

Chapter 2: Cross-Case Synthesis

Riffle Lake View, Gifford Pinchot National Forest, National Archives Catalog

Michael R. Coughlan, Stephanie Schneider, Heidi Huber-Stearns, James Johnson, Mark D.O. Adams

Northwest Forest Plan (NWFP) facts

Year Implemented: 1994

NWFP area: 58,184,084 acres (~24 million acres of federal lands)

Management: 17 National Forests, 5 BLM units

US Census County subdivisions with 30% or more national forest: 91

30-year monitoring case study states: Washington (2), Oregon (4), California (2)

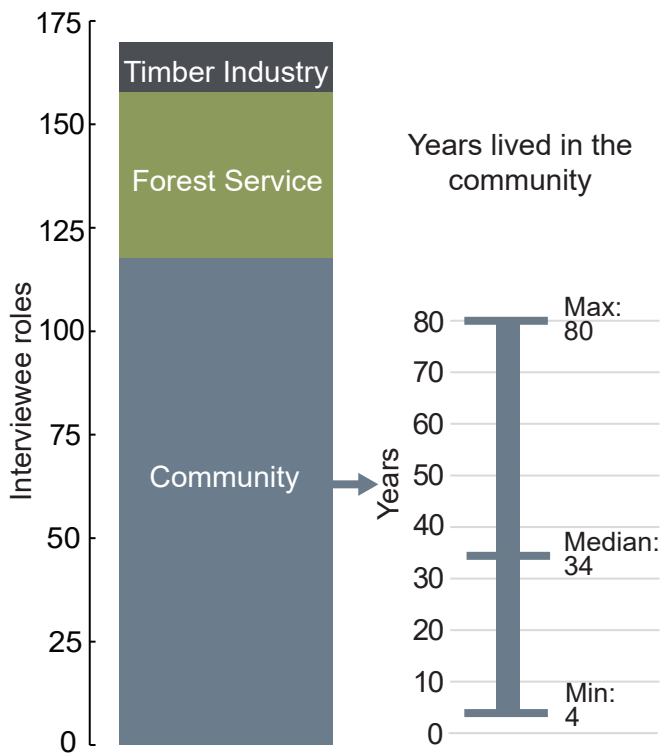
Case Study Populations (2020):

- Packwood-Randle, WA (2,348)
- Naches, WA (8,586)
- Upper Hood River Valley, OR (3,276)
- Southern Tillamook, OR (5,893)
- Butte Falls-Prospect, OR (2,631)
- Gold Beach, OR (5,881)
- Mt. Shasta-Weed, CA (14,479)
- Smith River-Gasquet, CA (3,239)

Introduction and approach

The Northwest Forest Plan (NWFP), signed in 1994, provides management guidance for over 24 million acres in 17 national forests and 5 U.S. Department of Interior Bureau of Land Management (BLM) units lands in Washington, Oregon, and California (USDA Forest Service and DOI Bureau of Land Management, 1994). We conducted social and economic monitoring of eight rural communities within the NWFP area. We used a case study approach involving qualitative analysis of interviews, literature review, and descriptive summaries of selected secondary data. Case study areas were purposively selected U.S. Census County Subdivisions (CCDs) within the NWFP area that (1) were associated with specific Forest Service Ranger Districts and hosted a ranger station, (2) were comprised of at least 30 percent federal forestlands, and (3) had fewer than 15,000 people (as of 2020).

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We interviewed a total of 170 community members, Forest Service employees, and timber industry employees (Figure 2.1). All interviewees worked in, resided in, or had social or economic ties to each study area. Interviews focused on identifying changes experienced by the communities since the implementation of the NWFP. Quotes in these reports are from interviews conducted January 2024 to January 2025.

Each case study can be read as a standalone report. This chapter presents a synthesis of results from social and economic monitoring of impacts over 30 years of the NWFP on eight systematically selected rural, forest-based communities within the Plan boundaries. Chapter 1 provides a full introduction and methods including case study selection, interviewee sampling rationale, and secondary data analyses. Subsequent chapters (3-10) present detailed profiles of each community case study. Please reference individual case study chapters for case-specific facts, references cited, and example quotes from interviewees.

Figure 2.1. Graph of interviewees by role and number of years lived in the community. Our sample included 118 community members, 40 Forest Service employees, and 12 timber industry representatives. Community interviewees lived in the study area for a minimum of 4 years, a maximum of 80 years, and a median of 34 years.



Hebo Ranger District, Southern Tillamook

Study areas and geography

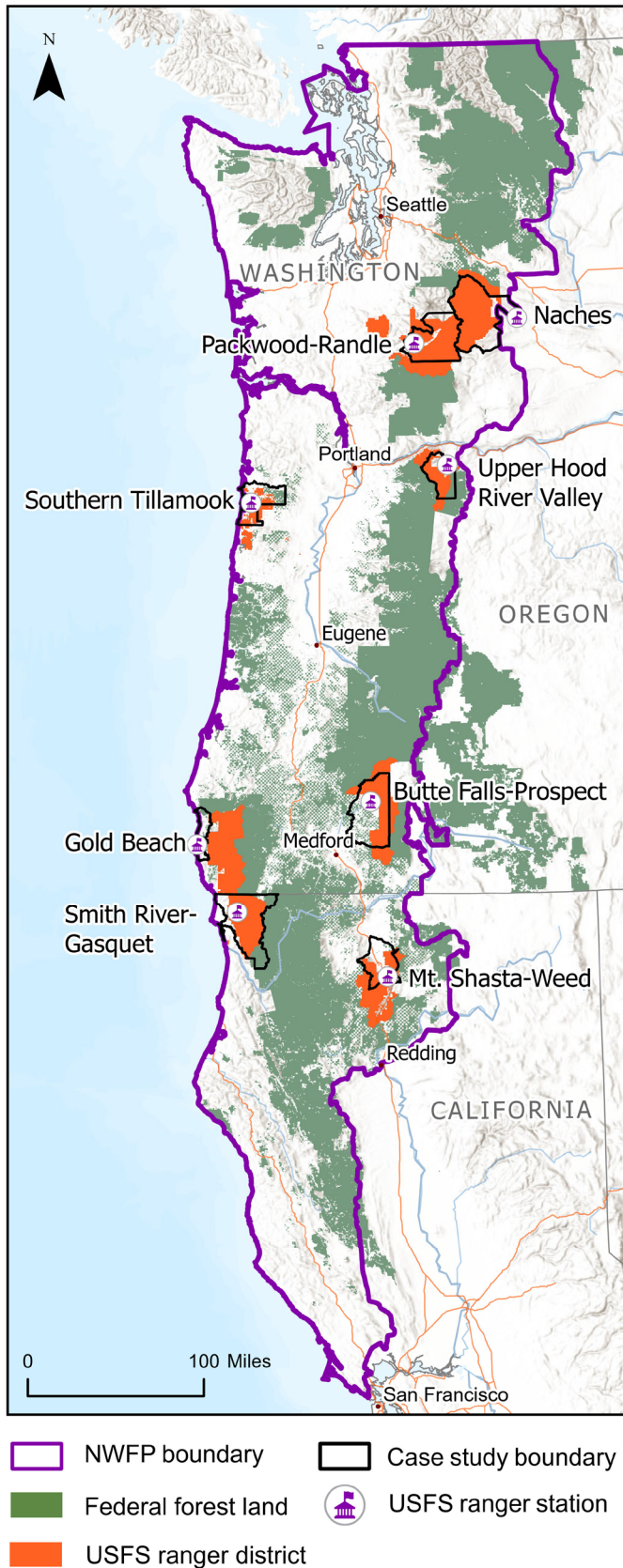


Figure 2.2. Map of all study areas.

