

Forest Management Policy and Community Well-Being in the Pacific Northwest

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ABSTRACT

This study uses a multiscale, multimethods approach to examine the effects of declining timber harvests on the well-being of forest communities in the Pacific Northwest as a result of the Northwest Forest Plan (the Plan). We found that the effects of declining timber harvests were variable and depended on the importance of the timber sector in a community in the late 1980s, the extent to which federal timber supported that sector, and the degree to which local residents depended on US Forest Service jobs. In addition, we found that other goods, services, and opportunities associated with federal lands declined under the Plan, further affecting communities by curtailing private and public sector business and employment opportunities. Community effects also depended on the unique circumstances of a community. A socioeconomic well-being index we developed indicated that overall, communities within five miles of a federal forest were not doing as well as communities farther away.

Keywords: Northwest Forest Plan, forest communities, socioeconomic monitoring, Pacific Northwest, US Forest Service, Bureau of Land Management

Across the United States timber harvests from federal lands have declined dramatically since the early 1990s. This decline began in the Pacific Northwest with injunctions prohibiting logging on US Forest Service and Bureau of Land Management (BLM) lands within the range of the northern spotted owl (*Strix occidentalis caurina*), which was listed as threatened under the Endangered Species Act in 1990. Declines in federal timber production spread across the western United

States during the 1990s as the US Forest Service shifted its management focus from intensive timber production to endangered species protection and ecosystem management. Considerable scholarly and political debate has ensued about the social and economic effects of reduced federal timber harvesting on forest communities in the Pacific Northwest and in the American West more generally.

This article examines the effects of the Northwest Forest Plan (the Plan)—a policy

that embodied this shift in federal forest management—on the well-being of forest communities in the Pacific Northwest. To date, studies of the relationship between declining federal timber production and community well-being report a diversity of findings. Some studies found negative psychological, social, and economic effects on logging families and on isolated rural communities (Carroll 1995, Kusel et al. 2000, Helvoigt et al. 2003). Others found that regional economic growth overwhelmed local economic impacts (Goodstein 1999). Still others pointed to positive economic effects associated with population growth from amenity migration to rural communities, in some cases correlated with reduced commodity production and increased environmental protection on federal lands (Lorah and Southwick 2003, Rasker 2006). These seemingly contradictory findings are, in part, a result of different scales of analysis and different subjects of study. Regional studies paint rosier pictures; community and household studies are bleaker.

To address this debate, we draw on findings from the Plan 10-year socioeconomic monitoring program. We found that

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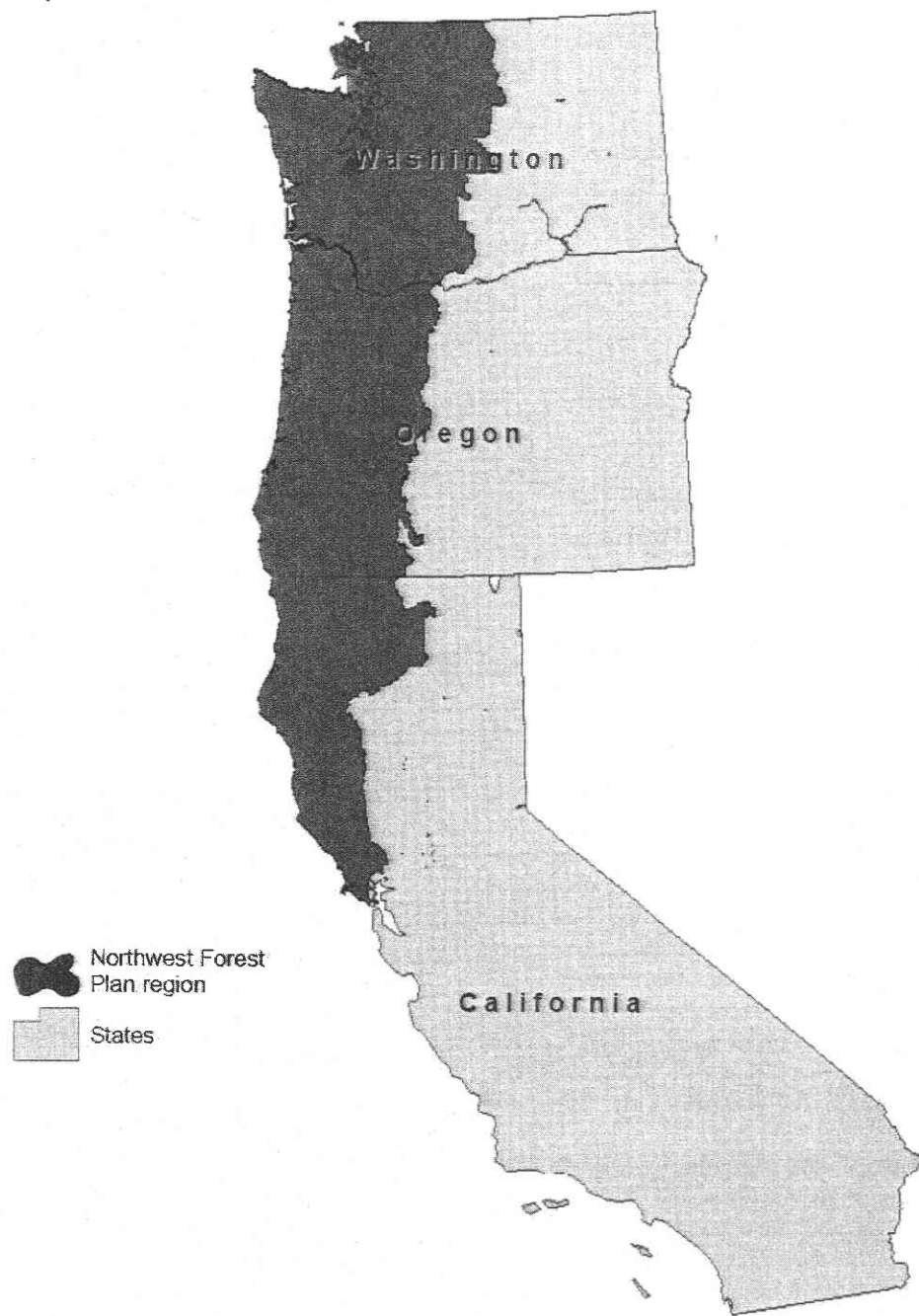


