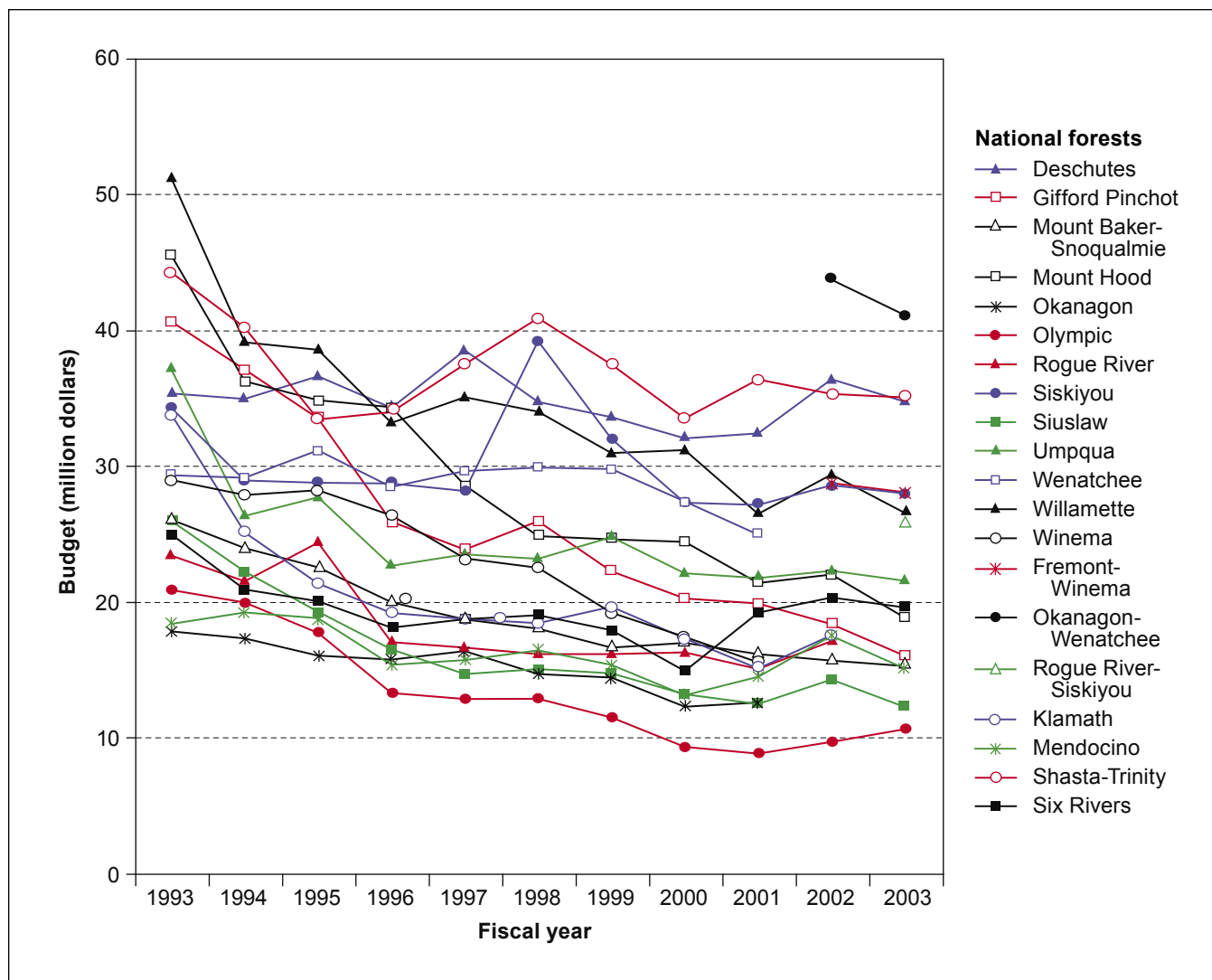


Figure 4-13—Forest Service individual Plan-area unit budget allocations, 1993–2003. Base year is 2003. Source: Forest Service Pacific Southwest and Pacific Northwest Regional Offices.

\$37 million during the period. Funding to the Roseburg District grew by 23 percent. Funding to the Salem District grew by 5 percent, but bulged in the middle of the period when a large amount of O&C construction funding was allocated to the unit and carried over for several years to repair roads after a major storm. Funding for the Eugene and Roseburg Districts grew the least, at 4 and 1 percent, respectively.

Controlling for unusual, infrequent, or emergency costs, as well as for fuel management, reduces BLM unit budget sizes throughout the period and has a varying effect on budget trends (fig. 4-16). Increases in nonfuel funding

for ordinary expenses ranged from 5 percent on the Coos Bay District to 13 percent on the Medford District. This type of funding fell by 4 percent on one unit, the Salem District.

A comparison of total average annual unit allocations to nonfuel, ordinary funding reveals varying trends among BLM units (table 4-3). On the Roseburg and Medford Districts, total funding grew more than two and three times as fast as increases in ordinary nonfuel funds, indicating overall growth concentrated in funding for fire-area rehabilitation, fuel management, or unusual costs. The Salem District also had average annual budget

**Table 4-3—Change in annual allocations to Plan-area units, 1993–2003**

Agency	Unit	Average annual change in total allocations <sup>a</sup>	Average annual change in ordinary, nonfire allocations
		----- Percent -----	
Forest Service:			
Washington			
	Gifford Pinchot	-6.05	-6.30
	Mount Baker–Snoqualmie	-4.12	-4.58
	Okanogan	-3.65	-4.77
	Olympic	-4.89	-5.41
	Wenatchee	-1.86	-3.92
Oregon			
	Deschutes	-0.17	-3.03
	Mount Hood	-5.85	-6.30
	Rogue River	-2.98	-4.51
	Siskiyou	-5.33	-6.65
	Siuslaw	-5.27	-5.60
	Umpqua	-4.18	-5.39
	Willamette	-4.81	-5.55
	Winema	-5.78	-6.60
California			
	Klamath	-1.84	-4.36
	Mendocino	-1.78	-4.29
	Shasta-Trinity	-2.07	-3.97
	Six Rivers	-2.15	-4.96
Bureau of Land Management:			
Oregon			
	Salem	0.46	-0.36
	Eugene	0.38	0.81
	Roseburg	2.27	0.89
	Medford	6.45	1.32
	Coos Bay	0.10	0.54

<sup>a</sup>Figures shown describe unit allocations before consolidation for the Okanogan, Wenatchee, Rogue River, Siskiyou, and Winema National Forests.

increases concentrated in fuel or unusual expenses, but its nonfuel, ordinary budgets declined. In contrast, ordinary, nonfuel funding grew slowly, but more than twice as fast as total budgets, on the Eugene and Coos Bay Districts, indicating a declining role played by funding for fuel or extraordinary expenses.

### Discussion

Although total FS agency appropriations grew by 41 percent, increases in allocations to FS Plan-area units late in the period failed to lift aggregate budgets beyond the significant declines they had already experienced, particularly in 1993 and 1994. Aggregate FS Plan-area budgets declined by 35 percent from 1993 to 2003. Aggregate nonfire, nonfuel

funding to FS Plan-area units fell by 50 percent. Individual unit budgets fell for every FS Plan-area unit, with nonfire funding declining even more sharply for every unit.

In contrast, total BLM agency appropriations grew by 79 percent, and aggregate allocations to the Plan-area units studied also increased, by 22 percent. Aggregate nonfuel, ordinary budgets for Plan-area BLM units grew by 12 percent. Individual unit budgets increased for every BLM district studied. Fuel management and unusual costs increased more rapidly than ordinary costs on three units, while on two others ordinary and nonfuel expenditures increased faster. Ordinary, nonfire budgets declined slightly on only one BLM unit.

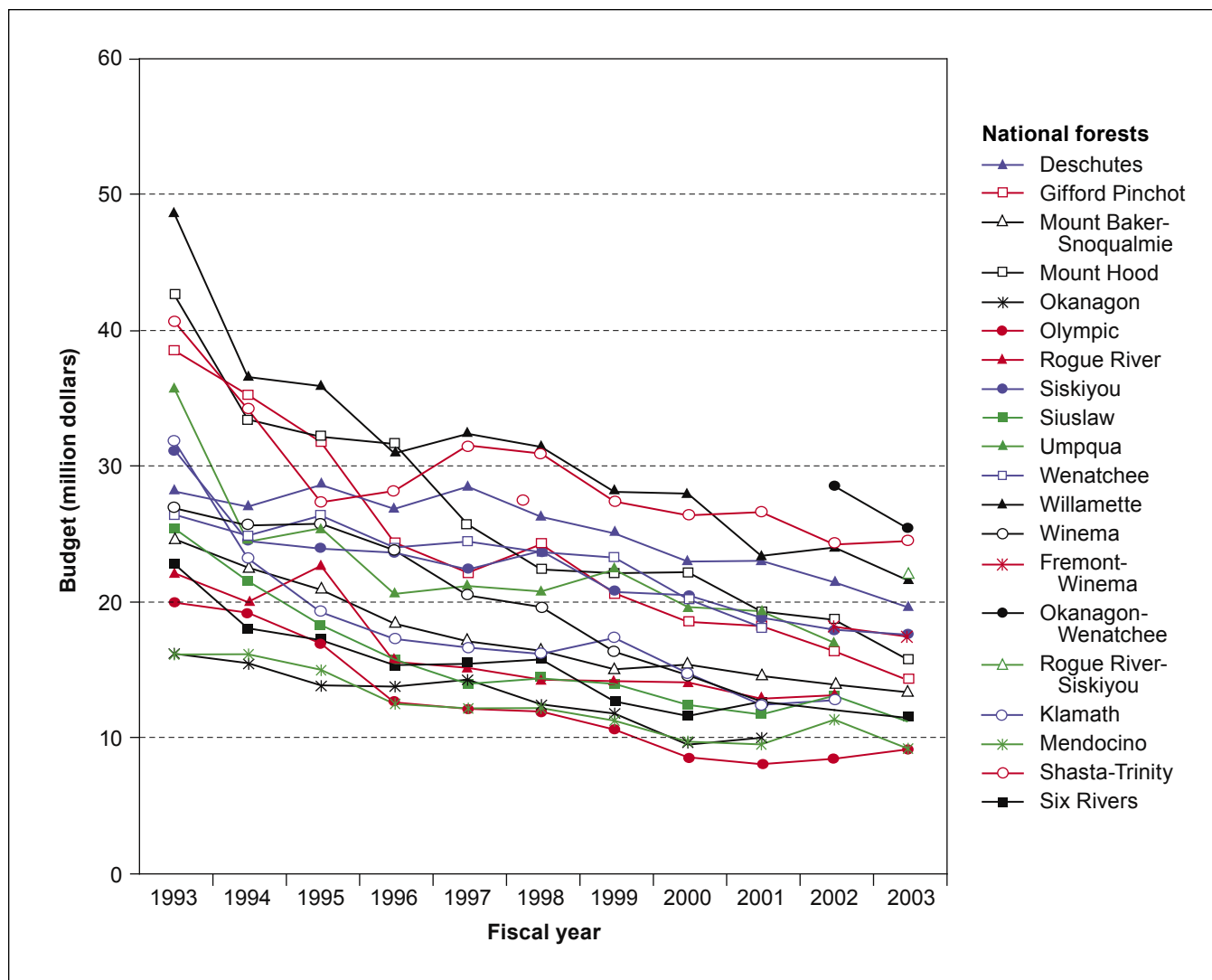


Figure 4-14—Forest Service individual Plan-area unit allocations, excluding fire and fuel management, 1993–2003. Base year is 2003. Source: Forest Service Pacific Southwest and Pacific Northwest regional offices.

Although National Forest System allocations for ecosystem management on FS units declined by 44 percent, because of the rapid drop in total unit budgets, and particularly in permanent and trust funds, the relative proportion of unit budgets made up by NFS ecosystem management funds declined only slightly. Allocations for managing land and resources on BLM units doubled, but played a minor role in BLM-unit budgets throughout the period.

Because ecosystem management activities can be funded through several sources, aggregate funding among programs is equally, if not more, important to evaluate. Among FS units, permanent and trust funds fell even faster

than National Forest System funds. Increases in fire and fuel funding, particularly in the last 2 years of the period, were not sufficient to offset these combined declines, particularly for most Region 6 units. Given these changes, most FS units simply had much less funding for conducting ecosystem management activities other than fuel treatments in 2003 than in 1993. This is particularly true for Region 6 units other than the Deschutes. This result is consistent with the findings of the case studies for the Mount Hood and Klamath National Forests, where many interviewees perceived a greatly reduced agency presence in land management (see volume III, chapter 8).

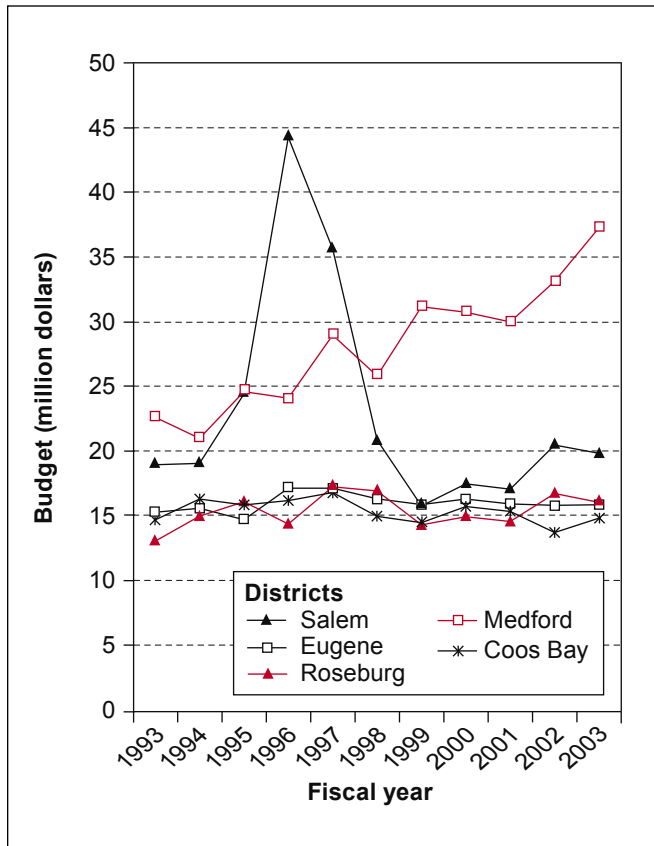


Figure 4-15—Individual Oregon Bureau of Land Management Plan-area unit allocations, 1993–2003. Base year is 2003. Source: Bureau of Land Management Oregon State Office.

In contrast, O&C dollars provided most of the BLM Plan-area unit funding throughout the study period. Although O&C funding fell across the decade, the magnitude and relative stability of O&C funds across the period were important contributors to stable or increasing aggregate budgets. According to Oregon state office budget staff, early in the Plan implementation, BLM realigned the balance among the activities in the O&C appropriation to reflect the changing work associated with implementing the Plan. Roughly \$17 million, or about 20 percent of the account, was shifted from reforestation and forest development into other forest management activities to reflect a more balanced approach to managing under the Plan. Congress also appropriated for BLM some new dollars associated with new work like Jobs-In-the-Woods restoration, and survey-and-manage work (see volume III, chapter 6 for discussion

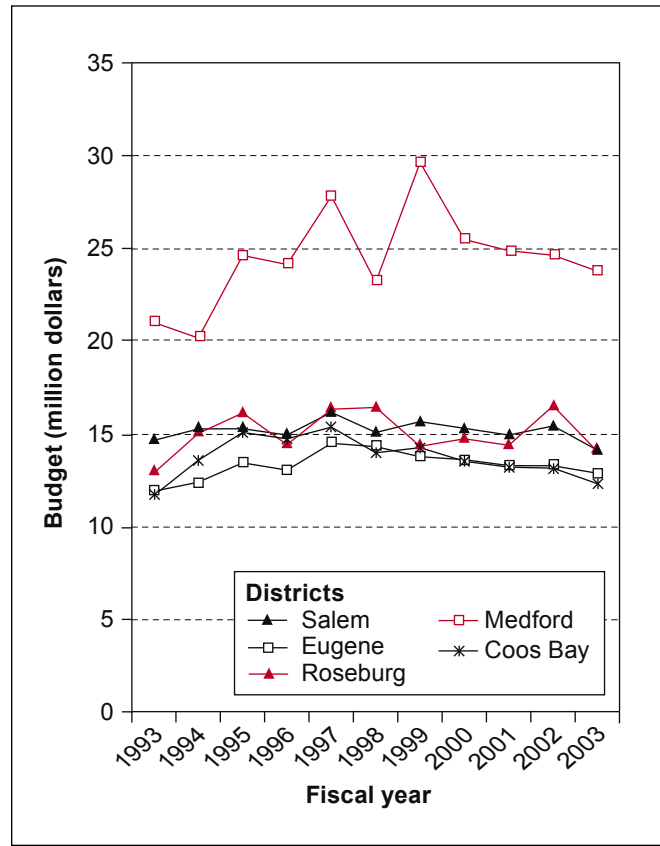


Figure 4-16—Individual Oregon Bureau of Land Management Plan-area unit allocations, with selected exclusions, 1993–2003. Base year is 2003. Source: Bureau of Land Management Oregon State Office.

of differences between agencies in the funding of community economic assistance programs). Given these shifts and the context of budget increases, BLM units were better positioned than FS units to accomplish management activities. This result is consistent with the result of the Coos Bay case study, where many interviewees perceived the district as having been relatively effective under the Plan (see volume III, chapter 8).

Note that tracking programmatic appropriations and unit allocations understates the actual effects of fire costs on the ability of field units to complete planned activities in the later years of the period, particularly for FS units. Agencywide withdrawal of funds from the field to support FS fire suppression activities was an annual event after 1998. Transfers were drawn only from FS reforestation (Knutson-Vandenburg) accounts in 1999 and 2000, but

from all nonsuppression programs in following years. In 2002, the year with the largest transfers, the shift removed nearly \$1 billion from the FS nonsuppression budget authority. Although I did not attempt to quantify the effects of suppression transfers on individual Plan-area field units, these shifts affected 8.9 percent of the total Region 5 budget, and 16.5 percent of the Region 6 budget (GAO 2004, USDA FS 2003). Available data for the BLM are not detailed by region, but suggest less severe effects, with approximately \$15 million transferred agencywide in 2002, only from the construction, land acquisition, and fire programs.

“Fire borrowing” disrupted and often terminated field projects and activities. For example, although about 80 percent of funds transferred were later repaid among all the agencies, reimbursement was handled differently between agencies. The FS often used reimbursements to fund different projects than those affected by the transfers, whereas BLM reimbursed affected projects. The General Accounting Office found that the funding transfers to support fire suppression had “caused numerous project delays and cancellations, strained relationships with state and local agency partners, and disrupted program management efforts” (GAO 2004: 3).

## Conclusions

How did the number and type of FS and BLM jobs change on Plan-area forest units after the Plan was adopted? How did the total presence and geographic distribution of agency offices containing unit-scale decisionmakers change?

The staffing and unit reorganization analyses found significant changes, some of which were inconsistent with planning expectations. The FS Plan-area units lost 3,066 FTEs, over one-third of the 1993 Plan-area staff, and significantly more than the 2,000 or fewer projected by the Plan’s alternative 9. The presence of local FS decisionmakers was also significantly diminished, by 23 percent, despite the FEMAT warning that office closures might “devastate” small communities. In contrast, BLM Plan-area units, for which the Plan had provided no staffing expectations, lost 13 percent of their staffing, with no

local office closures and a continued presence of agency decisionmakers in local communities.

How did budget allocations to Plan-area units change during the Plan period?

The FS units saw their total aggregate budgets decline by 35 percent from 1993 to 2003. This closely mirrored the 36-percent drop in FTEs among Plan units between 1993 and 2002.<sup>2</sup> These similar decreases suggest that budgets were an important determinant behind FS staffing declines. The analysis also suggests that over the period studied, most FS funding may have been invested in retaining remaining FS staff. The data further show that budget trends may have played an important role in the level of FS investments in partnerships, contracts, and procurement over the decade<sup>3</sup> (see volume III, chapter 5 for a discussion of trends in forest contracting). The analysis further confirms and helps explain the case-study finding of a greatly reduced agency presence, both in the community and on the ground, for some national forests. It also helps explain why at least one BLM unit was relatively successful in implementing the Plan (see volume III, chapter 8 for case-study results).

The budget data show a significant change in the types of investment (fire and fuel management, National Forest System management, and permanent and trust funds) among FS Plan-area units. Funding for fire and fuel management increased significantly to almost one-third of aggregate budgets. Other funding dropped by half. Budgets for National Forest System management declined sharply, but in the context of overall budget declines continued to make up a similar proportion of total budgets. Funding from permanent and trust funds, primarily used for timber-related forest management, declined precipitously to less than one-fifth of aggregate funding.

Although increased fire funding mitigated budget declines on the more fire-prone California national forests and two east-side Region 6 forests, the increase in agencywide fire funding did not strongly affect other Plan-area national

<sup>2</sup>Note the 1-year difference in the lengths of the budget and staffing analyses: the unit budget analysis extends from 1993 through 2003, but the staffing analysis extends from 1993 through 2002.

<sup>3</sup>This analysis does not fully account for annual increases in the cost of employee benefits, which have further eroded the ability of the national forests to fund remaining staff.

forests. Fire borrowing further eroded the flexibility available to many local FS managers in directing and timing fiscal obligations, in completing planned projects, and in honoring commitments to partners (GAO 2004). Declining funding, staffing, management flexibility, and funding reliability were accompanied by a decreasing presence of FS decisionmaking officials among Pacific Northwest communities, a decrease in local customer service, and a drop in the local job base. These changes suggest declines in unit and employee spending, and in indirect support of the local economy.

In compliance with federal policy for maintaining records, the budget and staffing data retained by agency regions in 2003 extended back only to 1993. The FS regional staff and local community interviewees noted, however, that the most extreme declines in Plan-area unit budgets and staffing took place in the years immediately preceding Plan implementation. (See volume III, chapter 8 for a summary of case study results). These changes are not accounted for in this analysis, but they played a major role among the impacts felt by local agency units and communities during those years.

In contrast, BLM Plan-area aggregate budgets rose by 22 percent over the period studied. The BLM aggregate staffing dropped, but by much less than FS staffing. Although BLM managers lost staff, their stable or rising funding levels allowed them greater flexibility in selecting among potential means to accomplish needed work. Unlike their FS counterparts, most BLM unit managers saw nonfuel funding rise.

The BLM funding for fuel and burned-area management increased significantly over the period but continued to be a minor portion of Plan-area aggregate budgets. Funds for the management of BLM land and resources grew but were less than 10 percent of aggregate Plan-area allocations throughout the period. "Other" allocations, much of them for the timber and recreation pipelines, grew to 21 percent of aggregate Plan-area budgets. Funding under the O&C Act declined, but made up the great majority of aggregate BLM unit budgets throughout the period. The BLM managers had relatively wide latitude in directing investments among programs within the O&C allocation.

The available data do not allow us to specify the impact of fire borrowing on BLM Plan-area units (GAO 2004), but do suggest that such transfers had less effect than among FS units. At the same time, although the number of BLM line officers shrank by 25 percent, no change occurred in the number and distribution of BLM offices housing line officers. This suggests that there was not as strong a change in local opportunities for interaction between Pacific Northwest communities and BLM decisionmaking officials, in local customer service, in the local job base, or in local employee or unit spending.

The FEMAT recommended that the units implementing the Plan be supported with stable staffing and budgets to support the new approach of ecosystem management (FEMAT 1993: VIII-41):

Pending additional fiscal analysis, we emphasize that the options selected should not be hastily coupled with reductions in funding and personnel based on the inappropriate assumption that ecosystem management is somehow cheaper than traditional commodity production-focused plans.

The monitoring and evaluation results show that the FEMAT recommendation was not met, at least for the FS. The FS unit budgets are supported in part by the receipts generated by forest timber programs. After the signing of the Plan, trends in FS Plan-area unit budgets continued to be strongly determined by the level of timber receipts generated. As shown in volume II, chapter 2, the volume of FS Plan-area timber harvested declined precipitously before the Plan was implemented, and continued to decline across the study period. The major reductions in FS timber harvest receipts under the Plan were coupled with decreases in allocations from other appropriations, such as National Forest System funds, resulting in greatly reduced unit budgets. Increases in FS fire and fuel management allocations in the second half of the decade were targeted toward the area's more fire-prone units, reflecting a shift in management priorities for these national forests. Even for these units, however, the increase in fire and fuel management funding was not sufficient to offset budget declines over the decade.

The Plan appears not to have affected BLM funding to the same degree. The BLM timber volume offered also decreased over the decade studied. Bureau of Land Management funding was not as sensitive to trust and permanent operating accounts derived from timber receipts, however. Although O&C funding declined during the period, allocations to all other program accounts grew. These increases were mostly attributable to additional funding for the timber and recreation pipelines, for the forest health initiative, for fire rehabilitation and fuel management, and for the management of land and resources.

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## Chapter 5: Procurement Contracting

*Cassandra Moseley and Susan Charnley*

To mitigate the loss of timber jobs, the Northwest Forest Plan (the Plan) included a goal to contribute to the well-being of rural communities by assisting them with long-term economic development and diversification. The Forest Service (FS) and Bureau of Land Management (BLM) were expected to create new jobs in the woods associated with ecosystem management. The Plan called for restoring late-successional and old-growth (older forest) habitat and watershed health. It also contained survey and monitoring requirements that called for agencies to undertake new kinds of activities ranging from surveying for northern spotted owls (*Strix occidentalis caurina*), to thinning plantations to restore old-growth characteristics. In addition, because the Plan called for sharply reducing intensive timber management, the road building, maintenance, and decommissioning that was a part of timber sales would now have to be done through other mechanisms. Procurement contracting—the purchase of goods and services—is one way the FS and BLM could restore forests and undertake other work on the ground (such as work associated with recreation, restoration, or monitoring) while contributing to local economic development. In the early 1990s, agencies accomplished much of their forestry services work (such as reforestation and timber stand improvement) through procurement contracts. This work, and new jobs related to ecosystem management consistent with Plan goals, would continue to be accomplished mainly through procurement contracts (although some occurred in-house or through grants and agreements).

The Plan changed management priorities for the federal land-management agencies. At the same time, President Clinton created the Jobs-in-the-Woods program, which sought to create job opportunities for people who had been displaced by the new management priorities that focused on endangered species protection and ecosystem management (see chapter 6). Procurement contracting was one of the ways the federal land management agencies intended to implement the Jobs-in-the-Woods program. The FS and BLM were exempted from free and open competition

procurement requirements and allowed to set aside Jobs-in-the-Woods contracts for contractors in the Plan's affected counties.

After the Jobs-in-the-Woods program dwindled, several other administrative and congressional programs sought to create economic benefits for rural, forest-based communities by using procurement contracting. A memorandum of understanding between the FS Pacific Northwest Region (Region 6), the BLM in Oregon and Washington, the Governor of Oregon, the National Fire Plan, the Secure Rural Schools and Community Self-Determination Act of 2000, and the stewardship contracting pilot program all attempted to create rural community benefit by using procurement contracting as a source of jobs and business opportunities (Moseley and Toth 2004). If these programs were effective, contractors in communities near federal forests would capture proportionately more of the contract dollars than in the early 1990s, because these programs created direction or authority to direct work to local communities.

### Monitoring Questions

1. How much and what kind of ecosystem management work did the FS and BLM contract between 1990 and 2002, and how did this work change over time?
2. Who received economic benefits from FS and BLM procurement contracting, and how did these benefits change over time?

### Expectations

Work in the forestry services sector (reforestation, timber stand improvement) was expected to decline (USDA and USDI 1994: 3&4-291). Work in ecosystem restoration, silvicultural activities, surveys, assessments, and inventories would increase, and could create about 7,000 jobs per year during the first 3 years of the Plan, helping to offset job loss in the forestry services and timber sectors (USDA and USDI 1994: 3&4-291–292, 308). However, program costs would be substantial. Restoration through watershed maintenance, ecosystem restoration and research, environmental monitoring, and forest stewardship would both improve the condition of regional ecosystems and create jobs in timber-dependent areas (USDA and USDI 1994: 3&4-314).

## Data Analysis

For a full description of the methods used in this analysis, refer to Moseley (2006)<sup>1</sup> or to appendix C. In brief, to answer the monitoring questions, Moseley examined data drawn from the Federal Procurement Data Center’s database that includes information from all federal agencies compiled from the SF-279 form that each federal agency must fill out for contracts with an estimated value above \$25,000. The data set includes contracts from all FS and BLM units in western Oregon and Washington and north-western California that were designated counties affected by the Plan, and were awarded between fiscal years (FY) 1990 and 2002. All data are reported by federal fiscal year and are in inflation-adjusted 2002 dollars. The data set includes contracts related to forestry and watershed management such as thinning, brush cutting, brush piling, noxious weed control, biological surveying, riparian restoration, and road building and maintenance. The data set does not include activities such as building construction or copier repair, and does not include any purchases of goods. Fire suppression and prescribed burning contracts are not included because they are not accurately represented in the data set. The analysis does not include any timber-sale data.

These data were used to calculate a variety of descriptive statistics that would provide insight into the regional contracting market and the contractors involved in it. These included the value of contracts, the number of contracts, the type of contracts, and the distance between contractor headquarters and where the work would be. Even though the agencies are under the same procurement laws, past studies suggest that their procurement practices are quite different and that the two agencies need to be analyzed separately (Moseley et al. 2002). We do so here.

<sup>1</sup> Cassandra Moseley of the University of Oregon’s Ecosystem Workforce Program undertook the procurement contracting monitoring portion of the Socioeconomic Monitoring Program as a separate study, which is being published by the Pacific Northwest Research Station.

## Results and Discussion

### Procurement Spending

Between 1990 and 2002, the FS and BLM together procured \$1.06 billion in land-management services in the counties affected by Jobs-in-the-Woods (table 5-1). The FS spent \$750 million and the BLM \$256 million. The FS spending declined throughout the period but BLM spending remained nearly constant (fig. 5-1).

**Table 5-1—Jobs-in-the-Woods counties**

California	Oregon	Washington
Del Norte	Benton	Chelan
Glenn	Clackamas	Clallam
Humboldt	Clatsop	Clark
Lake	Columbia	Cowlitz
Mendocino	Coos	Douglas
Shasta	Curry	Grays Harbor
Siskiyou	Deschutes	Island
Tehama	Douglas	Jefferson
Trinity	Hood River	King
	Jackson	Kitsap
	Jefferson	Kittitas
	Josephine	Klickitat
	Klamath	Lewis
	Lake	Mason
	Lane	Okanogan
	Lincoln	Pacific
	Linn	Pierce
	Marion	San Juan
	Multnomah	Skagit
	Polk	Skamania
	Tillamook	Snohomish
	Wasco	Thurston
	Washington	Wahkiakum
	Yamhill	Whatcom
		Yakima

The FS spending peaked in 1991 at \$103 million and then declined almost continually until 1998—when it briefly increased before declining again to a low of \$33 million in 2002. The 1998 peak was likely caused by an influx of funds for restoration work made available after the January 1997 flood in western Oregon and northern California. Between 1990 and 2002, FS contract spending in western Oregon fell by 62 percent, whereas it declined by 56 percent in northern California and by 60 percent in western Washington (fig. 5-2). The number of FS contracts issued

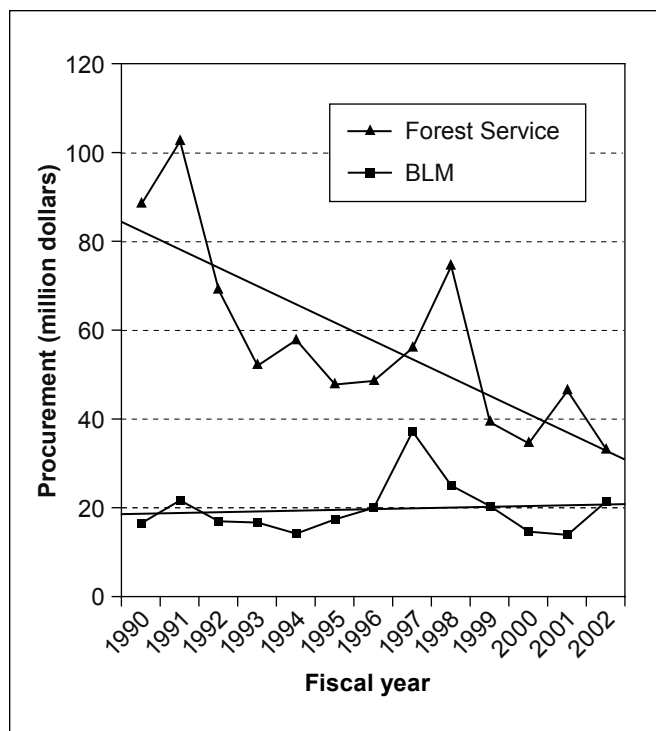


Figure 5-1—Total annual procurement, Forest Service and Bureau of Land Management (BLM), 1990–2002. Base year is 2002. Straight lines represent linear regressions.

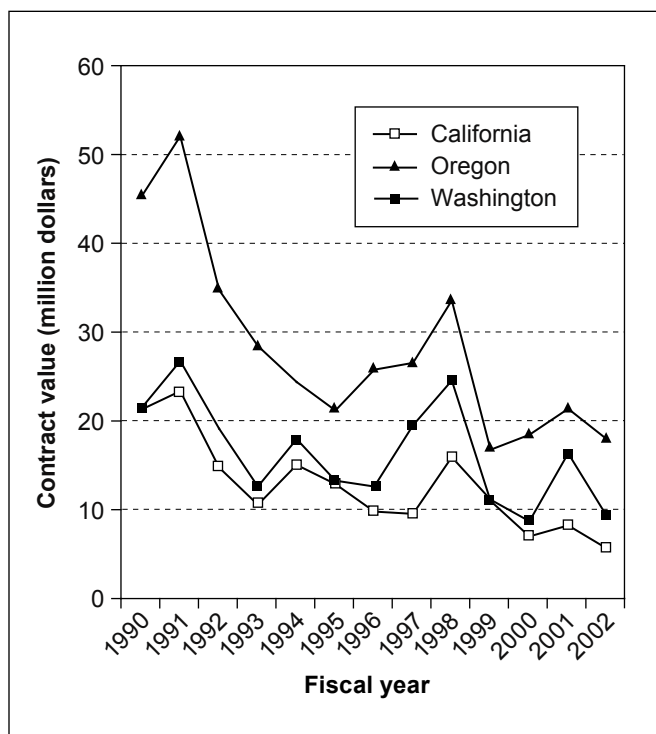


Figure 5-2—Total contract spending by state, Forest Service. Base year is 2002.

also declined, although at a slightly faster rate than the total dollar value of contracted work did (fig. 5-3). Consequently, the average contract value increased slightly over the study period (fig. 5-4). Given that past studies have shown that larger contracts tend to be awarded to more distant contractors, this trend suggests that it would be more difficult for nearby contractors to obtain contracts as contract size increased (Moseley and Shankle 2001).

The BLM spending on procurement contracting was more consistent throughout the period, averaging just under \$20 million per year. The agency spent the most money on land-management procurement in 1997 (\$37 million), which was also most likely the result of funding made available after the 1997 flood. The BLM issued roughly the same number of contracts each year (fig. 5-3). Because the rate of procurement spending fluctuated slightly from year to year, the average value of BLM contracts varied over time, with average contract value increasing whenever the agency spent more money procuring services (fig. 5-4).

Why did FS contract spending decline so substantially during the study period, contrary to expectations? The most obvious explanation is the decline in forest budgets during the study period (see chapter 4). Moseley and Reyes (N.d.) found that the rates of decline in contracting spending, forest budgets, and staffing fell at about the same rate from 1993 to 2003, with contracting perhaps declining even more slowly than staffing or budgeting.

Contract spending also declined on the three case-study national forests (see chapter 8). The monitoring team conducted interviews with case-study forest employees who were contracting specialists, who worked in forest program areas that solicit procurement contracts, or who were line officers (see app. C). The team discussed trends in forest-scale procurement contracting with these agency employees to obtain their perspectives and insight as to why the number and amount of contracts had declined during the Plan period. Interviewees suggested some additional explanations for why contracting declined. One explanation was that the FS chose to spend its funds on retaining employees rather than contracting as its budgets declined. A second explanation was that the increased planning requirements associated with the Plan created a need for FS staff to

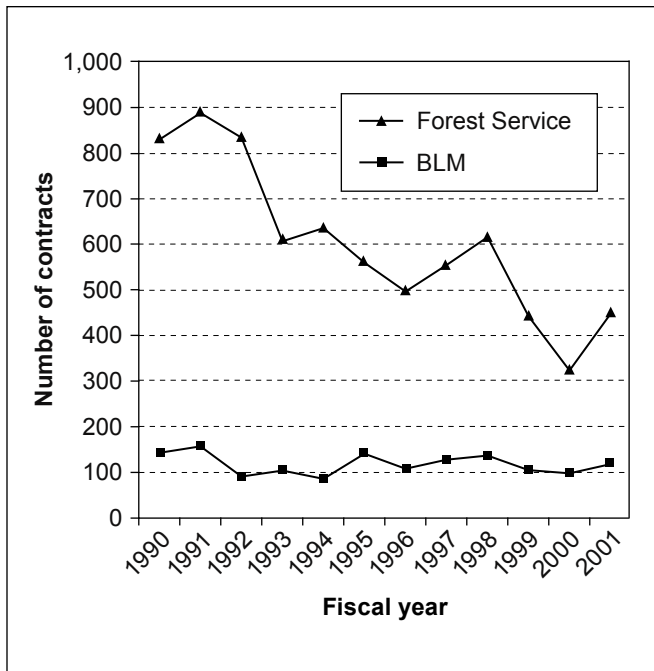


Figure 5-3—Number of contracts issued, Forest Service and Bureau of Land Management (BLM), 1990–2001.

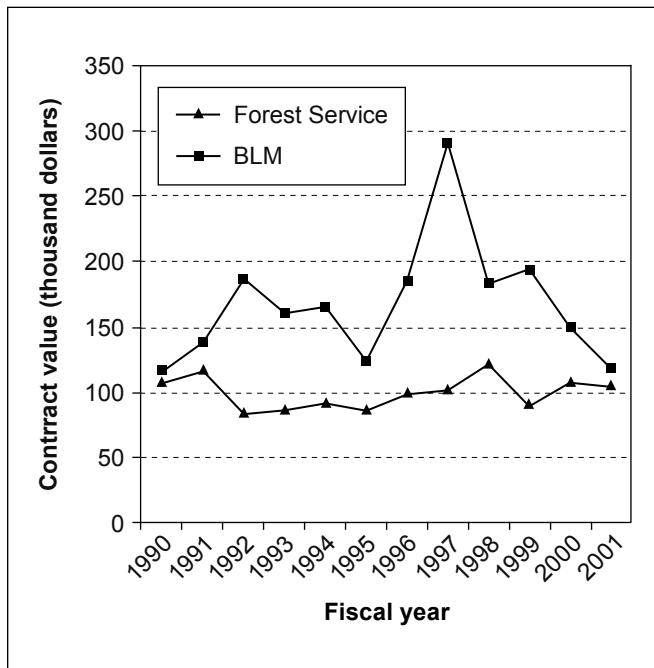


Figure 5-4—Average value of contracts over time. Base year is 2002.

undertake significant planning, which reduced the funds available for contracted on-the-ground activities. Finally, several interviewees said that their forests increased the use of grants and agreements to accomplish work with partners, rather than using contracts. The Jobs-in-the-Woods training programs are one example of the use of grants and agreements to accomplish on-the-ground restoration. Grants and agreements can be more flexible than contracts. The terms and conditions can be changed more easily, and they can be a tool for leveraging outside money to help accomplish work. It can also be easier to direct funding to local organizations through grants and agreements. A shift toward using grants and agreements may be contributing to the decline in contracting trends reflected. A systematic analysis of trends in spending via grants and agreements was not possible with the available data, however.

### Procurement by Type of Work<sup>2</sup>

The Plan shifted management priorities away from intensive forest management and toward ecosystem management, with increased requirements for species surveys. A decline in labor-intensive activities such as tree planting and site preparation was expected as a result of this change, together with an increase in equipment-intensive activities (such as road decommissioning) and of technical activities (such as species surveys).

#### Forest Service—

Spending by the FS in all three contracting categories (labor, equipment, and technical) shrank during the 1990s (fig. 5-5). Labor-intensive contracting diminished most, from \$140 million during the 3-year period 1990–92, to \$37 million during 2000–2002, representing nearly a 75-percent decrease. This drop in labor-intensive work was largely due to a decline in tree planting, although other labor-intensive work associated with intensive

<sup>2</sup>Definitive analysis of how the type of work contracted by the FS and BLM changed between 1990 and 2002 is difficult because product service codes are generalized, and procurement staff may not consistently classify contracts across units. In addition, some product service codes defy neat categorization because they include both technical activities, such as surveys, and equipment-intensive activities, such as rock crushing.

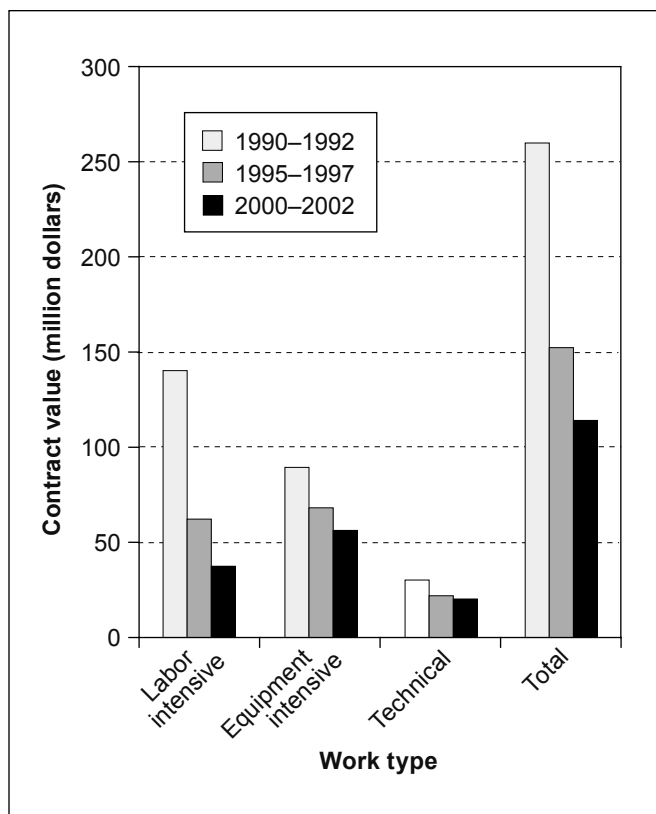


Figure 5-5—Forest Service contract dollars by work type. Base year is 2002.

forest management also waned (like thinning, producing and transplanting seedlings, land treatment practices). By the mid-1990s, spending on equipment-intensive work had surpassed labor-intensive contracting. Nevertheless, equipment-intensive and technical contracting also declined by one-third between 1990-92 and 2000-2002.

Among the equipment-intensive activities, the FS spent considerably more procurement dollars in the early 1990s on road building than it did in later periods. In later years, road maintenance spending increased, although not enough to make up for the decline in road-building spending. In technical work, the contracting of endangered species surveys was greater in 1995-97 than in 1990-92, but spending had fallen off by the early 2000s. Spending for environmental assessments was greatest during the early 1990s and declined after that.

The patterns of decline in FS land-management-procurement contracting showed that the FS did not replace labor-intensive work associated with intensive forest management activity (such as tree planting and thinning) with contracted work related to restoration and maintenance (such as road maintenance, wildlife management, surveying) to meet Plan goals and objectives. Although some types of equipment and technical work increased, the overall decline in contracted on-the-ground work was far greater than the increases.

#### Bureau of Land Management—

Total BLM procurement spending remained fairly constant throughout the 1990s except for a spike in funding in the mid-1990s (likely caused by the availability of postflood restoration funds) (fig. 5-6). Despite the mid-1990s bump, some longer term shifts in emphasis occurred during the study period.

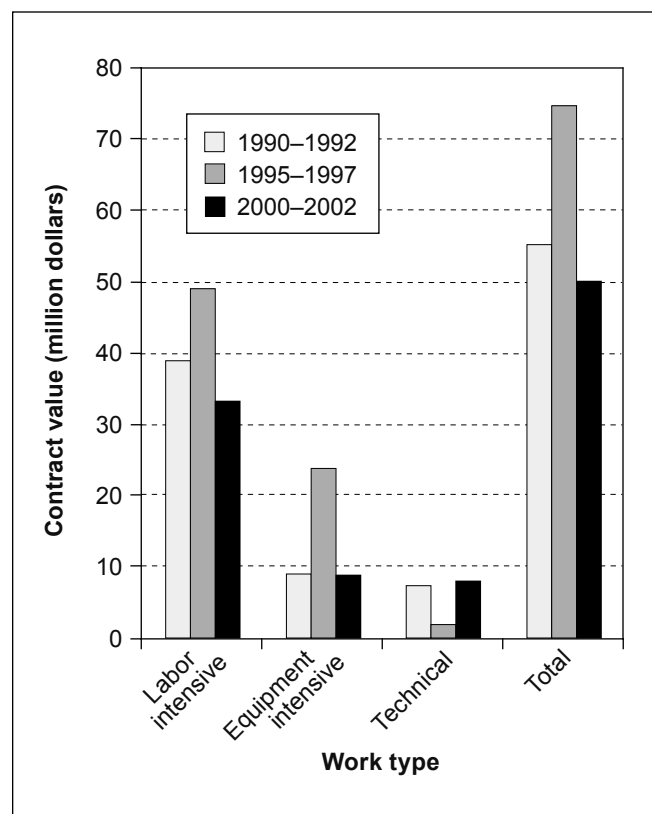


Figure 5-6—Bureau of Land Management contracting by work type. Base year is 2002.

As with the FS, labor-intensive work associated with intensive timber management declined. Thinning and site preparation had largely replaced tree planting by the early 2000s. Just as striking, the BLM procured little road construction or maintenance work in the early 1990s, probably because this sort of work was performed as a part of timber sales or with in-house crews. By the mid-1990s, however, the BLM was procuring a lot of roadwork, while other equipment-intensive activities such as aerial spraying were declining. In addition, the BLM increased its procurement of surveys and environmental assessments in the late 1990s, whereas they were rare earlier.

### Location of Contractors

The expectation was that procurement contracting for ecosystem management work would help offset job loss in the timber sector and create new economic opportunities for rural communities near federal forests. It is important to understand whether contractors in rural communities near federal forest lands obtained proportionately more of the contracting dollars after the Plan than before.

#### Forest Service—

Throughout the study period, contractors working in western Oregon, western Washington, and northern California were concentrated along the Interstate-5 corridor (fig. 5-7). Although the amount of money captured by contractors declined nearly everywhere, the reductions were greatest for contractors with offices in the Willamette Valley of western Oregon and the central valley of California.

Consequently, in the affected counties, the mean distance that contractors traveled to work on national forest lands decreased from 131.1 air miles in 1990–1992 to 107.9 air miles in 1999–2001, a statistically significant difference ( $p < 0.001$ ). A more detailed statistical analysis shows, however, that the decline in mean distance traveled is the result of the shift in work type and the location of the work and is not likely the result of efforts to increase local contracting capture of particular types of work. After controlling for work type, where the work was performed, and other factors, the expected distance actually increased

compared to the control year of 1990 (Moseley and Reyes, n.d.). Essentially, the more detailed statistical analysis tells us that the apparent decline in the mean distance is largely the result of the relative shift from labor-intensive contracting to equipment-intensive contracting. Labor-intensive contracts are typically awarded to more distant contractors than equipment-contractors. A shift in the type of work performed, then, naturally changes the mean distance traveled. Consequently, contracts within particular work types—equipment, labor, or technical—were no more likely to be awarded to nearby contractors at the end of the study period than they were a decade before. Although the adverse socioeconomic effects of this shift in work type were greater in more distant communities, local communities still experienced a drop in contracting opportunities overall.

#### Bureau of Land Management—

The contractors working on BLM districts in the Plan area were even more concentrated along the Interstate 5 corridor than the FS contractors were (fig. 5-8). Contractors from southern Oregon performed more work on BLM lands in the early 2000s than in the early 1990s. This follows logic—BLM procurement spending in southern Oregon was much higher in the 2000s than it was a decade earlier, and southern Oregon has long had local contracting capacity (Moseley and Shankle 2001). Similarly, fewer contracts were awarded to contractors in the Willamette Valley of Oregon in the early 2000s.

As with the FS, the distance that contractors traveled to work on BLM land decreased between the early 1990s and the early 2000s by 47 miles, a statistically significant difference. ( $p < 0.009$ ). As with the FS, however, this decline can largely be explained by a shift in the type of work contracted and where the work was performed. An analysis analogous to that of the FS contracts shows no statistically significant change in the distance the contractors traveled to work on BLM districts in the study area, again suggesting that the decrease that contractors appear to have traveled is a byproduct of a shift in the type of work contracted and the location of that work.

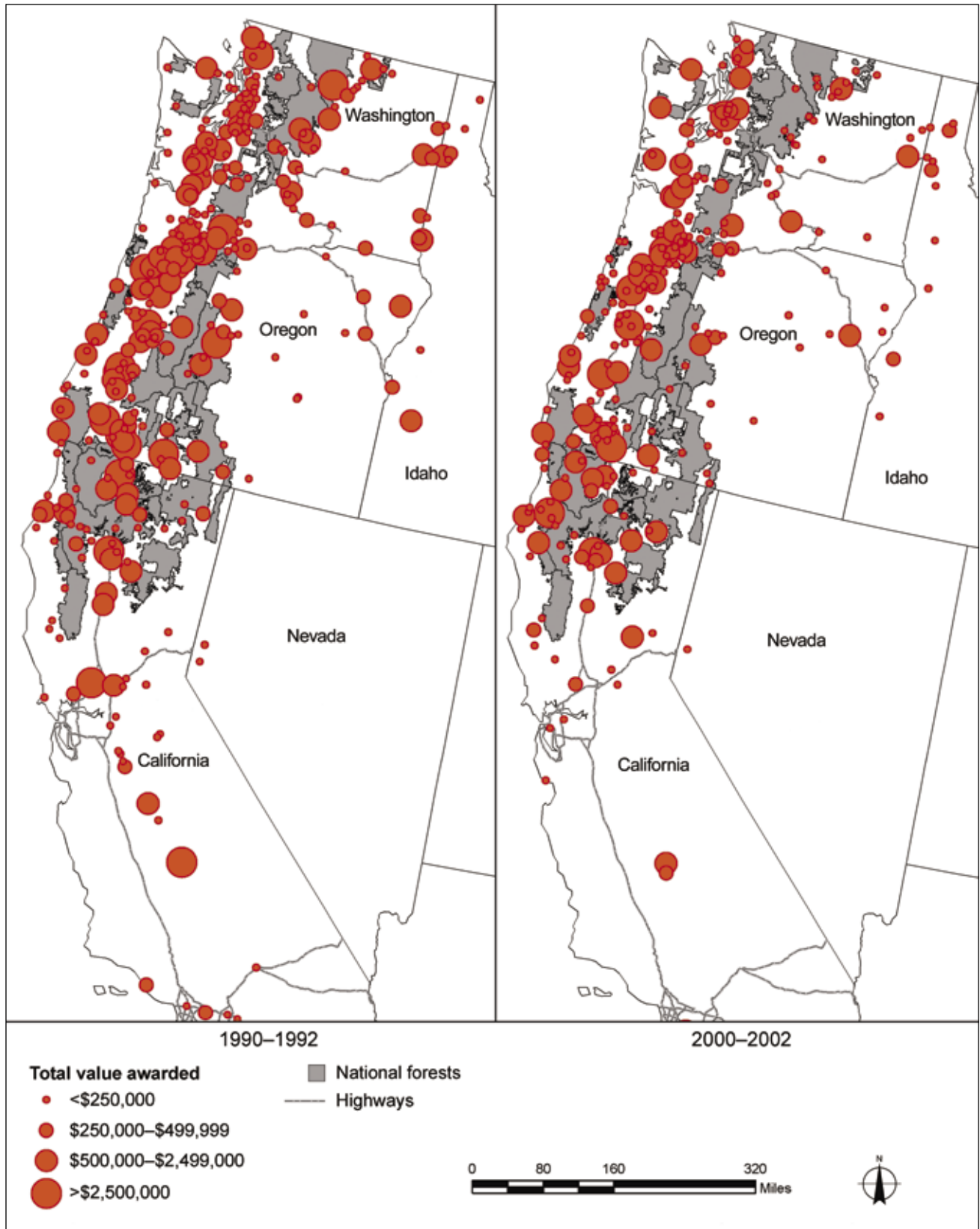


Figure 5-7—Location of Forest Service contractors, 1990–92 and 2000–2002.

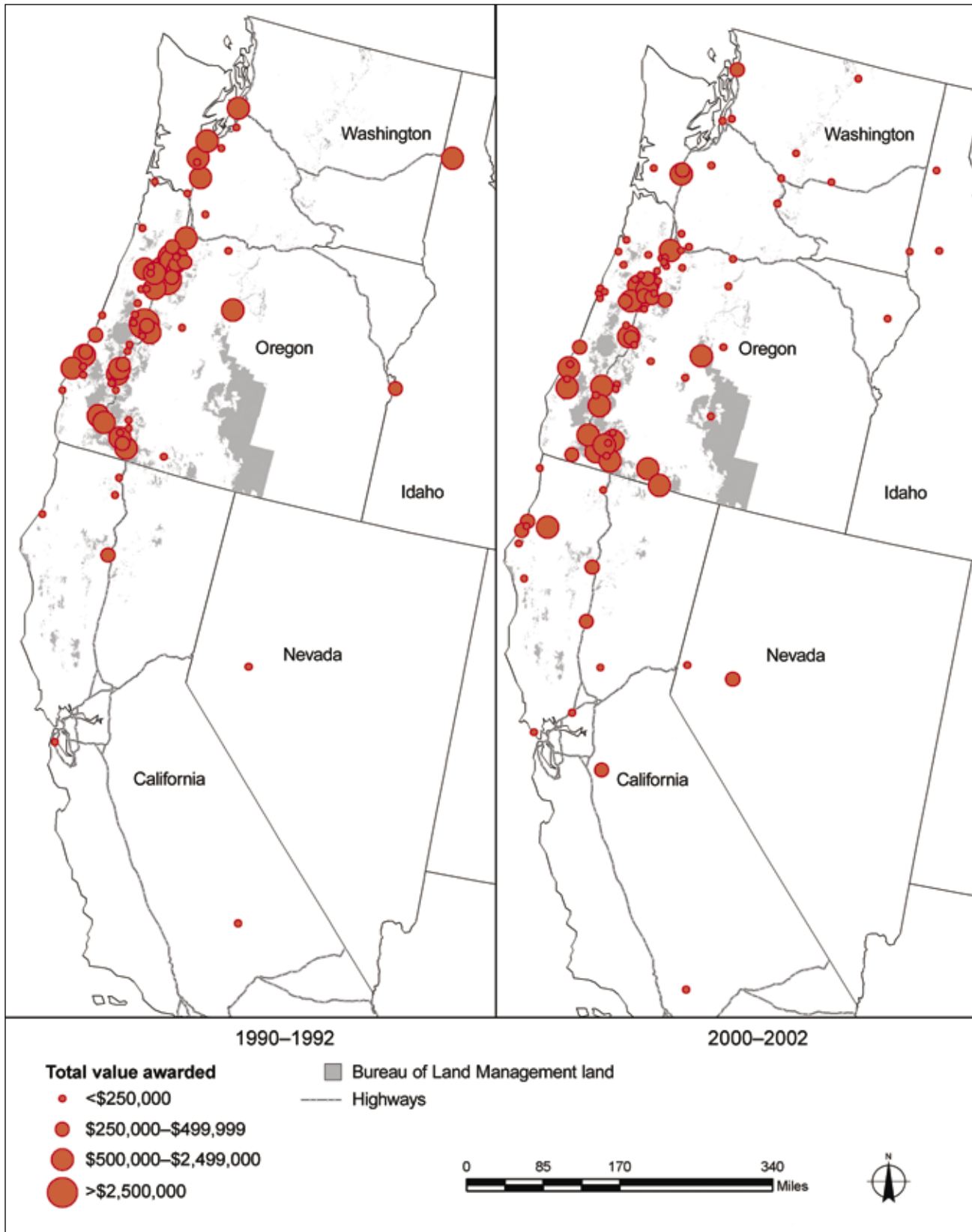


Figure 5-8—Location of BLM contractors, 1990-92 and 2000-2002.



**Contract awards to rural communities—**

The FS and BLM awarded contracts to contractors located closer to national forests and BLM lands over time because of a shift in the type and location of work that they contracted out. This might have resulted in an increase in awards to rural communities. For both the BLM and the FS, however, there was no overall statistically significant shift in the proportion of awards by community size.

At first glance, the BLM appears to have shifted its distribution of awards considerably. In 1990–92, the BLM awarded 26 percent of its contract value to rural communities (those having fewer than 5,000 people, according to the U.S. Census Bureau definition), whereas, in 2000–2002, the BLM awarded 33 percent of its contract value to contractors in rural communities. However, the percentage of contract value awarded to communities with unknown populations declined from 10 percent in 1990–92 to 5 percent in 2000–2002. If most unknown communities are rural communities (because large communities are more likely to have been identified), then the actual shift over the study period would be much smaller.

Similarly, in 1990–92, the FS awarded 24 percent of its contract value to contractors in rural communities, whereas in 2000–2002 it awarded 25 percent of its contract value to contractors in rural communities, not a statistically significant difference. At the same time, the percentage of the contract value awarded to contractors in towns with populations between 5,000 and 10,000 declined by 1 percent, also not significantly different. Therefore, for contractors in communities of fewer than 10,000, there was no change in the proportional capture of FS procurement dollars.

**Contract awards to affected counties—**

From 1990 through 2002, the BLM awarded 93 percent of its contract value to contractors in Jobs-in-the-Woods affected counties. In 1990–92, Jobs-in-the-Woods counties received 89 percent of the value, and in 2000–2002, they received 93 percent of the value. Awards to contractors from the affected area increased during the mid-1990s (to 96 percent), which suggests that the Jobs-in-the-Woods program had a small impact on BLM contract awards. Because

the BLM already awarded most of its contract value to contractors in affected counties, however, this component of the Jobs-in-the-Woods program could have had only a small effect.

The FS awarded less contract value to contractors from the affected counties than did the BLM. The percentage of contract value awarded to contractors from affected areas did not change appreciably between the early and mid 1990s (it was about 82 percent). Although this increased to 85 percent by 2000–2002, these results suggest that policies aiming for greater rural economic benefit through increased procurement contracting had little effect.

**Challenges to Creating Community Benefit**

Given that most contracts were already being awarded to contractors in the Jobs-in-the-Woods counties before the Plan, the waivers offered only a limited mechanism for creating new contracting opportunities for forest-based communities, particularly in the face of declining funds available for contracting. Some management units, such as the Coos Bay BLM District, focused its economic development efforts by creating Jobs-in-the-Woods and Hire-the-Fisher training programs with community partners. Other management units, however, struggled to use contracting as an economic development strategy.

To understand the challenges to creating community benefit more fully, employees from case-study forests were asked to talk about some of the barriers to creating community benefit through contracting. According to interviews with agency contracting specialists, national forests faced many institutional challenges to using contracting as an economic development opportunity for forest-based communities. The biggest barrier was the agencies' history of using low-bid contracting. Both FS and BLM acquisition regulations had long been designed to favor efficiency through economies of scale and the lowest bidder. Until the mid-1990s, federal law required the agencies to use a sealed bidding process that awarded contracts to the lowest bidder regardless of the quality of the work they performed. In the mid-1990s, however, federal acquisitions reforms allowed the FS and BLM to use negotiated contracts (also known as best-value contracts) to consider factors other than price

when awarding contracts. Some forests and districts, such as those in the Willamette Province Workforce Partnership, used this authority quickly and deliberately to create economic opportunity (Moseley 2002). But, many management units were slow to move away from low-bid contracting, and they may not have seen this option as a vehicle of rural public land economic development.

More explicit language to allow the agencies to use best-value contracting to create rural community benefit came in 1998 with stewardship contracting pilots, and in 2000 with National Fire Plan funding. These authorities were too late to help many displaced workers in need of new work opportunities in the early 1990s to remain in their communities. Consequently, our interviewees told us that many of these workers moved away in the early 1990s, taking their skills and infrastructure (like equipment) with them. That the available contracting work during the study period was typically sporadic or seasonal, especially in particular types of work, may also have caused potential contractors to move elsewhere in search of steady, year-round employment. Our interview subjects were concerned that the result may be that now, when contract work is available, a shortage of people with the needed skills and equipment to perform it has developed. Thus, the work will either have to be done internally or by contractors from outside the local area.

In addition to the challenge of structuring contracts to create community benefit, funding for contracting and the type of activities contracted vary considerably from year to year for both the FS and the BLM. Catastrophic events such as fires and floods tend to lead to infusions of funds for restoration activities that need to be spent over a short period. After such events, too much work is needed for a forest or district to accomplish internally, so they increase their contracting of activities associated with the emergency. Such episodic events do not provide a predictable supply of work, so for contractors to invest in training or capital equipment, or to sustain a workforce from year to year is extremely difficult.

Finally, as part of a larger, nationwide restructuring of Forest Service procurement management, forests in the Plan area moved from forest-based contracting to “zone”

contracting in the late 1990s. Zone contracting meant that individual forest contracting staff had to reorganize, causing contracting processes to slow. According to procurement specialists interviewed, forests have taken a long time to figure out how to get contracting work accomplished under the new organizational structure, which has diverted attention away from contracting innovation.

## Conclusions

The shift from timber management to ecosystem management changed the procurement contracting practices of both the FS and the BLM. The type of work that both agencies procured changed in similar ways. Both agencies procured fewer forestry services associated with intensive timber management, such as tree planting and site preparation (mostly labor-intensive contracting work), as was expected. They bought proportionately more surveying and road maintenance services. Here is where the similarities end. Procurement spending by the BLM was nearly constant between 1990 and 2002, averaging just under \$20 million per year. In contrast, FS spending declined from a peak of \$103 million in 1991 to a low of \$33 million in 2002. The dramatic decline in forest budgets combined with other factors meant that the agency had no choice but to reduce contracting, despite the need to accomplish project planning, analysis, and implementation.

Although labor-intensive contracting associated with intensive timber management by the BLM declined as expected, equipment-intensive and technical contracting increased, as did different types of labor-intensive work, which may have offset job loss associated with the BLM’s shift away from intensive timber management. Procurement contracting opportunities offered by the BLM did not increase overall, nor did they decrease and contribute to job loss induced by reduced federal timber harvests. By contrast, contrary to expectations, FS contracting opportunities associated with ecosystem management work did not increase to offset job loss in the forestry services or the timber sectors. Instead, the decline in procurement contracting by the FS likely added to job loss in the timber sector caused by reduced federal timber harvests.

The BLM slightly increased its awards to contractors from Jobs-in-the-Woods areas during 1995–97, compared to 1990–92. The FS, however, did not increase its awards to affected counties during the same period. In addition, the BLM increased its awards to contractors in communities with fewer than 5,000 people, from \$14.4 million between 1990 and 1992 to more than \$32 million between 1995 and 1997. The BLM's procurement of land-management services likely created an economic boost to rural and small communities in the mid 1990s. Unfortunately, the effects were short lived; by 2000–2002, the BLM's awards to rural contractors had declined to \$16.4 million. Both the BLM and the FS increased the proportion of their awards to nearby contractors and decreased their awards to distant contractors. Much of this change is attributable to a shift in the type of work that the agencies procured and the location of that work. Despite increases in awards to rural and nearby contractors, the FS's dramatic decline in procurement spending far outweighed any proportional increases in contract capture that the rural and local contractors may have experienced. Thus, procurement contracting for ecosystem management work did not enhance opportunities for economic development and diversification in local communities.

## **Acknowledgments**

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## Chapter 6: Community Economic Assistance Programs

*Candace Dillingham*

One goal of the Northwest Forest Plan (the Plan) was to minimize adverse effects on jobs and to assist with long-term economic development and diversification in rural communities affected by cutbacks in timber harvest on federal forest lands. Four major economic assistance strategies were developed to achieve this goal:

- The Northwest Economic Adjustment Initiative (the Initiative), which provided economic assistance to workers and their families, businesses, and communities;
- Payments to states legislation, designed to stabilize payments to counties and to compensate for reductions in payments traditionally tied to federal timber receipts;
- Removal of tax incentives for the export of raw logs; and
- Assistance to encourage growth of, and investment in, small businesses and secondary manufacturers in the wood-products industry (Tuchmann et al. 1996: 141).

This chapter focuses on the Initiative and treats the last of the assistance strategies as one of its components. Payments to states and counties are addressed in chapter 7. This monitoring report does not examine the effects of the export tax incentive change put in place in 1993. The log export market has declined significantly over the last decade, and it would be difficult to determine the extent to which reductions in log exports were due to the removal of tax incentives, the reduction in public timber harvesting from national forests in the Pacific Northwest in response to the northern spotted owl (*Strix occidentalis caurina*) controversy, changes in Asian demand, or the globalization of wood markets (see Daniels 2004).

The Forest Service (FS) and Bureau of Land Management (BLM) are not economic development agencies and cannot be expected to function as such. Nevertheless, these agencies have long been committed to providing people in

communities that surround federal forest lands with socio-economic benefits from the forests they manage, thereby contributing to socioeconomic well-being. Community economic assistance programs are one way of doing this. The economic assistance package, designed to mitigate the effects of the Plan on people, communities, and businesses that were economically dependent on the wood products industry, was a central component of the Plan.

### Monitoring Question

How did agencies assist with long-term economic development and diversification in rural communities affected by cutbacks in timber harvest on federal forest lands and what were the outcomes?

### Expectations

Federal officials, in consultation with state and local officials, designed the Initiative with the expectation of accomplishing five specific objectives:

- Provide immediate relief for distressed timber communities.
- Create an environment for long-term economic development consistent with and respectful of the character of communities and their natural resources.
- Develop new mechanisms for delivering assistance.
- Emphasize equal partnership with the states and the critical role of local governments in economic development.
- Emphasize the use of performance-based standards for funding (outcomes based on creating new opportunities and sustainable jobs) over traditional standards for funding, which were based on programmatic eligibility (Tuchmann et al. 1996: 156).

Note that this is a very comprehensive approach including short-term mitigations, long-term community partnerships, and changes in how business is to be conducted and evaluated.

## The Northwest Economic Adjustment Initiative

The initiative was designed with four main categories of assistance to meet its goals and objectives (Tuchmann et al. 1996: 157):

- Retraining programs and other support services for dislocated workers.
- Retaining existing businesses and helping businesses to diversify by increasing access to capital, providing technical assistance and support, and improving access to markets.
- Developing technical capacity and infrastructure (including public works) to retain and promote the growth of existing businesses and to recruit new businesses.
- Ecosystem investment, primarily through Jobs-in-the-Woods programs in federal agencies.

Federal land management agencies executed programs in all of these categories except for the first. The retraining assistance category was under the purview of the Department of Labor.

The initiative's federal financial commitment was to make \$1.2 billion available to the affected region over 5 years, beginning in fiscal year 1994. Seven federal departments with 16 programs participated financially, and three additional agencies provided technical assistance and leadership (Tuchmann et al. 1996: 155). This commitment supplied the targeted funds to meet both the initiative's short- and long-term objectives to supply assistance and improve socioeconomic well-being. The scope of this complex initiative, together with the number of agencies implementing it, called for changes in the way that business had been conducted to date. Two major changes from past practices were emphasized to meet initiative goals: "subsidiarity" in decisionmaking (enabling local organizations to perform functions that they could carry out more effectively than a dominant, central organization), and agency coordination to greatly improve service delivery (FCR 2002: 13). A revised memorandum of understanding, supported by the three states and signed by the original participating federal agencies, extended the initiative for an additional 2 years, but

without the enhanced amounts of economic and community development money from the federal funding agencies as they had before. The agreement was to use initiative processes, institutions, and coordination to manage the normal amounts of agency funding in the region (Christensen et al. 1999: 85).

The initiative brought about several programmatic advantages relating to the provision of community assistance in the Plan region (Tuchmann et al. 1996: 161). It enabled federal agencies to reprioritize their use of funds, and to favor projects in places affected by changes in federal forest policy caused by the Plan. These assistance programs were funded partly or wholly from national sources, enabling the region to capture funds that otherwise would not likely have been available. In addition, funds that were passed to state agencies through community development block grants and Old-Growth Diversification programs, for example, allowed states the flexibility to develop their own priorities and uses for that money, while adjusting those priorities and uses over time on the basis of experience (Tuchmann et al. 1996: 161).

An innovative feature of the Plan was the intent to create linkages between the biophysical and socioeconomic components of the ecosystem by connecting and balancing jobs, businesses, and communities with forest management and restoration. The Plan's memorandum of understanding, an interagency agreement that initiated the planning process under the Plan, envisioned a high level of cooperation between the ecosystem management component of the Plan and the economic adjustment and community assistance components of the Plan (Pipkin 1998: 77). For example, they expected a range of restoration activities for which displaced timber workers could be retrained through programs funded through the initiative, which would offset job loss in the timber sector (Haynes and Perez 2001). Despite this vision of coordination, the forest management and economic adjustment programs were largely separated in implementation (Pipkin 1998: 78). Although this disconnect has been blamed for shortcomings of the initiative, implementation of the objectives of the initiative led to some successes related to this vision, notably precipitation of a change in

agency and community relations as well as some new forms of capacity-building infrastructure and techniques for long-term success of Plan goals.

## **Methods**

Several excellent and comprehensive assessments have reviewed and evaluated the complex initiative program, and provided associated findings and policy recommendations (Christensen et al. 1999, FCR 2002, Pipkin 1998, RCERT 1999, Tuchmann et al. 1996). We made no attempt to repeat these efforts in this monitoring program. Instead, we used the findings of these assessments to help us evaluate how well the Plan achieved the goal of promoting long-term economic development and diversification in Plan-area communities and mitigated job loss in the timber sector.

We did monitor the FS and BLM components of the initiative for this report because our monitoring program focuses on the socioeconomic benefits to rural communities from federal forest lands and their managing agencies in the Plan area. Community economic assistance provided by the FS and BLM is an important socioeconomic benefit. Although the FS and BLM portion of the initiative was a relatively small piece of the overall program, these agencies' programs played a unique role, providing the linkage between forest resource management jobs, businesses, and communities. The FS contributions to the initiative were in three main program areas: Old-Growth Diversification funds, Rural Community Assistance (RCA) Programs, and Jobs-in-the-Woods. The BLM contributions were mainly through Jobs-in-the-Woods.

An individual agency's distinctive institutional structures, and policy and funding differences can affect both how community assistance programs are implemented and what community outcomes occur. The initiative-targeted RCA and Old-Growth Diversification (OGDF) program funds, which did provide additional funding over the existing base program, ended in 2002, extending beyond the initial 5-year commitment. The FS Jobs-in-the-Woods money, as with most other initiative funding, consisted of reprogrammed dollars, not additional new dollars. Department of the Interior Watershed Restoration and Jobs-in-the-Woods programs were increases over and above base

programs (Tuchmann et al. 1996: 161). Unlike the FS, the BLM did not have authority to use federal funds for projects not on public land until the Wyden Amendment, so the BLM had no equivalent RCA program. Both agencies use partnership agreements for projects on public lands.

Since commencement of the initiative, several community-focused programs have emerged with many of the same objectives as the initial community economic assistance programs. Because these programs are continually changing, tracking the characteristics and evolution of these programs and how agency structures adjust and adapt to these changes is considered here to be an important part of socioeconomic monitoring. Although these other programs are not discussed in detail here, they are viewed as not only connected to the initial programs, but also potentially more powerful and effective as they emerge and evolve.

The following sections discuss the outcomes of FS and BLM community economic assistance programs to the present. In addition to providing data on dollars contributed, the discussion covers successful features of these programs within the initiative's framework that emerged during this period. These features, which help meet the initiative's objectives and Plan's socioeconomic goals, are candidates for incorporating into future community-focused programs, as funding mechanisms and assistance programs available to rural communities will likely continue to change over time.

## **Results**

### **Monitoring FS and BLM Community Assistance Programs**

As noted in Forest Community Research (FCR 2002: Chapter 4), monitoring agency investments in community assistance programs is challenging because of poor record-keeping and difficult access to records that do exist. Record-keeping practices for the initiative projects differed between agencies, states, and state Community Economic Revitalization Teams (CERTs). Some information is incomplete. Regional data identify some block grants and loans, but it is not possible to track their benefits to individual communities. In spite of these limitations, lessons can be learned from the information that does exist.

**Jobs-in-the-Woods—**

Watershed Restoration and Jobs-in-the-Woods had both economic and environmental objectives. This program was intended to provide employment opportunities that produced ecological benefits (Tuchmann et al. 1996: 164). Federal agencies with Jobs-in-the-Woods projects included the FS, U.S. Fish and Wildlife Service, the BLM, and the Bureau of Indian Affairs (Tuchmann et al. 1996: 161). In the timeframe available to produce this monitoring report, it proved too difficult to obtain reliable and consistent quantitative data from agencies other than the BLM to allow monitoring the amount of funds associated with the Jobs-in-the-Woods program and the types of projects these funds supported.

The Jobs-in-the-Woods program has evolved differently in the BLM and the FS since inception of the Plan. Public land managed by the BLM within the Plan area is generally intermixed with private land; in contrast, FS land typically consists of large blocks of consolidated public ownership. The dispersed pattern characteristic of BLM land requires a great deal of collaboration between the agency and private landowners to accomplish effective projects across property lines. Judging by the continued funding of this program past the initiative period, the provision of community assistance through Jobs-in-the-Woods has worked well and facilitated close collaboration between the BLM and local watershed councils. The Wyden Amendment, allowing the use of federal funds on private land, has assisted with this collaboration.

Although over time the short-term job training needs for displaced timber workers have declined, the BLM has integrated the Plan's objective of assisting communities while accomplishing watershed restoration into its land management activities by incorporating an ongoing separate Jobs-in-the-Woods program with an annual budget. The program is coordinated at the state level with other community-focused programs and tools as they arise, including Secure Rural Schools Act projects and stewardship contracting (which targets both community and ecosystem needs and allows retention of forest products in exchange for vegetation management services). Jobs-in-the-Woods funding is often combined with other restoration funds

from these programs as a way of capitalizing on economies of scale and, in effect, leveraging the investments made with appropriated funds. The program has now expanded its scope to include vegetative treatment work as opportunities arise. The BLM has incorporated the new stewardship contracting authorities in a regionwide coordinated program with a target of four stewardship contracts in 2004 (half for fire and fuels and half for restoration projects). Figure 6-1 shows trends in the BLM's Plan-area Jobs-in-the-Woods program appropriated dollars between 1994 and 2003. Although funding for the program decreased in 1999 at the end of the initiative period, it has remained stable since that time. The Jobs-in-the-Woods program is considered a success by the BLM and continues to be funded through 2005.

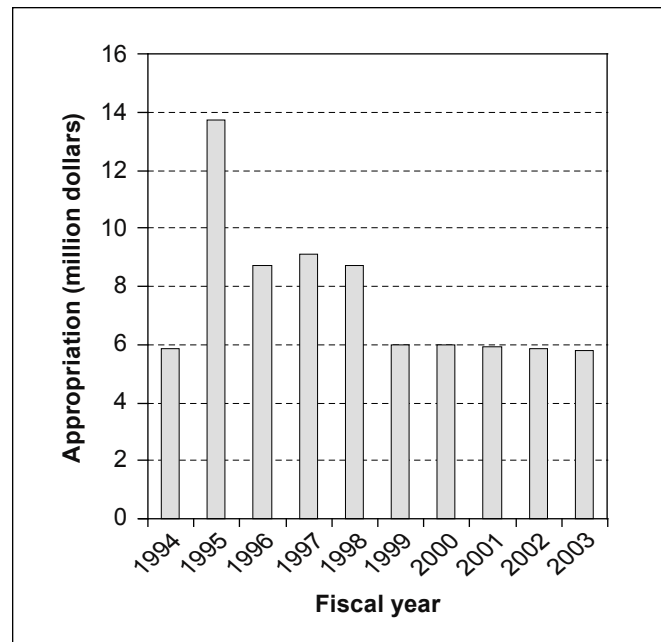


Figure 6-1—Bureau of Land Management (BLM) Northwest Forest Plan area Jobs-in-the-Woods program appropriated dollars. Base year is 2003. Source: BLM Oregon State Office.