Our goal in selecting case study areas was to collect data in communities that were well distributed throughout the NWFP area and that were representative of the range of variability in geography (coastal, inland, eastside, westside, coast ranges, northern and southern Cascades, etc.), community characteristics (near to major population centers, far from major population centers, very small, medium sized, etc.) and forest types (moist and highly productive, dry interior, mixed conifer, etc.) (Figure 2.2). Study areas were variously included within ($n=4$), adjacent to ($n=2$), or neither within nor adjacent to ($n=2$) Forest Service designated national priority landscapes. Previous monitoring focused primarily on communities with a historically high degree of dependence on the timber industry and relatively few economic alternatives. For the 30-year monitoring, we selected communities with high potential to serve as “gateway” service centers for significant natural amenity attractions. Some of these natural amenities are managed by the Forest Service; others are adjacent to national forests (see Chapter 1, Table 1.2).

Three communities included iconic Pacific coastline as a natural amenity: Smith River-Gasquet, Gold Beach, and Southern Tillamook. The Smith River-Gasquet case study additionally has a unit of the Redwood National and State Parks and the Smith River Recreation area. Five of the communities were gateways to iconic, volcanic landscapes along the crest of the Cascade Mountains: Mount Shasta-Weed is a gateway to Mount Shasta; Butte Falls-Prospect is a gateway to Crater Lake National Park; Upper Hood River Valley is a gateway to Mount Hood; and Packwood-Randle and Naches case studies are the east and west gateways (respectively) to Mount Rainier. See individual case study chapters for additional details about these natural amenities.

Impacts of the NWFP to rural forest communities

In the late 1980s, conservationists began to raise public awareness of the destruction of old-growth forest habitats by logging in the Pacific Northwest. Public protests and legal actions soon focused attention on the northern spotted owl (*Strix occidentalis caurina*), whose habitat was threatened. Impacts on the management of federal forests began as early as 1989 with a temporary legal injunction on federal timber sales in the Pacific Northwest. In 1990, the northern spotted owl was listed as endangered under the U.S. Endangered Species Act. Lawsuits and appeals continued over the following years. To resolve this conflict, the federal government adopted the Northwest Forest Plan (NWFP) in 1994 which supersedes and underpins management plans on individual federal forest units within the range of the spotted owl (Hungerford, 1994). The Plan significantly changed management on federal forests in western Oregon, western Washington, and northwestern California by limiting timber harvest on late successional forests and variously restricting management interventions across different land use allocations (Thomas et al., 2006).

Although the NWFP was designed as a compromise that would help ensure a stable supply of timber from national forests while protecting old growth forests, initial declines in timber harvests were steep on national forests across the Plan area (Figure 2.3). Annual timber harvest volume for the NWFP area national forests fell from 5,654 million board feet (mmbf) in 1988 to 830 mmbf in 1995, a decline of nearly 85 percent (USDA Forest Service, 2025).¹ Timber harvest continued to fall over the next decade, reaching 269 mmbf in 2002 before recovering to an annual mean of 502 mmbf between 2003 and 2023. The shift away from timber production transformed the Forest Service in multiple and complex ways including staffing capacity and composition, planning processes, and management priorities. It also transformed public perceptions of the Forest Service and the role the agency played in local communities.

Interviewees in four study areas felt that the NWFP had negatively impacted their community: Packwood-Randle, Naches, Butte Falls-Prospect and Gold Beach. Interviewees in those case studies directly attributed the NWFP to local job losses. Other impacts reported by interviewees

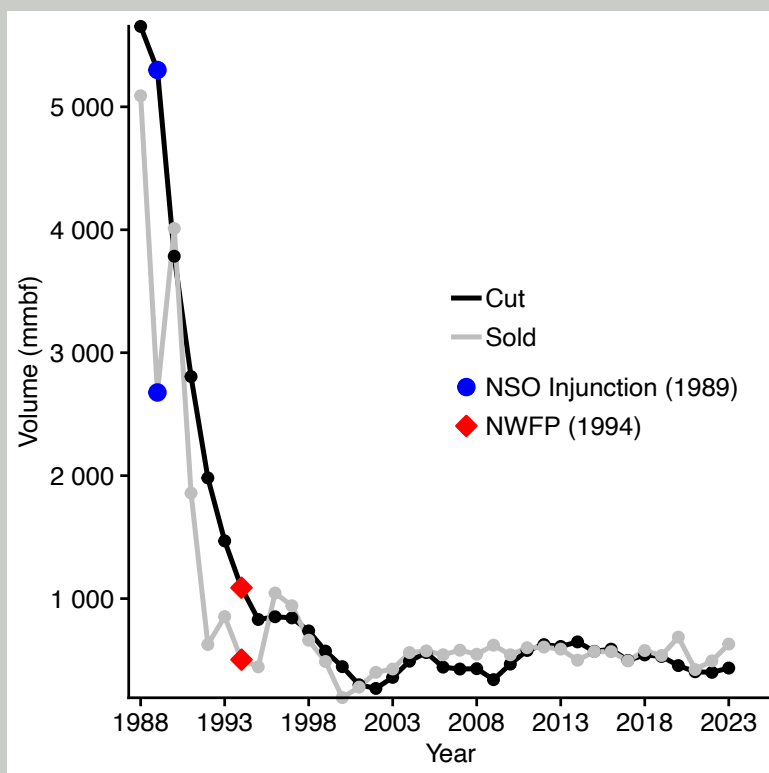


Figure 2.3. Timber harvest and sales (“cut” and “sold” volume in million board feet) for the 17 national forests within the NWFP area, federal fiscal years 1988 through 2023. Landmark 1989 temporary injunction on timber sales in NSO (northern spotted owl) habitat in federal forests in the Pacific Northwest and 1994 implementation of the NWFP are indicated by blue dots and red diamonds respectively (USDA Forest Service, 2025).

1. Harvest volumes reported in federal fiscal years

included population decline or aging, declining school enrollment and consolidation, closures and consolidations of local forest service offices, and declines in Forest Service staffing.

Communities where interviewees thought the NWFP had less of a social or economic impact to their community included Upper Hood River Valley, Southern Tillamook, Mt. Shasta-Weed, and Smith River-Gasquet community case studies. These communities experienced declines in federal timber harvests, but most interviewees did not directly link them to the NWFP. Interviewees in Upper Hood River Valley described how NWFP-related declines in timber harvest impacted local mills. However, they felt the community's diversified economy, including local fruit orchards, had buffered it from significant economic disruption. In Mt. Shasta-Weed, interviewees suggested that in Mt. Shasta city, the importance of wood processing had declined in the late 1980s before the implementation of the NWFP. In that community, tourism and recreation had replaced wood processing in economic importance. Conversely, interviewees noted that Weed continued to depend on the timber industry, but local mills sourced timber from private forest lands. Southern Tillamook interviewees felt that economic impacts from reduced federal timber harvests were buffered by harvests from the Tillamook State Forest as timber on that forest reached maturity just as the NWFP was being implemented. Lastly, Smith River-Gasquet did not see as many negative social and economic impacts from the NWFP because the area's designation as a National Park (1960) and wild and scenic National Recreation Area (1990) had already limited logging on federal lands.

Pre-NWFP history

This section presents a synthesis of material cited in the "Pre-NWFP history" section in each of the case study chapters (Chapters 3 – 10). Please refer to those chapters for full citations and additional details.

Settlement

Indigenous populations were violently displaced by Euro-American settlement in the mid- to late-1800s in all study areas. This displacement also disrupted continuity and intensity of Indigenous forest stewardship practices that had helped shape local forest ecology. The Euro-American settlement economies that followed Indigenous dispossession centered on resource extraction including agriculture, logging, fishing, and mining. Forest clearing for agriculture occurred at lower elevations across the region. Dairying and fishing were important economic activities for the three coastal study areas. Mining for gold and, later, other minerals was most significant in the southern study areas: Smith River-Gasquet, Gold Beach, Butte Falls-Prospect, and Mt. Shasta-Weed. Seasonal grazing and burning associated with cattle and sheep ranching were common at higher elevations in many study areas, but these activities were most important in the Naches and Butte Falls-Prospect study areas.