Figure 1. The Plan area.

the effects of reduced federal timber harvesting on forest communities were variable and depended on the importance of the timber sector in a community in the late 1980s, the extent to which federal timber supported that sector, and the degree to which local residents depended on US Forest Service jobs. In addition, we found that other goods, services, and opportunities the US Forest Service and Bureau of Land Management (BLM) made available to communities—not just timber—declined under the Plan, further affecting communities by curtailing private and public sector business and em-

ployment opportunities. These declines were more pronounced for the US Forest Service than the BLM. The Plan's effects also depended on how a community responded to change, a function of the unique circumstances of the community. We found that between 1990 and 2000, socioeconomic well-being indicators were more likely to drop in communities near federal forestlands than in communities farther away, and that the majority of communities scoring low on a socioeconomic well-being index we developed were within 5 mi of a federal forest.

Background

During the 1980s, the US Forest Service and BLM together sold an average of 5.5 bbf of timber annually in western Oregon and Washington and northwestern California. Intensive timber management on federal lands came to an end in the early 1990s because of litigation over species protection under the Endangered Species and National Forest Management Acts (Thomas et al. 2006). The Plan was adopted in 1994 to provide “a sustainable level of human use of the forest resource while still meeting the need to maintain and restore the late-successional and old-growth forest ecosystem” (USDA and USDI 1994 pp. 26–27). It applies to 24 million ac of US Forest Service and BLM lands that lie within the range of the northern spotted owl (Figure 1).

The Plan required effectiveness monitoring to evaluate whether its goals were being met. The 10-year socioeconomic monitoring program was part of a multiobjective, multiyear, multimillion dollar Pacific Northwest Interagency Regional Monitoring Program designed to answer biological and social questions about the Plan's effectiveness during the first 10 years and to provide information for adaptive management. The primary socioeconomic monitoring question identified in the Plan for evaluation focused on the effects of forest management policy on community well-being: “Are local communities and economies experiencing positive or negative changes that may be associated with federal forest management?” (USDA and USDI 1994, p. E-9).

Methods

To study the effects of the Plan on communities, the socioeconomic monitoring team, which included the authors, examined links between Plan implementation, trends in goods, services, and opportunities from federal forests, and socioeconomic change in communities (Figure 2). We used a multi-scaled approach and three distinct methods of data collection and analysis, which are detailed in Charnley (2006a).

First, to understand trends in goods, services, and opportunities from federal lands, we analyzed quantitative data about the production of timber and nontimber resources, associated jobs and income, agency jobs, forest unit budgets, contracting of forest management work, and county payments at the forest unit and regional scales. The data were for 17 US Forest Service and

5 BLM units in the Plan area and came mainly from federal databases. The baseline for monitoring was 1990 and the monitoring period lasted to 2003. Data back to 1990 were not available for all indicators.

