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

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Introduction

This chapter synthesizes literature about the relation between federal forest management and low-income and minority populations, as defined by Executive Order (E.O.) 12898 (February 16, 1994)—“Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations” (Clinton 1994). The 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 populations” to refer to populations protected by E.O. 12898 in matters of environmental justice (defined below). The U.S. Department of Agriculture (USDA) Forest Service and U.S. Department of the Interior Bureau of Land Management (BLM) primarily address environmental justice in their land and resource management planning processes. For example, the Forest Service 2012 planning rule requires responsible officials to “encourage participation by youth, low-income, and minority populations” (p. 21167) throughout all stages of the planning process, and, under the National Environmental Policy Act (NEPA) process, preparation of an environmental impact statement that includes impacts on low-income and minority populations.

Northwest Forest Plan (NWFP, or Plan) socioeconomic monitoring has not explicitly monitored low-income or minority populations other than American Indian tribes. Moreover, since 2006, NWFP socioeconomic monitoring has focused on status and trends in socioeconomic well-being in the Plan area, and has not examined how these trends might be linked to the NWFP. Thus, we are unable to specify how the NWFP has affected low-income and minority populations. 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. These serve as the guiding questions for this chapter. Chapter 8 discusses the economic impacts of the plan in Plan-area communities. American Indian tribes are the subject of chapter 11; this chapter focuses on other minority populations.

In the absence of monitoring data, we rely mainly on existing scholarly research studies. 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). Nevertheless, some studies address how environmental justice populations use and value federal forests. Although none has directly investigated how the NWFP has affected minority populations, some include information about how federal forest management may affect them more broadly. A tendency to think about environmental justice as an urban issue challenges federal forest managers to consider how their actions may affect environmental justice populations in rural settings.
Defining Environmental Justice

Most of the following section on defining environmental justice—including the references to other documents—is excerpted from Grinspoon et al. (2014: 3–8), a guidance document for Forest Service staff to help them comply with E.O. 12898 during the NEPA process. NEPA requires the agency to consider the potential social and economic effects of its proposed actions. There is no one universally agreed-upon definition of environmental justice in the scholarly literature; the Forest Service defines environmental justice in accordance with USDA 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 status under E.O. 12898. An environmental justice population may be low income and/or minority.

Defining Minority Population

During the 1980s and 1990s, the U.S. Census Bureau (USDC CB 1999) enumerated population in four racial categories (White, Black, American Indian or Alaska Native, Asian or Pacific Islander), and two categories of ethnicity (Hispanic and non-Hispanic). Adopting the Census Bureau’s categories, USDA regulations define a 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). Following guidelines for federal data regarding race and ethnic categories issued by the Office of Management and Budget in 1997, the Census Bureau revised its racial categories for the 2000 and 2010 censuses (White; Black or African American; American Indian and Alaska Native; Asian; Native Hawaiian and other Pacific Islander; some other race; and two or more races). It also revised its ethnicity categories for the 2000 and 2010 censuses from Hispanic and non-Hispanic, to Hispanic or Latino and Not Hispanic or Latino. USDA regulations have not been updated to reflect these more recent Census Bureau categories; however, environmental justice guidance documents continue to treat all populations other than non-Hispanic or non-Latino Whites as minorities. Note that there are some White people who are non-Hispanic or non-Latino who may be considered to be minorities based on other national origins (e.g., people of Middle Eastern origin) who are excluded by this USDA definition. For purposes of this chapter, we adopt the terminology for minority populations used by the Census Bureau at the time of the study or data cited; or by the terminology used by the study we cite if it is different from the Census Bureau categories (to accurately represent research findings).

In its direction on environmental justice in 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 the 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 by the annual statistical poverty thresholds from the Census Bureau’s annual current population reports (Series P-60) on income.
Synthesis of Science to Inform Land Management Within the Northwest Forest Plan Area

and poverty. The official poverty measure was developed in the 1960s. The Census Bureau (USDC CB 2013) defines low-income populations by the percentage of people living below poverty in a given area, which is consistent with CEQ’s environmental justice guidance. Low-income status is determined by comparing annual income to a set of dollar values called poverty thresholds that differ 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.

For tables showing Department of Health and Human Services guidelines for poverty, see the Federal Register notice (USDHHS 2013). For more information, see also “How poverty is calculated in the ACS [American Community Survey]” (USDC CB 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. The Census Bureau updates the poverty thresholds annually using the Consumer Price Index.

Key Findings

Guiding Questions

Regional federal land managers wished to know whether environmental justice populations in the NWFP area have been growing, and to understand the implications of trends in the size of these populations for federal forest management. Thus, 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?

We address the implications of these trends and interactions for forest management in the “Conclusions and Management Considerations” section of this chapter.

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

The size and percentage of environmental justice populations in the Plan area have increased since the NWFP was adopted, consistently 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), and the number of people belonging to minority groups specified by E.O. 12898. 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 (Grinstein et al. 2016). The census data provide the best available information on low-income and minority populations across the Plan area. Although some low-income and minority populations may be missed by census takers, such as transient workers or undocumented immigrants, no other datasets are currently available that capture these populations for the Plan area as a whole in a statistically significant manner.

There are 72 counties—32 metropolitan, and 40 nonmetropolitan—in the Plan area (appendix). The population size data presented below are for the Plan area as a whole, and for metropolitan versus nonmetropolitan counties (in aggregate). There is no evidence to suggest that trends in the size and percentage of environmental justice populations since the NWFP was adopted are in any way linked to the Plan.

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 10-1). Nevertheless, the poverty rate was lower overall than the national poverty rate during the three periods reported here. Although 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 Plan area between 2000 and 2012.