The mid to late 1800s also saw the development of natural amenity-based tourism in Gasquet (Smith River), Mount Shasta (Mt. Shasta-Weed), Crater Lake National Park and the Rogue River gorge (Butte Falls-Prospect), and Mt. Rainier National Park (Packwood-Randle). Natural springs (hot and cold), fishing, hunting, and hiking were popular among visitors traveling from developing urban centers.

Early timber industry

The onset of industrial logging and processing varied across study areas in relation to transportation

connectivity and terrain ruggedness (Table 2.1). From the 1850s through the 1880s, small-scale sawmills and horse logging were common in all study areas. Economic and ecological impacts of early forest industries often varied in relation to mining activity. The earliest industrial-scale logging within the NWFP 30-year study areas occurred in the 1870s in Smith River with the harvest and export of redwoods. The operation relied on steam-powered machinery and the construction of logging railroads. Logs were transported by rail from logging camps to mills on the coast and processed lumber was shipped to markets in San Francisco and beyond by steam powered cargo ships. By the 1890s, similar steam-power reliant logging railroad and cargo ship operations arrived in Southern Tillamook, with processed timber shipped to markets in California. The arrival of the Southern Pacific Railroad in Mt. Shasta-Weed study area in the late 1880s facilitated development of the timber industry. By the 1890s, logging railroads were shipping sugar and ponderosa pine logs to mills strategically placed along the main railroad at Mt. Shasta and Weed. Box shooks and lumber were shipped from railheads at these mills to markets in California, Oregon, and beyond.

Table 2.1. *Evolution of logging and wood processing across study areas.*

Case study	Onset of industrial logging	Extraction technologies	Early processing species	Pre-WWII products	Post-WWII species	Post-WWII products
Smith River-Gasquet	1870s	Railroad, steam cargo ships	Redwood, Sitka spruce	Boxes, Lumber	Doug fir, Redwood	Plywood, lumber
Mt. Shasta-Weed	1890s	Railroad	Pine	Boxes	Pine, Doug fir	Plywood, lumber
Southern Tillamook	1890s	Railroad, steam cargo ships	Doug fir, Sitka spruce	Lumber	Doug fir, western hemlock, spruce	Plywood, lumber
Upper Hood River Valley	1900s	Railroad	Doug fir	Lumber	Doug fir	Lumber, hardboard
Butte Falls-Prospect	1900s (Butte Falls), 1930s (Prospect)	Railroad (Butte Falls), Trucks (Prospect)	Pine	Shakes	Doug fir, Pine	Plywood, fiberboard, pulp, paper
Naches	1920s	Trucks	Pine	Fruit boxes	Pine, Doug fir	Lumber
Packwood-Randle	1930s	Small scale river log drives, truck logging	Multiple	Lumber, Shingles	Doug fir, Cedar	Shingles, lumber, plywood
Gold Beach	1930s	Trucks, diesel cargo ships	Doug fir, Cedar	Shakes, lumber	Doug fir	Plywood, veneer, lumber

United States federal forest management developed in concert with industrial timber harvesting activity. As public lands became increasingly regulated and management cultures professionalized, private industry gained control of high-quality timberlands in the PNW through wagon road and railroad land grants, land exchanges, and both legal and fraudulent land claims. These private industrial forests were easily accessed from early transportation routes (large rivers and railroads) which typically ran through lowlands with gentle terrain making them suitable for railroad logging. By contrast, the National Forest System evolved from the more remote and often rugged and mountainous public lands that remained unclaimed.

In the early 1900s, timber companies were constructing spur railroads to connect more remote sawmills in the Upper Hood River Valley and in Butte Falls (Butte Falls-Prospect case study). These operations also employed logging railroads to reach harvest units on national forest lands. During this same decade, Weed (in Mt. Shasta-Weed), Dee (in Upper Hood River Valley), and Brookings (just south of Gold Beach) were founded as company towns where the local timber company owned worker housing, stores, banks, and other amenities.

During the first World War (1914-1918), newly developing airplane technologies initiated a war-effort demand for Sitka spruce. Timber operations in the three coastal study areas (Southern Tillamook, Gold Beach, and Smith River-Gasquet) targeted their logging and processing efforts on spruce. As the war ended, the timber industry transitioned back to other species.

By the 1920s-1930s, new road construction reached the more isolated areas in the region. These roads facilitated log extraction and shipping with internal combustion engine tractors and trucks. Truck logging opened new opportunities for industrial-scale harvesting and processing operations in national forests across the study area and served as the initial wave of industrial timber harvesting in the remaining study areas: Packwood-Randle, Naches, and Gold Beach.

Post-World War II timber industry

After World War II, timber harvesting and processing intensified in response to a post-war housing boom. Internal combustion engine technologies such as chainsaws and more powerful tractors and trucks improved logging efficiency, facilitated new management possibilities, and transformed the social organization of the timber industry. Small, family owned, logging operations (“Gypo” loggers) began to dominate timber harvests on public lands. Demand for building materials sparked innovation in the wood products industry including the manufacture of veneer- and particle-based products. International timber corporations, regional conglomerates, and a few large family-held corporations built hardboard and plywood processing plants in every study area.

As timber supplies from private lands contracted, the Forest Service increased the timber sale volume on national forests to meet growing demand. Between the mid-1950s to mid-1960s, communities in each of the study areas evolved into versions of the classic Pacific Northwest timber town organized around independent logging businesses, one or more mills or wood processing facilities, and a well-staffed Forest Service office responsible for managing the public timberlands. One exception to this model was the unincorporated community of Prospect (in the Butte Falls-Prospect study area) where processing facilities had all relocated closer to transportation networks and workforce in Medford and surrounding area by the 1960s. Nonetheless, many independent logging companies remained based there for the next two decades.

As timber markets fluctuated, corporations merged and consolidated their operations, wood processing plant closures, both temporary and permanent, and associated periods of unemployment variously impacted each of the study areas from the 1960s through the early 1990s. For example, Boise Cascade pulled out of Naches in 1965, closing its mill and terminating more than 100 local jobs. Plant closures were associated with decline in local wood processing employment as early as the 1970s in Smith River, Gold Beach, and Southern Tillamook. The fall out of the early 1980s economic recession saw additional bankruptcies and acquisitions leading to plant closures and layoffs in Upper Hood River Valley (Champion Lumber), Butte Falls-Prospect (MedCo), Gold Beach (U.S. Plywood-Champion), and Mt. Shasta Weed (International Paper). In Packwood-Randle, the Mount Adams Veneer Company closed in the late 1980s.

Nonetheless, even as processing declined and facilities were consolidated to more centralized metropolitan areas, harvest volumes from national forests across the NWFP region remained high into the late 1980s. By 1990, case study communities (except Naches) were in counties that retained an extremely high to high relative dependence on federal forests in comparison to all counties in the NWFP area (Adams, 2025). Only Naches, which is in metropolitan Yakima County, was in a county where the wood products industry was on par with mean dependence for the NWFP area.

NWFP communities after the Plan

This section presents a synthesis of material cited in the “[Case study] after the NWFP” section in each of the case study chapters (Chapters 3 – 10). Please refer to those chapters for full citations and additional details.