Second, we used US census data to evaluate changes in socioeconomic well-being in communities in the Plan area between 1990 and 2000. The team defined a community-level unit of analysis by aggregating 7,776 US census block groups (the smallest census geography) from the 1990 census into 1,314 nonmetropolitan communities and developed a comparable set for the 2000 census. These communities represent all people who resided in nonmetropolitan areas in the Plan region. The team then developed a community socioeconomic well-being index based on six census-derived indicators: employment diversity, percent unemployment, percent of people living below the poverty level, household income inequality, percent of population 25 years and older having a BA degree or higher, and average travel time to work. We used the index to analyze changes in well-being between 1990 and 2000. We also compared well-being scores for communities located within 5 mi of a federal forest ("forest communities") and those farther than 5 mi away ("nonforest communities"), assuming that the effects of forest management policy would be stronger in communities within 5 mi. Statistical *t*-tests comparing means (assuming unequal variance) were performed for the indicators comprising the socioeconomic well-being index. We chose 5 mi to differentiate forest and nonforest communities because federal land managers we consulted indicated that communities farther than 5 mi away from a federal forest generally did not have strong social, economic, and cultural connections to the forest, while those located less than 5 mi away often did. A detailed description of methods used to define the community unit of analysis and to develop the well-being index can be found in a study by Donoghue and Sutton (2006).

Quantitative data from secondary sources painted a general picture of social and economic trends at different scales. Taken alone, however, these data did not indicate how socioeconomic conditions and trends were linked to forest management policy, including the Plan. One challenge we faced was to understand how the Plan influenced the flow of goods, services, and opportunities from federal forests when compared with other federal policies and external so-

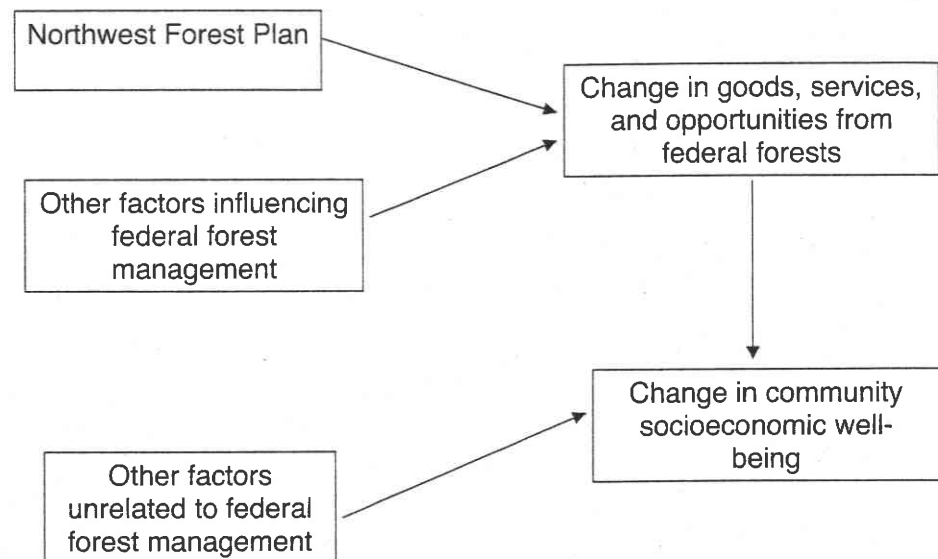


Figure 2. Socioeconomic monitoring model.

cial, political, and economic dynamics. Another challenge was to separate the effects of the Plan and other factors unrelated to federal forest management on community well-being. Thus, the third method we used was in-person interviews to obtain qualitative data pertaining to these topics. The interview data also helped us better understand the nature of community social and economic change. The team conducted interviews on four national forests and one BLM district and in 17 randomly chosen forest communities (three to five around each forest unit) that represented a range of socioeconomic well-being categories (high, medium, and low) based on their well-being scores in 1990 (Figure 3). A total of 311 community members and 96 agency employees were interviewed.

One limitation of the study was that, even with the qualitative data, it remained difficult to precisely determine how changes in the flow of goods, services, and opportunities caused by the Plan affected social and economic conditions in communities. These data provided insights into the perceptions of community members and land managers but could not be used to measure to what degree change in the quantitative indicator data was caused by the Plan versus other factors. Similarly, the socioeconomic well-being analysis was not designed to show causal relations between forest management policy and community well-being. Rather, it told us, on average, what was happening to communities in the region and revealed broader trends, providing a useful regional context for situating the case study work.

Findings

Goods, Services, Opportunities, and Direct Effects. When the Plan was adopted, a main concern was how reduced timber harvests would affect wood products workers, businesses, and timber-dependent communities. This concern reflected a notion that community economic stability and well-being depended primarily on an even flow of federal timber. In fact, federal land management agencies have always provided a wide array of goods, services, and opportunities. Here, we examine regional changes in timber harvests and associated jobs, payments to counties, federal employment, and service contracting. We focus on trends in these variables because interviews with agency employees indicated that these were the goods, services, and opportunities most affected by the Plan. We do not address trends in nontimber forest products harvesting, grazing, minerals extraction, or recreation on federal lands because the Plan did not have a large impact on them at the regional scale or because data to address its impacts were inadequate (Charnley 2006b).

In the 1980s, the US Forest Service offered an average of 4.5 bbf of timber for sale annually in the Plan area, and the BLM offered an annual average of 1.1 bbf. During the first 10 years of the Plan, the agencies offered an annual average of 525 mmbf – or 54% of the total volume expected (Figure 4). The contribution of federal timber to the total regional supply went from about 25% in 1990 to less than 5% by 2000 (Phillips 2006).