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 (which includes both metropolitan and nonmetropolitan...
counties) (table 10-1). Overall, poverty rates were highest in Oregon and lowest in Washington in both 1990 and 2012. However, in California, nonmetropolitan counties 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 10-1). Figure 10-1 shows poverty rates in the NWFP area by county in 2012. The highest poverty rates were 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 Plan area between 1990 and 2012 (table 10-2). Most notably, the percentage of the population identifying as Hispanic or Latino doubled in nonmetropolitan counties, and nearly tripled in metropolitan counties in the Plan 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 were clustered near California’s Central Valley and east of the Cascade Range crest in Washington (fig. 10-2). This finding may be explained by evidence that about half of farm laborers and their supervisors in the United States are Hispanic or Latino (USDA ERS 2012), and these are areas of high agricultural activity.

American Indian and Alaska Native populations were higher in the NWFP area than in the nation as a whole (table 10-3). They were more prevalent in nonmetropolitan counties than in metropolitan counties of the Plan area throughout the period (table 10-2). In 2012, they accounted for a higher percentage of the population in nonmetropolitan counties in California (in aggregate) than in other subregions (tables 10-4 to 10-6; fig. 10-3). In Oregon and Washington, counties with high percentages of American Indian and Alaska Native populations reflect the presence of tribal reservation lands (e.g., the Warm Springs Indian Reservation in Oregon and the Colville Indian Reservation in Washington). In contrast, Black or African American, and Asian, Native Hawaiian, and other Pacific Islander populations formed a higher percentage of the population in metropolitan than in nonmetropolitan counties (table 10-2), and the highest percentage population for both was in metropolitan counties in Washington (tables 10-4 to 10-6). At the individual county level, Black or African American, and Asian, Native Hawaiian, and other Pacific Islander populations are concentrated around Seattle, Portland, and

Table 10-1—County-level poverty rates in the Northwest Forest Plan (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>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>13.5</td>
<td>11.3</td>
<td>15.0</td>
</tr>
<tr>
<td>All NWFP-area counties</td>
<td>11.2</td>
<td>10.0</td>
<td>14.7</td>
</tr>
<tr>
<td>All metropolitan counties</td>
<td>10.3</td>
<td>9.1</td>
<td>13.9</td>
</tr>
<tr>
<td>All nonmetropolitan counties</td>
<td>15.3</td>
<td>14.2</td>
<td>19.0</td>
</tr>
<tr>
<td>All California NWFP-area counties</td>
<td>11.4</td>
<td>11.1</td>
<td>15.4</td>
</tr>
<tr>
<td>All California metropolitan counties</td>
<td>9.6</td>
<td>9.0</td>
<td>13.1</td>
</tr>
<tr>
<td>All California nonmetropolitan counties</td>
<td>15.6</td>
<td>16.4</td>
<td>21.7</td>
</tr>
<tr>
<td>All Oregon NWFP-area counties</td>
<td>12.2</td>
<td>10.4</td>
<td>16.9</td>
</tr>
<tr>
<td>All Oregon metropolitan counties</td>
<td>11.4</td>
<td>9.7</td>
<td>16.4</td>
</tr>
<tr>
<td>All Oregon nonmetropolitan counties</td>
<td>15.2</td>
<td>13.2</td>
<td>19.2</td>
</tr>
<tr>
<td>All Washington NWFP-area counties</td>
<td>10.5</td>
<td>9.4</td>
<td>13.2</td>
</tr>
<tr>
<td>All Washington metropolitan counties</td>
<td>9.9</td>
<td>8.8</td>
<td>12.8</td>
</tr>
<tr>
<td>All Washington nonmetropolitan 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.
Figure 10-1—Percentage of people living in poverty in Northwest Forest Plan-area counties, 2012.
Table 10-2—Minority populations in the Northwest Forest Plan area, 1990, 2000, and 2012

<table>
<thead>
<tr>
<th></th>
<th>Plan area</th>
<th>Nonmetropolitan</th>
<th>Metropolitan</th>
<th>Percent</th>
<th>Plan area</th>
<th>Nonmetropolitan</th>
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<th>Percent</th>
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<th>Nonmetropolitan</th>
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</thead>
<tbody>
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<td>American Indian and Alaska Native</td>
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<td>3</td>
<td>1</td>
<td></td>
<td>2</td>
<td>3</td>
<td>1</td>
<td></td>
<td>2</td>
<td>3</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Asian, Native Hawaiian, other Pacific Islander(^a)</td>
<td>4</td>
<td>1</td>
<td>4</td>
<td></td>
<td>5</td>
<td>1</td>
<td>6</td>
<td></td>
<td>7</td>
<td>2</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Black or African American</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td></td>
<td>3</td>
<td>1</td>
<td>3</td>
<td></td>
<td>3</td>
<td>1</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Hispanic or Latino(^b)</td>
<td>5</td>
<td>6</td>
<td>5</td>
<td></td>
<td>9</td>
<td>7</td>
<td>8</td>
<td></td>
<td>14</td>
<td>12</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>≥ two races(^c)</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td></td>
<td>4</td>
<td>4</td>
<td>4</td>
<td></td>
<td>4</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

Source: U.S. Census Bureau population estimates.
\(^a\) The 1990 Census grouped Asians and Pacific Islanders into one category. In 2000, this category was divided into two: Asian, and Native Hawaiian and other Pacific Islander. For consistency across years, we have grouped these two back into one category.
\(^b\) Hispanic or Latino is a category of ethnicity. Individuals may identify as Hispanic or Latino and any of the racial categories (e.g., Hispanic or Latino and White, Hispanic or Latino and Black). Therefore, table totals will not sum to 100 percent.
\(^c\) This category was not available on the 1990 census form.