Employment and industry

Wood processing persisted post-NWFP in all case study areas except Butte Falls-Prospect where a hostile takeover ended in the liquidation of the local timber company (MedCo) by 1992. Mills closed successively, starting with mills in Upper Hood River Valley (1995) and ending with the closure of Roseburg Forest Product’s Weed Veneer plant in 2025 (Figure 2.4). The causes of these closures were diverse. However, as mentioned above, interviewees directly implicated the NWFP as a cause of mill closure in Packwood-Randle and Naches. Ten timber processing facilities closed since 1992 in the case study areas.

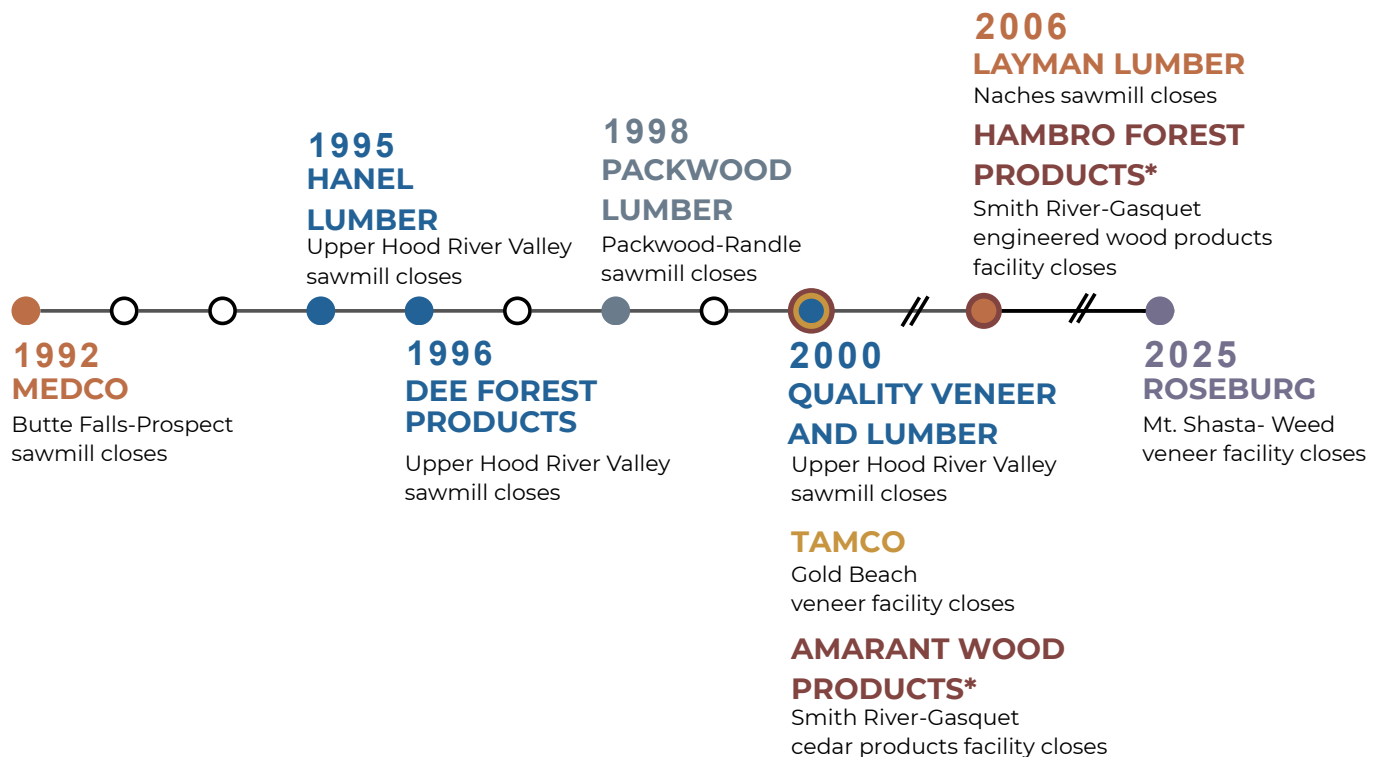


Figure 2.4. *Timeline of mill closures by case study. *Includes mills within 2 miles of the study area boundary.*

As of 2024, mills remained open in Mt. Shasta-Weed (Roseburg Veneer, Weed), Packwood-Randle (Hampton Lumber, Randle), Upper Hood River Valley (Mt. Hood Forest Products, Hood River), and Southern Tillamook (Stimpson Lumber, Tillamook).² By the end of 2025, for reasons unrelated to national forest policies,

2. We limited this analysis to mills within two miles of the various study areas

Roseburg closed its Weed facility. Indeed, over the last decade, none of the remaining mills have relied very heavily on federal timber supply. For example, between 2013 and 2023, Hampton Tree Farms (the forest management component of Hampton Lumber) purchased only 33 mmbf of timber from the Cowlitz Ranger District, a fraction of the volume it processed. Mt. Hood Forest Products in the Upper Hood River Valley did not purchase any timber directly from the Forest Service during that time period. Interviewees in that community noted that county managed forest added to the local timber supply. Stimpson Lumber in Southern Tillamook purchased a very small amount of timber from the Hebo Ranger District (less than 110 thousand board feet), while Hampton Lumber, which operates two additional mills within 10 miles of the study area, purchased 9 mmbf.

Even in case study communities that had operating wood processing facilities in 2024, interviewees were unsure about the importance of wood processing to community well-being. As documented in the 25-year community case studies (Coughlan et al., 2025), it is increasingly common for mill workers to commute from nearby, often less rural, communities. For example, before the closure of Roseburg's Weed Veneer, one interviewee in Mt. Shasta-Weed noted that, *"I'm not even sure how many of the current employees who still remain at Roseburg Plywood are from Weed. My guess is maybe a third or more are from outlying towns: Mount Shasta, Gazelle, Grenada, Yreka maybe."* Lack of affordable housing (discussed below) in the rural case study communities may be one factor contributing to this issue.

Communities that experience shocks related to abrupt interruptions in resource supplies must reorganize their economies or face significant declines in social and economic well-being (Morzillo et al., 2015). In theory, communities in the NWFP area with industries other than wood products would be insulated from the shock represented by the early 1990s decline in federal timber supply. Interviewees in the Naches and Upper Hood River Valley noted that fruit orchards helped buffer forestry-related employment losses in those study areas. Interviewees from the Southern Tillamook study area suggested that their community did not experience significant impacts from the NWFP. As noted above, this lack of impacts may relate to supply from the Tillamook State Forest. However, this study area also has a more diverse economy, including a robust, nationally branded dairy industry and its proximity to the Portland metropolitan area provides a large pool of potential tourists and second home owners.

Some study areas attracted new sources of employment just as the NWFP was implemented. For example, the Pelican Bay Prison opened in Smith River offering new employment opportunities as mills closed. In Mt. Shasta-Weed and in Butte Falls-Prospect, commercial spring water bottling represents one newer source of economic activity for the respective study areas. Although wood processing has left the Naches study area, interviewees suggested that many people in the community make a short commute to work in nearby Yakima.

Since the implementation of the NWFP, natural amenity-based economies such as tourism, recreation, vacation second homes, and retirement significantly expanded in six of the case study areas, though its impacts were uneven. In Packwood-Randle, vacation homes and short-term rentals, recreation (i.e. downhill skiing), and tourism associated with Mt. Rainier National Park has most significantly impacted Packwood rather than Randle. In Mt. Shasta-Weed, the city of Mt. Shasta has capitalized on its legacy of "spiritual tourism" while Weed remained industrial. In Southern Tillamook, vacation rentals and tourism have expanded in Pacific City and Neskowin while social and economic well-being in Hebo continues to decline. In Smith River-Gasquet, the development of tourist infrastructure has stagnated, perhaps due to constraints on use of public lands and its relative isolation from metropolitan areas. Efforts to promote and further develop tourism (i.e., development of new ski facilities) in the Upper Hood River Valley have met with local resistance.