The Plan was intended to resume a predictable flow of timber, albeit at a much reduced level. However, the Plan was only one of many factors affecting employment in the wood products industry. Primary wood products manufacturing in the Plan area declined by 30,000 jobs between 1990 and 2000 (Phillips 2006). An estimated 11,800 of these jobs were lost because of cutbacks in federal timber harvesting, and all but 400 of these were lost between 1990 and 1994 after injunctions on federal timber harvesting. By 1994, when the Plan was implemented, many employment effects associated with federal timber production had already occurred. Harvests on other ownerships also decreased in the early 1990s, but rose again between 1995 and 2000. However, timber industry job loss continued despite increased log availability from private lands because of industry restructuring (Phillips 2006). This finding shows that even-flows of federal timber were not sufficient to ensure the stability of communities.

Federal timber harvests also contributed to county revenues historically. Beginning in the early 20th century the US Forest Service and BLM paid 25 and 50% of their gross timber receipts, respectively, to the counties where the timber was harvested for roads, schools, and other social services. In counties with considerable public lands, these receipts contributed substantially to county budgets. The Omnibus Budget Reconciliation Act of 1993, replaced by the Secure Rural Schools and Community Self-Determination Act of 2000, decoupled payments to counties from annual timber harvests and stabilized federal contributions to county budgets. However, the Secure Rural Schools Act was set to expire in 2007, and debate continues over whether the act should be reauthorized. Recoupling timber harvests and payments to counties would have considerable negative impacts in the Plan area because many counties still depend on federal payments to fund services, and revenue sharing based on current timber receipts would be well below payment levels under the act.

Historically, the US Forest Service and BLM were among the few sources of jobs in forest communities that provided family-wage salaries, health benefits, and opportunities for professional development. The five western Oregon BLM districts in the Plan area lost 166 full-time equivalent positions (FTE) between 1993 and 2002, or 13% of their workforce (Stuart 2006). The 17 na-

