

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

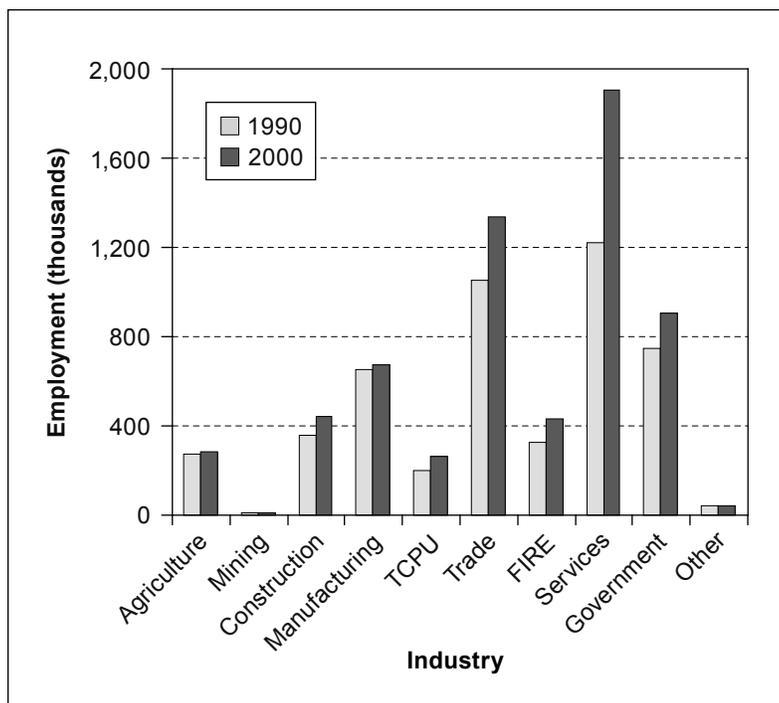


Figure 3-1—Employment by major industry, 1990 and 2000. TCPU = trade, communications, and public utilities; FIRE = finance, insurance, and real estate.

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

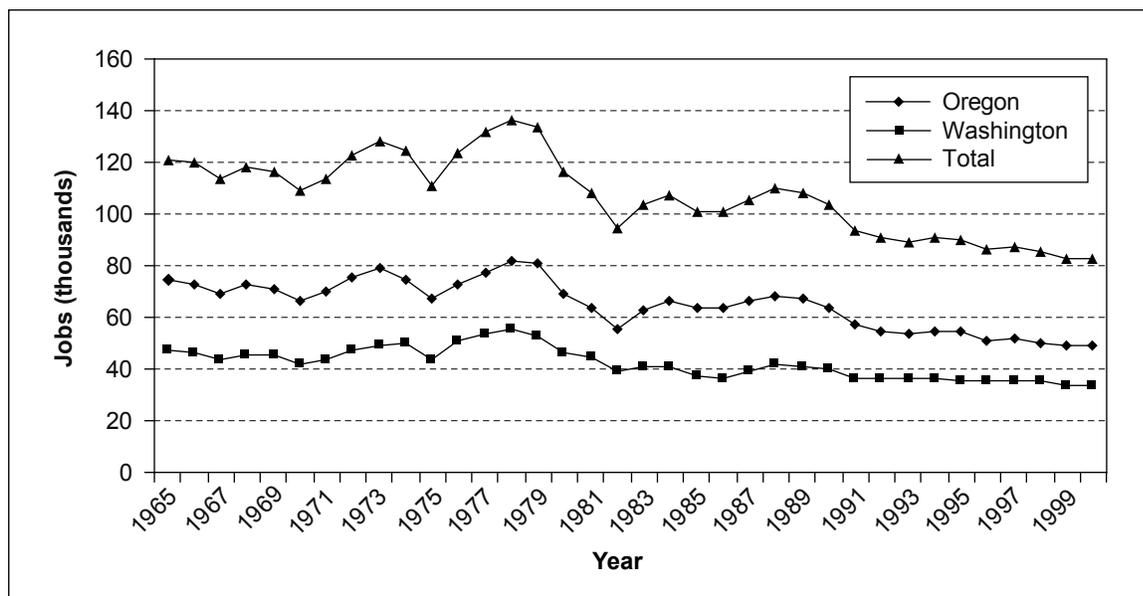


Figure 3-2—Lumber and wood products employment in Oregon and Washington, 1965–2000.

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).

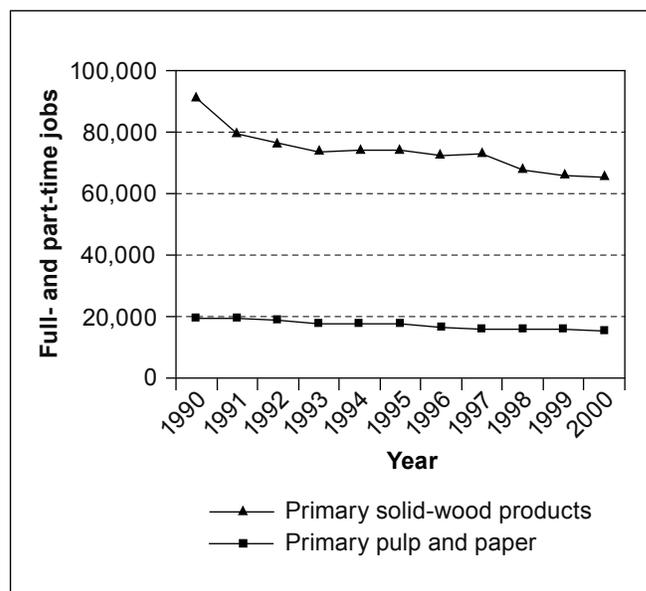


Figure 3-3—Timber industry employment, Northwest Forest Plan area, 1990–2000.

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).

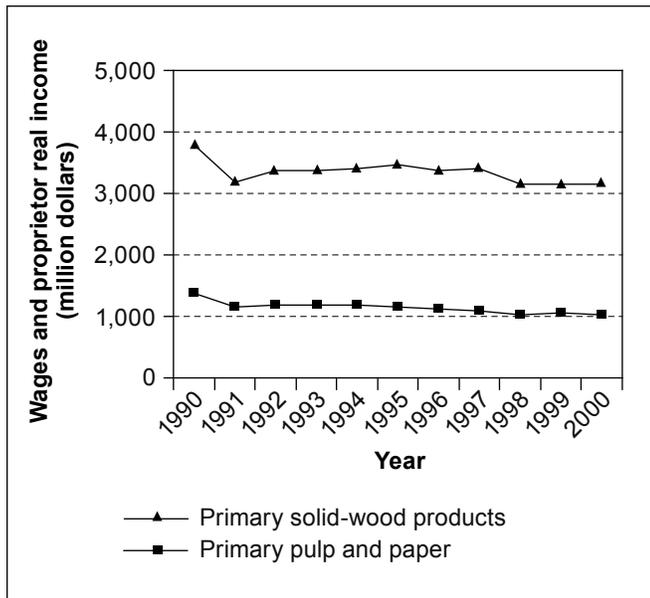


Figure 3-4—Total income from the primary wood-products processing sectors, Northwest Forest Plan area, 1990–2000. Base year is 2000.

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.

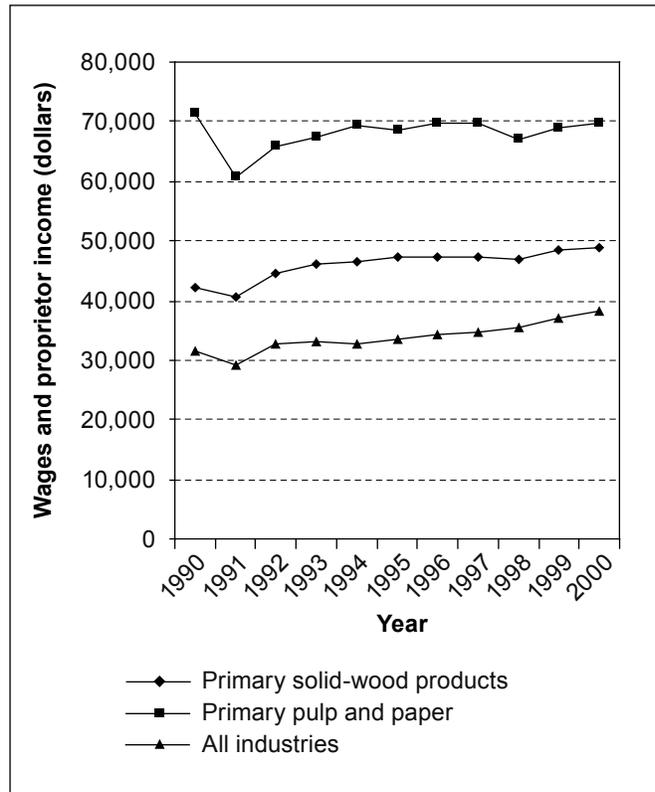


Figure 3-5—Average annual income per job from primary wood-products sectors and all industries in the Northwest Forest Plan area, 1990–2000. Base year is 2000.

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.

