Chapter 10: Environmental Justice, Low Income and Minority Populations, and Forest Management in the Northwest Forest Plan Area

Susan Charnley, Elisabeth Grinspoon, Heidi Huber-Stearns, Eric White, Delilah Jaworski, Lee Cerveny

Introduction

This chapter synthesizes literature about the relation between federal forest management and low-income and minority populations, as defined by the 1994 Executive Order 12898–Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. The executive order requires federal land managers to identify and address any disproportionately high and adverse human health and environmental effects of agency programs, policies, and actions on minority and low-income populations. In this chapter we use the term “environmental justice population” to refer to populations protected by the Executive Order on environmental justice (defined below). The Forest Service forest planning process, and the Bureau of Land Management (BLM) land use planning process, are the primary ways that

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these agencies incorporate environmental justice into their mission. Northwest Forest Plan (NWFP) monitoring has not explicitly focused on low-income or minority populations other than American Indian tribes. However, federal land managers in the plan area submitted several priority management questions pertaining to environmental justice and forest management for consideration in this science synthesis report. We address these questions here. American Indian tribes are the focus of chapter 11; this chapter focuses on other minority populations.

### Defining Environmental Justice

The following material is excerpted from Grinspoon et al. (2014, p. 3-8), a guidance document for Forest Service staff to help them comply with the Executive Order on Environmental Justice during the National Environmental Policy Act (NEPA) process, which requires the agency to consider the potential social and economic effects of its proposed actions. The Forest Service defines environmental justice in accordance with U.S. Department of Agriculture Departmental Regulations (USDA 1997). Environmental justice includes the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies (USEPA 2013). An environmental justice population is a group of people that meets the criteria for low-income or minority under Executive Order 12898 (Clinton 1994). An environmental justice population may be both low income and/or minority.

### Defining Minority Population

The U.S. Census Bureau (1999) identifies four racial categories (white, black, American Indian/Alaska Native, Asian and Pacific Islander), and two categories of ethnicity (Hispanic and non-Hispanic). The USDA departmental regulations define minority as “a person who is a member of the following population groups: American Indian or Alaska Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic” (USDA 1997: 2). In its direction on environmental justice in the NEPA, the Council on Environmental Quality (CEQ) defines a minority population as:
1. A readily identifiable group of people living in geographic proximity with a population that is 50 percent minority or greater. The population may be made up of one minority or a number of different minority groups; together the sum is 50 percent or more; or,

2. A minority population may be an identifiable group that has a meaningfully greater minority population than the adjacent geographic areas, or may also be a geographically dispersed/transient set of individuals such as migrant workers or Native Americans (CEQ 1997).

**Defining Low-Income Population**

According to CEQ, a low-income population is a community or a group of individuals living in geographic proximity to one another, or a set of individuals, such as migrant workers or American Indians, who meet the standards for low income and experience common conditions of environmental exposure or effect (CEQ 1997). USDA departmental regulations (USDA 1997: 2) state that low-income populations in an affected area should be identified with the annual statistical poverty thresholds from the Census Bureau’s annual current population reports (Series P-60) on income and poverty. The U.S. Census Bureau (2013) defines low-income populations by the percentage of people living below poverty in a given area, which is consistent with the CEQ’s environmental justice guidance. For tables showing Department of Health and Human Services guidelines for poverty, see the Federal Register notice (U.S. DHHS 2013). For more information also see “How poverty is calculated in the ACS [American Community Survey]” (U.S. Census Bureau 2013). In 2013, the poverty guideline for the 48 contiguous states and the District of Columbia was $11,490 for a one-person household and $23,550 for a four-person household.

Low-income status is determined by comparing annual income to a set of dollar values called poverty thresholds that vary by family size, number of children, and age of householder. If a family’s before tax monetary income is less than the dollar value of their threshold, then that family and every individual in it are considered to be living in poverty. For people not living in families, poverty status is determined by comparing the individual’s income to his or her poverty threshold.
Guiding Questions

This chapter addresses the following questions pertaining to environmental justice, low income and minority populations, and federal forest management:

1) What are the trends in the size of low-income and minority populations in the NWFP area since the plan was adopted, and what is their current distribution?

2) How do low-income and minority populations interact with federal forests in the NWFP area?

Key Findings

Trends in Low-income and Minority Population Sizes and Current Distribution

The size and percentage of environmental justice populations in the NWFP area have increased since the NWFP was adopted, consistent with national trends. This increase has occurred both in the size of low-income populations (measured here by number of people living below the poverty line), as well as in the number of people belonging to minority groups specified by the Executive Order on Environmental Justice. These trends are detailed below. We use 1990 as our baseline because of the availability of decennial U.S. Census data from 1990. For current status, we use U.S. Census data from 2012, consistent with the 20-year NWFP socioeconomic monitoring report (Grinspoon et al. 2016).

Low-income populations—

The poverty rate in the NWFP area as a whole increased from 11.2 to 14.7 percent of the region’s population between 1990 and 2012 (table 1). Nevertheless, the poverty rate was lower overall than the national poverty rate during the three periods reported on here. While poverty rates fell in many subregions of the plan area between 1990 and 2000, those improvements were more than offset by increases in poverty across the NWFP area between 2000 and 2012. There are 72 counties—32 metropolitan, and 40 nonmetropolitan—in the NWFP area (appendix). Poverty rates were uniformly higher in nonmetropolitan counties than in metropolitan counties during the analysis period, and they were also higher than the national average (table 1). Overall,
## Table 1—County-level poverty rates in the NWFP area, 1990, 2000, and 2012

<table>
<thead>
<tr>
<th></th>
<th>1990 Poverty rate</th>
<th>2000 Poverty rate</th>
<th>2012 Poverty rate</th>
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</thead>
<tbody>
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<td>13.5</td>
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</tr>
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</tr>
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<td>9.1</td>
<td>13.9</td>
</tr>
<tr>
<td>All nonmetro counties</td>
<td>15.3</td>
<td>14.2</td>
<td>19.0</td>
</tr>
<tr>
<td>All CA NWFP counties</td>
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<td>11.1</td>
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</tr>
<tr>
<td>All CA metro counties</td>
<td>9.6</td>
<td>9.0</td>
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<td>16.4</td>
<td>21.7</td>
</tr>
<tr>
<td>All OR NWFP counties</td>
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<td>All WA NWFP counties</td>
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<tr>
<td>All WA metro counties</td>
<td>9.9</td>
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<td>12.8</td>
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<tr>
<td>All WA nonmetro counties</td>
<td>15.1</td>
<td>13.3</td>
<td>16.7</td>
</tr>
</tbody>
</table>

Source: U.S. Census Bureau, small area income and poverty estimates.
poverty rates were highest in Oregon and lowest in Washington in both 1990 and 2012. However, in California, nonmetropolitan counties area had the highest poverty rates within the plan area during the period. These counties also experienced the biggest increase in poverty—rising from 15.6 percent in 1990 to 21.7 percent in 2012, with no dip in 2000, unlike the other subregions (table 1). Figure 1 shows poverty rates in the NWFP area by county in 2012. The highest poverty rates are concentrated in northern California and southern Oregon. Counties with the lowest poverty rates are concentrated around the greater San Francisco, Portland, and Seattle metropolitan areas.