The FS Jobs-in-the-Woods program is no longer funded by Congress, the Administration, or the agency. Like the BLM, the FS is moving to take advantage of new stewardship contracting authorities. The FS also has a pilot program for stewardship contracting projects (which has separate appropriations) to test new ways of designing and packaging projects that combine ecosystem



management with local workforce considerations. Like the BLM, the FS also has ongoing community-focused projects through the Secure Rural Schools Act and the National Fire Plan. In addition, grant money, until recently, has been available for economic action programs. The FS regions, however, have no single point of contact for coordinating community-focused programs, relying instead on close coordination between a variety of dispersed program managers. Because no single program manager orchestrates community-focused programs, how well the FS is achieving Plan socioeconomic objectives relating to economic assistance will likely be much more difficult to assess. These achievements may perhaps best be monitored through procurement contracts and grants and agreements.

Jobs-in-the-Woods has been characterized as the most complex component of the initiative because it requires “simultaneous and innovative consideration of forest ecosystem management, workforce development and employment, community economic needs, interagency coordination (within the federal government), and federal-nonfederal collaboration with relevant partners” (Tuchmann et al. 1996: 201). Despite the BLM’s successes, published assessments and case studies indicate that to many, Jobs-in-the-Woods has been the greatest disappointment of all of the components of the initiative because public expectations regarding the quality and number of jobs that would be created to offset job losses in the timber industry were out of proportion to the program’s size. In addition, many of the economic effects of reduced federal timber harvests on the timber industry happened before the initiative began. Many workers had already adjusted to the new situation out of necessity. Only a small proportion of displaced timber workers participated in job training programs, and little work was then available in the timber industry. Most high-paying contracts were for heavy-equipment work, which created very few jobs. Record keeping and monitoring were poor. Most of the funds went directly to restoration projects, contributing to the biophysical goals of the Plan, but having minimal effect on workers. Although Jobs-in-the-Woods created some short-term jobs, very few workers were able to find long-term employment as a result of this program (FCR 2002: chapter 3).

#### **Old-Growth Diversification Funds—**

The FS’s OGDF program was funded by dollars appropriated during the initiative period; it continued the influx of dollars into a program that began in 1991 in the FS Pacific Northwest Region (Region 6) (Oregon and Washington). A total of \$19.8 million was appropriated for this fund between 1994 and 2002, compared with the \$5.3 million in fund dollars available from 1991 to 1993 that predated the Plan. In addition, a new fund was established in 1994 in the FS Pacific Southwest Region (Region 5) (California) with OGDF money that totaled \$4.0 million over the 1994–2002 period. These funds were passed through to state agencies to administer. In Region 5, the money went into a revolving loan fund. In Region 6, most of the Washington State money (\$10.1 million) went into a revolving loan fund, and the Oregon State money (\$9.7 million) mostly went for RCA grants. This fund has not had additional appropriations since 2002.

The OGDF was one component of the assistance directed to small businesses and secondary manufacturing in the wood products industry (the fourth of the major economic assistance strategies that were a part of the Plan). Small businesses can provide significant employment opportunities, but they also face challenges related to size, financial capital, and rural location (Tuchmann et al. 1996: chapter 6). Direct grants and loans from OGDF made millions of dollars available for business expansion and community diversification. “Revolving loan funds played a particularly important role in enabling very small and micro-level enterprises to obtain access to affordable credit” (FCR 2002: 93). This program met the first objective of the initiative by providing immediate relief. It also addressed the second objective, to create an environment for long-term development and the fourth objective to emphasize equal partnership with the states. Developing new forest-based enterprises has proved difficult, however, given the extent of the changes in the timber industry and regional, national, and global economies and markets. Funding for OGDF that went into revolving loan funds will continue to provide capital in the future as the original loans are repaid, offering a sustainable source of affordable credit over the long term. Thus OGDF proved successful on two accounts: it played

an important role in providing for the needs of small resource businesses, and it is a sustainable program that will play this same role into the future as revolving loan funds.

**The Forest Service Rural Community Assistance Program—**

The FS RCA program, in keeping with the first objective of the initiative, provided some immediate relief in the form of grant money, loans, and some jobs for distressed timber communities. Most important, the RCA program also helped to create an environment for long-term economic development consistent with and respectful of the character of communities and their natural resources (the second objective of the initiative). Criteria for program funding emphasized new and sustainable resource-based businesses and jobs in resource-dependent communities. This met the fifth objective of the initiative: to emphasize the use of performance-based standards for funding. Appropriations for this program from 1994 to 2002 were above base allocations to the region (Tuchmann et al. 1996: 161). The amount of money distributed through the RCA program during this period totaled \$12.3 million in FS Region 5, and \$63.8 million in FS Region 6. (As noted above, this includes identified Oregon OGDF that went primarily to grants, but not Washington OGDF that went primarily to revolving loan funds.)

The FS initiative funds represented substantial increases in the agency’s competitive (not congressionally earmarked) economic community assistance programs over pre-Plan funding as shown in figures 6-2 and 6-3. These figures also show how the funds were distributed over time. The remarkable level of leveraged funds (cash and in-kind services contributed by groups outside the FS) that this program generated demonstrates the importance that communities placed on projects funded through RCA program grants (fig. 6-4). The data on leveraged dollars are not readily available for Region 5, but the RCA grant program required a 20-percent funding match.

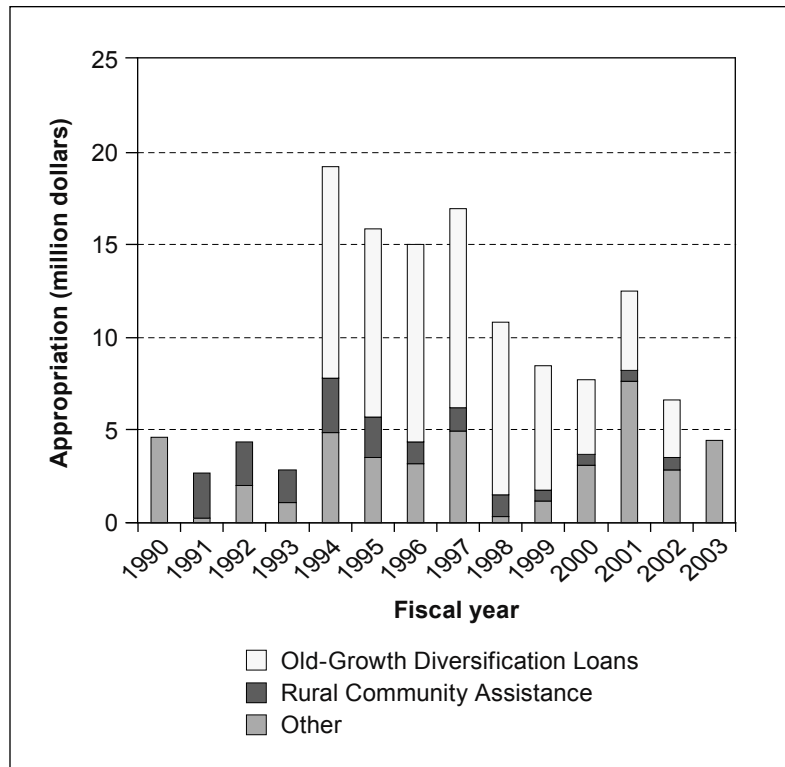


Figure 6-2—Trends in community economic assistance funding, Forest Service Region 6. Base year is 2003.

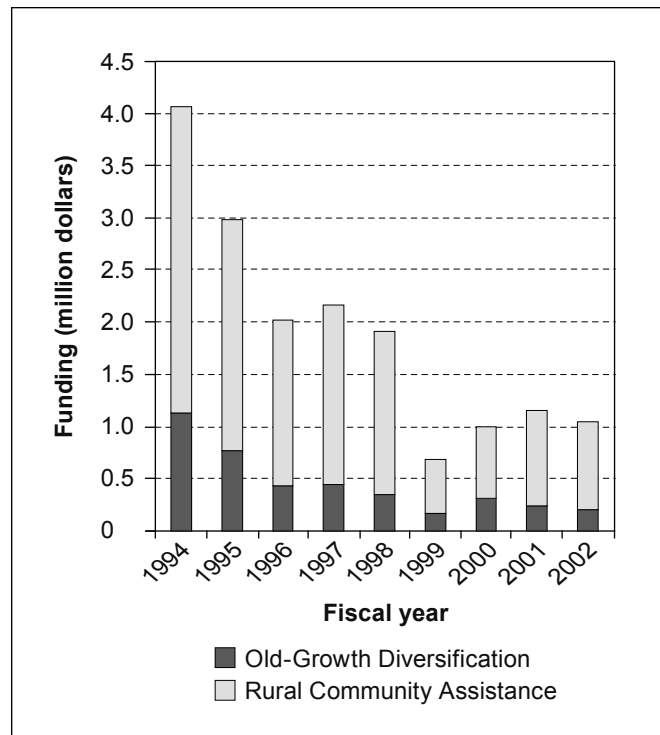


Figure 6-3—Trends in community economic assistance funding, Forest Service Region 5. Base year is 2003.

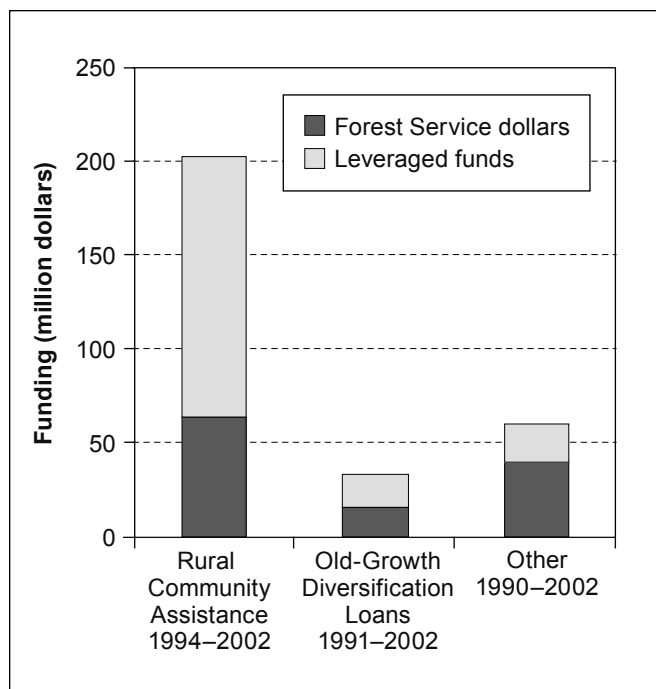


Figure 6-4—Dollars leveraged with community assistance funds, Forest Service Region 6. Not adjusted for inflation.

Assessments of the initiative have pointed out that small, rural communities with few or no paid staff to conduct even basic community service operations often have little or no capability to take advantage of programs available for economic assistance (Reyna 1996: 8; Tuchmann et al. 1996: 184,199). “Offering dollars alone is insufficient. Communities needed development of the human skills and social capital to take advantage of the other kinds of assistance. Without an emphasis on building these kinds of resources and skills, only the most advantaged of the disadvantaged are able to respond” (FCR 2002: 90). Not only were such skills necessary for taking advantage of FS programs, but “soft infrastructure projects, consisting of leadership development, community-based planning and visioning, and building networking skills and cultural capital were vital for creating, leveraging and succeeding with the entire array of NEAI projects” (FCR 2002: 90). Other initiative assessments also noted the varying ability of communities to respond to economic development opportunities, and the importance of breaking down the “grantsmanship syndrome” whereby the winners were those who could prepare the best applications (Berblinger 1999: 81).

The FS RCA program and the Economic Development Administration (EDA) provided most of the initiative funding that supported soft infrastructure development (FCR 2002: 90). Although the RCA program provided most of the funding for leadership development and community-based planning and projects, the EDA contributed support for the long-term staffing of organizations, such as economic development districts (FCR 2002: 43). The RCA program not only targeted these “soft infrastructure” projects such as leadership development, community visioning and action plans, market and feasibility studies, business plans, and technical assistance, but program coordinators and managers also provided outreach and assistance to communities to help ensure the best opportunity to find appropriate assistance, and to succeed in acquiring project funding. “For some communities, particularly small ones, the Forest Service Community Assistance Coordinator is an ambassador of the federal government, and provides a link to other federal services” (Tuchmann et al. 1996: 193). These coordinators participated in community-based planning to provide technical assistance and to assist with leadership development, sometimes without additional funding from the program. They served as visible messengers and catalysts of change for community and forest relations. For these reasons, the RCA program was particularly effective in offering economic assistance crucial to the smallest, most remote, unincorporated areas around Plan forests. The need to reach out to these highly affected communities that were not well informed about development opportunities and that lacked sufficient capacity to develop proposals on their own, was noted in most assessments of the initiative (Donoghue et al. 1999: 61).

There were other characteristics of the RCA program that assessments considered successful. The program had the flexibility to provide “gap” funding for priority projects not available through other economic assistance programs. Most importantly, the program focused on funding those projects identified by communities themselves as being most important to them (Berblinger 1999: 81). This practice of supporting and honoring local plans helped to provide access to assistance programs for priority projects for all communities, and it meets the second and fourth objectives

of the initiative: to create an environment for long-term economic development consistent with and respectful of the character of communities and their natural resources, and to emphasize the critical role of local governments.

The FS economic assistance programs continue to be aimed at long-term diversification, building community capacity, and developing natural-resource-based products, as required by their existing authorities. Now that the initiative has expired, however, not enough dollars are available to support technical assistance and projects at anything other than a minimal level within the Plan area. More recent funding made available to communities through the FS and BLM has come from the Secure Rural Schools and Community Self Determination Act (Secure Rural Schools Act) Title II Resource Advisory Committee projects. The FS, BLM, and other agencies have also provided funding to communities through the National Fire Plan. These more recent programs often do not contain explicit criteria for funding qualification aimed at long-term economic diversification related to natural resources and utilization of natural resource products. Nevertheless, they sometimes include criteria for using local community plans to develop community support, prioritize projects, and leverage funds. The Jobs-in-the-Woods and RCA program managers have developed expertise within the agencies to coordinate and integrate complex community and agency needs and old and new community-based programs, and to use administrative tools in innovative ways to respond to local resource and socioeconomic situations.

### **Assessment of Other Initiative Components**

Innovative approaches in how business was conducted were incorporated during initiative implementation. The Community Economic Revitalization Team (CERT) process was established as a part of the initiative to streamline service delivery. It built on previous successful models for providing economic and social assistance to rural areas in Oregon and Washington affected by declines in the timber industry. In contrast, the California CERT was “created from scratch and undertook the economic assistance tasks of the initiative without the benefit of state institutions exclusively

charged with the responsibility of dealing with issues of rural development and rural industrial dislocation” (Tuchmann et al. 1996: 163). State CERTs defined the affected area (the counties eligible for assistance), decided on organizational ground rules for how they would operate, and conducted outreach to potential funding recipients. They used a “one-stop-shop” approach that greatly simplified access to the different kinds of federal and state assistance that was available. The “lead agency” technique, which assigned responsibility for developing a project proposal on behalf of all federal and state agencies participating in the initiative, was also a successful method of streamlining government processes for providing community assistance. Another group, the Regional CERT, served as a “forum for exchanging information and identifying problems relevant to all three states” (Tuchmann et al. 1996: 186). These CERT groups met the third, fourth, and fifth objectives of the initiative: to develop new mechanisms for delivering assistance, to emphasize the equal partnership of states and the critical role of local governments, and to emphasize the use of performance-based standards for funding over traditional standards based on programmatic eligibility. They addressed barriers, identified priority issues at different scales, and ensured the most efficient agency and funding approach. Assessments of the initiative considered the CERTs very successful and innovative in streamlining service delivery.

Some of the functions of the CERTs still exist. The Oregon CERT has been renamed the Needs and Issues process. As before, local communities develop their desired projects for the year, and send them to the countywide group that decides on what priority to give projects in their county. Each county then forwards its list to the state, where the federal funders select which projects they could fund given their missions, authorities, and needs. The FS coordinators provide field personnel that scope each potential FS project and provide any necessary technical assistance. They collectively prioritize and select projects based on the goals of the program in a competitive process. The Washington CERT is essentially the same. However, both state CERTs are hampered by diminished state funding, reducing their effectiveness somewhat. The members of the

California CERT still meet but do not have the same project funding role. This body serves as a forum for discussing issues relevant to economic well-being in northern California.

Other groups have incorporated various elements of the CERTs in their design. In California, the statewide Fire Safe Council has adopted the “one-stop-shop” approach for fire-related grant funds from federal and state sources. The Secure Rural Schools and Community Self Determination Act Title II Resource Advisory Committees, initiated in 2001, include local officials as part of the cross section of representative constituencies who advise federal officials on priorities for funding projects. The county allocates money for these funding opportunities. This structure fosters local empowerment. Currently there is no equivalent group to the CERTs that looks across resource advisory committees and other programs for regional and other agency and government funding opportunities. One assessment proposed incorporating CERT functions into existing regional or province groups established with the Plan to increase coordination between forest management and related community programs (Pipkin 1998: 79).

### Assessing the Effectiveness of the Initiative

Up to this point I have discussed how well specific components of the initiative contributed to its success, with a focus on FS and BLM programs. Here, I present an assessment of how effective the entire, much larger, initiative program was in meeting its goals. Forest Community Research (FCR 2002) provided the most recent, and by far the most comprehensive assessment of the initiative. That study’s conclusions are summarized here to help evaluate how well the Plan has met its goal of minimizing adverse effects on jobs, and assisting with long-term economic development and diversification in rural communities affected by cutbacks in timber harvest on federally managed forest lands.

Effects on timber workers and their families (FCR 2002: chapter 4):

- Many of the economic effects associated with declines in the timber industry were felt in the 1980s, before the Plan and the initiative were implemented. Although the initiative aimed to mitigate the socio-

economic effects of timber industry decline associated with cutbacks in federal timber harvest, many timber workers had already experienced the effects of industry decline, and either left their communities to look for new jobs or moved on to new opportunities locally. For these workers, reductions in federal timber harvesting under the Plan contributed to an already declining industry affected by foreign competition, timber industry downsizing from increasingly efficient timber harvesting and processing equipment, mill concentration, and economic recession. In other words, timber workers were already experiencing different degrees of crisis, and the timing and scope of the initiative were inadequate to address this crisis.

- Many of the timber workers and their families who needed assistance did not benefit from the initiative. The needs were far greater than what could be met through initiative programs.
- Although job creation around long-term, family-wage work in the woods associated with ecosystem management and restoration was expected under the Plan, it never moved beyond pilot projects. The jobs workers were retrained for by initiative job training programs never materialized in rural communities. Some exceptions were the tribes that had their own land base.

Effects on rural communities:

- Communities and businesses benefited more than displaced timber workers and their families did.
- Some industrial development projects succeeded, although these typically require long-term investment.
- Loan programs allowed businesses to gain access to affordable credit, and were largely successful.
- The initiative was fairly successful in supporting investments in physical infrastructure in rural communities (e.g., water and sewer systems, community facilities, industrial parks) that facilitate other forms of community and economic development.
- The initiative was also successful in supporting investments in human capacity-building through soft

infrastructure development, a critical component of any overall community assistance program, that should be integrated with other forms of physical and financial capital development. “While focusing on building physical and financial capital may work in communities that already have relatively high levels of organizational capacity and social, human, and cultural capital, it will be relatively ineffective in communities without those resources” (FCR 2002: 91).

- Finally, although the initiative provided a start, many rural communities in the Plan area still face economic challenges, and continuing assistance is needed to help them develop and diversify economically over the long term.

## Conclusions

The Northwest Economic Adjustment Initiative provided new and redirected program funding for a transition period of adjustment to the effects of policy changes in the Plan area. Community economic assistance programs were a few among many agency initiative programs. These programs were relatively small in terms of total initiative dollars. The forest management agencies with the bulk of federal forest lands, the BLM and the FS, had three primary programs to integrate forest management activities, jobs, and communities and to deliver this assistance: Jobs-in-the-Woods, Rural Community Assistance, and the Old-Growth Diversification Fund. Each program contained elements of initiative objectives, summarized here as short-term mitigations, long-term economic diversification, and changes in how business was to be conducted and evaluated with agency and nonagency partners and community members.

Many view the short-term mitigation aspects of these programs as too little, too late. Timber industry restructuring and timber supply changes were occurring, to a large degree, before the initiative dollars became available in 1994. Each of the three programs injected dollars into the community. The OGDF provided loans to retain existing businesses. Local jobs were targeted through Jobs-in-the-Woods for ecosystem management activities. The RCA

provided grants to the private sector for projects related to forest management. Many believe that the dollars that were available were inadequate to compensate for the magnitude of the effects.

It can be argued that it is too soon to assess the success of long-term economic diversification projects. Many rural resource-based communities have relatively slow growth and are subject to fluctuations owing to national and international economic forces beyond their control. Some aspects of initiative programs have had mixed reviews. For example, the RCA program specifically targeted economic diversification and funded projects of this type such as marketing and business plans, but whether these were generally successful is debatable.

However, some components of the programs that targeted long-term diversification were widely considered successful. The OGDF, as a revolving loan fund, still provides a long-term sustainable source of capital for resource-related business expansion and diversification and is considered highly successful. In the RCA program, community-based planning was a focus where communities were funded to identify and prioritize the value of their natural resources and related projects. Projects to improve community social capacity, such as leadership development, were aimed at helping communities to help themselves. In reviews of the initiative, these “soft infrastructure” projects were considered vital to the success of initiative projects.

Another objective of this complex, multiagency initiative was to design new ways for federal agencies to conduct business in collaboration with nonfederal and community partners. The CERTs developed organizational ground rules and incorporated “one-stop-shop” and “lead agency” techniques to streamline program delivery. Collaborative groups from community plans, local government, and regional groups identified and prioritized and greatly leveraged available funds. The RCA program provided technical assistance to small, remote, unincorporated communities to enable them to organize and compete for funding. The program had the flexibility for managers to provide “gap” funding for identified critical projects to fill in where other agencies couldn’t. Criteria for program funding emphasized new and sustainable resource-based

businesses and jobs in resource-dependent communities. The Jobs-in-the-Woods and RCA program managers have developed expertise within the agencies to coordinate and integrate complex community and agency needs and old and new community-based programs, and to use administrative tools in innovative ways to respond to local resource and socioeconomic situations. Assessments of the innovative aspects of these programs view them as highly successful.

Jobs-in-the-Woods, characterized as the most complex component of the initiative, linked the biophysical and socioeconomic components of the Plan. It initiated a transition by the agencies to new ways of accomplishing projects with partners and communities. Despite the BLM's successes, to many, Jobs-in-the-Woods has been the greatest disappointment of all of the components of the initiative because public expectations regarding the quality and number of jobs that would be created to offset job losses in the timber industry were never realized.

With the exception of OGDF revolving loan funds, minimal funding remains available for programs begun under the initiative. The initial Plan vision of linking the biophysical and socioeconomic components of the ecosystem with the goals of the Northwest Economic Adjustment Initiative was perhaps so ambitious that it raised unrealistic expectations, and thus resulted in much disappointment. However, the intent of the Plan to create linkages between the biophysical and socioeconomic components of the ecosystem by connecting and balancing jobs, businesses, and communities with forest management and restoration remains important to achieving Plan socioeconomic goals. There are a number of new programs emerging with many of the same long-term objectives and community-based collaborative design. We can learn from the initiative period and use the successful features of programs identified in this report in these new community-focused programs as they emerge. In summary, the features of the agencies' community economic assistance programs identified as important for achieving these goals include the following:

- Funding programs that provide opportunities for rural forest-based communities with the lowest capacity.

- Funds targeted for “soft infrastructure” projects.
- Outreach and assistance to low-capacity forest-based communities to enable their successful participation.
- Sufficient flexibility for program managers to direct funding at the appropriate scale, communities, and activities.
- Use of a CERT-like process (one-stop-shopping and lead-agency techniques) to streamline service delivery for all assistance programs for all agencies and governments participating in natural resource and community-focused projects.
- Use of an interagency, intergovernmental, and citizen collaborative group at one or more stages of the process to broaden input to decisions, and also to identify barriers to programs, efficiencies of scale, and other agency, government, and private funding opportunities.
- Use of existing RCA criteria for program priorities in the outreach and application process that target long-term economic diversification related to natural resources, promote forest product utilization, and demonstrate project support in local community plans and through leveraging funds.

To continue monitoring the effectiveness of community-focused programs in meeting Plan socioeconomic goals, it is important to evaluate program delivery features such as those above as a component of assessing program outcomes. Improvement in the reliability and consistency of basic program data (including grants, agreements, and contracts) will enable further evaluation of the Plan's socioeconomic goals.

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## Chapter 7: Payments to County Governments

*Richard Phillips*

Shared revenues generated by the sale of timber and other goods and services from federal lands are important sources of funds for local governments. Historically, 25 percent of gross timber receipts from the sale of Forest Service (FS) timber and 50 percent of timber receipts for the Oregon and California Railroad (O&C) and Coos Bay Wagon Road (Wagon Road) lands have been returned to counties as compensation for revenues foregone because the lands and resources are not in private ownership.

Under the Payments to States Act of 1908 (Public law 60-136 as amended), FS payments are for public schools and local roads. State legislatures decide on the actual division of funds. In California and Washington, the split is 50:50; Oregon schools get 25 percent, and county roads get 75 percent. The payments received from the O&C and Wagon Road lands located in Oregon can be used for any county general purpose.

Timber receipts, which include purchaser road credits, Knutsen-Vandenburg Act (KV) collections for sale area restoration, and salvage sale fund payments, are by far the largest source of revenue. They exceeded 99 percent of all revenues collected during the early 1990s and dropped to 95 percent by the end of the decade. Other revenues generated by the sale of natural resources from federal lands include collections for developed recreation, mineral leasing, special uses, and grazing permits.

Washington, Oregon, and northern California were affected by the drop in federal timber harvest and associated timber revenues resulting from administrative and judicial decisions designed to protect the northern spotted owl (*Strix occidentalis caurina*) and other ecosystem components. For 1991–93, Congress annually invoked stop-gap measures to mitigate the reduction in revenue to 48 counties in western Oregon and Washington, and northern California (see table 7-1). Congress passed the Omnibus Budget Reconciliation Act of 1993 to provide a longer lasting alternative payment. All of these alternative payments are known as the “spotted owl safety net” or “owl guarantee” payments. The 72 counties (see table 3-1) in

**Table 7-1—Counties receiving owl guarantee alternative payments**

State, county	State, county
California, Del Norte County	Oregon, Multnomah County
California, Glenn County	Oregon, Polk County
California, Humboldt County	Oregon, Tillamook County
California, Mendocino County	Oregon, Wasco County
California, Shasta County	Oregon, Yamhill County
California, Siskiyou County	Washington, Chelan County
California, Tehama County	Washington, Clallam County
California, Trinity County	Washington, Clark County
Oregon, Benton County	Washington, Cowlitz County
Oregon, Clackamas County	Washington, Grays Harbor County
Oregon, Coos County	Washington, Jefferson County
Oregon, Curry County	Washington, King County
Oregon, Deschutes County	Washington, Kittitas County
Oregon, Douglas County	Washington, Klickitat County
Oregon, Hood River County	Washington, Lewis County
Oregon, Jackson County	Washington, Mason County
Oregon, Jefferson County	Washington, Okanogan County
Oregon, Josephine County	Washington, Pierce County
Oregon, Klamath County	Washington, Skagit County
Oregon, Lake County	Washington, Skamania County
Oregon, Lane County	Washington, Snohomish County
Oregon, Lincoln County	Washington, Thurston County
Oregon, Linn County	Washington, Whatcom County
Oregon, Marion County	Washington, Yakima County

the Plan area include 47 of the owl guarantee counties.<sup>1</sup> Under the act, counties received a declining percentage of the 1986 through 1990 average annual payment; payment began in 1994 at 85 percent of the 5-year average and was to decline by 3 percent each year through 2003, when it would reach 58 percent. Between 1999 and 2003, counties would receive either their percentage from the act, or their revenue-sharing percentage from gross receipts, whichever was higher. The owl guarantee payments under this act were to expire in 2004.

In 2000, Congress replaced this spotted owl safety net with the Secure Rural Schools and Community Self-Determination Act (Public law 106-393), which expires in 2006. Under this act, counties receive an annual payment equal to the average of the payments received during the 3 highest years between 1986 and 1999. This act provides

<sup>1</sup> The exception is Lake County, Oregon, which is included in the owl-guarantee legislation but not in the Plan’s 72-county area.

alternative payments to counties nationwide that historically shared revenues from goods and services sold from FS lands and from O&C and Wagon Road lands. The national forest component stipulates that at least 85 percent of this money (Title I) must be used to fund education and transportation projects. For the O&C and Wagon Road components, 85 percent must be used for general county purposes. The remaining 15 percent is used to fund special projects on federal lands (Title II) and general county budget needs (Title III).

Resource advisory committees were established by the act to promote collaborative relations and to advise the Secretaries of Agriculture and Interior on the use of Title II funds. The advisory committees include 15 members representing a balance between the environmental community; industry, commodity, and recreation interest groups; and government officials, educators, and members of the public. The advisory committees review and recommend projects and associated funding proposed by willing federal agencies, state and local governments, private and non-profit entities, and landowners. The projects must focus on enhancing or restoring forest ecosystem health (including water quality), promoting land stewardship, or maintaining or improving existing infrastructure. The projects can be on national forest land, Bureau of Land Management (BLM) O&C and Wagon Road lands, or on nonfederal land where they would benefit federal land.

In addition to revenue sharing, counties receive payments in lieu of taxes (PILT) based on the amount of eligible federal land in each county. The payment amount is determined based on a formula that includes population and the amount of prior-year revenue sharing. In 1994, Congress passed legislation to increase the payment amounts calculated in the formula and added an annual inflation increase (Schuster 1996). These payments are funded directly through congressional appropriations, but Congress typically does not fully fund PILT. Funding varies year to year and is generally about 50 percent of the calculated amount. The PILT payments are important to county governments, and they are inversely tied to timber receipts and other revenue sharing. The payments in lieu of taxes were generally not affected by the Plan's implementation that reduced

timber harvest, because the owl guarantee legislation and the Secure Rural Schools Act mitigated the loss in timber revenues.

## Monitoring Question

Did payments-to-counties legislation stabilize payments to county governments and compensate for payments traditionally tied to timber receipts?

## Expectation

Payments-to-counties mitigation measures were expected to offset the effects of reduced federal timber-harvest receipts on county governments through a transition period.

## Methods

Data on actual payments to county governments are available for 1988 through 2004. The primary source of FS revenue-sharing data is the annual USDA, FS All Service Receipts report. The BLM revenue-sharing data are from the annual USDI, BLM Facts reports available at the BLM Oregon State Office, Portland, Oregon. The payments under the Secure Rural Schools Act for 2001 are from FS and BLM Web sites. The payments reported for 2001 are projected to 2004 without the estimated 2-percent annual increase in the consumer price index.

It is also important to know what the payments to county governments would have been if they were unadjusted by safety net legislation. The unadjusted payment data are available by using the same FS and BLM sources with the following limitations. The national forest payments without the guarantees were not reported after 1999, and BLM data without guarantees were only reported until 1995. Data for the adjusted and unadjusted payments to county governments in the Plan area are presented in table 7-2 for FS data and table 7-3 for BLM data.

## Results

The amount of money county governments received from the FS, O&C, and Wagon Road payments are shown in figures 7-1 and 7-2. The lower line on each graph represents the amount county governments would have received based on revenues generated without legislative assistance.

**Table 7-2—National forest payments to counties in Plan area**

Year	Unadjusted	Owl-guarantee adjusted
<i>Million dollars</i>		
1988	193.3	193.3
1989	216.8	216.8
1990	188.9	188.8
1991	155.5	184.1
1992	120.8	167.2
1993	104.5	156.0
1994	80.1	153.9
1995	54.2	147.6
1996	44.2	137.7
1997	44.9	133.5
1998	39.4	126.5
1999	25.7	120.6
2000	NA	115.0
2001	NA	205.4
2002	NA	205.4
2003	NA	205.4
2004	NA	205.4

NA = not available.

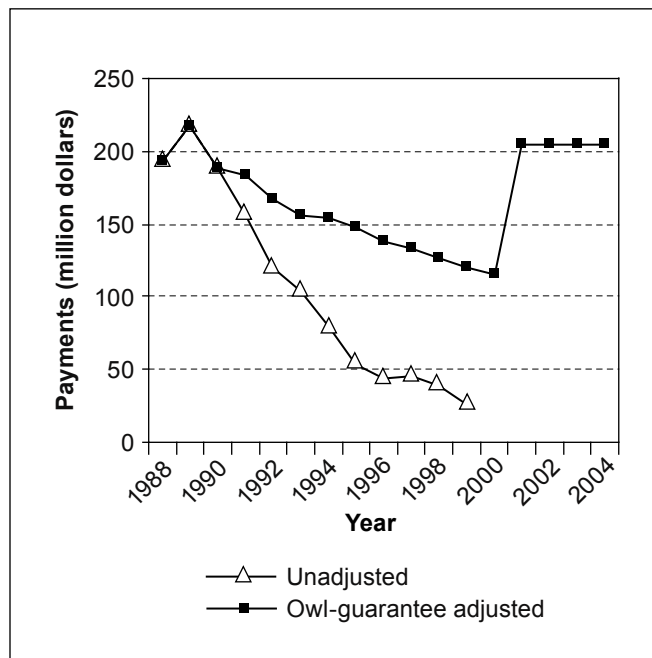


Figure 7-1—National forest payments to counties in Plan area.

**Table 7-3—Oregon and California Railroad and Coos Bay Wagon Road payments to counties in Plan area**

Year	Unadjusted	Owl-guarantee adjusted
<i>Million dollars</i>		
1988	69.6	69.7
1989	110.0	110.0
1990	204.8	204.9
1991	44.1	70.0
1992	NA	119.2
1993	67.4	79.3
1994	31.8	79.3
1995	22.1	76.5
1996	NA	73.6
1997	NA	70.9
1998	NA	68.1
1999	NA	65.3
2000	NA	62.5
2001	NA	109.7
2002	NA	109.7
2003	NA	109.7
2004	NA	109.7

NA = not available.

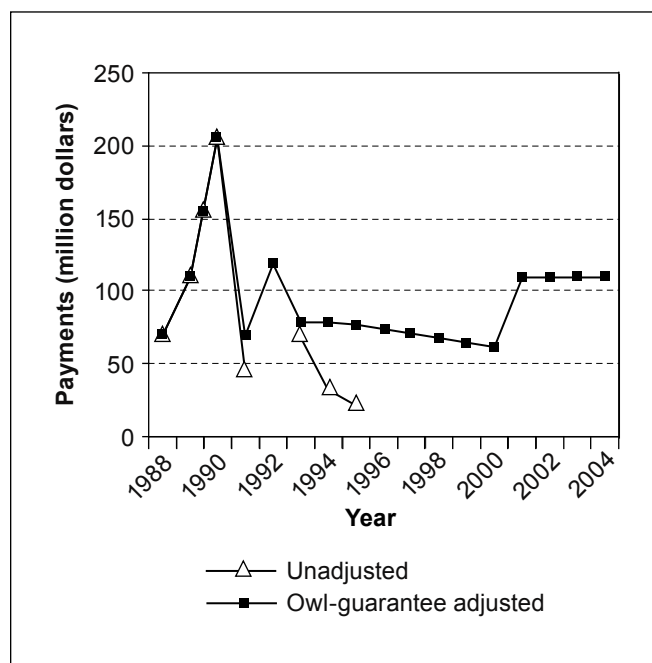


Figure 7-2—Oregon and California Railroad and Coos Bay Wagon Road payments to counties in Plan area.

The upper line indicates the amount county governments received under the owl safety net payments and the Secure Rural Schools Act. The spotted owl safety net measures resulted in substantially higher payments to counties than they would have received through revenue sharing alone. The Plan area, and specifically the 48 owl guarantee counties, were receiving more than \$150 million annually in owl guarantee payments by 2000. Beginning in 2001, the Secure Rural Schools Act provided the highest rate of payments to the Plan counties. These payments increased each year by about 2 percent, based on 50 percent of the previous year's change in the consumer price index. The Secure Rural Schools Act thus provided an adjusted payment totaling about \$270 million to the Plan counties (figs. 7-1 and 7-2).

The payments in lieu of taxes for the Plan counties in western Oregon and Washington, and northern California are shown in figure 7-3. Across all counties, these payments totaled more than \$13 million in 2002. The formula for the payments was revised in 1994 to provide increases to cover inflation costs. The peaks in 1993 and 1995 are primarily because prior-year payment information was received from the states too late to put into the formula, shifting counties into a higher payment amount because part of the formula subtracts prior-year revenue-sharing from current-year payments in lieu of taxes. In 1993 and 1995, the prior-year amounts were underreported.

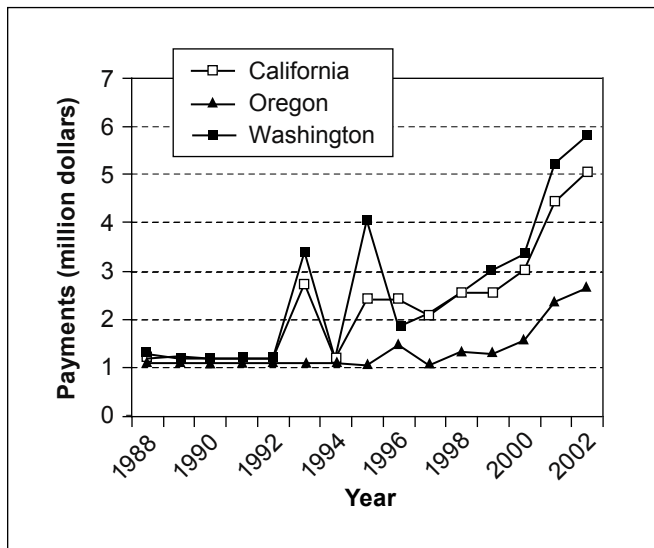


Figure 7-3—Plan area payments in lieu of taxes.

## Conclusions

The initial payments-to-counties legislation has generally mitigated the effects of declining timber receipts for the 48 counties covered by the legislation. The counties in other parts of the Plan area (in eastern Washington, Oregon, and other parts of California) did not fare as well until the Secure Rural Schools Act extended these payments to all of the eligible counties in the region and across the United States.

Some of the intent behind the Omnibus Budget Reconciliation Act of 1993 was to provide a transition to a lower rate of assistance. The transitional path downward was replaced by a much higher rate of revenue support under the Secure Rural Schools Act.

The goal of the payments-to-counties legislation was clearly met. The legislation has replaced past dependence on timber-harvest revenues and has generally mitigated the lost revenues associated with the declines in federal timber harvest in the region. It is not known how the owl safety net payments have affected overall county financing. In the short term, a guaranteed amount is likely to have a stabilizing effect. The Secure Rural Schools legislation, however, sunsets on September 30, 2006. The long-term stability of the payments is uncertain. Without new congressional action, counties in the Plan area will need to address a projected \$270 million in revenue shortfall. Congressional hearings are expected in 2005 to address the possibility of reauthorization of the Secure Rural Schools legislation.

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## Chapter 8: The Effects of the Northwest Forest Plan on Forest-Based Communities

*Susan Charnley and Ellen Donoghue<sup>1</sup>*

In Chapter 8 we do three things. First, we describe how 12 case-study communities associated with 4 case-study forests (the Olympic, Mount Hood, and Klamath National Forests and the Coos Bay Bureau of Land Management (BLM) District) changed between the 1980s and 2003, and the strategies communities used to adapt to changes brought about by the decline of the wood products industry. Second, we examine the causes of community-scale change and the role that the Northwest Forest Plan (the Plan) played in contributing to it. Third, we assess the roles played by the Forest Service (FS) and the BLM in mitigating the effects of cutbacks in federal timber harvest by providing socio-economic benefits to communities affected by the Plan, and assisting with long-term economic development and diversification.

### Monitoring Questions

1. Are local communities and economies experiencing positive or negative changes that may be associated with federal forest management?
2. Did the Plan help maintain the stability of local and regional economies on a predictable, long-term basis?
3. Did the Plan assist with long-term economic development and diversification to minimize adverse effects associated with job loss?

<sup>1</sup>The material in this chapter is based on the following:

Buttolph et al. (in press).

McLain et al. (in press).

Charnley, S.; Dillingham, C.; Stuart, C.; Moseley, C.; Donoghue, E.M. Manuscript in preparation. Northwest Forest Plan—the first 10 years (1994–2003): socioeconomic monitoring of Klamath National Forest and three local communities. On file with: S. Charnley, Forestry Sciences Laboratory, 620 SW Main, Suite 400, Portland, OR 97205.

Kay, W.; Donoghue, E.M.; Charnley, S.; Moseley, C. Manuscript in preparation. Northwest Forest Plan—the first 10 years (1994–2003): socioeconomic monitoring of Mount Hood National Forest and three local communities. On file with: S. Charnley, Forestry Sciences Laboratory, 620 SW Main, Suite 400, Portland, OR 97205.

The case-study results presented here are summarized from those documents. Refer to them for a richer discussion of change in the case-study communities.

### Expectations

It was expected that the major adverse social and economic effects of the Plan would be associated with the loss of jobs and income caused by reduced federal timber harvests (USDA and USDI 1994a: 3&4-320). These cutbacks would threaten the economic vitality of many communities that had depended on them in the past. Not all communities would be affected the same way, or to the same extent. The Plan's effects would be intense and debilitating for some forest-based communities and some people employed in the wood products industry, and would provide a challenge and an opportunity for change to others (USDA and USDI 1994a: 3&4-310). The effects would last longer than a firm's or worker's ability to "wait it out" (USDA and USDI 1994a: 3&4-311). Loggers, mill owners and workers, small businesses, and their families were expected to experience significant, long-lasting effects that would be difficult to overcome. In some communities, the effects of the Plan would be very noticeable; in others, they would not be visible (USDA and USDI 1994a: 3&4-308). The communities most negatively affected would be the relatively small and isolated communities closest to federal forest lands that lacked economic diversity, depended on public timber harvests, and had low leadership capacity (FEMAT 1993: VII-9, USDA and USDI 1994a: 3&4-301).

Communities with the highest capacity to adapt to Plan-related change would be those with good access to transportation, markets, and raw materials, a high degree of economic diversification, and quality leadership (FEMAT 1993: II-68).

Communities depending on amenity, recreation, or other environmental quality resources could be positively affected by the Plan (FEMAT 1993: VII-9). Nevertheless, nonconsumptive forest activities and recreation were not expected to sustain communities whose economies had been timber based (USDA and USDI 1994a: 3&4-309).

Some rural communities would experience the effects of reductions in FS employment (USDA and USDI 1994a: 3&4-311). Employment in the "forestry services" sector

(such as reforestation, timber-stand improvement) would also decline (USDA and USDI 1994a: 3&4-291).

The negative effects of the Plan would be partially offset by Plan-related mitigations, such as new jobs in forest restoration, safety net payments to county governments to make up for some lost timber revenues, and the Northwest Economic Adjustment Initiative (USDA and USDI 1994a: 3&4-291, 298, 313–314).

## Methods

The information in this chapter comes primarily from interviews with community members and agency employees from the case-study areas. Appendix B describes the methods we used to choose the case-study communities. Three communities within 10 miles of each case-study forest were randomly selected for monitoring. Our results are based on interviews with a total of 223 members of 12 communities and 82 agency employees from 4 case-study forests. Community interviewees represented a variety of stakeholder perspectives. A list of the types of people interviewed and the interview guides are located in appendix D. Brief descriptions of each community are found in appendix E.

Interviewing to obtain qualitative data is commonly used in social science research. Interviews are appropriate when trying to understand a specific process or phenomenon, such as the relation between federal forest management and community well-being. The team selected interviewees purposefully, not randomly, because we wanted to interview local experts who could provide information relevant to the monitoring questions posed in this chapter. The team also chose a sample that would represent variation in the populations under study; we identified specific categories of people to interview in each community and on each forest unit about the monitoring question of interest, so that we could document a range of perspectives on them.

After identifying categories of informants to be interviewed in each community and on each forest, we used a snowball sampling approach to locate interviewees. Snowball sampling is an effective method of building a sampling frame where a relatively small population of

people live, who know of and come into contact with one another (Bernard 2002), as was true in most of the communities and all of the forest units we sampled. The method entails locating key individuals in a community, and asking them to identify people who would be appropriate to interview about the topics under study. The criteria we used to develop our sample frame included people who represented one of the informant categories initially identified; people who had lived in the case community or worked on the case-study forest at least since 1994 when the Plan was adopted; people who were knowledgeable about the topics under study; people who were considered able to provide a window into the community or the forest unit of interest; and people who were articulate and willing to talk with us. Our interviewees fit most, if not all, of these criteria.

The team gathered names of potential interviewees and contacted those people whose names were repeatedly mentioned to set up an interview time and place. We conducted semistructured interviews by using an interview guide that contained a list of questions and topics to be covered during the interview. We recorded and transcribed most of the interviews. We compared qualitative data from the interviews with quantitative data obtained from secondary sources to develop a response to the monitoring questions. We did not, however, investigate all of the details given in the narrative accounts to check the accuracy of the “facts.” Rather, we used peoples’ understandings and perspectives to construct a more general understanding of how the effects of the Plan and agency mitigation measures on communities were perceived. And, we used subsequent interviews to cross-check points and clarify perspectives.

Because the case-study communities and the interviewees were not chosen randomly, the interview results do not serve the purpose of generalization to the entire universe represented by the Plan area. Instead, the approach helped us develop an indepth understanding of the effects of agency management actions, policies, and programs on forest-based communities in different locations to help us answer the monitoring questions. The number of cases examined for purposes of this report was limited by the time and funding available. We are careful not to over-generalize

results beyond our cases. The interviews were not conducted in the context of a research project designed to test specific causal hypotheses relating to the monitoring trends, or the effects of forest management policy on local communities. The results could, however, be used to develop such hypotheses to be tested in future research projects. We view the case-study communities as an initial sample that will form part of a larger community sample to be monitored in the future as part of the Plan's socioeconomic effectiveness monitoring program. For more information on qualitative research methods see Ragin and Becker (1992), Denzin and Lincoln (1994), Miles and Huberman (1994), Bernard (2002), and Patton (2002).

Note that the unit of analysis in this chapter is the place-based community, as defined in chapter 2 of this volume—not communities of interest, individuals within communities, or regional economies. Our focus on place-based communities is appropriate given the direction in the record of decision (USDA and USDI 1994b), the emphasis of the Forest Ecosystem Management Assessment Team (FEMAT) 1993 report and the Plan Final Supplemental Environmental Impact Statement (USDA and USDI 1994a), and the recommendations that came out of phases 1 and 2 of the socioeconomic monitoring program. Nevertheless, there are tradeoffs involved in selecting the place-based community as the unit of analysis for understanding Plan impacts on rural communities and economies. One is that we overlook the differential distribution of Plan effects on individuals within forest communities. For some of these individuals, the effects may have been negative and irreversible; for others who were able to take advantage of new opportunities, they may have been beneficial. A second tradeoff is that we overlook the differential distribution of Plan effects on communities of interest. The costs and benefits of the Plan across interest groups were likely highly variable. Finally, communities are nested within larger social, political, and economic systems. Community-scale effects from federal forest management policy may be mitigated by broader regional socioeconomic trends, and these larger systems may provide opportunities for community members. Viewed at different scales, Plan effects might

look quite different. Again, our focus here is on the place-based community. We make no attempt to use the results of our analysis to scale up or down and make generalizations about Plan effects at different scales; nor do we attempt to generalize our results beyond our case-study communities to communities in the Plan area as a whole.

## Results

We present our results by case-study area. The following sections contain detailed findings from the case-study forests and communities, by geographic location. Each section provides the data that support a general discussion relating to the monitoring question that follows. **Those who do not wish to read through all of the case-study descriptions and supporting data may jump ahead to the general discussion of findings that begins on page 148 of this chapter.** A general social and economic characterization of each community, and how it changed between the 1970s/1980s and 2003, is contained in table 8-1.

### Olympic National Forest and Case-Study Communities

The three case-study communities associated with the Olympic National Forest are the Quinault Indian Nation, the Lake Quinault Area (containing the towns of Quinault, Neilton, and Amanda Park), and Quilcene (fig. 8-1). The Quinault Indian Nation community, with a population of 1,471 in 2000, consists of the Quinault Reservation of 208,150 acres. The tribe has its own land base, which makes it less dependent than the other two communities on federal forest lands for timber and other natural resources. Quilcene and the Lake Quinault Area are both small communities, with populations of 375 and 622, in 2000. These communities were highly involved in the timber industry in the 1970s and 1980s. By the 2000s, timber had become a secondary activity in both places, which diversified along different trajectories during the 1990s.

Federal forest lands were but one source of timber on the Olympic Peninsula during the second half of the 20th century. The Olympic National Forest contains 16.5 percent of all forest land in Clallam, Grays Harbor, Jefferson, and

**Table 8-1—Changes in community social and economic orientation, pre- and post-Plan**

<b>Community</b>	<b>1970s–1980s</b>	<b>2003</b>
Olympic National Forest:		
Quinault Indian Nation	Tribal with land base, timber, fishing	Tribal with land base, timber, fishing, tribal government administration, and businesses
Lake Quinault Area	Timber Secondary: recreation/tourism	Recreation/tourism Secondary: timber, special forest products
Quilcene	Timber Secondary: fishing, agriculture, goods and services center	Retirement, bedroom community Secondary: natural resources sectors
Mount Hood National Forest:		
Upper Hood River Valley	Agriculture (fruit orchards), timber	Agriculture (fruit orchards), mixed economic base (recreation/tourism, retirement, small business, self-employed, bedroom community)
Villages of Mount Hood from Brightwood to Rhododendron	Second home, recreation/tourism, transportation corridor Secondary: timber	Bedroom community, second home, retirement, recreation/tourism, transportation corridor
Estacada	Timber, agriculture (fruit orchards) Secondary: timber, recreation/tourism	Agriculture (Christmas trees and specialty goods), bedroom community Secondary: timber, recreation/tourism
Klamath National Forest:		
Scott Valley	Agriculture (beef cattle, hay), timber	Agriculture (beef cattle, hay), retirement, bedroom community, mobile workers, services
Butte Valley	Agriculture (beef cattle, potatoes, hay), timber, transportation corridor	Agriculture (beef cattle, strawberries, hay), transportation corridor
Mid-Klamath	Timber, tribal (no land base)	Tribal (no land base), public administration, goods and services Secondary: recreation/tourism, retirement
Coos Bay District:		
Greater Coos Bay	Timber, shipping, shipbuilding, fishing	Regional trade and service center, retirement Secondary: timber, shipping, recreation/tourism
Greater Reedsport	Timber, commercial fishing	Retirement Secondary: recreation
Greater Myrtle Point	Timber Secondary: agriculture	Agriculture, retirement, social services Secondary: timber



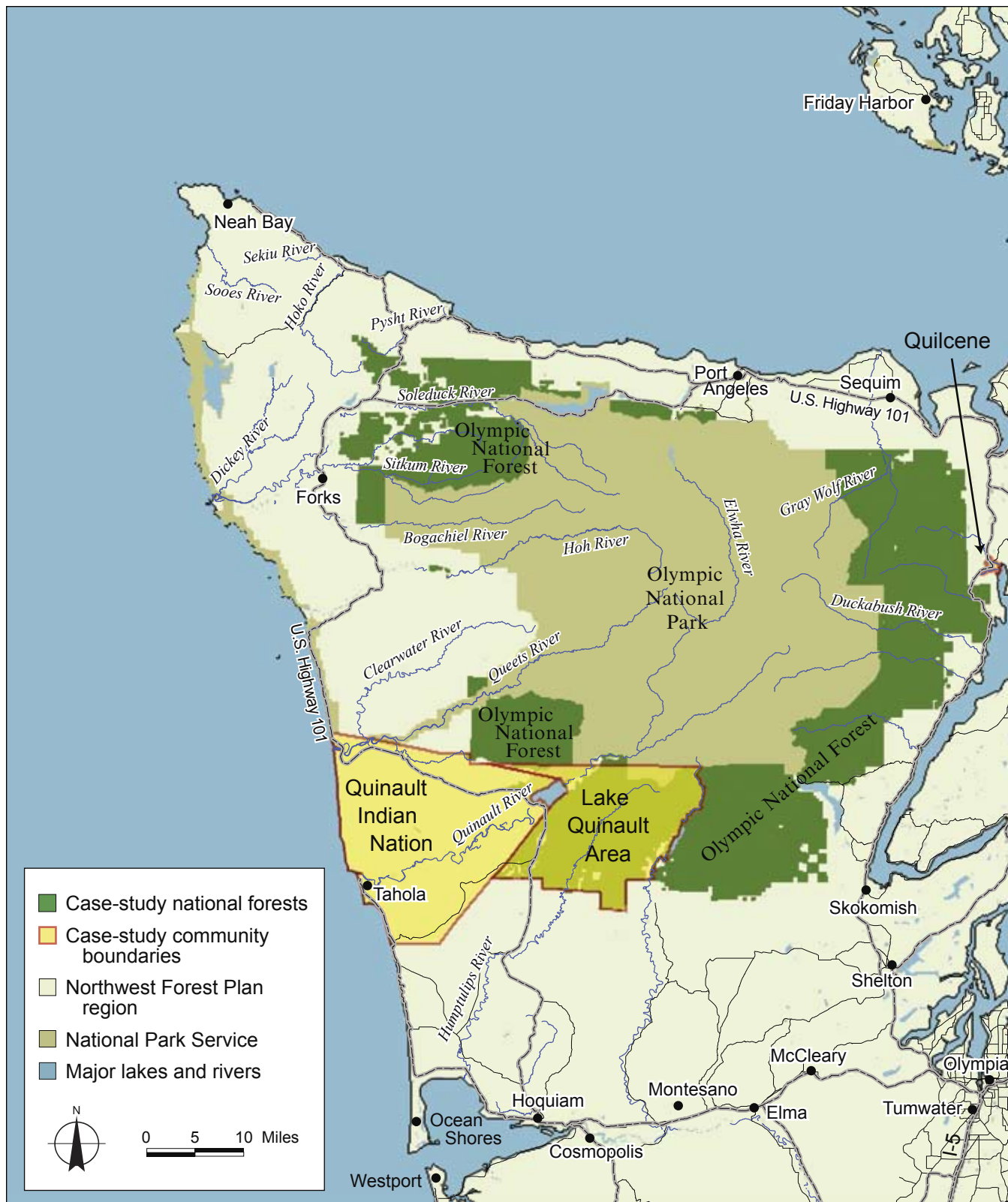


Figure 8-1—Case-study communities, Olympic National Forest.

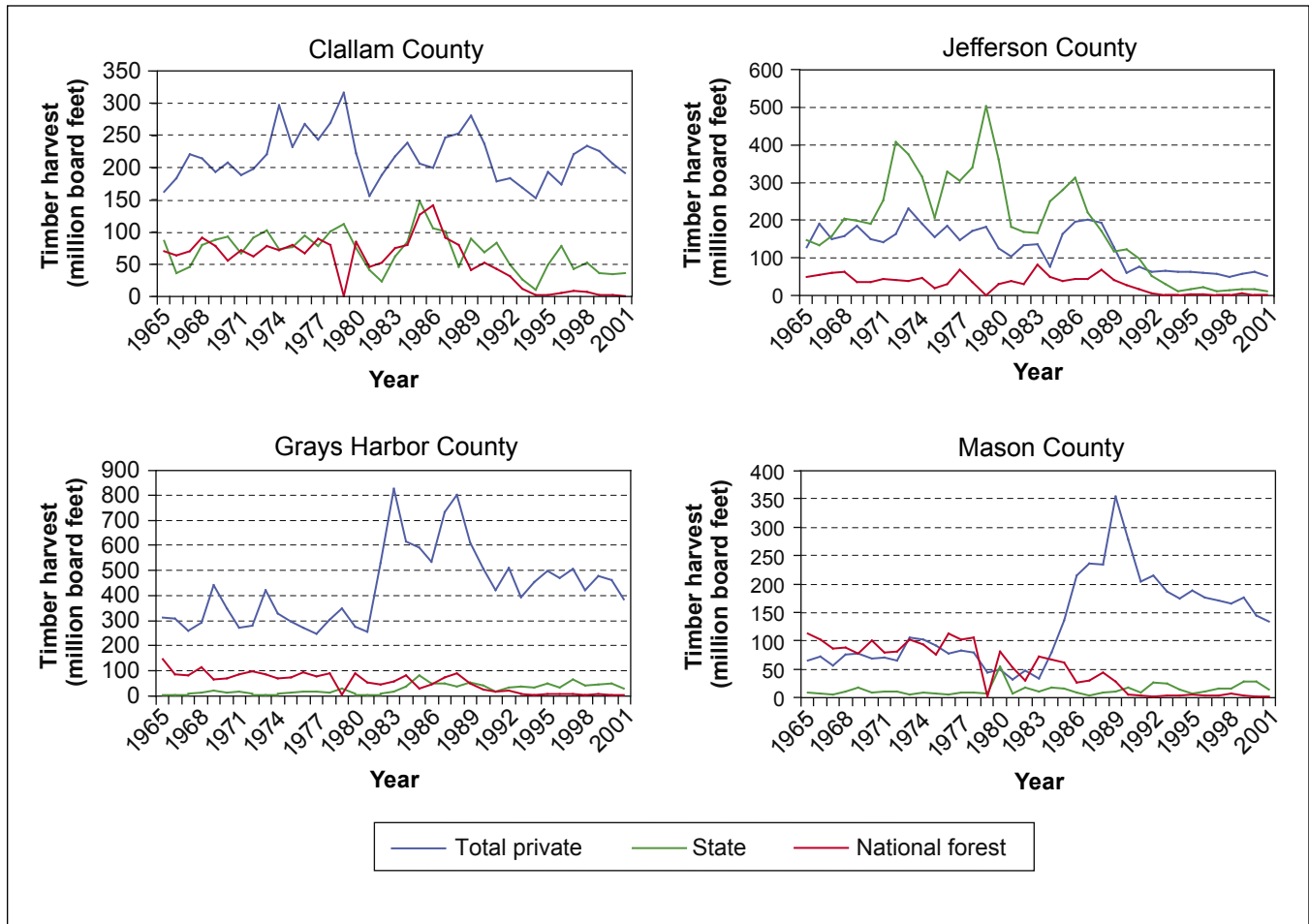


Figure 8-2—Timber harvest by ownership, Olympic Peninsula, 1965–2001.

Mason Counties (USDA Forest Service Forest Inventory and Analysis Data). The remaining forest lands are in other public and private ownerships, with private industrial forest land accounting for roughly one-third of the ownership. With the exception of Mason County, the Olympic National Forest produced only between 5 and 25 percent of the timber harvested in the four Olympic Peninsula counties in the decades preceding the Plan (fig. 8-2). Nevertheless, some people were highly dependent on FS timber.

### Quinault Indian Nation

The Quinault Reservation, with its relatively large land base endowed with forests, rivers, and coastline, allowed tribe members to obtain natural resources that supported many of their subsistence, cultural, and economic needs. Many community members worked in the timber industry

from the mid-1900s through the late 1970s as loggers and mill workers. Many were contract loggers on the Olympic National Forest. Others worked salvaging downed cedar wood left over from earlier logging. The cedar was used to make shakes and shingles. Several cedar shake mills were nearby, and many Quinault tribe members worked in the mills. Some tribe members also worked for the Olympic National Forest as seasonal firefighters.

In the early 1980s, the regional timber economy began to decline. Many community residents who worked in the timber industry lost their jobs as local shake mills closed or downsized. Manufacturing went from 26 percent to 6 percent of total employment in the Quinault Indian Nation between 1990 and 2000. In the early 2000s, six cedar shake mills remained in the area, some of which tribe members owned and operated. A few Quinault continued to work in

the remaining mills, and some ran cedar salvage operations on reservation land, selling cedar to the local shake mills.

In earlier decades, many Quinault men worked as laborers in the timber industry for companies that logged on public, private, and reservation lands. With tribal self-governance and self-determination, decisionmaking authority over timber harvest on tribal land transferred from the Bureau of Indian Affairs to the Quinault Indian Nation. With management autonomy by the Quinault, harvest volumes have declined, although the Quinault maintain an active timber program on the reservation. A main motivation for logging on the reservation is a desire on the part of the tribe to buy back reservation lands and place them in tribal ownership. In 1980, the tribe owned only 2 percent of the Quinault Reservation; the bulk was either trust land (privately owned by tribe members, but held in trust by the Bureau of Indian Affairs), or fee lands (privately owned by nontribe members). The tribe buys timber from owners of trust and fee lands on the reservation, hires subcontractors to log the land, sells the logs to mills, and uses the revenues generated to buy back land from those who acquired it through fees. A tribal organization established in 1988—the Quinault Land and Timber Enterprises—oversees this process. By 2003, the Quinault Indian Nation owned 31 percent of the reservation land.

Fishing has also been a mainstay of the Quinault Indian Nation economy and culture. Subsistence fishing for salmon and steelhead has always been important to the tribe. The Boldt Decision, passed in 1974, facilitated off-reservation commercial fishing activity.<sup>2</sup> Beginning in the mid-1970s, the Quinault became active participants in the commercial fishing industry, expanding their catch to include ocean fisheries for salmon, halibut, tuna, and crab. They also built their own processing plant and seafood enterprise on the reservation. After the mid-1980s, however, fishing industry jobs fell dramatically because of declining salmon runs, competition from farm-raised salmon, harvest restrictions, Endangered Species Act listings, and a drop in the price of salmon. Many tribe members reverted to subsistence

fishing, although some still participated in the commercial fishery, and the Quinault fisheries enterprises still operated. Despite declines in the forestry and fisheries sectors, census statistics found that employment in agriculture, forestry, fishing, hunting, and mining increased from 9 to 12 percent between 1990 and 2000 in the Quinault Indian Nation community.

The harvest of special forest products for personal, subsistence, and commercial uses was also important historically. Today, the important products include western redcedar (*Thuja plicata* Donn ex D. Don), beargrass (*Xerophyllum tenax* (Pursh) Nutt.), ferns, salal (*Gaultheria shallon* Pursh), and huckleberries (*Vaccinium* spp.). The Quinault harvest these products on reservation lands and on the Olympic National Forest.

Although some community members continued to be employed in the fishing and forestry industries in the early 2000s, the simultaneous downturn in these industries that began in the 1980s caused many Quinault Indian Nation members to shift away from natural resource jobs. Some moved off the reservation to find jobs in Aberdeen and Hoquiam, others returned to school, and some took service industry jobs, such as at the tribal casino built in 1999.

By far, the main force offsetting job loss in the timber and fishing industries during the 1990s was growth in tribal administration. The Quinault implemented tribal self-governance in 1975. Since then, the tribal government has grown. The Quinault have succeeded in writing grants, obtaining support for development projects, and establishing partnerships. In addition, the Tribal Self-Governance Act of 1993 allowed the tribe to receive congressional appropriations directly. All of these changes enabled the tribal government to expand, and created job opportunities. The tribe now has many service programs and business enterprises; it is the second largest employer in Grays Harbor County, after Weyerhaeuser. Public administration went from 13 percent to 26 percent of employment by industry in the Quinault Indian Nation between 1990 and 2000. The tribal government employed 50 to 75 people in 1990; it now has 350 full-time employees. In fact, the tribe has employed several people who once worked on the Olympic National Forest.

<sup>2</sup>The Boldt Decision ruled that tribes had rights to 50 percent of the harvestable catch of salmon and steelhead on their usual and accustomed fishing grounds.

Nevertheless, many members of the Quinault Indian Nation community continued to live in poor socioeconomic conditions in the early 2000s. The community scored very low in socioeconomic well-being in 1990 (45.6) and remained very low in 2000 (44.2), making it one of the lowest scoring communities around the Olympic National Forest. In comparison, the 35 communities within 5 miles of the Olympic National Forest had an average socioeconomic well-being scoring of 61.7 in 1990 and 64.5 in 2000.<sup>3</sup> Nevertheless, unemployment and percentage of the population living below the poverty line dropped during this period (unemployment went from 19 to 13 percent, and percentage in poverty went from 32.3 to 28.2), and median income rose slightly (\$25,724 in 1990, \$28,171 in 2000). The total population of the Quinault Indian Nation dropped between 1990 and 2000 (from 1,542 in 1990 to 1,471 in 2000). The geographic isolation of the reservation and its distance from regional centers mean that local job opportunities are limited.

### Lake Quinault Area

The timber industry began operating in the Lake Quinault Area in the early 1900s. Early White settlers established timber claims there and were running small mills by 1915. Logging increased after World War II. Grays Harbor County, where the Lake Quinault Area community is, produced the most timber of the four Olympic Peninsula counties between 1965 and 2001, with an annual average of 600 million board feet across all ownerships. Most of this timber came from private forest land (fig. 8-2). All timber harvested from federal forest land had to be processed in the county. As a result, many of the small sawmills and cedar-shake mills in the Lake Quinault Area depend on timber from the Olympic National Forest. Until the late 1980s, many community residents worked in the timber industry.

The timber industry in the Lake Quinault Area began to decline in the mid-1980s, and continued to decline rapidly with the reduction in federal timber sales in the

early 1990s. About 15 cedar-shake mills were in the area in the mid-1980s; in 2003, only 6 remained. Manufacturing went from contributing 31 percent of employment in 1990, to 16 percent in 2000. Most manufacturing jobs were in the timber industry. Many timber workers and their families left the community in the late 1980s and early 1990s in search of timber jobs elsewhere (such as Alaska). Some of these departing workers found jobs in other professions that required similar skills (such as building or as arborists in urban areas). Others remained in the community and continued to work in the timber sector, which was sustained by lower levels of production on private, state, and tribal forest lands. Still others stayed and found new jobs in other sectors, which sometimes meant accepting lower wages.

Many FS employees also left the Lake Quinault Area in the 1990s because of budget cuts, downsizing, and consolidation on the Olympic National Forest districts. One interviewee from the forest said that the Quinault District office (located in Quinault) had about 65 full-time employees and 150 part-time and seasonal employees in the 1980s. In 2003, only 13 people worked in that office. Community interviewees reported that the loss of FS employees from the Lake Quinault Area dramatically affected community capacity. These workers had been active in the schools, community affairs, service clubs, and the fire department, and they provided community leadership. Their exodus represented to the community a loss of human capital.

Recreation and tourism were also important in the Lake Quinault Area throughout the 1900s because of the presence of Lake Quinault, the natural beauty of the area, and its closeness to Olympic National Park and the Olympic National Forest. Lodges and chalets are scattered around the lake. The Quinault Lodge, which originally opened in 1890, is the most renowned of the lodges. With the decline of the timber industry, a growing percentage of community residents have jobs in the service sector; many work at the lodge or in local restaurants. Others work as hunting and fishing guides, or sell outdoor equipment. Arts, recreation, accommodation, and food services rose from 8 percent of employment in the community in 1990, to 15 percent in 2000. Some interviewees believed that tourism had kept the community going and was the reason it still exists.

<sup>3</sup> See chapter 2 for a description of the socioeconomic well-being scoring system. Well-being category scores are as follows: very low (0–48.72), low (48.73–61.07), medium (61.08–73.36), high (73.37–85.58) and very high (85.59–100).

Tourism is seasonal, however, and most visitors come in summer. Few visitors come in the winter, likely because the area receives 140 inches of rain annually, falling in fall, winter, and spring. Recreation and tourism wages are low compared to timber wages, and tourists and local residents often have conflicting values. The Lake Quinault Area has a strong timber culture. Many local people want logging jobs and feel that tourists, who want to see natural beauty rather than clearcuts, view them negatively. Nevertheless, the community economic revitalization plan developed by a local community action forum in the late 1980s strongly promotes tourism.

The special forest products industry has long been important on the Olympic Peninsula. During the 1990s, the industry grew and became increasingly dependent on outside laborers. Few long-term residents of the Lake Quinault Area worked in the industry because the work is extremely labor intensive. Several area residents and Olympic National Forest employees interviewed noted a growth in the Peninsula's Hispanic population during the 1990s, which they associated with growth in the floral greens industry. Between 1990 and 2000, the Hispanic population of the Lake Quinault Area rose from zero to 6 percent of the total population (their numbers are likely underreported); many picked and transported brush, and others worked as tree planters, doing forest thinning, and in the shake industry. In the Lake Quinault Area, as elsewhere on the Peninsula, the influx of Hispanic families has helped schools maintain their enrollment in light of outmigration by timber workers and their families. These families also helped maintain business at local stores. Nevertheless, the total population of the Lake Quinault Area declined by 11.8 percent (from 705 to 622) between 1990 and 2000.

Apart from these natural-resource-based industries, government jobs (with the school district, the county, the Quinault Indian Nation, and state and federal governments) became a mainstay of the local economy. Some people also commuted to professional jobs in Aberdeen and Hoquiam. Others pursued college education because they could not get work in the woods when they graduated from high school. The Lake Quinault Area had not yet become a destination for retirees. One of the constraints on development in the

community is the limited amount of private land. Federal and state governments, private timber companies, or the Quinault Tribe own most of the land in the area.

Socioeconomic well-being in the Lake Quinault Area was lower than the average for the 35 communities within 5 miles of the Olympic National Forest: it was low in 1990 (59.3), and remained low in 2000 (60.3). Although median income rose by 30 percent (from \$27,507 to \$35,893), unemployment also rose 6 percent during the decade (from 6.8 to 7.2 percent). The percentage of people living below the poverty line decreased from 18.3 to 16 percent.

### Quilcene

From the 1950s to the 1980s, Quilcene was a traditional logging town. Community members logged mainly on the Olympic National Forest, which is adjacent to the community. Other community members worked for the FS (the Hood Canal Ranger District office is in Quilcene), in local businesses, or at nearby mills. Beginning in the late 1980s, timber sector employment in Quilcene declined dramatically, triggered mainly by the decline in timber supply from the Olympic National Forest. Many timber workers lost their jobs and left the community with their families. Between 1990 and 2000, manufacturing jobs went from providing 27 percent to 9 percent of employment locally. Many FS jobs also disappeared in the 1990s, causing an exodus of FS employees, which affected local businesses, such as restaurants, stores, and gas stations that either closed or down-sized. It also created a supply of inexpensive housing. Between 1990 and 2000, the population of Quilcene dropped by 21.6 percent, from 478 to 375. Some timber workers with strong ties to the community did stay in Quilcene, and either found other work or shifted to logging on private lands.

Although the population declined, new groups of people moved into Quilcene during the 1990s and early 2000s drawn by affordable land prices, low housing costs, the natural beauty of the area, and its reasonable proximity to urban areas. One such group consisted of low-income people with no visible means of support who bought houses left by timber workers at affordable prices. Another group was high-income people buying second homes, retirement

homes, or primary residences in the community from which they commuted to jobs in urban areas, such as Port Townsend, Bremerton, and Silverdale. Construction went from contributing 3 percent to 15 percent of employment in Quilcene between 1990 and 2000. Although timber workers lived and worked locally and therefore shopped in Quilcene, commuters and second-home owners generally shopped and used services elsewhere, hurting local businesses. Another group of new residents are entrepreneurs and people trying to start new businesses. Most of the newcomers are affluent and well-educated, with the potential to help build community capacity in Quilcene.

Median household income in Quilcene rose 58 percent between 1990 and 2000 (from \$25,378 to \$40,094). At the same time, unemployment dropped 65 percent (from 20.3 to 7.1), and the percentage of the population living below the poverty line dropped by 23.3 percent (from 19.5 to 14.9 percent). The community's socioeconomic well-being rating jumped from very low in 1990 (46.5) to medium in 2000 (64.2), by far the largest increase of any of the case-study communities in our sample. These statistics mask the fact that Quilcene as a community no longer has much of a middle class, which was once composed of timber workers. Quilcene's population now consists of very rich people and very poor people. Hence, community residents interviewed had mixed views of how well the community was doing, and whether socioeconomic conditions were improving, stagnating, or worsening.

Fishing and agriculture are the other main natural-resource-based employment sectors in Quilcene, which is on the Hood River Canal. It has had an active shellfish industry since the 1920s and is particularly well endowed with oyster beds. Lush pastures in the small valleys north of Quilcene once sustained several beef, dairy, or poultry farms that provided a supplemental source of income to loggers, and the farms declined in number as loggers left the community. More recently, efforts to develop organic agriculture in the area have begun.

The special forest products industry was not commercially important to Quilcene residents in 2003. A brush processing plant was once in the community, but it is no

longer there and never supported many people, according to interviewees. Special forest products, however, did provide an additional income stream to loggers in the past. Now, the main brush harvesters around Quilcene are not local residents but Hispanics who arrive in vans, harvest brush locally, and leave.

Small efforts were intended to promote recreation and tourism in Quilcene over the last decade, with some business development in this arena. These efforts, however, were hampered by the closure of the Dosewallips Road, the main local access to the Olympic National Forest and Olympic National Park. This popular route was closed by heavy rains and landslides in 2002, and it has not been repaired and reopened—a topic of local concern currently being evaluated by the Forest Service.

Another impediment to growth and development in Quilcene is the lack of physical infrastructure. It has no sewer system and the community water supply is from wells. The Olympic National Forest is currently planning to transfer part of the Forest's water rights to the local Public Utilities District. Quilcene is also affected by strict zoning regulations that apply to unincorporated areas under the Washington Growth Management Act of 1990 that limit subdivision and commercial and industrial development. Community interviewees also reported a lack of community cohesion, with no agreement on a future vision for the community, and no collective will to work toward improvement.

### Role of Federal Forest Management Policy in Influencing Change

All three of the case-study communities around the Olympic National Forest were actively involved in the timber industry in the decades leading up to the Plan. The timber industry decline began in the early to mid 1980s in the Quinault Indian Nation and Lake Quinault Area, in the late 1980s in Quilcene, and continued in all three communities throughout the 1990s. Although some people still work in the woods or in mills, the timber sector is no longer dominant in any of the three communities.

In the Quinault Indian Nation, most interviewees believed that federal forest management policy played a minor role in bringing about change in the local timber economy.

According to them, change began in the early 1980s, before the spotted owl listing, court injunctions, and the Plan. They believed the decline was triggered by increased mechanization, the retooling of mills, changes in export markets, a national recession, and corporate buyouts that often eliminated union employees. More recently, the drop in timber prices related to competition from exports has made it uneconomical to engage in timber production. Labor-intensive forest management jobs such as tree planting and thinning, once done by tribe members, are now done by Hispanic crews. The cedar-shake industry, important as a source of jobs for both the Quinault Indian Nation and the Lake Quinault Area, was hard hit by competition from Canadian imports and federal regulations requiring fireproofing shakes and shingles, a process that doubles the price to consumers, reducing their marketability. Many tribe members were no longer working in the timber industry at the time the Plan was adopted because of these combined forces.

The Plan was not without effects to the Quinault Indian Nation, however. Interviewees said that the Plan reduced the supply of cedar trees for the shake industry, contributing to mill closure. They also said that the Plan reduced job opportunities on the Olympic National Forest. Roughly 20 tribe members had worked seasonal jobs on forest fire crews, jobs that were highly valued because they provided employment at a time of year not overlapping with the fishing season. According to a FS employee interviewed, the decline in logging on the forest caused a decline in the amount of slash burned, decreasing fire risk on the forest, and reducing the number of fire jobs.