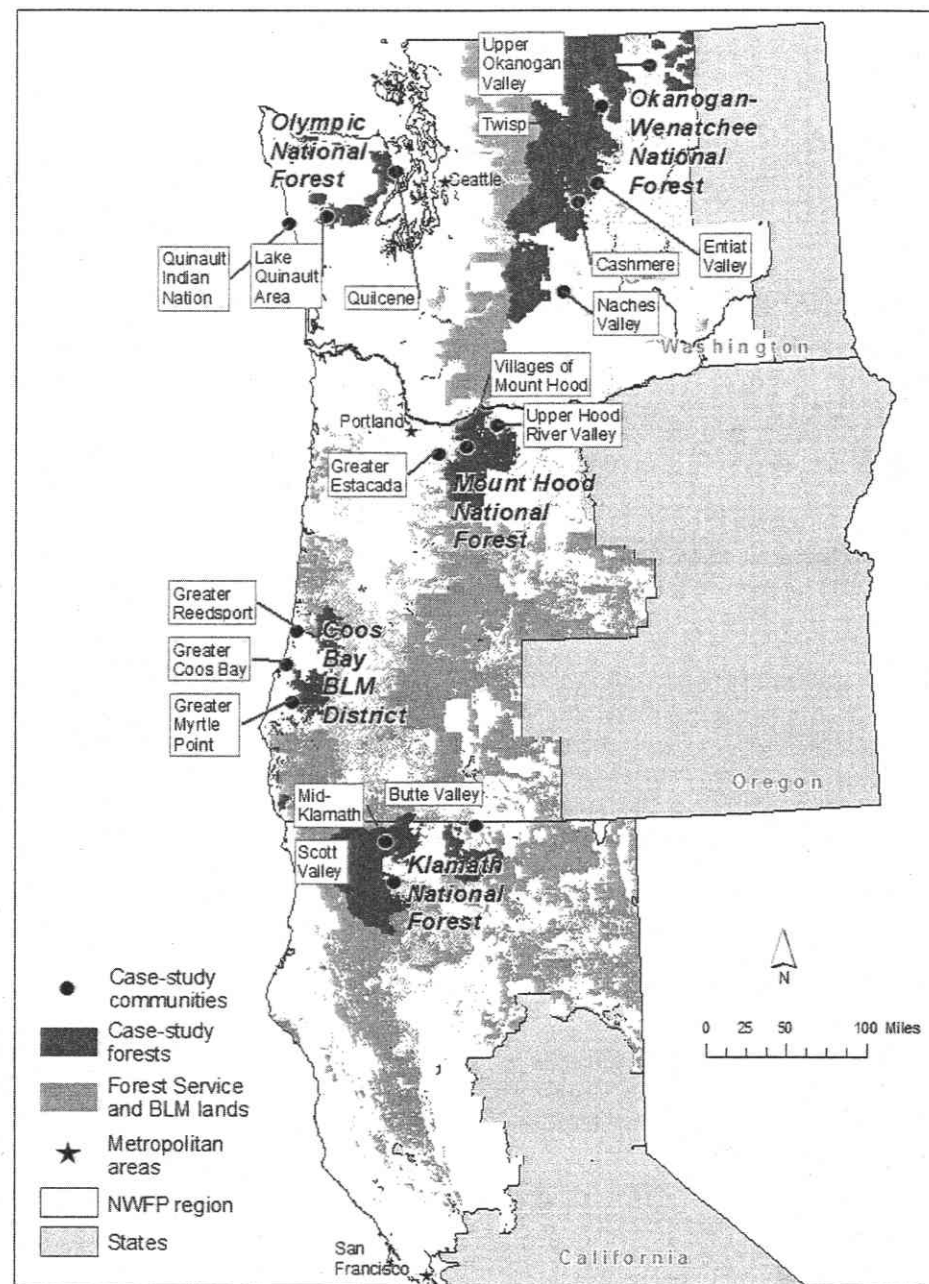


Figure 3. Case study forests and communities.

tional forests in the Plan area lost 3,066 FTEs between 1993 and 2002, a 36% decline in the workforce. Nearly one-quarter of US Forest Service offices closed completely or persisted with greatly reduced staffing and no Forest Supervisor or District Ranger. No BLM district or resource area offices closed during the period. Thus, communities lost not only timber jobs but also lost agency jobs during the first 10 years of the Plan.

Procurement contracting (federal purchasing of goods and services) is another way that agencies accomplish land management work, creating jobs from which local com-

munities may benefit. BLM contract spending remained fairly constant between the early 1990s and the early 2000s at an average of \$20 million/year (in 2002 dollars). However, US Forest Service spending declined throughout the period, dropping from a high of \$103 million in 1991 to a low of \$33 million in 2002. Thus, US Forest Service procurement contracting did not help offset economic decline during the first 10 years of the Plan; it contributed to it. Moreover, only about one-quarter of the agencies' contract value in the early 1990s and the early 2000s was awarded to contractors from communities having populations under 5,000.

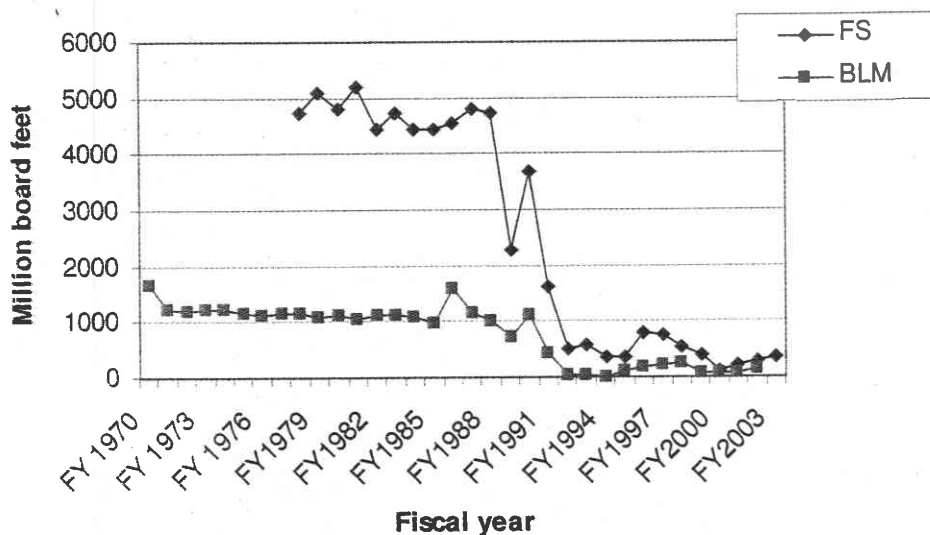


Figure 4. Timber sold from the Plan area national forests and Bureau of Land Management (BLM) districts, from 1970 to 2003.

We attribute the reduction in both US Forest Service employment and procurement contracting to declines in the agency's budget, an unintended consequence of the Plan. Between 1993 and 2003, excluding fire and fuels line items, inflation adjusted BLM unit-level budgets rose 12% and US Forest Service unit-level budgets declined 50% in the Plan area. If fire and fuels line items are included, BLM unit budgets rose 22% and US Forest Service unit budgets dropped 35% (Figure 5; Stuart 2006). We were unable to obtain unit-level budget numbers before 1993, but US Forest Service budget specialists interviewed said that budget declines began around 1990.