Minority populations—
The percentage of the population identifying as a racial or ethnic minority grew in both metropolitan and nonmetropolitan counties within the NWFP area between 1990 and 2012 (table 2). Most notably, the percentage of the population identifying as Hispanic/Latino doubled in nonmetropolitan counties, and nearly tripled in metropolitan counties in the NWFP area. The percentage of the white population declined more in metropolitan counties than in nonmetropolitan counties. Plan-area counties with high concentrations of minority residents are clustered near California’s Central Valley and east of the Cascade crest in Washington (fig. 2). This finding may be explained by evidence that half of farm laborers and supervisors in the United States are Hispanic (ERS 2012), and these are areas of high agricultural activity.

American Indian and Alaska Native populations are higher in the NWFP area than in the nation as a whole (table 3). They were more prevalent in nonmetropolitan counties than in metropolitan counties of the plan area throughout the period (table 2). In 2012, they accounted for a higher percentage of the population in nonmetropolitan counties in California than in other subregions (tables 4 to 6, fig. 3). In contrast, black/African American, and Asian and Pacific Islander populations formed a higher percentage of the population in metropolitan than in nonmetropolitan counties (table 2), and the highest percentage population for both was in metropolitan counties in Washington (tables 4 to 6, fig. 4 and 5). The percentage of the population identifying as Hispanic/Latino was high relative to other minority groups in the plan area as a whole, and was fairly similar between metropolitan and nonmetropolitan counties (table 2). The percentage of the population that was Hispanic/Latino was highest in California counties
Figure 1—Percentage of people living in poverty in NWFP area counties, 2012.

Credit: Clara Dair
Table 2—Minority populations in the NWFP area, 1990, 2000, and 2012

<table>
<thead>
<tr>
<th></th>
<th>1990</th>
<th>2000</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Plan area</td>
<td>Nonmetro</td>
<td>Metro</td>
</tr>
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<td>American Indian &amp; Alaska Native</td>
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<td>3</td>
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</tr>
<tr>
<td>Asian &amp; Pacific Islander</td>
<td>4</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Black/African American</td>
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<td>1</td>
<td>3</td>
</tr>
<tr>
<td>White</td>
<td>92</td>
<td>95</td>
<td>92</td>
</tr>
<tr>
<td>Hispanic/Latino&lt;sup&gt;a&lt;/sup&gt;</td>
<td>5</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>≥ two races&lt;sup&gt;b&lt;/sup&gt;</td>
<td>35</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

Source: U.S. Census Bureau, population estimates.

<sup>a</sup> Hispanic/Latino is an ethnicity and individuals may identify as Hispanic/Latino and any of the racial categories (e.g., Hispanic and white or Hispanic and black). Therefore, totals will not sum to 100 percent.

<sup>b</sup> This category was not available on the 1990 census form.
Figure 2—Percentage of minority populations (combined) in NWFP-area counties, 2012.

Credit: Clara Dair
Table 3—Minority populations in the United States, 1990, 2000, and 2012

<table>
<thead>
<tr>
<th></th>
<th>1990</th>
<th>2000</th>
<th>2012</th>
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<tbody>
<tr>
<td>U.S. Percent</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>American Indian</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>&amp; Alaska Native</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian &amp; Pacific</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<td>Islander</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Black/African</td>
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<td>13</td>
<td>13</td>
</tr>
<tr>
<td>American</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>White</td>
<td>84</td>
<td>81</td>
<td>78</td>
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<tr>
<td>Hispanic/Latino</td>
<td>9</td>
<td>13</td>
<td>17</td>
</tr>
<tr>
<td>≥ two races</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

Source: U.S. Census Bureau, population estimates.

*a* Hispanic/Latino is an ethnicity and individuals may identify as Hispanic/Latino and any of the racial categories (e.g., Hispanic and white or Hispanic and black). Therefore, totals will not sum to 100 percent.

*b* This category was not available on the 1990 census form.
Table 4—Minority populations in California’s NWFP area, 1990, 2000, and 2012

<table>
<thead>
<tr>
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<tr>
<td>&amp; Alaska Native</td>
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<td>4</td>
<td>1</td>
<td>5</td>
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<td>7</td>
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<td>Black/African American</td>
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<td>2</td>
<td>2</td>
</tr>
<tr>
<td>White</td>
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<td>93</td>
<td>90</td>
<td>89</td>
<td>87</td>
<td>85</td>
</tr>
<tr>
<td>Hispanic/Latino</td>
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<tr>
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<td>2</td>
<td>4</td>
<td>4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: U.S. Census Bureau, Population Estimates

* Hispanic/Latino is an ethnicity and individuals may identify as Hispanic/Latino and any of the racial categories (e.g., Hispanic and white or Hispanic and black). Therefore, totals will not sum to 100 percent.

* This category was not available on the 1990 census form.
### Table 5—Minority populations in Oregon’s NWFP area, 1990, 2000, and 2012

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<tbody>
<tr>
<td>Percent</td>
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<td>2</td>
<td>6</td>
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</tr>
<tr>
<td>Black/African American</td>
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<td>1</td>
<td>3</td>
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<td>3</td>
<td></td>
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<td>90</td>
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<td>86</td>
<td></td>
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<td>4</td>
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<td></td>
<td></td>
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</tbody>
</table>

Source: U.S. Census Bureau, population estimates.

<sup>a</sup> Hispanic/Latino is an ethnicity and individuals may identify as Hispanic/Latino and any of the racial categories (e.g., Hispanic and white or Hispanic and black). Therefore, totals will not sum to 100 percent.

<sup>b</sup> This category was not available on the 1990 census form.
Table 6—Minority populations in Washington’s NWFP area, 1990, 2000, and 2012

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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>American Indian &amp; Alaska Native</td>
<td>3</td>
<td>2</td>
<td>3</td>
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<td>5</td>
<td>2</td>
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<td>10</td>
</tr>
<tr>
<td>Black/African American</td>
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<td>5</td>
</tr>
<tr>
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</tbody>
</table>

Source: U.S. Census Bureau, population estimates.

<sup>a</sup> Hispanic/Latino is an ethnicity and individuals may identify as Hispanic/Latino and any of the racial categories (e.g., Hispanic/Latino and white or Hispanic/Latino and black). Therefore, totals will not sum to 100 percent.

<sup>b</sup> This category was not available on the 1990 census form.
Figure 3—Percentage of American Indian and Alaska Native populations in NWFP-area counties, 2012. Credit: Clara Dair
Figure 4—Percentage of Asian and Pacific Islander populations in NWFP-area counties, 2012.

Credit: Clara Dair
Figure 5—Percentage of black/African American populations in NWFP-area counties, 2012.

Credit: Clara Dair
The percentage of American Indian and Alaska Native, and black/African American populations did not increase between 1990 and 2012, while the percentage of Asian and Pacific Islander populations grew, and the percentage of Hispanic/Latino populations grew substantially (table 2). The NWFP area had a higher percentage of the total population that was American Indian or Asian and Pacific Islander compared with the nation as a whole in 2012, but a substantially lower percentage of the total population that was black/African American or Hispanic/Latino compared with the nation as a whole (tables 2 and 3).