The Plan also affected revenues to the tribe from the Quinault Special Management Area of the Olympic National Forest (also known as Section 2 lands). The tribe is entitled to receive 45 percent of the revenue generated from this 5,260-acre piece of the forest as part of an agreement drawn up to compensate them for an inaccurate reservation boundary survey that historically deprived the Quinault of some of their lands. The agreement was made in 1988-89, when the tribe anticipated that commercial logging in the special management area would generate substantial revenue. Despite the fact that this land was designated an

adaptive management area under the Plan, little timber harvest was done, and the tribe has not received the anticipated money.

Most interviewees from the Quinault Indian Nation concurred that the Plan did not cause the decline of the local timber industry, but rather exacerbated already deteriorating conditions. Interviewees from the Lake Quinault Area also expressed the view that the decline of the local timber industry began before the Plan, in the 1980s. Like interviewees from the Quinault Indian Nation, they cited as causes industry consolidation, increased mechanization, retooling of mills, competition from imports, changes in export markets, and the depletion of old-growth forest on public, private, and reservation lands. The harvest of second-growth—which predominates now—requires fewer trucks to haul it, and different mills to mill it.

Interviewees from the Lake Quinault Area cited Plan-related budget cuts, causing the loss of agency jobs and district consolidation, as being one of the most significant effects of the Plan on the community. They agreed that the Plan had decreased the supply of cedar for local shake mills. Interviewees also stated that the curtailment of logging on the Olympic National Forest had a disproportionate effect on local small- to medium-sized timber companies. These companies and mills were highly dependent on FS timber. Large timber companies obtained their wood supply from more diverse sources and were not as affected by the Plan.

In contrast, the decrease in logging on the Olympic National Forest—from Endangered Species Act listings of the northern spotted owl (*Strix occidentalis caurina*) and the marbled murrelet (*Brachyramphus marmoratus*), court injunctions preventing timber sales on the forest, and the Plan itself—were reportedly the greatest causes of change in Quilcene between the mid-1980s and the early 2000s. The timber economy of this community was highly dependent on Olympic National Forest timber. Reduced harvests on the forest triggered the transition away from a logging community toward what it is today.

With or without the Plan, some forest interviewees believed that some amount of change was inevitable. In

their view, the Olympic National Forest could not realistically sustain an output of 200 to 300 million board feet of timber per year.

**The FS Role in Mitigating Plan Effects**

**Resource and recreation benefits—**

The volume of timber harvested on the Olympic National Forest went from an annual average of 243 million board feet in the 1980s, to an estimated average annual probable sale quantity (PSQ) of 10 million board feet under the Plan. The volume of timber offered for sale on the forest since the Plan has been so low that the associated economic benefits to local communities are limited.

Grazing and mining on the Olympic National Forest are negligible. Special forest products constitute a thriving industry on the Olympic Peninsula, but they did not provide a livelihood for most community residents previously employed in the timber sector. Harvesting special forest products is highly labor-intensive, and these jobs have no benefits. Workers in the special forest products industry are predominantly Hispanic immigrants.

Recreation is a potential growth area. The Lake Quinault Area has become increasingly reliant on jobs in the recreation and tourism sectors. The Olympic National Forest has built trails, improved campsites, and maintained recreation facilities around Lake Quinault to help support this sector.

**Agency jobs—**

Full-time-equivalent jobs on the Olympic National Forest dropped from 267 in 1993 to 115 in 2003 (fig. 8-3). The forest had four ranger district offices in 1990 (including one in Quilcene and one in Quinault), and now has two. The Quilcene and Quinault offices are still there, but district rangers split their time between them and the other two district offices, and both offices are substantially smaller. Downsizing on the Olympic National Forest has meant many fewer permanent full-time and part-time or seasonal jobs for community residents. The Quinault Indian Nation has provided jobs for former FS employees. Interviewees cited the loss of agency jobs on the Olympic National Forest as one of the most significant negative effects of the Plan on local communities.

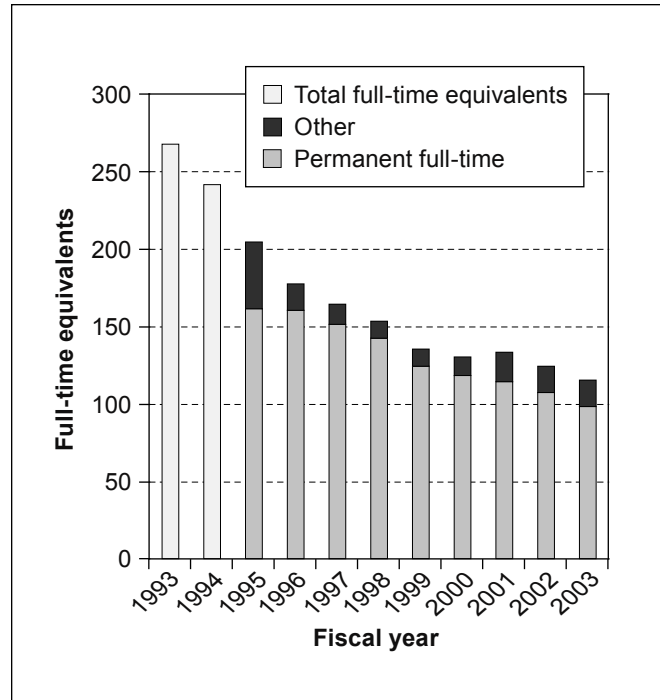


Figure 8-3—Olympic National Forest staffing levels, 1993–2003.

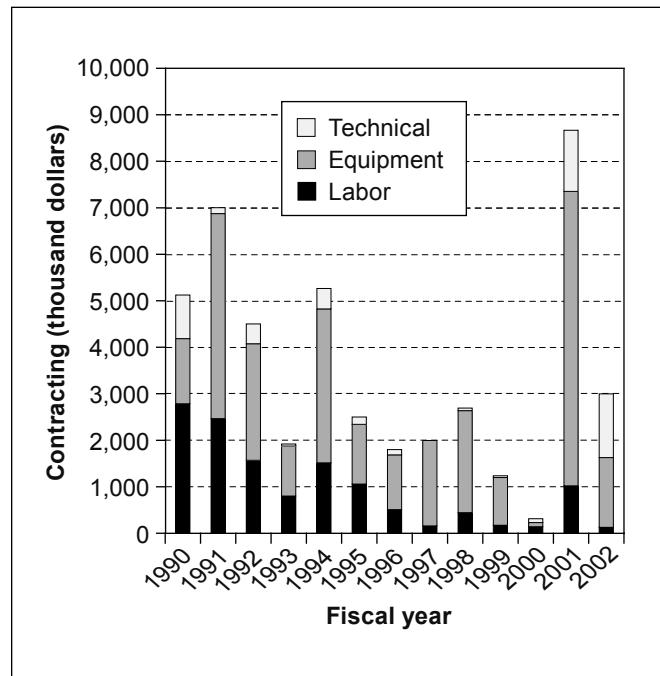


Figure 8-4—Olympic National Forest land management contracting by work type, 1990–2002.



### Contracting—

The Olympic National Forest spent \$46.7 million on land management contracting between 1990 and 2002. Contract spending dropped 28 percent over this period. The nature of the contracts shifted from labor-intensive work associated with the forest timber program, to equipment-intensive and technical contracting, such as species surveys and road-related work (fig. 8-4). The number of contractors working for the Olympic National Forest decreased by 54 percent, from 110 in 1990–92 to 51 in 2000–2002. Contractors from the Interstate 5 corridor and from small and medium-sized communities around Puget Sound captured more contract value than did contractors from the Olympic Peninsula between 1990 and 2002.

Residents of the three communities reported that the Olympic National Forest provided them with some contracting opportunities, but that they are few and far between. Examples of contract work include road decommissioning, precommercial thinning, building trail bridges, installing culverts, and flood-repair work. A number of storms in the late 1990s and early 2000s caused damage on the forest, leading to contracting opportunities for flood-repair work. Resource advisory committees, established by the 2000 Secure Rural Schools Act, have also been a recent source of money for some contract work on the forest, although the amount is fairly small. Many Quinault Tribe contractors reportedly work on reservation lands, but not on the Olympic National Forest. Most Quilcene interviewees were unaware of contracting opportunities on FS lands.

Making a living from FS contracting is difficult for community residents because of too few contracts and too short a season of work. Most land management work on the Olympic National Forest must be done between mid-July and mid-October, so as not to disturb nesting owls and murrelets. Fish-related restrictions also limit the time when work can be done in streams. Although Lake Quinault Area interviewees stated that some local preference is given in contract hiring through Historically Underutilized Business (HUB) zone contracts, many contractors on the forest come from elsewhere on the Olympic Peninsula or from the Interstate-5 corridor.

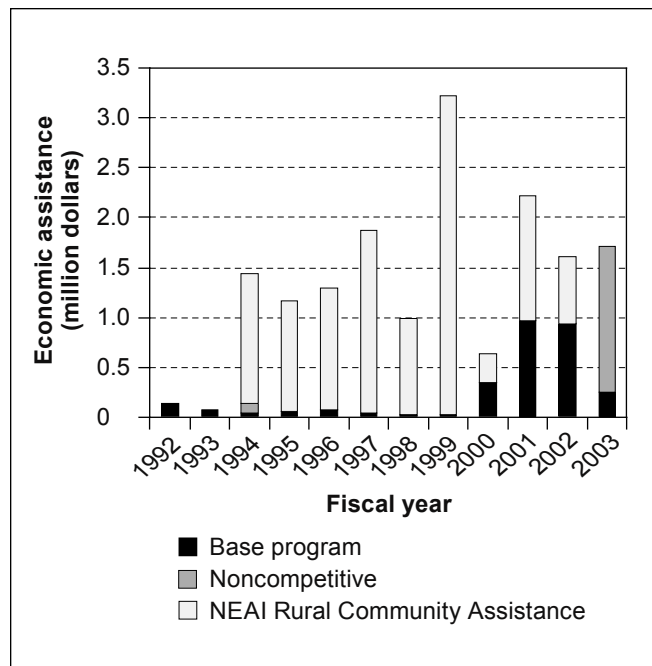


Figure 8-5—Olympic National Forest community economic assistance program trends (not adjusted for inflation). NEAI = Northwest Economic Adjustment Initiative.

### Community economic assistance—

A substantial amount of Northwest Economic Adjustment Initiative, Rural Community Assistance Program funding went to the Olympic National Forest between 1994 and 1999 (fig. 8-5). The Lake Quinault Area and Quilcene communities both received relatively little. Quilcene obtained grant funds to assess infrastructure development and habitat restoration needs, but the interviewees knew little about these projects, which apparently had little effect. The same was true in the Lake Quinault Area. This community received \$65,000 in Rural Community Assistance Program money for infrastructure development and community land use planning. The FS also helped community organizations write grant proposals. According to community interviewees, however, these projects also had little effect. In both places, any contributions made by the Initiative were minimal compared to the economic losses sustained by the communities from reductions in federal timber sales.

In contrast, the Quinault Indian Nation received more than \$5 million in Initiative funds through the Bureau of Indian Affairs Jobs-in-the-Woods program, the FS Rural

Community Assistance program, and the USDA Rural Development program. The tribe spent much of this money on infrastructure development, such as tribal administration buildings, a store, a gas station, a mini-mall, and an interpretive center. It also spent money on a watershed analysis and restoration program for the Salmon River watershed. The Initiative helped Quinault tribal government efforts already underway grow and develop, and made a substantial contribution to economic diversification in the community.

**Payments to county governments—**

Some forest interviewees reported that payments-to-states mitigations had a major stabilizing effect on county governments on the Olympic Peninsula. Our data indicate that this effect was indeed true (fig. 8-6).

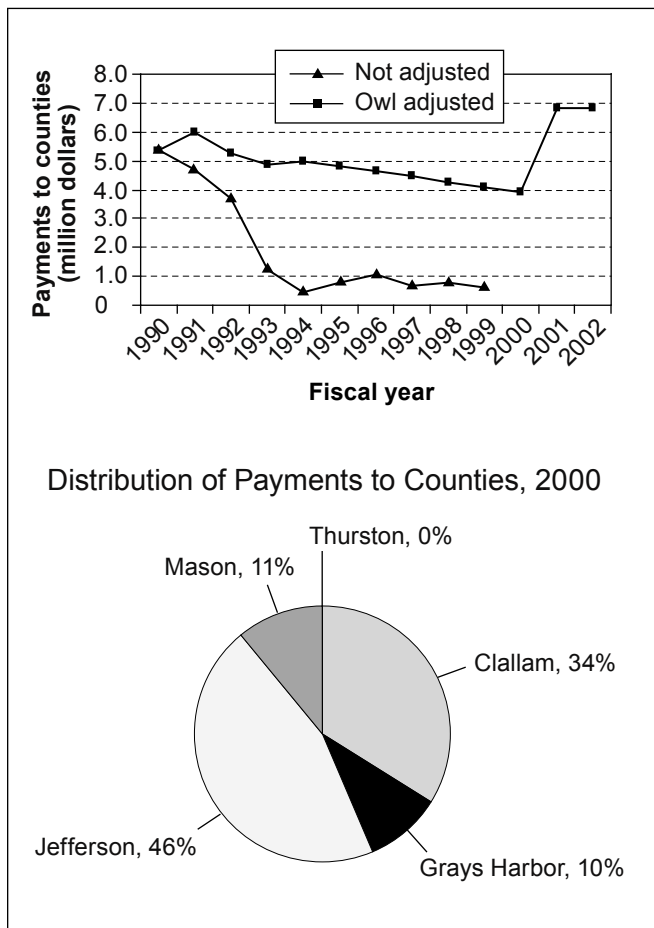


Figure 8-6—Olympic National Forest payments to counties. “Owl adjusted” reflects the increased payments to counties made to mitigate the effects of decreased timber revenue and revenue sharing.

**Summary**

The role of the Olympic National Forest in helping the case-study communities develop and diversify has been minor. In some areas, recreation development on the forest helped; in others, the lack of restoring and maintaining recreation infrastructure has been a barrier. Commodity resource outputs from the forest have made a negligible contribution to the communities, with the exception of special forest products. Participants in the special forest products sector, however, are mainly new workers who moved to the Olympic Peninsula for this purpose, rather than displaced timber workers. Jobs in the FS declined by more than half. Contracting opportunities for land management work on the forest also declined, although not as quickly as they did in the Plan area as a whole. Contracts provide seasonal work for some local residents. The shrinking contracting opportunities that do exist, however, appear to go mainly to contractors who live somewhere other than the Olympic Peninsula. Northwest Economic Adjustment Initiative funds from the Olympic National Forest and other sources contributed substantially to development and diversification efforts underway in the Quinault Indian Nation, although not in the other two communities. Mitigation measures and legislation to supplement payments to states helped stabilize county budgets.

On balance, however, the flow of socioeconomic benefits to communities around the Olympic National forest declined markedly between 1990 and 2002, and strategies implemented to mitigate the loss of those benefits have not added up. As some interviewees from Quilcene and the Olympic National Forest pointed out, the forest provided substantial economic benefits to local communities in the form of timber and agency jobs until the late 1980s. The huge reduction in timber and jobs during the 1990s meant that much of this benefit was lost. It would be difficult for the forest to compensate for this loss; much would have to happen to make up for it. The Olympic National Forest budget declined 49 percent between 1993 and 2003. The forest has tried to help where it can, but it is constrained by lack of staff and money.

## Mount Hood National Forest and Case-Study Communities

The three case-communities composing the sample around the Mount Hood National Forest are the Upper Hood River Valley (population 4,288 in 2000), the Villages of Mount Hood from Brightwood to Rhododendron (population 3,670 in 2000), and Greater Estacada (population 9,315 in 2000) (fig. 8-7). The Upper Hood River Valley was predominantly a timber and agricultural community in the decades leading up to the Plan, as was Greater Estacada. Both communities had mills, and both communities contained large fruit orchards. The Villages of Mount Hood, in contrast, were heavily influenced by being along Highway 26, the main transportation corridor connecting the Portland metropolitan area to eastern Oregon. Despite the community's being virtually surrounded by the Mount Hood National Forest, timber was only a minor part of its economy in the 1970s and 1980s. Instead, the small towns of the Villages of Mount Hood were historically inhabited by people with second homes, and people whose goods and services cater to the travelers, recreationists, and tourists who travel on Highway 26. By 2003, all three case-study communities had changed, as described below.

### Upper Hood River Valley

The Upper Hood River Valley is high on the northern and eastern slopes of Mount Hood, in Hood County. The FS manages 72 percent of the forested land in the county (USDA Forest Service, Forest Inventory and Analysis data). The agriculture and timber industries took hold in the community in the mid to late 1800s. Orchardists often bought land that had been logged and put it into fruit production. Timber and agriculture persisted for a century or so, until timber began declining in the late 1980s.

Between the 1960s and the late 1980s, three timber mills operated in the Upper Hood River Valley. All of them closed during the 1990s, with the loss of several hundred jobs. Manufacturing contributed 14 percent of total employment in the community in 1990, but it had dropped to 8 percent by 2000. Many timber workers moved away, and those who stayed adapted in various ways. In 2003, some

people still worked in forestry on private or county lands, or outside the county. A few people had small, specialized milling equipment. Others practiced forestry or had nurseries on their own land. Some found replacement jobs in orchards, trucking, welding, the service industries, and other odd jobs—although none of these jobs reportedly paid as well as timber industry jobs did. Some engaged in contracting work, such as watershed restoration.

The agricultural sector remained stable through the 1990s, reflected in U.S. census data that show agriculture, forestry, fishing, hunting, and mining accounting for 22 percent of total employment in 1990, and 23 percent in 2000. Over the last decade, however, orchardists have responded to trends in regional and international fruit markets by converting their orchards from apples to pears and more recently to cherries, and planting more varieties of apples and pears. Most farms were family-owned. Although agriculture has persisted, some interviewees felt it was threatened by foreign competition, big grocery-store chains that control fruit markets, and large companies that buy up farms. The Hispanic population of the community grew from 21.5 percent of the total population in 1990 to 29 percent in 2000. Increasingly, farm workers who were formerly migratory are taking up residence in the community and bringing their families to live with them, often in housing provided by the orchardists.

The community also diversified during the 1990s. Retirees, people who are self-employed or commute to regional centers, and people starting up small businesses moved to the community, many of them from urban areas. Although the community's population grew by 14.3 percent between 1990 and 2000 (from 3,752 to 4,288), this rate was slower than the average for nonmetropolitan Plan-area communities.

A growing number of recreationists and tourists travel through the community between Mount Hood and the Columbia River Gorge. This increase has been good for the local service and retail sectors, although it has increased congestion, accident rates, and the local population. Developing recreation and tourism was a divisive issue in the community.

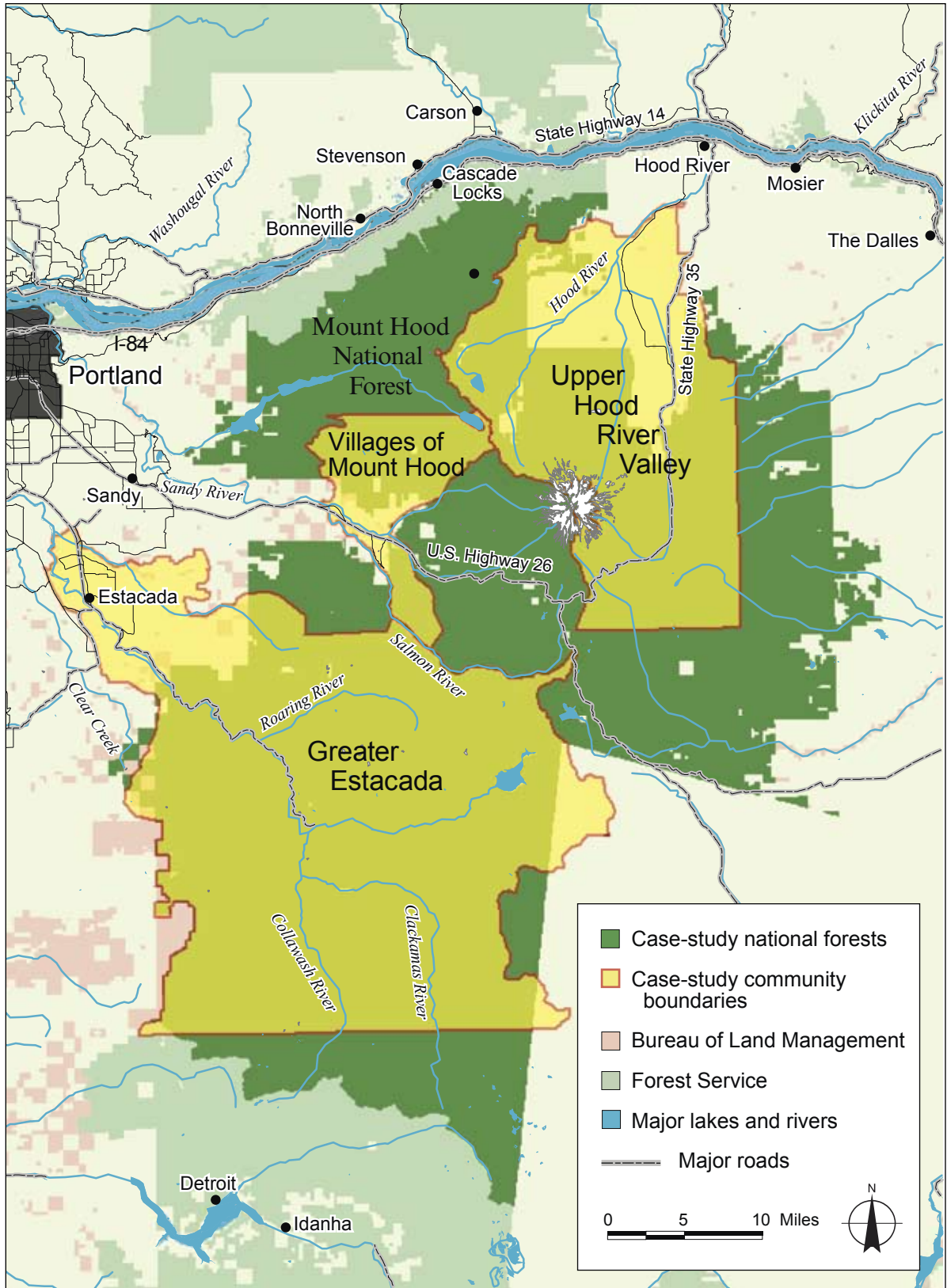


Figure 8-7—Case-study communities, Mount Hood National Forest.

The socioeconomic well-being measure for the Upper Hood River Valley remained medium between 1990 and 2000 (at 71.3 in 1990 and 72.0 in 2000). This measure was above the average for the 43 communities within 5 miles of the Mount Hood National Forest, which was 67.3 in 1990 and 66.8 in 2000. Median income rose slightly during this period (from \$32,533 to \$37,715). Unemployment and the percentage of the population living below the poverty line both dropped by roughly 25 percent (from 10 to 7.5 percent for unemployment, 17.3 to 13.2 percent for poverty). Some interviewees noted that people who lost their jobs or could no longer afford to live in the area moved away; their departure may partially explain the differences in these economic indicators.

### **Greater Estacada**

The timber industry dominated the economy and culture of Greater Estacada from the 1950s through the late 1980s. A rail line built in the early 1900s helped spur Greater Estacada's development as a timber community. Federal timber from the Mount Hood and Willamette National Forests formed the basis of the local timber economy. Sixty-six percent of the forest lands in Clackamas County (Greater Estacada's county) are in federal ownership (USDA Forest Service, Forest Inventory and Analysis data). Consequently, cutbacks in federal timber harvesting in the late 1980s severely affected the community. Many loggers, mill workers, and their families moved away and some timber workers retired. Others switched to jobs in the service or construction industries, which did not pay as well. Greater Estacada's construction sector went from 9 to 12 percent of total employment between 1990 and 2000.

Some timber workers remained in Greater Estacada. They stayed in the timber industry by working elsewhere seasonally, competing for logging contracts over a broad geographic area, or commuting to mill jobs in other locations. Few, if any, buy timber sales on national forest lands; local logging businesses now rely on private timber, although only 13 percent of the forest land in Clackamas County is in private industrial forest ownership. Similarly, the local mill no longer mills wood from the national forests. Its timber comes from private lands or is imported

from somewhere else. Although the mill in Estacada has not closed, the number of work shifts has dropped substantially. Manufacturing made up 21 percent of total employment in 1990; it accounted for 17 percent in 2000.

Accompanying the loss of timber sector jobs was a loss of contracting opportunities and FS jobs. The Mount Hood National Forest has a district office in Estacada, but the number of employees there dropped sharply in the 1990s. Jobs lost in the community also affected retail businesses, several of which closed down because of lack of demand for their goods and services. Nevertheless, U.S. census data indicate that retail trade made up 14 percent of total employment in both 1990 and 2000.

Agriculture, established in Greater Estacada in the 1850s, also persists. Agriculture was the dominant industry in the area from the 1850s through the early 1900s. Today, it is much less prevalent, although still important. Agriculture, forestry, fishing, hunting, and mining contributed 6 percent of total employment in 1990, and 4 percent in 2000. Like the Upper Hood River Valley, the nature of agriculture in Greater Estacada has changed over the years. Fruit orchards once dominated the industry, but Christmas tree farms, farms producing specialty products (such as greenhouse flowers), and nurseries prevailed during the 1990s. These crops require year-round labor, unlike earlier forms of agriculture, which were seasonal. This shift brought about an increase in the permanent Hispanic population of the community between 1990 and 2000 (from 3.1 to 7.3 percent of the total population).

Tourists and recreationists started visiting the Greater Estacada area in the early 1900s for picnics, fishing, and other activities. The number of visitors passing through the community has steadily increased because Greater Estacada is one of the access routes to the Mount Hood National Forest. Recreation and tourism have always been small contributors to the local economy, however.

Many commuters to the Portland metropolitan area moved into the community during the 1990s, helping explain the community's increase in population from 8,396 in 1990 to 9,315 in 2000 (an increase of 11 percent). Portland is roughly 30 miles away. Many of these commuters were middle-aged and had families with school-age children.

Working people close to retirement, whose children have grown, also moved into the area. Many of these people were drawn to the community by a desire to have a more rural lifestyle and land, and many were also well off economically, causing some “gentrification” of the community. Median household income in Greater Estacada rose by 24.5 percent between 1990 and 2000 (from \$35,898 to \$44,689), greater than the increase for Plan-area communities as a whole. Nevertheless, unemployment rose by 13.4 percent (from 8.5 to 9.6), and the percentage of the population living below the poverty line rose by 7.8 percent (from 11.5 to 12.4). The socioeconomic well-being score for Greater Estacada dropped from medium in 1990 (61.7) to low in 2000 (58.4), and was below average for the 43 communities within 5 miles of the Mount Hood National Forest.

The decline of the timber industry and the growth of Greater Estacada as a bedroom community mean that, today, most residents no longer have local jobs. Several interviewees said that the majority of the community’s population lived and worked in Greater Estacada through the late 1980s; in 2003, most of the population commuted to jobs outside the area. One consequence of this change was that many commuters spent their money elsewhere. This shift, combined with the rising cost of owning and running a business, caused turnover in local businesses during the past 15 years. Although several people have attempted to start small businesses in Greater Estacada, most have not survived.

One of the constraints on economic development and diversification in Greater Estacada has been opposition to commercial development on the part of local government. State land use regulations have also played a role in limiting residential, commercial, and industrial development there. The community did upgrade its water and sewer systems and extended them into areas zoned for industrial development in the hope of attracting new industrial jobs. Although the infrastructure is in place, no industries have come. Community leadership held divergent views on growth and development issues, and competing visions for Greater Estacada’s future. As a result, decisionmaking to support the community’s growth and development, and community involvement and support for projects, were weak.

## Villages of Mount Hood From Brighton to Rhododendron

The Villages of Mount Hood from Brighton to Rhododendron (hereinafter called the Villages) are along or just off of Highway 26, roughly 45 miles east of Portland, on the west slope of Mount Hood. They lie close to the mountain’s recreation destinations (ski areas, trails, lakes, and resorts). Some 14,000 to 20,000 vehicles travel through the community on a busy day en route to recreation destinations or to eastern Oregon. Traffic is growing at a rate of 3 percent per year, and the Oregon Department of Transportation continues to widen Highway 26. The Highway 26 traffic provides an important source of income to local businesses. When traffic is up, business is better.

According to several interviewees, the Villages did not depend heavily on timber historically. Logging was a part of the community’s economy and culture from the 1940s to the 1970s, however. Some mills operated in the area during that period. The timber industry declined in this community during the 1970s and early 1980s, before both the owl’s listing and the Plan. The local logging companies and mills had left by the early 1980s. Agriculture, forestry, fishing, hunting, and mining dropped from 5 to 2 percent of total employment between 1990 and 2000. Manufacturing dropped from 9 to 8 percent, reflecting the minor role of timber in the local economy during the 1990s. The few timber workers who still lived in the area in the 1990s logged on private lands. Some small, private nonindustrial forest owners in and around the Villages have residential properties. They hire local residents and small contractors to log their land. According to some interviewees, logging on private nonindustrial forest land has been more profitable since the harvest of federal timber declined.

Interviewees reported that the loss of agency jobs on the Mount Hood National Forest during the 1990s had a much stronger effect than did the loss of timber jobs in the Villages. Between 1993 and 2003, the number of full-time-equivalent positions on the forest dropped by 59 percent. Consequently, many local residents who had worked for the forest transferred, retired, or lost employment opportunities, and many moved. The exodus of FS employees created a supply of housing at affordable prices and contributed to

the growth of the Villages as a bedroom community for the Portland metropolitan area. A major widening of Highway 26 in the mid-1980s provided another impetus for this shift. Low-income and first-time home buyers willing to commute longer distances to afford a home, people wishing to live in a more rural area, and people who wanted more for their money moved into the community during the 1990s. The population of the Villages grew by 50 percent between 1990 and 2000. The newcomers were families with school-age children, young people, early or partial retirees, and low-income people. Many commuted to jobs elsewhere. The community's Hispanic population also grew slightly, as seasonal migrant workers settled there and brought their families to join them. Many work at the nearby resorts, in residential building, and in the service sector.

Recreation, tourism, and seasonal residents have been a feature of the community's identity for decades. The Mount Hood National Forest hosts the second largest number of recreation visits among Plan-area national forests: just over 4 million annually (Kocis et al. 2004). More than 550 recreational residences are on the Mount Hood National Forest, many of them in the Villages. In addition, many Portland-area residents seeking recreation opportunities on Mount Hood travel through the community to reach their destinations. Recreational services were a prominent feature of the local service sector. Jobs in arts, recreation, accommodation, and food services rose from 10 percent to 21 percent of total employment between 1990 and 2000. The Mount Hood ski areas, in particular, play an important role in drawing recreationists to the area, and have a big influence on the local economy.

Rapid population growth in the Villages (from 2,445 in 1990 to 3,670 in 2000, an increase of 50 percent) helped offset the effects to local businesses caused by the departure of many FS employees. Between 1990 and 2000, median household income in the community increased by 43.9 percent (from \$35,898 to \$51,639). Unemployment dropped by 12.7 percent (from 6.9 to 6), and the percentage of the population living in poverty dropped by 8.2 percent (from 6.9 to 6.3). Nevertheless, the community's socioeconomic well-being measure dropped from high (73.7) to medium (73.0) during this period. Despite this decline, the Villages

had one of the highest socioeconomic well-being scores of the communities within 5 miles of the Mount Hood National Forest.

Few organized efforts have been made to formulate community development plans in the Villages, but the community is growing and developing of its own accord. Residents were divided about whether they believed development was desirable. No common vision exists for the future direction of the community.

### **Role of Federal Forest Management Policy in Influencing Change**

Interviewees from communities around the Mount Hood National Forest perceived the Plan as having an array of effects on their communities. Several interviewees from the Upper Hood River Valley believed that declining timber supplies from the Mount Hood National Forest under the Plan was partly responsible for the mill closures in the community in the 1990s. They also viewed litigation, which prevented a continued flow of timber from the Mount Hood National Forest under the Plan, as a partial cause of mill closures. They identified other variables affecting the timber industry, however, such as competition in regional and international markets. One of the community's three mills burned down and did not reopen. Another was converted to other industrial uses. The third went out of business, although it remains standing and is reportedly operational.

Many interviewees from Estacada believed that the owl listing, subsequent court injunctions against harvesting federal timber, and the Plan were the main causes of decline in the community's timber economy, and the main impetus for community change. They associated the drop in federal timber harvesting with the loss of jobs for logging contractors, FS downsizing, and layoffs at the mill. Simultaneous growth in the Portland metropolitan area, and the aging of Oregon's population, contributed to Estacada's transition to a bedroom community.

By contrast, most interviewees from the Villages viewed the Plan as not having much effect on their community or as influencing the nature of change there. The effect they associated most with the Plan was the loss of FS jobs and employees from the community. Interviewees viewed

recreation and tourism on the Mount Hood National Forest as not being affected by the Plan or forest management policy, more broadly. Instead, they believed weather, the health of the economy, and the development and marketing of recreation infrastructure (such as resorts and ski areas) affected local recreation and tourism the most. Thus, the effects of the Plan on case-study communities associated with the Mount Hood National Forest were uneven.

**FS Role in Mitigating Plan Effects**

**Resource and recreation benefits—**

Trends in resource and recreation outputs from the Mount Hood National Forest are reported in volume II of the monitoring report. The Mount Hood produced an average of 350 million board feet of timber annually during the 1980s, but its PSQ dropped to 64 million board feet under the Plan. None of the people interviewed from the three case-study communities around the Forest said they were benefiting from Mount Hood timber sales in 2003.

Mining was insignificant in the case-study communities, as was grazing. And special forest products were not mentioned as being important economically. Interviewees did identify recreation as being important in helping the case-study communities derive economic benefits from the forest. Forest-based recreation was critical to the economy of the Villages, and it was seen as one way to stimulate business in Greater Estacada and the Upper Hood River Valley. Recreation expansion and tourism development are divisive issues in the Upper Hood River Valley, however. Interviewees from Estacada and the Villages said that the FS could contribute to community well-being by improving recreation opportunities and infrastructure on the forest, and by encouraging tourism there.

**Agency jobs—**

The Mount Hood National Forest workforce went from 662 full-time equivalent positions to 274 between 1993 and 2003, making it one of the hardest hit of all Plan-area national forests (fig. 8-8). The forest closed two of its six ranger district offices between 1990 and 2004 (in Maupin and Troutdale). Interviewees from all three communities

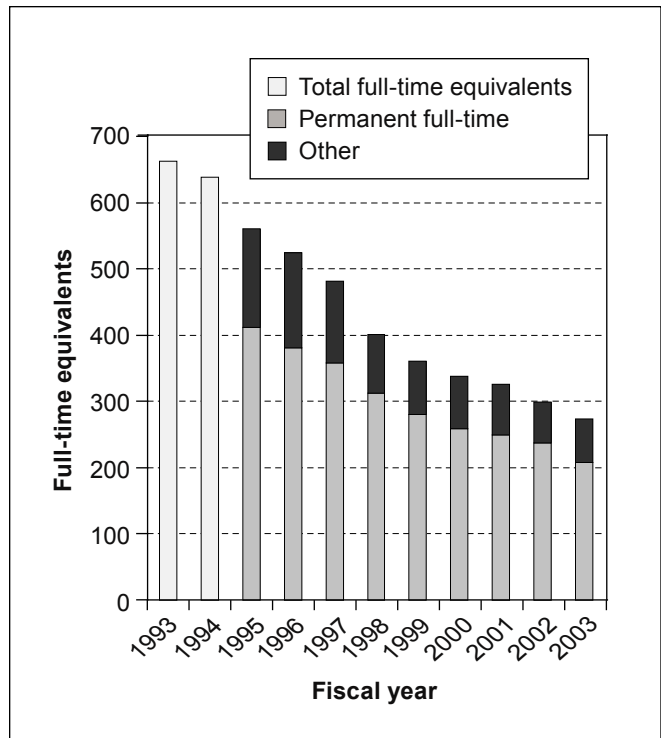


Figure 8-8—Mount Hood National Forest staffing levels, 1993–2003.

reported that the FS had been one of the main local employers, if not the main employer, before the 1990s. Since then, both permanent and seasonal jobs with the Mount Hood National Forest have declined steadily, strongly affecting all three communities. According to several interviewees, the loss of agency jobs represented a loss of some of the best jobs available in their communities. Moreover, they viewed the loss of FS employees from their communities as causing a local “brain drain.” These employees were typically well educated and active in local schools, churches, and government. When they left, the communities felt a noticeable loss of human capital. Seasonal jobs on the Mount Hood National Forest were also important to some residents. They provided summer jobs for youth, gave them valuable experience, taught responsibility, and created a connection to the forest and its management. The Mount Hood once used employees to run its campgrounds and recreation sites, but in 2003, it was outsourcing most of this work to concessionaires. The concessionaires reportedly contribute little to local job creation, because most of their employees are from outside the area.



**Contracting—**

The Mount Hood National Forest spent \$76.2 million on land management contracting between 1990 and 2002. Contract spending declined by 15 percent between 1990–92 and 2000–2002, compared to the 56 percent drop on Plan-area national forests as a whole. Most of this decrease happened after 1998, although 2001 was a good year for contracting (fig. 8-9). The amount of money spent on equipment-intensive and technical contracting increased during the study period, especially for road-related work and surveys. Labor intensive contracting—for tree planting in particular—declined after 1997. In 1990–92, 178 contractors worked for the forest. By 2000–2002, this number had dropped to 109. Throughout the period, about 20 percent of the forest’s contract value went to rural contractors (in communities with fewer than 5,000 people), and one-third to one-half went to urban contractors (in cities of more than 50,000 people). Many of the contractors working on the Mount Hood came from the Willamette Valley.

Interviewees from the Villages stated that most of the local small contractors moved away in the 1970s and 1980s. Few were aware that any FS contracting opportunities

were available. A few small mill operators in the Upper Hood River Valley said they would welcome opportunities to engage in contracting work with the Forest to achieve forest health objectives and gain access to small amounts of timber. Interviewees from Estacada stated that a few contracting opportunities were available locally to do road-related work on the Mount Hood National Forest and to fight fires. None of the work created through restoration or land management contracting came close to compensating for the loss of timber industry and agency jobs during the 1990s, however.

**Community economic assistance—**

The Mount Hood contributed roughly \$1 million in Rural Community Assistance Program funds as part of the Northwest Economic Adjustment Initiative (fig. 8-10). This money supported community planning efforts and infrastructure development, community livability, and downtown improvement projects consistent with community plans. The forest also provided technical assistance to communities.

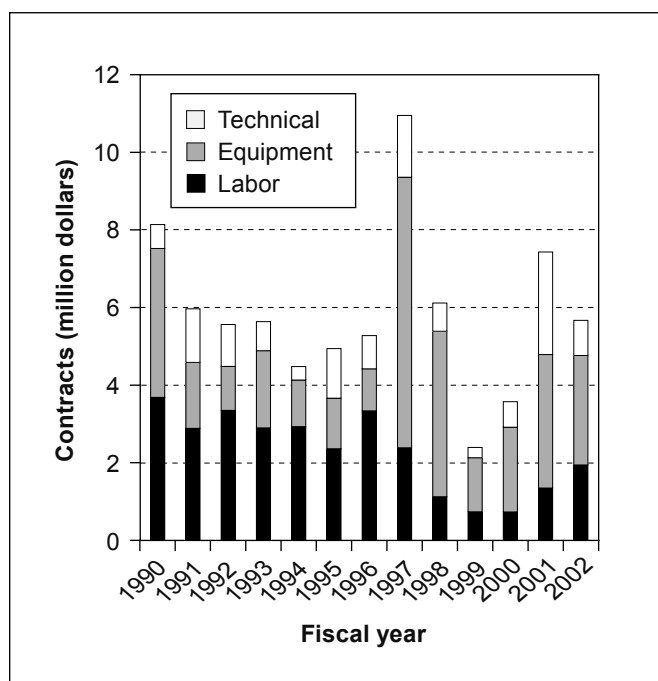


Figure 8-9—Mount Hood National Forest land management contracting by work type, 1990–2002.

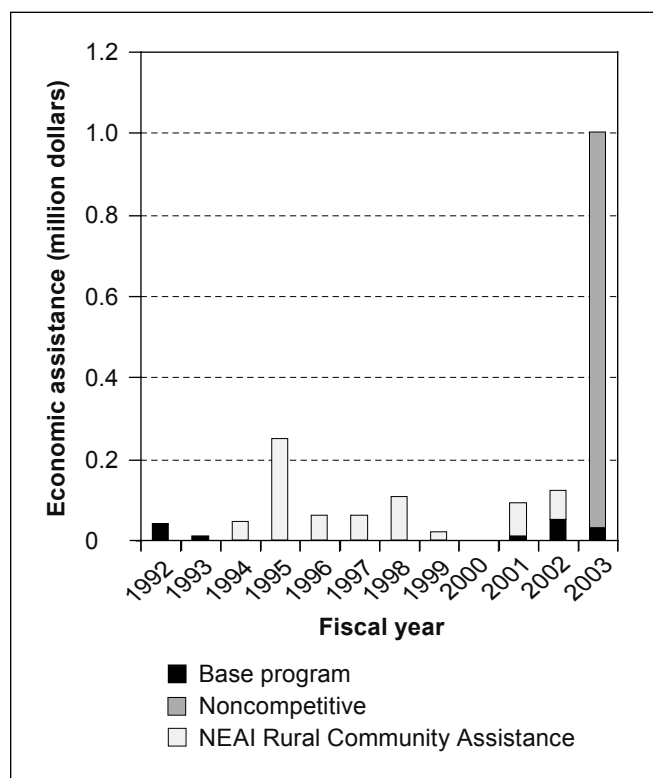


Figure 8-10—Mount Hood National Forest community economic assistance program trends. NEAI = Northwest Economic Adjustment Initiative.

Some forest interviewees believed that these efforts had brought about some local improvements. Because the FS’s Northwest Economic Adjustment Initiative funds were administered through the agency’s State and Private Forestry program, some also felt that the forest had missed opportunities to reach out and work with communities through the Initiative process, which could have helped mend and build relations with community members. The forest once had someone on each district coordinating its community economic assistance programs; only one program coordinator served the whole forest in 2003.

To our knowledge, the Villages did not receive any grants under the Initiative, although other communities in Clackamas County did.

Hood River County received about \$15 million in Initiative funds. The Upper Hood River Valley received little, if any, of this money. Community members preferred supporting infrastructure development projects through tax measures and bonds, rather than grant writing. The community did obtain Title II money for infrastructure development projects from the local resource advisory committee. Some skepticism was expressed about whether such projects would stimulate the local economy.

In contrast, Estacada received over \$5 million in grant and loan money through the Initiative from various agencies. This money supported the extension of the water and sewer infrastructure that has yet to attract industry. It also provided business loans and development, and supported community planning activities. Unfortunately, funded projects did not yield the desired results because community support was lacking, as were commitment and follow through. Few interviewees perceived a connection between the Plan and the grants and loans that supported these projects.

**Payments to states—**

Payments-to-states mitigation measures substantially offset declines in forest collection receipts and funding to counties that would have occurred in the absence of mitigation (fig. 8-11). Not until after the Secure Rural Schools Act of 2000, however, did these payments compare with pre-1990 amounts.

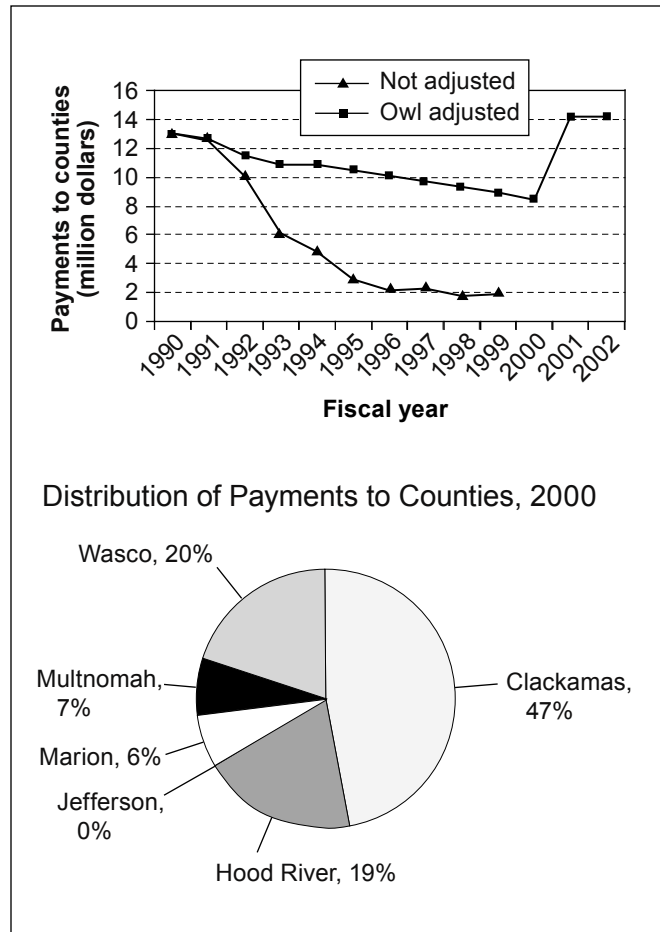


Figure 8-11—Mount Hood National Forest payments to counties. “Owl adjusted” reflects the increased payments to counties made to mitigate the effects of decreased timber revenue and revenue sharing.

**Summary**

The consensus among interviewees from all three case-study communities and the Mount Hood National Forest was that the forest contributed little to economic development and diversification and community well-being in the Upper Hood River Valley, Greater Estacada, and the Villages of Mount Hood after Plan adoption. Exceptions were some projects funded through the Northwest Economic Adjustment Initiative, and payments-to-states mitigation. Any benefits created did not offset the effects of declining timber harvests and agency jobs. Several interviewees from Estacada and the Upper Hood River Valley expressed the view that the FS could not assist communities with economic development and diversification, and they

did not expect it to. Not only did the number of people working on the forest drop by 59 percent between 1993 and 2003, but the forest budget also decreased 59 percent during the same period. A couple of interviewees from the forest and from the Upper Hood River Valley noted that any progress local communities had made in developing and diversifying was the result of their own efforts, not the result of agency management actions, policy initiatives, or assistance programs.

### **Klamath National Forest and Case-Study Communities**

The case-study communities surrounding the Klamath National Forest were Scott Valley (population 5,126 in 2000), Butte Valley (population 1,883 in 2000), and Mid-Klamath (population 1,660 in 2000) (fig. 8-12), all in Siskiyou County. Federal forest land accounts for 72 percent of all forest land in the county (USDA Forest Service Forest Inventory and Analysis data). Thus, federal forest management policy can substantially affect the county's timber sector. Agriculture and timber were strong components of the Butte Valley and Scott Valley economies historically. The Mid-Klamath primarily depended on timber in the decades leading up to the Plan. As a result, the Plan affected the community strongly.

#### **Scott Valley**

Historically, gold mining, farming, ranching, and logging were mainstays of the Scott Valley economy. Gold mining has been insignificant in recent decades, however. Timber workers began leaving the area in the 1970s and 1980s, when the downturn in the timber economy began. By 1990, roughly half of them were gone. Declines in timber production on the Klamath National Forest in the years immediately preceding the Plan dramatically affected the community's remaining timber workers, causing most of those who still lived in the community to leave with their families in the early 1990s. Between 1994 and 2002, two of the remaining mills that employed Scott Valley residents closed down, with some 145 jobs lost as a result. Manufacturing jobs dropped from 14 percent to 4 percent of total employment in the community between 1990 and

2000. Not all timber workers left the area, however. Some retired, some got lower paying jobs in the service sector, and some continued to work in the industry, commuting long distances to find work or working intermittently.

Although private industrial timberlands are on the mountain slopes above the valley floor, the companies that own them did not provide a meaningful alternative source of employment for Scott Valley timber workers. Only 18 percent of the forest land in Siskiyou County is owned by the private forest industry (USDA Forest Service Forest Inventory and Analysis data). Private industrial timberland owners in northern California have difficulty continuing to operate there because of the loss of timber industry infrastructure and California state regulations that put a burden on their businesses, making it costly to operate. Several companies have moved across the border to Oregon, where the business climate is more favorable to the timber industry. This move has exacerbated the effects of job loss on rural communities in northern California.

Many welfare recipients (another long-term segment of the local population) and people living on unemployment also moved away from the Scott Valley in the mid-1990s, when their benefits apparently ran out. The exodus of these residents and their families, along with most of the remaining timber workers, caused some schools to close or consolidate, and caused a loss of support to the service and business sectors of the community. When timber workers and their families moved away, housing prices slumped briefly, attracting the attention of young retirees from urban areas, and older, mobile, high-earning workers. These people began to move into the Scott Valley, and housing prices have since risen dramatically. Median age in the community rose 33.6 percent between 1990 and 2000, reflecting the exodus of families and the influx of older people. Although the community's population changed in composition between 1990 and 2000, its total population remained at about 5,100.

Ranchers in the Scott Valley community, whose families have been ranching for generations, have also experienced stress over the last decade and have a difficult time maintaining their way of life. The pressures come from

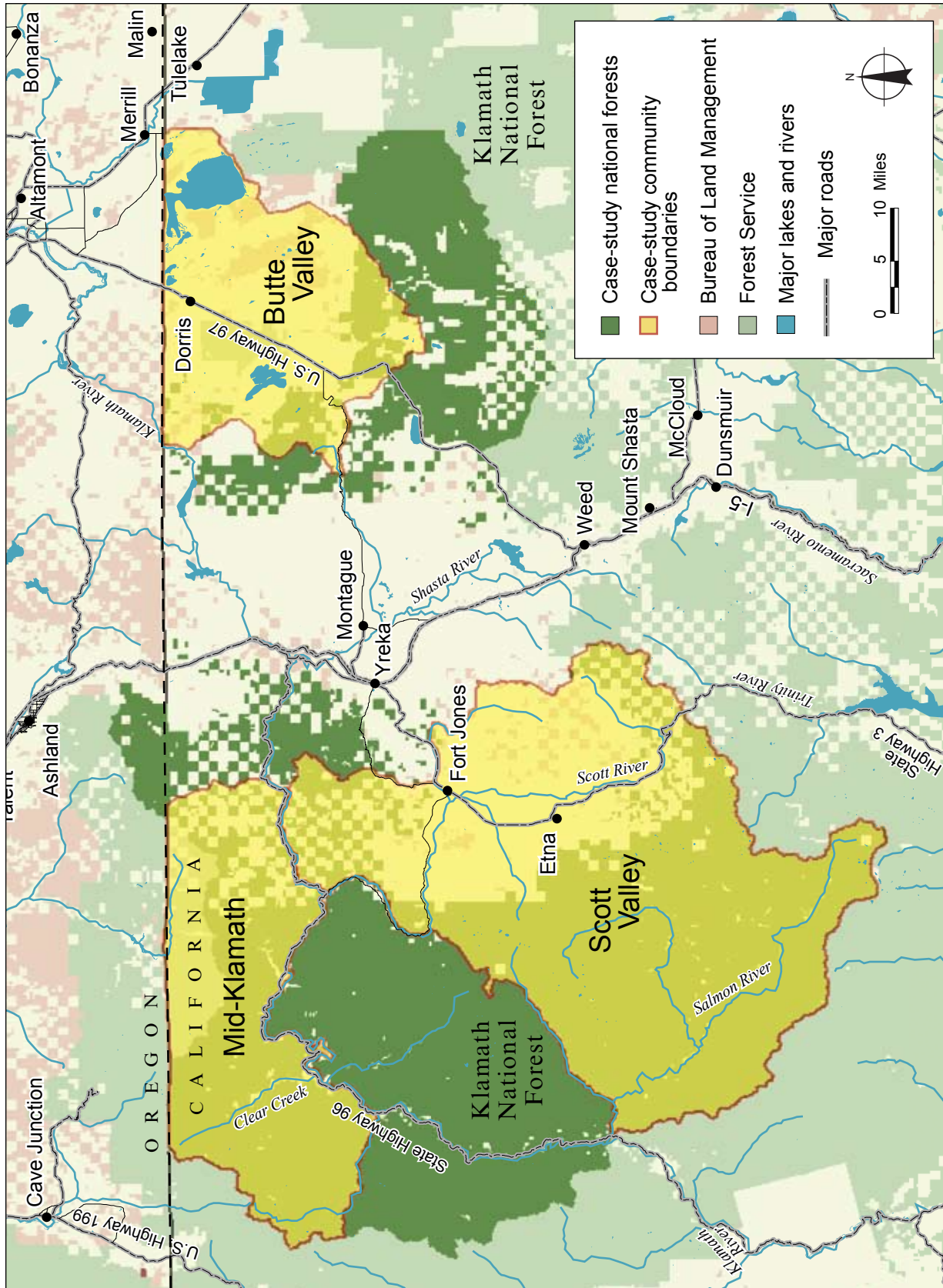


Figure 8-12—Case-study communities, Klamath National Forest.

many sides: flat beef prices in the face of rising labor costs, rising production costs, drought, and the 1997 listing of the coho salmon (*Oncorhynchus kisutch*) as a threatened species. The coho listing may affect local water management and could threaten the use of water by ranchers who irrigate pasture on their private ranches and grow alfalfa for sale.

An estimated six Scott Valley ranchers have allotments on the Klamath National Forest. Changes in forest management under the Plan have added to the other pressures they face. For these permittees, FS allotments play a critical role in their livelihood strategy. The interviewed ranchers, however, stated that drought, stricter rules regarding the use of riparian areas under the Aquatic Conservation Strategy, and increased scrutiny of grazing practices under both the National Environmental Policy Act and the Plan have meant that grazing on the forest has become more labor-intensive, because it has to be managed more carefully. Rising labor costs put a burden on household economies, causing some ranchers to shift from hired to household labor, stressing family resources. Increased scrutiny of grazing practices and plans has added to the climate of uncertainty around the viability of ranching, and permittees interviewed felt insecure about whether they will continue to have their permits renewed. Another concern among permittees is the increased risk of catastrophic fire on the Klamath National Forest over the last decade because of inadequate fuel management. This risk has caused some ranchers to consider obtaining fire insurance for their cattle, adding to the cost of doing business.

Pressures that threaten the viability of ranching make it difficult for ranching families to recruit younger generations into this way of life. Inflated property values in the Scott Valley resulting from the influx of wealthier residents and high inheritance taxes are decreasing the likelihood that family ranches will be passed on to the next generation. Instead, they may well be sold to rich newcomers, or subdivided and developed.

Although the nature of the Scott Valley community has changed over the last decade, the community is persisting. The Scott Valley's proximity to Yreka and the Interstate 5 corridor means that commuting to jobs outside the community is a more viable option than it is for more remote

communities around the Forest. The Scott Valley also has a relatively diversified natural-resource-based economy. The ranching and agricultural sectors, although under stress, are still viable, contributing 18 percent of total employment in 1990 and 19 percent in 2000. The influx of retirees and mobile workers into the community has helped support the local economy, although the demand for many kinds of businesses and services has decreased. Although median income increased from \$27,888 in 1990 to \$32,013 (14.8 percent), unemployment rose from 7.9 to 9.3 percent (17 percent). The community's socioeconomic well-being score dropped from medium (62.6) to low (56.7) between 1990 and 2000. This score was slightly lower than average for the 37 communities within 5 miles of the Klamath National Forest (63.4, medium, in 1990 and 57.4, low, in 2000).

The Scott Valley has a strong constituency of residents who are highly active in community issues, have strong leadership skills, work to promote economic development in the area, are effective at organizing the community around issues of concern, and work to protect the rural way of life and values that predominate there. In 1997, the Scott Valley towns of Etna and Fort Jones were assessed as having high (Etna) and medium community capacity (Fort Jones) (Doak and Kusel 1997: 72). This high community capacity has been a critical factor in helping the community adapt to change.

### Butte Valley

The Butte Valley also has had a diverse natural-resource-based economy historically, with timber, ranching, and farming all playing important roles. The timber industry was an important employment sector in the Butte Valley historically. By 1990, Butte Valley had long since lost its sawmill. Forest industry jobs remained an important component of the local economy, however. When logging on federal forest lands was restricted in the early 1990s, the local effects were big. Truckers, fallers, markers, and people who worked for the FS lost jobs. Loggers and truckers could no longer find jobs that would sustain their families. Some individuals began "tramp" logging, going farther and farther from home to find work. Many people moved away, disrupting close family intergenerational ties and established ways

of life. By 2003, the bigger truck operators were in cities, and traveled greater distances to work.

Some people stayed in Butte Valley and commuted to work in the mills in Klamath Falls, Oregon. Others stayed and switched to lower paying jobs in the service sector, sometimes commuting to Klamath Falls. Pay reductions caused a reduced standard of living and often required both husband and wife to work to support their household. Some interviewees reported an increase in drugs, crime, and other social problems in the community since 1990 that they associated with job loss in the timber sector.

Two small mills remain in the area in the town of Dorris. One is a molding mill, in operation since 1924, now an industry leader in the United States. The other operation went through two incarnations as a molding business before the current peeler core business started in 1997. These and other successful businesses persisted by developing markets outside the local area. The mills shifted their supply of raw materials from expensive, locally produced wood to cheap, imported wood from New Zealand and peeler cores from Oregon mills. They also stayed viable by responding to orders quickly.

Apart from these two small wood-related businesses and FS employees at the local ranger district office, interviewees did not know anybody in Butte Valley who was employed in timber industry-related jobs in 2003. Manufacturing jobs dropped from 12 percent to 9 percent of total employment in the community between 1990 and 2000.

While the timber industry was declining in Butte Valley, the potato industry was thriving. Potato farming was a year-round source of employment, so workers bought houses and settled in the community. Agriculture, forestry, fishing, hunting, and mining were 26 percent of total employment in 1990, and grew to 33 percent by 2000. Since 2000, however, potato farming in Butte Valley has largely disappeared because of international trade practices, changes in American eating habits, and the expensive cost of pumping ground water to irrigate them. Potato farmers sold out to strawberry farmers, who grow strawberry plants in Butte Valley and ship them elsewhere to be replanted and produce berries. Work on the strawberry farms is seasonal, and is performed mainly by migrant workers. Interviewees

did not perceive strawberry growers as contributing much to the community or the local economy because of their seasonal presence and practice of hiring mostly nonlocal workers. Trends in Butte Valley's farming sector were not viewed as being tied to federal forest management policy.

Ranchers were another important component of the Butte Valley agricultural sector. Ranchers who had FS allotments relied on them heavily because most of them did not own enough acreage to keep cattle on their own property year-round. Typical permittees ran cattle on their own land for part of the year, on the Klamath National Forest for part of the year, and on pasture rented from other private landowners for part of the year. In general, ranchers moved their cattle to the Klamath allotments in late spring or early summer, where they remained until late summer or early fall.

In recent years, the water crisis in the Klamath Basin and the drought in southern California have caused farmers to come to the Butte Valley in search of farmland and water for irrigation. This search has created competition among ranchers for land and has driven up the cost of renting seasonal pasture. Ranchers who cannot afford to rent pasture locally must take their cattle farther away to find available pasture, increasing the cost of production.

Production costs associated with running cattle on the Klamath National Forest have reportedly increased since the Plan was adopted. The Plan was perceived as increasing agency scrutiny over grazing practices. Some interviewees said that ranchers had to monitor their animals more closely on allotments to be sure that they did not overgraze. They also had to do more mitigation work to comply with the Aquatic Conservation Strategy, such as maintaining more miles of fences to keep cattle out of riparian areas. Both of the requirements increased labor demands. Greater scrutiny over grazing and reduced access to water meant that allotment days and animal unit months had gradually declined each year. This decline increased ranchers' needs for access to private pasture land, which was becoming increasingly scarce and costly to use. Some interviewees mentioned that the heightened risk of fire on the Klamath might cause ranchers to want fire insurance for their cattle to protect them from catastrophic loss, further increasing production

costs. Despite these pressures, ranchers interviewed in Butte Valley felt that their FS allotments were secure relative to the private land component of their grazing strategy. They felt squeezed, however, by rising production costs in the face of unstable beef prices. According to interviewees, the only ranching families likely to persist were those who had enough pasture and water on land they owned to support their herds year-round.

One segment of the Butte Valley population that reportedly has increased since 1990 are the people on fixed or low incomes, including retirees, who find the cost of living, natural amenities, and proximity to services in Butte Valley attractive. Another segment of the local population commuted to jobs across the border in Oregon, mainly in Klamath Falls, a large regional center about 20 miles away.

Some things in the Butte Valley changed little since 1990. For example, land values and the cost of living remained low. The population stayed at around 1,900 residents. Services remained about the same. The socioeconomic well-being score of the community was low in 1990 (52.4) and was still low in 2000 (50.7), substantially lower than average for the 37 communities within 5 miles of the forest. Nevertheless, median household income rose slightly (from \$21,594 to \$23,826), unemployment decreased (from 13 to 9.7 percent), and the percentage of the population living in poverty also decreased (from 26.8 to 21.9) between 1990 and 2000.

Highway 97—an alternative to Interstate 5 that many truckers prefer—runs through the Butte Valley and brings traffic that has helped sustain the business sector there, which could not be supported by the local population alone. Retail trade grew from 4 percent of total employment in 1990 to 11 percent in 2000. The Dorris city council has also worked to attract business to the Butte Valley by improving the city's infrastructure and cleaning up the town. The community's proximity to Klamath Falls, however, limits its ability to compete for business (Doak and Kusel 1997: 48). The loss of timber workers, FS employees, and farming families from the Butte Valley caused a loss of people who were willing to engage in civic affairs and promote community development. The core nucleus of individuals who played this role in 2003 was

small. In a study of community capacity in the Klamath region, Butte Valley received the lowest possible community capacity score (Doak and Kusel 1997: 6).

Local residents interviewed viewed the Butte Valley as potentially attracting tourists. In 2003, the section of Highway 97 that goes through Butte Valley was included as part of the Volcanic Legacy Scenic Byway. The community and agencies are promoting bird-related tourism in the area. The city of Dorris recently built the tallest flagpole west of the Mississippi River. In the last 2 years, Dorris also sponsored a Fourth of July celebration, and an "Art in the Park" event. All of these activities were designed to attract tourists, who the community hopes will contribute to the local economy. Residents were divided in their support of recreation and tourism development, however, and acknowledged that it is not likely to be a solution to the area's economic problems. The Butte Valley is more a pass-through area than a destination.

### **Mid-Klamath**

Between the 1960s and the early 1990s, the economy of the Mid-Klamath community was driven by timber. The local timber economy, in turn, almost wholly depended on federal timber because the community is surrounded by vast tracts of the Klamath National Forest. Community interviewees said that during the 1970s and 1980s, getting logging and mill jobs locally was easy. Five mills operated in the area. When the federal timber supply dropped off in the early 1990s, mills closed and jobs became scarce. Not just loggers and mill workers were affected; the FS, which had been the other major employer in the community, had to downsize because many of its employees supported the forest's timber program. Many mill workers, loggers, and FS employees moved away in search of work elsewhere, taking their families with them. As a consequence, housing prices dropped, stores and service centers that supported these workers shut down, and school enrollment declined precipitously. Manufacturing went from contributing 30 percent of total employment in 1990 to just 4 percent in 2000. Not only did the community lose its economic base, but it also lost productive people who were hard-working and contributed much to the community. The exodus of

timber workers from the Mid-Klamath community was accompanied by the loss of a way of life and local culture. By the mid-1990s, most of this culture was gone, although some loggers have remained in the area.

Community residents interviewed said that since the decline of the local timber economy, new people have moved into the Mid-Klamath community, especially people on fixed incomes. One such group was characterized by interviewees as being low-income people on welfare, who are drawn to the area in part because of the low cost of living there. Another group of newcomers consists of people in the early phase of retirement, who do not yet require the health and transportation infrastructure that more elderly retirees do, amenities currently lacking in the Mid-Klamath. A small number of “urban escapees,” who telecommute or otherwise work remotely from their place of employment, have also settled in the Mid-Klamath area. Nevertheless, total population in the community dropped 21.6 percent between 1990 and 2000, from 2,117 to 1,660.

The outmigration of families with children, the inability of young people to remain in the community because jobs are lacking, and the immigration of retirees and others greatly altered the social and economic structure of the Mid-Klamath community. Median age rose by 36.6 percent between 1990 and 2000, and school enrollment dropped by 41.8 percent. Median household income sank 29 percent, unemployment rose 21.1 percent, and the percentage of the population living in poverty rose 64.7 percent. The socioeconomic well-being score dropped from low (51.7) to very low (42.3), making the Mid-Klamath one of the lowest scoring communities within 5 miles of the Klamath National Forest.

Other local consequences are associated with restrictions on timber harvest under the Plan. Stakeholders asserted that survey and manage species, and other Plan requirements have almost made it impossible to implement fuel management projects for the Klamath National Forest. The fire risk posed by accumulating fuel in the vast national forest lands surrounding the Mid-Klamath community is of great concern to residents and local officials. The Plan has had a negligible effect on other forest resource uses.

Very few local grazing permittees exist. The one permittee interviewed stated that the Plan had no effect on his practices because his allotment is at a high elevation with no rivers or creeks, and hence no associated riparian constraints.

Mid-Klamath residents who remained in the community did so out of a commitment to place, and a determination to find alternate means of survival there. In some cases, one family member (typically the husband) worked outside the area and came home on weekends, while the spouse and children remained in the community. Other residents diversified and engaged in a mix of pursuits, with both spouses working to support the family. Some loggers owning equipment did contract work on the forest, such as road decommissioning. Other natural-resource-based jobs were limited. Unlike the Scott Valley and the Butte Valley, farming and ranching were not viable livelihood strategies in the heavily forested, steeply mountainous Mid-Klamath area. The shortage of private land has also limited development opportunities in the community. Some people found adjusting to change very difficult, contributing to drug abuse, domestic violence, and divorce.

The forest did provide recreation-related opportunities, and some residents were hoping that recreation would provide new economic vitality to the community. The Happy Camp Chamber of Commerce believed that the Klamath River and the local scenery were the Mid-Klamath’s biggest assets, and were exploring ways to bring visitors to the community by marketing these resources. The Chamber started an annual Fourth of July motorcycle event 3 years ago, which draws many visitors.

Two recreational activities predominated in 2003: gold mining and river rafting. In 1986, two local residents started a recreational mining club. In 2003, this club had more than 60 miles of mining claims along the Mid-Klamath River and its tributaries, and club membership stood at about 800. Members come to the Mid-Klamath between June and September and dredge for gold. Most interviewees viewed them as major contributors to the local economy, although concern was expressed about the environmental effects of their behavior. Similarly, river rafting was uncommon on the middle Klamath River in



1990. In 2003, 75 outfitter-guides were reportedly running rafting trips there between spring and fall. Rafters contribute to the local economy by staying in local motels, eating at restaurants, and buying supplies there. Nevertheless, some community members were skeptical that recreation will contribute much to the economic development and diversification of the community.

Several interviewees commented on the role of natural disasters in supporting the local economy. The 1997 flood brought nearly \$8.8 million in emergency funding to the Klamath National Forest and other agencies, which translated into local jobs such as repairing and decommissioning roads. Fire suppression on the forest in 1999 added another \$3.5 million to the Klamath National Forest budget, which also contributed jobs and income to the local economy (Dillingham 1999: 1). Many interviewees viewed fire as a growth area from the economic standpoint.

Interviewees consistently said that the Karuk Tribe was the main driving force behind the survival of the Mid-Klamath community after the timber decline. Many of the tribe's 3,200 members live in the Mid-Klamath community. Although the community includes their ancestral territory, they do not have a reservation. The Karuk were federally recognized in 1979 (Tobe et al. 2002: 2). Many tribe members participated in the local timber industry as loggers or mill workers. The disappearance of those jobs provided an impetus for the Karuk to organize and seek ways of promoting economic development in the community. They have been extremely successful over the last decade at obtaining grant money to fund projects such as a museum, housing development, education program, and natural resources department. The tribe and the FS were the two biggest employers in the area in 2003. Public administration rose from 2 to 9 percent of total employment between 1990 and 2000. The tribe's annual operating budget stood at roughly \$12 million in 2001 (Tobe et al. 2002). The tribe had fewer than 20 employees in the early 1990s, but it had over 100 employees in 2003. The tribe also took over managing some local businesses and service centers in the Mid-Klamath that might not have remained viable otherwise, such as a hardware store and a health clinic. Tribal representatives interviewed felt a sense of responsibility in helping the

community survive. The tribe, not the FS, was viewed as the major contributor to community stability and socioeconomic well-being in the area. Concern was expressed, however, over the long-term sustainability of the tribal economy, which depended on soft money.

### **Role of Federal Forest Management Policy in Influencing Change**

Many Mid-Klamath interviewees viewed the listing of the owl under the Endangered Species Act and the Plan as causing the demise of the timber economy and culture in their community. In the 1970s and 1980s, local mills reportedly obtained most of their timber from national forest lands. When the timber stopped flowing, the mills were forced to close, and loggers and mill workers lost their jobs. One logger interviewed stated that the Plan made operating difficult for small loggers who remained in the community. Small, independent loggers once made a living by buying small timber sales they could afford. Plan requirements increased the cost of timber-sale preparation, so that new sales under the Plan had to be large to be cost-effective. Small logging operators could not always afford to bid on these large sales, and therefore felt squeezed out of the market.

Butte Valley was also affected by changes in federal forest management policy, although it lost its main mill decades before the Plan. The curtailment of timber harvest on the Klamath caused job loss in the community's timber sector, which has virtually disappeared except for two small mills that persist but do not use federal timber. The Scott Valley's timber sector started to decline in the 1970s, and continued to decline through the 1980s. Cutbacks in federal timber harvesting exacerbated this trend, and reportedly contributed to the virtual disappearance of the community's timber economy.

California state regulations creating an unfavorable business climate for private timber companies, combined with the loss of local wood-products industry infrastructure, caused some of these companies to move their operations to Oregon and Washington. This move added to the decline of timber jobs in the area.

The Plan affected more than timber workers in communities around the Klamath National Forest. Lack of adequate

fuel treatment on the forest, in part because of the difficulty of implementing surveys for survey and manage species and other Plan requirements, increased the risk that local communities face from fire. Growing fire risk is a critical concern to adjacent property owners and residents of adjacent or nearby communities. Rising fire risk also affects local and regional fire-fighting organizations, and is of great concern to local and county governments.

Ranchers interviewed reported many factors that were making difficult their maintaining a viable ranching business and lifestyle. The drought resulted in less forage and declining water sources that require increasing protection and cattle management. The Plan incorporated and strengthened requirements for riparian areas during the 1990s. Incremental costs to production when requirements change add to all of the other pressures ranchers face. From the permittees' point of view, their operations become increasingly marginal as costs rise. Apparently most ranchers were able to maintain their businesses during the first decade of the Plan by absorbing the added costs, but they do not see a sustainable future in the ranching business for their children.

## The FS Role in Mitigating Plan Effects

### **Resource and recreation outputs—**

An average of 200 million board feet of timber was harvested annually on the Klamath National Forest during the 1980s. Under the Plan, the forest's estimated annual average PSQ is 51 million board feet. Interviewees from all three communities reported that the Klamath National Forest does not contribute to socioeconomic well-being in their communities by providing timber as it once did. The small mills that remain in Butte Valley do not use national forest timber. The Scott Valley has few remaining timber workers. Those Mid-Klamath residents who are still trying to make part of their living in the wood-products industry are frustrated by the lack of reliable supplies of federal timber, so making a living is difficult for them.

The Klamath National Forest plays an important role in providing local ranchers with the grazing allotments critical to their viability. Plan standards and guidelines for riparian reserves added to the growing requirements for riparian

protection on national forest lands in place before the Plan, increasing ranchers' operating costs. Mining is negligible, except for recreational mining. Special forest products are important to tribes, but the Plan has hampered the ability of the forest to manage for some tribal cultural products that grow well in burned areas. Matsutake mushrooms have commercial importance, but provide little in the way of economic benefit to local residents because most harvesters and buyers come from outside the area. These people do support local businesses when they are in town, however.

Interviewees had mixed views about the Klamath National Forest's contributions to recreation and tourism development. The Butte Valley community recognized the forest as a tourist attraction and wanted to see the forest develop interpretive programs to help attract more visitors. Interviewees from the community viewed the forest's efforts to develop east-side snowmobiling opportunities in a positive light. This development has brought more recreationists to the area. The Klamath National Forest also worked with the community to promote a Volcanic Byway designation, and the FS in Oregon helped develop a brochure on local birding opportunities.

In the Scott Valley, people expected that reductions in federal timber harvest would be partly offset by increased investment in developed recreation and tourism. These expectations have not been met. According to several interviewees, not only had the forest failed to work with the community to develop recreation and tourism options, but it could not maintain the existing recreation opportunities. For example, the forest had yet to clear and open a large number of wilderness trails in the Scott Valley area closed by a timber blowdown that occurred during a storm in 1997. Local outfitters said the Klamath National Forest could not respond to their requests to address problems relating to recreation use on the forest because it did not have the staff.

In the Mid-Klamath, the Chamber of Commerce was working with the Happy Camp Ranger District to design and build a visitor center to be housed in the FS office, and to develop visitor materials and resources. They were also working together to identify mountain bike trails on the forest, and to attract professional bikers to the area, in the hope that one day it will become a destination for mountain

bikers. Some interviewees felt that the FS was not doing much to help facilitate recreation development; they stated that lack of campground maintenance, boat launches, maintained trails, and road closures were deterrents.

**Agency jobs—**

The decline in the Klamath National Forest’s timber program triggered declines in the forest’s budget and jobs. The forest went from having 636 employees in 1993, to 441 in 2003, a loss of 31 percent (fig. 8-13). Although this decline was not as severe as on the other two case-study forests, it strongly affected local job opportunities, particularly in the Mid-Klamath, where a ranger district office closed in 1997.

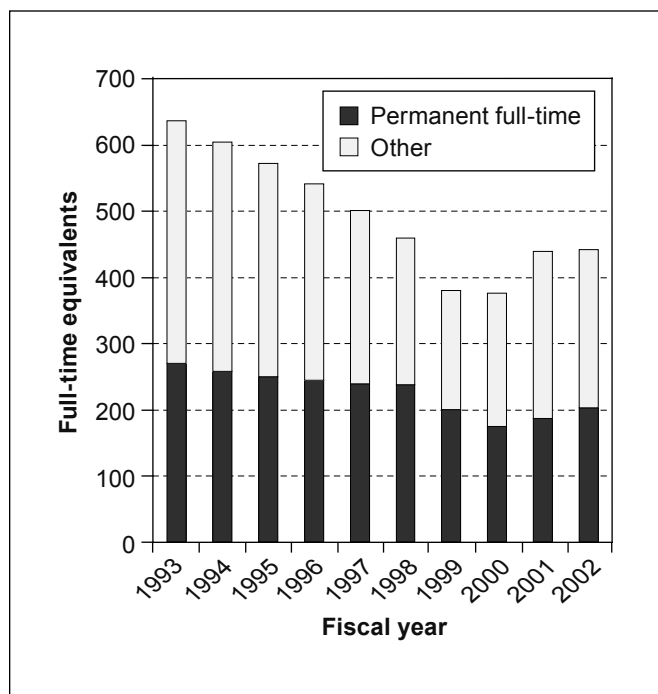


Figure 8-13—Klamath National Forest staffing levels, 1993–2003.