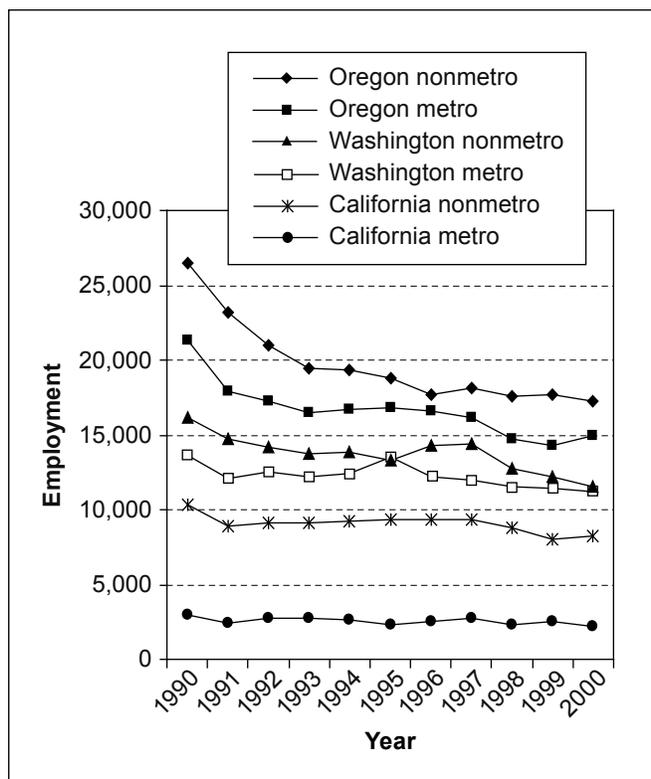


Figure 3-6—Metropolitan and nonmetropolitan primary wood-products employment by state.

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,

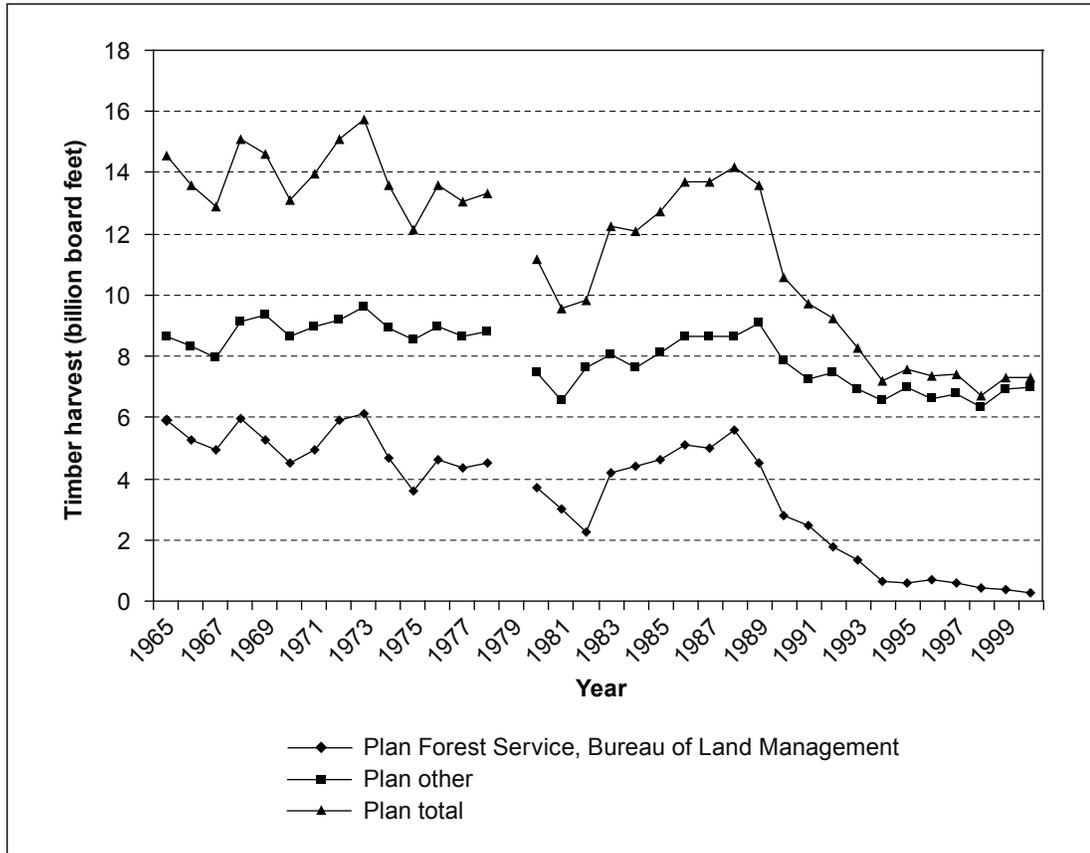


Figure 3-7—Timber harvest by general ownership class in Oregon and Washington of the Plan area, 1965–2000. Source: Oregon Department of Forestry, Washington Department of Natural Resources.

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).

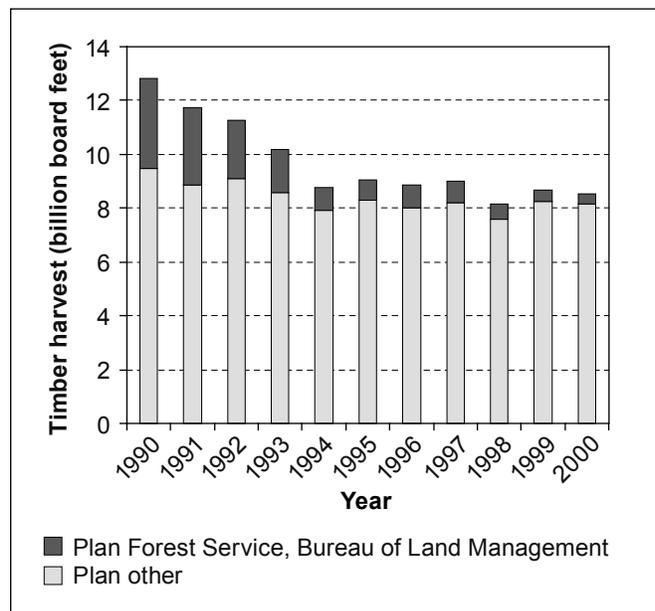


Figure 3-8—Timber harvest by general ownership class, 1990–2000. Source: Oregon Department of Forestry, Washington Department of Natural Resources, California Board of Equalization.

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

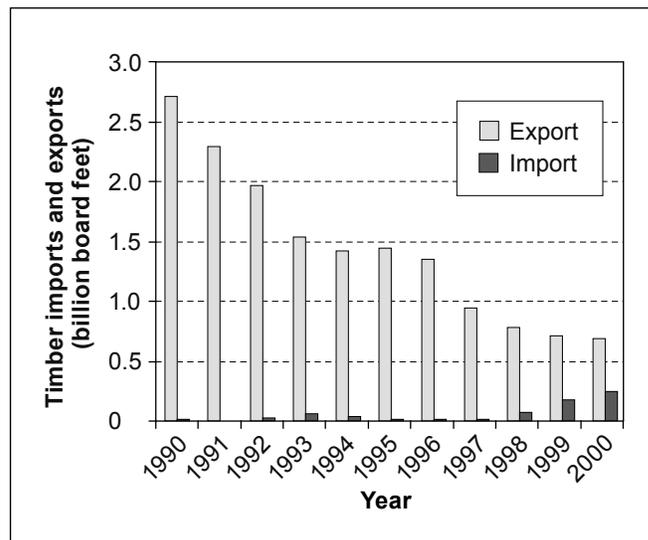


Figure 3-9—Timber exports and imports in Plan area, 1990–2000.

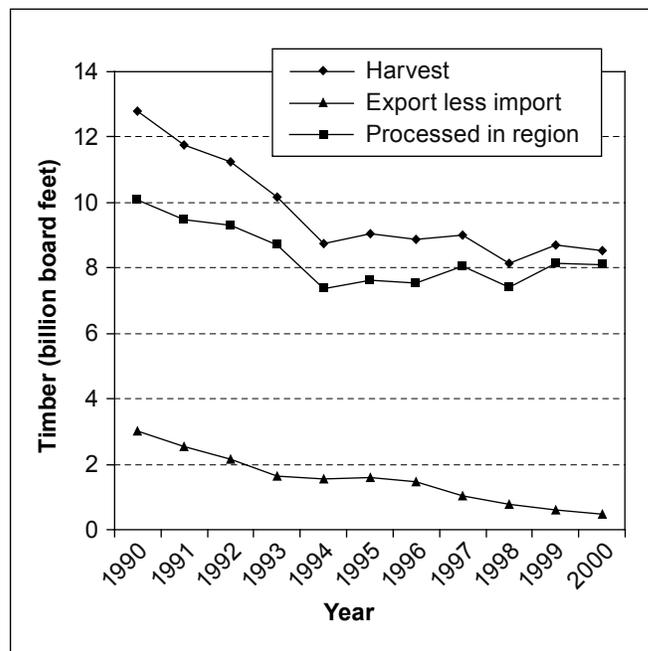


Figure 3-10—Timber harvest, net export, and volume processed in Plan area, 1990–2000.

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
Employment											
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
Harvest (million board feet)											
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
Jobs per million board feet											
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.

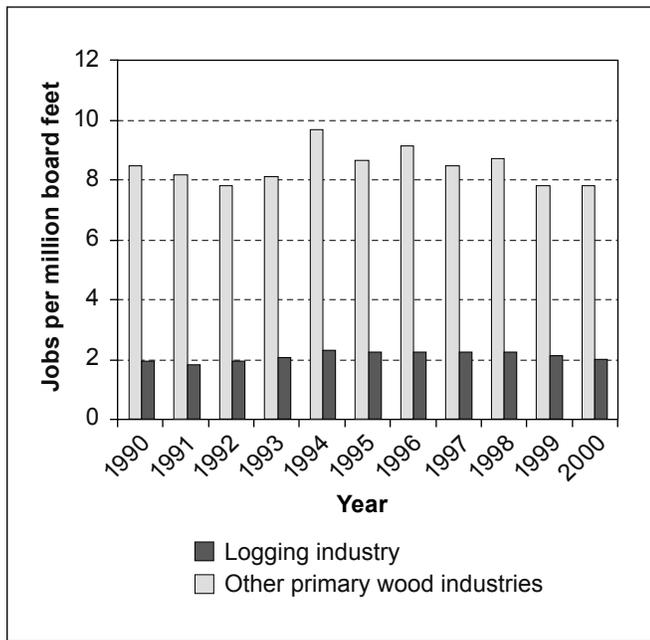


Figure 3-11—Jobs per million board feet, 1990–2000.