Many poor counties in the plan area also have large shares of minority residents (fig. 7). However, poverty is not limited to those areas having high concentrations of minorities. For example, Josephine, Douglas, and Lane counties in Oregon and Trinity County in California have some of the highest rates of poverty in the plan area (all exceed 20 percent), yet their residents are predominantly white who are not of Hispanic/Latino origin. Similarly, low-poverty counties in the greater San Francisco, Portland, and Seattle metropolitan areas have relatively high concentrations of minorities. The coarseness of county-level data used for NWFP socioeconomic monitoring over the past decade, and the data presented here, prevent finer-scale comparisons (e.g., community-level) of minority status, poverty, and the relationship between them. Examining how trends in minority group populations and poverty rates may be linked is beyond the scope of this chapter. Nevertheless, at the national level, black/African American, American Indian, and Hispanic/Latino populations in the United States experience significantly higher rates of poverty than white and Asian populations (Macartney et al. 2013).

How Low-Income and Minority Populations Interact With Federal Forests in the Plan Area

The demographic composition of the NWFP area is changing: the percentage of the total population comprised of minority groups, especially Hispanic/Latino, is increasing, as are poverty rates. Research indicates that to some degree, different populations maintain different relations to federal forests, have different use preferences, and face different constraints that
Figure 6—Percentage of Hispanic/Latino populations in NWFP-area counties, 2012. Credit: Clara Dair
Figure 7—Minority populations by NWFP-area county poverty rates, 2012. Credit: Clara Dair
influence their use, though variation within groups exists. They may also have different views of
the environment and resource management, and different environmental behaviors and values
(see Chapter 9). To comply with the 1994 Executive Order 12898 and to encourage use of
federal forests by environmental justice populations, it is important to understand these
differences and ways of overcoming constraints. The scientific literature from the Pacific
Northwest is limited in this arena, and focuses mainly on participation by low-income and
minority populations in gathering nontimber forest products, recreation use, and the
environmental work force. We address these topics below, and also note an emergent issue: the
presence of temporary residents—including homeless populations—on national forests, many of
whom are likely low income. We also discuss some connections between wildfire management
and environmental justice.

**Nontimber forest-products gathering—**
The gathering of nontimber forest products (NTFPs) in the Pacific Northwest for subsistence,
commercial, recreational, and cultural purposes is important and widespread, both in urban and
rural areas (Alexander et al. 2001; Alexander and Fight 2003; Charnley et al. 2007; Jones and
forests and BLM land are important sites for commercial NTFP harvesting, generally (Charnley
et al. 2008). Most commercial NTFP harvesting in the Pacific Northwest occurs in temperate
forests from the Cascade Crest west to the Pacific coast owing to high concentrations of
economically important species, more people, and infrastructure that makes access easier
(Charnley et al. 2008). Chapter 8 provides an overview of NTFP gathering in the plan area,
including common species harvested.

Low income and minority populations are often active in harvesting NTFPs for
commercial purposes, although subsistence and cultural uses are also important. For instance, on
Washington’s Olympic Peninsula—a focal point for the Northwest’s floral greens industry—the
harvester workforce was originally EuroAmerican, but shifted to being dominated by Southeast
Asian refugees in the late 1970s and early 1980s, and then shifted again in the late 1980s to
become dominated by immigrants from Mexico and Central America (McLain and Lynch 2010).
Asians are also active participants in commercial wild mushroom harvesting, particularly
matsutake (Tsing 2015). A survey from the early 1990s found that roughly half of the
commercial mushroom harvesters in the Northwest were white, followed by 37 percent Asians
and Pacific Islanders, and 9 percent American Indians (Schlosser and Blatner 1995). Our focus
here is on commercial gathering. Commercial NTFP harvesting for some people may be their
primary source of income, but for most it fills gaps or provides supplemental income in between
other seasonal jobs such as agricultural or forestry services work, or jobs in cities.

Beargrass is one example. Commercial harvesting of beargrass for its flowers and leaves
gained importance in the Pacific Northwest in the 1980s (Higgins et al. 2004, Lynch & McLain
2003), and it has since become one of the leading commercial NTFP species harvested in the
region, and a multimillion dollar industry (Charnley and Hummel 2011). Most commercial
beargrass harvesters in the Pacific Northwest are Southeast Asian and Latino immigrants (Hansis
1998). Despite the physical hardships, these groups may be drawn to gathering beargrass and
other NTFPs for the floral greens industry because it is work that does not require English
language skills; jobs in the forest may be more appealing than low-paying jobs in cities; the job
can be performed by and with families; payment is in cash; and it may provide cultural
continuity to gathering traditions from immigrants’ home countries (Hansis 1998, Charnley and
Hummel 2011).

Wild mushrooms are another example; matsutake, the most economically valuable
mushroom in the world (Tsing 2015), is a case in point. Three distinct populations harvest
matsutakes in the Pacific Northwest. Japanese Americans have been harvesting the mushroom in
the region for a century and pick them as part of their cultural heritage; Mt. Hood is a favorite
spot (Tsing 2013a). These are largely recreational pickers who distribute mushrooms among
their relatives and across the Japanese American community, which reinforces social relations
and their heritage. Matsutake gained commercial value for the export trade to Japan in the 1980s.
At that time, a second group started picking it, white men, such as workers who had lost jobs in
the timber industry and other rural residents. These pickers have since been largely displaced by
a wave of Southeast Asian refugees to the United States who entered the woods in the thousands
beginning in the late 1980s: the Khmer from Cambodia, and the Lao, Hmong, and Mien from
Laos (Tsing 2013a, 2013b). Many of these pickers migrate to the Pacific Northwest seasonally

21
from cities in California to harvest mushrooms between other seasonal or temporary jobs. Despite associated dangers such as the presence of hunters or the possibility of getting lost, mushroom harvesting offers these populations, who often are poor, the ability to earn money as entrepreneurs who only need a permit, transport, and camping equipment; and also provides a sense of freedom (Tsing 2013b). Tsing (2015) describes this industry and the pickers who are part of it in detail.

Salal, another major commercial product in the floral greens industry, is a third example. Most salal harvesters are undocumented migrant workers from Mexico and elsewhere in Latin America and Southeast Asian immigrants (Ballard and Huntsinger 2006). Research about these harvesters finds that many have detailed local ecological knowledge related to stand conditions, canopy cover, soil conditions, and disturbances that affect salal.

Other researchers have also found that NTFP harvesters may possess substantial local ecological knowledge about the species they harvest, though this varies with experience (Charnley et al. 2007, Tsing 2013a). These findings indicate the capacity of nontimber forest-product harvesters to contribute to sustainable forest management. However, environmental justice populations who engage in NTFP harvesting, and NTFP harvesters more broadly—regardless of ethnic or racial identity—have been underrepresented in the process of developing management guidelines and regulations for NTFPs (Charnley et al. 2007, Jones and Lynch 2007, McLain and Jones 2001). Harvesters are highly dependent on public or large private lands for gathering, making them subject to access and use regulations imposed by other landowners. Moreover, other land uses (e.g., timber harvest, grazing) and management actions (e.g., fire suppression) have an impact on the productivity and diversity of NTFP species. Thus, NTFP harvesters have a strong interest and stake in federal forest management.

