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# Science

FINDINGS

*“Science affects the way we think together.”*

Lewis Thomas

## FOREST COMMUNITIES AND THE NORTHWEST FOREST PLAN: WHAT SOCIOECONOMIC MONITORING CAN TELL US



Recreational vehicles have become more common than logging trucks in many forest communities in the Pacific Northwest that once depended on jobs in the timber industry.

### IN SUMMARY

The Northwest Forest Plan (the Plan) was designed to balance protection of older forest ecosystems with mitigation of impacts on rural communities and economies. It was implemented by using an adaptive management approach that featured an interagency monitoring program. This program included socioeconomic monitoring—the systematic observation and measurement of a set of social and economic indicators over time—to evaluate the effects of the Plan on forest communities. Socioeconomic goals of the Plan included producing predictable levels of timber and nontimber resources, maintaining the stability of local and regional economies, assisting with long-term economic development and diversification, promoting collaboration in forest management, and protecting forest values associated with aquatic and older forest ecosystems.

As part of a comprehensive review of the Plan's first 10 years, Pacific Northwest (PNW) Research Station scientists assessed changing socioeconomic conditions in more than 1,300 forest communities in the Plan area. They also selected three national forests, one Bureau of Land Management district, and 12 associated communities for closer inspection to investigate the links between federal forest management and socioeconomic conditions. The baseline year was 1990, corresponding both to the availability of data from the U.S. census and the listing of the northern spotted owl as a threatened species.

Outcomes associated with the Plan were mixed. The socioeconomic monitoring team found that predicted timber outputs generally were not met, that about a third of communities decreased in socioeconomic well-being between 1990 and 2000 while another third increased, and that many of the initiatives intended to assist local economies came “too little, too late” to benefit communities most affected by timber-industry job losses.

*“Not everything that counts can be counted. Not everything that can be counted counts.”*

—Albert Einstein

Go back in time in the Pacific Northwest. Two generations ago, if you had a manufacturing job in a rural, forest-based community, chances are it was connected to the timber industry.

In those days, the timber industry was a major employer. Your job might have been to log the big conifer trees from stands of big trees that seemed to go on forever. Or to carve those trees into lumber at the local mill, transport forest products to their markets, prepare or replant the logging sites, or grow seedlings for replanting. Or

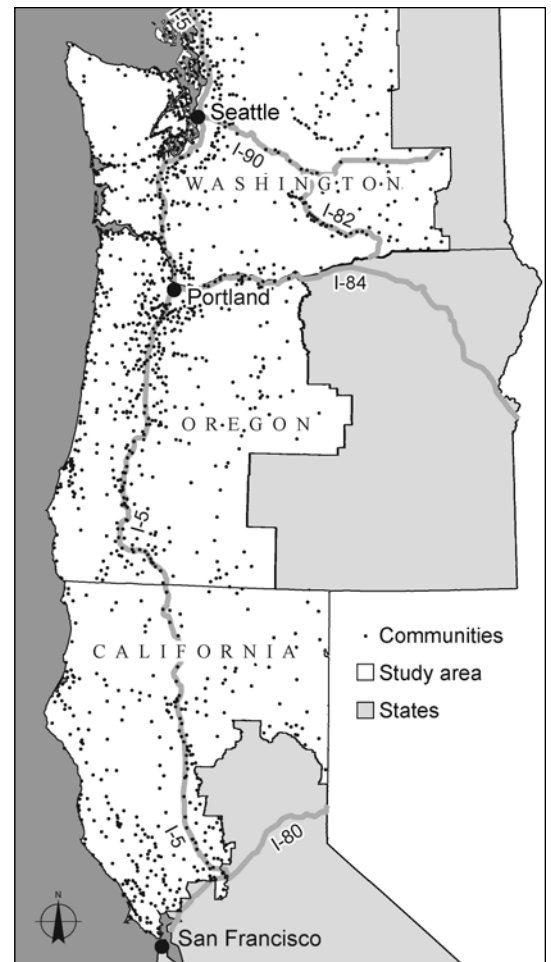
perhaps you worked in town, providing goods and services to the workers. Your job paid a family wage, and if your employer depended on sales of federal timber, you expected the government to provide a steady supply.