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

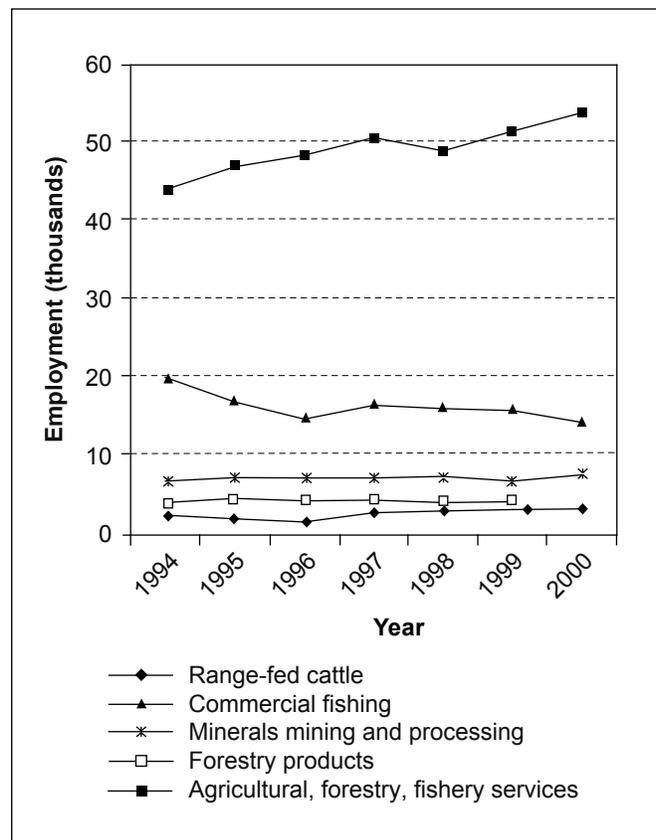


Figure 3-12—Employment trends in nontimber forest industries, 1994–2000.

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

References

- Christensen, H.H.; McGinnis, W.J.; Raettig, T.L.; Donoghue, E. 2000.** Atlas of human adaptation to environmental change, challenge and opportunity: northern California, western Oregon, and western Washington. Gen. Tech. Rep. PNW-GTR-478. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 66 p. and companion CD-ROM.
- Cordell, H.K.; McDonald, B.L.; Teasley, R.J.; Bergstrom, J.C.; Martin, J.; Bason, J.; Leeworthy, V.R. 1999.** Outdoor recreation in American life: a national assessment of demand and supply trends. Champaign, IL: Sagamore Publishing: 219–321.
- Darr, D. 1970.** Production, prices, employment, and trade in Northwest forest industries, fourth quarter 1970. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station. 57 p.
- Forest Ecosystem Management Assessment Team [FEMAT]. 1993.** Forest ecosystem management: an ecological, economic, and social assessment. Portland, OR: U.S. Department of Agriculture; U.S. Department of the Interior [and others]. [Irregular pagination].
- Gebert, K.M.; Keegan, C.E, III; Willits, S.; Chase, A. 2002.** Utilization of Oregon's timber harvest and associated direct economic effects, 1998. Gen. Tech. Rep. PNW-GTR-532. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 22 p.
- Radtke, H.D.; Davis, S.W. 1993.** Economic description of coastal fisheries in the Pacific Northwest. 36 p. Unpublished report. Prepared for the Forest Ecosystem Management Assessment Team. On file with: Strategic Planning, Forest Service, Pacific Northwest Region, 333 SW First Avenue, Portland, OR 97204.

- Ruderman, F. 1982.** Production, prices, employment, and trade in Northwest forest industries, fourth quarter 1981. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station. 49 p.
- Sommers, P. 2001.** Monitoring socioeconomic trends in the northern spotted owl region: framework, trends update, and community level monitoring recommendations. Tech. Rep. Seattle, WA: U.S. Geological Service, Forest and Rangeland Ecosystem Science Center, Cascadia Field Station College of Forest Resources. 48 p.
- Stynes, D.J.; White, E.M. 2004.** Spending profiles of national forest visitors, 2002 update. 46 p. Unpublished report. Special report under the joint venture agreement between the USDA Forest Service Inventory and Monitoring Institute and Michigan State University.
- Swanson, C.; Loomis, J. 1993.** Role of nonmarket economic values in benefit-cost analysis of public forest management options. 46 p. Unpublished report. Prepared for the Forest Ecosystem Management Team. On file with: Strategic Planning, Forest Service, Pacific Northwest Region, 333 SW First Avenue, Portland, OR 97204.
- Tuchmann, E.T.; Connaughton, K.P.; Freedman, L.E.; Moriwaki, C.B. 1996.** The Northwest Forest Plan: a report to the President and Congress. Washington, DC: U.S. Department of Agriculture, Office of Forestry and Economic Assistance. 253 p.
- Warren, D. 1992.** Production, prices, employment, and trade in Northwest forest industries, fourth quarter 1991. Resour. Bull. PNW-RB-192. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 112 p.
- Warren, D. 2004.** Production, prices, employment, and trade in Northwest forest industries, all quarters 2002. Resour. Bull. PNW-RB-241. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 171 p.

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.

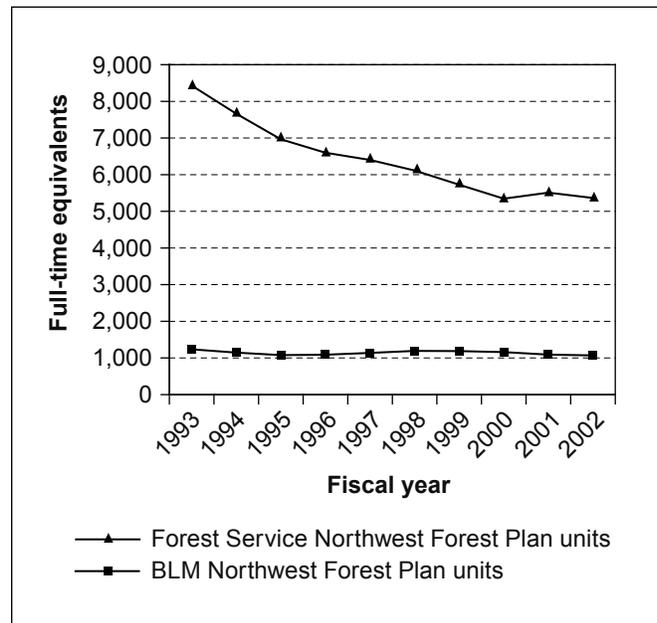


Figure 4-1—Plan-area aggregate unit staffing by agency, 1993–2002. Source: Forest Service Pacific Southwest and Pacific Northwest regional offices, Bureau of Land Management (BLM) Oregon State Office.

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

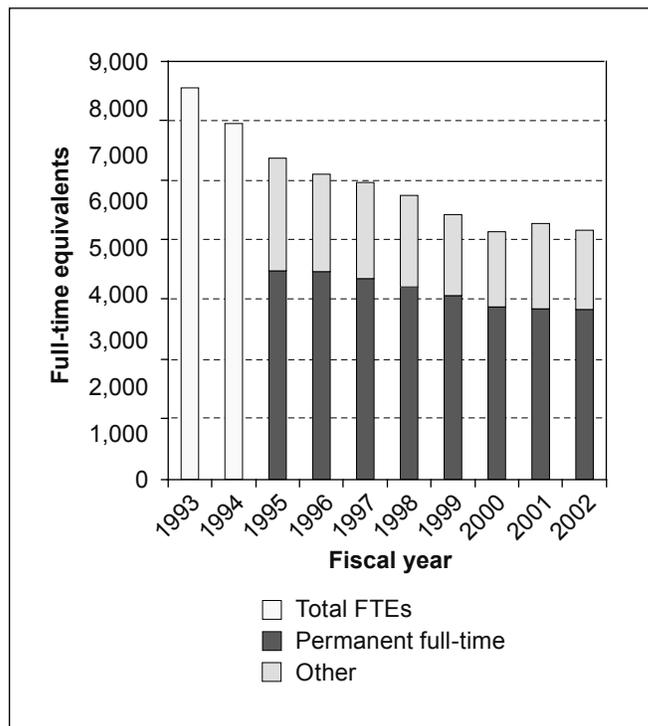


Figure 4-2—Forest Service aggregate Plan-area unit staffing composition, 1993–2002. Source: Forest Service Pacific Southwest and Pacific Northwest regional offices.