As commercial harvesting of NTFPs increases in response to market demand, conflict with gatherers primarily interested in recreational, subsistence, and cultural uses has emerged in some areas where there is competition over harvesting the same species (Charnley and Hummel 2011, Jones and Lynch 2007, Tsing 2015). For example, beargrass is highly valued for the floral greens industry, but it is also a culturally important plant to American Indian tribes in the NWFP area, especially for basketry (Charnley and Hummel 2011, Chapter 11). Leaf properties desirable
for commercial versus cultural purposes differ, as does forest stand management to promote the desired properties (detailed in Charnley and Hummel 2011). These competing interests and management requirements can cause conflict among users; some tribal members have expressed concern over the impact of commercial beargrass harvesting on the plant (Charnley and Hummel 2011). Conflict among participants within specific sectors of the industry—such as the floral greens industry—also exists, for example when some participants follow harvest regulations and others do not (McLain and Lynch 2010). Moreover, some stakeholders do not support any gathering activities that they perceive as threatening forest health, even if only for subsistence use (Salazar 2009). A general lack of inventory and monitoring data about NTFP species populations makes it difficult to assess the impacts of harvest activities on them and to develop effective management guidelines (Jones and Lynch 2007).

For their part, harvesters have expressed a number of concerns related to NTFP gathering and management. For example, Latino harvesters from the Olympic Peninsula who participated in a natural resource values mapping exercise that included national forest lands stated that their main concerns were:

(1) Encounters with immigration and law enforcement officers looking for undocumented workers.

(2) The presence of hunters and target shooters who they perceived as acting irresponsibly in places where they harvest, making them feel unsafe.

(3) Challenges associated with harvesters who do not comply with harvest regulations (Biedenweg et al. 2014).

Other concerns revolve around labor relations within the industry. On the Olympic Peninsula, commercial floral greens harvesting is often performed by people who gain access to harvest sites through buying sheds (where the greens are purchased from harvesters, sorted, quantified, and boxed up for shipping to wholesale distributors and exporters) that hold leases to public or private forests where harvesting occurs (Lynch and McLain 2003, McLain and Lynch 2010). Ongoing legal debate over whether harvesters should thus be considered shed employees
has implications for their rights as workers, working conditions, and whether they receive fair prices for their products.

**Recreation—**

Data on recreation visitation in the NWFP area are presented by national forest and BLM district in the NWFP socioeconomic monitoring reports (Charnley 2006, Grinspoon et al. 2016). However, these reports do not display recreation visitation data by income, racial, or ethnic group. In this section we present recreation participation data for NWFP-area national forests in aggregate by income, racial, and ethnic group, drawing on Forest Service National Visitor Use Monitoring program data. Comparable data are unavailable for BLM districts. We also synthesize what is known from the literature about participation by environmental justice populations in the region and nationwide in outdoor recreation. See Chapter 9 for a broader discussion of recreation in the NWFP area.

**Low-income populations—**

More than half of recreation visits to NWFP-area national forests are made by people whose household incomes are less than $75,000 per year (table 8). Households with incomes under $25,000 per year account for 11 to 12 percent of all recreation visits in the NWFP area, consistent with national patterns. The only income group with a lower participation rate is households having incomes of more than $150,000 per year (table 7).

Research from the Pacific Northwest about recreational use of public lands among low-income populations focuses on income levels and cost as determinants of participation. A general survey of Washington and Oregon households (Burns and Graefe 2006) found that income is positively correlated with interest and participation in outdoor recreation; as income increased, so did the average number of visits to a national forest during the preceding year. The lowest income group visited national forests significantly less than other income groups (Burns and Graefe 2006); this may be due, at least in part, to the overall cost of a trip (Ostergren et al. 2005).

Regardless of urban or rural residency, the cost of recreation on federal forests includes equipment and gear expenses, transportation costs to reach the recreation site, and in some places, recreation fees. Of these expenses, federal land managers only have influence over recreation fees. The Forest Service’s Recreation Fee Demonstration program, initiated in the late
Table 7—NWFP-area recreation visits by household income

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<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Under $25,000</td>
<td>11</td>
<td>12</td>
<td>11</td>
</tr>
<tr>
<td>$25,000 - $49,000</td>
<td>25</td>
<td>20</td>
<td>19</td>
</tr>
<tr>
<td>$50,000 - $74,999</td>
<td>24</td>
<td>23</td>
<td>23</td>
</tr>
<tr>
<td>$75,000 – $99,999</td>
<td>19</td>
<td>19</td>
<td>17</td>
</tr>
<tr>
<td>$100,000 - $149,999</td>
<td>14</td>
<td>16</td>
<td>15</td>
</tr>
<tr>
<td>$150,000 and up</td>
<td>7</td>
<td>9</td>
<td>14</td>
</tr>
</tbody>
</table>

Source: USDA Forest Service 2016.

1990s, established recreation fees at many dispersed areas on national forests that previously had no site fees. Brown et al. (2008) found that recreation fees to park and access a wilderness area on the Willamette National Forest had a greater negative effect on recreation visitation than did high-severity fire within the wilderness area. In their survey from Washington and Oregon, Burns and Graefe (2006) found that the lowest-income respondents in their study (earning less than $10,000 per year) were the most likely to indicate that they could not afford to pay recreation-use fees on national forests.

**Minority populations—**

Nearly all visits to NWFP-area national forests are by white visitors, consistent with national trends (table 8). People of Hispanic/Latino ethnicity account for 4 percent of NWFP-area national forest visits. Across all national forests, the vast majority of visits are also from white visitors, and about 5 percent of visits nationally are from those of Hispanic/Latino ethnicity.
### Table 8—NWFP-area recreation visits by minority group

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<tr>
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</thead>
<tbody>
<tr>
<td></td>
<td>Percent</td>
<td>Percent</td>
<td>Percent</td>
</tr>
<tr>
<td>American Indian/Alaska Native</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>3</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Black/African American</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>White</td>
<td>96</td>
<td>95</td>
<td>95</td>
</tr>
<tr>
<td>Hispanic/Latino</td>
<td>4</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Source: USDA Forest Service 2016.