Demographic and community changes

We conducted quantitative analysis of demographic changes within community case studies using data estimated for the US Census County Subdivisions (CCDs) that we chose as study area boundaries (see Chapter 1, table 1.1). We compared CCD data from the 2000 Census with data from the 2010 and 2020 decennial Census (for total population and population by age) and from the American Community Survey estimates for 2008-2012 and 2018-2022 (all other indicators). Our analysis covers a 20-year period falling in the middle of the 30-year implementation of the NWFP (1994 to 2024). Below, we summarize 1) total population, 2) age of community members, and 3) low-income population. We compared these results to total changes for all CCDs within the NWFP area where at least 30 percent of the CCD land base is federal forest lands. Thus, changes within the case studies are compared to other similarly “forest-based” communities in the NWFP area. We also report location quotients (see explanation below) for low-income populations. Participation in the civilian labor force (unemployed population) and workforce non-participation unrelated to unemployment are reported in Appendix D.

Total Population

Total population (Table 2.3) declined in two of the eight case studies: Packwood-Randle and Smith River-Gasquet. Butte Falls-Prospect population remained static and population in the other five cases increased modestly. Population loss in Packwood-Randle was especially striking—this community's population declined by nearly 30 percent between 2000 and 2020. Population increased by around 25 percent in the two coastal Oregon cases (Southern Tillamook and Gold Beach) over the 20-year period examined, and from 7 to 15 percent (less than 0.7 percent annually) in the other three locations.

Population under age 18

The number of children in a community is an important indicator of future population growth and associated development, particularly in communities that do not reliably attract in-migrants. In a demographically stable community, individuals that “age out” of the child cohort would be cyclically replaced by similar numbers of new births or in-migrating children, and the total number of children would be relatively stable over time. Much of the decrease in child populations typically occurs as a simple result of aging: a 9-year-old in 2010 is 19, not a child, in 2020. However, in all eight case study areas there were fewer children in 2020 than in 2000, indicating that the combination of aging-out and out-migration exceeded new births and in-migration (see Appendix D, Table D.1). If such a pattern is sustained through multiple decades (as is observed in both California cases), a community's long-term prospects for a viable future labor force and the formation of new households are not promising.

Population aged 25-44

The cohort of young adults between 25 and 44 represents community members in the beginning or middle portion of a career and often forming households or raising children. Sustaining a consistent population in this cohort is key to future economic stability: it implies both a population that will still be active in the labor force between two and four decades in the future; and that will potentially also add children to the population to replace those that “age-out” of childhood.

The age 25-44 population decreased between 2000 and 2020 in all eight case study areas (see Appendix D, Table D.2), though in the Upper Hood River Valley the decrease was minimal. The proportional decreases tend to directly reflect observations in the under 18 population: the largest decreases occurred in

Packwood-Randle (-34 percent) and Smith River-Gasquet (-22.5 percent). Decreases in Naches, Butte Falls-Prospect, Mt. Shasta-Weed, and Gold Beach were similar to the trend in the 79 combined CCDs. The outlier in this cohort is Southern Tillamook, which recorded 110 (+11 percent) more individuals in this cohort in 2020 than in 2000. There are no cases where the 2020 population aged 25-44 was smaller than the 2010 population, suggesting stabilization of this cohort.

Table 2.3. *Total population estimates for case studies for the years 2000, 2010, and 2020. Shading indicates population declined or remained static.*

Case study*	2000	2010	2020	Percent change (2000-2020)
Packwood-Randle (Big Bottom, WA)	3,328	2,882	2,348	-29%
Naches (Northwest Yakima, WA)	8,029	7,968	8,586	7%
Upper Hood River Valley (Dee & Parkdale, OR)	2,852	2,865	3,276	15%
Southern Tillamook (Beaver, Neskowin OR)	4,831	4,769	5,893	22%
Butte Falls-Prosepect, OR	2,629	2,654	2,631	0%
Gold Beach, OR	4,686	5,219	5,881	26%
Mt. Shasta-Weed (Mt. Shasta, Weed, CA)	13,362	13,635	14,479	8%
Smith River- Gasquet, CA	3,754	3,321	3,239	-14%
Case study totals	43,471	43,304	46,333	7%

*CCD noted where name differs from case study name.

Population aged 65 and older

A disproportionately large older population is not necessarily correlated with community-level economic difficulties, since some communities are able to attract affluent retirees that bring considerable social capital with them to their retirement destination. Such a population is, however, correlated with a labor force that is smaller than the community population size would otherwise indicate. When in-migrants do not factor prominently in a community's population profile, its cohort of older adults will be comprised mostly or entirely of people that have lived in the community for decades, possibly since youth. In such cases, the remaining labor pool may have a limited skill palette, associated with a local economy from prior decades when its older population was still locally employed. Where high location quotients for people over 65, low-income, and workforce non-participation align, and in-migration is low or non-existent, communities face high hurdles to future economic development and population stability.

All eight case studies exhibit a tendency for steady proportional increase of the over 65 population (see Appendix D, Table D.3), a trend that typifies most everywhere in rural America since the 1980s. The lowest

rate of increase (50 percent) is, perhaps surprisingly, found in Packwood-Randle. This suggests that it has an unusually large component of older adults leaving the community (through either death or out-migration) compared to the other cases (see total population Table 2.3, in which Packwood-Randle has the largest proportional loss of population of all the cases). Two case study areas, Naches and Butte Falls-Prospect, experienced a doubling of the over 65 population between 2000 and 2020, far surpassing the rate of increase other NWFP CCDs with greater than 30 percent federal forestlands. The remaining cases are similar, with a 60 to 70 percent increase over the 20-year period.

Low-income populations

Low-income is defined as household with total income that is less than two times the applicable poverty threshold for the number of people in their household. For example, in 2023, the poverty threshold for a four-person household in the contiguous United States was roughly \$32,000. A household with total income of \$60,000 and four members is thus defined as low-income, and the four household members are added to the estimate of low-income individuals.

The absolute number of low-income individuals has declined since 2000 in the Packwood-Randle and Smith River-Gasquet study areas. It has stayed about the same in Butte Falls-Prospect. Due to estimate uncertainty, it is difficult to identify a clear trend in the other five cases. However, further insights can be gained by examining low-income population location quotients (Table 2.4). A location quotient compares the proportion of population that is low-income in a case study to the same proportion in the entire NWFP social and economic monitoring area population.

In 2000, following the first six years of the NWFP, three case studies stand out as having high concentrations of low-income populations in comparison to other CCDs with greater than 30 percent federal forest lands: Packwood-Randle, Upper Hood River Valley, and Smith River-Gasquet. Low-income location quotients for 2020 dramatically declined in two of the eight case study communities relative to 2000: Packwood-Randle and Smith River-Gasquet. This means that these two study areas have become more similar to the total NWFP population (which includes the PNW's major metropolitan areas - see note in Appendix D). After 2000, low-income individuals became more highly concentrated in Naches and Southern Tillamook relative to the rest of the NWFP area. The other four cases show only slight changes in their concentration of low-income populations between 2000 and 2020.

Table 2.4. *Low-income population location quotient (estimates). See Appendix D, Table D.6 for upper and lower boundaries.*

Case study*	2000	2008-2012	2018-2022
Packwood-Randle (Big Bottom, WA)	1.623	1.294	1.165
Naches (Northwest Yakima, WA)	1.019	1.106	1.174
Upper Hood River Valley (Dee & Parkdale, OR)	1.500	1.052	1.705
Southern Tillamook (Beaver, Neskowin OR)	1.072	1.252	1.361
Butte Falls-Prosepct, OR	1.353	1.092	1.330

Gold Beach, OR	1.327	1.169	1.373
Mt. Shasta-Weed (Mt. Shasta, Weed, CA)	1.414	1.174	1.326
Smith River-Gasquet, CA	1.707	1.226	1.195
Case study mean	1.377	1.17	1.33
NWFP CCDs that are >30% Federal Forest Land**	1.332	1.243	1.340

*CCD noted where name differs from case study name.