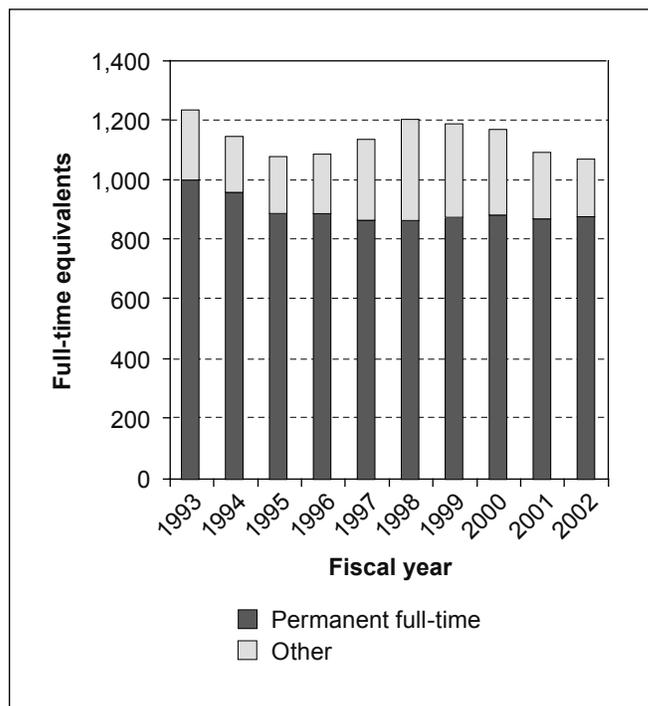


Figure 4-3—Oregon Bureau of Land Management aggregate Plan-area unit staffing composition, 1993–2002. Source: Bureau of Land Management (BLM) Oregon State Office.

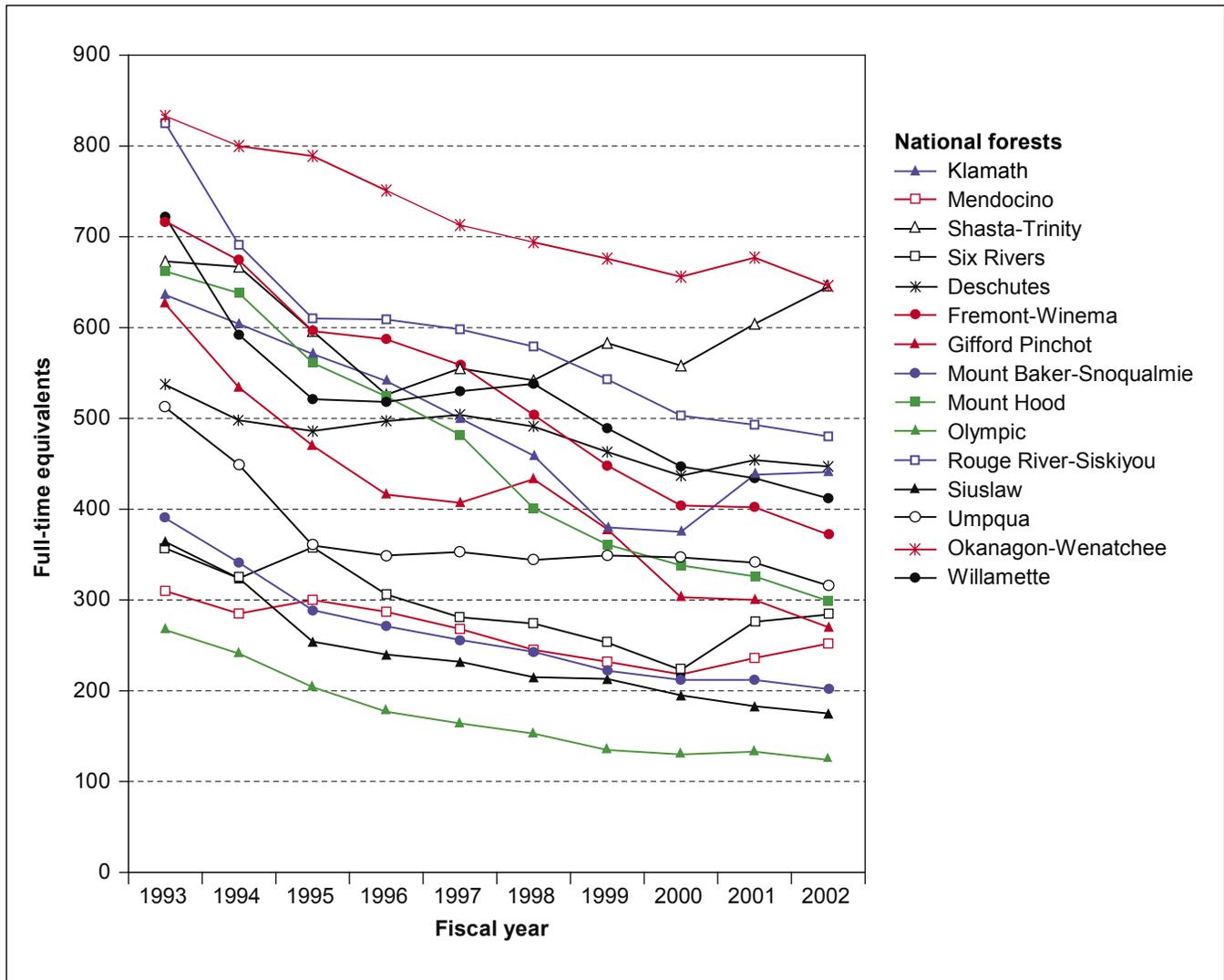


Figure 4-4—Forest Service individual Plan-area unit staffing, 1993–2002. Source: Forest Service Pacific Southwest and Pacific Northwest Regional Offices.

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.

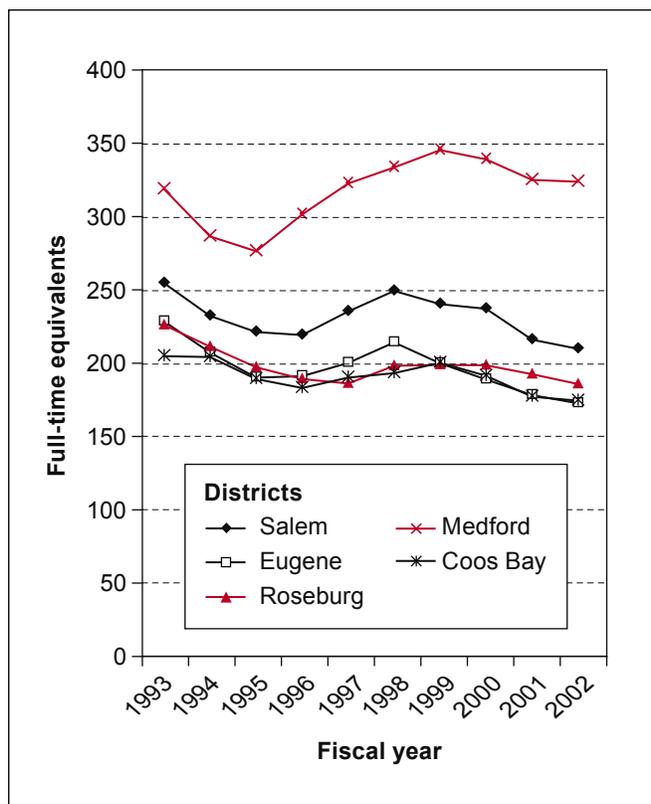


Figure 4-5—Bureau of Land Management individual Plan-area unit staffing, 1993–2002. Source: Bureau of Land Management Oregon State Office.

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,

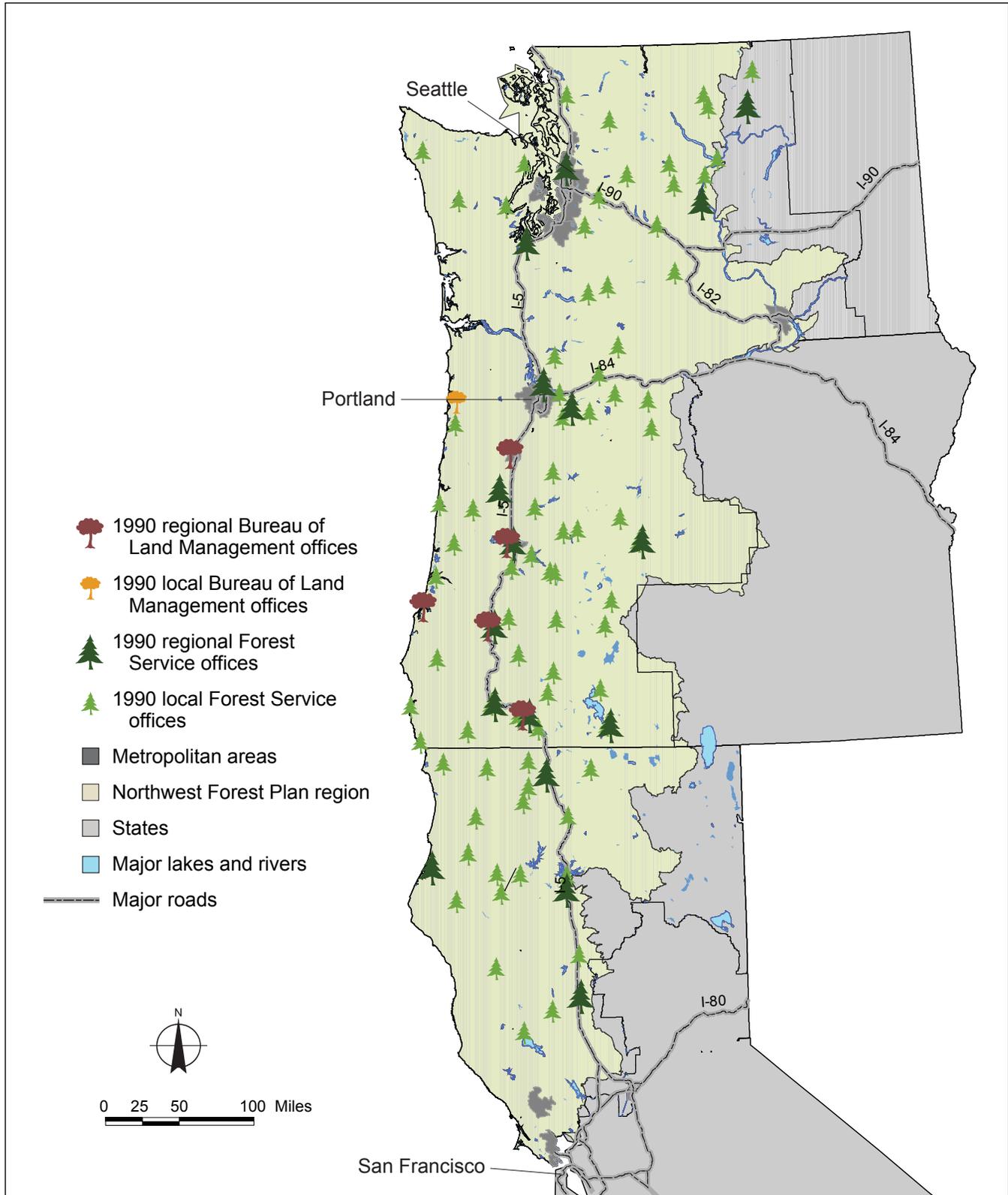


Figure 4-6—Locations of Forest Service and Bureau of Land Management line officers, 1990.