The National Outdoor Recreation Survey (Cordell 2012) indicates that American Indians have activity participation patterns that are similar to whites, although American Indians have higher rates of participation in backcountry activities (like primitive camping, backpacking, visiting wilderness), and lower rates of nonmotorized winter recreation participation than whites (table 9). Asian and Pacific Islanders, like most other groups, have high rates of participation in activities at developed sites. A much higher percentage participate in viewing and photographing nature than in backcountry activities, hunting and fishing, and motorized and nonmotorized activities. Hispanic/Latino populations surveyed participate more in some activities than other minority groups, and less in others, but the relative popularity of different activities is generally similar between Hispanics and other groups. Black/African Americans have the lowest levels of participation in outdoor recreation relative to the other groups surveyed. However, more than half of respondents had visited developed sites and participated in viewing and photographing nature (table 9).
Table 9—Nationwide percentage of participation in outdoor recreation activity by racial and ethnic group

<table>
<thead>
<tr>
<th>Activity</th>
<th>American Indian</th>
<th>Asian/Pacific Islander</th>
<th>Black/African American</th>
<th>White</th>
<th>Hispanic/Latino</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visiting developed sites</td>
<td>84</td>
<td>82</td>
<td>69</td>
<td>80</td>
<td>75</td>
</tr>
<tr>
<td>Viewing and photographing nature</td>
<td>79</td>
<td>73</td>
<td>59</td>
<td>78</td>
<td>71</td>
</tr>
<tr>
<td>Backcountry activities</td>
<td>60</td>
<td>34</td>
<td>21</td>
<td>46</td>
<td>43</td>
</tr>
<tr>
<td>Motorized activities</td>
<td>42</td>
<td>24</td>
<td>15</td>
<td>41</td>
<td>35</td>
</tr>
<tr>
<td>Hunting and fishing</td>
<td>38</td>
<td>19</td>
<td>21</td>
<td>38</td>
<td>32</td>
</tr>
<tr>
<td>Nonmotorized winter activities</td>
<td>7</td>
<td>11</td>
<td>4</td>
<td>13</td>
<td>12</td>
</tr>
<tr>
<td>Nonmotorized water activities</td>
<td>21</td>
<td>21</td>
<td>7</td>
<td>24</td>
<td>19</td>
</tr>
</tbody>
</table>

Source: Adapted from White et al. (2014) and Cordell (2012)

Several variables influence participation in outdoor recreation by racial and ethnic minorities. One national study found that, relative to other groups, ethnic minorities, older people, women, and those living in rural places perceived higher constraints to participating in outdoor recreation (Ghimire et al. 2014). The primary perceived barriers were lack of time or money, concerns about personal safety, lack of transportation, and lack of multilingual signage. Facility condition, perceived crowding, and environmental quality were infrequently seen as barriers to outdoor recreation by these groups. Distance and cost to access recreation opportunities on federal lands are key factors influencing outdoor recreation use (Cho et al. 2014,
Stevens et al. (2014). Because most minority groups live disproportionately in urban areas that are farther from national forests, on average, distance and cost can be a barrier to their participation. For example, Bowker et al. (2006), in a national study, found evidence that a central factor in lower participation in outdoor recreation in primitive settings by minority groups is distance to those settings.

Chavez (2008) points out the importance of understanding the distinct preferences, expectations, and barriers to participation in outdoor recreation among Latino populations in the United States. As table 2 shows, the share of the Hispanic/Latino population is large in metropolitan counties of the NWFP area (see also Johnson and Stewart 2007), making consideration of Hispanic/Latino preferences and barriers to access especially important for the management of urban national forests. Some studies have found that Latinos tend to participate in outdoor recreation activities with extended family members in natural areas close to urban centers (Burns et al. 2008, Chavez 2008). Constraints to participation include distance to recreation areas, lack of transportation, and lack of information (in Spanish and English) about where to recreate and who to contact to learn about recreation opportunities (Burns et al. 2008).

Burns et al. (2008) conducted research using focus groups (small groups of select people who discuss questions pertaining to specific research topics) with people belonging to different minority groups in several Oregon cities. They found that Asian Americans in their study also liked to recreate with the extended family, and preferred developed facilities having amenities over camping. Safety concerns loomed large, however, especially the safety of children. African Americans in the study disliked recreating in remote locations, preferring parks close to urban areas having well-managed, clean facilities, aesthetically pleasing views, and amenities such as picnic tables, places to barbeque, and areas to play sports. Constraints to recreating in parks and on public lands included lack of information about these opportunities, especially information in multiple languages for Asian Americans (Fig. 8). Metcalf et al. (2013) surveyed racial and ethnic minorities (“nontraditional users”) visiting the Mt. Baker-Snoqualmie National Forest about their perceived constraints to outdoor recreation participation, and strategies they use to overcome these constraints. The chief factors constraining recreation on national forests among these users were preferences for other recreation activities, limited time and other obligations, and weather
conditions. Very few survey respondents reported that discrimination from other recreation users or Forest Service employees limited their outdoor recreation participation.

Figure 8. Accessibility and recreation information in multiple languages are important for encouraging recreation use of national forests by minority populations.

Credit: https://www.flickr.com/photos/forestservicenw/24830055050/in/album-72157659796299964/

Non-recreational camping and homelessness—
Accurate estimates of homeless individuals in the United States are difficult to achieve. One study estimated 3.5 million homeless people in the United States each year, and one third of these are children (The National Law Center on Homelessness and Poverty 2004). Some people who are chronically or episodically homeless choose to live on public lands. These represent vulnerable populations, both in terms of economic vulnerability and social vulnerability. Poverty is the primary risk factor for homelessness (Ji 2006). Other economic risk factors include high unemployment, lack of affordable housing, and a female-only head of household. Personal
setbacks, such as an accident, divorce, natural disasters, unpaid medical bills, sudden job loss, or loss of a loved one can exacerbate these problems and increase a person’s vulnerability (Elliot and Krivo 1991.) Social vulnerabilities include lack of access to adequate health care, unmet mental health needs, domestic violence, and divorce (Elliot and Krivo 1991, Wasserman and Clair 2010). Untreated mental health issues such as depression, addiction, post-traumatic stress disorder, and others, can negatively impact personal resiliency and are associated with homelessness.

Camping is a common recreational use of national forests and grasslands, and BLM lands in the NWFP area. But many people camp on public lands for nonrecreational purposes, with these lands serving as a temporary residence. Some nonrecreational or long-term campers are homeless (with no permanent address), while others temporarily reside on public lands as a lifestyle choice or in response to local economic conditions. Federal land management agencies do not have accurate counts of how many people live on federal lands. A recent survey of national forest law enforcement officers revealed that encounters with non-recreational campers occur in every region of the United States, and that nonrecreational campers were most common in national forests near urban areas (Cerveny and Bauer n.d.). For national forests and grasslands in California (Region 5) and Oregon and Washington (Region 6), 41 percent of law enforcement officers surveyed reported weekly encounters with non-recreational campers, and 85 percent reported encounters at least monthly. These encounter rates were higher than for the nation as a whole (39 percent weekly and 75 percent monthly). In addition, 47 percent of officers in Region 5, and 49 percent in Region 6 reported that encounters with long-term nonrecreational campers had increased in the years since they had begun their current assignment (mirroring the national average of 47 percent).

This survey identified 10 types of non-recreational campers who were using the national forest as a residence. The most common type in Regions 5 and 6 were “separatists,” who were alone and seeking solitude; “transient retirees” living in RVs and moving from place to place; and “families.” The survey asked officers what they perceived as most often contributing to people living in national forests on a long-term basis. The most commonly mentioned factors associated with homelessness and long-term camping were substance abuse, mental health
issues, lack of employment, and lack of available housing (Cerveny and Bauer n.d.). These results echo the risk factors mentioned above and suggest economic and social vulnerabilities. National forests and grasslands are serving as a temporary home for people who are suffering from health challenges, as well as victims of a changing economy. These results confirm a finding from the Deschutes National Forest (Asah et al. 2012) that one ecosystem service not commonly identified is the ability of national forests to serve as a temporary shelter for people who are marginalized by dominant economic, social, and health care systems. The magnitude of temporary residence as a phenomenon and management issue on federal forests, and the degree to which it represents a problem for federal forest managers in the NWFP area are unknown; research on these topics is only beginning to emerge.