Table 10-3—Minority populations in the United States, 1990, 2000, and 2012

<table>
<thead>
<tr>
<th></th>
<th>1990</th>
<th>2000</th>
<th>2012</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Indian and Alaska Native</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Asian, Native Hawaiian, other Pacific Islander(^a)</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Black or African American</td>
<td>12</td>
<td>13</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>84</td>
<td>81</td>
<td>78</td>
<td></td>
</tr>
<tr>
<td>Hispanic or Latino(^b)</td>
<td>9</td>
<td>13</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>≥ two races(^c)</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: U.S. Census Bureau population estimates.
\(^a\) The 1990 Census grouped Asians and Pacific Islanders into one category. In 2000, this category was divided into two: Asian, and Native Hawaiian and other Pacific Islander. For consistency across years, we have grouped these two back into one category.
\(^b\) Hispanic or Latino is a category of ethnicity. Individuals may identify as Hispanic or Latino and any of the racial categories (e.g., Hispanic or Latino and White, Hispanic or Latino and Black). Therefore, table totals will not sum to 100 percent.
\(^c\) This category was not available on the 1990 census form.
Figure 10-2—Minority percentage of populations (combined) in Northwest Forest Plan-area counties, 2012.
Table 10-4—Minority populations in California’s Northwest Forest Plan area, 1990, 2000, and 2012

<table>
<thead>
<tr>
<th>California</th>
<th>1990</th>
<th>2000</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Non-</td>
<td>Non-</td>
<td>Non-</td>
</tr>
<tr>
<td></td>
<td>metropolitan</td>
<td>metropolitan</td>
<td>metropolitan</td>
</tr>
<tr>
<td>American Indian and Alaska Native</td>
<td>4</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Asian, Native Hawaiian, other Pacific Islander</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Black or African American</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>White</td>
<td>94</td>
<td>93</td>
<td>87</td>
</tr>
<tr>
<td>Hispanic or Latino</td>
<td>9</td>
<td>11</td>
<td>19</td>
</tr>
<tr>
<td>≥ 2 races</td>
<td>3</td>
<td>2</td>
<td>4</td>
</tr>
</tbody>
</table>

Source: U.S. Census Bureau population estimates.

a The 1990 Census grouped Asians and Pacific Islanders into one category. In 2000, this category was divided into two: Asian, and Native Hawaiian and other Pacific Islander. For consistency across years, we have grouped these two back into one category.

b Hispanic or Latino is a category of ethnicity. Individuals may identify as Hispanic or Latino and any of the racial categories (e.g., Hispanic or Latino and White, Hispanic or Latino and Black). Therefore, table totals will not sum to 100 percent.

c This category was not available on the 1990 census form.

Table 10-5—Minority populations in Oregon’s Northwest Forest Plan area, 1990, 2000, and 2012

| Oregon                                         | 1990     | 2000     | 2012     |
|                                                | Non-     | Non-     | Non-     |
|                                                | metropolitan | metropolitan | metropolitan |
| American Indian and Alaska Native              | 2        | 2        | 2        |
| Asian, Native Hawaiian, other Pacific Islander | 1        | 1        | 2        |
| Black or African American                      | <0.5     | 1        | 1        |
| White                                           | 97       | 94       | 94       |
| Hispanic or Latino                             | 3        | 4        | 6        |
| ≥ 2 races                                       | 2        | 2        | 3        |

Source: U.S. Census Bureau population estimates.

a The 1990 Census grouped Asians and Pacific Islanders into one category. In 2000, this category was divided into two: Asian, and Native Hawaiian and other Pacific Islander. For consistency across years, we have grouped these two back into one category.

b Hispanic or Latino is a category of ethnicity. Individuals may identify as Hispanic or Latino and any of the racial categories (e.g., Hispanic or Latino and White, Hispanic or Latino and Black). Therefore, table totals will not sum to 100 percent.

c This category was not available on the 1990 census form.
the San Francisco Bay area (figs. 10-4 and 10-5). The high percentage of the population that was Black or African American in northeastern California is attributable to the demographic composition of the prison population that resides in Lassen County. The percentage of the population identifying as Hispanic or Latino was high relative to other minority groups in the Plan area as a whole, and was similar between metropolitan and nonmetropolitan counties (table 10-2). The percentage of the population that was Hispanic or Latino was highest in California counties (in aggregate) (tables 10-4 to 10-6). Hispanic or Latino populations were highest in NWFP counties of eastern Washington and California’s Central Valley, where farming is an important economic sector.

The percentage of American Indian and Alaska Native, and Black or African American populations did not increase between 1990 and 2012, while the percentage of Asian, Native Hawaiian, and Pacific Islander populations grew, and the percentage of Hispanic or Latino populations grew substantially (table 10-2). The NWFP area had a higher percentage of the total population that was American Indian or Alaska Native, and Asian, Native Hawaiian, or other Pacific Islander compared with the nation as a whole in 2012, but a substantially lower percentage of the total population that was Black or African American, or Hispanic or Latino, compared with the nation as a whole (tables 10-2 and 10-3).

Many poor counties in the Plan area also have large shares of minority residents (fig. 10-7). 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 or Latino populations in the United States experience significantly higher rates of poverty than White and Asian populations (Macartney et al. 2013).

### Table 10-6—Minority populations in Washington’s Northwest Forest Plan area, 1990, 2000, and 2012

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Non-metropolitan</td>
<td>Metropolitan</td>
<td>Non-metropolitan</td>
</tr>
<tr>
<td>American Indian and Alaska Native</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Asian, Native Hawaiian, other Pacific Islander(^a)</td>
<td>2</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Black or African American</td>
<td>1</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>White</td>
<td>94</td>
<td>89</td>
<td>92</td>
</tr>
<tr>
<td>Hispanic or Latino(^b)</td>
<td>6</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>≥ 2 races(^c)</td>
<td>2</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

Source: U.S. Census Bureau population estimates.

\(^a\) The 1990 Census grouped Asians and Pacific Islanders into one category. In 2000, this category was divided into two: Asian, and Native Hawaiian and other Pacific Islander. For consistency across years, we have grouped these two back into one category.

\(^b\) Hispanic or Latino is a category of ethnicity. Individuals may identify as Hispanic or Latino and any of the racial categories (e.g., Hispanic or Latino and White, Hispanic or Latino and Black). Therefore, table totals will not sum to 100 percent.