**Contracting—**

Between 1990 and 2002, the Klamath National Forest spent \$44.5 million procuring land management services. Most of this spending (64 percent) was between 1990 and 1993 (fig. 8-14). After 1993, contract spending on the Klamath dropped sharply. Between 1990–92 and 2000–2002, contract spending declined 78 percent. The Klamath’s rate of reduction in procurement spending was considerably

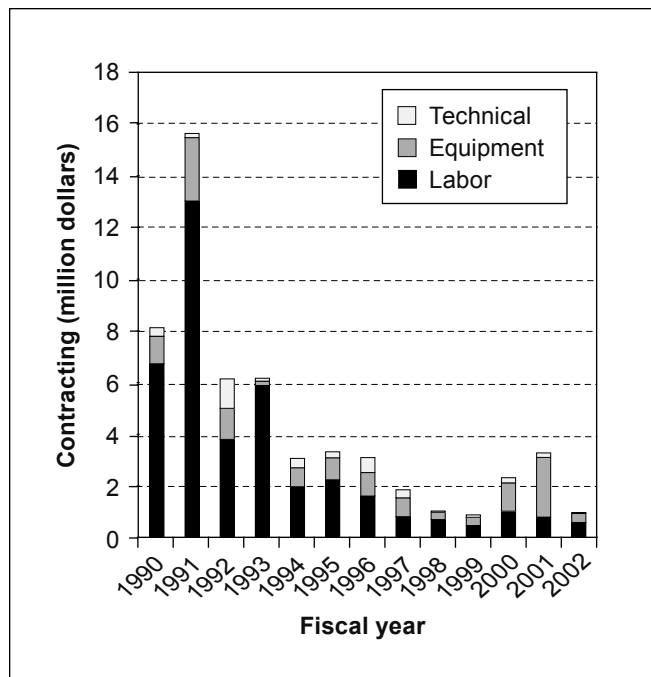


Figure 8-14—Klamath National Forest land management contracting by work type, 1990–2002.

greater than for the Plan area as a whole, but it was comparable to the decline in contract spending on other northern California forests (see Moseley et al. 2003). The relatively high contract spending in the early 1990s can likely be explained in part by salvage and restoration work going on at that time after a catastrophic fire in 1987. In 1997, the forest had a major flood. The Klamath received \$8.8 million of emergency federal highway repair money in 1998–99 for storm-related repair and restoration work. The rise in contract spending in 2000 and 2001 reflects the surge in restoration work resulting from the flood money. As with other national forests in the Plan area, the Klamath substantially reduced its spending on labor-intensive contracting over the course of the study period. The Klamath also reduced its spending on equipment-intensive and technical contracting. During 1990–92, 101 contractors worked for the Klamath National Forest, a number that fell to 58 by 2000–2002, a 43 percent decline. In 1990–92, contractors working on the Klamath came from up and down Interstate 5. Over time, contractors were increasingly concentrated in northern California and southern Oregon, and then finally in northern California.

Interviewees from the case-study communities viewed contracting on the Klamath as having contributed some local opportunities for residents. In Butte Valley, contracting work on the forest was not significant; once timber workers moved away, few local people had the needed skills and equipment. More recently, a few seasonal contracting job opportunities have become available in the community through the National Fire Plan to reduce hazardous fuels. In the Scott Valley, survey and manage species requirements provided some opportunities for local residents. The forest was praised for supporting training and economic development opportunities in the area of technical contracting. Much of this work was accomplished through support for a local nonprofit organization whose trainees worked on the Klamath doing surveys, restoration work, geographic-information-system (GIS) analysis, and other analyses. In the Mid-Klamath, a small number of individuals do contract work on the forest, such as road decommissioning and restoration work. The availability of contract work fluctuates depending on natural disasters (storms, floods, fire). Often, the season of work is restricted to a few months during summer, and contracts are sporadic, so relying on them as a steady source of work is difficult.

**Community economic assistance—**

The Northwest Economic Adjustment Initiative brought nearly \$2 million in grant money to the Klamath National Forest over 9 years. During this period, the forest averaged \$217,000 per year in grant money, with a high of \$478,000 in 1994, and a low of \$50,000 in 1999 and 2000 (fig. 8-15). The bulk of the initiative money became available during the first 4 years of the Plan. Rural community assistance grants composed the majority of this funding. Communities often used Rural Community Assistance grants to leverage money from other sources through matching grants and other means, so that the total benefit they provided was far beyond their face value. Not only did the initiative provide economic assistance to communities, but the way in which it was administered caused new collaborative relations to form between the agency and communities, where previous relations focused on the timber business.

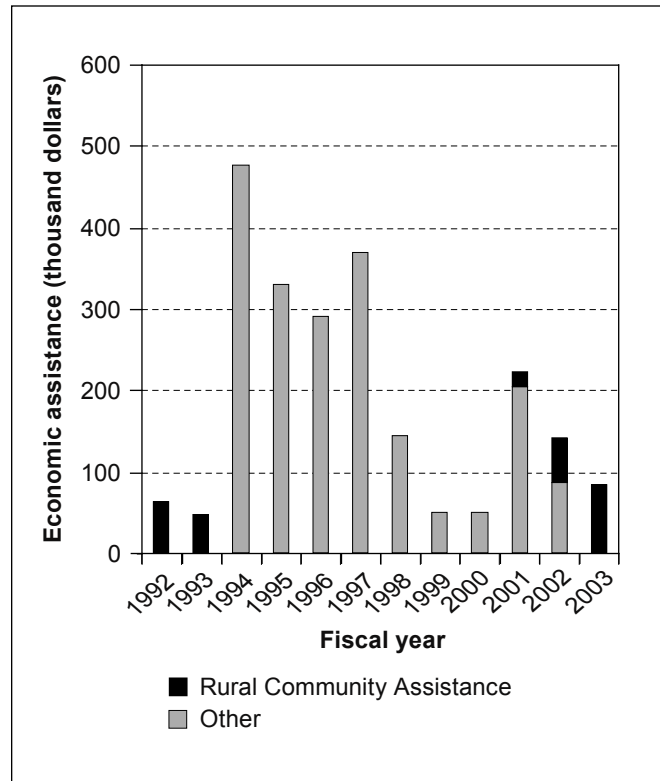


Figure 8-15—Klamath National Forest community economic assistance program trends. Not adjusted for inflation.

In the Butte Valley, federal grant money to support economic and community development, and small business loans—some of which came through the initiative—were critical for helping local businesses survive. In Scott Valley, the effectiveness of initiative funding and Rural Community Assistance grants received mixed reviews. They were believed to be helpful in funding specific projects and infrastructure developments, but their long-term success was believed to be limited by inconsistent commitment and follow-up on the agency’s part. Initiative money was not viewed as helping former timber workers adapt to changing job markets because most of the workers had lost their jobs and left by the time the funding arrived.

The Mid-Klamath community received a substantial amount of initiative funding in the mid-1990s. Tobe et al. (2002) studied how effective that funding was. The Karuk were able to secure \$1.86 million in initiative funds, and the community secured additional funds through other mechanisms. Numerous planning activities took place,

and several projects were initiated, roughly one-third of which were natural-resource-based (such as a small hardwood mill and a furniture business). Tobe et al. (2002) found that the initiative did increase the physical infrastructure and financial capital of the community. The initiative also provided job training and skills development, but it did not lead to creating significant local jobs. Instead, retrained workers had to move away to find new jobs. Nor did it build leadership capacity in the community to replace what was lost when timber workers moved away. What new businesses were created could not absorb displaced timber workers, who benefited little from the initiative programs. The FS did not create the job opportunities hoped for, or provide the raw materials required to make new value-added wood-products businesses successful. The main criticism of the initiative reported by interviewees was that it provided one-time funding for projects, but these projects were not linked together to create long-term, sustainable jobs for local residents. And the funding ran out too quickly to be effective.

**Payments to county governments—**

The spotted owl safety net measures resulted in substantially higher payments to counties than would have been received through forest-revenue sharing alone, given diminishing timber harvests (fig. 8-16). The Secure Rural Schools Act provided the highest rate of payments to counties since 1990. In addition to being an important source of revenue to support roads and schools countywide, those payments contributed a significant amount of money to support local resource-related projects on and around the Klamath National Forest. Title II of the act has made more than \$1.7 million available for resource-related projects on both private and national forest lands in the county since 2001. Many interviewees expressed concern that the Secure Rural Schools Act provisions expire in 2006.

**Summary**

The picture of changing socioeconomic benefits from the Klamath National Forest since the Plan was adopted is one of decline. Grazing, recreation, mining, and special forest products activity remained more or less stable overall, but

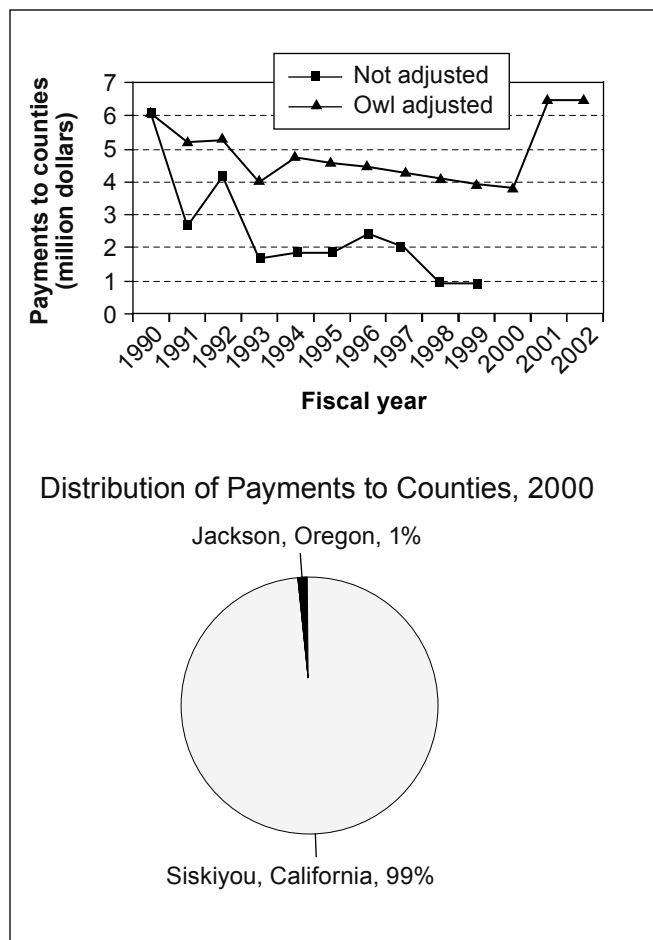


Figure 8-16—Klamath National Forest payments to counties. “Owl adjusted” reflects the increased payments to counties made to mitigate the effects of decreased timber revenue and revenue sharing.

timber harvest activity, by far the most economically important activity on the forest until the early 1990s, dropped substantially, as did agency jobs and contracting dollars. Managing fire risk to communities became more difficult. Payments to county governments have stabilized, at least for the near term. Community economic assistance money increased substantially during the mid-1990s, but this funding has now returned to pre-Plan amounts.

Interviewees from the Butte Valley viewed the Klamath National Forest as not having played much of a role in helping the community adapt to change. Although a few small contracting opportunities, some recreation developments, and some economic assistance have happened, no new forms of resource-related work on the Klamath have

emerged to contribute meaningfully to the local economy of Butte Valley. The same was true in the Scott Valley, although interviewees there viewed the Klamath as having made some small contributions through contracting opportunities and initiative funds. The consensus among Mid-Klamath interviewees was that the forest had done little to help the community recover from the loss of timber-related benefits. Many interviewees recognized the importance of payments to county governments, however, stating that their communities depended on those funds for supporting schools and other services.

### **Coos Bay District and Case-Study Communities**

The Coos Bay District lands, distributed up and down the southern Oregon coast, are bordered by the Siskiyou and Siuslaw National Forests in some places. Thus, the effects of the Plan on the case-study communities (fig. 8-17) were likely the result of implementing the Plan on both the BLM's Coos Bay District and the surrounding national forests. The Greater Reedsport community, on Oregon's central coast at the mouth of the Umpqua and Smith Rivers and around Winchester Bay, had a population of 5,545 in 2000. It lies at the northern extent of Coos Bay District land. Greater Myrtle Point is at the southern end of the Coquille Valley, roughly 20 miles inland from the main coastal highway. It had 4,927 residents in 2000. Greater Coos Bay was the largest of the case-study communities associated with the BLM Coos Bay District. It had a population of 28,596 in 2000. Coastal communities, both the Greater Reedsport and Greater Coos Bay community economies revolved around timber and commercial fishing in the 1970s and 1980s. Shipping and ship building were also important in Greater Coos Bay. Lying inland, the Greater Myrtle Point community was oriented toward timber and agriculture. All three communities experienced social and economic change during the 1990s, in part the result of changes in federal forest management policy.

### **Greater Reedsport**

Greater Reedsport was economically oriented toward timber and commercial fishing in the decades that preceded the Plan. Two International Paper Company businesses—a paper mill and a sawmill—were the economic backbone of Greater Reedsport for three to four decades. The sawmill, established in 1964, closed in 1991; at the height of operations, it employed 400 people. The paper mill, established in 1956, was having trouble by the early 1990s and went out of business in 1999, displacing some 350 workers. Several other small mills in the area also closed during the 1980s and 1990s. Currently, only two small mills continue to operate in the area.

These mill closures hugely affected job opportunities in the Greater Reedsport area. Manufacturing went from 25 percent to 6 percent of total employment between 1990 and 2000. Many middle-income, working-class families left the area, causing school enrollment to drop and some secondary support businesses to close. Greater Reedsport's population dropped 11 percent between 1990 and 2000 (from 6,246 to 5,545), and school enrollment dropped 14 percent during the same period, causing the area's middle school to close. A significant effect of these changes has been the loss of the community's timber culture. Working in the timber industry is no longer a way of life that families can pass down across generations. The community's timber infrastructure has declined with the loss of timber workers and their skills. Moreover, local youth can no longer graduate from high school and go straight to quality, family-wage jobs.

At the same time, the commercial fishing industry suffered a downturn, adding to the job loss in the Greater Reedsport community. During the 1980s and 1990s, all 30 charter-boat businesses also closed, causing Winchester Bay's marina to lose boats and business.

The exodus of timber workers from Greater Reedsport created a housing glut, which reduced property values and attracted retirees. Many retirees have moved into the community over the last decade, reflected by a change in the median age of community residents from 38 to 48 between 1990 and 2000 (a 26 percent increase). Although the loss of working-class timber families caused a drain on the community's capacity and leadership skills, many retirees

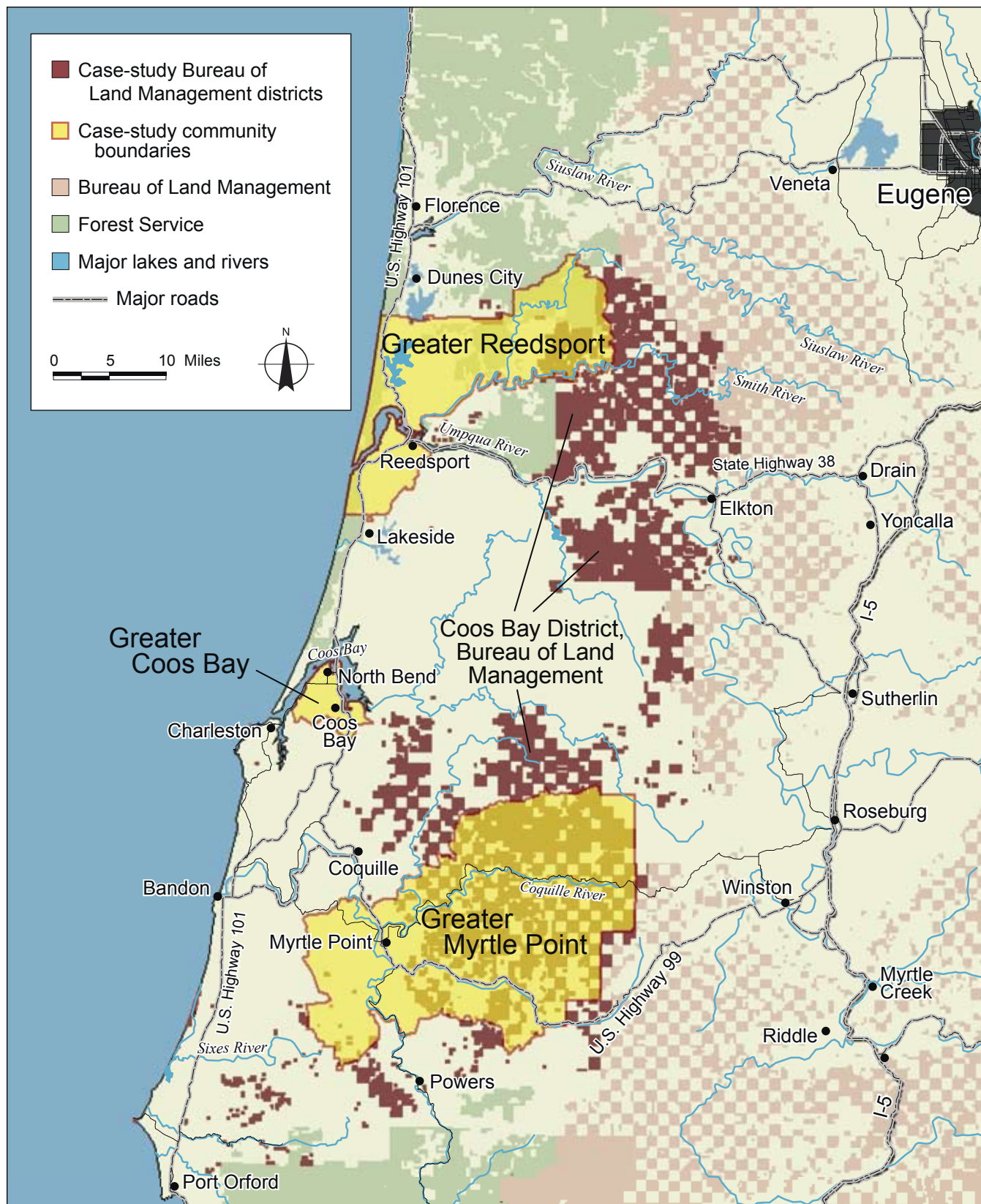


Figure 8-17—Case-study communities, Coos Bay District.

bring with them skills and a willingness to volunteer, which has helped fill the void.

In 2003, many Greater Reedsport residents still identified their community as a timber and fishing community, although many also realized that timber was not likely to come back and that new strategies for economic development and diversification were necessary. In 1993, an economic development strategic plan was created that placed a priority on creating jobs, revitalizing downtown, training workers in emerging technologies, developing and maintaining infrastructure, and improving the quality of life through developing housing, recreation, and cultural opportunities. The plan was updated in 2003. A local Economic Development Forum is taking the lead on implementing this vision. To date, development and diversification efforts have focused on tourism and attracting alternate nontimber industries.

Projects to revitalize downtown and riverfront areas are intended to embrace tourism. The community has also been developing its tourism infrastructure, for example by creating a recreational vehicle campground in the Salmon Harbor Marina area, and encouraging tourism-oriented businesses. They have also built a Discovery Center and Museum.

In terms of alternative industries, most notable is the community's success in attracting a Fortune 500 company called American Bridge that manufactures steel. The community bought land and developed infrastructure to facilitate locating the company's plant. This effort has created some jobs, although not as many as anticipated because of the weak economy.

Despite these successes, the community is competing with many other rural communities affected by downturns in the timber industry to attract businesses that offer family-wage jobs. It is also relatively remote, and limited land is available for industrial use. Moreover, residents are reluctant to move away from a natural resource-based economy, given a history of resource use and that they are surrounded by forests, rivers, and the sea. These factors make it challenging to move forward. Although unemployment declined between 1990 and 2000 (from 14.1 to 11.8 percent), median household income decreased 7.6 percent (from \$30,022 to

\$27,727), and poverty rates increased almost 10 percent (from 15.2 to 16.6 percent of the population). The community's socioeconomic well-being score was low in 1990 (53.9) and remained low in 2000 (54.4), well below the average of 61.8 or medium (1990) and 62.4, also medium (2000) for the 62 communities within 5 miles of Coos Bay District land.

### Greater Myrtle Point

Between 1945 and the early 1990s, Greater Myrtle Point depended heavily on the forest products industry. People worked in small local mills, commuted to jobs in large mills, logged, hauled logs, or built timber-related roads. Timber employment began to decline in the early 1980s, when large mills in Coos Bay and smaller local mills started closing. In the early 1990s, many of the smaller local mills that had relied heavily on federal timber supplies went out of business. Only one large and a few small mills continue to operate in the Coquille Valley. Most of their timber is from private landowners.

Although some residents continue to work in the timber industry, the nature of the work has changed greatly from three decades ago. Industrial and nonindustrial private forest owners now harvest smaller diameter trees, grown on shorter rotations. The lack of mill capacity for processing large-diameter wood has contributed to market disincentives for landowners to grow timber on longer rotations. Most woods workers are now hired as contractors rather than being company employees. Much of the wood processing takes place in the Willamette Valley rather than locally. And, because of technological advances and mechanization, fewer workers are needed to deliver the same amount of product. The changes in the demand for wood-products employees is reflected in these statistics: in 1990, manufacturing provided 28 percent of local employment compared to only 12 percent in 2000.

As the timber industry waned, many of Greater Myrtle Point's core working class families moved away. The local population declined by 8.5 percent between 1990 and 2000 (from 5,383 to 4,927), and school enrollment declined 7 percent, contributing to school closures (although they might have closed anyway because of statewide school budget problems that had nothing to do with the timber industry).



Many families and individuals suffered social and economic stress. Manufacturing and equipment-repair enterprises, retail stores, and restaurants that strongly depended on the forest-products customer base fared poorly in the 1990s, and many went out of business. Myrtle Point's tax revenues declined to the detriment of the community infrastructure. The decline of the forest products industry reduced opportunities for young people in Greater Myrtle Point to get jobs without completing high school, creating an incentive for more teenagers to finish high school. The decrease in local jobs, however, reduced the incentives for high school graduates to remain in the community. Many of the displaced timber workers who stayed in Greater Myrtle Point either retired, changed jobs, went into business on their own, or began commuting to work outside the community. Despite the population decline, newcomers continued to move to the Greater Myrtle Point area in the 1990s. Many more retirees now live in the community.

Two economic sectors that have persisted in Greater Myrtle Point are the agricultural sector and the nontimber forest-products sector. Beef, dairy, and sheep ranching have been a way of earning income since the late 1800s. Myrtle Point still has one creamery. Nontimber forest products have provided a supplemental source of income for some people. People work either picking and selling products, such as ferns, salal, and boughs, or in brush sheds processing floral greens and boughs. Although the Coquille River once supported an active salmon fishery, declines in salmon stocks had made the fishery negligible by the 1990s. Most jobs in Greater Myrtle Point currently are in the health, education, social, professional, recreation, and other services sectors. Many residents were concerned, however, that service jobs do not pay well.

The Greater Myrtle Point community responded to the timber industry downturn by developing strategic action plans in 1994 and, later, a community action plan in 2000. Efforts to develop and diversify the local economy have focused on the agricultural, tourism, and health-care sectors. Agricultural development strategies have included enhancing the connections between local farmers and the state agricultural extension program, improving the county fairgrounds, marketing the community's agricul-

tural heritage as a tourist attraction, and investigating the potential for developing a biogas facility that uses cattle manure. In addition, a small but thriving organic farming sector had developed by the 1990s. Greater Myrtle Point also developed a system of mountain bike trails and city walking trails, undertook downtown area improvements, marketed the Coos County Logging Museum, and worked to develop regional nature-based tourism. Greater Myrtle Point suffers from being off the tourist track, however, and inland from coastal scenery. Health care development included the opening of a geriatric care facility, a benefit for the retiree population. Opportunities for industrial development in the community are limited because much of the land base has inadequate highway access, and the water and sewer system is outdated. Interviewees expressed mixed views about how these economic development projects had benefited the community. Interviewees also expressed an over-riding concern with how to create family-wage jobs in the community.

Unemployment in Greater Myrtle Point dropped from 14 percent in 1990 to 9 percent in 2000. Median household income increased by 10.2 percent (from \$25,868 to \$28,509) during this same period, but the percentage of the population living below the poverty line stayed at about 18.5 percent. Greater Myrtle Point's socioeconomic well-being score climbed from very low (46.7) in 1990 to low (54.4) in 2000, both lower than average for the 62 communities within 5 miles of the Coos Bay District.

### Greater Coos Bay

Greater Coos Bay is the regional center for Coos County and Oregon's south coast. The Port of Coos Bay is the deepest marine port between San Francisco and Astoria, making it a shipping center for the region. Logging, milling, shipbuilding, wood products exports, and—to a lesser extent—commercial fishing formed the backbone of the community's economy through the late 1980s. Logging was on both public and private forest lands. Greater Coos Bay's wood-products industry has historically been diverse. Logging and milling operations ranged from small, locally owned businesses to large companies owned by multinational corporations. Wood products exported from the area

included raw logs, lumber, plywood, veneer, pulp, and wood chips.

The timber economy of Greater Coos Bay began to change in the early 1980s. Cutbacks in federal timber harvesting during the 1990s contributed to the region's economic difficulties. By 2003, only a handful of mills, one log-sorting and shipping center, and one alder-sorting and processing facility still operated in the area. Manufacturing went from providing 14 percent of the community's jobs in 1990, to 6 percent in 2000. Older, smaller mills that lacked the equipment for processing small-diameter wood and lacked their own timber lands, and thus depended primarily on federal timber, were hit hardest by the cutbacks. Larger companies with their own land holdings, the capacity to acquire logs from other public and private forest lands, or with retooled mills for processing small-diameter wood, persisted. The local mills now mostly process wood from Washington and Canada, because little federal timber is available, and private industrial forestland owners generally sell their wood to mills outside the area.

Private nonindustrial forestland owners initially benefited from drops in federal timber production because of increased demand and higher prices. Once mills shut down, local competition for raw logs decreased, causing timber prices to drop. Many forest landowners have thus opted to sell their logs in areas such as the Willamette Valley where competition is greater and prices for raw logs are higher. The added transportation costs decrease the log seller's profits, however, resulting in lower return relative to sales in the early 1990s.

The Coquille Tribe has also suffered from constraints imposed by the Plan. The Coquille acquired part of the Coos Bay BLM District in 1996. The law creating the Coquille Tribal Forest stipulated that the tribe manage the land according to the standards and guidelines pertaining to adjacent BLM land. Although the standards and guidelines of the Plan itself have constrained the tribe's ability to harvest trees, appeals by environmental organizations have effectively blocked the tribe's efforts to implement planned timber sales. Many of these appeals were based on Plan-related issues, such as survey and manage species requirements and aquatic conservation strategy guidelines.

Environmental groups have used the Plan as a tool to block tribal timber sales. As a result, the tribe has not yet obtained the revenues it had hoped for from its forest land.

In addition to changes in Coos Bay's role as a supplier of timber, Coos Bay has also lost its position as a major supplier of wood chips. The chips produced from trees grown on shorter rotations are different in their properties than chips produced from trees grown on longer rotations. Consequently, wood chips from the Coos Bay area are no longer competitive in wood chip markets.

The downturn in the timber industry had secondary effects on the Greater Coos Bay economy. Local nurseries that once provided seedlings for replanting federal forests have closed. The maritime commerce sector, which was based largely on the export of logs, wood chips, and lumber, has declined. The number of shipping vessels using the Port of Coos Bay dropped from 200 in 1992, to 46 in 2003. A declining county budget has made providing basic services, such as law enforcement, health care, and road maintenance, more difficult. Although other factors have contributed to some of these trends, cutbacks in federal timber supply played a role.

Changes in the forest products industry also brought about social changes in the Greater Coos Bay community. Beginning in the early 1980s, many younger, blue-collar mill workers and their families left the area. Cutbacks in federal timber harvest in the 1990s hit hard on wood-products harvesters, log transporters, mill workers, and reforestation workers. Competition between workers for jobs caused people to tire of their work and quit. Outmigration by people unable to find jobs locally contributed to declines in school enrollment and school closures. Substance abuse, domestic violence, and mental health disorders increased. Some workers, however, remained in the community and transferred their skills to replacement jobs, such as in the growing building industry. Others continued to focus on wood processing by producing for niche markets. Some people shifted to harvesting alder in response to the growing market for hardwoods. Nonetheless, many community members expressed concern about the outmigration of young people because of the scarcity of jobs in the area, affecting both family and community stability.

The Coos Bay fishing industry also declined during the 1980s and 1990s when salmon, steelhead (*Oncorhynchus* spp.), and ground fish stocks dwindled, and fish prices dropped. In 2001, several of the area's fish-processing plants closed. These changes added to the hardships the community faced from timber industry declines.

Today, the Greater Coos Bay community has evolved into a more services-oriented community, with a higher proportion of retirees. Its services sector grew through the 1990s. Education, health, and social services provided 26 percent of the area's employment in 2000, compared with 19 percent a decade earlier. Professional service workers and older, often retired, people have moved into the community. Greater Coos Bay already had the infrastructure needed to attract new retail and service enterprises during the 1990s. The availability of good medical facilities, services, and retail stores make the area especially attractive to retirees. The population grew slightly between 1990 and 2000, from 27,851 to 28,596.

The Coquille Tribe and the Confederated Tribes of Coos, Lower Umpqua, and Siuslaw also invested heavily in the community during the 1990s. The tribes built housing developments, administrative offices, and businesses, including a casino. These developments, together with the passage of self-governance legislation in the early 1990s, have drawn tribe members back to the area.

Greater Coos Bay's relatively large and diverse economy compared to other, smaller communities surrounding the Coos Bay BLM District, and the diversity in its wood-products sector, have contributed to this community's relatively strong resilience in the face of timber industry declines. Shopping, medical services, a community college, and theater and fine-arts facilities existed in Greater Coos Bay well before the Plan. Economic diversification efforts during the 1990s, funded in part through the Northwest Economic Adjustment Initiative, have contributed to the expansion of already-existing infrastructure. The community's socioeconomic well-being score was medium (71.8) in 1990 and medium (66.2) in 2000, but it was better off than many communities in the area. Unemployment and the percentage of the population living in poverty changed little between 1990 and 2000 (unemployment was about

9 percent, poverty was about 16.5 percent), and median household income rose 7.7 percent (from \$28,918 to \$31,143).

The community has tried unsuccessfully to attract new, large-scale shipping and manufacturing businesses. According to a Port employee, Greater Coos Bay lacks the three things necessary for becoming a major shipping port: ready access to a railroad line, easy access to an interstate highway, and a large local consumer base. Community members have also encountered difficulties in their efforts to expand the area's recreation and tourism sectors. Greater Coos Bay is fairly remote from large population centers, and once had a reputation as an unattractive, noisy mill town. In addition, local proponents of recreation and tourism development have faced considerable internal opposition from some of their fellow citizens who view recreation and tourism jobs as low-paying, seasonal, and undesirable. The building of a privately financed, world-class golf course in the nearby town of Bandon, the opening of the Coquille Tribe's casino in North Bend, and a concerted effort by local organizations and public agencies to develop and market the area's nature-based tourism opportunities, have helped to draw visitors to Coos Bay.

Community members still express hope that jobs based on natural resources could again become viable. For example, increases in federal timber harvest under the Healthy Forests Restoration Act, on O&C lands, or with less stringent Plan guidelines could help stimulate the local economy. Watershed restoration work could also help to restore local fisheries.

### Role of Federal Forest Management Policy in Influencing Change

Interviewees from all three communities cited multiple factors that had contributed to the downturn in the regional timber industry during the 1980s and 1990s. The mix of federal, state, county, tribal, and private forest lands in the Coos Bay District area, together with the district's checkerboard ownership pattern, made distinguishing between the effects of changes in forest management on the Coos Bay District versus other forest lands difficult for some interviewees.

According to interviewees in these three communities, timber industry declines caused by forces other than the Plan included mechanization and technological advances in milling, harvesting, and transportation processes, all of which reduced the demand for labor; the globalization of the industry, which opened up new sources of supply, making the region's products less competitive internationally; domestic competition with Southern states; economic recessions in the United States in the early 1980s and in Japan in the early 1990s; changes in the kinds of wood products desired by the wood-processing and building industries; the Endangered Species Act and other environmental regulations; growth in the political influence of environmental organizations; the transfer of large timberland holdings from timber companies to real estate investment trusts; possible over-harvesting, with the potential for the lack of a sustainable wood supply in the short run and possibly in the long run; and a shift to the use of the metric system for global marketing, meaning U.S. companies could not compete as effectively as in the past.

In the view of interviewees, the reduction in federal timber supplies caused by the spotted owl listing, the Dwyer injunctions<sup>4</sup>, the Plan, and subsequent lawsuits over timber sales added to all of these pressures. By the 1980s, federal forest lands had become the main source of old growth in the region because the old growth on most private forest lands had already been harvested, and many private landholders had shifted to managing their forests on 40- to 60-year rotations. Mills that were tooled to process large-diameter wood no longer had a sufficient supply of raw material available at affordable prices. Additionally, the cost of large-diameter logs increased once the supply diminished. According to interviewees actively involved in the forest products industry, uncertainty about the availability of federal timber and increasing costs associated with milling large-diameter timber caused local mills to disinvest in wood-processing infrastructure for large-diameter logs. According to interviewees, mills that could

afford to retool to process small-diameter wood, or that had retooled in the 1980s, survived. These mills were typically owned by the large companies. Those that could not retool mostly shut down. This shift, in turn, influenced other forest landowners—such as Coos County—to grow trees on shorter rotations, so that they could produce timber that the mills could handle. Demand for large-diameter wood has now reportedly dropped, and large trees have lost value.

Interviewees did not link changes in the area's fishing industry to federal forest management policy. Instead, they attributed downturns in fishing during the 1990s to declining stocks and harvest quotas and attributed increases in fish stocks in 2003 to changes in ocean conditions.

### Role of the BLM in Mitigating Plan Effects

#### **Resource and recreation outputs—**

Timber harvests on the Coos Bay District reached an annual average of 200 million board feet in the 1980s. Under the Plan, the district has a PSQ of 27 million board feet (short logs). Several interviewees felt that the Coos Bay District timber program was providing their communities with socioeconomic benefits, but not at the level that it could—or should. Some Greater Coos Bay interviewees expressed frustration and resentment that the government—which in their view had at least some control over federal timber production—had allowed a reduction in timber harvesting, thereby adding to the problems communities already faced, rather than helping them.

Mining and grazing on the Coos Bay District are small programs, and the data suggest that the Plan had little effect on the public's access to mineral and grazing resources on the district. The special forest products program is also small. The statistical and interview data gathered during this study provide a mixed picture of the degree to which the Plan has affected public access to various products. The data strongly suggest that the Plan significantly decreased the amounts of firewood and small-scale salvage materials available to the public. The District's limited capacity to track the actual amounts of other special forest products removed from its holdings prevents saying, with any degree of certainty, how the Plan has affected access to most other special forest products.

<sup>4</sup>In 1989, 1991, and 1992, U.S. District Court Judge Dwyer issued injunctions against the FS that prevented timber sales throughout spotted owl habitat.

Recreation opportunities have clearly expanded since the Plan was implemented. The Coos Bay District actively engaged with local communities to help build a nature-based recreation and tourism economy on Oregon's south coast. The 1990s saw the Coos Bay District's recreation program go from managing a few scattered campgrounds to becoming a full-fledged program, and a key player in developing regional, community-based tourism and environmental education. Upper-level district management thought that adapting their management priorities to changing economic conditions was important, as was investing in nature-based tourism and environmental education to contribute toward the joint building of a diversified natural-resource-based economy. Although the Coos Bay District encountered some local opposition to its recreation development plans, the program has generally met with great success. Many interviewees believed that the district's investments in recreation under the Plan had provided notable benefits. For example, the district helped promote tourism by creating an elk-viewing area, supporting an intern at the Discovery Center museum in Reedsport, helping with local festivals, and improving recreation and tourism opportunities on district lands.

#### Agency jobs—

The Coos Bay BLM District had 206 employees in 1993 and 175 employees in 2002 (fig. 8-18). Although agency jobs dropped by 15 percent during this period, the decline was much smaller than was the decrease in FS units. The Coos Bay District made a conscious effort to avoid laying off workers no longer needed in its timber and roads programs by shifting them to the district's growth areas, such as recreation, fish and wildlife, and watershed restoration. None of the interviewees from the Coos Bay District case-study communities complained about the loss of BLM jobs and employees from their communities. Indeed, several timber-industry stakeholders from Greater Myrtle Point commented that the Coos Bay District had too many employees, given the reduced workload relating to timber sales. They perceived the district's shift in focus to recreation and biological monitoring, for example, as a way of protecting employees from job loss.

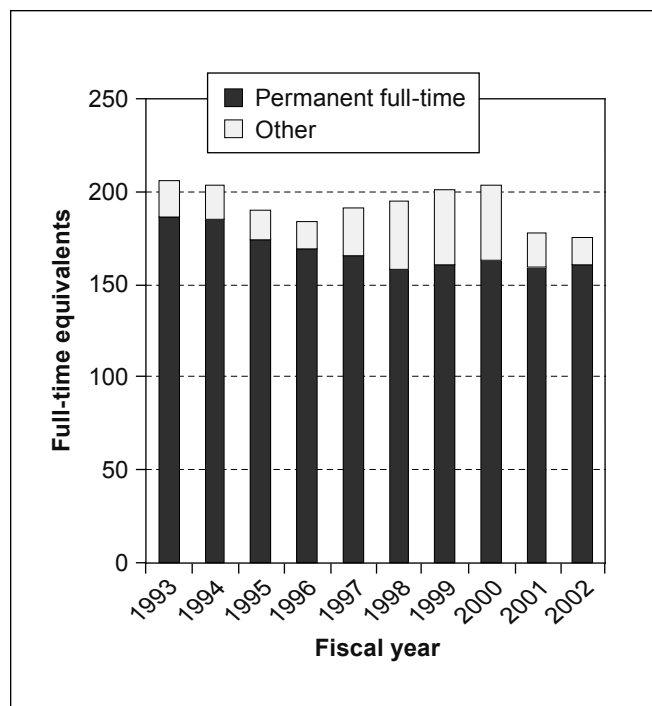


Figure 8-18—Coos Bay District staffing levels, 1993–2002.

#### Contracting—

The Coos Bay District spent at least \$39.7 million on land management contracting in Coos and Curry Counties between 1990 and 2002. The amount of money spent each year varied considerably, with peaks in the mid-1990s, and a tapering off since 1998 (fig. 8-19). Between 1990–92 and 2000–2002, contract spending declined 56 percent, from \$9.29 million to \$5.22 million. As elsewhere, the emphasis of contracting work shifted away from labor-intensive work toward equipment-intensive and technical work (such as surveys and restoration) during the period. In 1990–92, the district awarded contracts to 28 contractors. By 2000–2002, this number had increased to 42. The decrease in procurement spending during this period meant that more contractors were being awarded less contract value in 2000–2002, compared with a decade earlier. Although contractors from coastal communities captured a considerable proportion of contract value, much of the district's contract value was awarded to contractors from the Interstate 5 corridor, particularly the Willamette Valley.

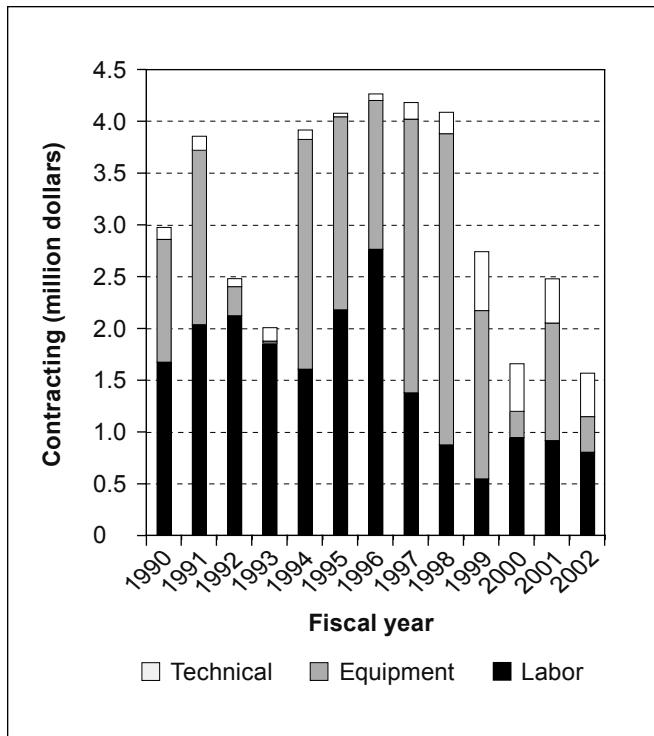


Figure 8-19—Coos Bay District land management contracting by work type, 1990–2002.

Some district interviewees noted that targeting contractors in nearby communities was easier when Jobs-in-the-Woods and resource advisory committee money was used to fund them. The district is making an effort to provide jobs locally with its watershed restoration and fuel-related work. The district contracts much of its watershed restoration work through local watershed associations, which provides a small number of family-wage jobs. Some local contractors interviewed in Greater Reedsport stated that BLM contracting opportunities there had been negligible during the last decade, however. Although some opportunities to do watershed restoration work were offered, this work was short in duration, the contracts were small, and the work was not plentiful enough to warrant investment in personnel and equipment. In addition, the need for capital to invest in equipment, bonding, and liability concerns were additional barriers to becoming contractors. Similarly, in Greater Myrtle Point, BLM contracting was generally viewed as a source of supplemental income rather than as an economic backbone.

**Community economic assistance—**

Unlike the FS, the BLM is not authorized to provide grants to communities in the form of community economic assistance. It did have a Jobs-in-the-Woods program funded through the Northwest Economic Adjustment Initiative from 1994 on, however (fig. 8-20). This program provided the funding, labor, and partners needed to undertake watershed restoration work on the district. Much of this money was channeled to local watershed councils, including the Coquille and Coos Watershed Associations, which have become two of the most successful watershed organizations in Oregon. In addition to funding, the Coos Bay District provided technical expertise and office space, equipment, and other forms of project support. Jobs-in-the-Woods funding generated the equivalent of roughly six full-time jobs per year between 1998 and 2002. Although the Coos Bay District was committed to the program and viewed it as successful, the program lacked the funds to accomplish all of the restoration work needed, and it does not provide as much year-round employment as community members would like. Most community interviewees stated that the program had helped to provide some displaced workers with jobs, and had helped connect the timber harvesting

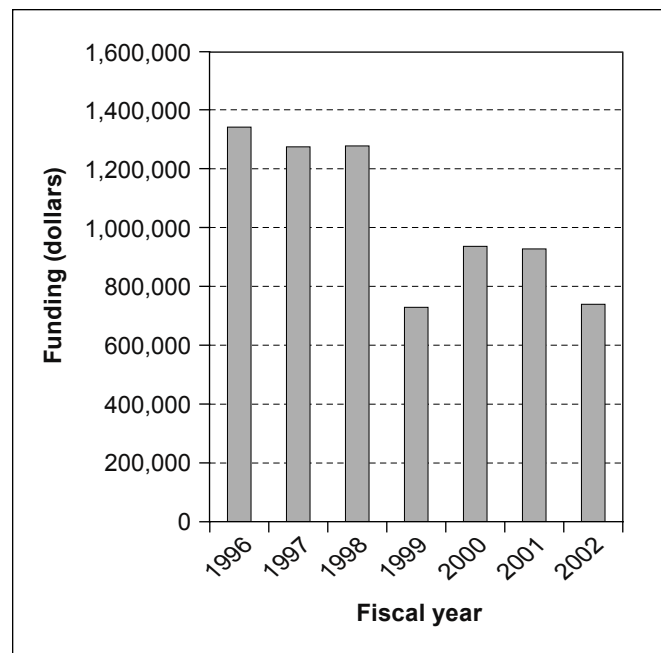


Figure 8-20—Coos Bay District Job-in-the-Woods funding, 1994–2002.

community with the watershed restoration community. They felt that the size of the program was grossly inadequate to compensate for the scale of layoffs that took place in their communities, however.

The case-study communities around the Coos Bay District are in counties that also contain Siuslaw and Siskiyou National Forest lands. Hence, they also benefited from other sources of initiative funding. Between 1994 and 2003, coastal Douglas County received \$7.7 million in initiative money. In Greater Reedsport, most of this money was used to develop infrastructure to support tourism, non-timber manufacturing industries, and the Port of Umpqua. In Greater Myrtle Point, initiative funding supported developing community strategic action plans and infrastructure related to agriculture and tourism. Greater Coos Bay received nearly \$20 million between 1994 and 2003, more than half of which was Jobs-in-the-Woods funding. The remainder (an estimated \$8.7 million) supported economic development and capacity-building projects, such as small-business loans, worker-retraining programs, infrastructure improvement, recreation and tourism planning, and a business park. Interviewees considered initiative funding to have made a significant contribution to helping their communities build a foundation for future development and diversification. Interviewees viewed the projects related to recreation and tourism as particularly successful, although some felt these projects would not lead to high-paying jobs. For many projects, it is too soon to tell what the long-term benefits will be.

**Payments to county governments—**

Before the Plan was implemented, the Coos Bay District made three types of payments to counties annually: Oregon and California Railroad (O&C) payments, Coos Bay Wagon Road (Wagon Road) payments, and payments in lieu of taxes. The O&C and Wagon Road payments were linked to timber revenues. Owl-guarantee payments and payments associated with the Secure Rural Schools and Community Self-Determination Act of 2000 aimed to mitigate for falling county revenues stemming from declines in payments based on timber revenues. These mitigations did indeed have a stabilizing effect on payments to counties,

although payments were substantially below 1990 rates (fig. 8-21). Local counties relied heavily on these payments during the 1980s. Although the mitigations helped offset the loss of revenue to county governments from declining federal timber harvests, they did not compensate for the loss of business and job opportunities associated with the curtailment of timber harvest on BLM land. As one district interviewee put it, county residents get services, but they do not have jobs. The lack of jobs and associated problems

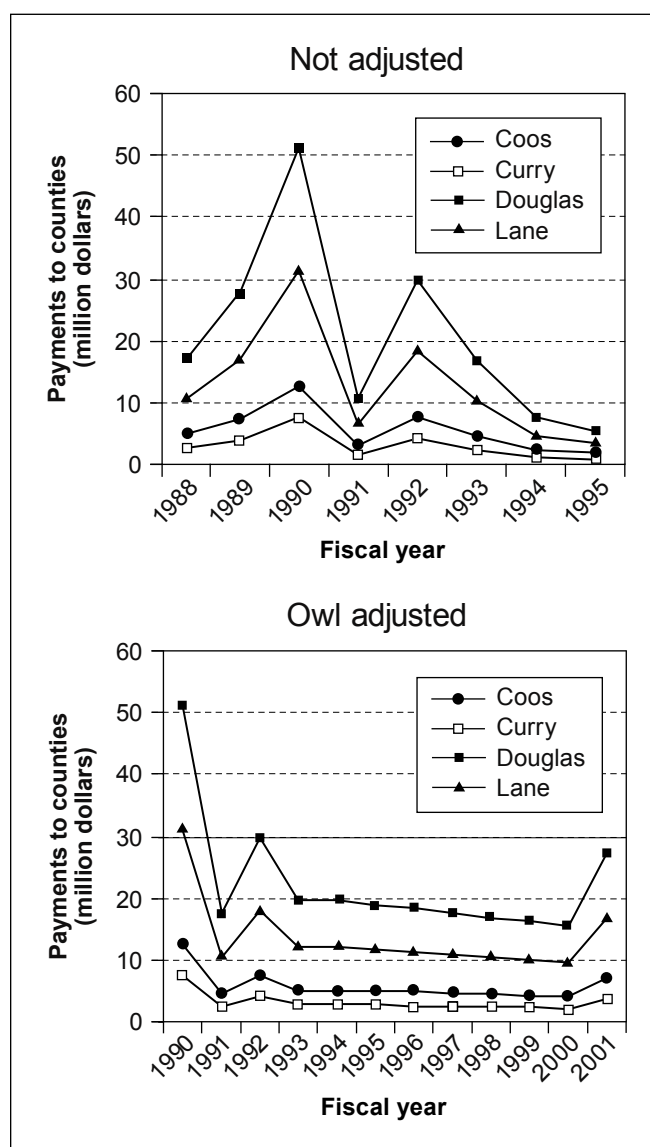


Figure 8-21—Coos Bay District Oregon and California Railroad Land and Coos Bay Wagon Road distributions, 1990–2001. “Owl adjusted” reflects the increased payments to counties made to mitigate the effects of decreased timber revenue and revenue sharing.

increased the demand for county services, which became difficult to provide because of limited county revenues.

## Summary

The reduced timber harvesting on Coos Bay District land under the Plan was substantial, adding to the multiple forces affecting the area's wood-products industry since the early 1980s. To compensate, the district invested heavily in its recreation program to help local communities build a nature-based recreation and tourism industry on the central Oregon coast. This effort has met with many successes, although determining their economic contributions is difficult because of the lack of adequate tracking mechanisms.

Although agency jobs declined over the 10-year period, the decline was mainly due to attrition, rather than layoffs, and it did not cause the negative effects in communities that FS job losses did. Contract spending declined somewhat between 1990 and 2002, although the number of contractors working on the district increased, spreading the benefit. The Jobs-in-the-Woods program was viewed as being largely successful, and it helped to contribute a small number of jobs to local communities. Projects supported by initiative funding were also for the most part viewed positively, and as making important contributions to community development and diversification. Mitigation measures to stabilize payments to counties were seen as essential.

## Discussion and Conclusions

**Are local communities and economies experiencing positive or negative changes that may be associated with federal forest management?** Change has affected all of the case-study communities between 1990 and 2003 (table 8-1). But social and economic changes in communities are inevitable. Federal forest management policy is just one of many variables that can shape the nature of that change. The Endangered Species Act listing of the northern spotted owl in 1990 and court injunctions halting the flow of federal timber were the turning points that reduced federal timber production, not the Plan. The Plan, which was intended to restore the production of timber from federal forest land came later, formally codifying a shift in forest management that had already happened.

The role of these events in contributing to change in the case-study communities varied considerably. As was expected, not all communities were affected the same way, or to the same extent, and Plan effects were much more noticeable in some communities than in others. For the case-study communities, the effects depended on the relative strength of the timber sector in each community around 1990, the extent to which wood products harvested on federal forest lands supported that sector, and the degree to which local residents depended on FS jobs. Communities such as Quilcene, Upper Hood River Valley, and the Mid-Klamath participated heavily in the wood products industry until the late 1980s. Loggers worked mainly on national forests lands, and local mills obtained most of their wood from federal forests. These communities were hit hard by the reduction in federal timber supplies. In contrast, although timber was important to the economy in the Quinault Indian Nation in 1990, tribal and private forest lands largely supported that sector. Interviewees from that community did not report any major effects from changes in federal forest management policy. Although the timber industry was of secondary importance in the Villages of Mount Hood in 1990, many FS employees lived there. The decline in agency jobs associated with reductions in FS timber programs had negative effects in the Villages of Mount Hood and other case-study communities, just as the loss of timber sector jobs did.

The major adverse social and economic effects of the Plan were expected to be associated with job and income losses from reduced federal timber harvests. But the Plan was not the only variable causing the Pacific Northwest timber economy to change. The timber sector in some communities—such as Greater Coos Bay—had been declining since the early 1980s from economic recession, domestic and international competition, changes in market demand for wood products, industry restructuring, mechanization and technological advances, and environmental regulations. The Plan added to these pressures. Other case-study communities, such as the Mid-Klamath, seemed to be relatively buffered from the changes affecting the industry during the 1980s. Interviewees there perceived the halt of federal timber production around 1990 as being the beginning



of the end. But some interviewees believed that the Plan simply brought on changes that would likely have happened in time anyway. Many interviewees perceived that logging on federal forests during the mid-1980s was unsustainable. They observed that old-growth trees were mostly gone from private industrial forest lands, and they were becoming depleted on the federal forests as well.

The Plan's environmental impact statement predicted that some communities would feel the effects of agency job losses. The FS cut its workforce by 57 percent on the Olympic National Forest, 59 percent on the Mount Hood National Forest, and 31 percent on the Klamath National Forest between 1993 and 2003. Although the FS made every effort to address the problem through attrition, some workers had to move to obtain agency jobs elsewhere. Others retired and remained in their communities or moved away. Employee cutbacks disproportionately affected the temporary work force. The Coos Bay District also lost 15 percent of its employees between 1993 and 2002, mainly through attrition. The effects on local residents around the Coos Bay District were not as severe as around the national forests. Nevertheless, community residents have fewer opportunities for agency jobs.

The environmental impact statement also predicted that workers in the wood-products industry and their families would feel significant, long-lasting effects that would be difficult to overcome. One of the shortcomings of using "the community" as the unit of analysis in this study is that it obscures, and could devalue, the experience of individual community members. But as the interview results describe, timber workers and FS employees were among the community members most affected by declines in federal timber harvesting. Many of these people moved out of their communities in the 1990s, causing a loss of working-class families, young people, human capital, and community capacity. We were unable to monitor what became of them. The communities persist, but changes in forest management policy had dramatic and disruptive effects on the lives of many people. Seven of the twelve case-study communities lost population between 1990 and 2000, whereas population grew by 20.6 percent in Plan-area nonmetropolitan communities during this period. Only the Villages of Mount

Hood—fairly close to the Portland metropolitan area—grew in population by more than 20.6 percent between 1990 and 2000.

In coastal communities, the fishing industry declined at the same time that the timber industry did, adding to local hardships. The special forest products industry, which has grown in the Pacific Northwest since 1990, was an important source of employment for mobile workers and immigrants. It did not provide an alternative source of family-wage jobs for displaced timber workers or agency employees, however. Agriculture—which persists in several case-study communities—has been changing; ranching, in particular, was under stress as a viable livelihood strategy. Like special forest products, agriculture did not appear to offer a new source of jobs for displaced workers. Many agricultural laborers are migrants, although increasingly migrant workers are taking up residence, as in communities like the Upper Hood River Valley.

Our sample size was not large enough to adequately test the hypothesis that the communities most negatively affected by the Plan would be the relatively small and isolated ones surrounded by federal forest lands, lacking economic diversity, most dependent on public timber harvest, and with low leadership capacity and that the communities with good access to transportation, markets, and raw materials, with high economic diversity and quality leadership, would best adapt to change.

Socioeconomic well-being scores rose in two, dropped in four, and showed little change in six of the case-study communities between 1990 and 2000.<sup>5</sup> The largest and most economically diverse community in our sample—Greater Coos Bay—decreased in socioeconomic well-being between 1990 and 2000, as did the Mid-Klamath community, one of the smallest, most remote, and formerly most dependent on federal timber communities in the sample. Quilcene—also small, remote, heavily dependent on federal timber harvests in the 1980s, and lacking strong

<sup>5</sup> If a community socioeconomic well-being score changed by more than 3 percent (plus or minus), we considered its socioeconomic well-being to have increased or decreased. If the score changed by less than 3 percent, we considered that to mean little change in socioeconomic well-being.

leadership—showed the highest increase in socioeconomic well-being. Socioeconomic well-being in Greater Myrtle Point also increased—another small, isolated, and not very economically diverse community where federal timber harvests were important in the 1980s. These findings, combined with our small sample size, make difficult identifying correlations between the effects of federal forest management policy, community characteristics, and change in socioeconomic well-being during the study period. In 2000, two communities scored very low, six scored low, and four scored medium in socioeconomic well-being; none scored high or very high. This finding suggests that the communities in our sample are still struggling to develop and diversify.

Some communities have sustained themselves by having a substantial agricultural sector, being on a major transportation corridor, or being close to a popular recreation and tourism destination. Other communities experienced an influx of retirees, commuters, mobile or self-employed workers, or second-home owners. Some that had been centers for goods and services expanded their role as regional centers. And tribes, where present, played an important role in contributing to community development through the growth of tribal businesses, administration, and social and environmental services. Tribal forest lands also helped sustain local timber economies in some areas (unless subject to Plan restrictions, as in the Coquille case).

Of the 12 U.S. census social and economic indicators we tracked, only two showed consistent trends across all 12 communities: median age and educational attainment, both of which increased. Median age rose in every community by anywhere from 6.1 to 36.6 percent. Median age for all nonmetropolitan communities in the Plan region rose 10 percent, from 36.4 to 40, between 1990 and 2000 (compared to 7 percent for the Nation as a whole). In 11 of the 12 case-study communities, median age rose more than the average for the Plan area as a whole. Although this trend in part reflects the aging of the baby boomers, interviewees consistently reported that over time, families and young people had left their communities because of the shortage of jobs. Meanwhile, retirees had moved in, partly because of the low cost of living. The influx of retirees may

be partly responsible for the increase in the percentage of the population over 25 that completed high school in each community, and having a B.A. degree or higher (only in the Mid-Klamath did the percentage of people with a B.A. degree or higher drop). Some interviewees also attributed rising educational attainment to the fact that young people could no longer leave high school and earn good wages by getting jobs in the timber industry. It had become more important to complete high school and obtain a higher degree in order to find family-wage jobs. Some interviewees viewed the growth in the number of retirees in their communities as helping to replace some of the human capital and community capacity that was lost when working-class families departed. Some interviewees viewed retirees and older telecommuting populations as bringing in new and sometimes conflicting values about rural life.

We did not have enough evidence to determine how communities that depend on amenity, recreation, and other environmental benefits of federal forests were affected by the Plan. Nor did we evaluate to what extent recreation was sustaining formerly timber-based communities. Interview results showed that recreation and amenity values played a role in drawing new residents to communities around federal forests that lost timber workers and FS employees in the 1990s. Recreation and tourism also played an important and evolving role in contributing to the economies of the Upper Hood River Valley, the Villages of Mount Hood, and the Lake Quinalt Area. Several interviewees from the case-study communities viewed recreation and nature-based tourism as the natural-resource-based sectors holding the greatest potential for local economic development. Yet developed recreation and tourism were often controversial, and many interviewees stated that they do not provide many family-wage jobs. Nevertheless, several of the case-study communities were attempting to promote recreation and tourism locally. Their success will depend on the popularity of local attractions, the seasonal availability of recreation opportunities, the supply of forest-based recreation opportunities and the agencies' abilities to manage recreation demand, the accessibility of the communities, the availability of recreation and tourism infrastructure, and the competition with other communities for tourists. The

agencies were actively working with many communities to assist with developing recreation and tourism.

**Did the Plan help maintain the stability of local and regional economies and assist with long-term economic development and diversification to minimize adverse effects associated with job loss?** The anticipated forest-restoration economy never really developed on the case-study forests. Procurement-contract spending for ecosystem management on the four forests varied annually and was driven in part by natural disasters. The decline in contract spending between 1990 and 2002 on all four forests ranged from 15 to 78 percent. The number of contractors working on the Olympic, Mount Hood, and Klamath National Forests dropped by roughly half between 1990 and 2002. In contrast, the number of contractors increased by about one-third on the Coos Bay District. Only a handful of case-study community residents reported that they or people they knew had obtained agency contracts to do forest restoration work. People that had contracts viewed them as supplemental rather than as a stable form of income because the jobs were sporadic and the work season was short. The Coos Bay Jobs-in-the-Woods program came the closest to sustaining a restoration-based workforce on that district. The money for the program was not enough to support more than a few jobs, however, and future funding is questionable. Our findings showed that to date, resources to provide full-time, year-round jobs in forest restoration on the case-study forests are sufficient for only a few people. And contract work is often linked to unpredictable natural disasters such as fires and floods.

The unit budgets of the case-study national forests dropped by 49 percent on the Olympic, 59 percent on the Mount Hood, and 18 percent on the Klamath between 1993 and 2003. With steeply declining budgets, the FS did not have the resources to invest in procurement contracting. In contrast, the Coos Bay District budget remained relatively flat, growing only 1 percent during this same period.<sup>6</sup>

<sup>6</sup> Although the total budget for Coos Bay rose just 1 percent from 1993 to 2003, nonfuel and “ordinary” budgets grew faster for Coos Bay than did its overall budget. Its ordinary budgets increased 5.4 percent. We interpret these “ordinary” funds as important to achieving sustained ecosystem management.

The Northwest Economic Adjustment Initiative was an important strategy for helping some communities affected by the loss of timber jobs develop and diversify. The case-study communities received vastly different amounts of initiative money. Many of the case-study communities reported benefiting from initiative-supported projects, particularly those for developing infrastructure. These projects did not always succeed in attracting new businesses or industries, however. What the long-term benefits of some of these projects will be is unknown. Other successes reported were in community planning and small business loans. Initiative-supported efforts to develop alternate wood-products sectors that use federal timber have largely failed to materialize as yet. For example, the initiative supported establishing a small hardwood mill and a small furniture business in the Mid-Klamath. New markets and business sectors are very difficult to develop, however, especially in remote communities. And building a business is difficult where the supply of wood to support it is small and unreliable, as was found on the Klamath under the Plan. What the initiative money mostly failed to do was to create sustainable local jobs comparable to the quantity and quality of those lost. Most interviewees believed the initiative had done little to help displaced timber workers. One exception was the Coos Bay Jobs-in-the-Woods program, which was viewed as a success, although it created only a small number of jobs. In some communities, the links between initiative-funded projects and the local BLM and FS offices were not readily apparent to most interviewees. Thus, opportunities to mend local community-agency relations that had deteriorated when timber harvests declined were sometimes missed.

Other important and largely successful mitigations were the owl-guarantee payments associated with the Budget Reconciliation Act, and the Secure Rural Schools and Community Self-Determination Act monies. These funds helped stabilize payments to county governments, and provided some funds (through the Secure Rural Schools Act, Title II) for local ecosystem management work. Many community interviewees commented on the importance of these funds to their communities, and expressed concern

over what will happen in 2006, when the Secure Rural Schools Act payments expire.

One Plan-related change apparent from the interviews was that the case-study communities found increasing difficulty in sustaining themselves in a way that linked their local economy and culture to the natural resources that surround them and to federal forest lands, in particular. Although some communities still had a wood-products industry, federal timber played a minor, if any, role in supporting that industry. Many interviewees reported that the lack of forest-based, family-wage jobs in their communities was one of the biggest issues of concern relating to federal forest management. That a declining number of community members now made a living from federal forest land meant that relations between local residents and FS and BLM personnel were becoming more distant, and local people were less interested in forest management issues. Recreation is replacing timber as an arena for interaction between community residents, federal forests, and the agencies that manage them. Little evidence from the case-study communities suggested that the Plan had been successful in linking its socioeconomic and biophysical goals by providing local, family-wage jobs that promote forest stewardship on federal forest lands.

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## Metric Equivalent

Million board feet (log scale)  $\times$  4530 = cubic meters

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## Chapter 9: What We Have Learned

*Susan Charnley*

This volume focuses on the Northwest Forest Plan (the Plan) record of decision evaluation question, Are local communities and economies experiencing positive or negative changes that may be associated with federal forest management? It also assesses how well two of the Plan's socioeconomic goals were met during the first decade: to maintain the stability of local and regional economies on a predictable, long-term basis; and, where timber sales cannot proceed, to assist with long-term economic development and diversification to minimize adverse effects associated with job loss. The monitoring team examined trends in socioeconomic benefits from federal forest lands between the early 1990s and the early 2000s, and the ways in which the Plan may have contributed to these trends. The team also examined socioeconomic mitigation measures designed to offset some of the adverse effects of cutbacks in federal timber harvest, how effective they were, and why they sometimes were not. In addition, we examined social and economic change in Plan-area communities at the regional scale and in a sample of 12 forest-based communities to identify links between Plan implementation, the mitigation measures, and community change. Our main conclusions follow.

We began this volume (chapter 2) by taking a regional look at social and economic change in 1,314 communities in the Plan area. We analyzed 12 social and economic indicators from the U.S. census for the years 1990 and 2000, and also used U.S. census data to develop a community socioeconomic well-being measure that would help us evaluate change in community socioeconomic well-being over time.

Our analysis of the census data showed that communities in the Plan area are changing. The population is growing, educational attainment and household income are increasing, and poverty is decreasing. At the same time, the manufacturing sector of the economy is declining in many communities. Socioeconomic well-being increased for more than a third of the communities in the region, and decreased for about the same number between 1990 and 2000.

Almost 5 million people lived in communities in the Plan area in 2000, and more than 2 million lived within 5 miles of federal forest land. Using a socioeconomic well-being index we developed, we found that 40 percent of the communities within 5 miles of federal forest land decreased in socioeconomic well-being between 1990 and 2000, compared with a 33 percent decrease for communities farther than 5 miles from federal forests. Generally, Plan-area communities with lower socioeconomic well-being tended to be those within 5 miles, comprising 71 percent of all communities that scored low or very low in socioeconomic well-being in 2000. Forty-three percent of the communities that received high or very high scores, however, were also within 5 miles of federal forest lands. Although some of these communities had relatively high socioeconomic well-being, income inequality has also increased there. Drivers of socioeconomic change, such as increasing income inequality, migration, shifts in dominant industry sectors, and aging populations, affect community socioeconomic well-being.

How much do federal forests contribute to socioeconomic change in rural communities and economies? Finding direct connections between changes in forest management policy and socioeconomic change is difficult. The way we approached this challenge was to examine trends in socioeconomic benefits from federal forests that could affect the well-being of forest-based communities. These benefits included jobs and income associated with resources and recreation, agency jobs, and procurement contracting opportunities. We examined regional-scale trends in these forest benefits for 1990 to 2003, and we examined local-scale trends in four sample case-study areas. Interviews with 223 members of 12 case-study communities and 82 agency employees who work on four case-study forests provided insight into how changes in the flow of these benefits had contributed to change in local communities, and helped explain the ways in which the Plan had affected the flow of socioeconomic benefits from the forests and their managing agencies.

## Maintaining the Stability of Local and Regional Economies

### Jobs and Income From Resources and Recreation on Federal Forests

In the early 1990s, residents of forest communities expressed concern about the uncertainty around the timing and quantity of federal timber sales (FEMAT 1993: VII-70). Communities wanted stability, predictability, and certainty in timber supplies (FEMAT 1993: VII-77). Many people believed that if federal agencies produced a stable, even flow of timber, social and economic stability in rural, forest-based communities would be assured (see sources cited in Richardson 1996). The Plan's socioeconomic goal of maintaining the stability of local and regional economies on a predictable, long-term basis by producing predictable levels of timber sales, nontimber resources, and recreation opportunities reflects this thinking. However,

Absolute predictability is impossible. Nature, society, and human economies are extremely complex systems. Cause and effect relationships follow many pathways in each system.... While predictability is difficult for natural systems, the same can be said about economic and social systems. When economic, social and natural systems interact, uncertainty dramatically increases, making reliable prediction of outcomes most difficult [MacCleery and Le Master 1999: 522].

In volume II of this report we found that the levels of timber sales during the first decade of the Plan did not meet expectations. Trends in special forest products sold, mining activity, and recreation opportunities were mixed, and grazing declined. In chapter 3 of volume III, we found that measuring jobs and income associated with grazing, mining, and harvesting special forest products on federal forest lands in the Plan area was not possible because of lack of data. But we could measure jobs and income associated with timber harvest and recreation. For recreation, the only available data pertained to current status on Forest Service (FS) lands. In the early 2000s, recreation opportunities provided by FS lands in the Plan area supported about 17,500 direct jobs and 25,500 total jobs.

The main adverse social and economic effects of the Plan were expected to be associated with the loss of jobs and income from reduced federal timber harvests. Federal timber supplies dropped over the course of the 1990s, and federal agencies did not produce anticipated probable sale quantity (PSQ) volumes (volume II, chapter 2). Thirty thousand direct timber industry jobs were lost between 1990 and 2000 in the Plan area (compared to Plan expectations of 25,000 jobs lost). Most of this job loss was in nonmetropolitan counties, with Oregon being the hardest hit of the three states. Yet timber supplies across all ownerships in the Pacific Northwest were relatively stable during the last half of the 1990s. Nevertheless, about 11,000 of the 30,000 timber industry jobs lost during the 1990s were lost in the last half of the decade. About 400 of the 11,000 jobs lost since 1994 can be attributed to a net reduction in timber harvesting on federal forest lands. The remaining 10,600 job losses occurred during a period of increased log supply, and are the result of less efficient mills closing, and mills continuing to invest in labor-saving technologies. The contribution of federal timber to the total timber supply dropped in the Plan area from about 25 percent in 1990 to 10 percent in 1995 to less than 5 percent by 2000.

Although stable timber supplies may contribute to economic stability, they do not ensure it. This finding is consistent with research undertaken in the 1990s that shows how assuming community stability depends on nondeclining, even flows of timber from federal forests can be misleading (see sources cited in Kusel 1996, Richardson 1996). Many factors can influence the stability of forest-based communities (USDA FS 2000: 3-326–3-329). Demand for wood and commodity prices fluctuates; alternative sources of supply are available; some firms prefer locating close to large labor markets rather than in geographically isolated areas; mills compete for timber supply; communities compete for jobs; wood products manufacturing technology changes; and other federal and state policies affecting the business climate change. All of these forces can affect jobs in the timber industry, and neither agencies nor communities have much influence over them. Consequently, the concept of community stability has come to be replaced by the concept of community resiliency—the ability of communities to



respond and adapt to change in positive, constructive ways to mitigate the effects of change on the community (Harris et al. 2000: 6).

The expectation that the Plan would provide predictable levels of resource outputs and recreation opportunities, which would in turn provide predictable levels of employment, was not achieved with respect to timber supply. The timber projections for FS and Bureau of Land Management (BLM) lands in the Plan area were not realized, and there was a lot of variation across the years since the Plan was implemented. However, increased harvests from other ownerships and the redirection of logs from the export market to local processing industries have mitigated some of these impacts. The Plan's effect on nontimber resources and recreation opportunities was either minimal or not readily discernable.

### **Agency Jobs and Offices**

The loss of agency jobs also affected community stability. The five western Oregon BLM districts lost 166 full-time equivalents (FTEs) between 1993 and 2002, or 13 percent of their workforce. No BLM district or resource area offices closed during this period, however, providing a continued presence of agency decisionmakers in local communities. National forests in the Plan area lost 3,066 FTEs between 1993 and 2002, representing a 36-percent decline in the workforce. This loss was more than expected, and it led to a consolidation of field offices. The number of FS offices with forest supervisors declined by 2, and the number of offices with district rangers dropped by 20 during the period, representing a 23-percent reduction in the number of communities housing FS offices with a line officer. Some of these offices closed completely; others persisted, but with greatly reduced staffing. The FS job loss was most severe among units in Oregon and Washington.

The FS and BLM are often two of the few sources of quality jobs in forest communities, and their employees often make important contributions to community well-being. Agency jobs help to maintain the presence of community members who contribute leadership skills, invest in improving their communities, and substantially enhance community capacity. The report by the Forest Ecosystem

Management Assessment Team (FEMAT) recognized that the presence of FS and BLM offices in small, isolated communities enhances community capacity, and that office closures could devastate some of these communities. Not only displaced timber workers, but FS employees moved out of their communities in the 1990s as they retired or went to work elsewhere, contributing to the loss of productive community members. The negative effects of these changes were described for some of the case-study communities (chapter 8). The loss of agency jobs was tied to declines in agency budgets associated with reduced timber harvest under the Plan.

### **Agency Budgets**

Between 1993 and 2003, western Oregon BLM unit total budgets rose by 22 percent. In contrast, Plan-area FS unit budgets declined by 35 percent. These trends can be compared to national-scale trends in agency budget appropriations. Between 1993 and 2003, total FS agency appropriations grew by 41 percent, and total BLM agency appropriations grew by 79 percent.

The 35-percent decline in FS unit budgets occurred at the same time FS field-unit budget allocations for fire and fuel management rose from 7 to 29 percent of the total. Excluding fire and fuel management funding, FS budgets for all other activities dropped 50 percent during the decade. This drop meant that the FS had much less funding for non-fuel-related forest management activities in 2003 than in 1993. We were unable to obtain data for earlier years; however, agency budget specialists interviewed said that budget declines began around 1990. The BLM field units received a smaller proportion of fire and fuel management dollars than the FS did. Nevertheless, excluding fire rehabilitation and fuel management money, BLM unit budgets still rose by 12 percent, providing additional money for non-fire-related forest management work.

The decline in FS budgets between 1993 and 2003 can largely be attributed to the decline in timber receipts generated during the period. Although BLM timber sales also decreased during the decade, BLM funding was not as heavily dependent on trust and permanent operating accounts derived from timber receipts. The BLM units lost

staff despite budget increases, but rising funding allowed them greater flexibility in selecting among potential means of doing needed work (such as partnerships, Jobs-in-the-Woods, contracting). The BLM managers also had relatively wide latitude in directing investments among programs in the Oregon and California Railroad (O&C) allocation, which composed the majority of the BLM budget. In the early 1990s, BLM realigned about 20 percent of the O&C funding away from timber management activities and toward other forest management activities more consistent with Plan goals (Priebe 2004). Although O&C funding declined slightly during the period, BLM funding was not as sensitive to trust and permanent operating accounts derived from timber receipts as FS allocations were. Although O&C funding declined during the period, allocations to all other BLM program accounts grew. These increases were mostly attributable to additional funding for the timber and recreation pipelines, for the forest health initiative, for fire rehabilitation and fuel management, and for the management of land and resources.

With regard to the alternatives being considered for the Plan, the FEMAT report stated:

...we emphasize that the options selected should not be hastily coupled with reductions in funding and personnel based on the inappropriate assumption that ecosystem management is somehow cheaper than traditional commodity production-focused Plans [FEMAT 1993: VII-41].

That BLM funding rose and staffing dropped slightly during the first decade while FS funding and staffing dropped by more than one-third provides an opportunity to examine differences in the institutional capacity of the agencies to be effective in achieving Plan goals.

### Procurement Contracting for Ecosystem Management Work

Procurement contracting is another way in which agencies create jobs that could benefit local communities. Although contract work associated with intensive timber management (forestry services) was expected to decrease under the Plan, contract work in ecosystem restoration was expected

to increase, helping to offset job loss in both the forestry services and timber sectors.

This expectation was not met. Although a proportional shift in work types turned away from labor-intensive contracting associated with intensive timber management and toward technical and equipment-intensive work associated with ecosystem restoration, this shift was in the context of a general decline in contract spending. This decline can be attributed to a reduction in FS procurement contracting. The BLM contract spending remained fairly constant between the early 1990s and the early 2000s, averaging just under \$20 million per year. The FS spending declined throughout the period, dropping from \$103 million in 1991 to \$33 million in 2002.

We attribute these differences in agency contract spending primarily to the differences in agency budget trends during this period. The FS did not have the money to invest in procurement contracting, and local managers sometimes chose to accomplish work in-house to keep people employed, rather than to invest in contracting. Thus, FS procurement contracting did not help offset economic decline in the Plan area during the first decade of the Plan. Added to this problem, the Plan did not contain adequate provisions for targeting local community residents with procurement contracting opportunities. Only about one-quarter of the agencies' contract value in the early 1990s and the early 2000s was awarded to contractors from rural communities (communities with populations under 5,000), though the value awarded by the BLM increased to one-third of the total by the 2000s. Available contracts often went to contractors from far away because of institutional barriers that impeded Plan goals.

From the local perspective, community case-study results indicated that anticipated jobs in forest restoration never really materialized. Procurement contract spending for ecosystem management on the four case-study forests varied annually and was driven in part by natural disasters. A general decline in contract spending between 1990 and 2002 on all four case-study forests ranged from 15 to 78 percent. Only a handful of case-study community residents reported that they or people they knew had received agency

contracts to do forest restoration work. Those people who had, viewed the jobs as a supplemental, rather than a stable, form of income because of their sporadic nature and the short season of work. Our findings showed that, to date, sufficient resources to provide full-time, year-round employment in forest restoration work on the case-study forests are not available for more than a few people. Moreover, contract work is often linked to unpredictable natural disasters such as fires and floods.

Declines in agency jobs and jobs created through procurement contracting added to the climate of instability affecting local and regional economies under the Plan. These declines provide additional evidence to suggest that the Plan goal of maintaining the stability of local and regional economies on a predictable, long-term basis has not yet been achieved.

### **Community Effects of Plan Implementation**

What were the effects of this declining flow of socioeconomic benefits from federal forests on rural communities and economies? Our analysis of U.S. census indicators showed that 40 percent of the communities within 5 miles of federal forest lands decreased in socioeconomic well-being between 1990 and 2000, 37 percent increased, and 23 percent showed little change. The census data do not tell us why, however. We monitored a sample of case-study communities, and interviewed community members to identify these effects. As was expected, not all communities were affected the same way, or to the same extent, by the Plan.