The environmental workforce—

Forest workers in the Pacific Northwest perform a variety of labor-intensive tasks, such as planting and thinning trees, performing other forestry services, and fighting wildland fires. In 2014, there were an estimated 6,400 forest workers in Oregon alone during peak season (Wilmsen et al. 2015). Since the late 1970s, forest workers in the Pacific Northwest have been primarily Latino, marking a shift away from what was previously a white workforce toward one that is now predominately composed of low-income Latino immigrants and undocumented workers (Casanova and McDaniel 2005; Moseley et al. 2014; Sarathy 2006, 2012). In the mid-2000s, Mexican immigrants constituted the largest proportion of immigrant forest workers on federal lands in the Pacific Northwest (Sarathy 2008). The “Latinization” of labor-intensive forest work originated in a confluence of public policy (e.g., Small Business Administration set-asides for minority-owned businesses), and social networks (i.e., recent immigrants enter the sector because of relationships with earlier immigrants who work in forestry services) (Sarathy 2006). In contrast, minorities are underrepresented in the white-collar environmental workforce that offers higher job quality; one probable explanation is the low participation in university environmental programs (Weintraub et al. 2011).

With this change in workforce came a series of working condition concerns that disproportionately impacted immigrant forest workers, especially those without legal immigration status (Sarathy 2008). These forest workers are often Latino, and have been referred
to as “pineros” by the U.S. media (a Spanish word meaning “man of the pines” or “someone who works in the woods”) to describe the race of the worker and the type of work that they do (see Sarathy 2012, Knudson and Amezuca 2005). Job quality among forest contractors is typically low, measured by lack of employment stability, low wages, no benefits, and distance from home. While both white and Latino workers face low job quality, Latino workers are more likely to work far from home and seasonally, and less likely to receive health insurance through their employers (Moseley 2006).

Research from Oregon shows that Latinos also often face poorer working conditions than their non-Latino counterparts, such as disrespectful treatment, uncompensated injuries, little opportunity for advancement, and retribution if they complain (Sarathy 2012). High injury and fatality rates, low, unpaid, or stolen wages, lack of training, decline of union protection, and dangerous work environments also characterize this sector (Campe et al. 2011, Moseley et al. 2014, Sarathy 2012, Wilmsen et al. 2015). Latino immigrants often face a particular disadvantage owing to language barriers and limited access to legal recourse; fear of deportation makes it less likely that forest workers will report labor exploitation or dangerous working conditions (Campe et al. 2011; Sarathy 2008, 2012; Sarathy and Casanova 2008). Many of these concerns have been hidden from elected officials, the general public, and decisionmaking bodies, with scholarship, media, and public policy focusing disproportionately on the concerns of white, native-born loggers (Sarathy 2008).

Two deaths of forestry services workers in on-the-job accidents in southern Oregon in 2011 are a recent reminder of the dangers found in this workplace (Wilmsen et al. 2015). Poor working conditions for forest workers have persisted over the past two decades. The issues are particularly prominent in the Pacific Northwest; for example, forest workers in Oregon were found to have higher rates of occupational injury, illness, and fatality than the workforce at large (Hayford 2013, Wilmsen et al. 2015). Moreover, documented rates are thought to be low estimates due to historical underreporting of such problems by workers and employers alike (Azaroff et al. 2002, Ruser 2008, Sarathy 2012, Wilmsen et al. 2015). Increased media attention on working conditions for forest workers has led to more Congressional oversight and labor law enforcement, but this political attention has been inconsistent as other issues arise (Moseley et al.
2014). Some groups representing forest workers such as the Northwest Worker Justice Project and Alliance of Forest Workers and Harvesters advocate for better federal labor and contracting law enforcement to improve working conditions. But as Moseley et al. (2014) explain, the persistence of poor working conditions despite decades of political attention and advocacy suggests that changing labor laws alone will be insufficient for improving job quality. The vulnerability of immigrant workers, public lands policy, and federal contracting regulations also potentially impact working conditions, and deserve attention (Moseley and Reyes 2008).

The debate regarding how to address poor working conditions, punctuated by political controversy and advocacy, is as of yet unresolved. In recent research in southern Oregon (a region having a high proportion of forest workers), forest workers (mainly Spanish-speaking Latino immigrants) still reported workplace practices that are inconsistent with labor laws (Wilmsen et al. 2015). Workers’ vulnerable economic status, lack of legal status, and fear of retaliation still remain some of the largest drivers of marginalization for the increasing immigrant labor force in the Pacific Northwest (Campe et al. 2011, Moseley et al. 2014, Sarathy 2008, Wilmsen et al. 2015). This situation can cause the most marginal and vulnerable groups to shoulder a disproportionate level of risk, and find ways to navigate the system invisibly (Moseley et al. 2014, Wilmsen et al. 2015).

Although there have been some job quality improvements for Latinos in recent years, these have mainly occurred in the arena of fire suppression work, including compensation for travel and training (Moseley et al. 2014). Fire suppression work is historically more profitable and less price competitive than federal forestry work, in which contractors are pressured to cut costs to get contracts (Moseley et al. 2014). Additionally, firefighter safety and preparedness have become a high priority for federal land management agencies, and a culture of firefighter safety has been integrated into the incident command structure in which contractors operate (Moseley et al. 2014). Contract firefighters also work closely with federal, state, and local government employees on fire incidents, making it difficult to hide workplace safety issues. In contrast, working conditions for other forest workers have received inconsistent attention; labor and safety law enforcement is dispersed across a variety of state and federal labor and land management agencies; and workplace safety issues are less visible (Moseley et al. 2014).
Most workplace health and safety strategies have traditionally focused on improving the physical safety of the workplace, which is particularly relevant for improving the safety of working in the woods (e.g., hardhats, correct equipment and gear). However, the broader well-being of workers is also important. Research suggests that once basic physical safety conditions for forest workers are addressed, there should be more explicit consideration of employee well-being in order to improve retention, morale, and staff stability (Mylek and Schirmer 2015).

Wildfire management and environmental justice—

Under Executive Order 12898, the Forest Service and BLM must make environmental justice a part of their mission by identifying and addressing any disproportionately high and adverse human health and environmental effects of their programs, policies, and actions on minority and low-income populations. But existing environmental justice-related forestry research focuses mainly on urban issues, for example, the distribution of urban tree cover in relation to the social and economic characteristics of people living in different city neighborhoods (e.g., Schwarz et al. 2015). A tendency to think about environmental justice as an urban issue challenges federal forest managers to consider how their actions may impact environmental justice populations in rural settings. Wildfire management is a case in point. Relevant research addressing wildfire and low-income and minority populations in the United States, some of it from the Pacific Northwest, finds the following:

(1) The rural poor living in fire-prone areas in the wildland-urban-interface have fewer resources for creating defensible space around their homes, investing in fire-resistant building materials, purchasing insurance, and adopting other wildfire mitigation strategies than middle- and high-income rural residents (Collins 2005, 2008).