But many things have changed since then throughout the region, as has our understanding of what those changes are. For one, what it means to be a forest community is a moving target. Today, by choice or necessity, most people who live near federal forest lands look to sources other than forest products for their livelihoods. In myriad ways, forest communities have adapted to the changing fortunes and emerging environmental values of the region as a whole.

The shift started in the early 1950s when the timber industry began to

## KEY FINDINGS

- In the first decade of the Northwest Forest Plan (the Plan), the amount of timber produced did not meet the probable sale quantity volumes that were anticipated and much of the gridlock over timber harvesting was not reduced.
- In most communities, socioeconomic well-being was not as dependent as expected on an even flow of timber. Economic assistance initiatives and new ecosystem management activities were of limited success in creating sustainable, local, forest-based jobs.
- Effects of the Plan on forest communities differed depending on the strength in 1990 of the timber sector, the amount of federal timber supporting it, and the number of federal employees in residence. Between 1990 and 2000, socioeconomic well-being scores declined for 40 percent of communities located within 5 miles of federal forest lands, increased for 37 percent, and stayed about the same for the remainder.
- Changes in forest communities in the Pacific Northwest are only partly attributable to federal forest management policy. Social and economic ties to forests shifted during the monitoring period. Many wood products workers and agency employees moved away while new residents attracted to the amenity values of forests moved in.
- Communities have adapted to cutbacks in timber production by focusing on agriculture; investing in recreation and tourism; developing infrastructure to attract businesses, commuters, and amenity seekers; expanding as regional centers; and depending on the growth of tribal business and administration.
- In the region, public attitudes about forest management changed little during the monitoring period. Most people oppose clearcutting and favor protecting old-growth forests, but also support active forest management to maintain forest health.



There are 1,314 nonmetropolitan communities in the study area.

be transformed by modernization, industry restructuring, and global competition. These forces gradually chipped away at the number of stable industry-related jobs. The big blow came in 1991, when a court injunction halted new sales of federal timber on 24 million acres of federal land in western Washington, western Oregon, and northwestern California to protect the shrinking old-growth habitats of the northern spotted owl. At stake was the government's pledge to maintain a nondeclining flow of timber, which appeared to stand in direct conflict with other mandates and values. The Endangered Species Act required that threatened species be saved from extinction, while a rising tide of public opinion demanded that old-growth forests be made exempt from further logging.

The intent of the Northwest Forest Plan (the Plan) was to break up this logjam. Although many parts of the Plan area were set aside to protect older forests, threatened species, and aquatic ecosystems, selected areas saw

the resumption of timber sales on which rural communities were thought to depend. "The implementation of the Plan attempted to mitigate impacts on communities," says Susan Charnley, a social scientist at the Pacific Northwest (PNW) Research Station who led the socioeconomic monitoring team that assessed the Plan's effects on forest communities. "The challenge was to create forest-based jobs in a way that was more ecologically sustainable but still contributed to economic and social well-being."

"In the decades preceding the Plan, the prevailing notion was that a certain flow of timber was needed to maintain the 'stability' of communities and that any change in that flow would be detrimental to community well-being," adds Charnley's colleague Ellen Donoghue, a PNW Research Station social scientist who participated in the study. "What was not well understood was that many other factors affect community well-being."

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To provide scientific information to people who make and influence decisions about managing land.