\(^c\) This category was not available on the 1990 census form.
Figure 10-3—American Indian and Alaska Native percentage of populations in Northwest Forest Plan-area counties, 2012.
Figure 10-4—Asian, Native Hawaiian, and other Pacific Islander percentage of populations in Northwest Forest Plan-area counties, 2012.
Figure 10-5—Black or African American percentage of populations in Northwest Forest Plan-area counties, 2012.
Figure 10-6—Hispanic or Latino Percentage of populations in Northwest Forest Plan-area counties, 2012.
Figure 10-7—Minority populations by Northwest Forest Plan-area county poverty rates, 2012.
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 or 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 influence their use of federal forests, though variation within groups exists (as it does among all demographic groups). They may also have different views of the environment and resource management, and different environmental behaviors and values (see chapter 9). To comply with E.O. 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 the environmental work force, the gathering of nontimber forest products, and recreation. We address these topics below, and also note some emergent issues: the presence of temporary residents—including homeless populations—on national forests, many of whom are likely low income; and connections between wildfire management and environmental justice.

The environmental workforce—

Forest workers are employed by contracting businesses to conduct forest restoration and related work, often on federal lands. Forest workers in the Pacific Northwest perform a variety of labor-intensive tasks, such as planting and thinning trees, piling and burning brush, manual herbicide application, and digging firelines to fight wildland fires (Moseley 2006) (fig. 10-8). These tasks, which typically
require shoveling, planting, hand cutting, and similar manual labor, are more labor-intensive than other work performed by forest workers that entails less manual labor, such as operating heavy machinery and timber cruising. In 2014, there were an estimated 6,400 forest workers in Oregon alone during peak season (Wilmsen et al. 2015). This section focuses on the working conditions of workers hired by forestry and fire contracting businesses. To date there have been few systematic studies conducted on forest workers (Wilmsen et al. 2015). Most of the studies we draw on took place in western Oregon; information is much more limited for the California and Washington parts of the Plan area.

Since the late 1970s, forest workers in the Pacific Northwest have been predominantly Hispanic or Latino, marking a shift away from what was previously a White, not Hispanic or Latino, workforce toward one that is now primarily composed of low-income Hispanic or Latino immigrants and undocumented workers (Casanova and McDaniel 2005; Moseley et al. 2014; Sarathy 2006, 2012). Although the available scientific literature does not provide current statistics on the proportions of Hispanic or Latino workers now in the Northwest’s forestry workforce, research by Sarathy (2008) found that, in the mid-2000s, Mexican immigrants constituted the largest proportion of immigrant forest workers on federal lands in the Pacific Northwest. Moseley (2006) found that at a time when the U.S. Census put Oregon’s Hispanic or Latino population at 8 percent of the state total, a random sample of contractors interviewed from two national forests in Oregon during the high season were 45 to 60 percent Hispanic or Latino. A 2006 estimate found that between 2.2 and 3.1 million of the unauthorized immigrants residing in the United States were active in the labor force, particularly the lower skilled labor force (e.g., agri-food, crop production, forestry, and food services) (Sarathy and Casanova 2008).

What has been termed the “Latinization” of forestry 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 (e.g., less manual labor, more consistent oversight of safety); one possible explanation is their low participation in university environmental programs (Weintraub et al. 2011). In Oregon, the majority of ecological restoration businesses are small, family-owned seasonal businesses that fit the Small Business Administration’s definition of a small business (Nielsen-Pincus and Moseley 2013). Research about the proportion of forestry and fire contracting businesses that are minority owned is lacking.

With this change in workforce composition came a series of working condition concerns that disproportionately affected immigrant forest workers, especially those without legal immigration status (Sarathy 2008). These forest workers are often Hispanic or 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 ethnicity of the workers and the type of work that they do (see Knudson and Amezuca 2005, Sarathy 2012). Job quality among forest workers is typically low, measured by lack of employment stability, low wages, no benefits, and distance from home. Although all such workers face low job quality, Hispanic or Latino workers are more likely to work far from home and seasonally, and less likely to receive health insurance through their employers (Moseley 2006). For example, Moseley (2006) found a statistically significant correlation between the ethnic composition of a company’s workforce and the type of work performed. During high season, Hispanics or Latinos comprised 43 percent of the total workforce and 66 percent of the labor-intensive workforce. By contrast, those who were not Hispanics or Latinos accounted for 53 percent of the total workforce but 73 percent of the equipment-intensive workers. Labor-intensive workers often work seasonally and travel long distances (Moseley and Reyes 2008). Although there is limited research on equipment-intensive contractors, available data suggest that these contractors do not typically travel as far for work, and are less exposed to exploitative working conditions, compared to labor-intensive workers (Moseley and Reyes 2008). These findings suggest that there are job quality differences between Hispanics or Latinos, and non-Hispanics or Latinos.
Research on forest workers from Oregon also shows that Hispanics or Latinos often face poorer working conditions than their counterparts who are not Hispanic or Latino, including 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). Similar poor working conditions exist for immigrants who are agricultural workers. For example, low-wage immigrant workers in labor-intensive agricultural occupations often experience wage theft, unsafe working conditions, inadequate safety training, and fear of retaliation for reporting injuries or unfair working conditions (Wilmsen et al. 2015). Hispanic or Latino immigrants often face a particular disadvantage owing to language barriers and limited access to legal resources; 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).

Poor working conditions for forest workers have persisted over the past two decades. This problem is particularly prominent in the Pacific Northwest; for example, forest workers in Oregon were found to have rates of occupational injury, illness, and fatality three times higher than the workforce at large (Hayford 2013, Wilmsen et al. 2015). Moreover, documented rates are thought to be low estimates owing to historical underreporting of such problems by workers and employers alike (Azaroff et al. 2002, Ruser 2008, Sarathy 2012, Wilmsen et al. 2015). Two deaths of forestry services workers in on-the-job accidents in southern Oregon in 2011 were a reminder to the public and others of the dangers found in this sector (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 the Northwest Forest Worker Center (formerly the 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) explained, 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, federal land management policy, and federal contracting regulations can also affect 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. Recent research from southern Oregon (Wilmsen et al. 2015)—a region having a high proportion of forest workers who are mainly Spanish-speaking Hispanic or Latino immigrants—still reported workplace practices that are inconsistent with labor laws. Workers’ vulnerable economic status, lack of legal status, and fear of retaliation 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 Hispanics or 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). There is limited research on the impacts of federal contracting on businesses that engage in wildfire suppression and their employees, many of whom are forest workers (Caldwell et al. 2005, Lyon et al. 2017). Nevertheless, 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).