US Forest Service budget reductions were a byproduct of reduced timber harvests under the Plan. Timber harvest levels had long been the basis of US Forest Service budget allocations (Sample 1990). As timber harvests declined in the Plan area, US Forest Service appropriated funds were reallocated to other regions. In addition, the decline in timber harvests reduced trust fund deposits. Although BLM timber sales also decreased during the decade, BLM funding was not as heavily dependent on funding derived from timber receipts (Stuart 2006). The BLM increased its allocation of appropriated funding to the Plan area, and state- and local-level BLM managers had latitude to direct funds among programs, enabling them to accomplish work aligned with Plan goals. Although the BLM workforce declined somewhat, the agency's ability to provide other community benefits did not. In contrast, declining US Forest Service budgets in

the Plan area greatly reduced the ability of that agency to supply goods and services and provide local employment and contracting opportunities.

Community Socioeconomic Conditions. To understand how the shifts in goods, services, and opportunities on federal forests and their direct effects (job losses and declining contracting opportunities) affected communities, we evaluated changing community conditions across the region and conducted community-level case studies.

Regional Analysis. In 2000, 10.26 million people lived in the Plan area. Nearly 5 million of these people lived in nonmetropolitan communities, and about 2 million lived in nonmetropolitan communities located within 5 mi of US Forest Service or BLM lands. Between 1990 and 2000, the total population of the 1,314 nonmetropolitan communities in the Plan area grew 20.6%, substantially more than the 13.2% increase for the United States during this period. Although population increased overall, about one-fifth of the nonmetropolitan communities lost population between 1990 and 2000.

Based on the community socioeconomic well-being index, 27% of the nonmetropolitan communities in the region experienced little change in socioeconomic well-being between 1990 and 2000, 37% increased, and 36% decreased. Forty percent of the forest communities had socioeconomic well-being scores that decreased during the period, whereas 33% of nonforest communities had well-being scores that increased, making it more likely for forest

communities to have reduced well-being than nonforest communities. Moreover, most of the communities with very low or low socioeconomic well-being scores in 2000 (71%) were forest communities. However, 43% of the communities with high or very high socioeconomic well-being scores in 2000 were also forest communities. Thus, although some communities close to public forestlands were doing well, in general, communities farther away had higher socioeconomic well-being scores. There were no statistically significant correlations between the community socioeconomic well-being index scores and community population size or population change.

Closer examination of the six indicators that comprise the socioeconomic well-being index reveals that both forest and nonforest communities had statistically significant decreases in poverty and no significant changes in unemployment between 1990 and 2000 ($P < 0.05$). Both also had statistically significant increases in employment diversity and in percent of the population with a BA degree or higher ($P < 0.05$). However, there was a statistically significant increase in income inequality in forest communities between 1990 and 2000 ($P < 0.001$), whereas there was no significant change in income inequality for nonforest communities. Moreover, forest communities had a lower percentage of the population with bachelor's degrees or higher, higher unemployment, higher percentage of the population in poverty, and higher income inequality than nonforest communities in both 1990 and 2000. These differences were statistically significant ($P < 0.001$). Forest communities did have on average a 2-minute shorter travel time to work than nonforest communities (Donoghue and Sutton 2006).

Overall, these results suggest that communities close to public forestlands were not doing as well, as defined by socioeconomic well-being scores, as nonforest communities in 2000. Although some communities close to US Forest Service and BLM lands had relatively high socioeconomic well-being, income inequality was more likely to increase in forest communities during the 10 years, and socioeconomic well-being was more likely to decline.

Case-Study Communities. Qualitative interview data from the 17 case study communities indicated that communities were affected by the Plan in different ways and to different extents. The Plan and pre-Plan injunctions influenced changes in the timber