All of the case-study communities we monitored showed changes over the last two decades. Although timber was one of the major economic sectors in all of these communities in the 1970s and 1980s, the timber sector had become minor or negligible in many of them by 2003. Federal forest management policy was just one of many variables shaping the changes in these communities, however, and the extent of its effects varied considerably. These effects depended on the relative strength of the timber sector in each community around 1990, the extent to which wood products harvested on federal forest land supported that sector, and the degree to which local residents

depended on FS jobs. For example, the timber sector was an important component of the economy in the Quinalt Indian Nation in 1990, but tribal and private forest lands largely supported that sector. Hence interviewees from that community did not report any major effects from changes in federal forest management policy. In contrast, communities such as Quilcene, Upper Hood River Valley, and the Mid-Klamath participated heavily in the wood-products industry until the late 1980s. Loggers worked mainly on national forest lands, and local mills obtained most of their wood from federally managed forests. These communities were hit hard by the reduced federal timber supplies. Although the timber industry was of secondary importance in the Villages of Mount Hood in 1990, many FS employees lived there. The decline in agency jobs associated with reductions in FS timber programs strongly affected the Villages of Mount Hood and several other case-study communities, just as the loss of timber sector jobs did.

The Plan was not the only variable causing the Pacific Northwest timber economy to change. The timber sector in some communities—such as Greater Coos Bay—had been declining since the early 1980s because of an economic recession, domestic and international competition, changes in market demand for wood products, industry restructuring, mechanization and technological advances, and environmental regulations—and the Plan added to these pressures. Other case-study communities, such as the Mid-Klamath, seemed to be relatively buffered from the changes that affected the industry during the 1980s. Interviewees there perceived the halt of federal timber production around 1990 as the beginning of the end.

Some communities were sustained through the transitional period of the 1990s by having a substantial agricultural sector, being near a major transportation corridor, or being close to a popular recreation and tourism destination. Other communities had an influx of retirees, commuters, mobile or self-employed workers, second-home owners, immigrants, or low- and fixed-income populations. Some communities that had been goods and services centers expanded their role as regional centers. And tribes, where present, played an important role in contributing to community development through the growth of tribal

businesses, administration, and social and environmental services. Tribal forest lands also helped sustain local timber economies in some areas.

### Assistance With Long-Term Economic Development and Diversification

Did Plan mitigation measures assist with the transition, and promote long-term economic development and diversification in communities affected by cutbacks in federal timber harvests? Procurement contracting for forest restoration was not an effective mitigation measure at the regional scale, as discussed above. The Northwest Economic Adjustment Initiative and safety net payments to county governments were the primary mitigation measures intended to help with the economic transition.

### Northwest Economic Adjustment Initiative

The Northwest Economic Adjustment Initiative was one of the primary mitigation strategies designed to minimize adverse effects associated with job loss. It had five objectives: to provide immediate relief for distressed timber communities; to create an environment for long-term economic development; to develop new mechanisms for delivering assistance; to emphasize partnerships with states and the critical role of local governments; and, to emphasize the use of performance-based standards for funding. The BLM and the FS had three primary community economic assistance programs designed to provide short-term relief and long-term economic diversification through the initiative: Jobs-in-the-Woods, Rural Community Assistance, and the Old-Growth Diversification Fund. These programs were relatively small in terms of total initiative dollars.

Many people view the short-term mitigations of the initiative programs as too little, too late. Timber industry restructuring and timber supply changes were already going on, to a large degree, before the initiative dollars became available in 1994. The Old-Growth Diversification Fund provided loans to retain existing businesses, and was viewed as successful. Local jobs for ecosystem management activities were targeted through Jobs-in-the-Woods, and some short-term jobs were created. The Rural Community Assistance program provided grants to the private sector for

projects related to forest management, which helped. The initiative did not deliver on agency and public expectations to provide immediate help to displaced timber workers and their families, however, and many believe that the dollars available were inadequate to compensate for the magnitude of the effects.

Some people argue that it is too soon to assess the success of the initiative's long-term economic diversification projects. The Old-Growth Diversification Fund, a revolving loan fund providing grants and loans to small businesses to promote expansion and diversification, still provides a long-term sustainable source of capital for resource-related businesses, and it is considered highly successful. Community-based planning was a focus of the Rural Community Assistance program. Projects to improve community capacity—such as leadership development, community-based planning, and technical assistance to help communities write grants—were aimed at helping communities help themselves. In reviews of the initiative, these “soft infrastructure” projects were considered vital to the success of initiative projects. The program also supported economic diversification, funding projects such as market and feasibility studies and business plans; whether these projects were generally successful is debatable. The initiative also helped communities and businesses by funding hard infrastructure development projects (such as business parks and water and sewer systems). Although many communities have improved their infrastructure and are better poised for economic development, these opportunities had yet to materialize in most of the communities we studied.

Jobs-in-the-Woods has been characterized as the most complex component of the initiative because it requires “simultaneous and innovative consideration of forest ecosystem management, workforce development and employment, community economic needs, interagency coordination (within the federal government), and federal-nonfederal collaboration with relevant partners” (Tuchmann et al. 1996: 201). The BLM Jobs-in-the-Woods program met with such success that it persisted as an annual budget appropriation. Although the BLM funding for community economic assistance through Jobs-in-the-Woods dropped somewhat when the initiative ended, it has been stable since

1999. Despite the BLM's successes, to many, Jobs-in-the-Woods has been the greatest disappointment of all of the initiative's components because public expectations for the quality and number of jobs created to offset job losses in the timber industry were never realized.

Another objective of the initiative was to design new ways for federal agencies to conduct business in collaboration with nonfederal and community partners. The Community Economic Revitalization Teams developed organizational ground rules and incorporated "one-stop-shop" and "lead agency" techniques to streamline program delivery. Collaborative groups identified, prioritized, and greatly leveraged available funds. The Rural Community Assistance program provided technical assistance to small, remote, unincorporated communities to enable them to organize and compete for funding. The program also had the flexibility for managers to provide "gap" funding for identified critical projects to fill in where other agencies could not. Criteria for program funding emphasized new and sustainable resource-based businesses and jobs in resource-dependent communities. The Jobs-in-the-Woods and Rural Community Assistance program managers developed expertise in the agencies to coordinate and integrate complex community and agency needs and community-based programs. Assessments of the innovative aspects of these programs in promoting collaboration between agencies and partners to deliver assistance view them as highly successful.

The 12 case-study communities we monitored received vastly different amounts of initiative money. Many of the case-study communities reported benefiting from initiative-supported projects, particularly those involving physical infrastructure development. These projects did not always succeed in attracting new businesses or industries, however. What the long-term benefits of some of these projects will be cannot, as yet, be predicted. Other successes were reported in the areas of community planning and small-business loans. Initiative-supported efforts to develop alternate wood-products sectors that use federal timber have largely failed to materialize. And the majority of community members we interviewed believed the initiative had done little to

help displaced timber workers. One exception was the Coos Bay Jobs-in-the-Woods program, which was viewed as a success, although it created only a small number of jobs.

What the initiative largely failed to do was to create sustainable local jobs during the first 10 years of the Plan comparable to the number and quality of those lost because of reductions in federal timber harvest. Economic shifts evolve over long periods, and expecting new jobs to be created instantly is unreasonable. Moreover, many rural resource-based communities grow relatively slowly, and are subject to fluctuations from national and international economic forces beyond their control. Although the transition is not over, the initiative is. A focus on local job creation as a long-term goal is still needed in the context of new programs and sources of money. The FS funding for community economic assistance has returned to about what it was before the Plan. The Jobs-in-the-Woods and Rural Community Assistance program are no longer funded by Congress, the administration, or the agency. Several new programs are emerging, however, with many of the initiative's same long-term objectives and community-based, collaborative designs. Experience implementing the initiative resulted in lessons that can be applied to future efforts by federal government agencies to provide community economic assistance.

### **Payments to Counties**

The Omnibus Budget Reconciliation Act of 1993 and the Secure Rural Schools and Community Self-Determination Act of 2000—designed to stabilize payments to county governments in the face of declining revenues from the timber receipts generated by federal forest lands—have generally mitigated the effects of declining timber receipts. The initial payments-to-counties legislation (the Omnibus Budget Reconciliation Act) generally mitigated Plan effects for the 48 counties covered by the legislation. The counties in other parts of the Plan area (in eastern Washington, Oregon, and other parts of California) did not fare as well until the Secure Rural Schools Act extended these payments to all of the eligible counties in the region and across the United States.

Some of the intent behind the Omnibus Budget Reconciliation Act of 1993 was to provide a transition to a lower rate of assistance. The transitional path downward was replaced by a much higher rate of revenue support under the Secure Rural Schools Act.

The goal of the payments-to-counties legislation was clearly met. The legislation has replaced past dependence on timber-harvest revenues and has generally mitigated the lost revenues associated with the declines in federal timber harvest in the region. It is not known how the owl safety net payments have affected overall county financing. In the short term, a guaranteed amount is likely to have a stabilizing effect. The Secure Rural Schools legislation, however, sunsets on September 30, 2006. The long-term stability of the payments is uncertain.

Without new congressional action, counties in the Plan area will need to address a projected \$270 million in revenue shortfall. Congressional hearings are expected in 2005 to address the possibility of reauthorization of the Secure Rural Schools legislation. Rural communities continue to rely on stabilized payments to counties. The lack of secure funding for schools, transportation, and other social services produces a great deal of uncertainty in communities that depend on this income, especially given a climate of declining revenues from other sources. Land management agencies do not have decisionmaking authority over legislation on payments to counties. Long-term legislation to address the issue would be a major contribution, however; for example, the Forest Counties Payment Committee has developed recommendations for what such legislation might contain (<http://www.countypayments.gov/>).

The Plan's contributions toward long-term economic development and diversification were mixed. Payments-to-counties mitigations were successful. Loan programs, hard infrastructure development projects, and soft infrastructure development projects were largely successful, although the long-term outcomes of some of these projects is unknown. The initiative did not deliver on expectations to provide immediate help to displaced timber workers and their families. Nor did it create more than a handful of sustainable, local jobs.

## Plan Effects on Community Well-Being

Rural communities and economies underwent both positive and negative changes during the first decade of the Plan. The Plan contributed to negative changes in some communities, primarily because of reduced federal timber harvests and the loss of associated jobs and income; substantial decreases in the number of agency jobs; and declines in procurement contract spending. We do not have enough evidence to assess the Plan's contributions to positive change, for example, to assess how communities depending on amenity, recreation, and other environmental benefits associated with federal forests were affected by the Plan. Nor did we evaluate to what extent recreation was sustaining communities that were formerly timber based. Interview results showed that recreation and amenity values played a role in drawing new residents to communities around federal forests that lost timber workers and FS employees in the 1990s. Recreation and tourism also played an important and evolving role in contributing to the economies of some communities, such as the Upper Hood River Valley, the Villages of Mount Hood, and the Lake Quinault Area. Several interviewees from the case-study communities viewed recreation and nature-based tourism as the natural-resource-based sectors holding the greatest potential for local economic development, and several communities are working with the agencies to promote recreation and tourism locally.

One Plan-related change made apparent from the local-scale monitoring results was that communities are having increasing difficulty in sustaining themselves in a manner that links their local economy and culture to the natural resources that surround them, and to federal forest land in particular. Although some communities still had a wood products industry, federal timber played a minor, if any, role in supporting that industry. Many interviewees reported that the lack of forest-based, family-wage jobs in their communities was one of the biggest issues of concern relating to federal forest management. And the fact that a declining number of community members make a living from federal forest land means that relations between local

residents and FS and BLM personnel are becoming more distant. Some local people have become less interested in forest management issues.

The Plan aimed to provide "... a sustainable level of human use of the forest resource while still meeting the need to maintain and restore the late-successional and old-growth forest ecosystem" (USDA and USDI 1994: 26). Our findings show this goal has not been met from the human-use perspective and that it remains one of the most important challenges of federal forest management today in the Plan area.

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## Appendix A: Record of Decision Indicators Monitored

The Northwest Forest Plan (the Plan) record of decision (ROD) specified a set of indicators to be monitored to answer the question, Are local communities and economies experiencing positive or negative changes that may be associated with federal forest management? The ROD lists the key items to monitor as being demographics, employment, government revenues, facilities and infrastructure, social service burden, federal assistance programs, business trends, and taxes (USDA and USDI 1994: E-9). Phases I and II of the socioeconomic monitoring program attempted to assess these indicators, with mixed results (see Sommers 2001, Sommers et al. 2002).

Phase III of the monitoring program upon which this interpretive report is based monitored demographics, employment, and federal assistance programs (the Northwest Economic Adjustment Initiative). It did not, however, monitor the other indicators.

The social service burden refers to items such as welfare roll changes, aid to dependent children, poverty rates, food stamps, subsidized counseling, school lunches, alcoholism, and domestic violence. The team did monitor poverty rates. However, monitoring the other indicators requires obtaining data from different sources in different states, counties, and/or communities, raising problems of inconsistency between geographic areas. Furthermore, these data did not often pertain to the “communities” that we had delineated, which were based on census block-group aggregates, creating problems of scale. We used the U.S. census as our primary source of social and economic indicator data, and the census does not contain data on many of the social service burden indicators.

Indicator data for the other variables listed are available, and are potentially good indicators of socioeconomic well-being. However, most of the readily available data are

available only at the county, state, or federal scales—not at the community scale, which is the primary unit of analysis in volume III and is pertinent for addressing the monitoring question. To understand socioeconomic change at the local, community scale and how it is linked to federal forest management, the indicator data that only can be used to portray broader-scale trends are not useful.

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## Appendix B: Methods for Choosing Case Studies

### Methods for Choosing Case-Study Forests

Case-study forests were chosen to represent one national forest in each of the three states that lie within the Northwest Forest Plan (the Plan) area, and one Bureau of Land Management (BLM) unit in Oregon, the only place that the BLM has significant land holdings inside the Plan area. They were also chosen to represent different provinces (the Plan area is broken up into 12 planning provinces). The monitoring program sent a letter to all of the national forests and BLM districts in the Plan area asking for volunteers to participate in socioeconomic monitoring. We took this approach because the monitoring effort was considered a pilot program, and we wanted to conduct it on forests that were interested in participating and making use of the resultant information. Two of the four case-study forests volunteered to participate, and were chosen for that reason (the Olympic and the Mount Hood National Forests). The Klamath National Forest was chosen because it was previously a high timber-producing forest, and the forest supervisor was supportive of social science work. The Coos Bay District was chosen because the BLM Oregon State office recommended it.

### Methods for Choosing Case-Study Communities

Case-study communities associated with each forest were chosen on the basis of a number of criteria. First, the team identified a sampling frame of communities that included all of the community block-group aggregates (BGAs) whose polygons lay, at least partially, within a 10-mile radius of the case-study forest boundaries. The team chose this distance because it wanted to focus the monitoring work in forest-based communities, and assumed that communities close to federal forests would have social, economic, or cultural ties to those forests. We then met with agency employees from each case-study forest and showed them our sample frame. We discussed which of the communities within our sample frame currently or historically maintained some kind of relations with the case-study forest

and the managing agency, and which did not exhibit any relationship with the forest. This process narrowed our sample frame.

We selected three communities associated with each case-study forest from the sample frame for monitoring because time and budget constraints did not allow for a larger community sample. We recognize, however, that in choosing only three communities around each forest, we did not capture all of the variation in community “types,” or in community-forest relations in each case-study area. Case-study communities were chosen randomly from a stratified sample. We stratified communities within the sample frame on the basis of their socioeconomic well-being score in 1990, by using three categories: high, medium, and low. We randomly chose one community from each stratum, unless there were no communities in one of the strata (one case-study forest did not have any communities that measured high in socioeconomic well-being in 1990). In this case, we randomly chose two communities from the stratum that contained the largest number of communities, which generally was the middle category.

Once we selected the case-study communities randomly, we visited them and talked with community members to determine whether the community did indeed have historical and present ties to the case-study forest. We also used the interview process to determine how the communities should be defined for case-study purposes. The community BGA delineations were used for initially selecting case communities on a random basis; however, the model we used did not necessarily correspond geographically to the place that community members considered to be “their community.” Thus the BGA community delineations were starting points for defining study communities, but we adjusted those definitions according to how local residents conceptualized their community. In many cases, we further aggregated the original randomly chosen BGA with surrounding BGAs in response to feedback from local residents to ultimately define the case-study community boundaries.

## Appendix C: Methods Used in Chapter Analyses

### Methods Used in Chapter 2, Socioeconomic Trends in Northwest Forest Plan Area Communities

The methods used to undertake the analysis in chapter 2 are detailed enough to warrant being published separately as a Pacific Northwest Research Station Research Note (Donoghue and Sutton, n.d.). We briefly summarize these methods below.

Aggregations of census block groups were used to define “communities” in the Northwest Forest Plan (the Plan) region. The block-group aggregations (BGAs) were examined at a number of scales as part of a regional analysis and the case-study analysis found elsewhere in the report. The scales include all BGAs, BGAs representing case-study communities, and BGAs near the case-study public forests.

To develop the BGA unit of analysis that would delineate community boundaries in the Plan region, 1990 census block groups were aggregated by using a geographic information system (GIS) and visual review (Donoghue 2003). Note that the 2000 block-group boundaries differ from the 1990 block-group boundaries, primarily because of changes in population. To conduct a temporal analysis, we first had to make the 1990 and 2000 data compatible. We used a method based on population proportions. Because a census block is the smallest geographic unit for which census data are tabulated, it is the unit that most accurately shows the distribution of population within a given area. The calculation of the percentage of a block found within a BGA assumes that the population is evenly distributed within a block, although this is not the case. However, blocks represent the closest census designation to the actual distribution of population on the ground.

To calculate the proportion of each 2000 block-group population found within each 1990 BGA boundary, we (1) calculated the proportion of each 2000 block found within BGA boundaries; (2) using this proportion, calculated the population of each 2000 block found within BGA boundaries; (3) calculated the total 2000 block-group population found within each BGA; and (4) determined the proportion of 2000 block-group population found within a BGA by comparing it to each total 2000 block-group population.

A similar procedure was completed to determine the proportion of 2000 block-group households found within a BGA because some census indicators are based on households, rather than population.

The proportions were used to develop many socioeconomic indicators and measures for 1990 and 2000. This allowed researchers to evaluate changes in communities at several scales. Some of the indicators and measures generated included total population, school enrollment, percentage that completed high school, percentage with a Bachelor’s degree or higher, percentage unemployed, employment by industry, household income distribution, median household income, percentage in poverty, age distribution, median age, and race and ethnicity. Unfortunately, some census variables are defined differently for each census. For instance, race was collected differently in 1990 and 2000, and employment by industry was classified differently in these years. For some indicators like these, data preprocessing was required in order to use the data in the analysis.

In addition, a socioeconomic well-being index was developed and analyzed locally and regionally. It combined several measures to monitor community socioeconomic well-being based on current conditions and change. See volume III, chapter 2, table 2-3 for descriptions of the six variables that make up the index. Several regional social assessments have examined community socioeconomic status and included measures that we did not include in our community socioeconomic well-being index (Doak and Kusel 1996, 1997). For instance, we did not use the educational attainment and poverty intensity measures developed for the socioeconomic index in the Sierra Nevada Ecosystem Project social assessment (Doak and Kusel 1996) because in the Plan region, educational attainment was highly correlated with percentage of population with a bachelor’s degree or higher (Pearson  $r = 0.906$ ,  $p < 0.0001$ ). Similarly, poverty intensity (Doak and Kusel 1996) was highly correlated with percentage of the population living in poverty (Pearson  $r = 0.87$ ,  $p < 0.0002$ ). We also did not use an indicator reflecting children in homes receiving public assistance, used in the Sierra Nevada Ecosystem Project assessment (Doak and Kusel 1996), because supplemental income was reported

differently in 1990 and 2000 censuses. And we did not use an indicator for housing tenure (Doak and Kusel 1996) because we were not confident that home ownership in some areas contributed positively to well-being, particularly if home ownership affected job mobility. Although we recognized that census data on income might be problematic because of underreporting of interest, dividends, and public assistance income, we believe underreporting would be less of an issue for a measure that was based on how communities were doing relative to each other. Thus, we developed a measure for community income inequality based on census data for household income. The values for each indicator that make up our socioeconomic well-being index were standardized by using z-scores (the number of standard deviations a value is above or below the mean). After standardization, each indicator was normalized to a base of 100 to reduce the effect of outliers.

Some of the indicators we used in our analysis are described in detail in the report or elsewhere (Donoghue and Sutton, n.d.). Descriptions of several indicators are provided here as reference. For the 2000 census, population by race was the total number of people within each of the following mutually exclusive categories: White, Black, American Indian, Eskimo or Aleut, Asian or Pacific Islander, "other" race, and two or more races. Race as used by the census reflects self-identification and includes racial, national origin, or sociocultural groups.

For total population, we used the summary statistics from the long form. The sample data were weighted to represent the total population. Median age of the community was calculated by using a median calculation for grouped data based on age categories provided by the census. School enrollment was the number of persons enrolled in preprimary school, elementary, or high school at the time of the census. Percentage graduated high school is the percentage of the population 25 years and older that have graduated from high school.

Age distribution is the number of people within the age distribution categories. We grouped the census categories to produce six classes for both 1990 and 2000. For each census, age was reported based on the age of the person

at the time of the census. The following were our six age classes: ages 0 to 4 years, ages 5 to 19 years, ages 20 to 29 years, ages 30 to 44 years, ages 45 to 64 years, ages 65 years and up.

For household income, information on income received during the year prior to the census was requested from persons 15 years old and over. Total income is the sum of the wage or salary; net nonfarm self-employment income; net farm self-employment income; interest; dividend, or net rental or royalty income; Social Security; public assistance or welfare; retirement or disability; and all other income. Incomes for each member of a household were aggregated, resulting in the total income per household. One household includes all persons who occupy one housing unit (i.e., a house, apartment, mobile home, a group of rooms, or a single room). The number of households within each income distribution category was reported based on the following categories: less than \$10,000, 10,000 to \$14,999, \$15,000 to \$24,999, \$25,000 to \$34,999, \$35,000 to \$49,999, \$50,000 to \$74,999, \$75,000 to \$99,999, \$100,000 to \$149,999, and \$150,000 or more. For the 1990 census, median household income was based on income in 1989 that was adjusted for inflation to 2000 dollars. For the 2000 census, median household income was the median from 1999 in 2000 dollars.

We wanted to assess changes in socioeconomic well-being based on the proximity of communities in the Plan region to Forest Service (FS) and Bureau of Land Management (BLM) lands. To characterize proximity, we used feedback from forest managers that was gathered as we built the sample frame for community case-study selection for each of the four case-study forests. We determined that most communities within 5 miles of FS and BLM lands had strong connections (i.e., recreation, timber, aesthetics, watersheds) to nearby forests. Although connections to forests for communities greater than 5 miles exist, they were not as strong for many communities, or the communities were so diverse that the connection to forest resources were not dominant. Given the scale of the analysis (1,314 communities in 72 counties), we had to decide on a buffer size that would allow us to characterize communities

in a reasonable fashion. We used GIS to draw a 5-mile buffer around each of the FS and BLM lands to determine which communities were in proximity. The communities were represented by points located at the major population centers for each BGA. We did not use the community polygons in this analysis because the population within a BGA is not evenly distributed over the entire community. Therefore, overlaying the community points with the 5-mile buffer captured those communities with a majority of the population within the buffer. The community population centers that fell within the buffer were the communities in proximity ( $\leq 5$  miles); the communities outside the buffer were characterized as communities relatively farther away from FS and BLM lands.

We generated t-tests, correlations, and frequency tables for the socioeconomic well-being index and the other socioeconomic indicators by region, proximity to forests, and time. Additionally, we generated maps to spatiotemporally evaluate the data. One of our maps uses points to represent moments or time stamps of socioeconomic well-being status at the major population centers of the communities. It also uses the points to represent the static locations of continuing events and arrows to illustrate the temporal aspects and directions of change in the values of community socioeconomic well-being.

### **Methods Used in Chapter 4, Agency Jobs, Unit Reorganizations, and Budgets**

Raw data used as the basis for the analysis have been archived as part of the interagency regional monitoring effort.

#### **Limitations to the Staffing Data and Analysis**

Data classifying full-time equivalents (FTEs) into permanent full-time (PFT) and “other” positions were not readily available for FS Pacific Northwest Region (Region 6) for 1993 and 1994. Aggregate staffing for FS Plan-area units for these years is therefore enumerated only as FTEs.

Data enumerating positions by series (e.g., wildlife biologist, budget specialist) and grade level/pay scale

(e.g., GS-9) were not readily available. This limitation precluded a more detailed evaluation of workforce composition, or an analysis of the economic benefits of local agency employment to individual communities.

Like the budget data, agencies and regions differ in their handling of staffing and data. For example, in 2003, the FS began tracking field-unit positions in information resources management under regional staffing. The effect of this change on the staffing data described here is unknown.

Finally, regional staffing records incorporate fractional positions. Staffing positions enumerated in this analysis have been rounded to the nearest whole number.

#### **Limitations to the Unit Reorganization Data and Analysis**

Data for this part of the analysis were obtained from Plan-area public affairs offices. Data were requested from each unit; the results were compiled and returned for confirmation.

The data collected understate the actual presence among local communities of officials with decisionmaking authority delegated by the agencies. Deputy and associate officials—deputy forest supervisors, assistant district rangers, and associate district managers—are not included for either agency. National forest subunits other than ranger districts, such as work stations and tree nurseries, are also omitted.

The BLM districts are more centralized than national forests. A single district office usually houses a district manager and several field managers. The latter manage field areas dispersed across the district. Like Forest Service district rangers, BLM field managers frequently work outside the community hosting their office.

#### **Limitations to the Budget Data and Analysis**

All budget figures discussed in the analysis have been adjusted for inflation to the base year of 2003. Gross domestic product (GDP) deflators shown here were obtained from the Forest Service Washington Office.

**GDP deflators for 1993–2003**

<b>Year</b>	<b>Factor</b>
1993	1.1946
1994	1.1693
1995	1.1445
1996	1.1221
1997	1.1006
1998	1.0853
1999	1.0710
2000	1.0508
2001	1.0257
2002	1.0127
2003	1.0000

Readily available agency budget data are subject to numerous limitations. Accounting structures differ between the FS and BLM. I adopted the program areas used in the agency budgetary processes. In doing so, I have assumed that the operating scope and objectives of each program area have remained roughly consistent over the decade. In fact, within each agency program, accounting structures vary across time. For example, the objectives and scope of FS field-unit fire and fuel management programs has evolved during the period of study from presuppression and emergency firefighting, toward an approach integrating fuel management. Suppression is increasingly handled at the regional and national levels.

Other changes have occurred in agency programs. The BLM management of lands and resources (MLR) program was elaborated in fiscal year (FY) 1997 to include a number of additional budget lines. The FS appropriations structure was also significantly revised and simplified in FY 2001. Detailed data isolating the fiscal impact of these and other changes to agency budget structures were not readily available.

In another structural change, in 2000 the BLM shifted its leave surcharge account from the regional to the unit level. To adjust for this change, for 2000 and later years, the BLM unit budgets are reduced by a factor of 0.14 to represent a 20 percent increase in the estimated 70 percent of total allocations devoted to labor costs.

In another structural change, in 2003 FS Region 6 began accounting for unit-level indirect costs by using a

regional cost pool. Adjusting the 2003 data to include indirect costs increases total aggregate Region 6 Plan-area unit funding by \$3.5 million. Data describing this adjustment were available at the aggregate Region 6 Plan-area program scale, but not at the individual unit scale. Further, adjustment for the Region 6 cost pool has a negligible effect on the trend for aggregated Pacific Southwest Region (Region 5) and Region 6 FS Plan-area unit budgets. Given this context, I used the more detailed data from Region 6, which describe trends in individual units and their programs, but do not reflect adjustment to include the indirect cost pool.

The scope and objectives of program areas also differ across agency regions. Several expanded budget line items (EBLIs) funded for FS Region 5 units are not represented in unit budgets for Region 6, suggesting differing scope within the same program. Variations in regional agency budget structures and administration further complicate comparison across time and agency regions. For example, in the late 1990s, FS Region 5 grouped its four Plan-area forests into one province, consolidating a number of functions previously distributed among the four units. Time limitations precluded an analysis of the impact of these changes on unit and program allocations over the period. Nor, given the available data and time for analysis, was it possible to account for the effect of earmarked funds on the ability of Plan-area field units to accomplish work.

Analysis of individual unit budgets across time was also complicated by the consolidation of several Plan-area national forests during the period. Time constraints precluded a thorough analysis of budgetary trends among national forests after consolidation.

### Data and Analysis Associated with Figure 4-8 (Budgets)

Total spending authority for both the FS and BLM was taken from the “Analytical Perspectives” section of the Budget of the United States for FYs 1996 through 2005.<sup>1</sup>

<sup>1</sup> Government Printing Office. 1996–2005. Budget of the United States Government: Analytical Perspectives. <http://www.gpoaccess.gov/usbudget/browse.html>. Annual. (February 2005).

Total agency budget authority is represented by the sum of total agency appropriated funds and total trust funds. Amounts for BLM fire and fuel management are based on net appropriations for fire protection (1994–95) and wildland fire management (1995–2003). Amounts for FS fire and fuel management are based on net appropriations for fire protection (1994–95), emergency firefighting fund (1994–95), and wildland fire management (1996–2003).

#### Data and Analysis Associated with Figure 4-9 (Budgets Excluding Fire and Fuel)

To represent unit budgets excluding fire and fuel management, figure 4-9 excludes allocations under the fire and fuel appropriations listed for figure 4-8.

#### Data and Analysis Associated with Figure 4-12 (BLM Budget)

Amounts shown represent total final annual allocations to individual BLM-Oregon Plan-area units, excluding allocations for fire rehabilitation and fuel management, as well as the following budget items: Oregon and California Railroad (O&C) construction (budget item 6110), construction (budget item 2100), and land acquisition (budget item 3100). These exclusions were based on advice from regional staff concerning the composition of unusual or one-time-only costs large enough to affect overall budget trends.

### Methods Used in Chapter 5, Procurement Contracting

To understand the regional contracting market and the contractors involved in it, we calculated a variety of descriptive statistics by using the value of contracts, the number of contracts, and the distance between contractor headquarters and the location where the work occurred.

The data for the regional analysis are drawn from the Federal Procurement Data Center's database that includes information from all federal agencies compiled from the SF-279 form that each federal agency must fill out for contracts with an estimated value above \$25,000. Our data set includes contracts from FS and BLM in western Oregon and Washington and northwestern California awarded between FY 1990 and 2002. All data are reported by

federal fiscal year. More specifically, the data set includes contracts involving land management work in the Plan's affected counties, as defined in the Jobs-in-the-Woods program. The data set includes product service codes (PSC) that were related to land management, broadly defined by using the same criteria as Moseley and Shankle (2001) and Moseley and Toth (2004). That is, the data set includes contracts related to forestry and watershed management such as thinning, brush cutting, brush piling, noxious weed control, biological surveying, riparian restoration, and road construction and maintenance. The data set does not include activities such as building construction or copier repair and does not include any purchases of goods. Contracts involving fire suppression are reported separately because they are procured differently than other forestry services. However, prescribed burning is reported in the same product service code as fire suppression, and therefore cannot be distinguished from the regional portion of the study. Even though the BLM and the FS follow the same procurement laws, studies have suggested that their procurement practices are quite different and the two agencies needed to be analyzed separately (Moseley et al. 2002).

For the case studies, we added information from forest contracting registers to the data obtained from the Federal Procurement Data Center. The contract registers provide some information about contracts valued between \$2,500 and \$25,000, and more detailed descriptions of contracts valued over \$25,000. The contract registers typically provide a project title that is more specific than the product service code provided in the data set described above. Consequently, in the case studies, we can, at times, separate out some activities such as prescribed burning or stand exams from the more generalized product service codes.

Unfortunately, contract registers were not available for all of the years of the study period. For the Olympic, Klamath, and Mount Hood National Forests, we were able to obtain contract registers for 1990 through 2002. But for the Coos Bay BLM District we were only able to obtain contract registers for 2000 through 2002. Consequently, we omitted any contract register data from the Coos Bay analysis unless it was being discussed explicitly. In addition, we had only limited information about the Coos Bay District

BLM for contracts over \$25,000 because part of the Coos Bay District is located in Douglas County. Other districts control most of the BLM land in Douglas County, and we could not divide county data into BLM districts. Consequently, our analysis of contracts valued above \$25,000 includes only Coos and Curry Counties because those in Douglas County could not be distinguished from contracts performed on other districts, which made up the majority of the work. Finally, because the sample size of procurement in a single national forest or BLM resource area is small, some of the analysis performed at the regional level cannot be performed at the forest or district level.

The Federal Procurement Data Center records track data by task order. We defined the value of a contract to be the total amount of money entered into the database with the same contract number within each year. We counted a contract meeting these criteria as a single contract regardless of how many task orders were involved. The value of the contract is the sum of the dollars obligated with each task order. We corrected the contract values for inflation, and value data are reported in 2002 dollars.

The Federal Procurement Data Center records the location of work at the county level. Consequently, we report most information about procurement at the county level rather than at the forest or BLM district level. At times we aggregate information at the state or subregion level. To identify regional variation within the Plan area, we created four subregions: west Cascades, east Cascades, coast, and Klamath-Siskiyou. The subregional categories only include affected Plan counties and not all of what might, more generally, be considered the subregion. It was not possible to use Northwest Forest Plan provinces because they were not well correlated with the county or national forest boundaries, which was how the place of performance was recorded.

To understand to what extent local contractors were awarded contracts, we calculated the distance between the contractors' headquarters and the national forests where the work occurred by using an approach similar to Moseley and Shankle (2001). We calculate this distance rather than defining "local" because the definition of local is context specific, and a regionwide definition would be too arbitrary for the purposes here. We calculated these distances by

using ESRI's ArcView 8.3.<sup>2</sup> For the FS, we were able to impute the national forest in most cases from the county of performance, information about the office that wrote the contract, as well as the contract numbers. After deriving the national forest, we calculated the distance by averaging the distance in air miles between the weighted center of the ZIP code, as provided by ESRI, where the contractor has its headquarters, and 25 random points within the national forest. Because the BLM contracting is more centralized, we could not derive the BLM district from the information available. Consequently, for BLM contracts, we measured distance between the contractors' headquarters and 25 random points on the BLM land within the county where the work was performed. It is important to keep in mind that these distances are measured in air miles, which are likely to be considerably shorter than road miles and to vary in travel time considerably depending on topography. For example, the distance in air miles from Redding, California, to Ashland, Oregon, is 120 air miles and 135 road miles. By contrast, the distance from Redding, California, to Crescent City, California, is 123 air miles and 212 road miles (Moseley et al. 2003).

In addition to analyzing distances between the contractors' headquarters and the national forests or BLM lands as a measure of local benefit, we also examined awards to contractors based on the population of the community where they were located. Following Census Bureau definitions, we defined a rural community as having less than 5,000 residents. We included unincorporated communities in this category as well. Again following Census Bureau definitions, we defined urban areas to be cities with populations above 50,000. We created two additional categories: 5,000–9,999 and 10,000–50,000 to describe awards to contractors in mid-sized communities.

We divided the product service codes provided by the Federal Procurement Data Center into three categories—labor intensive, equipment intensive, and technical—based on the type of work that contracts with particular product

<sup>2</sup>The use of trade or firm names in this publication is for reader information only and does not imply endorsement by the U.S. Department of Agriculture of any product or service.

service codes were likely to involve. Activities such as tree planting and thinning were classified as labor intensive, whereas activities involving heavy equipment, such as road maintenance, were considered equipment intensive. Technical work would include activities such as species surveys or environmental assessments. This was a rough categorization because our conversations with FS and BLM procurement technicians suggested that some product service codes involve a wide variety of work types. For example, “other natural resource and conservation services” includes technical work such as species surveys, but also includes nontechnical work such as rock crushing. In addition, the way the agencies choose product service codes varies over time and from person to person.

In addition to reporting the data on an annual basis, we also chose three 3-year periods for detailed analysis: 1990–92, 1995–97, and 2000–2002. When analyzing data by using this format, we report data in 3-year aggregations. We did this to increase our confidence that we are reporting trends and not the impact of random year-to-year changes, which can be considerable in procurement contracting. We chose the first 3-year period because it is the first 3 years of the study period. It is also prior to the Plan implementation. We chose the middle 3 years based on consultation with people who have long been observers of the Plan and the Jobs-in-the-Woods program. They believe that these 3 years were the years the FS and the BLM were most focused on the Jobs-in-the-Woods program. Finally, we chose 2000–2002 because these are the final years for which data are available, and they represent years in which attention largely went to other programs, especially the National Fire Plan, stewardship contracting, and county payments.

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## Appendix D: People Interviewed and Interview Questionnaires

### **Case-Study Communities**

When conducting interviews in the case-study communities, we attempted to select people that represented a cross section of community leaders and stakeholder groups. We used the following categories to guide our selection:

#### **Community leaders:**

- Elected official
- Civic group leader
- School district/education leader
- Historic preservation/cultural center leader
- Economic development council leader
- Business leader/store owner
- Social service provider
- Fire district leader
- Health official
- Religious leader
- Watershed council representative
- Large landowner
- Planner

#### **Stakeholder group representatives:**

- Recreation/tourism
- Environment
- Timber industry
- Special forest products
- Fishing—commercial/recreational
- County government
- Agriculture/ranching
- Minerals
- Tribes
- Low income/minority groups

It was not possible to interview someone from each of the categories in every community, and many interviewees represented several categories at once. Descriptions of the interviewees from each community follow.

## Olympic National Forest and Local Communities

### Olympic National Forest

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#### Respondent's position

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Engineering program representative (3)  
 Forestry program representative (4)  
 District ranger (2)  
 Economic development representative  
 Public service representative  
 Forest planning representative  
 Forest supervisor  
 Aquatics program representative  
 Ecosystems/natural resources program representative  
 Wildlife biology program representative  
 Fire and aviation program representative  
 Operations staff representative  
 Timber contracting representative  
 Botany/forest ecology program representative  
 Recreation program representative  
 Information specialist  
 Tribal relations representative  
 Computer/mapping specialist

### Quilcene

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Respondent's position	Quilcene resident
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Former logging contractor	X
Former logging contractor, business owner	X
Logging contractor, logging contractors' association	X
Local businessperson, recent immigrant (2)	X
Firefighter	X
Pastor	X
School official	X
County planning official (3)	
County planning official	X
Environmental interest group member	
Social service provider	X
Social service provider	
Economic development agency official	
County health and human services official (2)	
Industrial timberland manager	

## Quinault Indian Nation

<b>Respondent's position</b>	<b>Taholah/Queets resident</b>
Quinault Tribal Council member, tribe member (2)	X
Quinault Indian Nation employee—forestry (2)	
Quinault Indian Nation employee—forestry, tribe member	X
Quinault Indian Nation employee—cultural historian, tribe member	X
Quinault Indian Nation employee—natural resources	
Retired logger, fisher, tribal elder	X
Basket weaver, tribal elder	X
School official	
Quinault Indian Nation employee—environmental protection	
Former Quinault Indian Nation employee—environmental protection	
Quinault Indian Nation employee—economic development	
Quinault Indian Nation employee—tribal liaison, tribe member	X
Basket weaver, Quinault Indian Nation employee—cultural historian, tribe member	X
Fisher, tribe member	X
Fisher, tribal elder	X

## Lake Quinault Area

<b>Respondent's position</b>	<b>Lake Quinault area resident</b>
Former Park Service employee, local tourism-based business owner	X
Elected county official	
Fire district representative	X
School official	X
Waitress, school board member	X
Owner of log truck company, pastor, member of community/economic development organization	X
President of local chapter of national recreation organization	
Local tourism-based business owner, school board member	X
Retired rancher	X
Shake mill owner	X
Contractor for ecosystem management work on the forest	X
Representative from regional economic development organization	
Store owner	X
Representative from a regional environmental organization	

## Mount Hood National Forest and Local Communities

### Mount Hood National Forest

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#### Respondent's position

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Forest recreation, planning, public affairs staff officer  
 Forest planner, forest hydrologist  
 Forest geologist  
 Range program manager  
 Forest Youth Conservation Corps host and senior volunteer coordinator  
 Forest volunteer program coordinator  
 Fire and aviation management program manager  
 Forest silviculturist  
 Forest supervisor  
 Zigzag District Ranger  
 Forest natural resources staff officer  
 Forest special forest products coordinator  
 Public affairs officer, rural community assistance coordinator  
 Forest engineer  
 Vegetation management specialist  
 District and forest recreation program managers (group interview) (5)  
 Clackamas River District Ranger

### Upper Hood River Valley

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Respondent's position	Upper Hood River Valley resident
Former logger	X
Volunteer fire department chief	X
Long-time orchardist (2)	X
Environmental activist	X
Former logger	X
Retired Forest Service employee, now hobby orchardist	X
Retired Forest Service employee	X
Former logger	X
Orchardist, owner private timberland	X
County commissioner, family long-time residents	X
Local store owner, family long-time residents	X
Small mill operator, family long-time residents	X
Recreation industry representative	X
Program manager migrant worker social services, family long-term migrant workers, now residents	X
Regional soil and watershed association, and watershed association, representative	
Confederated Tribes of Warm Springs employee, aquatic restoration program, office in case-study site	
Regional recreation industry representative	

## Villages of Mount Hood

<b>Respondent's position</b>	<b>Villages resident</b>
Tourism and recreation industry rep	X
Tourism and recreation industry rep	
Developer, community development activist	X
Real estate services	X
Business person/chamber of commerce member	X
Watershed activists (2)	X
Long-time resident, community development activist	X
Retiree, service organization representative	X
News media representative	X
Local business owner	X
Logging contractor	X
Pastor	X
Firefighter	X
Logging contractor	
County Economic Development official	
Environmental interest group member (2)	
Industrial timberland manager	
Public school teachers (3)	X
Community development activist, seasonal resident	X
Community development activist	X

## Estacada

<b>Respondent's position</b>	<b>Estacada resident</b>
Former logging contractors (3)	X
Forest service employees (4)	X
Logging supply store owner	X
Local businessman, town councilman	X
Logging contractor	
Firefighter	X
Local employer/business owner	X
Community activist, recent immigrant	X
City manager	X
Local employer/business	X
Wilderness outfitter	X
County Economic Development official	
Environmental interest group members (2)	
Wood products company employees (3)	
Former business owner, chamber of commerce member	
Pastor	X
Social service provider	X
School official	X
Industrial timberland manager	

## Klamath National Forest and Local Communities

### Klamath National Forest

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**Respondent's position**

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Forest landscape architect  
 Forest resource staff officer (fisheries, noxious weeds, earth sciences, timber, wildlife)  
 District Ranger, Scott/Salmon Ranger Districts  
 Deputy forest supervisor  
 Forest silviculturist  
 District resource staff (recreation, range, noxious weeds, archaeology, minerals)  
 District archaeologist  
 Forest timber management officer and contracting officer, Shasta Trinity National Forest  
 Forest earth science and fisheries program manager  
 Forest administrative staff officer (contracting, community assistance program, volunteer programs)  
 Forest environmental coordinator  
 District recreation, lands/minerals staff  
 Forest fire management staff officer  
 Forest assistant engineer  
 Wildlife biologist

### Scott Valley

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**Respondent's position** **Scott Valley resident**

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Reforestation nursery owner	X
Director, nonprofit natural resources consulting and training center	X
Local mayor	X
Natural resource management interest group member	
Former county supervisor	X
Rancher, rural conservation district member	X
County board of education member	
Superintendent of schools (retired)	X
Forester, tree farmer	
County supervisor	X
Wood products company manager (2)	
Wood products company employee/forester	
Wilderness outfitter, natural resource management consultant/contractor (2)	X
Shasta Tribe member, retired timber worker	X
Shasta Tribe member	X
County behavioral health specialist	X
State Department of Forestry acting unit chief	X
County Economic Development Corporation director	
County natural resource specialist	X
Environmental interest group member	X
County planning director	X
U.S. Forest Service district ranger (retired)	X
Salmon River Restoration Council representative, contractor, Mid-Klamath Watershed Council board member	X

**Butte Valley**

<b>Respondent's position</b>	<b>Butte Valley resident</b>
County Supervisor, Klamath Provincial Advisory Committee member, Ore-Cal Resource Conservation and Development Director, rancher	X
Ore-Cal Resource Conservation and Development employee	
Butte Valley Saddle Co. owner, chamber of commerce president	
Dorris Lumber & Molding	X
Vintage Woodworks owner	X
Shasta Tribe member, local environmentalist	X
Shasta Tribe member, former timber faller	X
Whitsell Manufacturing, Inc. (lumber remanufacturing)	X
TC Ranch owners	X
Butte Valley Fire District Fire Chief	X
Butte Valley Health Center	
Butte Valley Unified School District Superintendent	X
Butte Valley school district employee	X
Mayor of Dorris	X

**Mid-Klamath**

<b>Respondent's position</b>	<b>Mid-Klamath resident</b>
Local business owner/leader, county school board member, contractor, ex-mill worker	X
Fishing outfitter/guide, local school board member	X
Director, Happy Camp Family Resource Center (provides social services), local school board member, tribal council member	X
Retired Happy Camp district ranger, health clinic board member	X
Rancher, retired Forest Service employee	X
Miner, logger	X
Director, Karuk Economic Development Organization; Karuk Tribe member; vice president, Happy Camp Chamber of Commerce; chairman, Happy Camp Action Committee	X
Mid-Klamath Watershed Council representative, Klamath Forest Alliance representative	
Local business owner	X
Regional forest manager, Fruit Growers Supply Company	
Karuk tribal member, special forest products gatherer, basket maker	X
Logger	X
New 49ers recreational mining club representative	X
Forest contractor, ex-logger, local business owner	X
Outfitter-guide, owner, local river rafting company	X
President, Happy Camp Chamber of Commerce, local business owner, Resource Advisory Committee member	X
Treasurer, chamber of commerce, local business owner	X
Chair, Karuk Tribe	X
Vice Chair, Karuk Tribe	X
Secretary, Karuk Tribe	X
Anthropologist	X
Klamath-Siskiyou Wildlands Group representative	X
Klamath-Siskiyou Wildlands Group representative	

## Coos Bay District and Local Communities

### Coos Bay District

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#### Respondent's position

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District manager  
 Resource area manager—Umpqua Resource Area  
 Resource area manager—Myrtlewood Resource Area  
 Noxious weeds program coordinator  
 Timber sales administrator  
 Silviculturalist  
 Watershed analysis coordinator  
 Small sales administrator—Myrtlewood Resource Area  
 Small sales administrator—Umpqua Resource Area  
 Volunteer coordinator  
 Cultural resources program manager  
 Recreation specialist  
 Recreation specialist  
 Fish biologist  
 Wildlife biologist  
 Fire program manager  
 District geologist  
 Watershed restoration coordinator  
 Public affairs officer  
 Road engineer—Umpqua Resource Area  
 Road engineer—Myrtlewood Resource Area  
 Interpretive specialist

### Greater Coos Bay

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#### Respondent's position

#### Greater Coos Bay resident

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Chamber of commerce employee (tourism focus)	X
Consulting forester/small woodland owners association member	X
County commissioner	X
County commissioner/rancher	X
County forester	X
Health services agency employee	X
Large timber company manager	X
Large timber company manager	X
Large timber company manager, former local politician	X
Local economic development agency employee (tourism and industrial development focus)	X
Nature reserve employee	X
Tribal forester	X
Tribal member/fish biologist	X
Watershed association employee	X
Watershed restoration contractor /forest worker	X



## Greater Myrtle Point

<b>Respondent's position</b>	<b>Greater Myrtle Point Resident</b>
Brush shed operator	X
Business development specialist	
Environmental educator	X
Environmental group leader	
Farmer/environmental educator	X
Fisheries specialist with state educational agency	
Large timber company manager	
Mountain bike club member/carpenter	X
Municipal leader	X
Public works employee	X
Restoration contractor/forest worker	X
Retiree, fisheries volunteer, long-term resident	
Retiree, rockhound club member; newcomer	X
Small mill operator	X
Watershed association employee	

## Greater Reedsport

<b>Respondent's position</b>	<b>Greater Reedsport resident</b>
Cultural heritage organization leader/environmental education focus	X
Economic development leader/sportsfishing and tourism focus (2)	X
Economic development/elk viewing area involvement	X
Forest products company employee	X
Former school district leader	X
Former wood products industry employee/small mill operator	X
Industrial manufacturing company employee	X
Local politician	X
Manager of municipality	X
Member volunteer fire department	X
Municipal planner	X
Owner of local media	X
Rancher/mill owner/watershed organization member	X
Small business owner (timber related)	X
Small business owner, elk viewing area involvement	X
Social services organization manager	X
Timber company manager	
Wood products industry worker	X

## Interview Guide, Community Interviewees

### COMMUNITY INTERVIEW GUIDE Community and Stakeholder Representatives 15 August 2003

Interviewer  
Community  
Date  
Name of Interviewee  
Title  
Organization  
Who (interviewee category represented)  
Relationship to community (resident, representative-how, ...)  
How long in the area  
Place of residence  
Address (if applicable)  
Email address

#### Section 1

##### Defining the Community (ask a few key community representatives)

**Purpose:** The purpose of this section is to identify the boundaries of “the community” that will become the unit of analysis referred to in other sections. Hopefully a saturation point will be achieved after 3 or 4 interviews and researchers will not have to ask these questions to subsequent interviewees. If that does occur, researchers can just show interviewees the map of the “community” under study. If consensus about the community definition is slow in coming, perhaps the best thing to do would be to go wider, rather than narrower, and ask people to speak to issues a bit more broadly than might be inclined. (Consult with Susan or Ellen if this is problematic.)

As the “Intro” below describes, explain to interviewees that we are somewhat constrained by the use of Census block groups to define the communities. Explain that we want to take advantage of availability of socioeconomic data provided by the census, however, and that we recognize that the boundaries might not perfectly line up with what people think of as their community. Interviewees can disaggregate the block group aggregations (BGAs) or further aggregate the BGAs. **We cannot, however, go down to the block level.** The block-group level is the smallest unit for which we can obtain summary statistics on socioeconomic indicators. Remember that block group and BGA boundaries include public land. People may think that these polygons that include public land are an awkward way to depict their community, but remind them that this is how the census does it. And, that it helps to identify those places with connections to National Forests and BLM lands.

**Intro:** The Northwest Forest Plan (NWFP) record of decision (ROD) requires that we monitor the effects of

the NWFP on rural economies and communities. We are looking at social and economic changes that have occurred in communities within the NWFP area since 1990, and whether and how NWFP implementation can be linked to some of those changes. In order to do this work, we need to define what we mean by “community.” We developed a model that delineates communities in the NWFP area on the basis of things like school district boundaries, county lines, roads, topography, and population. The community delineations were made by aggregating census block groups—small geographic units that serve as a basis for gathering U.S. Census data—in order to make it easy to use social and economic data from the census to monitor trends in social and economic conditions in the communities. The community that we are using as our unit of analysis in discussions with you today we call “X.” I’d like to take a minute at the beginning here to show you on a map how we have delineated the boundaries of this community. Show them the map with mylar overlay!

##### TOPIC: Is the case-study BGA a meaningful community?

- (1) Does the area that we’ve delineated on the map and that we are referring to as “X,” in your mind, represent what you would consider to be your community? Do people here think of themselves as belonging to this one community? (“Belonging” can be defined as area of social interactions, networks, how and where people connect, or the area upon which the majority of local decisionmaking related to schools, rural development projects, etc. are made). Do people who reside within the area shown here think of this area as constituting a community?

##### TOPIC: Interviewees disaggregate, or further aggregate, block groups and BGAs.

- (2) If not: Does the area outlined here represent more than one community? If so, how would you break it down into individual communities? Please show me on a map, by using the BGA or block group boundaries as a reference. What are the criteria you are using for doing so?

or

- (3) If not: Does the area outlined here represent only a part of what most residents would think of as a larger community that they belong to? What would that community be? Please show me on a map by using block group or BGA boundaries how you would aggregate the block groups or BGAs (don’t have to use those terms) to make a more meaningful community. What are your reasons for including it with this larger area?

Note: It would be informative to see how interviewees draw the boundaries of their community without being constrained by census boundaries. This is not required.

If some people are interested and have time, ask them to draw such a boundary on a blank mylar. If researchers plan to gather this information, please label the mylar with interviewee name. Lynnae will put a couple blank mylars in your packet that she is sending out.

## Section 2

### Social and Economic Change in the Community (ask community reps)

**Purpose:** The purpose of this section is to obtain community residents' perspectives on how their community has been changing socially and economically over the last decade, and why. We have social and economic indicators from the U.S. census, and IMPLAN data, that reflect some dimensions of socioeconomic change in the community. However, we want to combine those data with residents' perceptions of the nature of change in their community. We also want to know what residents think is causing social and economic change in their community, and the extent to which they link this change to changes in forest management policy vs. other factors.

**Intro:** I'm trying to understand what kinds of economic and social changes have taken place in community X over the last decade or so, and some of the forces behind that change. First I'd like to discuss some of the economic changes that have been occurring in your community since 1990. I'll be showing you some data that I've gathered from the U.S. Census regarding economic conditions in community X to facilitate our discussion. After that, I'd like to discuss some of the social changes that have occurred in your community over the last decade. Again, I'll show you U.S. census data that reflect some of the social trends for community X. I'm also very interested in discussing what's been causing change in the community, and any ways that change might be linked to management policies and practices on Forest X.

#### **Economics Questions:**

#### **TOPIC: Describe economic change and trends in the community**

- (1) Overall, what is your perception of how well community X is doing economically? What are the indicators/the things you've observed that make you think the community is doing well/doing poorly economically? Are there particular sectors that are doing especially well/especially poorly?
- (2) In your mind, have economic conditions in the community gotten better/worse/stayed the same over the last decade? How so?
- (3) Please describe business trends in the community. Over the last decade, have you seen the number of businesses

increase/decrease/stay the same? What about the kinds of businesses are here? What kinds of businesses are on the increase, are dying out?

#### **TOPIC: Economic indicators. Present and discuss economic indicators from census**

- (4) Now I'd like to show you some of the economic information that we've put together for your community from the U.S. Census. These indicators have to do with income and employment, and reflect change that occurred between the 1990 and 2000 Census years. They serve as one way of assessing the economic well-being of a community.
  - a. Income data: Show the charts for median household income and percentage of people living in poverty. Describe what each indicator means, and interpret/explain the trends revealed in the charts. Then ask: Are these trends consistent with your perceptions? If not, how are your perceptions different?
  - b. Employment data: Show the charts for percentage unemployment and occupational categories. Describe what each indicator means, and interpret/explain the trends revealed in the charts. For occupational category, focus on the occupations that are natural resource based. Then ask: Are these trends consistent with your perceptions? If not, how are your perceptions different?

#### **TOPIC: What's causing economic trends in the community (federal forest management policy/NWFP/other factors unrelated to forest management policy)**

- (5) Do you think that NFS/BLM management policy on Forest X can be linked to any of these economic changes? How so? What about the NWFP in particular? Please describe any effects the NWFP has had on economic change in your community.
- (6) What factors other than federal forest management policy have contributed to changes in economic well-being in community X over the last decade?
- (7) How important do you believe that NFS/BLM management policy, and the NWFP in particular, has been—relative to other factors we've discussed—in contributing to economic conditions in community X?

#### **Social Questions**

#### **TOPIC: Display and discuss demographic indicators from census, and discuss reasons for demographic trends**

- (8) Population numbers—Show the charts on total population change.

These charts show how the total population of your community, and the surrounding area, has changed since 1990 (interpret trends for them).

- a. Does this match with your perception of population change in the community since 1990? If not, what's your perception?

(9) Demographic composition of population

Now show the charts for median age of community residents, and racial/ethnic composition of community residents.

These charts show how the composition of community residents has changed since 1990 in terms of age and racial/ethnic characteristics. (interpret)

- a. Does this match your perception of how the composition of the community has changed over the last decade or so?
- b. Are there any other ways in which the composition of community residents has changed in the last decade? That is, have certain kinds of people been moving in, and other kinds of people been moving out?

- (10) How would you account for the changes in population numbers and demographic composition of people in community X? To what extent does federal forest management policy/the NWFP contribute to this trend? What other factors explain this trend?

**TOPIC: Educational attainment of community residents and importance**

- (11) Education—Show the charts on school enrollment and high school graduates.

These charts show the proportion of community residents that had graduated from high school in 1990 and 2000.

- a. If there have been any changes—Why do you think fewer/more people are completing high school now than in 1990?
- b. Do you think it is necessary for people in this community to have a high school education in order to make a living here? Why? What about a college degree?

These charts show school enrollment in 1990 and 2000.

- c. Why do you think there are more/fewer children enrolled in local public schools now than in 1990?

**TOPIC: Changes in quality of life in community and causes**

- (12) Quality of life

- a. How has the quality of life in this community changed over the last decade?

Some quality-of-life indicators: cost of living, access to housing, commute time/distance, quality of natural amenities, facilities and infrastructure.

- b. To what do you attribute these changes?
- c. To what extent does the presence of the national forest, and forest management policy influence the quality of life in this community? Explain.

**TOPIC: Community adaptation to social and economic change**

- (13) In what ways has the community been adapting to the social and economic changes that have occurred here over the last decade, and how successful has it been? What things have helped the community adapt to changing social and economic conditions? What things have made it difficult for the community to adapt to social and economic changes?

**TOPIC: Implications of community social and economic changes for forest management**

- (14) Considering the social and economic trends we've discussed for community X, what overall do you think these trends mean for Forest X? What are the implications for the management of Forest X?

**Section 3**

**Community-Forest and Stakeholder-Forest Relations**

(ask of stakeholder group representatives and community members who engage in use activities on forest) You could ask some of these questions to community reps, but they are time consuming—so consider coming back to these if there is time in the interview

*Note:* The term “community” here refers to both community of place and community of interest—adapt for type of person you're interviewing.

*Purpose:* The purpose of this section is to investigate the nature of the relationship between people in the community (of interest, of place) and the case-study forest. We want to describe the ways in which the forest is important to the economy, lifestyle, and culture of community members. We also want to document how community members use the forest for timber harvest, gathering nontimber forest products, grazing, minerals, and recreation, and how they have been affected by any changes in forest management policy regarding these uses. We also want to learn what issues community members are most concerned about with regard to forest management, and how well the forest is doing at providing for the uses and values community members care about.

**Intro:** I'd like to get an understanding of the relationship between Forest X and community members. Specifically, I'd like to discuss how community members use and value Forest X, how they have been affected by forest management policy, and what issues relating to forest management are of most concern to members.

**TOPIC: Orientation toward case-study forest**

- (1) How would you characterize the relationship between community members and Forest X? How strong is the orientation of the community toward the forest? In other words, would you consider this community to be a "forest-based" community with respect to Forest X, and if so, in what sense?
- (2) Are there other public forest lands in the area (federal, state, county) that community residents have a strong relationship with and orientation toward? If so, what forest lands are they; please describe nature of the relationship.

**TOPIC: Key issues of concern relating to forest management**

- (3) What are the two or three issues that community residents are currently most interested in or concerned about with regard to the management of forest X?
- (4) Have these been the main issues of interest/concern for the last decade? If not, how have the issues been shifting over the last decade, and why?

**TOPIC: Ask stakeholder group representatives to describe their community of interest and organization**

- (5) How would you characterize the community of interest that you represent? That is, how big is the constituency, where do people come from, what characteristics do these people share in common, if any?
- (6) If you represent an organization, please describe for me the mission of that organization, and how that mission relates to Forest X.

**Resource-specific questions**

*Questions are for either community resident engaged in the activity, or stakeholder group representative—choose the question(s) appropriate to the interviewee's area of interest.*

**TOPIC: Effects of reduced timber harvests and adaptation**

- (7) Since the late 1980s, timber sales on Forest X and surrounding federal forest lands have declined significantly.

- a. To what extent have community members been affected by declines in federal timber harvests? Please describe the key social, cultural, and economic impacts of declining timber harvests on the community, including an estimate of number of community members affected.
- b. How have people been adjusting to these reductions in timber harvests?

**TOPIC: Role of nontimber forest products in community economy and culture, and management concerns**

- (8) Most federal forests in the Pacific Northwest have seen increasing use of nontimber forest products (NTFPs).
  - a. What NTFPs are most commonly gathered by community members for economic, social, or cultural uses?
  - b. How important are NTFPs to the economic and sociocultural well-being of community members? Explain.
  - c. Is the supply and availability of NTFP species from Forest X considered to be adequate? If not, why not?
  - d. Has access to Forest X for obtaining NTFPs changed over the last decade? How so? (**access to resources** = physical ability to get to them, ecological availability of resources, rules and regulations affecting their use)
  - e. To what do you attribute any changes in access to NTFPs on Forest X?
  - f. What has been the impact of these changes on community residents?

**TOPIC: Grazing importance and effects of changing management**

- (9) Is keeping livestock an important socioeconomic activity to community members? Please describe, including the role of ranching in supporting the social, cultural, and economic well-being of community members.
 

*If no, continue to question 10.*

  - a. If yes: Do any ranchers in this community graze livestock on Forest X?
  - b. If yes: Has there been any change in access to land and resources for livestock on Forest X over the last decade? Please describe these changes, and how they have affected ranchers (changes in ecological conditions, physical accessibility, rules/regulations).
  - c. To what do you attribute these changes?
  - d. What has been the impact (social, cultural, economic) of changes in access to grazing on Forest X on ranchers in the community?

**TOPIC: Minerals importance and effects of changing management**

- (10) Do community residents consider Forest X to be an important source of rocks, gravel, or minerals for their own commercial, recreational, or personal uses?
  - a. If yes, what materials are most valued, and for what?
  - b. Has access to Forest X for obtaining these rocks/minerals changed over the last decade? How so? (physical, regulatory, ecological)
  - c. To what do you attribute these changes?
  - d. What has been the impact (social, cultural, economic) of these changes on community members?

**TOPIC: Recreation use by community residents**

- (11) Indicators suggest that in general, recreation opportunities on Forest X have been consistently available, and recreational uses of federal forests are on the rise.
  - a. Do community members use and value Forest X for the recreational opportunities it offers? Describe.
  - b. Do you think that community members feel they have sufficient recreation opportunities on Forest X? If not, why not? What's lacking?
  - c. Has access to Forest X (physical, ecological, regulatory) for engaging in recreation opportunities changed over the last decade? How so?
  - d. To what do you attribute these changes?
  - e. What has been the impact of these changes on community residents?

**TOPIC: Recreation/tourism trends by the public on the case-study forest and impacts on community**

- f. In your perception, have recreation and tourism on Forest X been increasing, decreasing, or staying the same over the last decade?
- g. To what do you attribute these trends?
- h. What have been the impacts of recreation and tourism trends on Forest X on Community X? Specifically,
  - 1. Has it affected the way in which community residents use the forest? Describe.
  - 2. Has it had an impact on economic or social conditions in the community? Describe.
  - 3. Do community residents view recreation and tourism on Forest X as a way of contributing to economic development and diversification in Community X? Describe.

**TOPIC: Other forest values and environmental qualities of importance**

- (12) What other values and environmental qualities associated with Forest X, unrelated to commodity production and recreation, are important to community members and why?

**TOPIC: How well is the Forest doing at managing for public values and how to improve**

- (13) Do you (and the community you represent) think that Forest X has been doing a good job of managing for those forest uses, values, and environmental qualities that you care most about?
- (14) Why or why not?
- (15) How could it do a better job of providing for the uses, values, and environmental qualities the community cares most about?

**Section 4**

**Other Forest-based Socioeconomic Opportunities (ask of community representatives)**

*Purpose:* Interviews with forest employees and analysis of forest data will allow us to document changes in forest-based socioeconomic opportunities associated with commodity production, recreation, contracting, grants, and on-forest employment. We discussed changes in commodity production and recreation in the preceding section. In this section we discuss contracting, grants, and employment, how important they are to community members, and how the forests could do better at contributing to socioeconomic well-being in communities.

*Intro:* One way that Forest X contributes to socioeconomic well-being in communities is by providing forest products and recreation opportunities. Other ways of contributing to socioeconomic well-being in local communities include providing jobs, contracting opportunities, and grant money.

**TOPIC: Community benefits from contracting opportunities**

- (1) One way that Forest X provides jobs to local communities is through contracts to accomplish ecosystem management activities such as fuel reduction, habitat improvement projects, watershed restoration projects, etc.
  - a. Are such contracts an important source of jobs for residents of Community X?
  - b. If yes, describe the way in which these job opportunities contribute to community well-being.
  - c. Have contracting opportunities to do forest-based work been increasing or decreasing over the last decade? Why?

- d. Would community residents like to participate more in contracting opportunities? What are the barriers to making it happen?

**TOPIC: Community benefits from grants**

- (2) Over the last 10 years, several communities have received grant money through Forest X to support infrastructure development, community capacity building, job programs, and other economic development and diversification activities.
- a. Are you aware of your community having received federal grant assistance through Forest X over the last decade?
- b. **If so**, what kinds of projects/programs supported by these funds have been especially beneficial to the community, and how so?
- c. **If so**, what kinds of projects/programs have been least effective, and why?

**TOPIC: Importance of Agency jobs**

- (3) For non-Coos Bay communities:  
The number of people employed by Forest X has dropped substantially over the last decade. Has this change had an impact on community X? Describe.
- (4) How important is Forest X as a source of quality jobs for people in this community?

**TOPIC: Other forest contributions to community well-being**

- (5) Apart from the topics we have already discussed, are there other things that Forest X could be doing to better contribute to socioeconomic well-being in Community X? Describe.

**Section 5**

**Community Collaboration (ask both community and stakeholder group reps)**

*Purpose:* Data gathered in this section should contribute to understanding the evolution of how and why communities have participated in collaborative forest stewardship with the National Forest/BLM since the NWFP. Specific projects and motivations for engaging in such projects that are directly related to the NWFP should be identified. Projects and motivations not directly tied to the NWFP should be described separately in order to arrive at an overall sense of how public engagement and collaborative forest stewardship have changed.

*Intro:* I'm interested in how your community, or local groups that you are involved with, collaborates with Forest X in resource management activities on the forest or near

the forest. I'm also interested in how overall engagement in collaborative forest stewardship activities between the community, local groups, and Forest X has changed over the past decade. More specifically, I'd like to discuss what types of actual on-the-ground collaborative activities occur. (Researchers: If responses to prior sections indicate that the interviewee is well informed about the NWFP, please include reference to it when asking about change over the past decade. The questions below assume that the interviewee knows little about the components of the NWFP.)

**TOPIC: Change in general engagement with FS/BLM**

- (1) Has your community/group's overall engagement with the national forest changed over the past 10 years? Has it increased, decreased, or stayed the same?
- (2) How and why has it evolved or stayed the same?

**TOPIC: Change in on-the-ground collaborative forest stewardship**

- (3) What types of on-the-ground collaborative forest stewardship activities does your community engage in with the forest/district?
- (4) If none, why not?

**TOPIC: Objectives and motivations for collaborating**

- (5) Please describe some of the objectives of those collaborations or partnerships.
- (6) What motivates your community/group to collaborate with Forest X? Who usually takes the initiative to establish these collaborations?

**TOPIC: Benefits of collaborating**

- (7) How does the community/group benefit from the collaborations? What have been some of the successes?
- (8) Have there been any indirect benefits (such as skills developed, increased networking, improved relations to forests)?

**TOPIC: Barriers to collaborating (community and FS/BLM)**

- (9) What do you see as the biggest barriers, internal to your community, to collaborating with the national forest in resource management activities? (such as trust levels, community leadership/capacity, community cohesion)
- (10) What do you think are the biggest barriers that the National Forest/BLM has to collaborating with your community (or local communities) in resource management activities (such willingness/availability of forest leadership/staff to collaborate, lack of personnel, lack of funds)?

**TOPIC: Future direction of collaboration**

- (1) Are there any types of collaborative activities that you would like to see developed or expanded? Why?

**Section 6**

**The NWFP (ask everyone)**

*Purpose:* Presumably, by now, people will have already discussed forest management and referred to the NWFP throughout the other discussions. However, since we haven't asked explicit questions about the NWFP, here's the opportunity to do so if it has not been very explicit yet. Provide a chance for people to give some summary reflections on the Plan and its impacts on their community. The purpose of this section is to solicit specific views of interviewees on what's working and what's not working about the NWFP; and what their recommendations are for how to make it a more successful policy. These are recommendations that could be brought forward in the context of adaptive management.

*Intro:* To wrap up and summarize, I'd like to get a general perspective from you on what's been working and what hasn't been working with the NWFP and how it might be improved to better meet its objectives.

- (1) How familiar are you with the NWFP?

**TOPIC: Parts of NWFP working well for community/stakeholder group**

- (2) What parts of the NWFP do you think have been working well? How has it contributed to the well-being of this community/furthered the interests of your stakeholder group?

**TOPIC: Parts of NWFP *not* working well for community/stakeholder group**

- (3) What parts of the NWFP have not been working well? What problems has this caused for your community/how has this worked against the interests of your stakeholder group?

**TOPIC: Recommended changes or improvements to NWFP**

- (4) What would you recommend changing about the NWFP, if anything, so that it would better serve the needs of your community/your interest group, and meet its goal of balancing the need for forest protection with the need to provide a steady and sustainable supply of timber and nontimber resources to benefit rural communities and economies?

**Section 7**

**The NWFP Goals (ask everyone, as appropriate)**

*Purpose:* This section provides a reference to all the goals, including the overarching goal. Ask people to reflect on specific goals or one overarching goal, where appropriate. May be an individual community member or stakeholder group perspective.

USE the overarching goal (7-6) if you're short on time!

*Intro:* The NWFP had five main socioeconomic goals that are being evaluated by the current monitoring program. To what extent do you think progress has been made on the following goal(s), and why or why not:

**TOPIC: What progress has been made on meeting NWFP socioeconomic goals and reasons**

- (1) Produce a predictable and sustainable supply of timber sales, nontimber forest products, and recreational opportunities;
- (2) Help maintain the stability of local and regional economies, and contribute to socioeconomic well-being in local communities, on a predictable and long-term basis;
- (3) Minimize adverse impacts on jobs, and assist with long-term economic development and diversification in the area;
- (4) Help protect nontimber values and environmental qualities associated with the forest;
- (5) Improve relations between federal land management agencies and local communities, and promote collaborative forest management and joint forest stewardship activities.
- (6) An overarching goal of the NWFP was to balance the need for forest protection with the need to provide a steady and sustainable supply of timber and nontimber resources to benefit rural communities and economies. Do you believe Forest/district Y has been successful in achieving this goal? Why or why not? Examples?



## Interview Guides, Forest Interviewees

There were three different interview guides that the monitoring team used with forest interviewees, depending upon their position. The guide used with forest program specialists is contained in volume II appendix B. This appendix contains the interview guides used with line officers (forest supervisors and district rangers) and with community outreach specialists (such as public affairs officers). There is a fair amount of overlap between the three guides.

### Interview Guide for Forest Service/ Bureau of Land Management Forest Employees LINE OFFICERS July 3, 2003

Interviewer

Forest

Date

Name of Interviewee

Title

Unit/Location

How long in present position

How long working on this forest

*Note: if one of the interviewees is new in their position, and their predecessor is an old timer who is still accessible, you may want to interview both.*

#### Section 1

- (1) I'd like to begin with a general question. Can you please tell me what the three or so most burning social issues and/or public concerns are in relation to your forest and its management? Are these the same issues and concerns that have been dominant over the last decade, or has there been a shift? Please describe.

#### Northwest Forest Plan Implementation

**Intro:** The Northwest Forest Plan called for a number of changes in forest management, including land use allocations into late-successional and riparian reserves, matrix areas, and adaptive management areas; a host of standards and guidelines regarding forest management; and a number of new procedural requirements, such as survey and manage, watershed analysis, and late-successional reserve assessments. I'm interested in understanding how the NWFP has been implemented on (Forest Y) since 1994, and the ways in which the management of forest Y has changed under the NWFP. Rather than asking about specific resources or program areas, phrase the questions in general terms and see what resource areas they bring up as being significantly affected.

#### Questions:

- (2) How has the NWFP changed the way in which this forest is managed, overall? Specifically:
- a. How have the different land use allocations (late-successional reserves, riparian reserves, matrix, adaptive management areas) and associated standards and guidelines affected the management of your forest?
  - b. Have the procedural requirements associated with the NWFP—survey and manage, watershed analysis, LSR assessments—had an effect on the way in which forest management is carried out? Please explain.
  - c. How has the NWFP changed public access to the forest? Please comment on whether and how changes in forest management under the NWFP have affected
    1. peoples' physical ability to get to use areas (i.e., access routes);
    2. their ability to use forest areas for different activities from the regulatory standpoint (have some places been opened or closed for use, are people still allowed to go there, have uses been modified, how have rules and regs changed);
    3. ecological conditions on the forest, making them either more or less productive for specific kinds of public use activities;
    4. the economic feasibility of using the forest for desired uses;
    5. the presence of facilities or infrastructure for supporting certain use activities.
    6. Understanding that the NWFP is not the only thing that guides forest management, what other factors/policies have had a major influence on forest management activities over the last decade or so? Please describe.

#### Section 2

##### Impacts of Forest Management on People

**Intro:** You've described changes in forest management since the NWFP was implemented. I'd like to discuss how you think these changes have affected people more broadly.

#### Questions:

- (1) Please tell me how you think changes in forest management and access have affected people who use the forest, with a focus on economic impacts? social impacts? cultural impacts? To what extent is the NWFP, vs. other factors, responsible for these impacts?
- (2) Please tell me how you think changes in forest management since the NWFP was implemented have affected residents of communities surrounding the forest.

What do you think have been the economic impacts? social impacts? cultural impacts? on local residents, if any? What other factors may be contributing to these impacts?

- (3) Are there any other stakeholder groups that you think have been affected by changes in forest management since the NWFP was implemented that have not already been mentioned? Who? What do you think have been the economic impacts? social impacts? cultural impacts? on these stakeholders?

### Section 3

#### *Forest Budgets, Staffing, and Organization*

**Intro:** Because the FS and BLM can be an important source of quality jobs in rural communities, and because forest budgets and staffing levels affect your ability to manage the forest, and to interact with the public, we are interested in understanding whether or not the NWFP has had an impact on forest budgets, staffing levels, and organizational structure.

Show the interviewee the trend analysis we have performed for the total annual budget and number of employees on their forest since 1990. Talk also about any administrative reorganization that has occurred since 1990 (ie., consolidation of district offices, etc.)

#### **Questions:**

- (1) On budgets (refer to the trend chart):
  - a. What do you believe has caused the trends observed in your annual forest budget over the last decade or so? To what extent do you attribute these trends to NWFP implementation, if at all, and what's the connection?
  - b. Are certain activities/programs receiving more or less funding than they did a decade ago—what program areas have been most affected by these trends?
- (2) On staffing levels (refer to the trend chart):
  - a. What do you believe has caused the trends observed in the number of forest employees over the last decade or so? Would you attribute these trends to NWFP implementation at all, and if so, what's the connection?
  - b. What job categories have been particularly affected by the trends in FTEs?

- (3) On reorganization:
  - a. Has your forest undergone an administrative reorganization since the mid-1980s? Please describe, referring to years in which reorganization occurred.
  - b. What caused the reorganization? Any relation to NWFP implementation?
- (4) Effects on management:
  - a. How have trends in forest budgets and staffing levels, and any reorganization, affected your ability to manage the forest and carry out your programs?
  - b. How have they affected your relations with the public, if at all?
  - c. Has there been any impact on local communities?

### Section 4

#### **Contracting**

(Unfortunately, we won't have the results of the contracting study in by the time we interview folks, so won't know what the contracting trends are.)