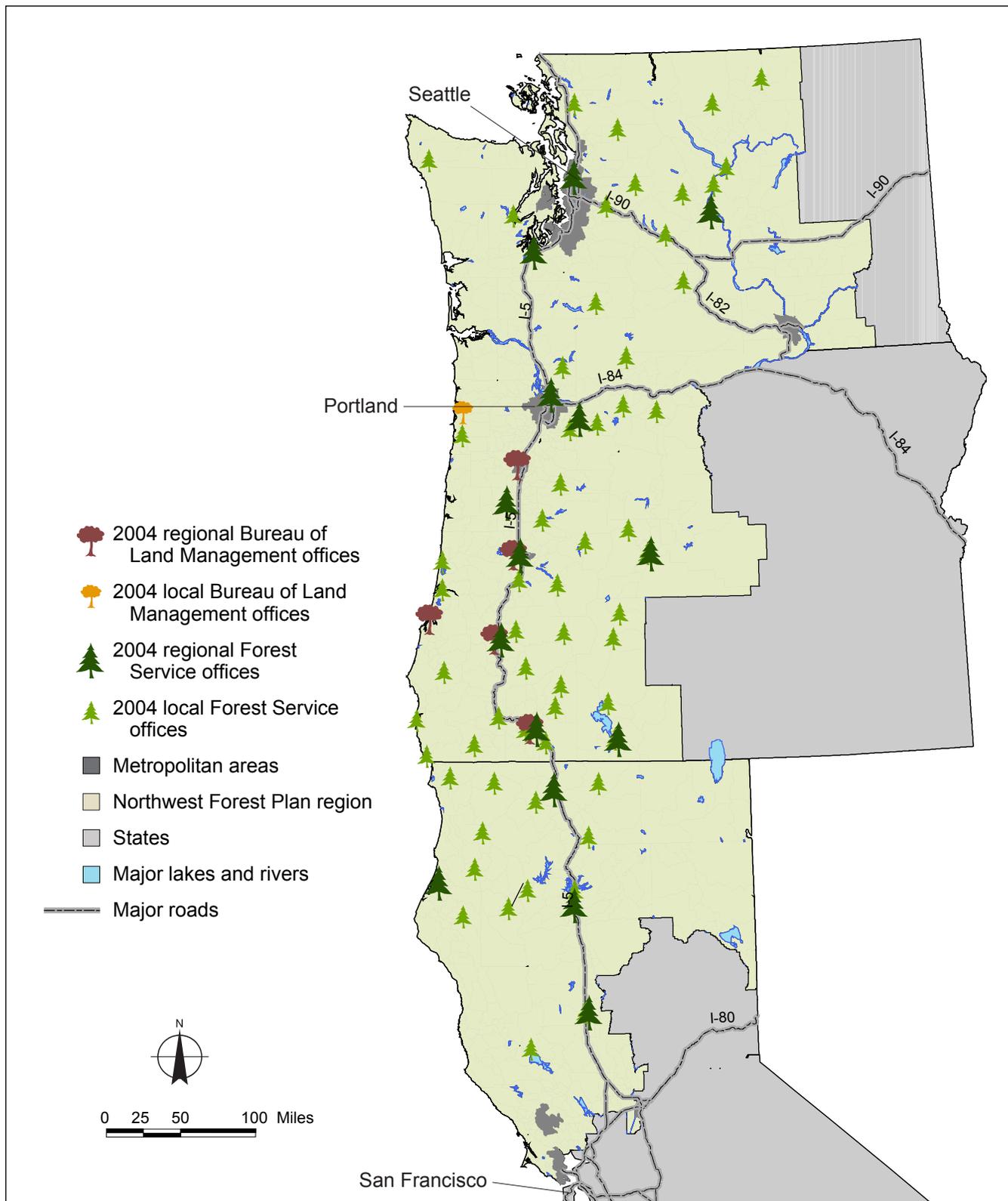


Figure 4-7—Location of Forest Service and Bureau of Land Management line officers, 2004.

Table 4-2—Locations of Forest Service and Bureau of Land Management offices with line officers, 1990 and 2004^a

State	1990	2004
Forest Service: ^b Washington	<p>Vancouver^c (Gifford Pinchot SO) Randle Trout Lake (Mount Adams RD) Amboy (Mount St. Helens NM) Packwood Carson (Wind River RD)</p> <p>Mountlake Terrace (Mount Baker-Snoqualmie SO) Sedro Woolley (Mount Baker RD) Darrington Skykomish North Bend Enumclaw (White River RD)</p> <p>Wenatchee (Wenatchee SO) Chelan Cle Elum Entiat Lake Wenatchee Leavenworth Naches</p> <p>Okanogan (Okanogan SO) Winthrop Twisp Tonasket</p> <p>Olympia (Olympic SO) Hoodsport (Hood Canal RD) Quilcene Quinault Forks (Soleduck RD)</p>	<p>Vancouver (Gifford Pinchot SO) Randle (Cowlitz Valley RD) Trout Lake (Mount Adams RD) Amboy (Mount St. Helens NM)</p> <p>Mountlake Terrace (Mount Baker-Snoqualmie SO) Sedro Woolley (Mount Baker RD) Darrington Skykomish North Bend (Snoqualmie RD)</p> <p>Wenatchee (Okanogan and Wenatchee SO) Chelan Cle Elum Entiat Leavenworth (Lake Wenatchee/Leavenworth RD) Naches Winthrop (Methow Valley RD) Tonasket</p> <p>Olympia (Olympic SO) Hoodsport (Hood Canal RD) Forks (Soleduck RD)</p>
Oregon	<p>Bend (Deschutes SO) Bend Crescent Sisters</p> <p>Medford (Rogue River SO) Jacksonville (Applegate RD) Ashland Butte Falls Prospect</p> <p>Grants Pass (Siskiyou SO) Brookings (Chetco RD) Grants Pass (Galice RD) Gold Beach Cave Junction (Illinois Valley RD) Powers</p> <p>Corvallis (Siuslaw SO) Alsea Waldport (Alsea/Waldport RD) Hebo</p>	<p>Bend (Deschutes SO) Bend Crescent Sisters</p> <p>Medford (Rogue River and Siskiyou SO) 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>Corvallis (Siuslaw SO) Hebo</p>

Table 4-2—Locations of Forest Service and Bureau of Land Management offices with line officers, 1990 and 2004^a (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)
	Eugene (Willamette SO)	Eugene (Willamette SO)
	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)
	Sandy (Mount Hood SO)	Sandy (Mount Hood SO)
	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
	Klamath Falls (Winema SO)	Klamath Falls (Winema SO)
	Chemult	Chemult
	Chilquin	Chilquin
	Klamath Falls (Klamath RD)	Klamath Falls (Klamath RD)
California	Yreka (Klamath SO)	Yreka (Klamath SO)
	Klamath River (Oak Knoll RD)	
	Happy Camp	Happy Camp
	Etna (Salmon River RD)	
	Mount Hebron (Goosenest RD)	Mount Hebron (Goosenest RD)
	Orleans (Ukonom RD) ^d	
	Fort Jones (Scott River RD)	Fort Jones (2 districts—Salmon River and Scott River RDs)
	Willows (Mendocino SO)	Willows (Mendocino SO)
	Covelo	
	Upper Lake	Upper Lake (Covelo and Upper Lake RDs)
	Stonyford	Willows (Grindstone RD)
	Corning	
	Redding (Shasta-Trinity SO)	Redding (Shasta-Trinity SO)
	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)
	Eureka (Six Rivers SO)	Eureka (Six Rivers SO)
	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^a (continued)

State	1990	2004
Bureau of Land Management: Oregon		
	North Bend (Coos Bay District Manager and 3 resource area managers)	North Bend (Coos Bay District Manager and 2 field managers)
	Eugene (District Manager and 3 resource area managers)	Eugene (District Manager and 2 field managers)
	Salem (District Manager and 4 resource area managers)	Salem (District Manager and 1 field manager)
	Tillamook (resource area manager)	Tillamook (field manager)
	Medford (District Manager and 4 resource area managers)	Medford (District Manager and 4 field managers)
	Roseburg (District Manager and 4 field managers)	Roseburg (District Manager and 2 field managers)

Note: SO = supervisor’s office, RD = ranger district office, NM = national monument office, NRA = national recreation area office.