Traditionally, most workplace health and safety strategies have focused on improving the physical safety of the workplace, which is particularly relevant for improving the safety of working in the woods (e.g., hard hats, 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 to improve retention, morale, and staff stability (Mylek and Schirmer 2015).

Research is lacking regarding the proportion of minority women who are forest workers. However, there has been increasing attention on issues of gender in the environmental workforce. To date, this attention has been more prevalent in the popular press than in the scientific literature, but the topic warrants attention in considering workforce conditions. A recent Washington Post article recounted women firefighters’ experiences with harassment, discrimination, and sexual violence (Fears 2016), which was followed by Congressional oversight hearings. Although the hearings focused on federal employees, similar problems are experienced by those contracted by the federal government (Moseley et al. 2014, Sifuentes 2016). A 2016 Association for Fire Ecology survey found that 32 percent of firefighters have witnessed sexual harassment, and 54 percent have witnessed gender discrimination in the workplace (Association for Fire Ecology 2016). Similar to Hispanic or Latino environmental workers, women may be especially vulnerable to workplace safety and culture issues, an area that warrants future research attention.

In summary, forest workers in the NWFP area are predominantly Hispanic or Latino. They work as contractors who perform a variety of labor- and equipment-intensive forestry work on federal forests in addition to participating in fire suppression crews. Much of the published literature about forest workers draws attention to the low job quality and poor working conditions they have experienced over the past few decades. Low job quality includes low wages, lack of stable employment, no benefits, and long travel distances to work sites. Poor working conditions experienced by forest workers include disrespectful treatment, little opportunity to advance, unsafe working environments and high rates of injury and fatality, lack of training opportunities, and fear of retaliation or deportation if they complain. Although there have been some improvements in recent years, especially in the area of fire suppression work, debates over how to address these poor working conditions remain unresolved. To date, federal agencies have not notably changed their oversight of service contract crews or enforcement of labor law provisions (Moseley et al. 2014, Sarathy 2012, Wilmsen et al. 2015).

**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 Lynch 2007; Love et al. 1998; Lynch and McLain 2003; McLain et al. 2012; Poe et al. 2013, 2014). National forests and BLM land are important sites for commercial NTFP harvesting (Charnley et al. 2008). Most commercial NTFP harvesting in the Pacific Northwest occurs in temperate forests from the Cascade Range 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. Our focus here is on commercial gathering owing to the scarcity of studies specific to environmental justice populations’ participation in recreational gathering and subsistence gathering (apart from American Indians, see chapter 11) in the Plan area. One of the few studies that includes a substantive discussion of recreational harvesters found that the majority (83 percent) of the recreational
chanterelle mushroom (*Cantharellus* spp.) harvesters interviewed on the Olympic Peninsula were Euro-Americans, with the next most common ethnic group represented being Japanese Americans (6 percent) (Love et al. 1998). In that study, none of the Latinos or Southeast Asians categorized their harvesting activities as recreational. As elaborated in chapter 8, the distinction between work and leisure is blurred for many commercial NTFP harvesters.

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 Euro-American, but shifted in the late 1970s and early 1980s to being dominated by refugees from Southeast Asia, 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 (*Tricholoma magnivelare*) (Tsing 2015). Commercial NTFP harvesting for some people may be their primary source of income, but for most it fills gaps or provides supplemental income between other seasonal jobs such as agricultural or forestry services work, or jobs in cities (Love et al. 1998; McLain 2000, 2008; Tsing 2015).

A survey from the early 1990s—which provides the only regional-level data available—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). An ethnographic study of the Olympic Peninsula chanterelle harvest (Love et al. 1998) documented the presence of four major groups of pickers—Cambodian (and other Southeast Asian), White, Latino, and Native American—during 1994 and 1995, but did not provide percentages for each category. An analysis of wild mushroom permit data for 1996–1998 from the Sisters Ranger District on the Deschutes National Forest, which falls within the eastern margins of the NWFP area and is a popular morel (*Morchella esculenta*) and bolete (*Boletus edulis*) harvesting site during the spring, estimated that 62 percent of permit holders were White, 28 percent Southeast Asian, and 10 percent Latino (McLain 2000). The only study identified that examined the intersectionality between gender and ethnicity for NTFP harvesters found that, among commercial chanterelle harvesters on the Olympic Peninsula, women comprised roughly 30 percent of Euro-American pickers but few Latino and Southeast Asian pickers were women (Love et al. 1998). There are no more recent studies providing statistics on NTFP harvester sociodemographic characteristics, whether at the local or regional scale.

Beargrass (*Xerophyllum tenax*) is one example of an NTFP harvested from federal forests located within the Plan area. Commercial harvesting of beargrass for its flowers and leaves gained importance in the Pacific Northwest in the 1980s (Higgins et al. 2004, Lynch and 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 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 (Charnley and Hummel 2011, Hansis 1998).

Wild mushrooms are another example; matsutake, the most economically valuable mushroom in the world (Tsing 2015), is a case in point. Four distinct populations harvest matsutake 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; Oregon’s Mount Hood area 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 (Richards and Creasy 1996; Tsing 2013a, 2013b). Many of these pickers migrate to the Pacific Northwest seasonally from cities in California to harvest mushrooms between other seasonal or temporary jobs (Tsing 2015). Despite associated dangers such as the presence of hunters or the possibility of getting lost, mushroom harvesting offers these pickers, who often are poor, a sense of freedom and the ability to earn money as long as they have a permit, transport, and camping equipment (Tsing 2013b). Latino pickers, originating primarily from Mexico and Guatemala, also participate in the commercial matsutake harvest in central Oregon. Many are undocumented and thus are in a more precarious legal position than Southeast Asian refugees, most of whom either have permanent residency or U.S. citizenship (Tsing 2013c). Many Latino pickers use the matsutake harvest as a way to fill in gaps in the demand for work in the agricultural and horticultural sectors (Tsing 2013c). Tsing (2015) described the matsutake industry and the pickers who are part of it in detail (fig. 10-9).