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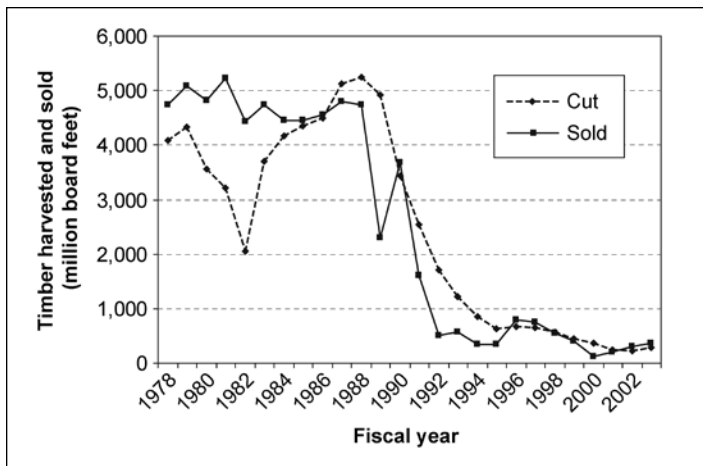
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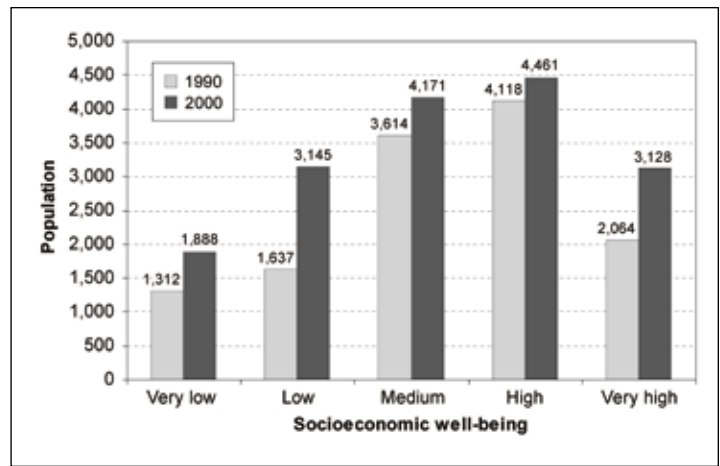
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After timber harvests on national forests in the Plan area dropped precipitously, many rural communities suffered economic hardships, whereas others adapted to the loss of timber industry jobs.



Changes in socioeconomic well-being index from 1990 to 2000 differed with population. Larger communities tended toward the medium and high categories, whereas smaller communities tended to be ranked very low, low, or very high.

## CHARTING THE CHANGES

More than 2 million people live within 5 miles of federal forest land in the Plan area. But existing U.S. census data were not a good match for delineating forest-based communities because many rural people live in unincorporated places with undefined boundaries. The monitoring team developed a way to use small geographic units from the census called block groups, aggregating them into what could be viewed as meaningful representations of communities in the region. Researchers painstakingly sorted 7,776 block groups from the 1990 census into 1,314 nonmetropolitan communities to identify, in each case, what Charnley called “a real community out there on the ground.” This method made it possible to include many of the smaller forest communities that might otherwise have been left out of the monitoring project.

Next, they developed a socioeconomic well-being index for 1990 and 2000, characterizing each community with a single numeric score. Trends in well-being were revealed by

whether each community’s scores went up or down or stayed the same during the decade. The index consisted of six indicators derived from census data: employment diversity, educational attainment, unemployment, people below the poverty line, income inequality, and travel time to work. The first two indicators are seen as positive influences on community well-being and the other four as negative.

“One goal of a socioeconomic well-being index is to send up red flags,” says Donoghue. “You look at them and ask why does this community have a low index and its neighbor have a high one? With more indepth investigation, specific dimensions of community well-being are revealed, and that understanding can be applied to communities that haven’t adapted to change in positive ways.”

The outcomes show that just over a third of communities increased their well-being scores and just over a third declined. But these rankings don’t tell the whole story. “To really get at people’s experiences and concerns,” Donoghue

says, the team conducted indepth case studies of the Olympic, Mount Hood, and Klamath National Forests (located in each of the three states in the Plan area) and of the Bureau of Land Management’s (BLM) Coos Bay District in Oregon.

The Olympic Peninsula had many timber-dependent communities and is home to nine different native tribes. The Mount Hood was an urban forest with a well-established role as a recreation provider and timber producer. The relatively remote Klamath was also a high producer of timber. The Coos Bay District, meanwhile, had been fairly successful in mastering the rocky transition from timber to tourism and other sectors. In each case study, researchers combined detailed analysis of local changes with interviews of workers, business owners, community leaders, interest group representatives, and federal employees. These interviews produced a wealth of insights into the complex dynamics of community-forest relations and community resilience.

## WEATHERING THE TRANSITION

The timber industry job base has long been buffeted by market forces and the march of modernization. Demand for different products fluctuates, and companies respond by changing their supply chains and processing capabilities. The trends have been to shut down less efficient mills near federal forests in favor of larger, more advanced facilities closer to major transportation corridors or private timberlands, and to replace legions of caulked boots on the ground or work gloves at the mill with smaller crews of skilled machine operators.