**Intro:** Contracting and procurement to achieve ecosystem management objectives provide forest-based employment opportunities. One expectation of the NWFP was that although jobs in the timber sector would be lost due to declining federal timber harvests, new opportunities for forest work relating to ecological restoration, scientific surveys, fuels reduction, road decommissioning, etc. would emerge. Researchers have found that Agency contracting to achieve ecosystem management on forests represents an important potential source of jobs for local communities. I'd like to discuss trends in contracting and procurement for ecosystem management purposes on forest Y.

#### **Questions**

- (1) What kinds of ecosystem management activities on the forest do you most often contract out to accomplish?
- (2) Do you think the trend in contracting to achieve ecosystem management objectives on your forest has been increasing or decreasing over the last decade or so? (We'll know once we get the trend data!) Please explain trends in contracting and procurement—why are you doing more/less contracting over time?
- (3) Do you believe that residents of local communities are receiving employment benefits from your contracting practices, and does the forest make any special efforts to target local contractors/local workers to do ecosystem management work on the forest? If not, why not? What are the barriers? Does the forest view it as being important to try to promote local contracting?
- (4) Did the NWFP or NEAI have an impact on contracting practices and opportunities on this forest? Explain.

## Section 5

### Rural Community Assistance

**Intro:** Federal financial assistance to rural communities through grants is one way in which agencies contribute to community capacity building. For example, the NWEAI provided grants to communities to help with worker retraining, building community infrastructure, jobs in the woods, community development and diversification activities, and so on.

#### Questions:

- (1) Please describe the programs your forest has for offering rural community assistance, and contributing to community capacity building.
- (2) What have been the trends in the amount of money and resources you've had to devote to these programs over the last decade? Please explain the reasons for these trends.
- (3) How effective have your programs been at helping communities build their capacity? How are communities benefiting? Are we investing in the kinds of community assistance strategies that are most productive? Explain.

## Section 6

### Collaboration with Communities in Forest Stewardship Activities

**Intro:** We are interested in how the Forests/Districts/Programs engage the public in discussions about resource management. In particular, we are interested in how the Forests/Districts/Programs collaborate with communities and local groups in on-the-ground forest stewardship activities, and how these types of collaborations have changed over the past decade.

#### Questions:

- (1) How have the ways in which your Forest/District/Program engages the public in discussions about forest management changed since the early 1990s?
- (2) To what do you attribute these changes?
- (3) Can you think of any direct or indirect ways in which the NWFP has influenced these changes? What are they?

Now I want to talk specifically about collaborative forest stewardship activities between the Forest/your District/your Program and groups or communities. These would be activities that stem from a pooling of resources (e.g., money, labor, information) by your Forest/District/Program and other groups to achieve mutual objectives from which all parties will benefit. The groups might include com-

munity groups, volunteers, and other types of groups or organizations. Thus, I am not referring to standard public input processes, but instead projects that are designed and implemented in collaboration, between the Forest Service and a group, and that have tangible on-the-ground outputs that benefit all participants in the collaborative.

- (4) What types of on-the-ground collaborative forest stewardship activities does your Forest/District engage in with community groups or other groups?
- (5) Who do these groups tend to be, and where are they from generally (local vs. non-local)?
- (6) In what ways, if at all, do collaborative forest stewardship activities help your Forest/District fulfill its forest management objectives?
- (7) What other motivations are there for engaging in collaborative forest stewardship?
- (8) How has the way your Forest/District engaged groups or communities in on-the-ground forest stewardship activities changed since the early 1990s?
- (9) To what do you attribute these changes?
- (10) Can you think of ways in which the NWFP has influenced these changes in collaborative activities?
- (11) How, if at all, have these changes (both NWFP induced and others) influenced the ways in which communities and groups seek out collaborative activities with your Forest/District?
- (12) Has the "leadership" on your Forest/District pertaining to collaborative forest stewardship changed in the past decade? By "leadership," we mean the ways in which leaders create vision, enable, and empower employees, deliver messages, demonstrate commitment, learn from past experiences, and pass on knowledge related to collaborative forest stewardship.
  - a. How?
- (13) In what ways are employees on your Forest/District who engage in collaborative forest stewardship activities acknowledged, rewarded, or promoted?
  - a. What are the incentives for employees to participate in collaborative forest stewardship activities?
  - b. What are the disincentives?
- (14) Are the current levels of resources in the following categories meeting the current demands/needs for collaborative forest stewardship activities:
  - a. budget (dollars)?
  - b. staffing (people with responsibilities or opportunities to engage in collaborative forest stewardship)?
  - c. skills (people with the skills, or access to training to develop skills)?

- (15) What are the biggest barriers to collaborative forest stewardship activities that your Forest/District face?

## Section 7

### Achieving Plan Socioeconomic Goals

**Intro:** I'd like to conclude our discussion by asking you some general questions about the NWFP and its effectiveness. The NWFP interagency regional monitoring program focuses on effectiveness monitoring to assess how well the NWFP is achieving its goals and expectations. The socioeconomic monitoring program is evaluating how effective the Plan has been at meeting its social and economic goals and objectives. I'd like to get your perspective on this.

#### Questions:

- (1) The NWFP had 5 main socioeconomic goals that are being evaluated by the current monitoring program. I'd like to discuss them in turn.

For each one, ask:

Do you believe progress in meeting this goal has been made with respect to forest Y and local communities around the forest since the NWFP was implemented? Why or why not?

- a. Produce a predictable and sustainable supply of timber sales, nontimber forest resources, and recreational opportunities;
  - b. help maintain the stability of local and regional economies, and contribute to socioeconomic well-being in local communities, on a predictable and long-term basis;
  - c. Minimize adverse impacts on jobs, and assist with long-term economic development and diversification in the area;
  - d. Help protect noncommodity values and environmental qualities associated with the forest;
  - e. Improve relationships between federal land management agencies and local communities, and promote collaborative forest management and joint forest stewardship activities.
- (2) More broadly/or in sum, an overarching goal of the NWFP was to balance the need for forest protection with the need to provide a steady and sustainable supply of timber and nontimber resources to benefit rural communities and economies. Do you believe Forest/district Y has been successful in achieving this goal? Why or why not? Examples?

#### To Conclude:

Do you have any final thoughts, points you want to emphasize, summary remarks, or things you want to add regarding

the impact of the NWFP on Forest Y and its management, and associated effects on forest users and local communities?

Are there any questions you would like to ask me?

Thank you so much for your time and thoughts!

### Interview Guide for Forest Service/ Bureau of Land Management Forest Employees COMMUNITY OUTREACH SPECIALISTS July 3, 2003

Interviewer

Forest

Date

Name of Interviewee

Title

Unit/Location

How long in present position

How long working on this forest

Note: if one of the interviewees is new in their position, and their predecessor is an old timer who is still accessible, you may want to interview both

- (1) First, would you please describe the overall nature of your program on Forest Y. How has the program evolved over the last decade or so?

## Section 1

### Contracting

**Note:** This section won't be relevant for some folks such as the public affairs officer. For others, like the volunteer coordinator, it should be adapted. In this case, you could ask questions 1–5 on the following page and replace “though contracting” with “through volunteers”—same questions but in the context of the volunteer program rather than contracting. Same for partnerships.

(Unfortunately, we won't have the results of the contracting study in by the time we interview folks, so won't know what the contracting trends are.)

**Intro:** Contracting and procurement to achieve ecosystem management objectives provide forest-based employment opportunities. One expectation of the NWFP was that although jobs in the timber sector would be lost due to declining federal timber harvests, new opportunities for forest work relating to ecological restoration, scientific surveys, fuels reduction, road decommissioning, etc. would emerge. Researchers have found that agency contracting to achieve ecosystem management on forests represents an important potential source of jobs for local communities. I'd like to discuss trends in contracting and procurement for ecosystem management purposes on Forest Y.

**Questions:**

- (1) What kinds of ecosystem management activities on the forest do you most often contract out to accomplish?
- (2) Do you think the trend in contracting to achieve ecosystem management objectives on your forest has been increasing or decreasing over the last decade or so? (We'll know once we get the trend data!) Please explain trends in contracting and procurement—why are you doing more/less contracting over time?
- (3) Do you believe that residents of local communities are receiving employment benefits from your contracting practices, and does the forest make any special efforts to target local contractors/local workers to do ecosystem management work on the forest? If not, why not? What are the barriers? Does the forest view it as being important to try to promote local contracting?
- (4) What, if anything, is Forest Y doing to help build community capacity to successfully obtain contracts?
- (5) Did the NWFP or NEAI have an impact on contracting practices and opportunities on this forest? Explain.

**Section 2**

**Intro: Rural Community Assistance**

Federal financial assistance to rural communities through grants is one way in which agencies contribute to community capacity building. For example, the NWEAI provided grants to communities to help with worker retraining, building community infrastructure, jobs in the woods, community development and diversification activities, and so on.

**Questions:**

- (1) Please describe the programs your forest has for offering rural community assistance, and contributing to community capacity building.
- (2) What have been the trends in the amount of money and resources you've had to devote to these programs over the last decade? Please explain the reasons for these trends.
- (3) How effective have your programs been at helping communities build their capacity? How are communities benefiting? Are we investing in the kinds of community assistance strategies that are most productive? Explain.
- (4) How was the rural community assistance program on the forest affected by implementation of the NWFP?

**Section 3**

**Collaboration with Communities in Forest Stewardship Activities**

**Intro:** We are interested in how the forests/districts/programs engage the public in discussions about resource management. In particular, we are interested in how the Forests/Districts/Programs collaborate with communities and local groups in on-the-ground forest stewardship activities, and how these types of collaborations have changed over the past decade.

**Questions:**

- (1) How have the ways in which your forest/district/program engages the public in discussions about forest management changed since the early 1990s?
- (2) To what do you attribute these changes?
- (3) Can you think of any direct or indirect ways in which the NWFP has influenced these changes? What are they?

Now I want to talk specifically about collaborative forest stewardship activities between the forest/your district/your program and groups or communities. These would be activities that stem from a pooling of resources (e.g., money, labor, information) by your forest/district/program and other groups to achieve mutual objectives from which all parties will benefit. The groups might include community groups, volunteers, and other types of groups or organizations. Thus, I am not referring to standard public input processes, but instead projects that are designed and implemented in collaboration, between the Forest Service and a group, and that have tangible on-the-ground outputs that benefit all participants in the collaborative.

- (4) What types of on-the-ground collaborative forest stewardship activities does your forest/district engage in with community groups or other groups?
- (5) Who do these groups that you engage in joint forest stewardship activities tend to be, and where are they from generally (local vs. non-local)?
- (6) In what ways, if at all, do collaborative forest stewardship activities help your forest/district fulfill its forest management objectives?
- (7) What other motivations are there for engaging in collaborative forest stewardship?
- (8) How has the way your forest/district engaged groups or communities in on-the-ground forest stewardship activities changed since the early 1990s?
- (9) To what do you attribute these changes?

- (10) Can you think of ways in which the NWFP has influenced these changes in collaborative activities?
- (11) How, if at all, have these changes (both NWFP-induced and others) influenced the ways in which communities and groups seek out collaborative activities with your Forest/District?
- (12) Has the “leadership” on your forest/district pertaining to collaborative forest stewardship changed in the past decade? By “leadership,” we mean the ways in which leaders create vision, enable, and empower employees, deliver messages, demonstrate commitment, learn from past experiences, and pass on knowledge related to collaborative forest stewardship.
- How?
- (13) Are employees on your forest/district who engage in collaborative forest stewardship activities acknowledged, rewarded, or promoted by upper management? How?
- (14) Are the current levels of resources in the following categories meeting the current demands/needs for collaborative forest stewardship activities:
- Budget (dollars)?
  - Staffing (people with responsibilities or opportunities to engage in collaborative forest stewardship)?
  - Skills (people with the skills, or access to training to develop skills)?
- (15) What are the biggest barriers to collaborative forest stewardship activities that your forest/district face?

## Section 4

### Achieving Plan Socioeconomic Goals

**Intro:** I’d like to conclude our discussion by asking you some general questions about the NWFP and its effectiveness. The NWFP interagency regional monitoring program focuses on effectiveness monitoring to assess how well the NWFP is achieving its goals and expectations. The socioeconomic monitoring program is evaluating how effective the Plan has been at meeting its social and economic goals and objectives. I’d like to get your perspective on this.

#### Questions:

- (1) The NWFP had 5 main socioeconomic goals that are being evaluated by the current monitoring program. I’d like to discuss some of these.

For each one, ask:

Do you believe progress in meeting this goal has been made with respect to forest Y and local communities

around the forest since the NWFP was implemented? Why or why not?

- Help maintain the stability of local and regional economies, and contribute to socioeconomic well-being in local communities, on a predictable and long-term basis;
  - Minimize adverse impacts on jobs, and assist with long-term economic development and diversification in the area;
  - Improve relationships between federal land management agencies and local communities, and promote collaborative forest management and joint forest stewardship activities.
- (2) More broadly/or in sum, an overarching goal of the NWFP was to balance the need for forest protection with the need to provide a steady and sustainable supply of timber and nontimber resources to benefit rural communities and economies. Do you believe Forest/district Y has been successful in achieving this goal? Why or why not? Examples?

#### To Conclude

Do you have any final thoughts, points you want to emphasize, summary remarks, or things you want to add regarding the ways in which Forest Y works to contribute to socioeconomic well-being in local communities, and to engage them with the forest in collaborative forest stewardship activities? Any last thoughts on the impact of the NWFP on Forest Y with regard to these kinds of activities/relationships?

Are there any questions you would like to ask me?

#### Community Outreach Specialists to Be Interviewed

Volunteer Coordinator

Partnership Coordinator

Community Assistance/Development Specialist

Public Affairs Officer

Interpretive Specialist/Environmental Education Specialist

Tribal Liaison (in which case focus all of the questions as they relate to forest interactions and relationships with tribes)

## Appendix E: Case Study Community Descriptions

### Olympic National Forest Case-Study Communities

#### Quinault Indian Nation

The Quinault Indian Nation (QIN) is the sovereign nation of the Quinault people, and six other tribes (Queets, Quileute, Hoh, Chehalis, Cowlitz, and Chinook) that were relocated to the reservation in the mid and late 1800s. Tribal enrollment is currently about 3,000 members, with half of the population living on the Quinault Indian Reservation (QIR). The majority of those living off of the reservation reside in the Aberdeen/Hoquiam area, but some live as far away as Alaska and Texas. The reservation covers 208,150 acres of land, and is the third largest Indian reservation in Washington State.

Most residents living on the QIR reside in the Indian villages of Taholah and Queets, with a smaller segment of the population residing in the nontribal community of Amanda Park. Taholah is a coastal fishing community located at the mouth of the Quinault River. With a population of about 871, most Quinault Tribe members reside in Taholah, and all government and administrative offices are there. Located at the terminus of a remote section of Highway 109 in Grays Harbor County, Washington, Taholah is approximately 45 miles north of Hoquiam. The village of Queets is located on the northern part of the reservation off of Highway 101 at the mouth of the Queets River, a few miles inland from the Pacific Ocean. Queets falls just within the boundaries of Jefferson County, Washington, and has a population of about 149 residents. Although both communities are located at or close to the Pacific Coast, no direct route exists between Taholah and Queets. Instead, from Taholah, one must travel inland 45 miles to Lake Quinault and continue northwest along Highway 101 for another 30 miles to Queets. Consequently Queets has been fairly isolated from much of the employment opportunities and tribal activities taking place in Taholah. Amanda Park is located inland at the eastern boundary of the reservation, along Highway 101 on the western shores of Lake Quinault, in Grays Harbor County.

The focus of this community case study is primarily on Taholah and Queets, as the majority of tribe members reside in these communities. Although some tribe members reside in Amanda Park, that community identifies itself more closely with the Quinault-Neilton communities. Qualitative information for Amanda Park is thus presented in the Lake Quinault area case study. Because block group areas (BGAs) were used to measure changes in socioeconomic conditions between 1990 and 2000, data from the entire reservation (including Amanda Park) were combined. We attempted to disaggregate the data into individual block groups; however, the block group boundaries changed between 1990 and 2000, making comparisons difficult. Thus, for this study, census statistics represent the entire BGA, defined as Taholah census designation place (CDP)-QIR (BGA 6101).

The QIR is west of the southwestern portion of Olympic National Forest (ONF), (i.e., the former Quinault Ranger District, and currently the Pacific District). The QIN shares many of its watersheds with ONF and Olympic National Park, with the headwaters located within the park or forest, and the lower portions of the watersheds located within the reservation. The QIN also owns Lake Quinault, and manages a fishery on the lake. Olympic National Park extends to the north shore of Lake Quinault, and ONF covers the south shore. Other major landowners in the area include the Washington Department of Natural Resources and large private industrial timberland owners, such as Rayonier and Weyerhaeuser.

#### Lake Quinault Area

The Lake Quinault area includes the communities of Quinault, Neilton, and Amanda Park, in the southwestern portion of the Olympic Peninsula. The three communities are approximately 40 miles north of Hoquiam, along the western loop of Highway 101, and about 30 miles east of the Pacific Coast, in Grays Harbor County, Washington. Referred to as the Quinault Rain Forest, the area receives an average of about 140 inches of rain a year. Adding to the scenic beauty of the area is Lake Quinault, a natural lake created by glacial runoff from the Olympic Mountains. The

town of Quinault is on the south shore of Lake Quinault; Neilton is about 5 miles south of the lake along Highway 101; and Amanda Park is along the northwest end of the lake. Amanda Park lies within the boundaries of the QIR, although it is considered a nontribal community. All three communities are unincorporated, and are within 10 miles of one another, sharing services and resources. For example, the school (kindergarten through 12<sup>th</sup> grade [K-12]) is located in Amanda Park, and the health clinic is in Neilton. Residents consider Quinault, Neilton, and Amanda Park to be part of one “community.”

Census data, collected at the level of BGAs, were used to measure changes in socioeconomic conditions between 1990 and 2000. For this study, the BGA is defined as Quinault-Neilton-Weatherwax (BGA 6109), which includes the communities of Quinault and Neilton. Amanda Park, however, is located within the QIR (BGA 6101). Although it is possible to break the BGA down into individual block groups and look only at the Amanda Park block group, the boundaries of this block group were changed between 1990 and 2000, making comparisons between years difficult at this level. Thus, for the purposes of this case study, qualitative data from interviews include changes that have taken place in the area as a whole (including Amanda Park), whereas quantitative census statistics will only include the communities of Quinault and Neilton (BGA 6109).

The three communities abut the southwestern portion of ONF. Quinault is surrounded by the ONF to the south, east, and west, and is bounded by Lake Quinault to the north (which is under the jurisdiction of the QIN). The Quinault Ranger Station, which is now part of the Pacific Ranger District, is located at Quinault. Olympic National Forest surrounds Neilton on all sides. Amanda Park, as mentioned previously, lies within the boundaries of the QIR, and borders Olympic National Park to the north. The north shore of Lake Quinault and the adjoining uplands are part of Olympic National Park. Other major landowners in the area include the QIN, which owns or manages land downstream of Lake Quinault; the Washington Department of Natural Resources, which also manages timberlands; and private industrial timberland owners, such as Rayonier, Weyerhaeuser, and Merrill-Ring.

## Quilcene

Quilcene is a small community of 375 located along the Hood River Canal adjacent to the eastern boundaries of the ONF, on the Olympic Peninsula. Quilcene’s downtown core lies on Highway 101, a well-traveled tourist route, 25 miles south of the county seat, Port Townsend, 73 miles north of the state capital, Olympia, and less than 2 hours from Seattle. Expanding out from the downtown core are limited commercial and industrial areas, a public school, and residential development to the north, southeast, and east. For the purposes of this study, census BGA data are used to describe Quilcene. Block Group Aggregation 6307 includes the downtown commercial core, marine industrial areas along the Hood River Canal, and residential areas close to downtown. The BGA 6307 closely approximates the village of Quilcene boundaries established for planning purposes by the Jefferson County Planning Department and reflects a narrow definition of the community.

Depending on their affiliations or occupations, area residents variously think of Quilcene as business core, fire district, postal code, or school district boundaries. Fire district, school district, and ZIP code boundaries are more expansive and include portions of BGAs 6308 and 6304. Census information for BGAs 6304 and 6308 is not included in this report; however, this case study report draws its information from and describes a community that encompasses this broader area of roughly 84 square miles that is sparsely populated. The broader area, as defined by ZIP code 98376, was populated by 1,644 at the time of the 1990 census and increased to 1,767 in 2000. The area that is BGA 6308, East Quilcene–Dabob–Camp Discovery–Coyle, includes the people—about 400 in 2000—on the Bolton and T Peninsulas. This area’s small but growing population has, for the most part, little relationship with the study area. Block group area 6304, Leland, population approximately 800, is north and northwest of the downtown area. Leland consists of old homesteads in pasturelands adjacent to timber lands. Historically, there was a tight social and economic relationship between the Leland population and Quilcene.



## Mount Hood National Forest Case-Study Communities

### Upper Hood River Valley

The community of Upper Hood River Valley (UHRV) consists of an aggregation of two BGAs (3602 and 2603) located in Hood River County on the north side of Mount Hood and 10 to 20 miles south of the Columbia River. There are no census places<sup>1</sup> in the UHRV BGAs, and the nearest census place is the city of Hood River. The combined BGAs consist of 19,968 acres of private and public lands, including national forest and county forest land. Roughly two-thirds of the area of the combined BGAs is national forest. The 2000 population for the combined UHRV BGAs was 4,288 people.

Private land in the UHRV consists of residential, agricultural (including orchards, forests, and some livestock), and some commercial land. Most of the commercial and government services offered within the UHRV are located in the town of Parkdale. The primary school, fire department, several social services offices, two grocery stores, a few restaurants, a museum, several shops, and a bed and breakfast (B&B) are located along or within a couple blocks of a main street in Parkdale. Other B&Bs, a gas station, convenience store, country store, and a few restaurants are located in other parts of the UHRV, including the hamlet of Mount Hood. Mount Hood Meadows Ski Resort and Cooper Spur Mountain Resort are located in the high elevations of the UHRV area, above residential and agricultural areas.

Lands within the UHRV and Hood River County are within the ceded lands of the Confederated Tribes of the Warm Springs. In addition to tribe members coming to the area to engage in traditional harvesting, hunting, and fishing practices, the Confederated Tribes of the Warm Springs is the lead administrator of a Bonneville Power Administration (BPA)-funded program for anadromous fish conservation and reintroduction. A fish acclimation station and a recently relocated fisheries office are located within the UHRV.

<sup>1</sup> Census places are incorporated places and census-designated places.

At 533 square miles, Hood River County is the second smallest county in Oregon. Approximately 75 percent of the county is under some form of public ownership, the majority being the Mount Hood National Forest (USDA FS 1996). Residents of UHRV are 10 to 20 miles from the county seat in Hood River. The 2000 population of Hood River County was 20,411. With a population of 5,831 (USBC 2004), Hood River is the largest population center in the county and offers commercial services, as well as medical, banking, and governmental services. The primary industries in Hood River County include agriculture, timber, hydroelectric production, and recreation. Hood River County is one of the few counties in Oregon that owns and manages forest land as an income source. Some of the approximately 31,000 acres of county forest land are within or adjacent to the UHRV. One interviewee mentioned that for some time, years ago, the Hood River Ranger District managed the county forest land. The land is now under the management of the county forester. Based on information from a county supervisor, about half of the county budget is made up of revenues from the county forest.<sup>2</sup> The county is also in the process of purchasing forest land in eastern Oregon counties to manage as a revenue source for Hood River County.

Interviewees who were asked to comment on the delimitation of the community unit of analysis described differences among the lower, middle, and upper Hood River valley. Differing population densities, zoning regulations, and elevations contribute to their distinction as separate communities. For instance, the UHRV was characterized as being at higher elevations that affected orchards differently than happens at the lower elevation. Zoning regulations in the UHRV also set it apart from the middle and lower valley because such regulations have tended to keep orchards relatively large and have limited housing development.

<sup>2</sup> A Forest Service watershed assessment stated that the revenue from county forest, in 1996, represented about 12.5 percent of the county budget (USDA FS 1996).

## Villages of Mount Hood From Brighton to Rhododendron

The Villages of Mount Hood in Clackamas County include the populated area along State Highway 26, between Brightwood and Rhododendron, beginning 41 miles east of downtown Portland. Thirteen miles east of Sandy, the study area is defined by BGA 2842 that includes the string of communities in the narrow Sandy River valley: Brightwood, Wildwood, Wemme, Welches, Zigzag, and Rhododendron. The study area is bounded to the north, east, and south by the Mount Hood National Forest encompassing portions of several tributaries to the Sandy River including the Salmon and Zigzag Rivers and Alder, Wildcat, and Boulder Creeks. The Bull Run Watershed Management Unit, Mount Hood Wilderness and Salmon-Huckleberry Wilderness areas of the Hood National Forest are adjacent to the study area in the Mount Hood National Forest. In addition, there are several blocks of land under Bureau of Land Management jurisdiction dispersed across the study area. The population at the time of the 2000 census was 3,670.

Although residents agreed Brightwood formed a suitable western boundary for the study area, many wanted to extend the boundary west to include Alder Creek and Cherryville. Because of census block group boundaries this was not practical, and the areas are not included in this study. On the eastern front, there was a divergence of opinion about whether Government Camp should be included. All of the communities, including Government Camp, are “east county” and under the same umbrella of Clackamas County government. Furthermore, residents and properties are in the same school and fire districts, and businesses have organized under one chamber of commerce. Business interests, in particular, see Government Camp as part of the Villages of Mount Hood community.

Moving west to east up the Villages of Mount Hood, communities transition from more strictly commuting to more strictly recreation-based communities and economies. Although many residents said Government Camp was part of the Villages of Mount Hood community, they characterized it as a very different community with a unique set of issues. The connection between the Brightwood through

Rhododendron area with Government Camp is indisputable, but issues of economics and politics are unique and distinct, especially with regard to the Forest Service. Key differences are Government Camp’s strict reliance on tourism and recreational uses of Mount Hood and the intensive dependency that results from being surrounded by Forest Service land. Additionally, Government Camp formed an Urban Renewal District in the early 1990s and works directly with Clackamas County Development Agency; this further separates it and the rest of the corridor communities. In the end, Government Camp’s characteristics and its issues with the Forest Service are distinct enough to warrant excluding it from the Villages of Mount Hood for the purposes of this case study.

The Villages of Mount Hood’s development originated with the initial Anglo-European settlement of Oregon. The community is located on what was part of the Barlow Road near the end of the Oregon Trail. A small number of individuals settled the area, and it remained a small enclave of communities on the travel route to Portland and into the Willamette Valley. The route through the Villages of Mount Hood later became State Highway 26, a major transportation route over Mount Hood to the Warm Springs Reservation, Madras, Bend, and other destinations in Central Oregon. Additionally, Highway 26 has long served as the route for visitors traveling from the Portland metropolitan area to destinations in the Mount Hood National Forest, including Timberline Lodge or one of the numerous ski areas, lakes, or trails. Although many local businesses consider the area merely a transportation corridor, there is a diversity of residents with varying perspectives, including those who consider the Villages of Mount Hood a “mountain community.” From west to east the individual towns are as follows:

**Brightwood** is characterized by the predominance of riverside rural residential development. There are a small number of businesses serving the local community, including a store, tavern, and post office.

**Wildwood** encompasses a small residential development on the north side of State Highway 26. There are a small number of businesses on the highway, primarily serving tourists, including an RV park, restaurant, and visitor center.

**Wemme** consists of a concentration of commercial businesses on the highway and a mix of residential and seasonal housing off the highway. Businesses include several eating and drinking establishments, a fly fishing shop, hardware store, and a few other basic goods and service businesses serving the local population and tourists.

**Welches** also consists of a concentration of commercial businesses on the highway and several types of housing developments. The commercial area, with a gas station, large grocery store, post office, and coffee shop, is the primary commercial hub serving area residents. The community includes a golf course and resort with a mix of housing developments ranging from year-round residences and rentals, to time shares and a hotel.

**Zigzag** has a very limited number of services, and there are a number of residential properties off the highway. **Faubion** is a residential neighborhood adjacent to Zigzag. There is a Forest Service ranger district office in Zigzag.

**Rhododendron** is characterized by a limited number of tourism and recreation businesses, including a grocery store and restaurant. Forest Service lease properties—seasonal housing—extend eastward from Rhododendron toward Government Camp.

## Greater Estacada

Estacada is located on State Highway 211/224, 34 miles from downtown Portland, Oregon, at the foot of the Cascade Mountain Range. The greater Estacada area straddles the “Wild and Scenic” Clackamas River and is adjacent to the Mount Hood National Forest.

Located in Clackamas County, the greater Estacada area includes seven BGAs—2822, 2823, 2826, 2838, 2839, 2840, and 2846—with a total population of 9,315, in 2000. Block group area 2838 includes the incorporated city of Estacada and outlying populated areas roughly 1 mile north, east, and southeast of the city. Two BGAs, 2823 and 2822, are northwest of Estacada and include areas west of State Highway 224/211 up to Eagle Creek. The three easterly BGAs, 2836, 2839, and 2846, abut the Mount Hood National Forest. The BGA 2840 is almost wholly within the national forest and encompasses popular destinations in the Mount Hood National Forest, including Table Rock, Bull

of the Woods, and portions of the Salmon and Huckleberry Wilderness Areas, as well as Timothy Lake and Bagby Hot Springs. Tens of thousands of acres are owned and managed by timber companies including Longview Fiber and Weyerhaeuser. Several thousand acres are managed by the state, Clackamas County, and the U.S. Department of the Interior Bureau of Land Management (BLM). Unless otherwise specified, Estacada refers to the greater Estacada area.

The city of Estacada includes a number of well-established businesses, including several banks, grocery stores, quick markets, restaurants, churches, and a small number of other service and retail businesses. Areas outlying the city are sparsely populated agricultural and timber lands and a limited amount of commercial and industrial development. The city serves as the commercial hub for the greater Estacada area, and it is the last stop for goods and services for people traveling east into the Mount Hood National Forest.

In 2000, the city of Estacada reported a population of 2,371; the other 75 percent of the study area population—6,944 people—lived in the remaining portions of BGA 2838 and the six other BGAs. Most respondents describe the community as an extensive area and the BGAs encompass most of it.

This study does not include any area north and northwest of Eagle Creek, such as Barton, and includes only a portion of Eagle Creek. Arguably, Eagle Creek could be included in the study area; it is not a separate and distinct community with regard to its relationship with the Estacada economy and the national forest. Most residents and county officials define the community as the Estacada school district, and many people who live in the outlying areas consider themselves Estacada residents.

## Klamath National Forest Case-Study Communities

### Scott Valley

The Scott Valley lies in central Siskiyou County about 35 miles south of the Oregon border. The north-south-oriented valley is about 30 miles long and 7 miles wide, and is surrounded by mountains. Most traffic into and out of the valley is over a mid-elevation mountain pass to Yreka, 15 miles north of the valley on the Interstate 5 corridor. Yreka

is the largest service center in Siskiyou County, and is the county seat. The fifth-largest county in California, Siskiyou County is also one of its most sparsely populated. The county is among the Northwest Forest Plan locations most remote from major urban areas.

Among the mountains around the Scott Valley are the Trinity Alps Wilderness, the Russian Wilderness, and the Marble Mountain Wilderness. The Trinity Alps Wilderness lies across the boundaries of the Klamath, Shasta, and Six Rivers National Forests beyond the valley's southern end. The other two wilderness areas lie within the western half of the 1.7-million-acre Klamath National Forest, which curves around the valley's southern and western flanks at elevations ranging from 3,200 to over 8,000 feet (USDA FS 1997). Sections of BLM land are scattered across the lower, drier mountains that make up the Scott Valley's eastern flank. The view across the valley is pastoral, with irrigated pasture on the flat, green valley floor backed by range upon range of rugged mountains to the west.

The Scott Valley community area was identified by area residents as including the geographic extent of the valley up to the surrounding mountain peaks. The entire north-south string of valley towns—Fort Jones, Greenview, Etna, and Callahan—were seen as essential components of the valley community. Cheeseville, although identified on the census map, effectively no longer exists. The Quartz Valley-Mugginsville-Oro Fino Valley to the west was considered by interviewees to be part of the Scott Valley community. Residents suggested that the headwaters of the North Fork of the Salmon River, particularly the Sawyer's Bar area, also be included, as they believed that residents in that area sought most of their services within the Scott Valley. However, owing to the community delineation protocol adopted by the monitoring program, the final Scott Valley community delineation also includes large tracts of land and census-designated places that were not considered by residents to be part of the community. These include Cecilville, Summerville, and parts of the Salmon Mountains to the south, as well as Scott Bar and Klamath River communities such as Horse Creek and Steelhead to the north.

Fort Jones at the Scott Valley's northern end, and Etna at its southwest edge, are the largest towns within the valley.

Fort Jones (pop. 660), has several primary schools, housing, a few restaurants and stores, a number of other businesses, a museum of local history, and a Forest Service district office. Etna (pop. 781) holds historical homes, a small downtown with a number of businesses, a public library, and primary and high schools. A Forest Service district office in Etna was closed during the study period. Greenview (pop. 200), Mugginsville, and Callahan are smaller villages scattered within the valley. Sawyer's Bar is a tiny, remote community in the rugged mountains to the west, along the North Fork of the Salmon River. The village of Sawyer's Bar has no businesses, but retains a post office and a small Forest Service work station that hosts a firefighting crew. A school in the Sawyer's Bar area closed during the study period. The other small towns within the BGA were not identified by Scott Valley residents as part of their community. Stakeholders and residents of these areas were therefore not sought for interviews, although they are represented in the census statistics.

The valley is part of the ancestral territory of the Shasta Tribe, which today includes about 1,500 people. About half of the tribe members live within 100 miles of Yreka. The other half reside in Oregon or Washington. Most families include at least one member who still lives in ancestral territory, and other members return often to visit or for tribal gatherings. Many tribe members continue lifestyles with a close connection to the land.

Gold mining, agriculture, logging, and ranching have been the area's primary uses since White settlers entered around the 1830s. This history remains alive, with descendants of pioneering settler families still prominent in the area. Gold brought many of the original White settlers to the Scott Valley, and was mined in hard rock mines as well as the Scott River and its tributaries. Extensive dredger tailings from these activities remain at the valley's southern end.

The floor of the valley historically has been dedicated to ranching, with a dominant presence today of irrigated agriculture. Cattle pastures and irrigated alfalfa cover most of the valley floor. The alfalfa hay is fed to local cattle, or is sold and apparently trucked throughout California and the West. Most of the remaining bottomland is used to

pasture cattle, some of which are summered on the Klamath National Forest's grazing allotments. Sugar beets and other crops may also be farmed on the valley floor.

For 150 years, logging also occurred on the slopes surrounding the valley. Privately owned commercial forest lands lie between the valley bottom and the national forest land along the valley's western and southern extents. Most of these lands are owned by two commercial timber companies: Timber Products (formerly Sierra Pacific) and Fruit Growers Supply. A large Oregon-based commercial timber grower (Roseburg Forest Products) owns a much smaller land base within the valley. Timber harvest within the area is supplemented by smaller private landowners (USDA FS 1997).

Small-claim mining, ranching, and logging, all historically central to the area's economy, are occupations entailing individual risk and requiring personal initiative and hard physical labor. These are traits valued in the Scott Valley today. Inhabitants of the valley adhere to a tradition of rugged individuality and independence. Interviewee comments made it clear that hard work and individual initiative are strongly valued, with personal freedom perhaps most highly prized.

Despite the economic and political pressures associated with living in a relatively remote, rural community, residents say that they would much prefer to live in the Scott Valley than elsewhere. Ranchers and loggers cite multiple generations of their families closely tied to the land, with no desire to leave the woods or the valley. Tribe members cite thousands of years of local residence, and of accumulating a deep understanding of and connection to its natural rhythms and processes.

Residents express a feeling that the valley is a strongly rural place, one with a powerful and living connection to its history. They value the intergenerational traditions of the valley, and express regret at urbanization and other intrusive changes. Most want to see their community's rural culture protected. The valley seems removed from the faster-changing world beyond the surrounding mountains, and residents want to keep it that way.

## **Butte Valley**

The Butte Valley is an agricultural area in northeastern Siskiyou County adjoining the Oregon border. The area is bordered by forest and range lands in mixed private and public ownership. The valley and surrounding areas include the Butte Valley National Grassland (administered by the Klamath National Forest), the Lower Klamath National Wildlife Refuge, the Butte Valley Wildlife Area, BLM land (administered by the Redding unit), and industrial timberland. The Goosenest Ranger District of the Klamath National Forest forms the mountainous border of the Butte Valley to the west and south. Large acquisitions of private land by the Klamath National Forest through exchanges or donations occurred from 1937 until 1951.

A portion of the Butte Valley is in the Goosenest Adaptive Management Area, designated by the Northwest Forest Plan with objectives related to forest health, late-successional forest habitat, and commercial timber production. The forested lands have historically provided grazing and timber-related products to the local economy. Major agricultural crops during the period of review, about 1990 until the present, have included hay, potatoes, and strawberries. The Butte Valley subbasin is a closed hydrologic system. All water drains into the ground or to Meiss Lake, and does not flow to the Klamath River under normal conditions.

The Upper Dorris Census Block Group defined the Butte Valley Community for purposes of this study. The city of Dorris is the only incorporated community in the Butte Valley, and one of nine incorporated communities in Siskiyou County. It contains a large component of the population of the area. Dorris is about 20 miles south of Klamath Falls, Oregon, and 50 miles north of Weed, California, on Highway 97. Macdoel, Mount Hebron, Tennant and Bray are unincorporated communities within the Butte Valley area. Tennant and Bray are not within this study area because the boundaries of the census block group, selected and validated locally as the most representative of the Butte Valley, does not include them. Fifteen people from the Butte Valley area were interviewed to obtain the information presented in this report.

As an incorporated city, Dorris has elected officials and a tax base to provide services to its citizens. Macdoel and Mount Hebron are small and dispersed enough that they do not have any organized services specifically for their area, such as a community service district for water and sewage. Fire protection is provided by two volunteer fire departments, one serving the entire area outside of Dorris. There is a health clinic in Dorris. A unified school district serves the entire area. Klamath Falls, Oregon, is the regional center for manufacturing, professional services, and shopping.

The area surrounding the Butte Valley has been logged for about 100 years. At one time there were several sawmills operating in the area. When long-time residents were growing up in the area, there was a sawmill in Dorris; in the 1950s and 1960s, the mill was the major employer in town. Although much of the forestry work was seasonal, the forests supplied work that supported families. Workers and their families were resident in the area and used local services. This mill reportedly closed down about 40 years ago. Since then, logs have been trucked out of the area. Two small mills remain in the area. One is a molding mill, in operation since 1924. This facility is an industry leader in the United States. The other remaining mill operation went through two previous incarnations as a molding business. The last molding business operated from 1986 until 1997 before converting to the current peeler core business.

Agriculture forms the largest employment sector in the Butte Valley. There is a strong ranching component, and farming has also been important historically. The potato industry thrived in the area for several decades. Most recently, strawberries have replaced potatoes.

The Butte Valley is part of the ancestral territory of the Shasta Tribe. However, few tribe members live there today.

### Mid-Klamath

The Mid-Klamath community lies in northwestern Siskiyou County and encompasses the area bounded by the Klamath River to the south, the Oregon border to the north, and the towns of Klamath River upstream and Happy Camp downstream (all to the west of Interstate 5). Although the area is large geographically, the total population is small (1,660 people in 2000) because much of it lies across

the Klamath National Forest. In addition to the towns of Klamath River and Happy Camp, the community includes the small towns of Horse Creek, Hamburg, Seiad Valley, and Scott Bar. Scott Bar lies on the Scott River, a short distance above its intersection with the Klamath River. The other towns lie along the Klamath River and Highway 96, the main transportation corridor through the community. Highway 96 follows the river from Interstate 5 to the east, to Highway 299 to the southwest where it ends roughly 25 miles inland from the coast. The Mid-Klamath community is the most remote of the three case communities discussed here. The entire area is unincorporated.

Happy Camp is by far the largest town along the river, containing 38 percent of the Mid-Klamath population. The remainder of the population is for the most part concentrated around the other small towns that compose the community, each of which have a few hundred residents. What is remarkable about these towns is that they are completely surrounded by the vast western portion of the Klamath National Forest. The community between Happy Camp and Hamburg contains roughly 95 percent public land managed by the Klamath National Forest. Between Hamburg and Klamath River, a checkerboard pattern of land ownership prevails, with much of the private property held by private industrial forest landowners such as Fruit Growers Supply Company. Community residents live in the narrow Klamath River valley or along its major tributaries (e.g., Indian Creek, Seiad Creek). They are surrounded by the steep forested slopes of the Siskiyou and Klamath mountain ranges.

The Mid-Klamath community lies within the ancestral territory of the Karuk and Shasta Tribes. The Karuk ancestral territory includes the Klamath River area between Seiad Valley to the east and Bluff Creek to the west, and the Shasta ancestral territory includes the areas east of Seiad Valley (USDA FS 1999: 4-1). The first wave of White settlers entered the area around 1850 in search of gold (USDA FS 1997: 3-23). Small mining camps sprang up along the Mid-Klamath River and its tributaries. Miners searched for gold as well as copper and silver. By the early 1900s, mining had started to diminish, and by 1920 it had declined

significantly (USDA FS 1997: 3-66). Today gold mining occurs on a small scale, and much of it is recreational in nature.

Commercial timber harvesting began in the community around 1950 (USDA FS 1997: 3-66). From the 1950s until 1990, timber dominated the local economy. Much of the community's road system was built during this period (USDA FS 1999: 4-3). Farming and ranching have only been practiced on a small scale by a small number of Mid-Klamath residents owing to a shortage of flat land in the region and the difficulty in clearing it. The exception to this has been in the Beaver Creek watershed above the Klamath River where cattle and sheep grazing occurred on a large scale along the Siskiyou Crest starting in the early 1900s (USDA FS 1996: 4-13–4-14). Since the 1940s, grazing in that drainage has decreased substantially.

Happy Camp is the largest town in the Mid-Klamath region. It contains several stores, a few restaurants, three or four motels, an elementary school and a high school, a health clinic, a small museum focusing on Karuk tribal culture, a library, a Forest Service district office, and the Karuk tribal government offices. The Karuk Tribe has no land base in the form of a reservation.

## **Coos Bay BLM District Communities**

### **Greater Reedsport**

For purposes of this study, Greater Reedsport as a community consists of the three towns of Reedsport, Gardiner, and Winchester Bay. Reedsport sits on the central Oregon coast on the western edge of Douglas County along Highway 101, about 75 miles from Roseburg, the county seat. Located at the mouth of the Umpqua and Smith Rivers, this community is bounded by a hodgepodge of county, state, and federal forest lands such as the Siuslaw National Forest and the Coos Bay District of the BLM. Two small, unincorporated towns border Reedsport to the north (Gardiner) and the south (Winchester Bay). As of 2000, these three communities, which constitute the greater Reedsport Area, had a population of 5,545 (U.S. Census Bureau 2004). Distinctly different communities, these three towns have a historical interdependence, which previously helped sustain a certain level of economic viability. Historically, both

Reedsport and Gardiner have been timber towns whose economic prosperity has fluctuated with the whims of the lumber market. Serving as an entrance to the Oregon Dunes National Recreation Area, Winchester Bay has shifted from a commercial fishing area to a tourist destination site. As one respondent said, "We all depend on each other, or there's no way that we could be autonomous." In fact, Reedsport and Winchester Bay share a chamber of commerce.

Spurred by the completion of the railroad in 1916, Warren P. Reed founded Reedsport in 1919 and served as its first mayor. During the 1920s, several canneries, two sawmills, and a creamery anchored the town's economy (Beckham 1986). Finished in 1936, the Umpqua River Bridge linked Gardiner and Reedsport, as well as a series of bridges across coastal estuaries that increased access to the area. The increase in demand for timber following World War II facilitated a logging boom and, in turn, local economic growth.

### **Greater Myrtle Point**

Located at the juncture of the Middle and South Forks of the Coquille River, the City of Myrtle Point serves as a microeconomic center for the far southern end of the Coquille Valley. Residents from the outlying settlements of Bridge, Arago, Dora, Fairview, Sitkum, and Broadbent send their children to school, shop, and do business in Myrtle Point. Myrtle Point, Powers, and Coquille form a socioeconomic unit in the minds of many inhabitants, who refer to that portion of Coos County as "South County." Some people also include Bandon in South County, but its coastal location on the mouth of the Coquille River provides it with a very different set of economic options from those available to the inland settlements.

Of the three case-study communities in the Coos Bay area, Myrtle Point is the most remote. It is situated roughly 20 miles inland from Highway 101, the major transportation corridor connecting Oregon's coastal towns. Roughly 60 miles of winding mountain road separate Myrtle Point from the Interstate 5 corridor.

The U.S. census recorded 4,927 inhabitants in Greater Myrtle Point in 2000. Most people in the southern Coquille

Valley reside in the lowlands along the Coquille River and its tributaries. The Coquille River uplands are used primarily for timber production and are sparsely populated. Forests are an important feature of the Coquille watershed, covering roughly 70 percent of its area (Oregon Department of Agriculture 2002: 7). Timber companies own roughly 40 percent of the land in the watershed, private nonindustrial landowners own 30 percent, and the remaining 30 percent is in public ownership, primarily Bureau of Land Management and Forest Service. Portions of the Coquille Indian Nation's tribal forest also fall within the Coquille watershed.

Although people living in and around Myrtle Point have access to many basic businesses, such as retail stores, banks, gas stations, and auto repair facilities, residents do much of their shopping and business in the neighboring towns of Bandon, Coquille, and Greater Coos Bay. Many residents commute to jobs in these three towns as well. Despite its small size, Myrtle Point offers a range of social services, including a fire department, a police department, an ambulance service, a medical clinic, K-12 public schooling, two banks, a public library, and a geriatric care facility.

Euro-Americans settled in the area of Myrtle Point beginning in the 1850s. The city of Myrtle Point was incorporated in 1887 (USDI BLM 1998: 40). Agriculture and livestock production dominated the local economy in the late 1800s, including cheese and butter exports to the San Francisco area (MPCPC 2000: 8). The introduction of splash dams in the region in the early 1900s opened up the area to industrial-scale logging operations, which dominated the local economy until the 1990s.

The Coquille River supported an active commercial salmon fishery during the late 1800s and early 1900s. Fish landing data indicate that fishermen caught 120,000 coho (*Oncorhynchus kisutch*) in 1908 (Heikkila 1999: 5). In contrast, an Oregon Department of Fish and Wildlife survey that took place between 1990 and 1996 estimated the number of coho spawners in the Coquille River at 3,000 to 15,000 (Heikkila 1999: 5). It would seem that the river has experienced a dramatic drop in its capacity to support a coho salmon population. The situation for spring chinook salmon (*Oncorhynchus tshawytscha*) is even worse, with an estimated 400 spring chinook entering the watershed

(Heikkila 1999: 5). Stocks of fall chinook salmon, coastal cutthroat trout (*Salmo clarkia*), winter steelhead (*Oncorhynchus mykiss*), and rainbow trout (*Salmo gairdneri*) remain relatively strong, albeit likely lower than historical levels (Heikkila 1999: 5).

In 2004, timber production and processing, as well as livestock and dairy operations remained important elements of Myrtle Point's economy. However, timber no longer dominates the economy as it did during the 20th century. McKenzie Forest Products, a small local business with 50 employees, remains one of the larger employers in the area, but many of the small family-owned mills, gyppo logging outfits, and associated businesses, shut down permanently in the early 1990s. The biggest employer in the area is the Myrtle Point School District with 130 jobs, followed by the Myrtle Point Care Center, which has 50 employees. The next largest employers include a local grocery store with 35 employees and a health clinic with 20 employees. The Coos County Oregon State University extension office relocated its office from Coquille to Myrtle Point in 2003, bringing an additional dozen long-term professional-level education-related jobs to the area.

### Greater Coos Bay

For more than a century, the twin cities of Coos Bay and North Bend have dominated Oregon's south coast economy and politics. The two cities are located on the shores of the protected bay formed by the Coos River estuary, and thus their inhabitants benefited from the economic activities made possible by their proximity to one of the few deep-water harbors along the Pacific Northwest coast. Formerly physically as well as politically separate entities, over the years the two cities have expanded to the point where the geographic boundary between them is difficult for an outsider to identify. Politically the two cities remain distinct, but economically and culturally they have become indistinguishable. For all practical purposes, the formerly outlying towns of Empire and Bunker Hill also have become part of North Bend–Coos Bay, forming a socioeconomic unit that we have labeled “Greater Coos Bay.”

The nearby fishing village of Charleston also has strong ties to the Greater Coos Bay area, but with its



economic origins in tourism and commercial fishing rather than logging and wood processing, its cultural and economic character is sufficiently distinct culturally and economically that we opted to exclude it when bounding the study site. Nonetheless, Charleston's coastal location and position as the stepping-off point for tourists attracted to the scenic headlands of Cape Arago, the internationally recognized Shore Acres Garden, and the South Slough National Estuarine Reserve, make it an important player in Greater Coos Bay's adaptation to the decline of its forest products economy. Indeed, a number of residents of the towns of Coos Bay, North Bend, and Charleston are increasingly beginning to think of the three towns as components of a cohesive sociopolitical entity known locally as the "Bay Area."

Greater Coos Bay is the proverbial large frog in a small and somewhat isolated pond. With a combined population of 28,596 in 2000, Greater Coos Bay is the largest settlement in Coos County. The towns of North Bend and Coos Bay serve as the trade and services center for Oregon's south coast. They offer residents many of the amenities of much larger towns in the Willamette Valley and Puget Sound without the population numbers, noise, and traffic snarls that come with dense population centers. Residents thus have access to a large variety of retail and wholesale stores, a wide range of medical facilities, a community college and a Marine Biology institute affiliated with University of Oregon, numerous government services, a range of transportation and shipping facilities, a world class export port, and a thriving arts community. Yet at 5 hours distance by road, Coos Bay is just far enough away from Portland to discourage day and weekend tourists, and at 2 hours drive from the Interstate 5 corridor, is far enough from Oregon's main transportation route to make manufacturing firms think twice before setting up shop in Coos Bay. Much of the traffic that flows through the area is tied to the seasonal tourist trade, which peaks in July and August.

Greater Coos Bay's origins are intimately interwoven with the development of southern Oregon's timber and associated shipbuilding and lumber export industries. Empire, which occupies a position as the first deep-water anchorage site inward of the Coos Bay sandbar that protects the bay

from wave action, was the first permanent White settlement of any size along the bay (Douthit 1999: 136). Henry Luse built the area's first sawmill in 1855 in Empire, setting the foundation for the industrial timber economy that dominated Greater Coos Bay until the end of the 20th century (Douthit 1999: 136).

A year or so later, Asa Simpson, a businessman from San Francisco set up a sawmill in the vicinity of modern-day North Bend to support a shipbuilding yard where many of the vessels supplying California's demand for lumber during the last half of the 19th century and the first half of the 20th century originated (Wagner 1986: 5). The town of Marshfield, which eventually changed its name to Coos Bay, emerged in the vicinity of a small lumber mill established in 1867 (Douthit 1999: 146). Marshfield began to rival North Bend in population size and economic importance only after the C.A. Smith Lumber Company set up the area's first really large-scale wood processing operation in the early 1900s on the south edge of Marshfield in an area known as Bunker Hill (Douthit 1999: 146).

Milling, shipbuilding, and wood products exports—all activities bound up with the harvest and processing of timber—constituted the core of the bay area economy through the late 1980s. From the 1850s to the 1900s, Greater Coos Bay's timber economy was a relatively open playing field, characterized by the presence of both large and small operations and no single dominating lumber company. The playing field shrank considerably in the early 1900s with the entry of C.A. Smith Company and its successor company, Coos Bay Lumber Company, which established milling facilities large enough for them to dominate the local lumber market (Douthit 1999: 146).

In the 1950s, Weyerhaeuser became the dominant force in Greater Coos Bay's lumber market. However, the Coos Bay timber economy has always retained an open flavor to it, in that it supported, and continues to support, the presence of a diverse set of logging and milling operations. These range in size and scale from multinational companies, such as Weyerhaeuser, Georgia Pacific, Plum Creek, and Menasha, to regional companies, such as Lone Rock Timber and Roseburg Forest Products, to local companies, such as South Coast Lumber. In addition, Greater Coos

Bay wood processing facilities have historically produced a wide variety of products, including raw logs, dimension lumber, plywood, veneer, pulp, and wood chips. Thus, Greater Coos Bay enjoyed a measure of resilience to downturns in the timber economy that timber-dependent communities with less diversity in terms of numbers, types, and scales of wood processing operations did not.

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**NORTHWEST  
FOREST PLAN**  
THE FIRST TEN YEARS (1994–2003)

# Socioeconomic Monitoring Results Volume IV: Collaboration

Ellen M. Donoghue, Claudia Stuart, and Susan Charnley



General Technical Report  
PNW-GTR-649 Vol. IV  
April 2006

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# Socioeconomic Monitoring Results Volume IV: Collaboration

Ellen M. Donoghue, Claudia Stuart, and Susan Charnley

Northwest Forest Plan—The First 10 Years  
(1994–2003): Socioeconomic Monitoring Results

Susan Charnley, Technical Coordinator

U.S. Department of Agriculture, Forest Service  
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## **Abstract**

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One of the Northwest Forest Plan (the Plan) socioeconomic goals was to promote inter-agency collaboration and agency-citizen collaboration in forest management. This volume focuses on agency-citizen collaboration under the Plan. Two formal institutions were set up to promote agency-citizen collaboration in forest management: provincial advisory committees (PACs) and adaptive management areas (AMAs). Chapter 1 synthesizes the literature describing the management and effectiveness of AMAs and PACs during the first decade of the Plan. Chapter 2 examines how collaborative relations and collaboration in forest stewardship evolved on four case-study Forest Service (FS) and Bureau of Land Management (BLM) units and 12 associated communities since the Plan was implemented.

The literature shows that in their first decade, most AMAs failed to meet the Plan's expectations for collaboration. The PACs have been more successful in engaging local communities. The PACs have provided a forum for ongoing, multiparty discussion of forest management issues among decisionmakers and local stakeholders. They have also been successful in completing regionwide, multiparty compliance monitoring. The Plan had direct and indirect, positive and negative, effects on collaborative forest stewardship on the case-study forests and communities.

Keywords: Northwest Forest Plan, socioeconomic monitoring, collaboration, joint forest stewardship, adaptive management areas, provincial advisory committees.



## Preface

This report is one of a set of reports produced on this 10-year anniversary of the Northwest Forest Plan (the Plan). The collection of reports attempts to answer questions about the effectiveness of the Plan based on new monitoring and research results. The set includes a series of status and trends reports, a synthesis of all regional monitoring and research results, a report on interagency information management, and a summary report.

The status and trends reports focus on establishing baselines of information from 1994, when the Plan was approved, and reporting change over the 10-year period. The status and trends series includes reports on late-successional and old-growth forests, northern spotted owl population and habitat, marbled murrelet population and habitat, watershed condition, government-to-government tribal relationships, socioeconomic conditions, and monitoring of project implementation under Plan standards and guidelines.

The synthesis report addresses questions about the effectiveness of the Plan by using the status and trends results and new research. It focuses on the validity of the Plan assumptions, differences between expectations and what actually happened, the certainty of these findings, and finally, considerations for the future. The synthesis report is organized in two parts: Part I—introduction, context, synthesis, and summary—and Part II—socioeconomic implications, older forests, species conservation, the aquatic conservation strategy, and adaptive management and monitoring.

The report on interagency information management identifies issues and recommends solutions for resolving data and mapping problems encountered during the preparation of the set of monitoring reports. Information issues inevitably surface during analyses that require data from multiple agencies covering large geographic areas. The goal of this set of reports is to improve the integration and acquisition of interagency data for the next comprehensive report.

The socioeconomic status and trends report is published in six volumes. Volume I of the report contains key findings. Volume II addresses the evaluation question, Are predictable levels of timber and nontimber resources available and being produced? The focus of Volume III is the evaluation question, Are local communities and economies experiencing positive or negative changes that may be associated with federal forest management? Volume IV (this volume) assesses the Plan goal of promoting agency-citizen collaboration in forest management. Volume V reports on public values regarding federal forest management in the Pacific Northwest. Volume VI provides a history of the Northwest Forest Plan socioeconomic monitoring program and a discussion of potential directions for the program.

## Summary

One of the Northwest Forest Plan (the Plan) socioeconomic goals was to promote inter-agency collaboration and agency-citizen collaboration in forest management. This volume focuses on agency-citizen collaboration under the Plan. The monitoring team did not monitor interagency coordination and collaboration because resources were not available to do so. Two formal institutions were set up to promote agency-citizen collaboration in forest management: provincial advisory committees (PACs) and adaptive management areas (AMAs). Chapter 1 synthesizes the literature describing the management and effectiveness of AMAs and PACs during the first decade of the Plan. Chapter 2 examines how collaborative relations and collaboration in forest stewardship evolved on four case-study Forest Service (FS) and Bureau of Land Management (BLM) units (the Olympic, Mount Hood, and Klamath National Forests and the Coos Bay BLM District) and 12 associated communities since the Plan was implemented.

The monitoring questions and indicators monitored were the following:

Monitoring questions	Indicators monitored
Chapter 1	
How effective have new forms of collaboration been in engaging local communities?	Summarized the existing literature that describes the management and effectiveness of AMAs and PACs.
How much has collaboration with the public contributed to achieving the other objectives of the new collaborative mechanisms, such as effective resource management?	
How effective have the new forms of collaboration been in providing socio-economic benefits to local communities?	
Chapter 2	
Did agency and citizen collaboration in forest stewardship improve under the Plan, and did relations between local communities and agencies improve?	Level of engagement between community (groups) and agencies Types of collaborative forest stewardship activities Purpose of collaborations and partnerships Benefits of collaboration Barriers to collaboration Volunteerism

## Plan Expectations Regarding Agency-Citizen Collaboration

Some AMAs were expected to be actively managed to contribute to the sustained supply of timber expected under the Plan. Local AMA resource managers and communities were expected to use their combined experience and ingenuity to identify approaches that would achieve the conservation objectives of the Plan, without adhering rigidly to all of its

standards and guidelines. Primary technical objectives were to develop and evaluate monitoring programs and innovative management practices integrating ecological and economic values. Specific forest management topics to be explored were identified for each AMA. They ranged in emphasis from intensive timber production to single-species management to partnerships with state and private land managers.

Adaptive management areas were intended to be prototypes of how forest communities might be sustained. Land management and regulatory agencies were expected to collaborate with other government entities, nongovernmental organizations, local groups, landowners, communities, and citizens to achieve these goals.

Under the record of decision (ROD), PACs were to “provide or coordinate analyses at the province level that can provide the basis for amendments to Forest and District Plans and will provide monitoring reports for provinces” (USDA and USDI 1994: E-17). The ROD also directs that PACs are to “encourage and facilitate information exchange and complementary ecosystem management among federal and non-federal partners.”

Collaborative processes, broadly speaking, were expected to create new ways to involve local governments, tribes, and the public in managing the region’s forests, in addition to increasing interagency and intergovernmental coordination (Tuchmann et al. 1996). Interagency cooperation and public participation would reduce conflict over forest management (Tuchmann et al. 1996). The Plan did not have specific expectations related to on-the-ground collaborative forest stewardship activities outside of adaptive management areas.

## Monitoring Results

Although neither AMAs nor PACs have been entirely successful in meeting Plan expectations, both mechanisms have offered significant improvements upon the gridlock and limited collaborative opportunities available in the early 1990s.

Initial AMA collaboration with local communities showed promise. Early in the period, the Federal Advisory Committee Act (FACA) chartering process forced federal participants to temporarily withdraw. Internal agency issues further impaired the ability of AMA managers to collaborate meaningfully. Given these failures, the collaborative synergy envisioned in the ROD did not materialize. Coordination with the public was not sufficient to leverage the land management agencies’ limited willingness and ability to experiment. Few AMAs appear to have gone beyond “business as usual” under the land allocations and standards imposed by the Plan. Accordingly, AMAs have provided little socioeconomic benefit to local communities beyond the other provisions in the Plan.

The PACs have been more successful in engaging local communities. The PACs have provided a forum for ongoing, multiparty discussion of forest management issues among decisionmakers and local stakeholders. In this sense they represent an important step forward over project “scoping” as defined under the National Environmental Policy Act. They also have been successful in completing regionwide, multiparty compliance monitoring. In this capacity the Plan’s PACs can serve as a basis for future efforts. Although PACs have served to improve the flow of information and learning among province interest groups, they have not significantly shaped decisionmaking, and have accordingly been unable to

affect the flow of benefits to local communities. Despite these failings, PACs represent an important interim step toward developing new mechanisms for collaboration.

The Plan has had direct and indirect, positive and negative effects on collaborative forest stewardship on the case-study forests and communities. The Plan's ecosystem focus and emphasis on interagency collaboration has encouraged interactions among public and private landowners and broadened the range of stakeholders and opportunities for collaboration. A variety of groups, together with forest agencies, are pooling time, labor, finances, and ideas to achieve mutually held forest stewardship objectives. Faced with decreased budgets and staffs, the forests have been able to maintain viable, productive, and multi-beneficial collaborative projects and programs. The volunteer programs are good examples of programs that are evolving and seeking new collaborative opportunities in the face of administrative and budgetary constraints.

Lower harvest rates and the resulting lower budgets and staff, which have both direct and indirect ties to the Plan, have influenced trends in collaboration in two key, yet paradoxical ways. With decreasing human and financial resources for forest management activities, the forests have expanded and developed partnerships with groups that share similar resource management goals. The paradox is that, as budget declines serve as an incentive for innovation and expansion of collaboration, they simultaneously constrain and potentially jeopardize collaborative efforts. Agency interviewees expressed concern that reducing staff and resources has made managing collaboration more difficult.

Increased diversity and innovation in collaboration, however, have coincided with a decrease in communication and collaboration with a once-prominent forest stakeholder, namely the timber community. The disconnect between timber-based communities and forest management, and the implication it would have for collaborative relations, were unanticipated consequences of the reduction in timber harvests under the Plan. In general, collaborative activities with members of the case-study communities were minimal, with some exceptions, such as tribes. New connections have yet to replace old timber ties in some communities. Interviewees from former timber-based communities tended to feel disassociated from, or unaware of, current forest policies and practices, or had little direct concern with forest management. And yet, some former timber industry employees who remained in their communities felt that their skills, knowledge, and experience in forest management could serve contemporary forest management but were not being used. Other factors that affected the participation of community residents in collaborative resource management, beyond the necessity of a shared mutual interest or stake, included a shortage of residents with skills to do the work or the time to participate, a lack of consistent players and participation, the local presence—or absence—of organized groups with resources, and the need to struggle to make ends meet.

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# Chapter 1: Federal Collaborative Efforts

*Claudia Stuart*

The Northwest Forest Plan (the Plan) called for federal agencies to coordinate and collaborate with one another in managing federal forests in the Pacific Northwest (Tuchmann et al. 1996: 6, 44–48). It also called for greater collaboration in forest management between agencies and citizens (Danks and Haynes 2001: 54). Two formal institutions were set up to promote agency-citizen collaboration in forest management: provincial advisory committees (PACs) and adaptive management areas (AMAs). An enhanced collaborative approach to forest management was expected to improve relations between agencies and the public and to reduce conflict over forest management.

In this chapter, I synthesize the literature describing the management and effectiveness of AMAs and PACs during the first decade of the Plan. The documents reviewed use various approaches to evaluate progress, ranging from interviews with agency officials to statistically based survey samples of local community residents. I do not attempt to evaluate these findings based on their technical or scientific merit, but simply to summarize them as they describe the effectiveness of the Plan in enhancing collaboration between agencies and communities.

## Monitoring Questions

1. How effective have new forms of collaboration been in engaging local communities?
2. How much has collaboration with the public contributed to achieving the other objectives of the new collaborative mechanisms, such as effective resource management?
3. How effective have the new forms of collaboration been in providing socioeconomic benefits to local communities?

## Adaptive Management Areas

The Plan recognizes the critical role played by innovation and experimentation in successful adaptive management. In response, the record of decision (ROD) designated 10 AMAs “intended to provide a geographic focus for innovation and experimentation with the intent that such

experience be widely shared” (USDA and USDI 1994: D-3). The AMAs comprise 1.5 million acres, about 6 percent of the Plan area. Individual AMAs range in size from 92,000 to almost 500,000 acres (table 1-1). Several factors were considered in selecting AMA locations (fig. 1-1):

- Minimizing risk to achieving the conservation objectives of the Plan.
- Providing a mix of public and private lands, to provide opportunities for various owners to cooperate in land management.
- Proximity to communities subject to adverse economic effects from reduced federal timber harvest.

## Expectations

The matrix land (land not set aside for reserves or other special designations) allocation and some AMAs were expected to be actively managed to produce the sustained supply of timber expected under the Plan. Local AMA resource managers and communities were expected to use their combined experience and ingenuity to identify approaches that would achieve the conservation objectives of the Plan, without adhering rigidly to all of its standards and guidelines. Primary technical objectives were to develop and evaluate monitoring programs and innovative management practices integrating ecological and economic values. Specific forest management topics to be explored were identified for each AMA. They ranged in emphasis from intensive timber production (Little River AMA) to single-species management (North Coast AMA) to partnerships with state and private land managers (Olympic and Snoqualmie Pass AMAs) (table 1-1).

Adaptive management areas were “intended to be prototypes of how forest communities might be sustained” (USDA and USDI 1994: D-4). Land management and regulatory agencies were expected to collaborate with other government entities, nongovernmental organizations, local groups, landowners, communities, and citizens to achieve these goals. The ROD identifies communities associated with each AMA (table 1-1).

The ROD stipulated several management elements involving collaboration between AMA managers and the public. Each area was to develop a shared, collaborative

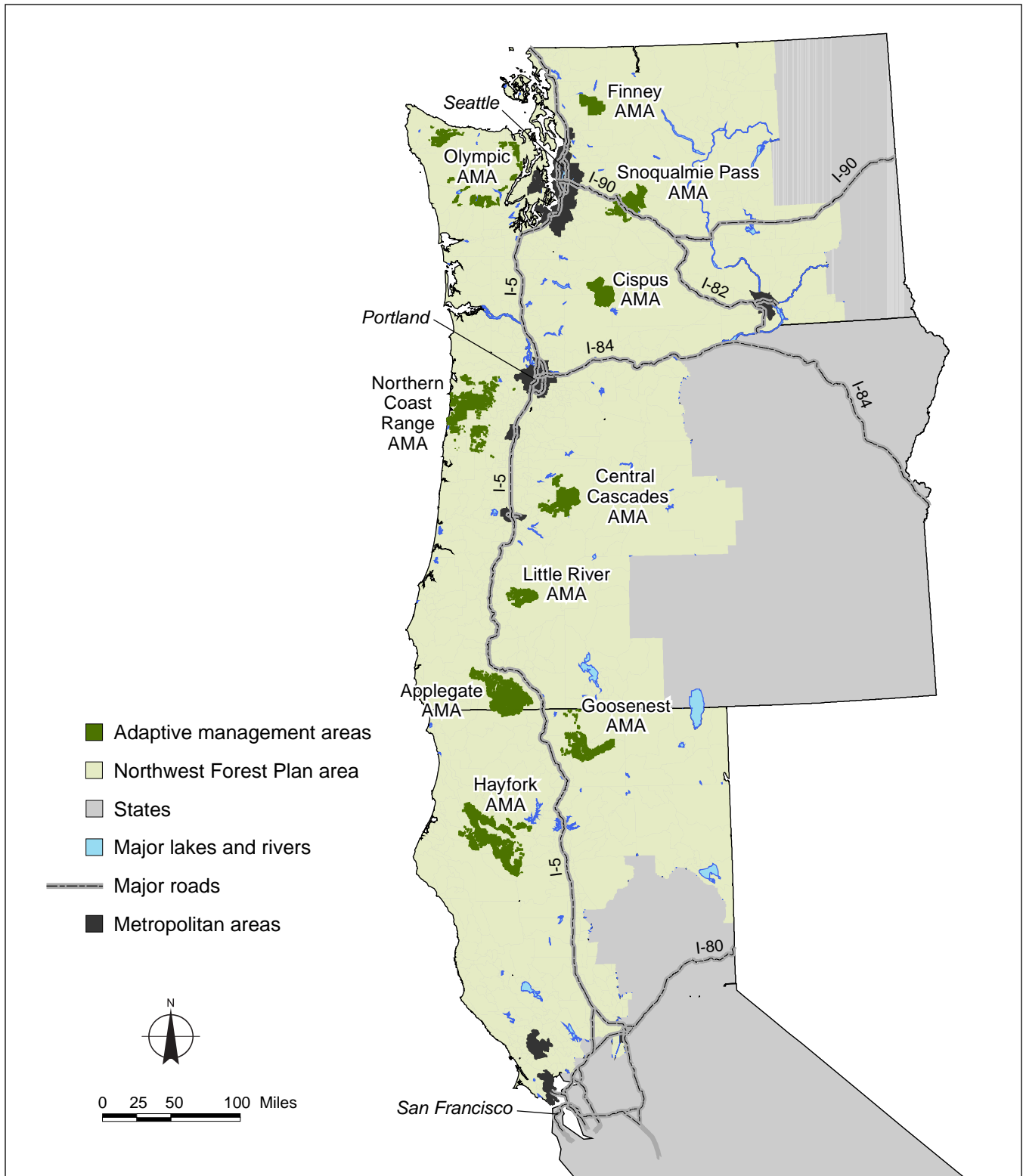


Figure 1-1—Adaptive management areas under the Plan.



**Table 1-1—Key characteristics of the Plan’s adaptive management areas**

State	Name	Size	Ownership	Associated communities	Research and development emphasis
		<i>Acres</i>			
Washington	Cispus	143,900	USFS	Randle, Packwood, Morton	Timber production and forest management
	Finney	98,400	USFS	Darrington	Late-successional and riparian habitat
	Olympic	150,400	USFS	Various counties	Partnership with Olympic State Forest
	Snoqualmie Pass	212,700	USFS, Plum Creek Timber Company, other private, state	Cle Elum, Roslyn	Forest planning on “checkerboard” lands
Oregon	Applegate	277,500	BLM, USFS	Grants Pass, Medford	Forest management
	Central Cascades	155,700	USFS, BLM	Eugene, Sweet Home	Ecosystem landscape processes and forest management
	Little River	91,800	USFS, BLM	Roseburg, Myrtle Creek	Intensive timber production
	Northern Coast	250,000	USFS, BLM	Tillamook, Willamina, Grand Ronde	Marbled murrelet management
California	Goosenest	172,900	USFS	Yreka, Montague, Dorris, Hornbrook	Ecosystem management, commercial timber production
	Hayfork	488,500	USFS, BLM	Hayfork	Forest and ecosystem-management, commercial timber production

vision for the area, knowledge sufficient to meet operating objectives, an operating strategy, and a plan to educate participants and stakeholders. Managers of each area were to define communities to be included in the collaboration; community resources and partners capable of advancing ideas for management; mechanisms for coordinating with local communities; a funding plan; and a plan for integrating community objectives with agency objectives (Pipkin 1998: 31).

The Plan recognized that developing innovative approaches would require communities to have sufficient political capacity, economic resources, and technical expertise to become full partners in the effort. Management also needed to be coordinated across ownership boundaries. Active management of each AMA was to begin with the collaborative development of an assessment and a plan for the area.

In addition to local land managers and communities, AMA operation was to include a third set of parties: agency scientists. Agency researchers were to design experiments testing techniques to meet AMA management objectives under the more flexible direction provided for the areas without compromising the Plan’s conservation objectives.

## Results and Discussion

Shindler et al. (1996) studied community attitudes related to the Central Cascades AMA only months after the Plan was signed. The researchers based their work on the premise that developing a community-oriented approach for AMAs required an understanding of the degree to which members of associated communities shared preferences for AMA management. The authors conducted opinion research among 744 members of three communities close to the AMA. They identified two community factors that correlated with divergent opinions about AMA management: community

dependence on the timber industry and the proportion of retirees among the local population. Two other factors, length of residence and income, did not affect responses.

The authors found that more than 90 percent of community members considered themselves aware of resource management issues. Forty-eight percent felt informed about the Plan. Respondents were supportive of the concept of adaptive management, believing that forest management was best conducted by land and resource agencies in concert with researchers and local citizens. Most respondents in each community supported science and experimentation on selected federal lands. Respondents, particularly those in the nontimber community, believed that federal resource management required significant change, and that AMAs were a generally responsible approach. Note that, although Shindler et al. found that local communities supported the **concept** of adaptive management, a contemporary study (Povey and Synder 1995) found that only 16 percent of local community members were aware of the existence of the Central Cascades AMA.

Timber and nontimber communities were divided over whether the survival of timber workers should be the most important goal of AMAs. Most respondents supported citizen participation, even if it increased government costs. Residents believed that land-management and regulatory agencies, along with local residents and stakeholders, were more fit to influence federal forest management than outsiders.

Shindler et al. concluded that community members would support agencies taking a lead role in AMA management, as long as local residents' input was taken into account. In resource-dependent communities, successful collaboration would be more challenging because these community members believed that agencies were not open to public feedback. The AMA managers would need to overcome lack of trust among local and outside groups. Successful collaboration would require lead agencies to unify constituent groups. If the agencies were unsuccessful, local communities would be reluctant to relinquish control, either to the agencies or to other groups. Continuing community support would be contingent on successful implementation. The authors hypothesized that, should adaptive management

fail to produce better agency decisions, public support for adaptive management might soon fail.

In assembling their report to Congress, Tuchmann et al. (1996) requested information from each Plan-area land management and regulatory agency's regional and field offices. Followup meetings were held with staff and line officers in 30 offices among five agencies. The group found that, by 1995, all AMAs had implemented public-private collaborative activities. Although AMAs differed in amount of activity, several partnerships had been formed with school districts, counties, and local institutions. The team observed a strong appreciation of the value of consensus-building efforts among both agency staff and community members. Compliance with the 1972 Federal Advisory Committee Act (FACA), however, had significantly slowed collaborative efforts: the act required federal officials to temporarily withdraw during adjudication and FACA chartering. A lack of clarity in defining the relation between federal and nonfederal landowners in AMAs further dampened collaboration and general effectiveness. The Tuchmann report's compilation of AMA accomplishments indicates that early management efforts were largely dedicated to the significant workload of planning, assessing, and analyzing required by the Plan and other relevant direction (Tuchmann et al. 1996: 118–119).

The Tuchmann team noted various approaches toward collaborative planning. The public did not participate early in some of the AMA planning process as envisioned in the ROD, but preferred to wait and comment on analyses developed by the agencies. In one AMA, collaboration broke down when the large participatory group polarized. Managers of the AMA went on to work successfully with smaller citizen groups. Managers of another area allowed local community members to lead the initial assessment process. This approach was found to be highly successful.

By the time of the Tuchmann team's assessment, a lack of flexibility under the Plan's standards and guidelines had emerged as a critical factor that limited implementing activities within AMAs. The ability of managers to innovate and experiment was accordingly circumscribed. Regulatory and land management agencies adhered to differing views about the degree of experimentation appropriate within Plan

guidance. Nor did operating budgets support rapidly implementing projects as was envisioned in the Plan. Instead, other programs increasingly took priority (Tuchmann et al. 1996: 121).

Stankey and Shindler (1997) examined the establishment of AMAs, proposed a framework for evaluating progress, and identified keys to successful implementation. They noted that agency and nonagency personnel had been disappointed in the apparent inability of the AMAs to attain the objectives outlined by the Forest Ecosystem Management Assessment Team (FEMAT 1993) and the ROD. They saw roadblocks in the lack of specific AMA guides and inadequate organizational support. They attributed the relative success of at least one AMA (Applegate) to an effective public coalition of land-management interests that predated the AMA. Adaptive management areas supported by the agencies internally, but lacking effective public recognition and support, were less likely to attain the objectives in the ROD.