**CCDs meeting the sampling criteria: federal forests lands comprise 30 percent of the land base.

Green shading: significant decrease in LQ since the prior period, indicating that low-income population was less concentrated in the community than it had been, making its proportion of low-income population either more similar to (if the prior period LQ was well above 1), or, less similar to (if the current period LQ is well below 1) than the NWFP monitoring region's proportion.

Orange shading: significant increase in LQ since the prior period, with the exact opposite interpretation as above.

New residents

In terms of newer residents, at least half of the interviewees in five of the case studies (Packwood-Randle, Southern Tillamook, Butte Falls-Prospect, Gold Beach, and Mt. Shasta-Weed) noted that retirees were moving to their communities. Agreement was especially high in Gold Beach where 89 percent reported that new residents were retirees. Approximately 30 percent of interviewees in Packwood-Randle, Southern Tillamook, and Mt. Shasta-Weed also suggested that newer residents were also “wealthy”. In the Upper Hood River Valley case study, 67 percent of interviewees suggested that new residents were “wealthy.” Interviewees in Naches and Smith River-Gasquet did not agree on who their new residents were.

Housing and development

Across every study area except Butte Falls Prospect, a majority of interviewees noted that both availability and affordability of housing in their communities had decreased over the last 30 years. Some interviewees in Butte Falls-Prospect suggested that these changes merely matched national trends, or that housing was more affordable in their community than the nearby city of Medford. Another issue for Butte Falls-Prospect was the poor quality of homes or aging homes that were poorly maintained.

Similarly, interviewees in every case study except Butte Falls-Prospect noted that one issue impacting the local housing market was the proliferation of vacation homes and short-term rentals. The proliferation of vacation homes and short-term rentals was especially notable in Packwood-Randle and Southern Tillamook (Table 2.5). Table 2.5 shows housing data from the 2020 US Census H1 table (Occupancy Status). The vacant housing unit estimate includes all houses that were not primary residences (e.g. actual vacant houses, vacation homes, short-term rentals). According to these data, fewer than half of the houses in Packwood-Randle were primary residences. In 2024, we inventoried a total of 312 homes (i.e. 12 percent of all housing) that were available for short-term rental in the Packwood-Randle study area. Given that interviewees suggested that housing was in short supply, it seems most likely that a large proportion of the remaining vacant houses (42 percent of all housing) in that study area were vacation homes. Following similar logic, approximately 8 percent of housing units in Southern Tillamook were short-term rentals

leaving just under 40 percent of housing as vacation homes. Similarly, vacation homes and short-term rentals comprised approximately 21 percent of housing units in the other two coastal areas: Gold Beach and Smith River-Gasquet.

Table 2.5. *Total housing units, vacant units, and short-term rentals by case study. Data from the 2020 US Census Bureau table H1 (U.S. Census Bureau, n.d.).*

Case study	Total housing units	Vacant units	Percent vacant	Short-term rentals	Percent short-term rental
Packwood-Randle	2,562 +/-247	1,381 +/-226	54%	312	12%
Naches	4,085 +/-258	746 +/-164	18%	51	1%
Upper Hood River Valley	1,420 +/-279	217 +/-163	15%	3	<1%
Southern Tillamook	4,502 +/-440	2,101 +/-488	47%	357	8%
Butte Falls-Prosepct	1,222 +/-134	66 +/-42	5%	19	2%
Gold Beach	3,300 +/-246	681 +/-258	21%	265	8%
Mt. Shasta-Weed	8,001 +/-562	1,213 +/-376	15%	199	2%
Smith River-Gasquet	1,965 +/-198	406 +/-175	21%	41	2%
Case study mean	3,382	851	25%	156	5%

Lack of housing for workers was also a common problem cited by at least some interviewees in all case studies (except Mt. Shasta-Weed). In Smith River-Gasquet, three interviewees cited lack of housing for workers as a major barrier to economic development in their community.

Development in many of the study areas is also constrained by other factors. For example, the high proportion of public limits development in nearly all study areas. Constraints imposed on rural development by public land ownership has been controversial for more than 100 years. There was significant public debate over designation of federal forests and access to those forests during the late 19th and early 20th century. With the termination of homesteading programs, national forest boundaries stabilized. However, conflict continues around “special” economic uses of public lands. For example, efforts to develop and expand ski areas on national forest lands have been controversial in Upper Hood River Valley and Mt. Shasta-Weed. Coastal study areas such as Gold Beach and Southern Tillamook are constrained by public lands located along the coastline, i.e. some of the most desirable building areas.

Further, limitations of the existing waste-water treatment infrastructure constrains development in Packwood-Randle and in Upper Hood River Valley. Packwood-Randle and Naches face significant issues with flooding. Wildfires have destroyed approximately 300 homes in Weed (Mt. Shasta-Weed) in recent years and interviewees mentioned that victims of those fires have faced difficulty rebuilding due to lack of insurance and the constraints and disincentives of rebuilding on small lots (a historical legacy of company worker housing). Interviewees in that study area also cited the construction industry’s lack of capacity to meet new demand.

Community services

Services and changes to services through time varied across the eight case studies. Interviewees across six of the case studies thought that both the quantity and quality of services had declined over the last 30 years. In the Upper Hood River Valley study area, interviewees suggested that services had increased. In Gold Beach, interviewees were divided as to the status of their services. One interviewee in Gold Beach suggested that more recent business closures might be tied to the arrival of a hypermarket-superstore (Fred Meyer) in nearby Brookings.

In 2024, Packwood-Randle, Southern Tillamook, Gold Beach, and Mt. Shasta-Weed each had full-service supermarkets. The Mt. Shasta-Weed study area had four full-service supermarkets, yet interviewees nevertheless discussed making trips to Redding, California and Medford, Oregon to shop. The Upper Hood River Valley, Smith River-Gasquet, Naches, and Butte Falls study areas lack a supermarket. The Upper Hood River Valley has long been dependent on Hood River for services such as a supermarket. In Smith River-Gasquet, the local supermarket had recently closed, but residents also discussed the importance of nearby Crescent City for services. Naches is adjacent to metropolitan Yakima, so their commute for services is not long. Conversely, residents of Butte Falls-Prospect must drive at least 25 miles to Shady Cove or Eagle Point for groceries. One interviewee from Butte Falls-Prospect suggested that the study area formerly had two grocery stores.

All of the study areas except Smith River-Gasquet have a local health clinic. Gold Beach and Mt. Shasta have their own small hospitals. Residents of Smith River-Gasquet must drive to Crescent City, California or Brookings, Oregon to access a hospital. Similarly, residents in Southern Tillamook must commute to Tillamook or Lincoln City for a hospital, Upper Hood River Valley residents access hospital services in Hood River, and residents of Naches access hospital services in Yakima. Packwood-Randle and Butte Falls-Prospect are the most isolated with respect to hospital services where residents must drive between 30 and 45 miles to a hospital.