In the Plan area, curtailed federal timber harvests—and their limited resumption—have added to the stress on forest communities. Annual timber sales have plummeted from nearly 5 billion board feet in the early 1980s to about one-tenth of that in recent years. Moreover, the goal of producing a reduced yet predictable supply of timber was not met; in the Plan’s first decade, annual volumes offered for sale averaged only 54 percent of expected probable sale quantities.

Between 1990 and 2000, primary wood products employment decreased by 30,000

jobs. Roughly 11,800 of those lost jobs can be attributed to declines in federal timber harvesting. The impact of this shortfall on the regional economy, which gained 1.4 million jobs across all industries, was relatively small. “If you look at it that way, it doesn’t seem like a lot of jobs,” says Donoghue. “But when you consider a forest community with fewer than, say, 1,000 residents, a few jobs lost can be a lot of jobs.”

To help people survive the cutbacks, the Plan included some assistance strategies. Key among them was the Northwest

Economic Adjustment Initiative (NEAI), which made \$1.2 billion available to provide loans to businesses, grants to develop local infrastructure, programs to retrain workers, and family-wage jobs associated with the Plan's ecosystem and watershed restoration projects. Although infrastructure development was deemed successful, much of what was intended under the NEAI did not pan out, or came too late to benefit displaced workers.

"The NEAI did improve agency coordination in funneling money to communities, which was new and innovative," Charnley says. "Whether it got to communities that needed it most is debatable," Donoghue adds. "Support tended to fall along the Interstate 5 corridor and wasn't necessarily distributed uniformly. It also depended on the capacity of communities to seek out those grants and opportunities." Unfortunately, she says, "there wasn't a system in place to help smaller communities build this capacity." The main disappointment was that the initiative did not

create sustainable local jobs comparable to the number and quality of those lost.

Declines in federal timber production also led directly to cuts in agency operating budgets and jobs. From the early 1990s to the early 2000s, Plan-area national forests saw an average budget decline of 35 percent and an average drop in staff jobs of 36 percent. The Forest Service closed or consolidated 23 percent of its offices in the region, compounding the difficulty of carrying out the Plan's new administrative requirements and taking more jobs from communities already saddled with a shrinking job base. In contrast, BLM districts fared better because their funding was not as strongly linked to timber.

What the case studies show is that some of the communities the Plan sought to help did not come out ahead, whereas others adapted on their own. Where people lived, the size and sophistication of their communities, and the availability of alternatives all came into play. Weathering the transition from timber

depended in large part on community capacity to seek help and respond to economic stress, Charnley notes. Communities without effective leadership were more likely to fall through the cracks.

"Stability" was the focus of past forest policies. But social scientists now take a broader view of what stability means. Newer concepts stress the importance of dealing with change and responding to opportunities. They substitute the terms "viability" or "resiliency," which reflect such factors as community cohesiveness, civic leadership, attachment to place, and connection to regional economies. The idea that forest communities were fixed in their dependence on wood products from the forest appears to have been shortsighted.

"Resilience is a fairly common term in the literature now," Donoghue says. "Communities adapt to change in the face of unknowns to meet the needs of their residents in lots of different ways."

## SEEING THE FOREST FOR THE TREES

**A**menity migration is sociologist-speak for moving to where the good life is. People relocate to rural areas for such values as scenery, access to trails or trout streams, or refuge from the city. The phenomenon, which has blurred the line between urban and rural in many Pacific Northwest communities, takes various forms. Trophy homes and vacation retreats sprout near national forest boundaries. Outdoor enthusiasts flock to trendy mountain or aquatic recreation hotspots. Business entrepreneurs seek out rustic rural settings to site their high-technology startups. Meanwhile, urban sprawl inexorably turns nearby towns and settlements into bedroom communities for commuters.

Fueled in part by amenity migration, the population of all 1,314 communities in the study increased by 20.6 percent between 1990 and 2000, much higher than the Nation as a whole, which grew by 13.2 percent. But about one-fifth of the communities lost population, typically the smaller ones that lacked, in leadership or infrastructure, the critical mass to move forward.