Salal (Gaultheria shallon), a major commercial product in the floral greens industry, is a third example of an NTFP harvested from federal forests in the Plan area. Most salal harvesters are undocumented migrant workers from Mexico and elsewhere in Latin America, and Southeast Asian immigrants (Ballard and Huntsinger 2006, McLain and Lynch 2010). 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 (Ballard and Huntsinger 2006).

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, Love et al. 1998, McLain 2000, Tsing 2013a). These findings indicate the potential capacity of NTFP 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 2000, McLain 2002, McLain and Jones 2001, McLain and Lynch 2010). A variety of factors likely contributes toward NTFP harvester underrepresentation, including limited knowledge of English on the part of some harvesters, commercial harvesters’ unfamiliarity with land management agency public input processes, and ineffective outreach on the part of federal and state land management agencies (Ballard and Sarathy 2008, McLain 2002, McLain and Lynch 2010).

Land tenure, and the formal and informal rules governing harvester access to commercially viable harvesting sites, further condition environmental justice populations’ interactions with forests in the NWFP area (Charnley et al. 2007, Love et al. 1998, McLain 2000, McLain and Lynch 2010, Tsing 2015). Harvesters are highly dependent on public or large tracts of private lands for gathering, making them subject to access and use regulations imposed by landowners who typically grant access through the issuance of short-term permits or longer term leases (Ballard and Huntsinger 2006, McLain and Lynch 2010, Tsing 2015). Research on wild mushroom policies in central Oregon suggests that failure to incorporate or consider
harvester input has sometimes resulted in the development of regulations, such as prohibitions on harvesting very small-sized matsutake (known as “babies”) and fixed harvesting season starting and ending dates, that fit poorly with ecological conditions (McLain 2002, Tsing 2015). 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.

Little research has focused specifically on assessing the impacts of restrictions emanating from the Plan on NTFP harvesters, whether members of environmental justice populations or not. An exception is McLain’s (2000, 2002, 2008) research on central Oregon’s wild mushroom harvest, which documented how restrictions on the commercial harvest of NTFPs in late-successional reserves and the closure of thousands of miles of forest roads significantly reduced areas open to commercial wild mushroom harvest on national forests in that area. As discussed in chapter 8, the extent to which NTFP harvesters rely on late-successional forest ecosystems for products will vary, depending on the requirements of the species gathered. No studies about NTFP harvesting on lands administered by the BLM were identified in our literature search.

As commercial harvesting of NTFPs increases in response to market demand, tensions between commercial gatherers and gatherers primarily interested in recreational, subsistence, and cultural uses have emerged in some areas where there is competition over harvesting the same species (Charnley and Hummel 2011, Dobkins et al. 2016, 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) (see 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). Tension also exists among participants within specific NTFP sectors, such as within the floral greens industry. For example, on the Olympic Peninsula, tensions have arisen among floral green harvesters when some participants follow harvest regulations and others do not (McLain and Lynch 2010). Moreover, some environmental groups do not support any gathering activities that they perceive as threatening forest health, even if only for subsistence use (Salazar 2009). A generalized lack of inventory and monitoring data collected in ways that would enable the impacts of harvesting on NTFP species to be evaluated makes it difficult 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: the presence of hunters and target shooters who they perceived as acting irresponsibly in places where they harvest, making them feel unsafe; challenges associated with harvesters who do not comply with harvest regulations; and encounters with immigration and law enforcement officers looking for undocumented workers (Biedenweg et al. 2014). Racial profiling by Forest Service law enforcement officers is another concern expressed by floral greens harvesters on the Olympic Peninsula (Biedenweg et al. 2014) and the Gifford Pinchot National Forest (Northwest Forest Worker Center 2015), and by matsutake harvesters in central Oregon (Tsing 2015). Additional studies are needed to determine whether these concerns apply more generally across the Plan region, to harvesters of other NTFPs, or to groups other than Latino harvesters.

Other concerns revolve around the intersection between labor relations and land tenure. In the wild mushroom sector throughout the Plan area, most pickers, regardless of ethnicity, operate as independent or family-based entrepreneurs and gain access to harvesting sites through relatively affordable permits (McLain and Lynch 2010, Tsing 2015). They thus have some measure
of independence from the firms to which they sell their mushrooms. Conditions for many pickers in the floral greens industry on the Olympic Peninsula are much less favorable. In that setting, most floral greens harvesters, most of whom are Latino, gain access to harvest sites through people who operate buying sheds. Buying sheds are the buildings where the greens are purchased from harvesters, sorted, quantified, and boxed for shipping to wholesale distributors and exporters. Shed owners on the Olympic Peninsula often obtain leases to large tracts of public or private forest where harvesting occurs, then give permission for harvesters to pick on those lands, often specifying informally (and illegally) that the harvesters must sell their product to them (Lynch and McLain 2003, McLain and Lynch 2010). One consequence of the pickers’ economic position under such circumstances is that they are unable to take advantage of higher prices paid by competing sheds (McLain and Lynch 2010). Harvesters and small-scale buyers have expressed opposition to leases, which large-scale buyers have historically monopolized and which appear to facilitate the exploitation of harvesters by limiting their resource access options (McLain and Lynch 2010, Northwest Worker Center 2015).