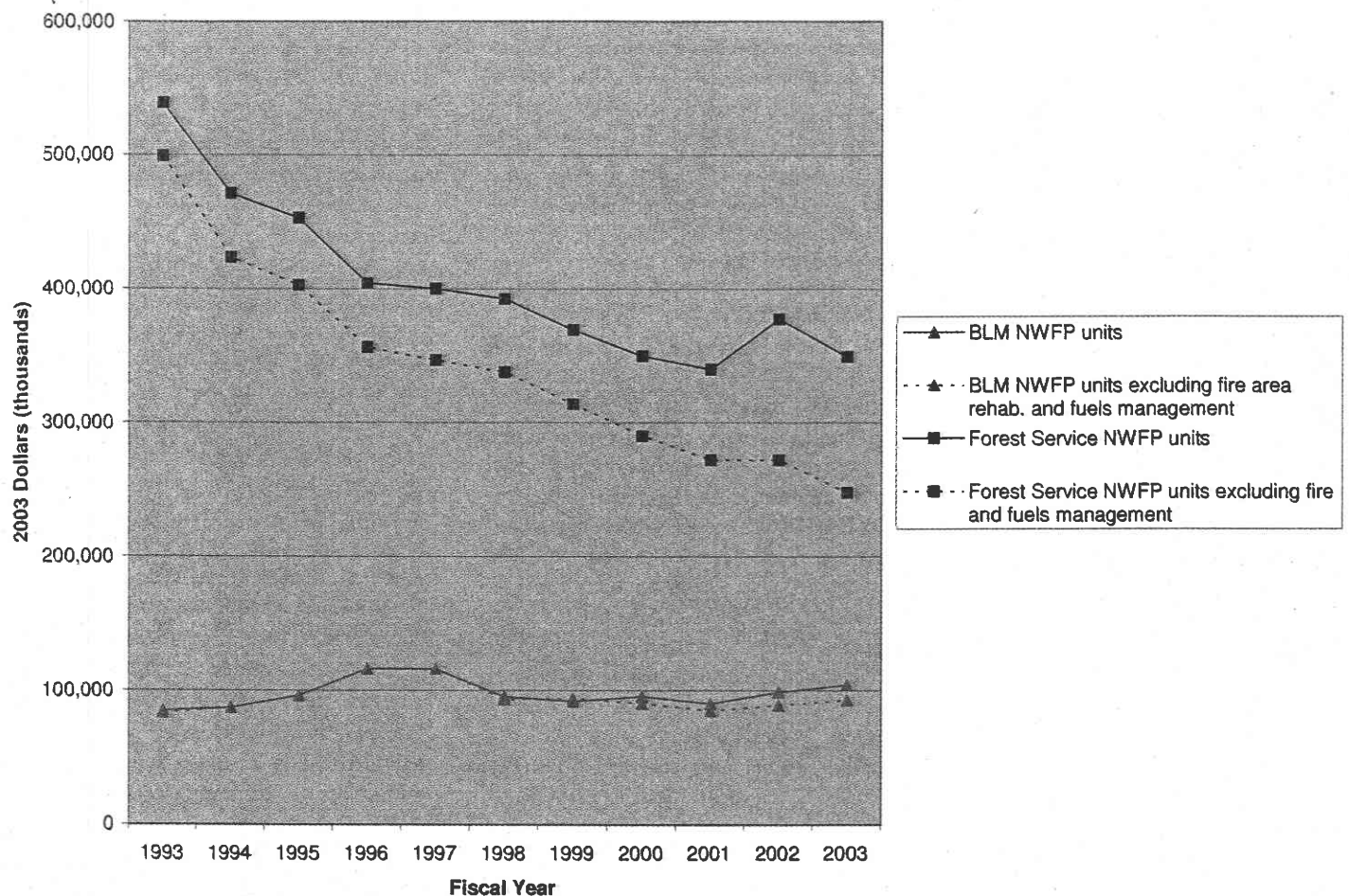


Figure 5. US Forest Service and Bureau of Land Management (BLM) budget trends, 1993–2003.

sector in many communities. Timber had been declining since the early 1980s in some communities, such as Greater Coos Bay and Scott Valley, because of economic recession; domestic and international competition; changes in market demand for wood products; industry restructuring, mechanization, and technological advances; and environmental regulations. The direct and indirect effects of the Plan added to these pressures. Other communities, such as Quilcene, Upper Hood River Valley, and the Mid-Klamath participated heavily in the wood products industry until the late 1980s. Loggers worked mainly on national forests and local mills obtained most of their wood from these forests. The reduction in federal timber supplies hit these communities hard. In coastal communities the fishing industry declined at the same time that the timber industry did, adding to local hardships. In communities such as the Quinault Indian Nation, timber was important to the local economy in 1990, but tribal and private forests supplied much of the timber; therefore, the Plan had little impact. The timber

industry was of secondary importance elsewhere by 1990, such as in Cashmere and Upper Okanogan. These predominantly agricultural communities felt few effects.

From 1993 to 2003, the US Forest Service reduced its workforce between 23 and 59% on the four sample forests. The decline in US Forest Service employment had negative effects in communities such as the Villages of Mount Hood, where many residents were US Forest Service employees in 1990, just as the loss of timber sector jobs did in timber-oriented communities. As timber workers and agency employees moved out of their communities in the 1990s, there was a loss of community capacity, including working-class families, young people, and human capital.

Recreation, natural amenities, and a relatively low cost of living drew new residents—including retirees, commuters and telecommuters, second home owners, people on fixed incomes, and the self-employed—to some communities that lost timber workers and agency employees. The population of five case study communities

increased by more than 20.6% between 1990 and 2000. Four of these communities were on the east side of the Cascades, within a half-day drive or less of the Seattle metropolitan area, or were in commuting distance of the cities of Yakima and Wenatchee, Washington. The other community was adjacent to the Mount Hood National Forest, which offers abundant and year-round recreational opportunities and is close to Portland, Oregon. New residents helped rebuild some of the community capacity that was lost when other families departed.

Recreation and tourism played an important and evolving role in the economies of communities such as the Upper Hood River Valley, the Villages of Mount Hood, the Lake Quinault Area, and Twisp. Several interviewees viewed recreation and nature-based tourism as the natural resource-based sectors holding the greatest potential for local economic development. However, developed recreation and tourism were often controversial, and many interviewees said they provided few family wage-jobs. Nevertheless, the agencies and several communities

were trying to develop recreation and tourism locally.