Communities beyond commuting range or at a distance from transportation corridors, recreational and tourist attractions, or other links to economic development did not fare as well as those that could draw upon these attributes. "If you look at the county scale, you see populations growing and incomes going up, but if you look at the community scale, you see that these trends are not going on everywhere," Charnley explains. "For example, if you are in a remote community at the tip of the Olympic



*The economy of Coos Bay, Oregon, once dominated by logging, wood processing, shipbuilding, agriculture, and commercial fishing, has changed with the times to one based on tourism, services, and retail trade.*

Peninsula, where it rains 100 inches a year, or near the Klamath National Forest 5 hours from San Francisco, those economic opportunities just aren't available."

But other places overcame their reliance on forest-based jobs, turning to growth in agriculture, recreation, tourism, trade, social and environmental services, or tribal administration. Some that had been sources of goods and services expanded their role as regional centers.

Notably, in communities that managed to adapt, many displaced timber workers left the area, or stayed behind and gravitated to jobs—often lower paying or seasonal ones—

in the service, construction, or tourism sectors. For example, the Coos Bay, Oregon, area has done relatively well, its former identity as a millworking and fisheries town overshadowed today by retail trade, real estate, medical care, and tourism. The area's economy may be healthy, but to the regret of some longtime residents, it's not the place it was.

Amenity migration to forest-based communities does more than bring in people—it brings in different sets of values, attitudes, and perceptions about forest management. Recent newcomers tend to consider federal forest lands more valuable as ecosystem, watershed, scenic, and recreational reserves than as commodity producers.

# COMMUNITY WELL-BEING AND FOREST HEALTH

**O**wls versus jobs: that's how the media framed the issue that engendered the Plan. "I think that's how it was perceived back then, that you could have one or the other but not both," Charnley says. "But that has shifted now; most people don't see this either/or dichotomy between environmental protection and jobs in the woods." The current push is to develop local job opportunities associated with reducing the buildup of fuels on national forests, manufacturing wood products from small-diameter wood, and using biomass for energy generation, to cite a few examples. The desire for forest-based, family-wage jobs remains a top priority in many forest communities, especially those that are relatively remote.

One expectation was that the Plan would spark the growth of a new industry based on ecosystem management. Paychecks would be earned by contractors engaged in watershed restoration, biological surveys, forest thinning treatments, and related projects. But reduced agency staffing, budget cuts, and other factors have combined to shrink contracting opportunities, particularly on Forest Service lands. Moreover, this kind of work is often seasonal and requires the services of relatively few workers—who aren't always hired locally.

Continued opposition to timber sales under the Plan have hampered agency efforts to provide a predictable supply of timber. Lawsuits and appeals have contested whether the Plan's survey and manage guidelines or aquatic conservation strategy were being rigorously followed, and timber companies have abandoned some potential sales areas in favor of those less likely to be encumbered by these requirements.

"We interviewed some representatives of environmental organizations and they weren't opposed to timber harvesting," Charnley says. "For them it was a question of what kind of trees you were going to take and where you were going to take them from. Were you going to harvest old growth or log on steep slopes or in environmentally sensitive areas? That's the kind of thing they really opposed." But planners of timber outputs under the Plan "expected much of it to come from old-growth trees using methods somewhat similar to clearcutting," Charnley says. "They based their calculations on assumptions about public acceptability that didn't hold up."

Much of what changed in forest communities was not anticipated by the Plan, Donoghue notes. "Land management agencies would love to know the cause-and-effect relationships between their actions and what happens in communities," she says. "If they could easily put their fingers on this, they would have a much better understanding of what to monitor and what management actions would most appropriately respond to social and economic trends."

Although the Plan sought to link the ecological, economic, and social goals of forest management, success to date has been limited. A key question for public land managers now is how to structure work in forest stewardship in ways that provide local community benefits but also meet ecosystem management objectives. The authors of the study recommend that future socioeconomic monitoring efforts focus on the variables that link land management agencies, federal forests, and forest communities, and that have the potential to enhance both community well-being and forest ecosystem health.

*"The important thing in science is not so much to obtain new facts as to discover new ways of thinking about them."*

—Sir William Bragg

## FOR FURTHER READING

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## LAND MANAGEMENT IMPLICATIONS



- Land management agencies need the institutional capacity to implement their ecological, social, and economic goals, including the skilled staff, financial resources, and flexibility and incentives to develop new approaches.
- Accurate assumptions about the relation between forest management and community well-being are essential to advancing the social and economic goals associated with forest management. Monitoring improves our understanding of community-forest relations and heightens our chances of success in implementing future ecosystem-management plans.

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