Harvesters have also identified theft of floral greens from leased lands as a problem (McLain and Lynch 2010, Northwest Forest Worker Center 2015). In response to complaints during the early 2000s by shed operators who did not have leases, the Washington Department of Labor and Industries sought, unsuccessfully, to have floral greens harvesters who gained access to harvesting sites through sub-leasing arrangements categorized as employees rather than independent contractors. The debate over whether harvesters acquiring access to floral greens through sub-leases should be considered shed employees, rather than independent entrepreneurs, has implications for their rights as workers, their working conditions, and whether they receive fair prices for their products (McLain and Lynch 2010).

To summarize, environmental justice populations in the NWFP area—particularly Southeast Asians, Latinos, and low-income Whites—play an active role in the commercial NTFP industry, with Latinos especially prominent in the floral greens industry and Asians and Whites prominent in the wild mushroom industry. National forests and BLM lands are important harvesting sites, but there has been virtually no published research documenting the impact of the NWFP on environmental justice populations who harvest NTFPs there. Although these populations are affected by agency regulations associated with NTFP harvesting and management practices influencing the distribution and productivity of the species they target, they have been underrepresented in developing regulations and management guidelines for NTFPs on federal forests in the Plan area. Important issues for managers to be aware of include potential social tension between commercial gatherers and those primarily interested in recreational, subsistence, and cultural gathering; tenure arrangements governing access to NTFPs; physical safety of harvesters when they are out in the forest; fear of encounters between undocumented workers and immigration and law enforcement officers; challenges associated with illegal harvest activities (e.g., theft); and the rights to safe working conditions and fair employment practices for harvesters.

**Recreation—**

Research about recreational uses of federal forests in the NWFP area by environmental justice populations comes from national surveys and scholarly research. The NWFP socioeconomic monitoring reports (Charnley 2006, Grinspoon et al. 2016) contain data on recreation visitation in the NWFP area by national forest and BLM district, but these reports do not display recreation visitation data by income, racial, or ethnic group. In this section, we present recreation participation data for Plan-area national forests in aggregate by income, and minority group from the Forest Service National Visitor Use Monitoring Program. Comparable data are unavailable for BLM districts. We also briefly synthesize key areas of knowledge from the literature about outdoor recreation participation by environmental justice populations in the region and nationwide, and constraints to participation. Some of this literature is specific to Forest Service lands, but none is specific to BLM lands. 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 10-7). Households with incomes under $25,000 per year account for about 12 percent of all recreation visits in the NWFP area, slightly higher than what is found nationally. The only income group with a lower participation rate is households having incomes of more than $150,000 per year (table 10-7).

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. Using a random sample of 2,005 adult Washington and Oregon residents, Burns and Graefe (2006) found lower interest and participation in outdoor recreation among those with the lowest personal incomes. One-quarter of those surveyed whose personal incomes were less than $10,000/year reported that they were “not at all” interested in outdoor recreation; and 13 percent of those with personal incomes between $10,000 and $30,000 reported the same low interest level. In contrast, only about 5 percent of respondents with incomes greater than $30,000 reported no interest in outdoor recreation. The vast majority (between 86 and 92 percent) of those making more than $30,000 per year had participated in an outdoor recreation activity during the preceding year, while about 56 percent of those making less than $10,000 had participated (Burns and Graefe 2006). On average, those earning less than $10,000 per year visited national forests about 2.6 times per year compared to about 8.5 times per year for other income groups (Burns and Graefe 2006). This pattern of visit frequency may be due, at least in part, to the ability of people with higher incomes to afford the cost of recreation trips to national forests (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 have influence only over recreation fees. The Forest Service’s Recreation Fee Demonstration program, initiated in the late 1990s, established recreation fees at many dispersed areas on national forests that previously had no site fees. Brown et al. (2008) examined permit data from 1991 through 2005 and found that recreation fees to park and access a wilderness area on Oregon’s Willamette National Forest had a greater negative effect on recreation visitation than did high-severity fire within the wilderness area. In their previously referenced 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 a hypothetical recreation-use fee on national forest lands (although more than half of the respondents in this income category indicated they could pay a hypothetical recreation use fee).

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<tbody>
<tr>
<td>Less than $25,000</td>
<td>10</td>
<td>12</td>
<td>10</td>
</tr>
<tr>
<td>$25,000–$49,999</td>
<td>24</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>$50,000–$74,999</td>
<td>25</td>
<td>23</td>
<td>22</td>
</tr>
<tr>
<td>$75,000–$99,999</td>
<td>18</td>
<td>20</td>
<td>18</td>
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<tr>
<td>$100,000–$149,999</td>
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<td>16</td>
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<tr>
<td>$150,000 and up</td>
<td>8</td>
<td>11</td>
<td>16</td>
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Source: USDA FS 2016.
Minority populations—

Nearly all recreational visits to NWFP-area national forests are by White visitors (table 10-8). People of Hispanic or Latino ethnicity account for more recreation visits to NWFP-area national forests (4 percent) than people belonging to other minority groups. Across all national forests, the vast majority of visits are also from White visitors, and about 6 percent of visits nationally are from those of Hispanic or Latino ethnicity, again exceeding visits by other minority groups (table 10-8).

Data from the 2008 National Survey on Recreation and the Environment (NSRE) (Cordell 2012) indicate that, nationwide, 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 10-9). Asian, Native Hawaiian, and other 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, motorized recreation (e.g., off-highway vehicles, motorized trail bikes, use of motorized play areas), and nonmotorized activities. Hispanic or 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 or Latinos and other groups.

Table 10-8—Visits to national forests in the Northwest Forest Plan area and nationally of people age 16 and older by racial and ethnic group

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

Source: USDA FS 2017.