^a Locations of Forest Service supervisors’ offices and Bureau of Land Management district offices are distinguished by boldface.

^b Forest Service data omit deputy forest supervisors and assistant district rangers.

^c Place names are shown. Where place name and ranger district name differ, both are provided.

^d 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.

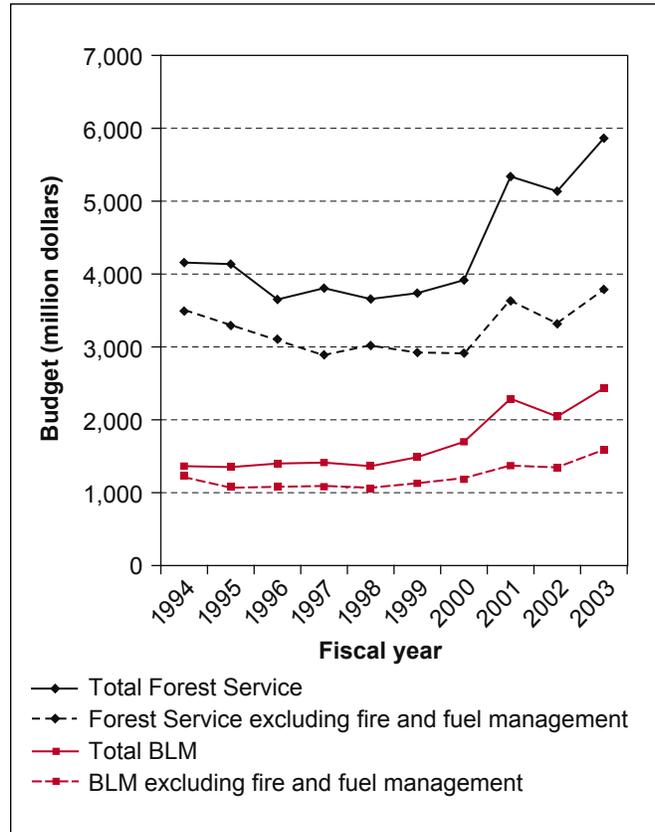


Figure 4-8—Forest Service and Bureau of Land Management (BLM) agency budget authority, 1994-2003. Base year is 2003. Source: Government Printing Office, Budget of the United States 1996–2005.

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.

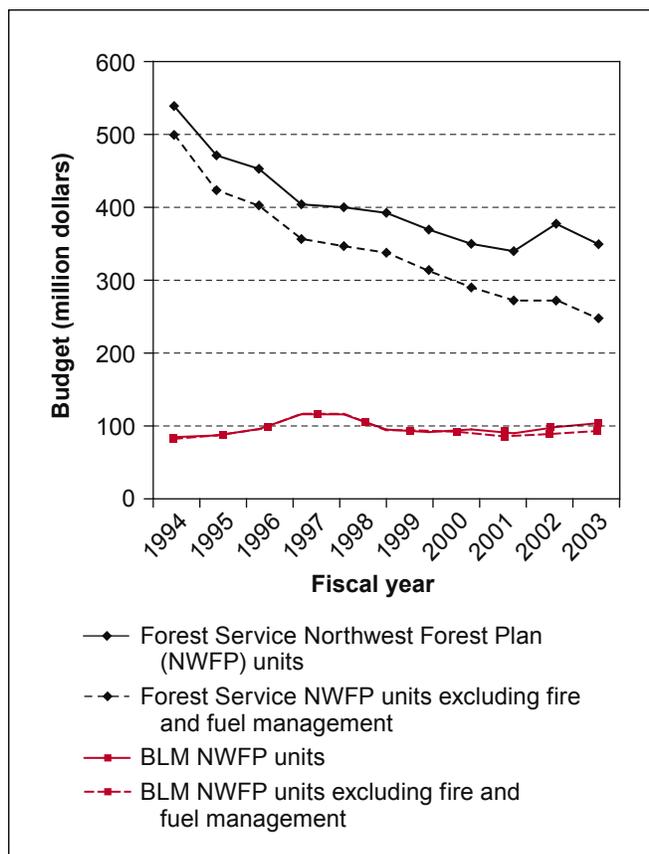


Figure 4-9—Forest Service and Oregon Bureau of Land Management (BLM) Plan-area unit budget allocations, 1993–2003. Base year is 2003. Source: Forest Service Pacific Southwest and Pacific Northwest regional offices, BLM Oregon State Office.

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.

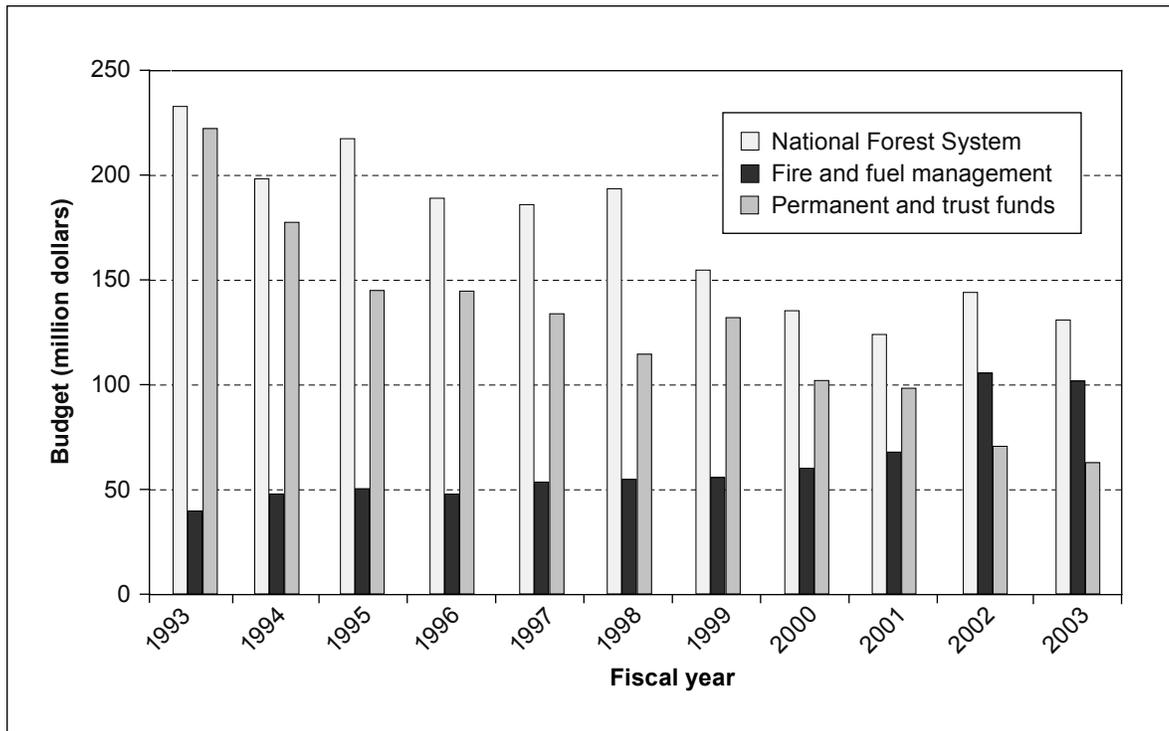


Figure 4-10—Forest Service Plan-area units, largest aggregate program accounts, 1993–2003. Base year is 2003. Source: Forest Service Pacific Southwest and Pacific Northwest regional offices.

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

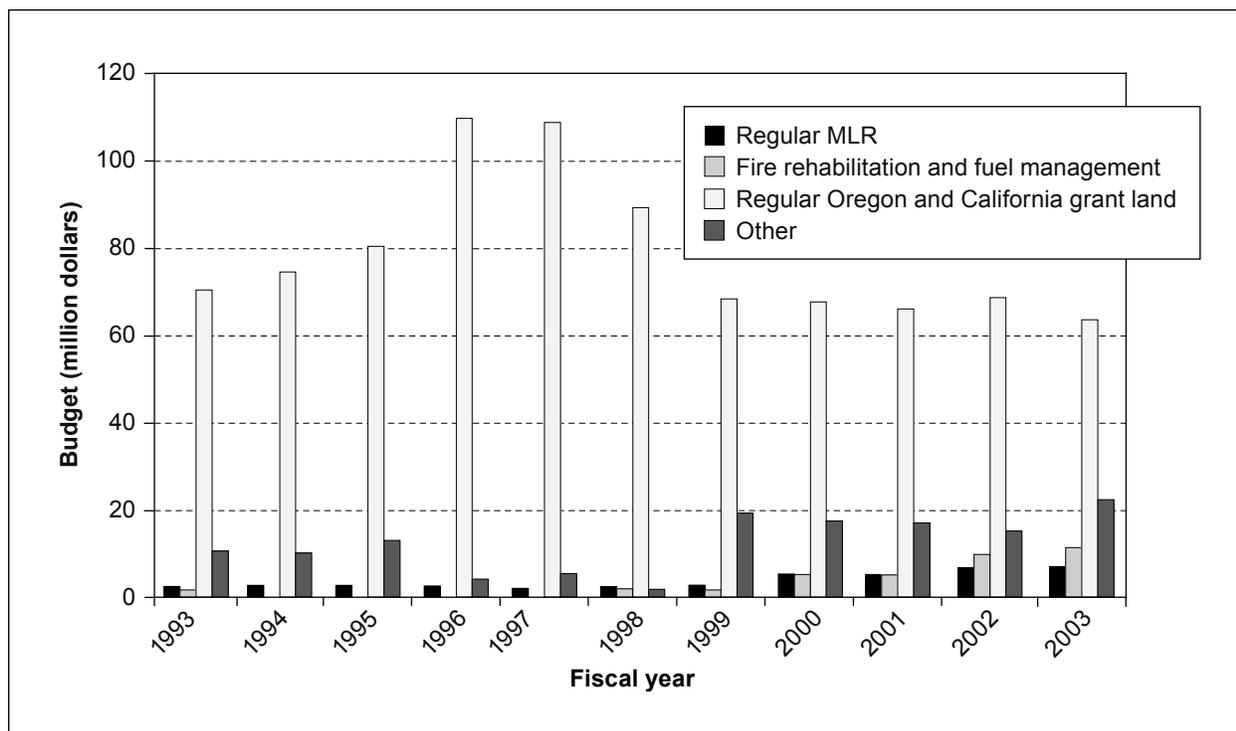


Figure 4-11—Oregon Bureau of Land Management Plan-area units, aggregate budget allocations by program account, 1993–2003. Base year is 2003. MLR = management of land and resources appropriation. Source: Bureau of Land Management Oregon State Office.