(2) Communities having high wildfire risk and high social vulnerability (e.g., below poverty line, nonwhite, low education) are less engaged in wildfire mitigation programs than communities having high wildfire risk and low social vulnerability (Gaither et al. 2011, Ojerio et al. 2011, Poudyal et al. 2012).

(3) Poor communities may have fewer fire suppression resources than more affluent communities (Lynn and Gerlitz 2006, Mercer and Prestemon 2005).
(4) Fuel reduction treatments may be concentrated in places where property values are high, although they may be ineffective at reducing wildfire risk because, aesthetically, homeowners favor dense forest stands (Roberts 2013).

(5) Poor households usually outnumber wealthier households near federal lands, but tend to be located in areas having low housing density that do not meet the threshold for wildland-urban-interface delineation (Lynn and Gerlitz 2006, Radeloff et al. 2005). Thus, they receive fewer benefits from fire hazard mitigation activities and suffer longer wildfire response times.

(6) Research from the southern United States (Gaither Johnson et al. 2015) found that smoke plumes from wildfires and prescribed fires did not disproportionately adversely affect socially vulnerable populations (defined using an index of indicators including poverty, minority status, renters, and age and education-related variables). These populations experienced no more smoke exposure than populations who are not socially vulnerable. Comparable research about the impacts of smoke on environmental justice populations from the Pacific Northwest is lacking.

(7) Finally, decades of disaster research by social scientists reveals that the effects of natural hazards, such as wildfire, are not experienced equally within a community. It is the most socially vulnerable people who have the most difficulty coping and recovering from the hazard event and adapting afterward (e.g., Oliver-Smith 1996).

Research about the location of hazardous fuels reduction treatments on national forests in relation to the distribution of nearby environmental justice populations in the Pacific Northwest is currently underway (Adams and Charnley), but results are not yet available.

Research Needs, Uncertainties, Information Gaps, and Limitations

This chapter has provided information about general trends in environmental justice populations in the NWFP area between 1990 and 2012 using readily available, county-level data. More
recent, detailed, or geographically specific trends in low-income and minority populations could be identified using U.S. Census data as part of the socioeconomic assessment to support revisions of the NWFP. Much of the research reported here comes from Washington and Oregon; the literature about how environmental justice populations relate to federal forests is more limited for the California portion of the NWFP area, except for American Indian tribes (see Chapter 11). Literature for BLM lands is also scarce. There is a reasonably substantive literature about how minority populations relate to national forests around work (e.g., forestry services work, commercial NTFP harvesting). However, most of the literature on NTFP harvesting is from the 1990s or early 2000s. Little information is available about recreational, subsistence, and cultural uses of NTFPs by environmental justice populations apart from American Indians. More broadly, apart from recreation, little information is available about noneconomic relations between environmental justice populations and federal forests. Although research is beginning to fill the gap in knowledge about the environmental justice implications of Forest Service hazardous fuels reduction activities, there is a lack of information about how fire – managed, prescribed, or wild – and associated smoke affect low income and minority populations in the Plan area.

These gaps could potentially be filled through additional research, including using methods such as focus groups with populations of interest that include participatory values mapping exercises (e.g., Biedenweg et al. 2014). It is also uncertain whether the research findings presented here are relevant locally, and reflect the nature of interactions between environmental justice populations and federal forests on specific national forest and BLM units. Research pursued at finer scales would help address this uncertainty. Changes in environmental justice populations throughout the NWFP area call for reassessing earlier findings, and ongoing research into how these populations relate to federal forests and are affected by their management.

Conclusions and Management Considerations
Environmental justice populations in the NWFP area are growing. Monitoring data and a handful of studies from different parts of the plan area provide insight into the changing demographics of the region, and how some members of low-income and minority populations interact with federal forests. When thinking about these relationships, it is important to avoid overgeneralizing and creating stereotypes about the values, uses, preferences, and behaviors of specific groups. Rather, the research synthesized here can be used to raise awareness and flag potentially relevant topics for agency staff.

NTFP Harvesting
Despite the long history and continued prevalence of NTFP gathering in the Pacific Northwest, federal forest managers have been slow to meaningfully consider NTFPs in management (Jones and Lynch 2007). Ballard and Huntsinger (2006), Biedenweg et al. (2014), Charnley et al. (2007), Jones and Lynch (2007), McLain (2008), McLain and Jones (2001), and McLain and Lynch (2010) offer numerous insights for how to address issues associated with NTFP gathering and management on public forest lands in the Pacific Northwest, and for how to better engage harvesters in management and decisionmaking associated with NTFPs in the region. Many of these are relevant to all harvesters, regardless of race, ethnicity, or class (see chapter 8). Those pertaining specifically to issues raised by environmental justice populations include addressing harvesters’ safety concerns associated with NTFP gathering (for example, encouraging harvesters to wear blaze orange vests), and examining how policies, including tenure arrangements for NTFP harvesting on federal forests, affect the working conditions and earnings of harvesters. Consideration of how federal forest management activities affect the abundance, distribution, diversity, and quality of economically and culturally important NTFP species also warrants more attention in the planning process.

Recreation
Management considerations discussed here focus on how to foster more recreation participation by environmental justice populations on federal forests in the NWFP area. Several strategies to
help alleviate cost barriers to recreation participation on national forests by low-income visitors
have been suggested: (1) offer people who can’t afford to pay visitor-use fees the opportunity to
do volunteer work on a national forest in exchange for a fee waiver; (2) set aside areas where
visitor-use fees are not required; (3) establish days or times when site fees are waived; and (4)
provide financial assistance to low-income visitors, for example by giving them free annual
recreation passes (Burns and Graefe 2006, Scott 2013). Some of these practices are already in
place in the Pacific Northwest (Burns and Graefe 2006).