Community governance

Case studies included both incorporated “cities,” “towns,” and unincorporated settlements. The former have local municipal governments that operate under the home rule authority, by which the state delegates power to local entities. In the Naches study area, the town of Naches is incorporated. In Gold Beach, the City of Gold Beach is incorporated and is the county seat. In Butte Falls-Prospect, the City of Butte Falls is incorporated; Prospect is not. In Mt. Shasta-Weed, both Mt. Shasta City and Weed are incorporated. Four of the study areas were characterized by unincorporated settlements: Packwood-Randle, Upper Hood River Valley, Southern Tillamook, and Smith River-Gasquet. These communities are relatively disadvantaged in comparison to incorporated communities due to their reliance on county-level governance. For example, in Packwood-Randle, interviewees suggested that residents felt disconnected from the county government. They further suggested that their community lacked coordination that formal incorporation might provide. The disadvantages of unincorporated communities are perhaps most obvious within the Butte Falls-Prospect study area. In that study area, the municipal government in Butte Falls played an active role in preparing the community for transitions it would face as local industry closed and the Forest Service transitioned its operations to Prospect. Prospect, on the other hand, has had to rely on “engaged volunteers” to keep basic services such as law enforcement and emergency response in operation.

Community relationship with the Forest Service

Interviewees across case study communities expressed a wide range of perspectives about their community's relationship with the Forest Service. Although the interviewees were not wholly negative about the relationship, many interviewees expressed a division amongst community members about their opinion of the Forest Service. In some communities, interviewees suggested that the personality of the district ranger was an important factor. In other communities, long-standing controversies still remained fresh in local memory.

Managing for wildfire resilience was seen as a high priority for the Forest Service by more than 70 percent of interviewees in the following case studies: Gold Beach (91 percent), Mt. Hood (79 percent), Mt. Shasta (78 percent), High Cascades (73 percent).

Incorporating science into planning processes was seen as the highest priority for the Forest Service for Southern Tillamook interviewees (82 percent) and as the second most important priority for Mt. Hood interviewees (72 percent).

Community relationship with national forest lands

Each community valued different things about their forest lands. We asked interviewees to rank the following uses of their national forest lands in terms of high, medium, or low, importance: hunting, nature/aesthetics, non-timber forest products, recreation, timber, tourism, and water. Community members in Naches (91%), Butte Falls-Prospect (86%), and Gold Beach (90%) valued hunting and fishing as highest level of importance. In Packwood-Randle, most interviewees (75%) ranked non-timber forest products as high importance. One hundred percent of interviewees in the Upper Hood River Valley and 73 percent of Smith River-Gasquet interviewees valued nature/aesthetics as high importance. Tourism was the most important use of forest service lands identified by Southern Tillamook residents (90%). Ninety percent of interviewees in Mt. Shasta ranked water as high importance.

These interviewee rankings were supported by case study quantitative data. For example, the relatively high valuation of non-timber forest products in Packwood-Randle is reflected in the incredibly high number of sales and harvest volumes of mushrooms, salal, bear grass, pine cones, and limbs and boughs on the Gifford Pinchot National Forest. The importance of tourism for Southern Tillamook is reflected in that community's percentage of vacation homes. Similarly, the importance of nature/aesthetics in the Upper Hood River Valley is reflected in interviewee explanations about that community's resistance to development.

Most interviewees across case studies ranked timber from national forests as low importance. Packwood-Randle was the only community where more than half (67 percent) of interviewees thought timber was highly important. Indeed, out of all the case study ranger districts over the 2013-2023 period, the Forest Service harvested the highest volume of timber (187 mmbf) from the Cowlitz Ranger District in Packwood-Randle (Table 2.6, Figure 2.5). Local businesses in Packwood-Randle also captured higher timber volumes than local businesses in other case studies, though most timber harvest went to businesses along the I-5 corridor with median travel distances of 65 miles. Smith River-Gasquet had the lowest harvest volumes (12 mmbf) and the highest median travel distances (164 miles) to businesses purchasing timber. Eighty-

two percent of interviewees ranked timber from the national forest as low to moderate importance to the community.

Table 2.6. Total timber sale volume from case study ranger districts, 2013-2023. Data from USDA Forest Service Timber Information Manager (TIM).

Case study	Ranger district name	Total sale volume mbf	Local sale volume mbf	Service bid value	Percent stewardship	Median distance to purchaser (miles)
Packwood-Randle	Cowlitz Valley	187,725	8,101	\$582,378	6%	65
Naches	Naches	94,661	288	\$1,185,327	20%	72
Upper Hood River Valley	Hood River*	53,205	1,690	\$778,287	38%	49
Southern Tillamook	Hebo	133,209	17	\$2,278,512	26%	75
Butte Falls-Prosepect	High Cascades	98,777	2,757	\$373,386	8%	58
Gold Beach	Gold Beach	46,845	-	\$0	0%	64
Mt. Shasta-Weed	Mount Shasta**	25,653	-	\$367,787	10%	84
Smith River-Gasquet	Gasquet	12,388	-	\$1,876,010	14%	164

*These two ranger districts are functionally managed together as both Hood River and Barlow. In this report, we refer to them collectively as “Hood River.”

** The Shasta District is part of the Shasta-McCloud management unit (SMMU), which comprises two ranger districts—Shasta and McCloud—with a shared district ranger. We include both districts in our analysis.

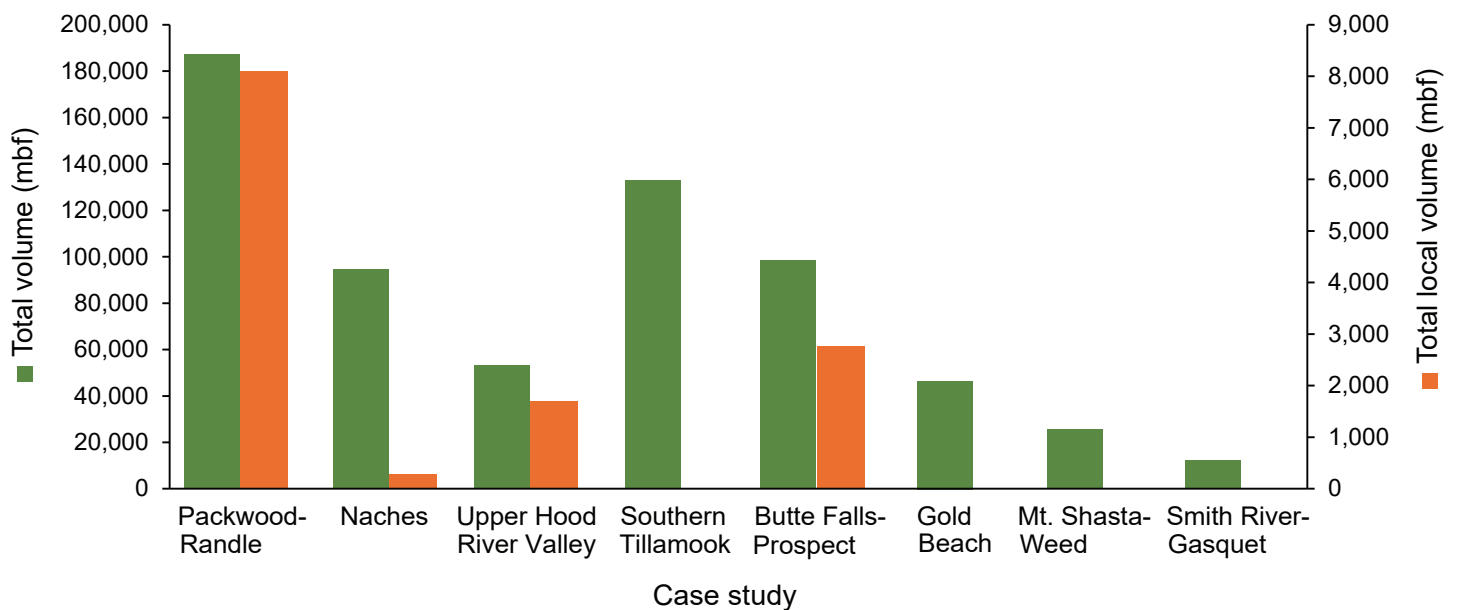


Figure 2.5. Bar graph of total timber sale volume and total local sale volume from the 30-year monitoring case study ranger districts, 2013-2023. Data from USDA Forest Service Timber Information Manager (TIM).