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.¹

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.

¹The 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.

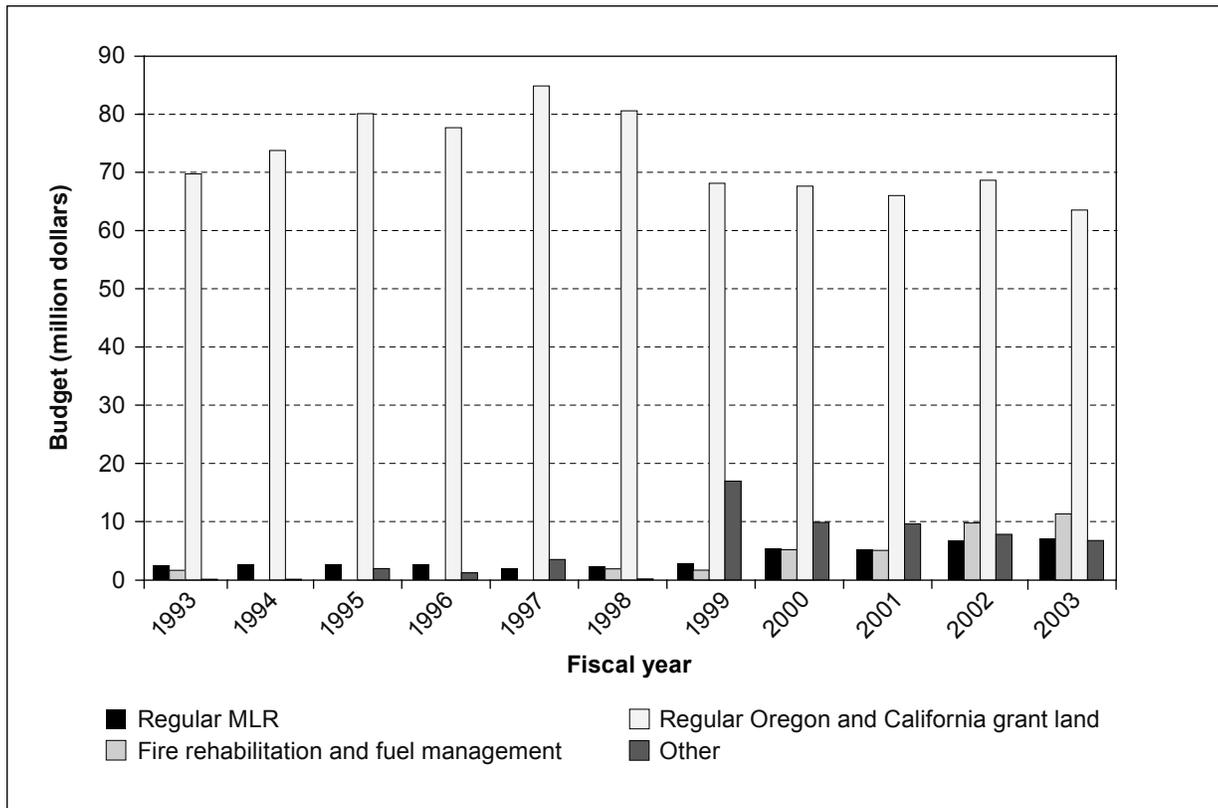


Figure 4-12—Oregon Bureau of Land Management Plan-area units, aggregate budget allocations by program account, with selected exclusions, 1993–2003. Base year is 2003. MLR = management of land and resources appropriation. Source: Bureau of Land Management Oregon State Office.

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

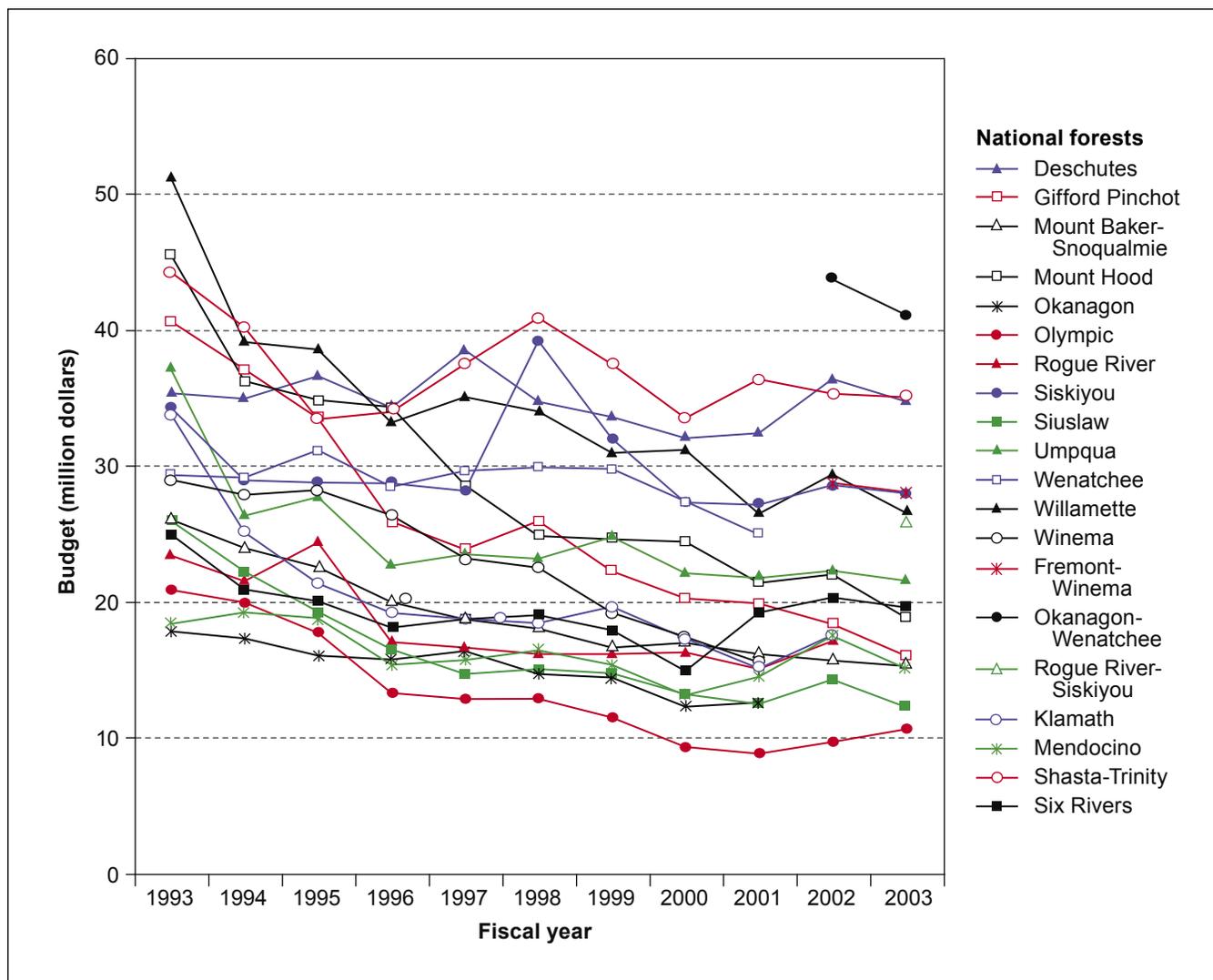


Figure 4-13—Forest Service individual Plan-area unit budget allocations, 1993–2003. Base year is 2003. Source: Forest Service Pacific Southwest and Pacific Northwest Regional Offices.

\$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 ^a	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

^aFigures 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.