The growing ethnic and racial diversity of the American population, reflected in NWFP
area statistics reported here, has important implications for recreational uses of federal forests
because recreation patterns are shaped by cultural norms and preferences (Sheffield 2012).
Minority and low-income populations are currently under-represented among national forest
visitors nationwide (Roberts et al. 2009). To ensure that all populations can enjoy federal forests,
and to broaden the base of support for public lands, finding ways to increase recreation use by
environmental justice populations is important. Roberts et al. (2009) provide a resource guide to
help land management agencies better serve culturally-diverse populations in California; the
suggestions are relevant to the NWFP area as a whole. Constraints that are important to address
include a lack of information about available recreation opportunities; improving transportation
options to urban national forests; and a shortage of recreation opportunities that match these
users’ preferences (Metcalf et al. 2013). For example, Spanish-language materials, developed
recreation sites that accommodate large groups, and outreach to Hispanic/Latino communities
related to volunteer and employment opportunities could strengthen the relationship between
federal forests and Hispanic/Latino populations (Chavez 2008). Burns et al. (2008) make a
number of suggestions for improving outreach to Latinos, Asian Americans, and African
Americans to increase their recreation participation on national forests. Key among these are
increasing information about available opportunities in multiple languages, working with media
outlets that target these populations in doing so. Improving facilities so that they accommodate
user preferences is also important. For groups concerned about safety, safety concerns could be
addressed by increasing the visibility of law enforcement officers and access to agency and
emergency personnel (Ghimire et al. 2014).
Non-recreational Camping and Homelessness

U.S. Forest Service law enforcement officers surveyed by Cerveny and Bauer (n.d.) reported that the frequency of homelessness and long-term camping on national forests is increasing, and that the greater share of responsibility for addressing the issue seems to be on patrol officers. The officers typically respond on a case-by-case basis by issuing citations for “stay violations,” “illegal residence” violations, or other violations (e.g., sanitation, litter, or drug possession). However, the same individuals repeatedly return to the forest, often to the same sites, or they may shift between national forest land and other nearby public lands. Recognizing the resource impacts and social effects associated with long-term camping by agency management would spotlight the concerns raised by law enforcement. Treating homelessness as a chronic and systemic phenomenon in which the agency plays a critical role potentially would lead to greater acceptance of responsibility and potential action. Law enforcement officers in the study described creative solutions that involved partnerships with public health agencies, social services, municipal police, and citizen groups to identify safe housing options in local communities.

The Environmental Workforce

As the demographic composition of the NWFP area continues to change, and the forestry workforce is increasingly represented by Latinos and other environmental justice populations, it is important that federal forest managers address the issue of working conditions for forest workers. Doing so means considering contracting markets and contract oversight, which include bidding on, awarding, and monitoring compliance for projects. Suggestions for improving working conditions for forest workers include:

(1) Examining how the beneficial features of fire-suppression contracting could be incorporated into other, non-fire contracts (e.g., specific contract requirements and more oversight).

(2) Strengthening agency policies to make labor-law-compliance inspection more consistent, combining these inspections with technical specification inspections, and increasing agency inspector training (Wilmsen et al. 2015).
(3) Changing the competitive low-cost bid process to reduce contractor incentives for cutting costs, and explicitly incorporating the costs of safety trainings and daily safety briefings into contract awards (Moseley et al. 2014, Wilmsen et al. 2015).

Other considerations that emerge from the literature pertain to increasing the ability of forest communities to capture contracting opportunities on nearby federal forests to contribute to local economies. For example, agencies might structure contracts in ways that allow local communities to benefit by facilitating local training opportunities, or changing contracting guidelines. They might also consider using local restoration contracting service providers for fire suppression to support local forest contracting capacity, and the ability of local contractors to capture contracts during potential fires. Agencies could also identify how to address potential obstacles, such as wildfire contracting policies, that inhibit local contractors’ participation.

Having a trained local workforce with the capacity to respond to wildfire rapidly and perform forest restoration work could help increase community preparedness for wildfire.

**Wildfire Management**

Whether reducing hazardous fuels or engaging in other forest management activities, managers are required to consider how their actions may adversely affect environmental justice populations disproportionately. It is also worth considering whether certain populations disproportionately benefit from forest management actions such as wildfire risk mitigation, so that these benefits may be equitably distributed. Research indicates that low-income and minority populations may be more vulnerable to wildfire than other populations. This finding suggests that not only is it important for fuel reduction treatments be proportionately distributed to places where low-income and minority populations border fire-prone federal forests; but treatments might favor these locales because social vulnerability to wildfire from federal forests is higher there. Furthermore, given research that indicates low-income and minority populations may have less access to assistance programs, directing outreach, and financial and technical assistance to these populations may help them increase fire-safe practices around their homes for greater protection from high-severity fire.
References


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**Appendix: Counties in the Northwest Forest Plan area (2012 designation)**

| CA, Colusa County (nonmetropolitan) | OR, Polk County (metropolitan) |
| CA, Del Norte County (nonmetropolitan) | OR, Sherman County (nonmetropolitan) |
| CA, Glenn County (nonmetropolitan) | OR, Tillamook County (nonmetropolitan) |
| CA, Humboldt County (nonmetropolitan) | OR, Wasco County (nonmetropolitan) |
| CA, Lake County (nonmetropolitan) | OR, Washington County (metropolitan) |
| CA, Lassen County (nonmetropolitan) | OR, Yamhill County (metropolitan) |
| CA, Marin County (metropolitan) | WA, Adams County (nonmetropolitan) |
| CA, Mendocino County (nonmetropolitan) | WA, Benton County (metropolitan) |
| CA, Modoc County (nonmetropolitan) | WA, Chelan County (metropolitan) |
| CA, Napa County (metropolitan) | WA, Clallam County (nonmetropolitan) |
| CA, Shasta County (metropolitan) | WA, Clark County (metropolitan) |
| CA, Siskiyou County (nonmetropolitan) | WA, Cowlitz County (metropolitan) |
| CA, Sonoma County (metropolitan) | WA, Douglas County (metropolitan) |
| CA, Sutter County (metropolitan) | WA, Franklin County (metropolitan) |
| CA, Tehama County (nonmetropolitan) | WA, Grant County (nonmetropolitan) |
| CA, Trinity County (nonmetropolitan) | WA, Grays Harbor County (nonmetropolitan) |
| CA, Yolo County (metropolitan) | WA, Island County (nonmetropolitan) |
| OR, Benton County (metropolitan) | WA, Jefferson County (nonmetropolitan) |
| OR, Clackamas County (metropolitan) | WA, King County (metropolitan) |
| OR, Clatsop County (nonmetropolitan) | WA, Kitsap County (metropolitan) |
| OR, Columbia County (metropolitan) | WA, Kittitas County (nonmetropolitan) |
| OR, Coos County (nonmetropolitan) | WA, Klickitat County (nonmetropolitan) |
| OR, Crook County (nonmetropolitan) | WA, Lewis County (nonmetropolitan) |
| OR, Curry County (nonmetropolitan) | WA, Mason County (nonmetropolitan) |
| OR, Deschutes County (metropolitan) | WA, Okanogan County (nonmetropolitan) |
| OR, Douglas County (nonmetropolitan) | WA, Pacific County (nonmetropolitan) |
| OR, Hood River County (nonmetropolitan) | WA, Pierce County (metropolitan) |
| OR, Jackson County (metropolitan) | WA, San Juan County (nonmetropolitan) |
| OR, Jefferson County (nonmetropolitan) | WA, Skagit County (metropolitan) |
| OR, Josephine County (nonmetropolitan) | WA, Skamania County (metropolitan) |
OR, Klamath County (nonmetropolitan)  WA, Snohomish County (metropolitan)
OR, Lane County (metropolitan)  WA, Thurston County (metropolitan)
OR, Lincoln County (nonmetropolitan)  WA, Wahkiakum County (nonmetropolitan)
OR, Linn County (nonmetropolitan)  WA, Walla Walla County (nonmetropolitan)
OR, Marion County (metropolitan)  WA, Whatcom County (metropolitan)
OR, Multnomah County (metropolitan)  WA, Yakima County (metropolitan)