Wildfire

Wildfires have been a growing concern in the NWFP area. For example, Gold Beach experienced the Biscuit Fire in 2002, the largest fire recorded in Oregon's history. The fire is considered by some to mark a turning point in how the Forest Service manages wildfire and post-wildfire recovery in the Pacific Northwest (Bormann and Stankey, 2009). Between 1994 and 2018, wildfires burned approximately 1,498,117 acres (an average of 59,925 per year) in the eight study areas. From 2019 to 2024 burned area increased to 105,770 per year on average, for a total of 634,621 acres. It is unsurprising that wildfire mitigation is now one of the top management concerns for the eight case study communities. Indeed, four of the study areas experienced their largest fires since 2019. The Southern Tillamook case study³ has not recorded any fires since the implementation of the NWFP. However, the 2020 Echo Mountain Complex occurred less than five miles from the case study's southern boundary. This fire forced evacuations in Lincoln City, Oregon and destroyed 288 homes and 339 structures.

Table 2.7. Five largest wildfires in case study ranger districts. Largest fire highlighted. All fire years and acreage from the State of Washington Geospatial Open Portal (Washington DNR, 2025), ODF ArcGIS Hub (NIFC & INR, 2025), and State of California Open Data Portal (CAL FIRE, 2026).

Case study name	Ranger District	Fire
Packwood-Randle	Cowlitz Valley	Goat Rocks (2022, 6,196 acres) Clear Fork (2018, 74 acres) South Point (2012, 337 acres) Lost Lake (2003, 265 acres) Panther Fire (2003, 44 acres)
Naches	Naches	Retreat (2024, 45,593 acres) Schneider Springs (2021, 107,336 acres) Evans Canyon (2020, 75,682 acres) Norse Peak (2017, 52,062 acres) Boulder Creek (2010, 101,001 acres)
Upper Hood River Valley	Hood River	Whisky Creek (2024, 3,240 acres) Eagle Creek Fire (2017, 48,227 acres) Blackburn (2013, 11,183 acres) Dollar Lake (2011, 6,304 acres) Gnarl Ridge (2008, 3,240 acres)
Southern Tillamook*	Hebo	2020 Echo Mountain Complex (2020, 2,2522 acres)
Butte Falls-Prosepect	High Cascades	South Obenchain (2020, 32,589 acres) Miles (2018, 39,335 acres) Blanket (2017, 33,344 acres) Middle Fork Complex (2008, 21,110 acres) Timbered Rock (2002, 27,106 acres)
Gold Beach**	Gold Beach	Klondike (2018, 175,287 acres) Chetco Bar (2017, 191,237 acres) Collier Butte (2015, 12,270 acres) Biscuit (2002, 500,338 acres) Unnamed (2001) (2001, 280 acres)

3. The Tillamook burn, occurring just north of the Southern Tillamook case study, was a historically significant series of four wildfires from 1933-1958 that burned 350,000 acres.

Mt. Shasta-Weed	Mount Shasta	Mountain (2022, 13,441 acres)
		Mill (2022, 3,939 acres)***
		Lava (2021, 26,329 acres)
		Mussolini (2002, 3,218 acres)
		Hotlum (2006, 3,023 acres)
Smith River-Gasquet	Gasquet	Smith River Complex (2024, 94,621 acres)
		Slater (2022, 157,430 acres)
		Eclipse Complex (2017, 91,125 acres)
		Gasquet Complex (2015, 100,369 acres)
		Siskiyou Complex (2008, 143,970 acres)

* Fires included are within 5 miles of case study boundary.

** This includes fires intersecting the Brookings CCD boundary.

*** The 2022 Mill Fire in Weed was a structural conflagration that began on the Roseburg Forest Products Mill site and destroyed 118 residential and other structures.

Community futures

When asked about their hopes and concerns for their communities in the next 10 years, at least some interviewees in seven communities voiced concerns about the potential impacts of climate change and wildfires. Many interviewees expressed a desire to see additional mitigation efforts taken to avoid wildfire disasters. Interviewees in every community mentioned concerns about the impacts of increasing recreational use of the national forest. Social impacts and other changes resulting from increased tourism was another related concern in five of the communities: Packwood-Randle, Naches, Southern Tillamook, Butte Falls-Prospect, and Gold Beach. Decreased availability and increased costs of housing was a concern in Naches, Upper Hood River Valley, Southern Tillamook, and Mt. Shasta-Weed.

Conclusions and highlights

Industrial histories, demographic changes, and challenges that communities face in housing and other developments make it clear that the timing and intensity of social and economic shocks associated with the NWFP and the timber industry broadly, varied significantly across the case study areas. Although the NWFP may not have uniformly contributed to the declining or stagnating social and economic trajectories of the case study communities monitored for the NWFP 30-year anniversary, the plan effectively constrained opportunities related to each community's potential to derive benefits from their local national forest.

Out of the eight case study communities, social and economic impacts of the NWFP were most significant in the Packwood-Randle community. Although the study area retained wood processing capacity and, between 2013 and 2023, local federal timber harvest volumes remained the highest of the eight case studies, the implementation of the NWFP caused significant negative impacts to that Packwood-Randle's economy. The most notable event related to the NWFP was the closure of the Packwood Lumber Mill in 1998. The mill had been dependent on large diameter timber from the national forest, a supply effectively cut-off by conservation measures imposed by the NWFP. By the 2000 US Census, two years after the closure of the mill, the share of low-income population in Packwood-Randle was over one and a half times greater than the low-income population in the rest of the NWFP area. Between 2000 and 2020, the community experienced significant population loss across all age cohorts as households moved to find employment opportunities

in other communities. Although this outmigration ultimately contributed to a lower concentration of low-income residents, it likely drained considerable human capital from the community. Vacated homes opened up the housing market to new investors who purchased homes and repurposed them as vacation homes and short-term rentals. While this transformation offers new economic possibilities for year-round residents, it also presents new challenges. For example, with fewer year-round housing options, by 2024, local businesses were experiencing difficulties finding housing for their workers.

Naches, Upper Hood River Valley, and Southern Tillamook were each buffered by a more diversified economy. Orchards in the former two and dairies in the latter communities provided more stable employment and income. The Tillamook State Forests (a legacy of wildfire history) additionally supplemented timber supply and helped retain wood processing capacities immediately adjacent to the Southern Tillamook study area. Nonetheless, segments of the population in each of these communities experienced social and economic disruptions related to changes in federal forest management. In Butte Falls-Prospect, events related to shifting industrial geographies largely pre-dated the NWFP. Most of the impacts related to the NWFP in that study area were associated with staffing and station changes internal to the Forest Service and BLM. These changes had ripple effects across the community's institutions, including its schools and other organizations contributing to the community's capacity to maintain and improve well-being.

Although the impacts of the NWFP to Gold Beach's timber industry were likely significant, that community was already transitioning toward an amenity economy based on attracting retirees. The relationship between the NWFP and social and economic changes in Mt. Shasta-Weed are complicated. However, the wood processing industry had largely abandoned Mt. Shasta by the late 1980s. Weed retained its wood processing facility until 2025, but the study area retained little to no dependency on federal timber in the post-NWFP era. Lastly, conservation efforts in the Smith River-Gasquet community including National and State Park, Wild and Scenic River, and National Recreation Area designations pre-empted the majority of impacts that the NWFP would have imposed on local timber supply. Although the timber industry suffered considerable decline in that community, its demise was not directly connected to the implementation of the NWFP.

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National Archives Catalog

Biscuit Fire, Eight Dollar Mountain, 2002

For full report, visit:
<https://hdl.handle.net/1794/31412>



Questions? Contact
mcougla@uoregon.edu



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