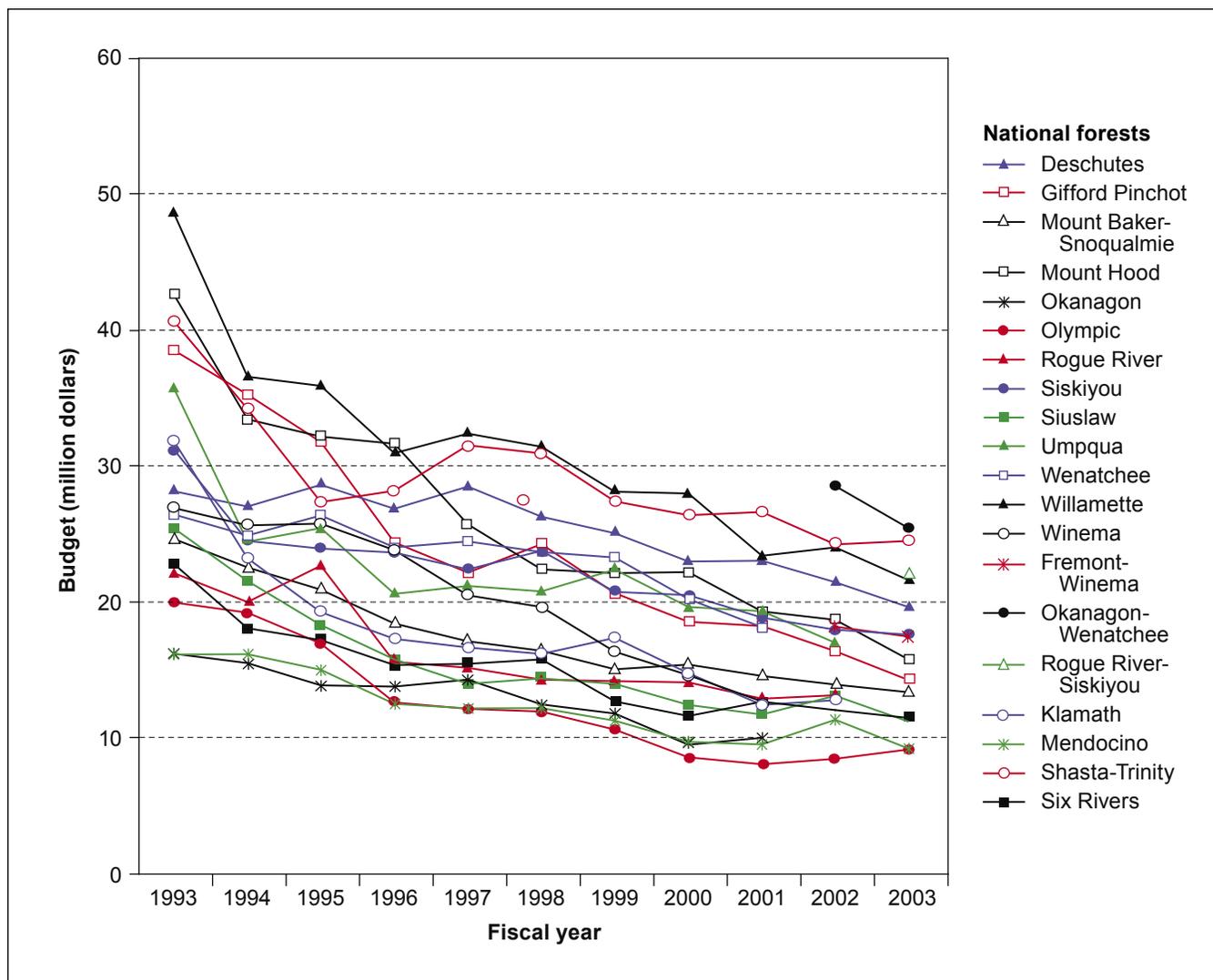


Figure 4-14—Forest Service individual Plan-area unit allocations, excluding fire and fuel management, 1993–2003. Base year is 2003. Source: Forest Service Pacific Southwest and Pacific Northwest regional offices.

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).

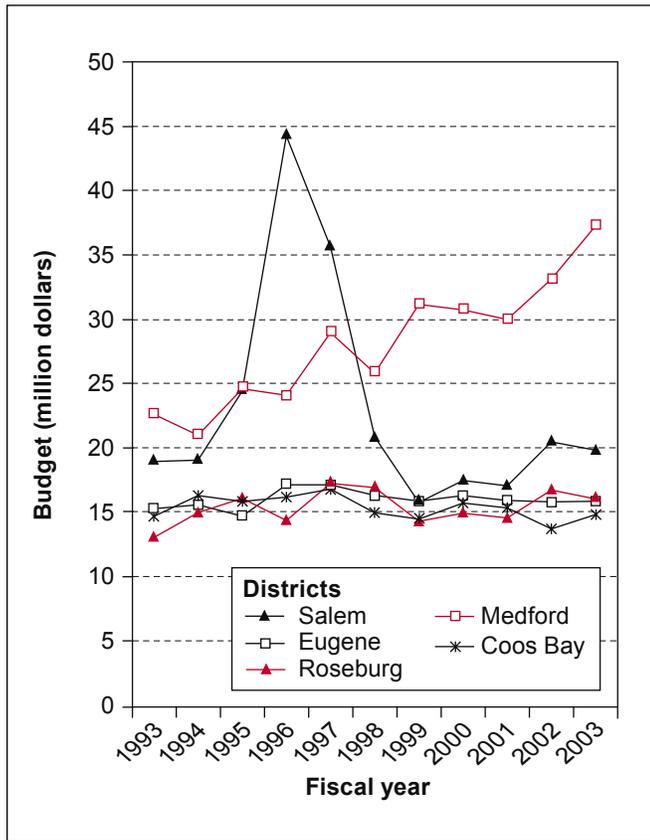


Figure 4-15—Individual Oregon Bureau of Land Management Plan-area unit allocations, 1993–2003. Base year is 2003. Source: Bureau of Land Management Oregon State Office.

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

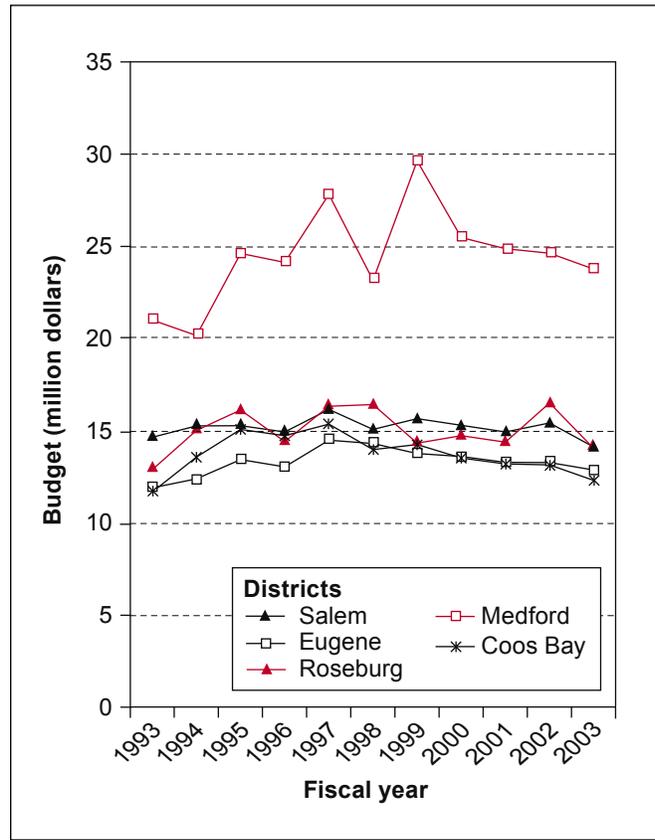


Figure 4-16—Individual Oregon Bureau of Land Management Plan-area unit allocations, with selected exclusions, 1993–2003. Base year is 2003. Source: Bureau of Land Management Oregon State Office.

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 2002.² 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 decade³ (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

²Note 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.

³This 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.

Acknowledgments

Susan Charnley (FS Pacific Northwest Research Station), Jon Martin, and Dick Phillips (FS Pacific Northwest Region 6) made suggestions that contributed substantially to this section. Darwin Priebe (BLM Oregon State Office); Mark Pauley, Lenise Lago, and Pat O'Day (FS Pacific Northwest Region 6); and Wendy Rook (FS Pacific Southwest Region 5); responded rapidly and efficiently to requests for information, as did the public affairs officers of Plan-area national forests and BLM Oregon Plan-area districts. Mark P. Ng (Angeles National Forest and FS Pacific Southwest Region 5) compiled a large data set for the project. Christina McElroy (BLM Oregon State Office), Rob Nauert (BLM California State Office), Brenda Johnson (BLM Oregon State Office), and Michael Brionez (FS Pacific Southwest Region 5) supported the information-collection effort. Lynnae Sutton (FS Pacific Northwest Research Station) developed the maps for this chapter.

References

Forest Ecosystem Management Assessment Team

[FEMAT]. 1993. Forest ecosystem management: an ecological, economic, and social assessment. Portland, OR: U.S. Department of Agriculture; U.S. Department of the Interior [and others]. [Irregular pagination].

Government Printing Office [GPO]. 1996–2005.

Budget of the United States Government: analytical perspectives. Annual. <http://www.gpoaccess.gov/usbudget/browse.html>. (July 11, 2005).

U.S. Department of Agriculture, Forest Service

[USDA FS]. 2004. Overview of FY 2004 President's Budget. www.fs.fed.us/budget_2004/appropriations.shtml. (March 2004).

U.S. Department of Agriculture, Forest Service

[USDA FS]. 2003. Overview of the FY 2004 President's Budget. Appendix H, FY 2002 Forest Service: funds withdrawn from field for transfer to suppression. www.fs.fed.us/budget_2004/documents/Appendix_H_FireTransfers.pdf. (March 2004).

U.S. Department of Agriculture, Forest Service; U.S. Department of the Interior, Bureau of Land Management [USDA and USDI]. 1994.

Final supplemental environmental impact statement on management of habitat for late-successional and old-growth forest-related species within the range of the northern spotted owl: volume I. Portland, OR. <http://www.or.blm.gov/nwfpnepa/FSEIS-1994/FSEIS-1994-I.pdf>. (July 11, 2005).

U.S. General Accounting Office [GAO]. 2004.

Wildfire suppression: funding transfers cause project cancellations and delays, strained relationships, and management disruptions. General Accounting Office report to congressional requesters GAO-04-612. Washington, DC. 62 p. <http://www.gao.gov/new.items/d04612.pdf>. (July 11, 2005).