Stankey and Shindler (1997) identified several key issues in effective AMA establishment and management: the need for a publicly recognized social meaning to AMA boundaries, a sense of “ownership” among the public and agency managers, the ability to incorporate personal and experiential knowledge into planning and management, the need to acknowledge diverse viewpoints, and the need for institutional support for rigor in following sound scientific criteria. They noted the ongoing constraint posed by FACA in implementing collaborative management as envisioned by FEMAT and the ROD and suggested restructuring the legislation to address the problem.

They further noted that vague goals and management parameters are impediments to success: clarity is needed in developing AMA purpose and direction. They pointed out that it may be necessary to develop local community capacity to participate in such an undertaking. Finally, they maintained that the issues of inequitable distribution of power and distrust among participants must be faced.

In developing his report to the Plan’s Interagency Steering Committee, Pipkin (1998) collected a variety of materials from several sources and interviewed about 75 agency personnel. He found that, although seven AMA

plans had been developed and submitted to a regional work group, work across the AMAs continued to lag behind the expectations set forth in the ROD.

Stankey et al. (2003) provided the most recent assessment of progress. The team conducted an extensive literature review; examined organizational plans and reports; and interviewed 50 agency staff, citizens, and academics. The authors considered AMA effectiveness primarily from the viewpoint of scientific experimentation, but did provide some insights into the effectiveness of AMAs as collaborative mechanisms. Like the Tuchmann team, they noted a lack of agency training and support, with the time and budgets available to AMA staff eroding over time. They described a risk-averse culture in the land management agencies and inflexibility on the part of the regulatory agencies as major impediments. Despite these stumbling blocks, they noted that two AMAs, the Central Cascades AMA and the Northern Coast Range AMA, have succeeded in implementing structured treatments. In their focus on the research aspect of AMAs, the authors noted the need to more fully involve stakeholders as an aspect of gaining social acceptability for designed treatments.

## **Provincial Advisory Committees**

The ROD divided the Plan area into 12 planning provinces (fig. 1-2). For each, the Plan established a PAC to consist of representatives of federal and state agencies, tribes, and others. In actuality, two sets of provincial teams were established to fulfill these objectives. Provincial interagency executive committees (PIECs) for each province are led by the executives of participating national forests and BLM districts and consist solely of agency personnel. Leadership rotates among participating FS and BLM units. Provincial advisory committees are chartered under FACA and consist of up to 29 participants from among a variety of federal, state, county, and tribal governments; the timber industry; environmental groups; recreation and tourism groups; and up to five members at large. This array meets FACA stipulations for representing a broad set of interests while limiting advisory groups to a workable size. The Plan’s PACs were formally established under FACA in September 1994.

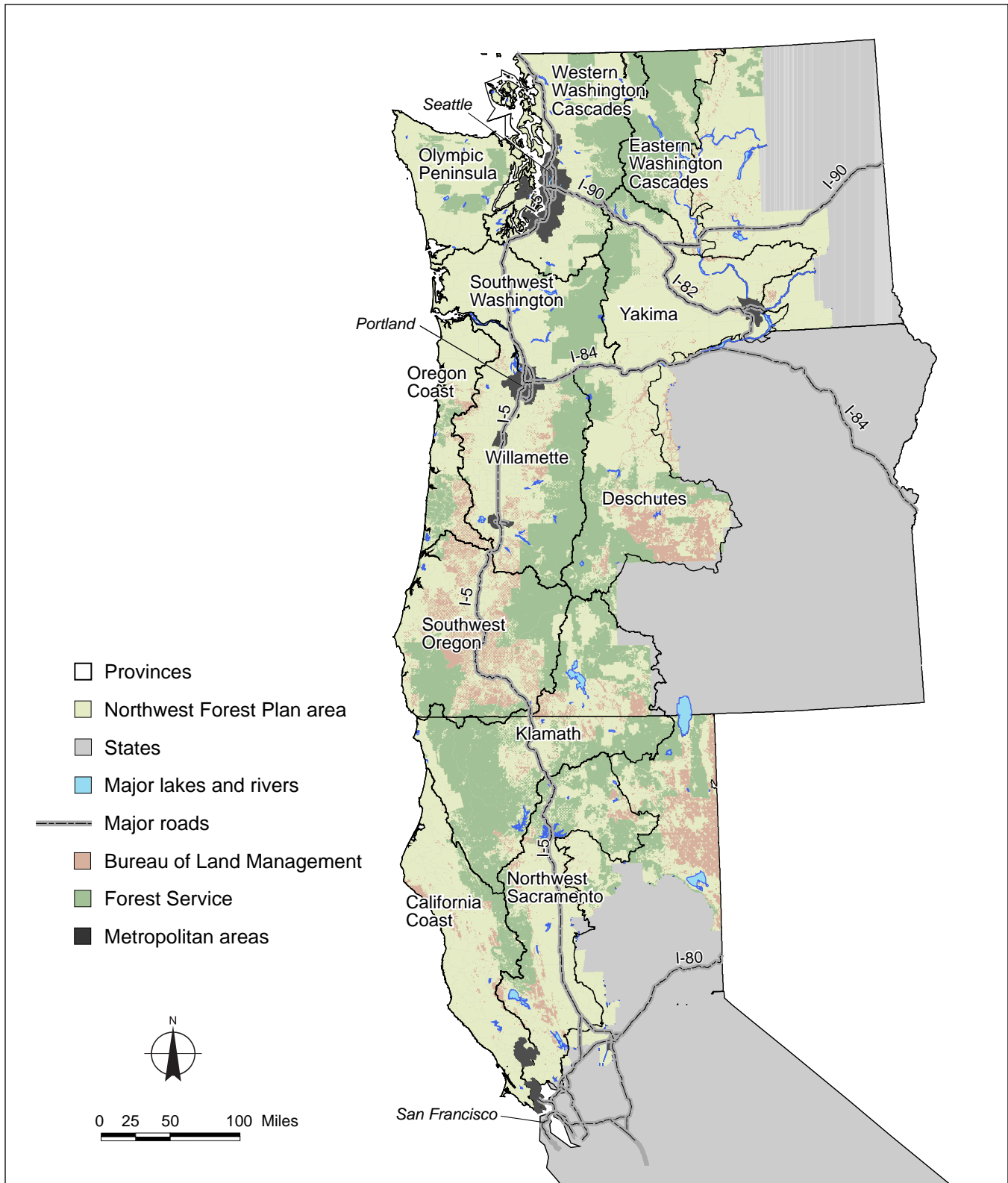


Figure 1-2—Province planning and analysis areas under the Plan.

## Expectations

Under the ROD, PACs were to “provide or coordinate analyses at the province level that can provide the basis for amendments to Forest and District Plans and will provide monitoring reports for provinces” (USDA and USDI 1994: E-17). The ROD also directs that PACs are to “encourage and facilitate information exchange and complementary ecosystem management among federal and non-federal partners.” The Plan mandates that the Interagency Advisory Committee and Regional Interagency Executive Committee “will continue to develop and refine the appropriate role for these teams at the level of physiographic provinces, Adaptive Management areas, or specific watersheds.”

## Results and Discussion

The literature summarized here to evaluate PAC effectiveness is limited to two agency reports. Tuchmann et al. (1996) noted early in the period that sometimes PAC chartering under FACA split representation among interests that did not accurately reflect local stakeholders. Provincial advisory committees were seen as redundant with existing bioregional councils. Further, several groups objected to the array of representation required under FACA, contending that the interests of Pacific Northwest communities could more effectively be represented by smaller memberships. In light of PAC boundaries that cross land ownerships, nonfederal PAC participants objected to PAC emphasis on federal land management.

Despite persisting concerns about redundancy, Pipkin (1998) found PACs to be vital to collaboration with state watershed councils and biodiversity councils. Pipkin also found PACs to be effective in enhancing communication between federal agencies and other stakeholders. He further noted that PAC members conduct project-scale compliance monitoring under the Plan. In this monitoring capacity, PACs have met the expectations in the ROD.

Pipkin also noted, however, the lack of a mechanism for communicating between the PACs and the region as envisioned in the ROD, foregoing opportunities for strengthening regional-local ties, for providing regional guidance when necessary, or for facilitating PAC input into larger scale decisions. He pointed out that PACs have not

participated in the kind of province-scale analysis foreseen in the ROD as contributing a “basis for Forest and District plans.” This work was expected to be central to the mission of the PACs. Lacking commitment to this objective, and without regional guidance or responsiveness, other work of PACs has responded to local projects, participant agendas, and member interests. Committee activities have included education, identifying restoration projects, and reviewing management activities. In some cases, PACs have served to facilitate information exchange between federal and nonfederal initiatives in the province. Members frequently discuss the socioeconomic effects of Plan implementation. Pipkin found that PAC participants generally want stronger links between their committees and regional agency staff. Interestingly, although he found that Bureau of Land Management personnel also want such strengthened ties, Forest Service personnel cite no need for further guidance until requested by the PAC.

## Conclusions

How effective have new forms of collaboration been in engaging local communities? How much has collaboration with the public contributed to achieving the other objectives of the new collaborative mechanisms, such as effective resource management? How effective have the new forms of collaboration been in providing socioeconomic benefits to local communities?

Adaptive management areas represent a significant agency investment in collaborative innovation, comprising 6 percent of the Plan area in subregions known to be socially and economically affected by declining timber harvests. Further, they are one of only two land allocations in which sustained timber harvest is expected. Immediately after the signing of the Plan, the work of Shindler et al. (1996) showed that at least some local communities were supportive of collaborative adaptive management. Despite these conditions, the literature shows that in their first decade, most AMAs failed to meet the Plan’s expectations.

Initial collaboration with local communities showed promise. The potential for success was diminished early in the period, however, when adjudication and the FACA chartering process forced federal participants to temporarily

withdraw, severely affecting local trust in this new form of collaboration. Conflict among some polarized interests also caused collaboration to collapse, forcing federal officials to work with disparate groups rather than in a unified partnership.

Internal agency issues further impaired the ability of AMA managers to collaborate meaningfully. These included a lack of demonstrated, long-term agency commitment to AMA staffing and funding; a lack of incentives to guide and support local AMA managers in shouldering risk; and an unwillingness or inability among the regulatory agencies to consider localized adaptive management—and its potential for small-scale experimental failures—as a legitimate approach for improving larger scale conservation knowledge and techniques (Stankey et al. 2003, Tuchmann et al. 1996).

Given these failures, the collaborative synergy envisioned in the ROD has not materialized among AMAs. Coordination with the public has not been sufficient to leverage the land management agencies' limited willingness and ability to experiment. Few AMAs appear to have gone beyond “business as usual” under the land allocations and standards imposed by the Plan. Accordingly, AMAs have provided little socioeconomic benefit to local communities beyond the other provisions in the Plan.

Despite the cumbersome membership requirements also imposed on them by FACA, PACs have been more successful in engaging local communities. Because of this success, the Plan's PACs were rechartered in 2003 and continue to operate. The PACs have provided a forum for ongoing, multiparty discussion of forest management issues among decisionmakers and local stakeholders. In this capacity, they represent an important step forward over project “scoping” as defined under the 1969 National Environmental Policy Act (NEPA). They have also been successful in completing regionwide, multiparty compliance monitoring. Provincial advisory committee monitoring efforts have fulfilled requirements for implementation monitoring under the Plan. In their monitoring capacity, the Plan's PACs can serve as a basis for future efforts.

But PACs have not delivered the full breadth or positive effects of participatory opportunities envisioned under the Plan. They have not coordinated province-scale analysis to serve as a basis for forest and district plans. Nor does the available literature indicate support from the regional level in developing and supporting a role for PACs in this respect, or in developing an appropriate role related to AMAs. Although PACs have served to improve the flow of information and learning among province interest groups, there is no indication in the literature that they have significantly shaped decisionmaking or resource management. They have thus been unable to affect the flow of benefits to local communities.

Despite these failings, PACs represent an important interim step in developing new mechanisms for collaboration. Resource advisory committees, or RACs, were established by Congress under the Secure Rural School and Community Self-Determination Act of 2000. The act broadens the scale of subregional mechanisms for collaborative ecosystem management, affecting 700 rural counties in 41 states. Like PACs, RACs are multicounty entities created to improve collaborative relations and provide advice and recommendations to the FS and BLM. They are chartered under FACA, with membership providing for smaller groups while still admitting a range of interests. The 15 members of each RAC are drawn equally from among three groups: organized labor, forest commodity production, and intensive uses; environmental and dispersed uses; and elected officials, tribal representatives, educators, and the public at large.

The RACs review and recommend road maintenance, watershed restoration, hazardous fuel reduction, and other projects proposed by counties and others for funding under Title II of the act, which returns a portion of the act's funding to counties for this purpose. The RACs thus play a more immediate role in shaping ecosystem management decisions and investments than do PACs. Although RACs have been in existence for a relatively short time, early research among three committees (Wilson, n.d.) has found members to be

satisfied with collaboration and outcomes among their committees. However, the sunset of the Secure Rural Schools Act in 2006 remains the source of considerable concern among members.

The literature shows that, although neither AMAs nor PACs have been entirely successful to date in meeting Plan expectations for engaging the public in new forms of collaboration, both mechanisms have offered significant collaborative opportunities beyond the gridlock and limited NEPA “scoping” mechanism available in the early 1990s.

Both initiatives have been significantly hampered by FACA restrictions. Although the act was designed to prevent inequitable influence in federal decisionmaking, it has caused significant disruptions, imposed cumbersome membership, and ultimately thrown a chill over federal efforts to participate in the collaborative mechanisms designated by the Plan.

Effective AMA management involves a second factor outside the land management agencies’ control: a more open interpretation of conservation requirements among the regulatory agencies (Stankey et al. 2003, Tuchmann et al. 1996). Other factors have been beyond the control of local managers responsible for day-to-day implementation. Whether the land management agencies will revitalize the AMA program remains to be seen. Should the attempt be made, federal officials will need to address the likely erosion of public trust and support engendered by the failings of the program in the Plan’s first decade.

Less restricted in their operational scope and with broad and sometimes redundant participation, PACs have been able to function despite obstacles like the lack of regional guidance and support. In collaborating with the public through the Plan’s PACs, the land-management agencies have been able to achieve other objectives: improved public-private communication and multiparty compliance monitoring. Despite these collaborative successes, the literature provides little evidence that AMAs or PACs have been effective in enhancing or sustaining flows of socioeconomic benefits from federal forests to local communities.

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## Chapter 2: Collaboration in Forest Stewardship

*Ellen M. Donoghue and Susan Charnley*

One of the Northwest Forest Plan (the Plan) goals was to improve relations between federal land management agencies and local communities by promoting collaboration between agencies and communities. The Plan's designers believed that the ability of the agencies to meet the principal goal of the Plan—to provide adequate protection for threatened and endangered species—depended on closer collaboration among state and federal land and wildlife management agencies and on developing better and more diverse communication networks between the agencies and local communities (Tuchmann et al. 1996). This chapter examines how collaborative relations and collaboration in forest stewardship have evolved for the four case-study Forest Service (FS) and Bureau of Land Management (BLM) forests since the Plan was implemented, including changes in collaborating with the 12 case-study communities.

Collaboration in forest stewardship comes in many forms and serves many functions. We discuss several forms of collaboration, but others were beyond the scope of the monitoring project. The primary focus is on understanding the status and changes in collaborative forest stewardship and on the relations between community or locally based groups and the case-study forests. We defined collaboration in forest stewardship as the pooling of ideas, tangible resources (such as information, money, labor), or both by communities of interest or place and federal forest-management agencies, to conduct a forest management activity or solve a forest management problem that neither group can solve by itself (adapted from Gray 1985).

The Plan set up specific institutional arrangements to promote collaboration with governmental and nongovernmental stakeholders in the form of provincial advisory committees and adaptive management areas. The Plan also called for a greater degree of collaboration among federal agencies. We did not conduct case-study assessments on all these forms of collaboration; instead, we decided that narrowing the focus on collaborative forest stewardship would allow us to address changes in one type of collaboration, given that an assessment of all collaborative processes in the context of the Plan was beyond the scope of the monitoring project.

### Monitoring Question

Did agency and citizen collaboration in forest stewardship improve under the Plan, and did relations between local communities and agencies improve?

### Expectations

Collaborative processes, broadly speaking, were expected to create new ways to involve local governments, tribes, and the public in managing the region's forests, in addition to increasing interagency and intergovernmental coordination (Tuchmann et al. 1996). Interagency cooperation and public participation would reduce conflict over forest management (Tuchmann et al. 1996). The Plan did not have specific expectations related to on-the-ground collaborative forest stewardship activities, outside of adaptive management areas.

### Data Analysis

We gathered data to assess collaboration trends from a variety of sources. The BLM district reports and a FS database contained data on volunteers. Much of our discussion on collaborative forest stewardship, however, is based on qualitative data from interviews with community and agency representatives from 4 case-study areas and 12 case-study communities; we synthesized these data for this report.<sup>1</sup> For a copy of our interview guide, see volume III, appendix D. A more detailed discussion of our interview methods is contained in volume III, chapter 8; and volume III, appendix D contains a list of people interviewed.

<sup>1</sup>More in-depth discussion of interview data can be found in:

Buttolph et al. (in press).

McLain et al. (in press).

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## Results and Discussion

We asked community and agency interviewees how collaboration in forest stewardship has changed under the Plan and whether relations between federal land management agencies and local communities was improving. We also asked interviewees to describe the types of collaborative projects they were familiar with and the factors promoting or discouraging collaboration in forest stewardship. Interviewees interpreted collaboration diversely, ranging from volunteer activities contributing to forest stewardship, to agencies listening to the concerns expressed by members of a community. We tried to keep the focus of the interviews on types of collaborations leading to on-the-ground forest stewardship or those indirectly contributing to forest stewardship, such as environmental education.

### Types of Collaboration in Forest Stewardship

Collaboration in forest stewardship in the case-study forests had many forms and served many functions. Various governing groups—tribes, state, and local governments—together with forest management agencies, are pooling resources—like time, labor, finances, and ideas—to achieve mutually held forest management objectives. And there are also nongovernmental groups that may be locally, regionally, or even nationally based, such as watershed councils, environmental organizations, economic development groups, and nature or recreation clubs and associations. Individual and corporate landowners also collaborate, as do informal groups, people from a variety of places who work in concert on a particular project, such as a bird or fish count. Some participants are paid or sponsored by their respective organizations to participate in the collaborative activities, but many people volunteer their time or contribute some type of in-kind contribution. Indeed, volunteerism has been, and continues to be, an important way to achieve forest stewardship objectives on the case-study forests.

Most forest stewardship collaboratives described by forest and community interviewees related to recreation, wildlife and fisheries conservation, and habitat protection. Environmental education and community development collaboratives were also mentioned. Because of the less-direct connection to on-the-ground forest stewardship and

insufficient data, however, we will not speak specifically of trends in these types of collaboratives. Community and agency interviewees on each of the case-study forests described collaborative projects between agencies and tribes, such as restoring habitat and managing forest products. Collaborative fisheries projects were also mentioned on each forest. Interviewees associated with the Olympic, Mount Hood, and Coos Bay District case studies described a variety of collaborative projects in recreation management, but on the Klamath National Forest, ecological restoration projects were the most commonly mentioned collaborative activities. Recreation collaboratives were diverse in their form and function, including projects involving equestrian associations working on trails or hiking clubs conducting wilderness-use education.

In conducting the community case studies, we purposefully selected community interviewees who represented a range of perspectives in order to address many dimensions of forest management and socioeconomic change (app.). Among this diversity of perspectives, we found that active participation in collaborative forest stewardship by interviewees of the case-study communities was minimal, with some exceptions. Although a focused evaluation of collaboration from the perspective of people engaged in collaborative projects was beyond the scope of the monitoring project, a general assessment of how stakeholders perceived opportunities for collaborative stewardship was possible.

Most of the groups that collaborated with case-study forests drew participants from larger cities or metropolitan areas, or people living in communities near public forests, rather than from a specific forest-based community. One exception is the collaboration between agencies and tribes that appears to be increasing within the case-study forests. Another exception is that in response to the multiple forces that affected the wood products industry since the early 1980s, the Coos Bay District invested heavily in its recreation program in an effort to help local communities build a nature-based recreation and tourism industry on the central Oregon coast. And the interdependency resulting from the patchwork ownership of lands around the Coos Bay District may have encouraged collaboration.

## General Trends in Collaborative Forest Stewardship

Most agency interviewees on the case-study forests indicated several ways that collaboration in forest stewardship has changed since the late 1980s. Olympic National Forest interviewees felt that the forest was engaging in more collaborative stewardship activities with the public than in the past. Some, however, felt that collaboration had not necessarily increased, but that the people with whom the forest was collaborating had changed from timber-industry interests to recreation, fish and wildlife, and watershed-oriented interests. Collaborative efforts on the Olympic National Forest have been important to leveraging funds for projects, getting projects accomplished through volunteer efforts, and building long-term relations between the forest and various forest stakeholders and communities.

Over the past decade, the Mount Hood National Forest has increased the emphasis on the use of partners and collaboration to administer forest policy, goods, and services. Interviewees there suggested that this management approach is quite different from the approach and outlook of a decade or more ago. The perception is that then forest managers not only felt they could do the work themselves, but they also tended to prefer to do the work independent of other groups. Currently, partners make up an integral component of forest management on the Mount Hood National Forest. For instance, concessionaires at campgrounds and developed recreation sites (such as Timberline Lodge), outfitters, guides, and volunteers (such as Mazamas wilderness stewards) are increasingly interacting with the public and providing information about forest and recreation management rules, practices, and opportunities. They are also helping conduct on-the-ground forest stewardship activities. Many agency interviewees commented on the high emphasis that the current forest leadership places on collaborative processes.

Compared to the neighboring national forests, the Coos Bay BLM District invested more into direct collaboration with a variety of community partners in the period immediately after the Plan was adopted. One explanation may be that the Coos Bay District had the ability to participate

more intensively in collaborative partnerships, particularly during the mid-1990s, because its funding and staffing remained relatively constant, while the need for timber-sale design and implementation dropped precipitously.

Interviewees on the Klamath National Forest noted an increased emphasis on collaboration between the forest and other federal and state regulatory agencies since the Plan was implemented. This emphasis has meant that forest employees in upper management have spent much time, effort, and money working with other agencies on issues relating to resource protection. Some interviewees suggested that the time investment required for interacting with other agencies has taken away from the ability of the forest to interact collaboratively with local communities. The drops in forest budgets and staffing have motivated the forest to develop partnerships with other organized groups such as Ducks Unlimited and the Rocky Mountain Elk Foundation to get work done on the ground. Collaboration through grants and agreements helps the forest leverage resources to get work done, make community members more aware of forest management issues, involve local residents in forest stewardship, and provide local jobs.

## The Plan and Collaborative Forest Stewardship

Collaboration in forest stewardship is likely influenced by a host of factors and not by a single one, such as a regional change in forest policy. Nonetheless, to the extent that we are able, we discuss the direct and indirect ways that the Plan has influenced changes in collaborative forest stewardship on the case-study forests.

### **Ecosystem orientation of the Plan—**

The ecosystem orientation of the Plan—and because ecosystems cross boundaries—has broadened the range of forest stakeholders who have interests in, and concerns about, forests and forest management. This expansion of interests has diversified the types of organizations that work collaboratively with the forests. For instance, interviewees on the Mount Hood noted that more than a decade ago the forest was mostly concerned about resource management within the boundaries of the forest and that they worked with a fairly narrow group of stakeholders. Now, a diverse

range of partners, including clubs, local landowners, businesses, and concessionaires collaborate with the forests on on-the-ground stewardship activities across ownerships. Coos Bay District employees indicated that the emphasis on watershed restoration and the need to conduct activities simultaneously on private and federal lands has expanded the use of partnership agreements to get work done.

Interviewees on the case-study forests, particularly the Olympic and Klamath National Forests, report that they have been increasingly working with stakeholders with specific environmental and conservation objectives. Some of these environmental groups acknowledge, and are pleased by, their increased participation in forest stewardship. Yet they remain cautious about whether such relations and commitments by the forests will endure with changes in forest policy. Also, interagency and multiparty collaborations directed under the Plan, such as in provincial advisory committees (see Volume IV, chapter 1), appear to have helped bring new stakeholders to collaborative processes and build relations at watershed, multiownership, and agency-to-agency scales. The extent to which these new forums have delivered benefits to local communities and increased collaborative forest stewardship is unclear, however.

#### **Effects of lower harvest rates and decreased budgets and staff—**

Lower harvest rates and the resulting lower budgets and staff, which have both direct and indirect ties to the Plan, have influenced trends in collaboration in two key yet paradoxical ways. With decreasing human and financial resources for forest management activities, the forests have expanded and developed partnerships with groups that shared similar resource management goals. Many agency interviewees suggested that collaborating with like-minded groups was spurred on by the necessity to get the work done. Collaboration and partnerships have become a new way of doing business. For example, the increasing demand for recreation uses and opportunities on the Mount Hood National Forest has not been met with an increasing budget for recreation, which has remained relatively flat (decreasing in real dollars) over the past decade. The contribution of the recreation budget to overhead costs, however, has

increased as other large programs, namely timber, have declined. Thus, managers have turned to numerous partners to help implement recreation management and recreation policy on the forest.

The paradox is that, as budget declines serve as an incentive for innovation and expansion of collaborative processes to achieve forest stewardship objectives, they simultaneously constrain and potentially jeopardize collaborative efforts. Agency interviewees expressed concern that reducing staff and resources has made managing collaborative processes more difficult. Many interviewees spoke of the importance of building relations, but they acknowledged that time—a key ingredient—was growing increasingly scarce with increased workloads and the emergence of more collaboratives. Some agency interviewees were concerned that the forests may not be able to live up to their commitments and obligations in collaborative processes and risk losing the trust of their partners. Case-study FS interviewees also reported that the forests were unable to anticipate the direct and indirect effects of the decreasing timber program on other programs, such as roads, recreation, and volunteer programs, and opportunities for collaboration were initially constrained by these effects.

#### **Agency and community relations—**

Although the Plan's emphasis on interagency collaboration and public participation is evident in the increase in multiparty groups, such as the advisory committees and watershed groups, the goal to improve communication and relations with local communities has been less realized. Indeed, some community interviewees felt that the investment in agency-to-agency processes has reduced the emphasis on working with local communities on local issues. Also, they mention a sense that relations have improved and collaborative opportunities have expanded for groups and organizations with interests similar to those of the forests: recreation, watershed, and conservation. Relations have expanded for groups with complementary interests, including youth employment and educational groups that view working in the woods as a way for people to build knowledge and skills, while receiving a wage, course credit, or other benefits. Often these groups are not place-based groups situated in local communities.

The increased diversity of stakeholders and collaborative opportunities on the forest has coincided with a decrease in communication and collaboration with a once-prominent forest stakeholder group, namely the timber community. Traditional ties to communities with previously strong timber orientations have been largely severed. Attempts to build relations in these communities and to find common interests and opportunities in forest stewardship were few in the case-study communities, according to both community and agency interviewees. Broad-based community partnerships have been difficult to establish in the more traditional areas of forest management, such as road construction and maintenance and timber management. And interviewees still working in the timber industry said that the federal forests are no longer key players in timber management. In some places, a notable tension over the inability of the forests to provide a reliable supply of timber may be impeding the creation of collaborative opportunities in forest stewardship with former timber stakeholders.

At the time of the Plan, some communities were more economically diverse than others, or they were beginning to orient themselves toward the forest in new ways, such as with recreation. Some case-study communities had not had strong timber orientations for several years; collaboration in recreation management, in particular, was more evident in these communities than in timber-oriented ones. But, for the most part, the reduction in traditional connections that local communities had to timber management has not been met by comparable increases in connections to the forests through other aspects like recreation or restoration.

Agency interviewees acknowledge multiple benefits of working collaboratively: including getting work done, building relations with the public, and building a sense of civic ownership in the public forests. But these benefits may be difficult to realize in communities without strong connections to the forest. And, they are concerned that a cycle of continued disengagement might follow. Community interviewees pointed out that although some forest employees, most notably some district rangers, were active and involved in the community, this involvement had not translated into collaborative stewardship activities. Many

community interviewees expressed appreciation for, and saw value in, the sharing of information about forest management. Residents, however, often did not see a strong relation between their concerns and forest management. This view, combined with diminished agency presence on the forests—in particular the Forest Service presence—and the decline of timber management activities have created a sentiment in some communities that little mutual interest in collaborative stewardship activities is visible. Although mitigation efforts, such as the Northwest Economic Adjustment Initiative, provided economic development benefits to some communities around the case-study forests, the role of, and contribution by, the forests into these efforts were not widely publicized locally. Thus, opportunities to build or mend relations and connections through mitigation efforts were not fully realized.

A perception among community interviewees is that the Plan has shifted decisionmaking authority from the local forests to the regional and national scale. Some people felt that for this reason collaborative processes would not lead to timely action, and thus participation in such efforts was not worthwhile. Other interviewees noted that many people in the communities are struggling economically and did not have time to get involved in collaborative processes.

#### **Collaboration with tribes under the Plan—**

Determining how changes in collaboration between the case-study forests and neighboring tribes relate to the Plan is difficult, given the many factors that may have influenced change. In recent years, recognition by federal and state resource management agencies of tribal rights and the unique relations that tribes have with the United States government has increased (Lesko and Thakali 2001). Appreciation of the formal dialogue and engagement processes with tribes has apparently increased, as mandated in a number of federal acts, including the National Environmental Protection Act of 1970, the National Historic Preservation Act of 1966 (amended 1992), and the Native American Graves Protection and Repatriation Act of 1990. Also, President Clinton's presidential memorandum of 1994 (Clinton 1994) and executive order of 2000 (Clinton 2000) directed all U.S.

agencies to build effective processes for government-to-government relations with American Indian tribal governments. Other factors, such as increased emphasis on protecting anadromous fish habitat of cultural importance to tribes, recent land transfers, and memoranda of understanding between tribes and resource management agencies, have influenced collaborative processes in recent years. Nonetheless, the Plan's emphasis on ecosystems, watersheds, and species protection, coupled with the emphasis on inter-agency and multiparty collaboration, has likely contributed to, rather than detracted from, collaborative processes between most tribes near the FS and BLM case studies.

Interviewees on the Olympic National Forest reported that collaboration between the Quinault Indian Nation and the forest has been high for the past decade. The Plan's emphasis on watershed assessments has prompted interaction and collaboration. In addition, a recent land transfer and the sharing of revenues generated from another parcel of land have produced legal and administrative ties between the agency and the Quinault Indian Nation that continue to fuel collaborative relations.

In 2003, Karuk tribal officials reported that the tribe had established a working relationship with the Klamath National Forest under the Plan and had attempted to implement a number of collaborative projects with the forest. The limitations imposed by the Plan's survey-and-manage procedures had derailed some of these. In addition, the Karuk perceived other roadblocks, including a lack of coordination between the Plan and the Northwest Economic Adjustment Initiative; a lack of collaborative support among some individuals in the Forest Service; and a lack of agency support for the Plan itself. Despite the notable contributions of some individuals in the Forest Service, the situation led to disillusionment among tribe members regarding the willingness of the forest to collaborate with them. In 2003 the Karuk leadership remained interested in actively engaging the Klamath National Forest in collaborative management, but they felt they had been excluded both from providing input and from exercising their traditional knowledge.

Relations with the Coquille Tribe and the Coos Bay District have reportedly improved dramatically since the

late 1990s, compared to how they were in the early 1990s. And BLM employees note that they collaborate closely with the Coquille Tribe and the Confederated Tribes of the Coos, Lower Umpqua, and Siuslaw.

Over the past decade, protecting anadromous fish habitat has been an area of increased collaboration among the Confederated Tribes of the Warm Springs and the Mount Hood National Forest, as well as other state and federal agencies and nongovernmental entities.

### Volunteerism

Volunteerism is a type of collaboration in which the pooling of interests, resources, and labor often results in on-the-ground forest stewardship activities. But, direct ties between the Plan and changes in volunteerism are difficult to make. Changes in budgets and staffing that coincided with the Plan, however, coupled with the ecosystem orientation of the Plan, have affected volunteer programs on the case-study forests. To assess changes in volunteerism, we combined agency data on volunteers with interview data from the case-study forests. Painting an accurate quantitative picture of trends in volunteerism is difficult, given limitations of, and changes in, methods for collecting and reporting data over the years. We compiled quantitative data for the FS case-study forests for the region, although only recent years were available (table 2-1). For the Coos Bay District, we compiled volunteer data for recent years from annual reports provided by the Coos Bay District Office (table 2-2).

Agency interviewees from the case-study forests indicated that the forests depend heavily on volunteers to contribute to forest stewardship activities. Volunteer programs have evolved, however, with most of the case-study forests reporting increased emphasis on hosted volunteer programs in which agency personnel train and coordinate projects with staff of organized groups. These groups, in turn, train and supervise their members in specific volunteer activities on the forests. Budget and staff declines appear to be a key contributor to changes in volunteer programs, particularly on the FS case-study forests. Although some gains in programmatic efficiency through hosted programs are acknowledged, the decline in direct interaction between

Table 2-1—Senior, youth, and volunteer programs, 2000 to 2003<sup>a</sup>

	Senior community service employment program	Hosted	International volunteers	Volunteers	Youth Conservation Corps	Total
Klamath National Forest						
			<i>Person years<sup>b</sup></i>			
2000	11.66	16.92		6.21	1.56	36.35
2001	6.95	15.23	0.52	7.72	3.14	33.56
2002	4.68	8.62		6.09		19.39
2003		11.92		4.38	1.61	17.91
			<i>Value of work (dollars)</i>			
2000	251,744	287,396		120,258	38,081	697,479
2001	188,168	295,567	9,554	179,107	74,618	747,014
2002	153,524	156,796		149,942	30,867	491,129
2003		151,875		106,249	45,622	303,746
			<i>Number of enrollees</i>			
2000	26	125		128	5	284
2001	20	97	2	55	19	193
2002	18	84		141	5	248
2003		94		237	12	343
Mount Hood National Forest						
			<i>Person years<sup>b</sup></i>			
2000	5.96	4.55	0.2	12.92	2.39	26.02
2001	5.78	3.85	0.16	14.51	3.09	27.39
2002	5.25	2.99	0.27	11.32	2.71	22.54
2003		3.30		15.99	3.33	22.62
			<i>Value of work (dollars)</i>			
2000	128,003	92,466	4,367	267,803	39,164	531,803
2001	116,488	75,037	3,711	306,539	43,881	545,656
2002	118,125	60,973	7,661	238,155	55,754	480,668
2003		69,116		379,850	46,462	495,428
			<i>Number of enrollees</i>			
2000	11	209	1	915	15	1,151
2001	14	199	1	952	19	1,185
2002	10	182	1	817	21	1,031
2003		175		1,299	20	1,494
Olympic National Forest						
			<i>Person years<sup>b</sup></i>			
2000		4.69		11.51		16.2
2001	5.90	9.19		9.55		24.64
2002	9.47	14.06		9.62		33.15
2003		13.66		11.66		25.32
			<i>Value of work (dollars)</i>			
2000		75,059		191,523		266,582
2001	96,886	77,986		168,209		343,081
2002	193,716	198,868		168,221		560,805
2003		275,879		213,786		489,665
			<i>Number of enrollees</i>			
2000		67		506		573
2001	22	105		406		533
2002	17	97		331		445
2003		64		138		202

<sup>a</sup>Hosted programs include, but are not limited to, the Student Conservation Association, Northwest Youth Corps, California Department of Corrections, California Conservation Corps, and Greater Avenues for Independence.

<sup>b</sup>Person year is 260 days and equals one full-time equivalent.

Source: Senior, youth, and volunteer FS database. (Monetary data were not adjusted for inflation.)

**Table 2-2—Coos Bay District volunteerism, 1996–2002**

Year	Number of volunteers	Volunteer hours	Estimated value <sup>a</sup>
	<i>Individuals/groups<sup>b</sup></i>		<i>Dollars</i>
1996			291,858
1997		17,000	262,383
1998 <sup>c</sup>		37,600	509,657
1999	68/2 <sup>d</sup>	19,204	267,322
2000	37/1	8,600	117,269
2001	40/1	9,600	102,054
2002	33/1	21,000	377,129

<sup>a</sup> Adjusted for inflation; 2003 dollars.

<sup>b</sup> The district tracks volunteer activity carried out by large groups, such as Girl Scouts or Boy Scouts, as group efforts rather than as individual efforts. County prison volunteer hours were not included in these data.

<sup>c</sup> We are unable to explain the unusually high numbers in 1998.

<sup>d</sup> The BLM began counting couples working as camp hosts as one volunteer, rather than two from FY 2000 onward.

Source: U.S. Department of the Interior, Bureau of Land Management, Coos Bay District (1996–2002).

forest employees and citizen volunteers is seen as negative, as is the necessity of having to turn down, or redirect, individual requests to volunteer because of a lack of capacity to coordinate volunteer efforts.

The recreation programs on all forests have consistently provided opportunities for people interested in volunteering as campground hosts, maintaining recreational sites and trails, wilderness education, and presenting interpretive programs and tours at special sites. For instance, the Elanor trail crew on the Olympic National Forest has been a crew of 6 to 10 retirees ranging from 60 to 80 years old. Other programs on the case-study forests—such as the wildlife, fisheries, and botany programs; the soil, water, and air programs; the reforestation and stand development programs; and heritage programs—have used volunteers to assist with inventory, monitoring, restoration, and interpretation. For instance, the heritage program on the Mount Hood National Forest does not have a budget line item for interpretation (except as program management), but relies on volunteers to do a large amount of the heritage work.

Many volunteers come from outside the communities adjacent to the forests. On the Mount Hood National Forest, for instance, most of the volunteers in the recreation program reportedly come from the Portland metropolitan area.

Local residents, particularly those with strong attachments to specific places or events, volunteer in garbage cleanups, bird counts, fish counts, and other annual events on the forest, but not in high numbers. Community interviewees mentioned few examples of volunteerism in collaborative forest stewardship activities on their respective forests. Some interviewees from the Mid-Klamath community in the Klamath National Forest case study indicated that residents were struggling economically and were not in a position to work for free on behalf of the forest. The pool of residents with the capacity and inclination to get involved in civic activities are occupied with community development activities and may not be able to add to their existing civic commitments. The volunteer coordinator on the Coos Bay District, however, reported that about 50 percent of the volunteers are local and that most of the individual volunteers are long-term workers who contribute 80 to 95 percent of the volunteer hours. Agency interviewees on the Mount Hood National Forest and Coos Bay District also point out that county prison inmates have been another source of volunteers.

We encountered some discrepancies between the agency data on volunteers and perceptions from agency interviewees about changes in volunteer programs. Agency



interviewees on the Olympic National Forest reported that the number of volunteers fluctuates from year to year, but has been steadily increasing, and it is a healthy volunteer program. The corporate database, however, shows a steady decrease in the number of volunteers in recent years. This difference may be the result of counting people and projects in different ways from year to year. The perception that the volunteer program is growing is probably more relevant because it reflects day-to-day administrative processes.

For several decades, the Mount Hood National Forest has had some of the highest volunteer numbers in the Nation, which has been attributed to its high environmental and recreational amenities and its proximity to a metropolitan population. Volunteer coordinators reported that the peak numbers of volunteers on the forest were in the late 1980s and early 1990s. Corporate data for recent years show increasing numbers of volunteers, yet fluctuations exist in the number of person-years and the dollar value of the work performed between 2000 and 2003. These fluctuations may be a reflection of the evolution of the volunteer program on the forest. Volunteer coordinators indicated that staff and budget declines have reduced the forest's capacity to manage volunteer programs and that the forest cannot meet the demand for individual volunteer opportunities. As a result, some volunteer programs are now emphasizing hosted volunteers, where the forest trains and coordinates with outside groups who then train and supervise groups of volunteers.

According to corporate data, the number of volunteers on the Klamath National Forest has fluctuated, although it has increased between 2000 and 2003. The data suggest that more people are volunteering for shorter periods of time, and that the dollar value of the work performed by volunteers has been decreasing. Interviewees from the forest stated that the volunteer program has remained fairly stable since the Plan was implemented. They also indicated that running volunteer programs takes a commitment of employee time that has become increasingly scarce as forest budgets and employees decline in number.

Although direct comparisons are not possible, data for the Coos Bay District for roughly the same period as the FS database (2000–2002) show that the district experienced an

increase in volunteer hours (although it increased to roughly the same peak as in 1999), an increase in the dollar value of the work performed, but variable numbers of enrolled volunteers. The volunteer coordinator suggested that the decline in volunteer hours between 1997 and 2001 was due in part to the BLM's reluctance to use volunteers for surveys of species because of the concern that volunteer-gathered data might not hold up in court. It also may be due to the increase in Jobs-in-the-Woods programs and other professionalized restoration activities that historically may have provided volunteer opportunities.

### Challenges to Collaborative Forest Stewardship

Although several positive and innovative aspects of collaborative forest stewardship are working on the case-study forests, challenges still exist. Some have had direct or indirect connection to the Plan. Those, and other challenges not related to the Plan, are summarized below.

Agency interviewees acknowledge multiple benefits of working in collaborative processes, including getting work done, building relations with the public, and building a sense of civic ownership in the national forests. Participation in collaboratives, however, is difficult in the face of increasing workloads and decreasing budgets and staff. Some program managers said they feel they are just getting by with the resources they have to do their program of work, and engaging new partners and expanding the work seems infeasible. Community and agency interviewees indicated that having leadership in collaboratives—in particular, agency representatives with decisionmaking authority—was important to the progress of collaborative groups because it demonstrates commitment and the willingness to act. Some interviewees, most notably on the Coos Bay District, were concerned that participation in collaborative groups had been delegated to technical specialists who lack decision-making authority.

Agency interviewees on all forests noted that leaders and field employees are some of the most enthusiastic supporters of collaborative processes. Nonetheless, several interviewees on the FS case forests noted that internal cultural barriers to collaboration exist, stemming mainly

from an enduring attitude that the FS can do the work best by itself. One challenge may be identifying areas where collaborative approaches can achieve high returns, and other areas where more narrow, traditional approaches are appropriate.

With the broadening of forest stakeholders comes the increased likelihood that perspectives on forest management issues will conflict. Throughout the forest case studies, the formation of groups that initially set out to address a management issue or series of issues is evident, but their inability to unify under common forest stewardship objectives has derailed some groups. For instance, community interviewees on the Klamath National Forest, who were involved in a collaborative group that formed at the onset of the Plan, said the group intended to address forest management issues but eventually a few strong dissenting voices led to a stalling of the collaborative process. Although this experience became a disincentive for some members to participate in collaborative processes in forest management, interviewees noted that they could apply knowledge gained through that experience to collaboratives that addressed other, less controversial objectives, such as water and fisheries management.

## Conclusions

Did agency and citizen collaboration improve under the Plan, and did relations between local communities and agencies improve? The Plan has had direct and indirect, positive and negative effects on collaborative forest stewardship on the case-study forests and communities. The Plan's ecosystem focus and emphasis on interagency collaboration encouraged interactions among public and private landowners and broadened the range of stakeholders and opportunities for collaborative processes. A variety of groups, together with forest agencies, are pooling resources, such as time, labor, finances, and ideas, to achieve mutually held forest stewardship objectives. Faced with challenges of decreased budgets and staffs, the forests have been able to maintain viable, productive, and multibeneficial collaborative projects and programs. The volunteer programs are good examples of programs that are evolving and seeking

new collaborative opportunities in the face of administrative and budgetary constraints.

Increased diversity and innovation in collaboration, however, has coincided with a decrease in communication and collaboration with a once-prominent forest stakeholder, namely the timber community. The disconnect between timber-based communities and forest management and the implication it would have on collaborative relations were unanticipated consequences of the reduction in timber harvests under the Plan. In general, collaborative activities, as reported by community interviewees who represented a diversity of perspectives, were minimal with some exceptions, such as Tribal collaboratives. New connections have yet to replace old timber ties in some communities. Many interviewees from former timber-based communities tended to feel disassociated from, or unaware of, current forest policies and practices or had little direct concern with forest management. And yet, some former timber industry employees who remained in their communities felt that their skills, knowledge, and experience in forest management could serve contemporary forest management practices but were not being used. Other factors that affected the participation of community residents in collaborative resource management, beyond the necessity of a shared mutual interest or stake, included a shortage of residents with skills to do the work, residents with the time to participate, consistent players and participation, organized groups with resources, and residents who are not struggling to make ends meet. We focused on common themes that emerged from the four local cases, and do not know if, and to what extent, the results reported here can be generalized to the Plan area as a whole.

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## Appendix: Methods and Interview Guide

### Methods

Our evaluation of how effective adaptive management areas (AMAs) have been is based on secondary source material. Refer to that material for a discussion of methods used to assess AMAs. Our discussion of how effective Provincial Advisory Committees (PACs) and Resource Advisory Committees (RACs) have been at promoting collaborative forest stewardship is based on both secondary source material and informal discussions with PAC and RAC members, both during and outside of committee meetings.

The analysis of trends in volunteerism and partnerships is based on agency data relating to volunteers and other work programs, as well as partnership agreements (e.g., memoranda of understanding, cooperative agreements, joint venture agreements). To document these trends, we first updated a survey of the many volunteer and partnership databases that exist within the Forest Service to determine how useable they are for monitoring. This survey was begun by the Forest Service Partnership Taskforce. Databases surveyed include infrastructure database (INFRA), Wildlife, Fish and Rare Plants (WFRP), Senior, Youth, Volunteer (SYV), Economic Action Programs (EAP), and National Fire Plan Operations and Reporting System (NFPORS). These databases have not been fully populated with historical data and typically contain only very recent data. They are not linked together and contain redundant

and contradictory information. Additional data on trends in collaborative forest stewardship, in particular related to volunteerism, were gathered during case study interviews with forest employees and community representatives and stakeholders.

Once the data sources were located, we queried them for information on our case-study forests. The Mount Hood National Forest served as a pilot test for this exercise, as that forest has an active partnership program. We refined our monitoring methods by using the Mount Hood and then applied them to the rest of the national forests in the plan area.

We wanted to track trends in partnership agreements as part of monitoring collaboration in forest stewardship. However we encountered substantial data problems that prohibited us from conducting an analysis of partnerships within the time and resources available for the project. One of the problems associated with monitoring partnership agreements is that they are removed from the database once they are terminated. Thus, agency databases only contain information on those partnership agreements that are active. This makes it difficult, if not impossible, to obtain data regarding past agreements. Hard copies of these agreements may be stored in Forest Service warehouses, but it was impractical to try to retrieve documents from warehouses for purposes of this monitoring report.

## Interview Guide

**Purpose:** Data gathered in this section should contribute to understanding the evolution, or not, of how and why communities have participated in collaborative forest stewardship with the national forest/BLM since the NWFP. Specific projects and motivations for engaging in such projects that are directly related to the NWFP should be identified. Projects and motivations not directly tied to the NWFP should be described separately in order to arrive at an overall sense of how public engagement and collaborative forest stewardship have changed.

### Intro:

I'm interested in how your community, or local groups that you are involved with, collaborates with Forest X in resource management activities on the forest or near the forest. I'm also interested in how overall engagement in collaborative forest stewardship activities between the community, local groups, and Forest X has changed over the past decade. More specifically, I'd like to discuss what types of actual on-the-ground collaborative activities occur. (Researchers: If responses to prior sections indicate that the interviewee is well informed about the NWFP, please include reference to it when asking about change over the past decade. The below questions assume that the interviewee knows little about the components of the NWFP.)

TOPIC: Change in general engagement with FS/BLM

- (1) Has your community/group's overall engagement with the National Forest changed over the past ten years? Has it increased, decreased, or stayed the same?
- (2) How and why has it evolved or stayed the same?

TOPIC: Change in on-the-ground collaborative forest stewardship

- (3) What types of on-the-ground collaborative forest stewardship activities does your community engage in with the Forest/District?
- (4) If none, why not?

TOPIC: Objectives and motivations for collaborating

- (5) Please describe some of the objectives of those collaborations or partnerships.
- (6) What motivates your community/group to collaborate with Forest X? Who usually takes the initiative to establish these collaborations?

TOPIC: Benefits of collaborating

- (7) How does the community/group benefit from the collaborations? What have been some of the successes?
- (8) Have there been any indirect benefits (such as skills developed, increased networking, improved relations to Forests)?

TOPIC: Barriers to collaborating (community and FS/BLM)

- (9) What do you see as the biggest barriers, internal to your community, to collaborating with the National Forest in resource management activities (such as trust levels, community leadership/capacity, community cohesion)?
- (10) What do you think are the biggest barriers that the National Forest/BLM has to collaborating with your community (or local communities) in resource management activities (such willingness/availability of forest leadership/staff to collaborate, lack of personnel, lack of funds)?

TOPIC: Future direction of collaboration

- (11) Are there any types of collaborative activities that you would like to see developed or expanded? Why?

TOPIC: Plan goal

- (12) What progress has been made on meeting the Plan goal to improve relations between federal land management agencies and local communities, and promote collaborative forest management and joint forest stewardship activities?



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**NORTHWEST  
FOREST PLAN**  
THE FIRST 10 YEARS (1994–2003)

# Socioeconomic Monitoring Results Volume V: Public Values and Forest Management

Susan Charnley and Ellen M. Donoghue



General Technical Report  
PNW-GTR-649 Vol. V  
April 2006

**USDA** United States  
Department of  
Agriculture

**FOREST SERVICE**  
**U.S.** Forest  
Service  
DEPARTMENT OF AGRICULTURE

**PNW** Pacific Northwest  
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# Socioeconomic Monitoring Results Volume V: Public Values and Forest Management

Susan Charnley and Ellen M. Donoghue

Northwest Forest Plan—The First 10 Years  
(1994–2003): Socioeconomic Monitoring Results

Susan Charnley, Technical Coordinator

U.S. Department of Agriculture, Forest Service  
Pacific Northwest Research Station  
Portland, Oregon  
General Technical Report PNW-GTR-649 Vol. V  
April 2006

## Abstract

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Northwest Forest Plan—the first 10 years (1994–2003): socioeconomic monitoring results. Gen. Tech. Rep. PNW-GTR-649. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 23 p.

One of the Northwest Forest Plan's socioeconomic goals was to protect the forest values and environmental qualities associated with late-successional, old-growth, and aquatic ecosystems. In Volume V we address the topic of forest protection from the socioeconomic perspective. A literature review revealed that between 1990 and 2002 there has been surprisingly little change in Pacific Northwest residents' views of how Pacific Northwest forests should be managed. Throughout this period, research findings indicate that people support forest management to provide a broad set of multiple uses and both economic and environmental benefits. Nevertheless, there has consistently been a proenvironment leaning, with the majority favoring environmental over economic management objectives when asked to make a choice between them. Throughout the study period, the belief that active forest management improves forest health has predominated. However, clearcutting has consistently been unpopular, and the majority have favored old-growth protection. New forestry techniques that are not intensive are more socially acceptable.

The monitoring team also conducted interviews with community members and agency employees from four case-study areas to document their perceptions of how well the Plan has protected forest values and environmental qualities associated with late-successional, old-growth, and aquatic ecosystems on federal forest lands. The team also documented interviewees' issues and concerns relating to federal forest management. The most positive Plan effects were believed to be associated with the protection of aquatic ecosystems. Most interviewees did not distinguish Plan effects on older forests from those on forest ecosystems more generally. Although the Plan brought an end to earlier forest management practices that many considered ecologically destructive, most people interviewed did not believe federal forests were currently healthy. They believed silvicultural activity was necessary for keeping forests healthy and that not enough had occurred during the first decade of the Plan. This led to concerns about fire, insects, and disease and frustration that needed forest work was not creating local jobs. Timber harvest, forest health, and jobs were among the biggest issues of concern to community interviewees. Although interviewees overwhelmingly believed that the Plan had emphasized forest protection over community well-being, their comments reflect a perception that healthy forest ecosystems and healthy community economies can and should be linked and that those links are currently weak.

Keywords: Northwest Forest Plan, socioeconomic monitoring, forest management values, management issues and concerns.

## Preface

This report is one of a set of reports produced on this 10-year anniversary of the Northwest Forest Plan (the Plan). The collection of reports attempts to answer questions about the effectiveness of the Plan based on new monitoring and research results. The set includes a series of status and trends reports, a synthesis of all regional monitoring and research results, a report on interagency information management, and a summary report.

The status and trends reports focus on establishing baselines of information from 1994, when the Plan was approved, and reporting change over the 10-year period. The status and trends series includes reports on late-successional and old-growth forests, northern spotted owl population and habitat, marbled murrelet population and habitat, watershed condition, government-to-government tribal relationships, socioeconomic conditions, and monitoring of project implementation under Plan standards and guidelines.

The synthesis report addresses questions about the effectiveness of the Plan by using the status and trends results and new research. It focuses on the validity of the Plan assumptions, differences between expectations and what actually happened, the certainty of these findings, and, finally, considerations for the future. The synthesis report is organized in two parts: Part I—introduction, context, synthesis, and summary—and Part II—socioeconomic implications, older forests, species conservation, the aquatic conservation strategy, and adaptive management and monitoring.

The report on interagency information management identifies issues and recommends solutions for resolving data and mapping problems encountered during the preparation of the set of monitoring reports. Information issues inevitably surface during analyses that require data from multiple agencies covering large geographic areas. The goal of that report is to improve the integration and acquisition of interagency data for the next comprehensive report.

The socioeconomic status and trends report is published in six volumes. Volume I of the report contains key findings. Volume II addresses the evaluation question, Are predictable levels of timber and nontimber resources available and being produced? The focus of Volume III is the evaluation question, Are local communities and economies experiencing positive or negative changes that may be associated with federal forest management? Volume IV assesses the Plan goal of promoting agency-citizen collaboration in forest management. Volume V (this volume) reports on public values regarding federal forest management in the Pacific Northwest. Volume VI provides a history of the Northwest Forest Plan socioeconomic monitoring program and a discussion of potential directions for the program.

## Summary

One goal of the Northwest Forest Plan (the Plan) was to protect the forest values and environmental qualities associated with late-successional, old-growth, and aquatic ecosystems. In Volume V we address the topic of forest protection from the socioeconomic perspective. First, we report the results of a literature review that evaluates trends in public values regarding forest management in the Pacific Northwest between the early 1990s and the early 2000s. Second, we summarize the results of interviews with community members and agency employees that document their perceptions of how well the Plan has protected forest values and environmental qualities associated with late-successional, old-growth, and aquatic ecosystems on federal forest lands. We also discuss community members' issues and concerns relating to forest management under the Plan.

The monitoring questions and indicators monitored were the following:

Monitoring questions	Indicators monitored
<p>What forest values and environmental qualities associated with federal forests are important to members of the public, and what is the balance of values (both commodity and noncommodity) that members of the public believe federal forests should be managed for?</p>	<p>Pacific Northwest residents' values, attitudes, and beliefs about forest management, based on a review of existing literature.</p>
<p>How have public attitudes, beliefs, and values relating to forest management in the Pacific Northwest changed since 1990?</p>	
<p>From the public perspective, how well has federal forest management under the Plan provided for forest values and environmental qualities associated with late-successional, old-growth, and aquatic ecosystems?</p>	<p>Community members' perceptions of how well forest management under the Plan has achieved the goal of forest protection and provided for the forest uses, values, and environmental qualities they care about.</p>
<p>What issues and concerns related to federal forest management under the Plan are prevalent in local communities?</p>	<p>Community member's issues and concerns relating to federal forest management.</p>

## Plan Expectations Regarding Public Values

The Plan would protect the long-term health of forests, wildlife, and waterways while providing for the sustainable use of timber and nontimber forest resources.

A system of terrestrial and aquatic reserves established by the Plan would protect late-successional and old-growth forest ecosystems inside of late-successional reserves, and the health of aquatic systems and the species that depend on them in riparian reserves and key watersheds. Late-successional reserves together with other Plan land use allocations and standards and guidelines would maintain a functional older forest ecosystem. Riparian reserves would help maintain and restore riparian structures and functions, benefit fish and nonfish species dependent on riparian ecosystems, and contribute to habitat conservation for terrestrial organisms.

## Monitoring Results

Between 1990 and 2002 there has been surprisingly little change in Pacific Northwest residents' views of how Pacific Northwest forests should be managed. Throughout this period, research findings indicate that people support forest management to provide a broad set of multiple uses and both economic and environmental benefits. Nevertheless, there has consistently been a pro-environment leaning, with the majority favoring environmental over economic management objectives when asked to make a choice between them. Continued support for timber production from federal forests has likely been tied to a belief that the wood products industry is important to the regional economy, and to concern for the health of rural communities. Whereas place of residence was not found to be a significant factor influencing people's attitudes, beliefs, and values about forest management prior to the Northwest Forest Plan, recent studies find that urban residents tend to be pro-environment, with rural residents having more evenly split views on forest management issues.

Throughout the study period, the belief that active forest management improves forest health has predominated. However, clearcutting has consistently been unpopular, and the majority have favored old-growth protection. New forestry techniques that are not intensive are more socially acceptable.

Have federal land managers been doing a good job of protecting the forest values and environmental qualities people care about under the Plan? The literature reviewed here does not provide extensive evidence for answering this question. The evidence that does exist suggests that opinion is fairly evenly divided. Some people have favorable views of the job forest managers are doing, and others believe that forest managers need to improve their performance.

In the four case-study locations in the Plan area where we conducted fieldwork, members of the public who were interviewed perceived that the Plan had had mixed results to date for forest protection. Their issues of concern relating to forest management were to some degree linked to those perceptions.

The most positive Plan effects were believed to be associated with the protection of aquatic ecosystems. Most interviewees did not distinguish Plan effects on older forests from those on forest ecosystems more generally. Although the Plan brought an end to earlier forest management practices that many considered ecologically destructive, most people interviewed did not believe federal forests were currently healthy. Like many Pacific Northwest residents surveyed in other studies, they believed silvicultural activity was necessary for keeping forests healthy and that not enough had occurred during the first decade of the Plan. This led to concerns about fire, insects, and disease and to frustration that needed forest work was not creating local jobs. Timber harvest, forest health, and jobs were among the biggest issues of concern to community interviewees. The others were recreation and forest access, also tied to the issue of jobs. Although interviewees overwhelmingly believed that the Plan had emphasized forest protection over community well-being, their comments reflect a perception that healthy forest ecosystems and healthy community economies can and should be linked, and that those links are currently weak.

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# Chapter 1: Trends in Public Attitudes, Beliefs, and Values About Forest Management in the Pacific Northwest

Susan Charnley

## Introduction

The Northwest Forest Plan (the Plan) codified a shift in forest management away from the intensive timber management practices of the 1970s and 1980s toward ecosystem management. In doing so, it aimed to balance the need for forest protection with the need to provide for the sustainable use of timber and nontimber forest resources. Hence, one of the Plan's socioeconomic goals was to protect the forest values and environmental qualities associated with late-successional, old-growth, and aquatic ecosystems. These forest values include amenity values (such as scenic quality, lifestyle), environmental quality values (such as clean air and water), ecological values (such as sustainability, biodiversity), public use values (recreation), and spiritual and religious values (Donoghue 2003: 334, Stankey and Clark 1992).

The strategy used to achieve this goal was to create a reserve system on federal forest lands where the management emphasis would be on protecting late-successional and old-growth forest (older forests), endangered species, and other noncommodity values associated with the forest (Clark et al. 1999: 15). Although commodities might be produced from the reserves, they would be by-products of forest management intended to achieve ecosystem health objectives. Late-successional reserves were designed to maintain older forest ecosystems and natural ecosystem processes and to protect them from loss resulting from large-scale fire, insects and diseases, and major human impacts (USDA and USDI 1994b: B4–B5). Riparian reserves were meant to protect the health of aquatic ecosystems and the species that depend on them and to provide habitat connectivity for the late-successional reserve system (USDA and USDI 1994b: B12–B13). These two reserve types make up roughly 41 percent of the Plan area (USDA and USDI 1994b: 6–7). Another 30 percent is designated as congressionally reserved areas (such as wilderness areas or wild and scenic rivers) that mainly support noncommodity values (USDA and USDI 1994b: 6).

Other Plan monitoring is designed to collect and analyze biophysical data that will be used to assess how well the Plan has achieved the goals and expectations associated with protecting older forest habitat, associated species (northern spotted owls [*Strix occidentalis caurina*] and marbled murrelets [*Brachyramphus marmoratus*]), and aquatic and riparian ecosystems. The socioeconomic monitoring team addressed the topic of forest protection from the social perspective.

Protecting forest values and environmental qualities associated with older forests and aquatic ecosystems is a social value. Changing societal values can trigger the adaptive management process (USDA and USDI 1994a Vol. II: E4). It is important to monitor how public attitudes, beliefs, and values relating to forest management change over time so that managers can be responsive. Chapter 1 of this volume evaluates trends in public values regarding forest management in the Pacific Northwest between the early 1990s and the early 2000s.

## Monitoring Questions

1. What forest values and environmental qualities associated with federal forests are important to members of the public, and what is the balance of values (both commodity and noncommodity) that members of the public believe federal forests should be managed for?
2. How have public attitudes, beliefs, and values relating to forest management in the Pacific Northwest changed since 1990?

## Expectations

The Plan would protect the long-term health of forests, wildlife, and waterways while providing for the sustainable use of timber and nontimber forest resources (USDA and USDI 1994b: 2–3).

## Methods

Collecting primary data on changing social values relating to federal forest management in the Plan area over time at the regional scale was beyond the scope of this monitoring program. I relied, therefore, on secondary sources documenting public views of forest management in the Pacific Northwest between 1990 and 2002 to characterize these trends. I synthesize this literature here, grouping the study findings into three periods: research conducted in 1990–94, 1995–98, and 1999–2002. The publication date of the source cited was used only when the date of research was not reported. This grouping allows comparing changing public values before and since the Plan was adopted.

## Results

### 1990–94

A 1991 survey of 872 randomly selected Oregon residents elicited their attitudes about federal forest management by testing whether they agreed or disagreed with several different statements about forest management (Steel et al. 1994). The scale used contained five response categories that ranged from 1 (strongly disagree) to 5 (strongly agree). Respondents slightly disagreed that forests should be used primarily for timber and wood products (2.23), that more trees should be harvested to meet the needs of a larger human population (2.14), and that the primary use of forests should be to obtain products useful to people (2.53). They agreed that forest resources can be improved through silvicultural practices (4.23), that forest plants, animals, and people have an equal right to exist and develop (3.68), and that people should have more love, respect, and admiration for forests (4.04). The authors concluded that Oregonians have more “biocentric” values toward forests (values that are nature-centered) than anthropocentric values (values that are human-centered). They view forests as having a right to exist for their own sake, independent of their utility to people. They also view the noneconomic benefits from forests as deserving respect and protection, even if managing for them conflicts with economic benefits. Biocentric values contrast with “anthropocentric” values, which hold that the goal of natural resource management should be to

produce goods and services that are beneficial to people. The study found that urban and rural residents surveyed exhibited little difference in their value orientation (Steel et al. 1994). However, Oregon respondents who depended on the timber industry for their livelihood were much more likely to have anthropocentric value orientations than those who did not. And, members of environmental organizations surveyed were much more likely to have biocentric values.

The same 1991 survey found strong support for managing federal forests to support a wide range of benefits (81 percent), rather than timber and wood products alone (Shindler et al. 1993). Respondents felt that noncommodity values should be incorporated into forest management policy more strongly than they had been to date. Managing forests holistically by using an ecosystem management approach, rather than focusing on single-species management, was strongly supported (84 percent agreed). Most respondents favored balancing environmental and economic considerations in forest management decisionmaking. Only 20 percent of the respondents supported mineral exploration and extraction on federal forest lands. Roughly one-third of respondents felt that forest management should emphasize timber production (32 percent), that endangered species laws should be set aside to preserve timber jobs (37 percent), and that the survival of timber families was more important than preserving old growth (36 percent). Between 39 and 48 percent of respondents disagreed with these statements (the remainder were neutral). Oregonians surveyed were essentially divided on whether the economic vitality of local communities should be given priority when federal forest management decisions were made (46 percent agreed, 44 percent disagreed).

Finally, more than half of the respondents believed that clearcutting should be banned on federal forest lands (57 percent), that fish and wildlife habitat deserved greater protection (55 percent), and that more effort should be made to protect old growth (51 percent). (In contrast, 30 percent, 25 percent, and 32 percent of respondents disagreed with these statements, respectively). Although strong support was expressed for managing forests for multiple uses, survey respondents exhibited more of an “ecosystem-based” orientation than a “commodity-based” orientation (Shindler et al. 1993).

Proctor (1998) analyzed public comments solicited on Option 9 of the Northwest Forest Plan Draft Supplemental Environmental Impact Statement (the preferred alternative, subsequently adopted in the Plan's record of decision [USDA and USDI 1994b]). These comments came from people residing in every state in the United States and 35 foreign countries. Proctor found that an overwhelming majority of the 103,000 comments received were sympathetic to the position of environmental groups and supported the protection of old-growth forests in the Pacific Northwest. Of those people who commented specifically on Option 9, 89 percent wanted more environmental protection than Option 9 offered, expressing concerns about the effects of timber harvest on old-growth habitat. These people generally felt that the national public and future generations were more important stakeholders than local timber communities when it came to making forest management decisions. The 5 percent of commentators who wanted less protection than Option 9 provided expressed economic concerns related to its impacts on timber industry jobs. Almost all of these people lived in the Pacific Northwest region. Interestingly, all comments received—whether from pro-environmental protection or protimber interests—expressed their concerns in terms of what sets of human needs and desires associated with Pacific Northwest forests they cared about, rather than in terms of their concerns for the forests themselves. In other words, biocentric arguments supporting the intrinsic value of forests rarely surfaced. Instead, the debate focused on whether increased protection of Pacific Northwest forests would support or undermine those human needs and desires that captured their greatest interest (Proctor 1998).

Fortmann and Kusel (1990) surveyed the environmental attitudes of people living around the Klamath National Forest in northern California (one of the case-study forests in this monitoring report). A random sample of 190 members of the general public residing within 20 miles of the forest found that 28 percent had “pro-environmental” attitudes, believing land should be preserved in a natural state, and commodity uses of forests such as timber and grazing should be limited or prevented. Twenty percent of the respondents had “procommodity” attitudes, supporting commodity uses of forests. The remaining 52 percent were

neutral (Fortmann and Kusel 1990: 218). These authors found no significant difference between the environmental attitudes of new rural residents from urban areas and long-time rural residents.

### Summary—

Published studies that examined the environmental attitudes, beliefs, and values of Pacific Northwest residents before the Plan was adopted (1990–94) show strong support for a balanced approach to federal forest management that would incorporate a range of multiple uses, and both economic and environmental forest values. Nevertheless, a definite leaning toward the environmental and biocentric side of the scale was reported. Residential status (urban vs. rural) was not significant as an indicator of forest management views. Although not representing a random or solely local sample of Pacific Northwest residents, support for protecting old-growth forests under the Plan was overwhelming. The idea that forest health can be improved through silvicultural practices was generally supported. Most people did not support clearcutting, however.

### 1995–98

Between 1995 and 1997, Ribe (2002) sampled 1,035 people who were members of organized groups in western Washington and Oregon to elicit their views on the owl controversy. These organizations were of three types: those favoring forest preservation (350 members surveyed), those favoring commodity production on public land (357 members surveyed), and those with more moderate views of environmental issues (328 members surveyed). Ribe found that a majority acknowledged that there was a threat to the owl (56 percent versus 32 percent), and that there was a need to reduce timber harvest on public lands below 1980s levels to protect the owl (66 percent versus 21 percent). Respondents were divided in their views of whether the owl should be saved at a high economic cost, however (44 percent disagreed, 38 percent agreed). Clearcutting was unpopular as a harvest method across groups. Although people broadly agreed that clearcutting should be regulated (about 86 percent), no consensus was found about whether it should be banned (about 38 percent said yes, and 47 percent

said no). Finally, “new forestry” techniques—those that include green-tree and down-wood retention, and selective harvesting—were found to have great potential to be socially acceptable, stable, forest management policies in the Pacific Northwest (Ribe 2002).

A survey of 1,545 randomly selected urban and rural residents living around the Gifford Pinchot National Forest in southwest Washington, and 343 other forest visitors and citizens with an interest in the forest, focused on the social acceptability of clearcutting as a forest management practice (Hansis 1995). This study found that roughly 30 percent of the respondents did not believe that clearcutting should be banned on federal forest land; roughly 56 percent did believe that clearcutting should be banned on federal forest land; and the remainder were neutral. People living in rural Washington were the most supportive of clearcutting (36 percent for, 46 percent against); interested members of the public and Portland metro-area residents were the least supportive of clearcutting on federal forest lands (26 percent for, 63 percent against).

Davis et al. (2001b) reported on the results of a statewide survey of 608 randomly chosen members of the Oregon public undertaken on behalf of the Oregon Forest Resources Institute in 1997. This survey found that most Oregonians surveyed think that forest managers need to do a better job of protecting wildlife habitat (80 percent) and fish habitat (especially for salmon) (87 percent), biodiversity (65 percent), and water quality (88 percent); and that they should do more to prevent soil erosion (88 percent). Forty-one percent of respondents thought that federal forest lands were being managed sustainably, and 39 percent did not. Although most people surveyed believed that forest managers should do a better job of providing enough timber harvest to sustain jobs in the wood products industry (63 percent), widespread concern was expressed that existing timber harvest practices were not sustainable (87 percent), and a general belief (89 percent) that finding a compromise between allowing adequate timber harvest and protecting Oregon’s forests was impossible.

### Summary—

The results of surveys within a few years of adopting the Plan showed that Pacific Northwest residents supported both forest protection and forest management to produce economic benefits. Strong feelings were expressed about how forests should be managed to produce those economic benefits. Most people surveyed did not support clearcutting, although support for this practice was stronger among rural residents than among urban residents. Widespread agreement was expressed that clearcutting should be regulated, but there was no broad agreement on whether it should be banned on federal forest lands. In contrast, “new forestry” techniques were found to be more socially acceptable. Finally, the vast majority of people surveyed believed that forest managers needed to do more to protect the environmental values and qualities associated with Pacific Northwest forests.

### 1999–2002

The Oregon Board of Forestry sponsored a study of Oregonians’ attitudes, beliefs, and values about forest management on public and private forest lands in Oregon (Davis et al. 2001a, 2001b). The study, which took place in 2001, included a review of the academic literature and public opinion research on this topic, focus groups, and a telephone survey of Oregon residents. The telephone survey included 1,401 Oregonians chosen from a stratified sample based on place of residence (Davis et al. 2001a). Forest management ranked fifth on a list of 10 environmental issues of concern presented to respondents. The top environmental issue of concern was protecting water quality (scoring 4.5).<sup>1</sup> The three forest management goals deemed most important by survey respondents were protecting soil and water quality; maintaining the amount of forest land and ensuring harvest rates don’t exceed growth rates; and protecting forests from fire, insects, disease, and invasives. When asked to weigh three different federal forest management objectives, respondents were fairly balanced in what they favored—producing forest products for human use (29 percent), protecting water

<sup>1</sup> 1 = not at all concerned, 5 = very concerned.

quality and wildlife habitat (39 percent), and meeting a wide range of social needs (32 percent). They also believed that achieving a balance between economic, environmental, recreational, and aesthetic values was possible.

Loss of forest land to development and other uses was a local issue of key concern among respondents (75 percent were very or somewhat concerned). The relation between the forest products industry and environmental groups was also a top issue of concern in local areas (scoring 4.0, with 76 percent of respondents very or somewhat concerned). The most serious issue in Oregon's rural communities was a lack of family-wage jobs (scoring 4.1),<sup>2</sup> followed by a perceived desire on the part of other Americans to shut down natural resource-based economies (3.9) (Davis et al. 2001a). Residents were almost evenly split on their views about whether federal forest lands were being managed sustainably to provide for the environmental, social, and economic needs of society (41 percent said yes, 39 percent said no).

Some of the relevant findings from the literature survey conducted by Davis et al. (2001b) follow.

- Whereas in 1986, 70 percent of Oregon residents surveyed supported the harvest of old growth, 75 percent of Oregon and Washington residents surveyed in 2001 believed that old growth should be protected from logging on national forests, with slightly more support for this position in urban than in rural counties.
- Surveys in 1994, 1996, 1998, and 2000 consistently found that respondents believed the wood products industry was important to Oregon's economy. The more recent surveys, however, indicated that people believe the wood products industry would not be an important employer in the state in the future.
- A 1999 survey found that, of 15 forest management values, setting aside wilderness and clean drinking water were the top priorities for Oregonians surveyed. Economically healthy rural communities was sixth, and forest industry jobs was eleventh.

<sup>2</sup> 1 = not at all serious, 5 = very serious.

In 2001, Shindler et al. (2002) held focus groups in 14 communities in Oregon and Washington and surveyed a stratified random sample of households throughout Oregon and Washington to examine public understandings of the concept of "ecosystem health" on forest lands (482 households responded). They also investigated people's attitudes toward different forest management practices. The authors found that among the study participants from urban areas, 64 percent favored a balanced set of priorities for forest management, with 31 percent leaning strongly toward environmental protection, and 5 percent leaning toward economic management priorities. Of the rural residents surveyed, 69 percent favored a balanced approach, 18 percent favored environmental protection, and 14 percent favored economic management priorities. The findings of their study are almost identical to the findings of a similar study conducted 10 years earlier (Shindler et al. 1993, summarized above). When examining their findings based on residence, they found that rural residents were equally divided in terms of supporting environmental (30 percent) versus economic (32 percent) priorities, whereas urban residents showed a strong preference for environmental (45 percent) over economic (15 percent) priorities.

Two of five social criteria included in the study were considered by a majority of respondents to be important indicators of forest health: opportunities for recreation (70 percent) and stable rural communities (55 percent). Although a majority also considered regular economic returns by logging to be part of a healthy forest (46 percent, versus 31 percent who didn't), significantly more rural than urban respondents felt this way. In contrast, closing public access roads (53 percent versus 22 percent) and lack of human intervention (49 percent versus 26 percent) were not considered by most respondents to be indicators associated with forest health. Most people surveyed (87 percent) believed that active forest management over the long term was needed to maintain forest health.

The Heritage Forests Campaign sponsored a telephone poll by state to survey public opinion about national forest management when the Forest Service Roadless Area Conservation Rule was under development. From 800 registered voters surveyed in 2000 in California, they found that 58

percent opposed any development on national forest lands (mining, logging), and 34 percent favored these activities (HFC 2000). A similar poll conducted in 2000 among Oregon residents found that 45 percent opposed any development on national forest lands, and 51 percent favored development. Among Washington residents, 49 percent opposed allowing development-related activities on national forest lands, and 43 percent favored them (HFC 2000).

A telephone survey of randomly selected residents of Oregon, Washington, and northern California counties was administered by the Forest Service as part of a national survey of values, objectives, beliefs, and attitudes about forests and rangelands held by the American public (the VOBA survey) (Shields et al. 2002). The survey is national by design. The number of people included from Pacific Northwest counties was 433, but fewer than 100 of them were asked to respond to each question. The survey was conducted during 1998–99.

The forest management objectives that Pacific Northwest residents surveyed generally agreed were highly important (where 1 = not at all important and 5 = very important) were conserving and protecting forests and grasslands that are the source of water resources (4.63), informing the public about recreation concerns on forests and grasslands (4.49), protecting ecosystems and wildlife habitats (4.47), preserving people's ability to have a wilderness experience (4.21), and developing volunteer programs to improve forests and grasslands (4.43) (Shields et al. 2002). Their views about how well the Forest Service is managing for these objectives were only somewhat favorable (averaging 3.68 on a scale of 1 [poor] to 5 [well]). Management objectives that were not important to the majority of respondents were those related to developed recreation: expanding commercial recreation on forests and grasslands (2.77), expanding access for motorized off-highway vehicles (2.1), developing and maintaining trail systems across public and private lands for motorized vehicles (2.51), developing new paved roads on forests and grasslands (2.22), and making the permitting process for commercial recreational use and resource extraction easier (2.58). Providing forest resources to support communities that depend on timber harvesting, grazing, and mining was of moderate importance (3.58).

Opinions on how well the Forest Service is fulfilling this objective were essentially neutral (3.11).