The forest restoration economy that some people hoped would emerge from the Plan's attempt to link the biophysical and socioeconomic goals of forest management never developed on the case study forests. Procurement contract spending for ecosystem management on the five forests varied annually but declined overall between 1990 and 2002, anywhere from 15 to 78%. The number of contractors working on the four national forests dropped by roughly one-half between 1990 and 2002. In contrast, the number of contractors increased by about one-third on the Coos Bay BLM District.

Some communities were more resilient to the effects of change in the timber sector than others. Those that were more resilient had a substantial agricultural sector, were located on a major transportation corridor that brings in business, were close to a popular recreation and tourism destination that attracts visitors, or were close to a regional center that offers jobs within commuting distance. Other communities experienced an influx of amenity migrants. Some that were local centers for goods and services expanded their role to become regional centers. Tribes, where present, contributed to community development through the growth of tribal businesses, administration, and social and environmental services. Nevertheless, many communities found themselves with few alternate economic opportunities. The nontimber forest products industry (e.g., floral greens and edible plants), widespread in the Pacific Northwest (Jones and Lynch 2007), was an important source of employment for mobile workers and immigrants. It did not, however, provide an alternative source of family-wage jobs for displaced timber workers or agency employees. Like nontimber forest products, agriculture—which persisted in several case communities—was not a new source of jobs for displaced workers.

Notably, communities found it difficult to sustain themselves through forest-based jobs. Although some communities still had wood products industries in the early 2000s, federal timber no longer supported these industries. Many interviewees reported that the lack of forest-based, family-wage jobs in their communities was one of the biggest issues of local concern related to federal forest management. Another issue was forest health and diminishing opportunities for community members to act as

stewards of the forests surrounding them. Recreation was replacing timber as a locus of interaction between community residents, federal forests, and the managing agencies. Community residents did, however, perceive some positive effects of the Plan, including improved water quality and a halt to unsustainable, environmentally destructive timber harvest practices.

Conclusions

This study uses results from the Northwest Forest Plan socioeconomic monitoring program to revisit the question of how changes in federal forest management policy affect social and economic conditions in forest communities. We found, in general, that the shift from intensive timber harvesting to ecosystem management caused the US Forest Service and BLM to reduce the goods, services, and opportunities that federal forests provided to communities. Although the Plan called for a reduction in timber harvests, other factors, such as a reduced US Forest Service budget, made it difficult to replace timber harvests with other direct economic opportunities. Regionwide the fact that forest communities were more likely to suffer socioeconomic decline during the 1990s than nonforest communities and tended to be comparatively worse off according to several socioeconomic well-being indicators may be a reflection of these changes.

Examining the Plan effects in 17 case study communities revealed that the community effects of federal forest management policy depended on the particulars of how policy change affected the management of individual forest units and on the particulars of the communities affected by these changes. Some communities in the Plan area felt the decline in timber harvest, reduced federal employment, and reduced contracting acutely. Where communities were also suffering from the simultaneous negative impacts of industry restructuring and other political and economic forces, socioeconomic conditions were particularly difficult. In other communities less dependent on federal lands for their socioeconomic well-being, changes in forest management policy were less disruptive. The Plan effects also depended on community characteristics that helped them adapt. Location, such as proximity to recreation and tourism attractions, major metropolitan areas, and major transportation corridors, and natural amenity endowments played a role in this regard by at-

tracting amenity migrants, small businesses and visitors, and by providing other job opportunities. The presence of alternative economic sectors such as agriculture, of tribes having the financial resources to invest in community development, and a community's ability to diversify and become a regional center also helped.

Because the community effects of changing federal forest management policy are varied and conditional, studies that address the issue at only one scale, using a limited set of indicators, or with a single methodological approach are likely to see a narrow pattern of impact—whether positive or negative—and may miss important socioeconomic dynamics. Our multiscale, multi-methods approach revealed that the effects of policy change are multidimensional.

An unexpected finding of this study was that the US Forest Service and BLM responded differently to the Plan, leading to different consequences for communities. The BLM was more successful at maintaining a stable flow of goods, services, and opportunities to communities than the US Forest Service, which experienced a dramatic decline in unit budgets and staffing. This decline made implementing ecosystem management on national forests more difficult, reduced local forest-based government and contract employment opportunities, and reduced agency presence on the ground (Charnley 2006a). Since their inception, the US Forest Service and BLM have provided goods and services to forest communities. This study makes clear, however, that with declining staffing and budget levels, the ability of the US Forest Service to supply goods, services, and opportunities at the levels needed to effectively support community well-being is increasingly limited. This finding points to the need to seriously examine the consequences of federal policies that lead to disinvestment in public land management agencies. Such policies potentially threaten the health of public lands and the health of forest communities whose well-being is associated with those lands.

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