As to respondents' individual values, people somewhat disagreed with statements suggesting that more trees should be actively harvested to meet the needs of a larger human population (2.2), that the most important role for public lands is to provide jobs and income for local people (2.71), and that the primary use of forests should be to produce products people can use (2.58).<sup>3</sup> Only slight agreement was found among respondents that public land managers are doing an adequate job of protecting natural resources from being overused (3.25).

### Summary—

The most recent research from the Pacific Northwest on public attitudes, beliefs, and values about forest management indicates that people support a balanced set of priorities that includes both environmental and economic objectives. Environmental concerns predominate, however, especially among urban residents. Support for timber production appears to revolve around concern for rural communities, the lack of family-wage jobs available there, and the belief that healthy communities are important for forest health. Active forest management is generally believed to be necessary to maintain forest health. Most people asked did not favor harvesting old growth, however. Opinion is divided over whether federal forest managers are doing an adequate job of managing public forest lands sustainably.

## Discussion and Conclusions

The forest management paradigm that prevailed in the Pacific Northwest following World War II emphasized high timber production by using techniques such as clearcutting, removal of logs and snags, slash burning, thinning, and planting single-species stands on harvested areas (FEMAT 1993: II-2-3). The agencies assumed that forests managed in this way could be harvested on a sustained-yield basis at 40- to 80-year intervals without negatively affecting other resources such as water quality, fish, soils, and wildlife. Studies conducted in the 1970s and 1980s made it apparent

<sup>3</sup> 1 = strongly disagree, 5 = strongly agree.

that this approach to forest management was not going to adequately protect the biodiversity of late-successional forests and associated aquatic ecosystems (FEMAT 1993: II-2-3). The forest management paradigm embraced in the 1990s under the Plan focuses on ecosystem management objectives that aim to sustain the underlying ecological processes of the forest (Johnson et al. 1993). Agencies are now placing more emphasis on managing for forest restoration, recreation, and other noncommodity values.

Was this paradigm shift supported by public attitudes, beliefs, and values regarding forest management in the Pacific Northwest, and do members of the public still support this management approach today? This literature review and synthesis suggest that the answer to both questions is “yes.” Between 1990 and 2002 there has been surprisingly little change in Pacific Northwest residents’ views of how Pacific Northwest forests should be managed. Throughout this period, research findings indicate that people support forest management to provide a broad set of multiple uses and both economic and environmental benefits. Nevertheless, there has consistently been a pro-environment leaning, with the majority favoring environmental over economic management objectives when asked to make a choice between them. Continued support for timber production from federal forests has likely been tied to a belief that the wood products industry is important to the regional economy, and to concern for the health of rural communities. Whereas place of residence was not found to be a significant factor influencing people’s attitudes, beliefs, and values about forest management prior to the Northwest Forest Plan, recent studies find that urban residents tend to be pro-environment, with rural residents having more evenly split views on forest management issues.

Throughout the study period, the belief that active forest management improves forest health has predominated. However, clearcutting has consistently been unpopular, and the majority have favored old-growth protection. New forestry techniques that are not intensive are more socially acceptable.

Have federal land managers been doing a good job of protecting the forest values and environmental qualities people care about under the Plan? The research reviewed

here does not provide extensive evidence for answering this question. The evidence that does exist suggests that opinion is fairly evenly divided. Some people have favorable views of the job forest managers are doing, and others believe that forest managers need to improve their performance. This question is addressed from the perspective of forest-based communities in the next chapter.

## Acknowledgments

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## Chapter 2: Local Perceptions of Forest Protection and Issues and Concerns Regarding Forest Management

*Susan Charnley and Ellen M. Donoghue*

### Introduction

People's perceptions of the effectiveness of agency management policies can influence their behavior and their attitudes toward the agencies. Although public perceptions may not always be "accurate" from the scientific standpoint, they matter, because these perceptions can drive appeals and lawsuits that prevent agencies from achieving their management objectives—regardless of what the science says. And if members of the public believe that agency management policies are ineffective at maintaining sustainable forest ecosystems, they may be critical and distrustful of the agencies, which can lead to a breakdown in relations. Socioeconomic monitoring can help managers become aware of these perceptions and complements biophysical monitoring related to the goal of forest protection.

The monitoring team interviewed community members from 12 case-study communities and agency employees from 4 case-study forests and documented their perceptions of how well the Plan had protected forest values and environmental qualities associated with older forests and aquatic ecosystems on federal forest lands. The results of these interviews are contained in chapter 2. Chapter 2 also documents community members' issues and concerns relating to forest management under the Plan

### Monitoring Questions

1. From the public perspective, how well has federal forest management under the Northwest Forest Plan (the Plan) provided for forest values and environmental qualities associated with late-successional, old-growth, and aquatic ecosystems?
2. What issues and concerns related to federal forest management under the Plan are prevalent in local communities?

### Expectations

A system of terrestrial and aquatic reserves established by the Plan would protect late-successional and old-growth forest (older forest) ecosystems inside of late-successional reserves, and the health of aquatic systems and the species that depend on them in riparian reserves and key watersheds (USDA and USDI 1994: 6-7). Late-successional reserves together with other Plan land use allocations and standards and guidelines would maintain a functional older forest ecosystem. Riparian reserves would help maintain and restore riparian structures and functions, benefit fish and nonfish species dependent on riparian ecosystems, and contribute to habitat conservation for terrestrial organisms.

### Methods

The monitoring team found no studies that explicitly examined public views of how well the Plan has achieved the goal of forest protection. We conducted interviews with a total of 223 community members and 82 agency employees from four case-study areas (the Olympic, Mount Hood, and Klamath National Forests, and BLM Coos Bay District; and three local communities around each of these federal forests. See appendix). We asked them the following questions:

- 1: What are the two to three issues that community residents are currently most interested in or concerned about with regard to the management of forest x?
- 2: Have these been the main issues of interest/concern for the last decade? If not, how have the issues been shifting over the last decade, and why?
- 3: Do you (and the community you represent) think that Forest x has been doing a good job of managing for those forest uses, values, and environmental qualities that you care most about? Why or why not?
- 4: How could it do a better job of providing for the uses, values, and environmental qualities the community cares most about?
- 5: What progress has been made on meeting the Plan goal to help protect nontimber values and environmental qualities associated with the forest?

- 6: An overarching goal of the Plan was to balance the need for forest protection with the need to provide a steady and sustainable supply of timber and non-timber resources to benefit rural communities and economies. Do you believe Forest/District x has been successful in achieving this goal? Why or why not? Examples?

The results of these interviews are summarized in this chapter, with a focus on the key findings common to all case-study areas.<sup>1</sup>

## Results

### Local Perceptions of Forest Protection

The case-study results point to some common themes about how well interviewees believe federal forest management under the Plan has achieved the goal of forest protection. The greatest successes were reported for aquatic ecosystems. Interviewees from the Olympic, Klamath, and Coos Bay areas commented that decreases in logging, road decommissioning, the provisions of the aquatic conservation strategy, the riparian reserve system, and the emphasis placed on watershed management and restoration under the Plan had protected and improved water quality.

Several interviewees commented that it would take a long time to see the benefits of the Plan for fish and wildlife populations, and reserved judgment on this topic. Several forest employees interviewed believed that survey and manage species requirements had led to a much better

understanding of older-forest-associated species, their distribution and habitat requirements, and how to manage for them. Some community residents were concerned about the effects that reduced silvicultural activity would have on habitat for wildlife species—especially big game—that prefer early seral-stage forest and habitat mosaics. Some community residents interviewed around the Olympic and Klamath National Forests and the Coos Bay Bureau of Land Management (BLM) District believed local fish populations had increased, and attributed the increase to the Plan. Some interviewees believed that the Plan emphasized managing forests for the benefit of individual species instead of taking an ecosystem management approach that had the whole forest and its health in mind. On the other hand, several agency employees noted that the Plan had led to a more integrated approach to forest management. People were working across program areas and trying to manage forests in a more holistic way.

Community interviewees' views of the Plan's success at protecting forest habitat were not as positive, with most of them noting some undesirable results. There were interviewees from all four case-study areas who believed that pre-Plan timber-harvest rates were unsustainable and environmentally destructive, and were glad the Plan had brought an end to those practices—a substantial contribution to forest protection. It also brought a virtual halt to clearcutting practices on federal forest lands, which many interviewees approved. Nevertheless, some believed the Plan had not done enough to protect old growth because some older forest habitat was included in matrix lands and subject to logging pressure (not an issue on the Olympic National Forest). They attributed this problem to shortcomings in the original design of the Plan.

The Plan also brought new constraints that many interviewees believed had undermined forest protection goals. A widespread perception among interviewees was that silvicultural activity was needed to promote forest health. Specifically, thinning was seen as being necessary for reducing the risk of fire and disease, which threatened older forest habitat. Thinning was also seen as a strategy for expediting development of older forest habitat. Interviewees

<sup>1</sup>The information in this chapter is a summary of interview results discussed in more detail in the following:

Buttolph et al. (in press).

McLain et al. (in press).

Charnley, S.; Dillingham, C.; Stuart, C.; Moseley, C.; Donoghue, E.M. Manuscript in preparation. Northwest Forest Plan—the first 10 years (1994–2003): socioeconomic monitoring of Klamath National Forest and three local communities. On file with: S. Charnley, Forestry Sciences Laboratory, 620 SW Main, Suite 400, Portland, OR 97205.

Kay, W.; Donoghue, E.M.; Charnley, S.; Moseley, C. Manuscript in preparation. Northwest Forest Plan—the first 10 years (1994–2003): socioeconomic monitoring of Mount Hood National Forest and three local communities. On file with: S. Charnley, Forestry Sciences Laboratory, 620 SW Main, Suite 400, Portland, OR 97205.

from all four case-study areas viewed federal forests as being overly dense because of past fire suppression practices and because of regenerating clearcuts and planted stands that were managed for timber before the Plan but had not been harvested or adequately thinned under the Plan. Thus, many interviewees believed that overall forest health had deteriorated because of the lack of active harvesting—especially thinning. And some believed this condition meant forests with little or no silvicultural treatments posed an imminent risk of fire danger, threatening both communities and older forest habitat.

### Issues and Concerns in Relation to Forest Management

Many of the community members interviewed were unfamiliar with the specific components, forest management guidelines, and requirements of the Plan, and were unable to comment on it directly (although some were well informed about the Plan and its components). All, however, expressed issues and concerns regarding the management of nearby federal forests which were, at least in part, linked to Plan implementation. These indicate some of the ways in which the Plan has affected local communities.

The monitoring team found many parallels between the issues and concerns raised by community interviewees from the four case-study areas, although certain issues were more prevalent around some case forests than others. These centered on five topics: timber harvest, forest health and fire risk, forest-based jobs, recreation, and forest access and roads. A number of other issues arose that are not reported here because they were more specific to individual forests (such as noxious weeds, tribal relations, special forest products, law enforcement, water).

#### **Timber harvest—**

Most community interviewees believed that timber harvest on federal forest lands was unlikely to return to pre-Plan levels, and many felt those levels were unsustainable or destructive. Nevertheless, debate continues over the amount, frequency, location, and methods of timber harvest, and the types of trees involved. Issues under debate included the appropriate levels of commercial thinning, whether

or not old-growth trees should be harvested, probable sale quantity (PSQ) levels, and whether there should be timber sales in areas of the forest that have high environmental values (such as key watersheds), or where excessive environmental damage could result (such as steep slopes).

Many community interviewees also expressed concern that forests and districts were not meeting average annual PSQ estimates and providing a reliable supply of timber sales. Without a reliable timber supply, many buyers had difficulty operating and maintaining their infrastructure, and many contractors found it hard to stay in business unless they could rely on timber from private lands. Many people acknowledged that the agencies were trying to meet PSQ estimates, but perceived that the agencies' hands were tied by excessive procedural requirements, appeals, and litigation.

#### **Forest health and fire—**

In chapter 1, we report that the majority of people surveyed in the Pacific Northwest believe that actively managing forests by using silvicultural treatments improves forest health. A widespread perception among interviewees from the four case-study areas was that low levels of timber harvest and density management under the Plan have increased fire risk, insects, and disease, undermining forest health.

Concerns over fire were much more prevalent around the drier, fire-prone Klamath National Forest and eastern portion of the Mount Hood National Forest, than around the moist, lower-risk Olympic National Forest and Coos Bay District. On the Klamath National Forest, low-intensity fires naturally recur every 8 to 12 years, and stand-replacing fires recur every 80 to 180 years (USDA FS 1994: 3–115). On the Olympic National Forest, very large fires are rare, with major fires occurring at approximately 200-year intervals in prehistoric times (USDA FS 1990: III-85). On the Coos Bay District, stand-replacement fires are estimated to occur every 130 to 150 years (USDI BLM 1994: 3-131-132). Nevertheless, neighboring forest landowners, and communities around all four forests, were concerned that fires starting on federal lands could spread to their lands and burn their forests and homes, resulting in economic damage. Interviewees also expressed concern

about the potential impact of fire on scenic quality around their communities, and on recreation and tourism.

Some people were also concerned about the spread of insects and disease. Others were concerned that densely stocked forests were detrimental to large game and other wildlife. Some interviewees expressed the view that the Forest Service (FS) had abrogated its responsibility for stewardship of federal forest lands by undertaking so little silvicultural activity under the Plan. Others believed that past timber harvest practices were bad for the forest, but that a complete lack of harvest activity was worse. Added to these sentiments was a common frustration that trees—which could produce useful products for people and provide jobs—were being left in the forest to die and rot.

#### **Forest-based jobs—**

Interviewees' concern over the perceived lack of timber harvest was based in part on the fact that federal forests were no longer a source of wood products and jobs for most community members. The dominant concern among long-time residents of the forest-based communities studied was the lack of family-wage jobs in their communities. Many jobs that were available in the timber and other natural-resource-based industries during the 1970s and 1980s are no longer available. Often young people and families must leave their communities to find work, breaking intergenerational family ties, making it impossible to pass trades down through generations, and causing a way of life to die out. Many community members interviewed viewed the forest as a place to work, and they wanted to find new ways in which federal forests could provide local, family-wage jobs that would allow them to stay in their communities and maintain family ties. Increasing access to timber for small locally-based mill operators and small businesses producing value-added products was also desired. Many community interviewees commented that the forests were unhealthy and in need of thinning and "cleaning up," which could provide local jobs.

Several interviewees from the Klamath National Forest (where recreation and tourism are less developed than on the other case forests) viewed forest fires and floods as the main source of local, forest-based jobs. Local people had

been successful in obtaining some fire suppression jobs and contracts for flood damage repair. Fires also brought people into the community who supported local businesses. In their view, natural disasters were a mixed blessing.

In sum, many interviewees believed that the FS in particular was overly concerned with protecting forest resources and should do more to create jobs in local communities. Environmental group representatives interviewed also supported forest-based job creation, as long as it occurred in a way that did not threaten ecological sustainability and old-growth forest ecosystems.

#### **Recreation—**

Recreation and tourism development hold potential for creating forest-based jobs. Recreation was a controversial issue on the case-study forests, with debates over the appropriate types, levels, and location of different recreation activities. Recreation and tourism development was also a controversial issue in the case-study communities. Those who supported it were typically business owners who stood to benefit. They cited jobs and economic development as benefits associated with forest-based recreation and tourism. Those who did not support it were concerned about its environmental impacts and effects on quality of life in their communities and questioned whether it would bring family-wage jobs.

Some interviewees were concerned that the FS was not maintaining the forest recreation infrastructure (such as campgrounds and trails) and forest access (roads) needed to attract visitors and promote recreation and tourism development in their communities. Others—around the Mount Hood National Forest in particular—were concerned that the forest was not adequately managing for growing recreation demand. Most interviewees around the BLM Coos Bay District strongly approved of the improvements the district had made to its recreation infrastructure. Many wanted to see this trend continue, because they believed it would support recreation and tourism development locally.

Community residents often enjoy recreating on surrounding federal forest lands themselves, and some of their issues of concern pertained to forest access for recreation opportunities they enjoy.

### Roads and access—

The issue of forest access is related to the issues of recreation and forest-based jobs. The BLM and FS system road miles have decreased since 1994, and fewer roads are being maintained to passenger car standards. Roads damaged by storms are not always repaired in a timely manner, and overall road repair and maintenance is declining, causing road closures. These factors reduce forest access for a wide range of uses, including recreation, special forest products gathering, hunting, and fishing. At the same time they increase opportunities for nonmotorized recreational experiences. Not only do roads provide forest access, they distribute use and impacts. The only case-study area where community residents did not express concern over roads and access was the Coos Bay District, where road closures have increased because of gating on private lands.

Some community interviewees were concerned that recreation and tourism development would be hampered by reduced forest access. Others believed that the large sums of money spent on road decommissioning should be spent on road maintenance, which they thought was less costly and created long-term jobs.

### Conclusions

The information in this chapter comes from four case-study locations in the Plan area. We focused on common themes that emerged from the four local cases, and do not know if, and to what extent, the results reported here can be generalized to the Plan area as a whole. In the places where we conducted fieldwork, members of the public interviewed perceived that the Plan had had mixed results to date for forest protection. Their issues of concern relating to forest management were to some degree linked to those perceptions.

The most positive Plan effects were believed to be associated with the protection of aquatic ecosystems. Most interviewees did not distinguish Plan effects on older forests from those on forest ecosystems more generally. Although the Plan brought an end to earlier forest management practices that many considered ecologically destructive, most people interviewed did not believe federal forests were

currently healthy. Like many Pacific Northwest residents surveyed in other studies (see chapter 1), they believed silvicultural activity was necessary for keeping forests healthy and that not enough had occurred during the first decade of the Plan. This led to concerns about fire, insects, and disease, and frustration that needed forest work was not creating local jobs. Timber harvest, forest health, and jobs were among the biggest issues of concern to community interviewees. The others were recreation and forest access, also tied to the issue of jobs. Although interviewees overwhelmingly believed that the Plan had emphasized forest protection over community well-being, their comments reflect a perception that healthy forest ecosystems and healthy community economies can and should be linked, and that those links are currently weak.

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## Appendix: People Interviewed for This Study

### **Case-Study Communities**

When conducting interviews in the case-study communities, we attempted to select people that represented a cross section of community leaders and stakeholder groups. We also targeted people who had been community members since the Plan was adopted (1994). We used the following categories to guide our selection:

#### **Community leaders**

- Elected official
- Civic group leader
- School district/education leader
- Historic preservation/cultural center leader
- Economic development council leader
- Business leader/store owner
- Social service provider
- Fire district leader
- Health official
- Religious leader
- Watershed council representative
- Large landowner
- Planner

#### **Stakeholder group representatives**

- Recreation/tourism
- Environment
- Timber industry
- Special forest products
- Fishing—commercial/recreational
- County government
- Agriculture/ranching
- Minerals
- Tribes
- Low income/minority groups

It was not possible to interview someone from each of the categories in every community, and many interviewees represented several categories at once. Descriptions of the interviewees from each community follow, by case-study area.

## Olympic National Forest and Local Communities

### Olympic National Forest

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#### Respondent's position

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Engineering program representative (3)  
 Forestry program representative (4)  
 District ranger (2)  
 Economic development representative  
 Public service representative  
 Forest planning representative  
 Forest supervisor  
 Aquatics program representative  
 Ecosystems/natural resources program representative  
 Wildlife biology program representative  
 Fire and aviation program representative  
 Operations staff representative  
 Timber contracting representative  
 Botany/forest ecology program representative  
 Recreation program representative  
 Information specialist  
 Tribal relations representative  
 Computer/mapping specialist

### Quilcene

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Respondent's position	Quilcene resident
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Former logging contractor	X
Former logging contractor, business owner	X
Logging contractor, logging contractors' association	X
Local businessperson, recent immigrant (2)	X
Firefighter	X
Pastor	X
School official	X
County planning official (3)	
County planning official	X
Environmental interest group member	
Social service provider	X
Social service provider	
Economic development agency official	
County health and human services official (2)	
Industrial timberland manager	



## Quinault Indian Nation

<b>Respondent's position</b>	<b>Taholah/Queets resident</b>
Quinault Tribal Council member, tribe member (2)	X
Quinault Indian Nation employee—forestry (2)	
Quinault Indian Nation employee—forestry, tribe member	X
Quinault Indian Nation employee—cultural historian, tribe member	X
Quinault Indian Nation employee—natural resources	
Retired logger, fisher, tribal elder	X
Basket weaver, tribal elder	X
School official	
Quinault Indian Nation employee—environmental protection	
Former Quinault Indian Nation employee—environmental protection	
Quinault Indian Nation employee—economic development	
Quinault Indian Nation employee—tribal liaison, tribe member	X
Basket weaver, Quinault Indian Nation employee—cultural historian, tribe member	X
Fisher, tribe member	X
Fisher, tribal elder	X

## Lake Quinault Area

<b>Respondent's position</b>	<b>Lake Quinault area resident</b>
Former Park Service employee, local tourism-based business owner	X
Elected county official	
Fire district representative	X
School official	X
Waitress, school board member	X
Owner of log truck company, pastor, member of community/economic development organization	X
President of local chapter of national recreation organization	
Local tourism-based business owner, school board member	X
Retired rancher	X
Shake mill owner	X
Contractor for ecosystem management work on the forest	X
Representative from regional economic development organization	
Store owner	X
Representative from a regional environmental organization	

## Mount Hood National Forest and Local Communities

### Mount Hood National Forest

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#### Respondent's position

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Forest recreation, planning, public affairs staff officer  
 Forest planner, forest hydrologist  
 Forest geologist  
 Range program manager  
 Forest Youth Conservation Corps host and senior volunteer coordinator  
 Forest volunteer program coordinator  
 Fire and aviation management program manager  
 Forest silviculturist  
 Forest supervisor  
 Zigzag District Ranger  
 Forest natural resources staff officer  
 Forest special forest products coordinator  
 Public affairs officer, rural community assistance coordinator  
 Forest engineer  
 Vegetation management specialist  
 District and forest recreation program managers (group interview) (5)  
 Clackamas River District Ranger

### Upper Hood River Valley

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<b>Respondent's position</b>	<b>Upper Hood River Valley resident</b>
Former logger	X
Volunteer fire department chief	X
Long-time orchardist (2)	X
Environmental activist	X
Former logger	X
Retired Forest Service employee, now hobby orchardist	X
Retired Forest Service employee	X
Former logger	X
Orchardist, owner private timberland	X
County commissioner, family long-time residents	X
Local store owner, family long-time residents	X
Small mill operator, family long-time residents	X
Recreation industry representative	X
Program manager migrant worker social services, family long-term migrant workers, now residents	X
Regional soil and watershed association, and watershed association representative	
Confederated Tribes of Warm Springs employee, aquatic restoration program, office in case-study site	
Regional recreation industry representative	

## Villages of Mount Hood

<b>Respondent's position</b>	<b>Villages resident</b>
Tourism and recreation industry rep	X
Tourism and recreation industry rep	
Developer, community development activist	X
Real estate services	X
Business person/chamber of commerce member	X
Watershed activists (2)	X
Long-time resident, community development activist	X
Retiree, service organization representative	X
News media representative	X
Local business owner	X
Logging contractor	X
Pastor	X
Firefighter	X
Logging contractor	
County Economic Development official	
Environmental interest group member (2)	
Industrial timberland manager	
Public school teachers (3)	X
Community development activist, seasonal resident	X
Community development activist	X

## Estacada

<b>Respondent's position</b>	<b>Estacada resident</b>
Former logging contractors (3)	X
Forest service employees (4)	X
Logging supply store owner	X
Local businessman, town councilman	X
Logging contractor	
Firefighter	X
Local employer/business owner	X
Community activist, recent immigrant	X
City manager	X
Local employer/business	X
Wilderness outfitter	X
County Economic Development official	
Environmental interest group members (2)	
Wood products company employees (3)	
Former business owner, chamber of commerce member	
Pastor	X
Social service provider	X
School official	X
Industrial timberland manager	

## Klamath National Forest and Local Communities

### Klamath National Forest

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**Respondent's position**

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Forest landscape architect  
 Forest resource staff officer (fisheries, noxious weeds, earth sciences, timber, wildlife)  
 District Ranger, Scott/Salmon Ranger Districts  
 Deputy forest supervisor  
 Forest silviculturist  
 District resource staff (recreation, range, noxious weeds, archaeology, minerals)  
 District archaeologist  
 Forest timber management officer and contracting officer, Shasta Trinity National Forest  
 Forest earth science and fisheries program manager  
 Forest administrative staff officer (contracting, community assistance program, volunteer programs)  
 Forest environmental coordinator  
 District recreation, lands/minerals staff  
 Forest fire management staff officer  
 Forest assistant engineer  
 Wildlife biologist

### Scott Valley

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**Respondent's position** **Scott Valley resident**

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Reforestation nursery owner	X
Director, nonprofit natural resources consulting and training center	X
Local mayor	X
Natural resource management interest group member	
Former county supervisor	X
Rancher, rural conservation district member	X
County board of education member	
Superintendent of schools (retired)	X
Forester, tree farmer	
County supervisor	X
Wood products company manager (2)	
Wood products company employee/forester	
Wilderness outfitter, natural resource management consultant/contractor (2)	X
Shasta Tribe member, retired timber worker	X
Shasta Tribe member	X
County behavioral health specialist	X
State Department of Forestry acting unit chief	X
County economic development corporation director	
County natural resource specialist	X
Environmental interest group member	X
County planning director	X
U.S. Forest Service district ranger (retired)	X
Salmon River Restoration Council representative, contractor, Mid-Klamath Watershed Council board member	X

## Butte Valley

<b>Respondent's position</b>	<b>Butte Valley resident</b>
County Supervisor, Klamath Provincial Advisory Committee member, Ore-Cal Resource Conservation and Development Director, rancher	X
Ore-Cal Resource Conservation and Development employee	
Butte Valley Saddle Co. owner, chamber of commerce president	
Dorris Lumber & Molding	X
Vintage Woodworks owner	X
Shasta Tribe member, local environmentalist	X
Shasta Tribe member, former timber faller	X
Whitsell Manufacturing, Inc. (lumber remanufacturing)	X
TC Ranch owners	X
Butte Valley Fire District Fire Chief	X
Butte Valley Health Center	
Butte Valley Unified School District Superintendent	X
Butte Valley school district employee	X
Mayor of Dorris	X

## Mid-Klamath

<b>Respondent's position</b>	<b>Mid-Klamath resident</b>
Local business owner/leader, county school board member, contractor, ex-mill worker	X
Fishing outfitter/guide, local school board member	X
Director, Happy Camp Family Resource Center (provides social services), local school board member, tribal council member	X
Retired Happy Camp district ranger, health clinic board member	X
Rancher, retired Forest Service employee	X
Miner, logger	X
Director, Karuk Economic Development Organization; Karuk Tribe member; vice president, Happy Camp Chamber of Commerce; chairman, Happy Camp Action Committee	X
Mid-Klamath Watershed Council representative, Klamath Forest Alliance representative	
Local business owner	X
Regional forest manager, fruit growers	
Karuk tribal member, special forest products gatherer, basket maker	X
Logger	X
New 49ers recreational mining club representative	X
Forest contractor, ex-logger, local business owner	X
Outfitter-guide, owner, local river rafting company	X
President, Happy Camp Chamber of Commerce, local business owner, Resource Advisory Committee member	X
Treasurer, chamber of commerce	X
Chair, Karuk Tribe	X
Vice Chair, Karuk Tribe	X
Secretary, Karuk Tribe	X
Anthropologist	X
Klamath-Siskiyou Wildlands Group representative	X
Klamath-Siskiyou Wildlands Group representative	

## BLM Coos Bay District and Local Communities

### Coos Bay District

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#### Respondent's position

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District manager  
 Resource area manager—Umpqua Resource Area  
 Resource area manager—Myrtlewood Resource Area  
 Noxious weeds program coordinator  
 Timber sales administrator  
 Silviculturalist  
 Watershed analysis coordinator  
 Small sales administrator—Myrtlewood Resource Area  
 Small sales administrator—Umpqua Resource Area  
 Volunteer coordinator  
 Cultural resources program manager  
 Recreation specialist (2)  
 Fish biologist  
 Wildlife biologist  
 Fire program manager  
 District geologist  
 Watershed restoration coordinator  
 Public affairs officer  
 Road engineer—Umpqua Resource Area  
 Road engineer—Myrtlewood Resource Area  
 Interpretive specialist

### Greater Coos Bay

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#### Respondent's position

#### Greater Coos Bay resident

Chamber of commerce employee (tourism focus)	X
Consulting forester/small woodland owners association member	X
County commissioner	X
County commissioner/rancher	X
County forester	X
Health services agency employee	X
Large timber company manager	X
Large timber company manager	X
Large timber company manager, former local politician	X
Local economic development agency employee (tourism and industrial development focus)	X
Nature reserve employee	X
Tribal forester	X
Tribal member/fish biologist	X
Watershed association employee	X
Watershed restoration contractor/forest worker	X

## Greater Myrtle Point

<b>Respondent's position</b>	<b>Greater Myrtle Point resident</b>
Brush shed operator	X
Business development specialist	
Environmental educator	X
Environmental group leader	
Farmer/environmental educator	X
Fisheries specialist with state educational agency	
Large timber company manager	
Mountain bike club member/carpenter	X
Municipal leader	X
Public works employee	X
Restoration contractor/forest worker	X
Retiree, fisheries volunteer, long-term resident	
Retiree, rockhound club member, newcomer	X
Small mill operator	X
Watershed association employee	

## Greater Reedsport

<b>Respondent's position</b>	<b>Greater Reedsport resident</b>
Cultural heritage organization leader/environmental education focus	X
Economic development leader/sportsfishing and tourism focus (2)	X
Economic development/elk viewing area involvement	X
Forest products company employee	X
Former school district leader	X
Former wood products industry employee/small mill operator	X
Industrial manufacturing company employee	X
Local politician	X
Manager of municipality	X
Member volunteer fire department	X
Municipal planner	X
Owner of local media	X
Rancher/mill owner/watershed organization member	X
Small business owner (timber related)	X
Small business owner, elk viewing area involvement	X
Social services organization manager	X
Timber company manager	
Wood products industry worker	X





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# NORTHWEST FOREST PLAN

THE FIRST 10 YEARS (1994–2003)

## Socioeconomic Monitoring Results Volume VI: Program Development and Future Directions

Susan Charnley and Claudia Stuart



General Technical Report  
PNW-GTR-649 Vol. VI  
April 2006

**USDA** United States  
Department of  
Agriculture

**FOREST SERVICE**  
**U.S.** Forest  
Service  
DEPARTMENT OF AGRICULTURE

**PNW** Pacific Northwest  
Research Station

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# Socioeconomic Monitoring Results

## Volume VI: Program Development and Future Directions

Susan Charnley and Claudia Stuart

Northwest Forest Plan—The First 10 Years  
(1994–2003): Socioeconomic Monitoring Results

Susan Charnley, Technical Coordinator

U.S. Department of Agriculture, Forest Service  
Pacific Northwest Research Station  
Portland, Oregon  
General Technical Report PNW-GTR-649 Vol. VI  
April 2006

## **Abstract**

**Charnley, Susan; Stuart, Claudia. 2006.** Socioeconomic monitoring results. Vol. VI: Program development and future directions. In: Charnley, S., tech. coord. Northwest Forest Plan—the first 10 years (1994–2003): socioeconomic monitoring results. Gen. Tech. Rep. PNW-GTR-649. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 18 p.

The socioeconomic monitoring program of the Pacific Northwest Interagency Regional Monitoring Program went through three phases of development between 1999 and 2005. Volume VI provides a history of the socioeconomic monitoring program, detailing each phase of its development and discussing challenges associated with socioeconomic monitoring at the community scale. Volume VI also evaluates the socioeconomic monitoring plan in the Northwest Forest Plan record of decision, and whether the questions, goals, and monitoring items are still relevant 10 years later. We provide recommendations for future monitoring.

Keywords: Northwest Forest Plan, socioeconomic monitoring, monitoring program history, future monitoring.

## Preface

This report is one of a set of reports produced on this 10-year anniversary of the Northwest Forest Plan (the Plan). The collection of reports attempts to answer questions about the effectiveness of the Plan based on new monitoring and research results. The set includes a series of status and trends reports, a synthesis of all regional monitoring and research results, a report on interagency information management, and a summary report.

The status and trends reports focus on establishing baselines of information from 1994, when the Plan was approved, and reporting change over the 10-year period. The status and trends series includes reports on late-successional and old-growth forests, northern spotted owl population and habitat, marbled murrelet population and habitat, watershed condition, government-to-government tribal relationships, socioeconomic conditions, and monitoring of project implementation under Plan standards and guidelines.

The synthesis report addresses questions about the effectiveness of the Plan by using the status and trends results and new research. It focuses on the validity of the Plan assumptions, differences between expectations and what actually happened, the certainty of the findings, and, finally, considerations for the future. The synthesis report is organized in two parts: Part I—introduction, context, synthesis, and summary—and Part II—socio-economic implications, older forests, species conservation, the aquatic conservation strategy, and adaptive management and monitoring.

The report on interagency information management identifies issues and recommends solutions for resolving data and mapping problems encountered during the preparation of the set of monitoring reports. Information management issues inevitably surface during analyses that require data from multiple agencies covering large geographic areas. The goal of that report is to improve the integration and acquisition of interagency data for the next comprehensive report.

The socioeconomic status and trends report is published in six volumes. Volume I of the report contains key findings. Volume II addresses the evaluation question, Are predictable levels of timber and nontimber resources available and being produced? The focus of Volume III is the evaluation question, Are local communities and economies experiencing positive or negative changes that may be associated with federal forest management? Volume IV assesses the Plan goal of promoting agency-citizen collaboration in forest management. Volume V reports on public values regarding federal forest management in the Pacific Northwest. Volume VI (this volume) provides a history of the Northwest Forest Plan socioeconomic monitoring program and a discussion of potential directions for the program.





## Summary

The socioeconomic monitoring program of the Pacific Northwest Interagency Regional Monitoring Program has been through three phases of development. Phase 1 lasted from 1999 to 2000, and was designed to review available information and recommend a pilot protocol. Phase II—lasting from 2000 to 2002—tested a pilot monitoring protocol and resulted in a set of recommendations for how to undertake socioeconomic monitoring related to the Northwest Forest Plan (the Plan). Phase III, started late in 2002 and ended in 2005 (also a pilot phase), produced the information contained in this monitoring report (volumes I through V). Volume VI provides a history of the socioeconomic monitoring program, detailing each phase of its development.

The Regional Interagency Executive Committee (RIEC) has not formally incorporated socioeconomic monitoring into the Plan regional monitoring program; nor is there a published socioeconomic monitoring protocol. Following publication of this interpretive report, the RIEC will decide how to proceed with future Plan-related socioeconomic monitoring. To assist with this decision, volume VI evaluates the socioeconomic monitoring plan in the Plan record of decision (ROD) and whether the questions, goals, and monitoring items are still relevant 10 years later. It also provides recommendations for future monitoring.

We find that the Plan goals are still relevant and are consistent with the broader missions and strategic goals of the Forest Service (FS) and the Bureau of Land Management (BLM), although some could be reworded. We also find that the ROD evaluation question that has received most of the program's attention to date—Are local communities and economies experiencing positive or negative changes that may be associated with federal forest management?—should be revised. We recommend formulating monitoring questions that focus on the things that link land management agencies, federal forests, and rural communities and economies in ways that can produce positive outcomes for community well-being and forest ecosystem health.

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# Chapter 1: Module History

## Introduction

The socioeconomic monitoring program of the Pacific Northwest Interagency Regional Monitoring Program has developed through three phases. The first socioeconomic monitoring team was formed in 1997, but it did not begin monitoring-related work until 1999. Phase I was from 1999 to 2000, phase II from 2000 to 2002, and phase III began in late 2002 and is still underway. The monitoring results in this report (volumes I through V) come from phase III.

Phase I was designed to review available information and recommend a pilot monitoring protocol. Phases II and III were pilots for the monitoring program. The Regional Interagency Executive Committee (the RIEC)<sup>1</sup> has not yet officially incorporated socioeconomic monitoring into the Regional Monitoring Program, nor has a formal protocol been published for socioeconomic monitoring. The monitoring during phase III followed a protocol developed by the socioeconomic monitoring team (the team) in late 2002. The protocol was pilot-tested in 2003–05. If the Committee formally adopts socioeconomic monitoring as part of the Regional Monitoring Program, the team will publish an updated monitoring protocol.

As stated in the Plan record of decision (ROD), “The monitoring plan will be periodically evaluated to ascertain whether the monitoring questions and standards are still relevant, and will be adjusted as appropriate. Some monitoring items may be discontinued and others added as knowledge and issues change with implementation” (USDA and USDI 1994b). Given that two pilot phases have occurred and that the committee must decide the future of Plan-related socioeconomic monitoring, evaluating the socioeconomic monitoring plan in the ROD; judging whether the questions, goals, and monitoring items are still relevant 10 years later; and assessing future options to ensure that agencies have the socioeconomic information they need to support adaptive management in the Plan area are timely.

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<sup>1</sup>The RIEC is responsible for ensuring the prompt, coordinated, and successful implementation of the Northwest Forest Plan at the regional scale and also oversees the Plan’s monitoring program and adaptive management processes. The Intergovernmental Advisory Committee advises the RIEC.

Chapter 1 begins with an overview of previous efforts at socioeconomic monitoring of forest-based communities, followed by a history of the Plan’s socioeconomic monitoring module, documenting its development since 1997. Chapter 2 contains recommendations and options for future socioeconomic monitoring associated with the Plan.

## Previous Socioeconomic Monitoring of Forest-Based Communities

One challenge the monitoring team faced in developing a protocol for socioeconomic monitoring was a lack of models. The Northwest Forest Plan’s (the Plan) record of decision (ROD) specifically called for monitoring rural economies and communities as part of a regional monitoring strategy. The Forest Service (FS) and the Bureau of Land Management (BLM) had done little in the way of community-scale socioeconomic monitoring in support of forest management before this effort. Although the National Forest Management Act (1976) calls for monitoring forest plans, the focus is typically on implementation monitoring (Wright et al. 2002: 2), and it rarely includes socioeconomic effectiveness monitoring. The FS has been actively involved in socioeconomic monitoring relating to forest sustainability at the national scale as a part of the Montreal Process Working Group on Criteria and Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests. The FS also regularly assesses trends in the supply of, and demand for, renewable natural resources and recreation at the national and broad regional scales, as mandated by the 1974 Forest and Rangeland Renewable Resources Planning Act. This work does not provide guidance for community-scale monitoring.

A regional FS monitoring effort that included a socio-cultural module was initiated in the mid-1990s as part of California’s Sierra Nevada framework planning effort. This effort included a conceptual model as a foundation for monitoring an array of environmental, social, economic, and cultural trends across the Sierra Nevada (Manley et al. 2000). The team designed rangewide sampling strategies based on the conceptual framework, including detailed strategies for monitoring change in cultural resources and the implementation and effectiveness of tribal relations programs.

Funding and implementing the Sierra Nevada monitoring program concentrated on ecological resources, however.

In 1999, the FS began a pilot study—the Local Unit Criteria and Indicators Development test—to assess how feasible monitoring ecosystem sustainability at the forest scale would be (Wright et al. 2002). The study focused on developing a set of criteria and indicators for monitoring sustainability, including the sustainability of socioeconomic systems, in support of adaptive ecosystem management and forest planning. The result was a monitoring framework containing a core set of criteria and indicators for sustainability monitoring. The pilot national forests in the study conducted community-level socioeconomic monitoring to test the indicators. Some have adopted the final framework and begun implementing monitoring activities in communities around their forests. Other FS monitoring efforts have focused on ecological monitoring (e.g., the Forest Inventory and Analysis Program, Maddox et al. 1999, Mulder et al. 1999, Tolle et al. 1999) rather than socioeconomic monitoring, and they are typically conducted at the broad scale. The BLM has not previously conducted socioeconomic monitoring at the community scale (McElroy 2005).

Outside the FS and BLM, a few models of community-based socioeconomic monitoring relate to forest management.<sup>2</sup> Some researchers have developed frameworks of social and economic indicators that can be used for monitoring sustainability and well-being in natural resource-based communities (such as Beckley and Burkosky 1999, Force and Machlis 1997, Parkins 1999, Parkins et al. 2001). More often than not, these research efforts conclude by identifying a set of socioeconomic indicators to be used in monitoring and stop short of applying them in monitoring programs and of reporting monitoring results useful for adaptive ecosystem management. Consequently, although they provide guidance for what to monitor, they do not provide guidance for how to monitor, nor do they demonstrate how monitoring results can be applied in the resource management context.

<sup>2</sup>Some examples of socioeconomic monitoring are associated with community sustainability projects, conservation and development projects, and certification programs, however.

Some researchers have developed frameworks of social and economic indicators that have been used in conducting broad-scale assessments in support of forest planning. Several excellent examples demonstrate the use of such indicators in assessing social and economic conditions and trends, community well-being, resiliency, and capacity<sup>3</sup> (Christensen et al. 1999, Doak and Kusel 1996, FEMAT 1993, Harris et al. 2000, Struglia et al. 2001, Sturtevant and Horton 2000). Although such assessments have not been developed within a monitoring framework, they do provide a frame of reference for building an approach to socioeconomic monitoring.

Related research focuses on how to conduct “multi-party” monitoring<sup>4</sup> and “community-based” monitoring<sup>5</sup> in support of ecosystem management (Bliss et al. 2001, USDA 2003). For example, the FS, in collaboration with partner organizations, has developed handbooks for multi-party monitoring of community forest restoration projects (<http://www.fs.fed.us/r3/spf/cfrp/monitoring/>). Our monitoring approach does not entail multiparty monitoring, although we consider it to be an option for the future.

The best examples we found of socioeconomic monitoring relating to forests and communities came from the Watershed Research and Training Center in Trinity County, California (Danks et al. 2002) and the Ecosystem Workforce Program at the University of Oregon (Moseley and Wilson 2002). This work was highly influential in developing the monitoring approach used in phase III.

Given the scarcity of existing models to draw from in developing a socioeconomic monitoring program for the Plan area, the history of the Plan’s program is one of developing and testing different approaches.

<sup>3</sup>Community capacity may be defined as the collective ability of community residents to respond to external and internal stress, take advantage of opportunities, adapt and respond to a variety of circumstances, and meet the needs of residents (Kusel 2001: 374).

<sup>4</sup>Multiparty monitoring consists of monitoring by a mixed group of people who are affiliated with local communities, local, regional, or national interest groups, and public agencies (USDA 2003: 3).

<sup>5</sup>Community-based monitoring refers to monitoring activities designed to produce information on social and ecological factors affecting a community that is needed or desired by the community, and in which members of the community participate (Bliss et al. 2001: 145).

## **Socioeconomic Monitoring Program History**

In 1993, President Clinton convened the Forest Ecosystem Management Assessment Team (FEMAT 1993) as part of the effort to develop the Plan. The team was charged with identifying management alternatives for Pacific Northwest federal forests that would maximize social and economic benefits from the forests, while complying with environmental laws and regulations (FEMAT 1993: ii). The FEMAT social assessment found that many communities in the Pacific Northwest were undergoing economic and social transitions from timber dependence to other types of economies. Time limitations imposed on FEMAT precluded a complete investigation of these and other changing dynamics across Pacific Northwest communities.

Given the complex, ongoing changes in the region's forest-based communities, the Forest Service's Pacific Northwest Research Station initiated a program to study rural development in the Pacific Northwest. The program focused on improving knowledge of the region's changing rural places. Researchers sought to better understand contemporary rural social and economic dynamics, to clarify relations between natural resource management and rural communities, and to investigate rural social values (Christensen 2003). Program scientists characterized rural conditions across the Pacific Northwest at the county and larger scales, using data available from the U.S. Bureau of the Census, Bureau of Economic Analysis, state employment departments, and other sources (Christensen et al. 2000; McGinnis et al. 1996, 1997; Raettig 1999, Raettig et al. 1996, 1998). The program also assessed the effectiveness of the Northwest Economic Adjustment Initiative (Christensen et al. 1999, Raettig and Christensen 1999). These efforts, however, did not specifically respond to the socioeconomic monitoring charge contained in the ROD.

## **Phase I**

In 1997, the Regional Ecosystem Office (the REO)<sup>6</sup> initiated an effort to respond directly to the ROD requirement for socioeconomic monitoring. An interagency team was formed to develop a monitoring protocol. The team included social scientists, economists, and others from the Station, the U.S. Army Corps of Engineers, the U.S. BLM, the U.S. FS Pacific Northwest Region (Region 6), and the U.S. Geological Survey's Forest and Rangeland Ecosystem Science Center. The team investigated options for developing the monitoring program.

In 1999, the team commissioned researchers at the University of Washington's Northwest Policy Center and College of Forest Resources to undertake a two-part study. The objectives for the first phase of work were to establish a monitoring framework, undertake preliminary data collection, and estimate the feasibility and costs of completing the evaluation in a succeeding phase of the work. This phase of the project focused solely on the monitoring question in the ROD that pertained to well-being in rural communities and economies, and how that was linked to federal forest management policy. The team also considered the need to develop the monitoring protocol for broader or long-term applications.

The report that resulted from the phase I efforts (Somers 2001) found that the literature dealing with rural development, socioeconomic assessment, and community effects studies did not offer a proven model for relating forest management to social and economic change. Nor did published data allow researchers to discern the causes of socioeconomic change. County data, such as mill employment, was readily available but could not be used to attribute the causes of change, because it described variables subject to a host of influences. For example, workers commute across county lines from home to workplace, and firms import and export products across county boundaries. Changing technology and business conditions further complicate analysis. These leakages and other confounding

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<sup>6</sup>The REO supports Plan decisionmaking processes, and implementation of Plan standards and guides.

factors make using existing county data to attribute changes in employment to federal forest management impossible.

A second disadvantage is that county data do not reflect conditions and trends taking place at the community scale, which can differ greatly within a single county. Accordingly, Sommers proposed a conceptual model of local economic flows that related changing forest management to community-scale socioeconomic change. Federal forest management actions were linked directly to local and nonlocal firms, to local workers and their household incomes, and to local services. Federal management was linked indirectly to variables such as income tax revenues and consumption, health, crime, and social capital.

Once estimated by using appropriate data, such a model can establish whether federal actions were the probable cause of socioeconomic changes at the community scale, or whether local change was more likely due to other factors. In addition to validating (or disqualifying) these relations, the data used to estimate the model could also describe change in community socioeconomic characteristics. The approach thus responded to the dual aspects of the ROD socioeconomic monitoring charge: to establish whether local communities and economies are undergoing change, and to discern whether that change is associated with federal forest management.

Sommers also undertook preliminary data collection by using county indicators readily available from secondary sources to describe socioeconomic trends in the Plan area. The available data suggested that the Pacific Northwest's metropolitan economies were stronger than its rural economies during the 1990s.

Sommers identified a complex set of issues associated with estimating and using the local model to determine cause-and-effect relations. Estimating the model would require assembling a substantial amount of community data. Community data, however, were not readily available. Accordingly, Sommers recommended primary data collection by using surveys or interviews to properly estimate the model. To control the increased monitoring costs associated with primary data collection, he suggested a limited sample of community cases.

Which communities should be sampled? More than 1,300 nonmetropolitan communities have been delineated in the Plan area (volume III, chapter 2). Monitoring every community is impractical; yet drawing generalizations about communities regionwide based on a sample is also difficult because the communities are unique. Sommers recommended monitoring a sample of communities typed and paired according to population size, distance from transportation corridors, and type of economic base. Such an approach would allow researchers to generalize results by community type. Alternatively, monitoring could sample a limited set of local communities before and after change in federal forest management. Given this emphasis on local data collection, Sommers also recommended evaluating available county data every 3 to 5 years to monitor regionwide conditions.

## Phase II

The second phase of the project was designed to test and evaluate the approaches outlined in phase I. Researchers adopted separate survey instruments for local businesses and households (Sommers et al. 2002). The business survey was to capture information describing economic activity and linkages critical to estimating the local economic model. The household survey was developed to inform the social components of the model and to build a picture of community social capital. When tested, however, the household survey imposed a substantial time burden on test subjects, requiring more than an hour to complete. Researchers estimated the costs of administering the surveys at over \$50,000 per community. The need to track potentially large numbers of residents moving into or out of the community during the study period entailed additional costs and challenges. Individual and household privacy were also concerns.

In addition to surveys, the researchers tested a case-study approach using available socioeconomic indicator data together with interviews. They conducted interviews with community members and supplemented them with data published by the U.S. census, local service providers, and others. The economic side of the analysis relied on economic-base theory applied at the subcounty scale.

The test was in Forks, Washington. Peer review indicated that, although community-scale analysis can result in more useful information than county-scale analysis, the monitoring methods tested presented significant limitations. Foremost were the lack of a proven basis for relating local economic change to change in regional federal forest management policy, and relating local economic change to local social change. Reviewers recommended that the monitoring effort focus initially on improving understanding of these relations. They also noted the need for a rigorous method of delineating community boundaries to facilitate community monitoring, given the debate in the literature about how to define a “community” as a unit of analysis.

The phase II report (Jackson et al. 2004) provided the researchers’ recommendations for Plan-related socioeconomic effectiveness monitoring. The report noted that a case-study approach incorporating community-scale socioeconomic indicators can be adequate for local socioeconomic monitoring. To validate causal relations between forest management and local communities, however, the report recommended longitudinal business and household surveys by using a sampling strategy based on community cases paired by type and degree of relation to the forest. The monitoring challenges identified by the University of Washington researchers and their key recommendations for how to proceed following phases I and II are summarized here.

**Monitoring challenges—**

- Determining an appropriate unit of analysis for monitoring (such as county vs. community).
- Defining and delineating “community” as a unit of analysis.
- Selecting sample communities and generalizing from the sample.
- Identifying relevant indicators for which community-scale data are available.
- Investing time and money for primary data collection.
- Distinguishing the effects of forest management policy on communities from the effects of other social, economic, and ecological processes.

**Monitoring recommendations from phases I and II—**

- Do not limit monitoring efforts to assessing indicators for which data exist from secondary sources.
- Conduct long-term community case studies.
- Define communities operationally according to geographic patterns of employment and retail trade.
- Monitor communities most likely to exhibit impacts from land management activities.
- Survey individuals, households, and businesses over time.

Through the remainder of 2002, the interagency committee responsible for developing the socioeconomic monitoring module considered the results of phases I and II in the context of the literature and evolving methods. Focal considerations were methods both to improve understanding of local community-forest relations, and to describe socioeconomic conditions and trends in rural communities across the Pacific Northwest.

A third phase of the monitoring program began developing in late 2002. The team’s charge expanded to include evaluating the second question contained in the ROD: whether predictable amounts of timber and non-timber resources were available and being produced. The team also adopted new methods to address the question of how federal forest management policy was affecting rural economies and communities.

Phase III used the widely accepted approach of interviews as part of rapid social assessment. Interviews were incorporated into a mixed-methods case-studies approach that also gathered secondary data (e.g., Yin 1994). Phase III adopted specific methods used in recent monitoring efforts (Danks et al. 2002, Moseley and Wilson 2002), as well as emerging approaches to delineating communities (Doak and Kusel 1996, Donoghue 2003, Kusel 1996). Monitoring was consistent with recommendations from phases I and II:

- Do not limit monitoring to an assessment of county-scale social and economic indicator data; these data do not reveal community-scale conditions and changes and, although they may be readily available, they are not always relevant for answering the monitoring question.

- Adopt a forest-community case-study approach to relate community-scale social and economic change to changes in federal forest management policy.
- Use a rigorous method of delineating community boundaries to facilitate community-scale monitoring.

- Combine community-scale social and economic indicator data from secondary sources with primary data collection by using surveys or interviews in a sample of communities.

The phase III approach and methods are outlined in detail in volumes II through V of this report.



## Chapter 2: Future Direction

The information in this interpretive report is largely the result of retrospective monitoring. No socioeconomic monitoring program was established early in the Northwest Forest Plan (the Plan) period. Thus there was no opportunity to formulate monitoring questions, identify appropriate indicators for answering those questions, and gather monitoring data associated with the indicators over the course of a decade to compile and evaluate in this interpretive report. To a large extent, the monitoring team had to rely on existing data from secondary sources to answer the evaluation questions in the record of decision (ROD) and to evaluate success in meeting Plan socioeconomic goals. These data and their associated indicators were not always adequate for the task. There is now an opportunity to establish a formal socioeconomic monitoring program that identifies relevant monitoring questions with appropriate indicators and to gather monitoring data pertinent to the indicators so that the questions can be answered. This chapter contains our recommendations for future socioeconomic monitoring.

Effectiveness monitoring asks, “To what extent are the goals and objectives of the Plan being achieved?” (Mulder et al. 1999: exec. summary). These goals form the basis for generating questions that the monitoring program should answer (Mulder et al. 1999: 5). We agree: effectiveness monitoring questions should be structured around Plan goals and should evaluate how well those goals are being achieved by identifying trends in associated indicators. However, as Noon et al. (1999: 25) pointed out, information about changes in the status of an indicator by itself is of limited value. Without understanding what is causing monitoring trends, and how management policies versus other variables drive them, we don’t know what policies and programs are working, what aren’t, and how to effect change in the context of adaptive management. Although monitoring typically results in a description of the status and trends in the attributes being monitored, it also generates information that can be used to build hypotheses about causation that can be tested through research (Busch and Trexler 2003: 4–5). Thus, another thing to consider as the program looks ahead is, how can research be integrated

into monitoring to better understand the cause-and-effect relations that underlie monitoring trends?

The agencies’ role, not the monitoring team’s, is to identify the social and economic goals of federal forest management under the Plan. To help with that process, we review the Plan’s socioeconomic goals and their relevance 10 years later and examine the ROD evaluation questions in light of these goals. To provide context, it is worth reviewing the mission and broader management goals and principles of the Forest Service (FS) and Bureau of Land Management (BLM) that are relevant to socioeconomic monitoring.

A part of the FS mission is providing technical and financial assistance to communities to improve their natural environment by caring for their forests; helping communities use forests to promote rural economic development and a quality rural environment; and providing work, training, and education to the unemployed, underemployed, elderly, youth, and disadvantaged in pursuit of the agency mission (<http://www.fs.fed.us/aboutus/mission.shtml>). Two of the agency’s guiding principles are to form partnerships to achieve shared goals and to promote grassroots participation in agency decisions and activities. The 2004 Forest Service Planning Rule calls for understanding the social and economic contributions that FS-managed lands make by evaluating relevant economic and social conditions and trends during the planning process. It also states that national forest lands should contribute to sustaining social and economic systems within their plan areas. The FS 2004 Planning Rule identifies sustainability as the overall goal of land management planning and recognizes that the social, economic, and ecological components of sustainability are interdependent. The rule also calls for a collaborative and participatory approach to planning.

Two of the guiding principles for achieving the BLM mission are to understand the social and economic context in which the agency manages its lands, including the effects of changing social and environmental conditions on land uses and local communities, and to work in partnership with others to achieve a shared vision of how the land and its use will change over time (USDI 2000: 10). One of

the BLM’s goals is to serve current and future publics, and another is to provide economic and technical assistance to state, tribal, and local governments (USDI 2000: 49). Another BLM goal is to restore and maintain the health of the lands it manages. To understand and plan for the condition and use of BLM lands, the agency recognizes the need for information about the sustainability of land use activities on BLM districts, and their contribution to local and regional socioeconomic conditions (USDI 2000: 54).

### Plan Goals: Are They Still Relevant?

The team identified five Plan socioeconomic goals for effectiveness monitoring:

- Produce a predictable and sustainable supply of timber sales, nontimber forest resources, and recreation opportunities.
- Maintain the stability of local and regional economies on a predictable, long-term basis.
- Where timber sales cannot proceed, assist with long-term economic development and diversification to minimize adverse effects associated with job loss.
- Protect forest values and environmental qualities associated with late-successional, old-growth, and aquatic ecosystems.
- Promote interagency collaboration and agency-citizen collaboration in forest management.

Are these goals still relevant and worth monitoring?

### Produce a Predictable and Sustainable Supply of Timber Sales, Nontimber Forest Resources, and Recreation Opportunities

Monitoring resource and recreation outputs from federal forest lands is important, because timber sales, nontimber resources, and recreation opportunities provide important social, economic, and cultural benefits to forest-based communities. An important finding of the FEMAT report was that communities wanted stability, predictability, and certainty in timber supplies. Predictability in resource and recreation outputs may be difficult to achieve, however, given the complex and dynamic nature of natural, social, and economic systems—all of which influence the agencies’

abilities to produce a predictable supply of resources and recreation. Agencies may wish to assess what is a realistic goal for the production of timber and nontimber resources that will meet the needs of the public, and reframe this goal accordingly.

Timber sales, nontimber forest resources, and recreation opportunities are not the only socioeconomic benefits that federal forests and their managing agencies provide. They also provide a host of other benefits that the team monitored, such as jobs and income associated with resources and recreation; agency jobs; jobs created through procurement contracting, grants and agreements; community economic assistance funding; and county revenue-sharing programs. A broader view of the socioeconomic benefits that forests provide could be incorporated into this goal statement, for example, “maximize the economic and social benefits from the forests, while conserving forest ecosystems,” which was President Clinton’s intent with the Plan (USDA and USDI 1994a: volume II E-4). Such a goal is still relevant today. Timber and nontimber resources, recreation, and the other benefits listed here could be specified as monitoring items associated with this goal.

### Maintain the Stability of Local and Regional Economies on a Predictable, Long-Term Basis

The purpose of the first goal—to produce a predictable and sustainable supply of timber and nontimber resources—was to help maintain the stability of local and regional economies on a predictable, long-term basis. A finding of this monitoring report is that, although stable timber supplies may contribute to economic stability, they do not ensure it. Assuming that community stability depends on non-declining, even flows of timber from federal forests can be misleading: many factors can influence the stability of forest-based communities. Consequently, the concept of community stability has been replaced by the concept of community resiliency—the ability of communities to respond and adapt to change in positive, constructive ways to mitigate the effects of change on the community (Harris et al. 2000: 6).

Agencies may wish to reframe this Plan goal in light of these findings. A more appropriate goal, linked to the first, might be “provide social and economic benefits that contribute to community well-being, and help communities improve their capacity to adapt to change.”

### **Where Timber Sales Cannot Proceed, Assist With Long-Term Economic Development and Diversification to Minimize Adverse Effects Associated With Job Loss**

The Plan sought to mitigate the effects of reduced federal timber sales by assisting with community economic development and diversification through the Northwest Economic Adjustment Initiative. The initiative has ended, and the FS no longer has appropriated funds to support Jobs-in-the-Woods or the Rural Community Assistance Program. Community assistance programs are one means of achieving this goal, but there are also other mechanisms for assisting communities with economic development and diversification. Agency efforts to promote this goal can have positive benefits for forest stewardship.

For example, one Plan objective was to integrate forestry and economic assistance by linking ecosystem management on federal forest lands with local family-wage jobs that would contribute to sustainable communities. Strategies designed to achieve this objective included Jobs-in-the-Woods, land management procurement contracting, and initiative projects that supported recreation and tourism development, and sustainable forestry enterprises, such as small businesses that produce value-added wood products made from small-diameter wood and hardwoods from federal forests. This goal remains as important and relevant today as it was when the Plan was developed.

One of the foremost issues of concern related to forest management expressed by community members interviewed for this study was the lack of family-wage jobs in their communities, especially jobs tied to forest resources. Many community residents interviewed were from families who had a history of working in the woods, and who were struggling to stay and raise their families in the communities they considered home. Residents of forest communities can potentially help forest managers meet their management

objectives given the recent climate of declining agency staff and budgets. Increasing federal forest-based employment opportunities would make an important contribution to community well-being. The desire for forest-based, family-wage jobs was a top priority in the case-study communities monitored, especially those not located near regional centers or urban areas that provide commuting options. The importance of sustaining family-wage, forest-based jobs in rural communities was also acknowledged in regional public surveys (see volume V). Linking forest restoration work with local job creation to promote economic development and diversification in communities is relevant, important, and possible.

### **Protect Forest Values and Environmental Qualities Associated With Late-Successional, Old-Growth, and Aquatic Ecosystems**

Several agency managers have questioned whether the socioeconomic monitoring team should conduct effectiveness monitoring relating to this goal. Some view it as a biophysical goal that should be monitored only by the biophysical modules. We assessed this goal for two reasons.

First, protecting forest values and environmental qualities associated with late-successional, old-growth (older forest), and aquatic ecosystems is a social value. Changes in societal values can trigger the adaptive management process (USDA and USDI 1994a Volume II: E4). Monitoring how public attitudes, beliefs, and values relating to forest management change over time is important, so that managers can be responsive. Second, people’s perceptions of the effectiveness of agency management policies can influence their behavior and their attitudes toward the agencies. This information supplements, but does not replace, biophysical monitoring related to this goal.

In our view, the monitoring questions that continue to be relevant are:

- What forest values and environmental qualities associated with federal forests are important to members of the public, and what is the balance of values (both commodity and noncommodity) that members of the public believe federal forests should be managed for?

- How well has federal forest management under the Plan provided for the forest values and environmental qualities that are important to members of the public?

### Promote Interagency Collaboration and Agency-Citizen Collaboration in Forest Management

President Clinton wanted federal agencies to work together to achieve Plan goals (USDA and USDI 1994b: 3). The Plan directed federal agencies to coordinate and cooperate in forest management. A host of new institutions and processes were created to improve interagency coordination and communication and to eliminate duplication (Tuchmann 1996: 6–7). The Plan also called for more collaboration between agencies and members of the public in forest management.

The socioeconomic monitoring team did not monitor interagency collaboration under the Plan because we did not have the resources. If interagency collaboration is viewed as an important subject for monitoring, it would be appropriate for the team to do so, and possible if resources were available.

The team did some monitoring of agency-citizen collaboration. We believe it is important and relevant to continue monitoring agency-citizen collaboration in forest stewardship. The FS units appear to rely increasingly on partnerships, volunteers, and joint forest stewardship efforts to get their work done because they lack the budgets and staff to accomplish all of the work themselves. The BLM also emphasizes cooperative partnerships for restoring and maintaining the health of the land. The success of these efforts depends in part on the capacity of communities to engage in them. Interviews with community members showed that many local residents have sophisticated perceptions of complex ecological processes and relations. Interviews also showed that many community members care deeply about nearby forests and their ecological integrity. Although many communities have limited capacity to engage with managers in forest stewardship activities, most communities have some capacity to do so. Agency-citizen collaboration provides one indicator of agency and community capacity and relations. Monitoring also provides insight into what kinds

of collaborative arrangements are most successful, and how to better engage in agency-citizen collaboration.

Adaptive management areas were an important Plan component that was not systematically monitored by the team. Future monitoring could examine the role of the areas in meeting Plan and unit-level land management and socioeconomic objectives, relating unit-level outcomes to approaches taken to collaboration. This would provide useful information for future management.

### Plan Evaluation Questions: Are They the Right Ones?

The socioeconomic monitoring team addressed two evaluation questions from the ROD:

- Are predictable levels of timber and nontimber resources available and being produced?
- Are local communities and economies experiencing positive or negative changes that may be associated with federal forest management?

We discuss these in turn.

#### Are Predictable Levels of Timber and Nontimber Resources Available and Being Produced?

The question has two components, one having to do with predictability and one with availability. We did not monitor whether predictable levels of resources and recreation were available because we did not have the capacity to do so; we focused on whether predictable levels of resources were being produced. We believe monitoring resource and recreation outputs from federal forests is important, but the concept of predictability is problematic. Modification of this evaluation question will depend on how that goal is framed. Potential modifications could be: What were the trends in timber sales, special forest products harvested, grazing, mining, and recreation opportunities on federal forest lands? What amounts of timber and nontimber resources are being produced, and how does the Plan (vs. other factors) influence those amounts? Are opportunities to harvest timber, use nontimber resources, and engage in recreation on federal forest lands predictable?

The ROD currently states that timber sales, special forest products, grazing, minerals, recreation, commercial fishing, and scenic quality should be monitored. We recommend dropping commercial fishing as a monitoring item because many factors affect commercial fishing, and we found that evaluating how the Plan might have influenced it was impossible. The Aquatic and Riparian Effectiveness Monitoring Program is evaluating watershed conditions, which are relevant for commercial fishing. Scenic quality is a relevant monitoring item because of its importance for recreation, and because it is one of the amenity values that draw people and businesses to rural communities. The ability to monitor it will depend on data availability (see volume II, app. A).

The agencies might also consider whether other monitoring items should and could be added to the list, such as indicators of ecosystem services and other amenity values.

Although monitoring resource and recreation outputs from federal forest lands is important, doing so is problematic, as volume II of this report demonstrates. Some of the problems the team encountered in evaluating this question were the following:

- Indicators tracked by the agencies were not always the right ones for answering the monitoring question.
- Historical data, in particular, are hard to get, because many of them are not stored in electronic format or in corporate databases.
- The FS regions, and the FS and BLM track some indicators differently, so aggregating agency data for the Plan area as a whole is difficult.
- Existing data are sometimes incomplete, and the numbers provided by regional and state offices, and by local forest units, for the same indicators sometimes differ.
- The direction we were given in evaluating this question was to obtain all of the monitoring data from the FS regional and BLM Oregon state offices, rather than from individual forest units. This direction limited our ability to obtain data because some data are available from local units only.

- The monitoring team consisted of social scientists, not agency program specialists with expertise in the areas of timber, special forest products, recreation, grazing, and minerals. The team had to rely on agency program specialists to help us retrieve, analyze, and interpret the data. Although most of the program specialists invested a great deal of time and effort assisting us, a few were less responsive, making it difficult to obtain data and use the benefit of their expertise. And, there were many instances of reviewers questioning whether our claims about data availability for different indicators were accurate and whether our interpretations of the data were correct.

We recommend that the agencies continue to monitor resource and recreation outputs from federal forest lands as part of the monitoring program. Our recommendations on how to do so are as follows:

- Identify what indicators need to be monitored to answer the evaluation question, and track data relevant to those indicators in a systematic, coordinated way between agencies and regions.
- Collect resource data directly from field units, rather than from regional and state offices.
- Charge agency specialists in the timber, special forest products, grazing, minerals, and recreation programs with the responsibility for monitoring associated with this evaluation question to improve accuracy, efficiency, and accountability.

### **Are Local Communities and Economies Experiencing Positive or Negative Changes That May Be Associated With Federal Forest Management?**

We believe that effectiveness monitoring questions should be structured around Plan goals and should evaluate how well those goals are being achieved. This evaluation question is very broad, general, and not tied to a specific Plan goal that can be evaluated for effectiveness. Moreover, it is difficult to measure the extent to which federal forest management policy, versus other variables, contributes

to positive or negative change in communities. Finally, the ROD gives a list of monitoring items associated with this question, several of which we found were impractical or irrelevant to monitor.

We believe the question, “Are communities experiencing positive or negative changes that may be associated with federal forest management” is the wrong one to be asking now. The question stemmed from concern in the early 1990s about how cutbacks in federal timber production would affect forest-based communities. Reduced federal timber harvests have been in place for over 10 years, and are unlikely to change much in the near future. Instead, we believe that monitoring should focus on those forest management policies, programs, projects, and practices—whether initiated by forest management agencies or local communities—that have already been identified through research as potentially making a positive contribution to both community well-being and forest health. Monitoring would focus on the key linkages between forests and communities that have the potential for positive outcomes for the agencies, forest landscapes, and community well-being. Monitoring could help evaluate whether those linkages are becoming stronger or weaker over time; their socioeconomic outcomes for communities; their stewardship outcomes for federal forests; and the causal factors underlying observed trends. Monitoring could also track agency and community capacity to engage in the kinds of mutually-beneficial relations that link healthy forests and healthy communities.

For example, a stable, predictable supply of small-diameter wood is needed to support community investments in technologies and businesses that utilize small-diameter wood, which can lead to reduced community wildfire risk, improvements in ecosystem health, and more jobs and income for communities (COPWRR 2005). Thus, it makes sense to monitor the supply of small-diameter wood coming off of federal forests, community infrastructure development for processing and manufacturing that wood, and jobs and income associated with removing, processing, and manufacturing it. Participatory monitoring of forest resources (such as nontimber forest products)

by community members can contribute to forest managers’ knowledge of those resources and help to manage them (Lynch et al. 2004). Participatory monitoring also contributes to harvester knowledge about, and sustainable use of, nontimber forest products. Socioeconomic monitoring could look at community engagement in forest monitoring and its outcomes. A finding of this report is that consistent opportunities to obtain family-wage jobs doing forest restoration work for at least part of the year through agency contracts, grants, or partnership agreements help sustain rural livelihoods. Monitoring agency contracting practices is relevant to understanding contributions to community well-being. Collaboration in joint forest stewardship—such as that which occurs through resource advisory committees, Fire Safe councils, volunteer programs, partnership agreements, and potentially in adaptive management areas—is having some positive outcomes for both communities and forest landscapes; it makes sense to monitor them.

These are just some examples that illustrate the potential for monitoring the variables that link agencies, federal forests, and rural communities and economies in a way that promotes achieving the socioeconomic goals of the Plan: to produce a predictable and sustainable supply of timber, nontimber forest products, and recreation opportunities; to maintain the stability of local and regional economies on a predictable, long-term basis; to assist with long-term economic development and diversification; and, to promote agency-citizen collaboration in forest management. Monitoring these items could also help assess progress toward achieving some of the biophysical goals of the Plan associated with forest protection, ecological restoration, and habitat improvement.

### **Additional Considerations for Future Monitoring**

1. We identified more than 1,300 nonmetropolitan communities in the Plan area. Although communities share commonalities, they are also unique. The Plan affected local communities in different ways because of variation in the conditions associated with Plan implementation on forest units, variation in the

socioeconomic conditions and circumstances in the communities, and variation in the external factors at play in influencing community-scale change. The monitoring results reported here do not do justice to this variation because time and resources only permitted us to sample 4 case forests and 12 communities before preparing this report. Nor was our sample size large enough to permit evaluating some of the expectations contained in the ROD associated with Plan effects. Socioeconomic monitoring should encompass a broader range of forest-community cases in order to adequately capture these differences and to provide a better evaluation of Plan effectiveness for the region as a whole.

We recommend developing a sample of cases to monitor on a rotational basis over a 5- or 10-year monitoring period (depending on program resources). One forest-community case would be selected from each of the 12 planning provinces for long-term monitoring. The number of communities monitored around each case-study forest would differ, depending on how much variation in community “types” and community-forest relations exists.

2. Our assessment of agency effectiveness in meeting Plan goals was based on a regional-scale assessment supplemented by four local-scale examples. We used our results to draw general conclusions in response to the monitoring questions. Generalizations always have exceptions, and undoubtedly, examples could be found that counter our general findings.

Investigating local successes in achieving Plan socioeconomic goals would be useful. Future monitoring should document and profile examples that illustrate how Plan socioeconomic goals are being successfully achieved. These examples could provide useful models and valuable lessons to draw on for adaptive management. For example, in 2005, monitoring around the Okanogan-Wenatchee National Forest identified successes that were unlike those described in this report. A greater depth of monitoring will provide more

complete evaluation of Plan effectiveness and clearer insights into the causes of organizational effectiveness in meeting Plan goals.

Data describing trends in staffing and budgets could also be used to identify units with potentially different institutional capacities. The relations between these units and associated communities could be more closely studied to provide better information on how institutional investments can affect local community outcomes.

3. Socioeconomic monitoring at the local scale would be most efficient and useful if done around forest units undergoing land and resource management plan revision. The case-study monitoring yields social and economic information that supports local planning and management needs, and can provide information for social and economic assessments and impact statements. Northwest Forest Plan-related socioeconomic monitoring could also be coordinated with individual forest plan monitoring. Coordination will improve cost-effectiveness and efficiency and enable local units to maximize their use of monitoring results.
4. To date, the focus of the socioeconomic monitoring program has been on rural communities and economies. This focus excludes metropolitan areas and broader regional stakeholder groups and emphasizes communities of place rather than communities of interest. Forest managers frequently commented that by focusing on rural communities we were missing an important segment of their client population. In evaluating the socioeconomic monitoring program, consideration should be given to whether including metropolitan areas and a wider range of forest stakeholders and communities of interest is important, or whether rural communities and economies should continue to be the focus. This decision will depend on the socioeconomic goals identified.
5. A possible revision of the tribal monitoring protocol is being discussed. Interest has been shown in refocusing that protocol to include questions similar to some

of those investigated by the socioeconomic monitoring team. The socioeconomic and tribal monitoring teams both worked with tribal communities, but not in a coordinated way. Integrating tribal and socioeconomic monitoring is possible because of overlapping interests and areas of inquiry. The agencies may wish to explore how tribal and socioeconomic monitoring could be integrated in the future.

6. The methods that produced the results contained in this monitoring report did not include primary data collection by using surveys. Surveys can provide quantitative monitoring data for a broader geographic area and population than was reached during phase III and may be an appropriate tool for broad-scale socioeconomic monitoring relating to some of the Plan goals. One drawback of surveys is that it can be time-consuming to obtain approval from the Office of Management and Budget to implement them. Nevertheless, the team should consider developing survey methods for future monitoring if the agencies desire socioeconomic data from a larger sample population.
7. The FS has been actively involved in socioeconomic monitoring at the national scale as part of the Montreal Process Working Group on Criteria and Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests. It would be useful to align some of the socioeconomic monitoring indicators for the Plan area with the Montreal Process social and economic indicators, in order to better link regional- and national-scale socioeconomic monitoring for forest management and sustainability. Not only would this improve national reporting; it would help managers situate regional trends within a national context.
8. The monitoring results reported here were, for the most part, at two scales: the Plan area as a whole, and the community. We sometimes reported results by agency or by state, but for the most part, did not provide an analysis of the spatial distribution of trends at

any intermediate scale. Initially the team also intended to report monitoring trends at the province scale (the Plan area is divided into 12 planning provinces). However, this quickly became problematic from a methodological standpoint. The majority of our data are for individual FS and BLM units, or are for counties (an exception being the community-scale U.S. census data). Planning province boundaries do not correspond to national forest or BLM district boundaries; nor do they conform to county boundaries. The methodological complexity of trying to aggregate county and forest-scale data at the province scale given these inconsistencies proved to be more than the team could address for this interpretive report, given time limitations. Nevertheless, we recognize the value of analyzing the spatial distribution of socioeconomic trends and Plan effects across the Plan area, and encourage the team to investigate the potential for analyzing subregional (such as province scale) variation in socioeconomic monitoring trends in the future.

9. Multiparty and community-based monitoring approaches are becoming more widespread for monitoring forest resources and the social and ecological benefits of forest management activities. The advantages of these approaches are that they build trust and relations between stakeholders and management agencies, they raise public awareness and promote public participation in forest management and stewardship, they create an opportunity for participants to contribute their skills and knowledge to improve the monitoring program, they enhance the credibility of the monitoring effort among community members, and they build capacity among participants. Among the drawbacks are that they take time and energy to set up and add organizational complexity to the monitoring process. Nevertheless, if the socioeconomic monitoring program is adopted by the RIEC, the team should consider whether and how multiparty or community-based monitoring methods could be integrated into the program for agency and community benefit.



10. Monitoring produces information that is important for adaptive management, yet it is also a process that can play an important role in building relations between agencies and communities. A common comment the team received from community interviewees was that Plan-related socioeconomic monitoring should have begun much sooner. Just as many community residents felt that forest management under the Plan had failed to produce many of the intended socioeconomic benefits, so they felt that agency monitoring programs that focus on the biophysical components of the Plan have taken precedence over socioeconomic monitoring. This continued emphasis on the biophysical dimension of forest management was perceived as a bias toward the ecological components of the Plan, in contrast to the original Plan intent of balancing ecological and socioeconomic needs. Interviewees welcomed the opportunity to tell their stories and share their perspectives, and wanted them to be heard by the agencies. Investing in socioeconomic monitoring demonstrates that agencies are interested in and care about the social and economic dimensions of forest management, and how federal forest lands can better contribute to community well-being, improving relationships between agencies and communities.

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