Table 10-9—Nationwide percentage of participation in outdoor recreation activities of people age 16 and older by racial and ethnic group

<table>
<thead>
<tr>
<th>Activity</th>
<th>American Indian</th>
<th>Asian, Native Hawaiian, Pacific Islander</th>
<th>Black or African American</th>
<th>White</th>
<th>Hispanic or Latino</th>
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<td>Percent</td>
<td></td>
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<td></td>
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</tr>
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<td>69</td>
<td>80</td>
<td>75</td>
</tr>
<tr>
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<td>73</td>
<td>59</td>
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<td>71</td>
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</tr>
<tr>
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<td>21</td>
<td>21</td>
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<td>24</td>
<td>19</td>
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</table>

Source: Adapted from White et al. (2014) and Cordell (2012).
Visiting developed sites, and viewing and photographing nature, were the most common activities. Adult Hispanic or Latino day visitors interviewed at urban national forests in southern California reported that they most often participated in picnicking and water recreation when visiting day-use sites (Chavez and Olson 2009). Blacks or 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 10-9).

Floyd et al. (2008) provide a comprehensive review of research related to race/ethnicity and leisure, including the many factors that affect recreation participation by minority groups. One national-level study using the 2004 NSRE data 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) (fig. 10-10). For example, Bowker et al. (2006), in a national

Figure 10-10—Distance to primitive settings and the cost of recreation, including equipment expenses, are constraints to outdoor recreation participation by low-income and minority populations.
study using NSRE data, found evidence that a central factor in lower participation by minority group members age 16 and older is distance to primitive settings. Johnson et al. (2007), also using NSRE data, found that minority groups were less likely than other groups to support a fee for using a recreation site.

Chavez (2008) pointed out the importance of understanding the distinct preferences, expectations, and barriers to participation in outdoor recreation among Hispanic or Latino populations in the United States. As table 10-2 shows, the share of the Hispanic or Latino population is large and growing in metropolitan counties of the NWFP area (see also Johnson and Stewart 2007), making consideration of Hispanic or Latino preferences and barriers to access especially important for the management of urban national forests (e.g., the Mount Baker–Snoqualmie National Forest in Washington and the Mount Hood National Forest in Oregon). Some studies have found that Hispanics or Latinos tend to participate in outdoor recreation activities with extended family members in natural areas located 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 four focus groups (small groups of select people who discuss questions pertaining to specific research topics) with adults belonging to different minority groups in several Oregon cities. Potential participants were identified through recreation managers (mostly from the Oregon Parks and Recreation Department) who worked in the communities where the focus groups were held. They found that Asian Americans in their study liked to recreate with their children and 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. Both groups identified lack of information about opportunities to recreate in parks and on public lands, information in multiple languages as an additional constraint (fig. 10-11). Metcalf et al. (2013) surveyed 234 racial and ethnic minority groups visiting the Mount 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.

In sum, recreation visitation by environmental justice populations to national forests in the NWFP area is relatively low. Nationwide, different racial and ethnic groups exhibit different preferences for types of outdoor recreation activity, although visiting developed sites and viewing and photographing nature are the most popular activities among all groups, including Whites. A main barrier to recreating on national forests for low-income populations is cost of the trip. Among minorities, distance, cost, lack of transportation, safety concerns, lack of awareness about recreation opportunities, and lack of available information in languages other than English are barriers. Ways of overcoming these barriers are discussed under Management Considerations.

Nonrecreational camping and homelessness—
Camping is a common recreational use of Forest Service 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 temporarily reside on public lands as a lifestyle choice or in response to local economic conditions. Others are homeless (with no permanent address).

Accurate estimates of homeless individuals in the United States are difficult to achieve. One study by Abt Associates for the U.S. Department of Housing and Urban Development estimated 549,928 homeless persons in a one-day count in 2016 (Henry et al. 2016). Yet, the National Law Center on Homelessness & Poverty suggests that these figures are grossly underestimated, and places the figure
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 (Elliott and Krivo 1991). Social vulnerabilities include lack of access to adequate health care, unmet mental health needs, domestic violence, and divorce (Elliott and Krivo 1991, Wasserman and Clair 2010). Untreated mental health issues such as depression, addiction, post-traumatic stress disorder, and others, can negatively affect personal resiliency and are associated with homelessness.

Federal land management agencies do not have accurate counts of how many people live on federal lands. A recent survey of 290 national forest law enforcement officers revealed that encounters with nonrecreational campers occur in every region of the United States, and that nonrecreational campers were most common in national forests near urban areas (Cerveny and Baur n.d.).
and Oregon and Washington (Region 6), 41 percent of law enforcement officers surveyed reported weekly encounters with nonrecreational 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).

Cerveny and Baur (n.d.) also identified 10 types of nonrecreational 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 Baur n.d.).

An unpublished master’s project conducted in Oregon’s Willamette National Forest by students from the University of Oregon explored the incidence of homelessness and long-term camping there (Bottorff et al. 2012). The authors conducted interviews with staff from the national forest, local service agencies, law enforcement, and homeless individuals to gain a better understanding of homelessness. They learned that the homeless people on the Willamette were mostly seasonal, and that lack of services in nearby towns often drives the homeless to nearby forests. In addition, many homeless people were unwilling to stay in available shelters, which prohibited either children or pets. They also observed that homeless people living in the forest often struggled with addiction and mental health problems.

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 or economic hardship. 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.

Wildfire management and environmental justice—
Wildfire management is one of the many areas in which federal land management actions may affect adjacent and nearby residents and landowners, some of whom may be low income or minorities. Research about the relation between wildfire management and low-income and minority populations living in fire-prone forest ecosystems of the United States is limited; research on this topic from the Pacific Northwest is even more limited. Key findings from the studies that have been conducted include the following:

1. The rural poor living in fire-prone areas in the wildland-urban-interface (WUI) in Arizona’s White Mountains, and low-income residents in a community in the Sierra-Cascades foothills of northern California, were found to have fewer resources for creating defensible space around their homes, investing in fire-resistant building materials, purchasing insurance, or adopting other wildfire mitigation strategies than middle- and high-income rural residents (though other variables also influence people’s choices to mitigate fire on their properties) (Collins 2005, 2008).

2. In the southeastern United States, communities having high wildfire risk and high social vulnerability (e.g., below poverty line, non-White, low education) are less engaged in wildfire mitigation programs than communities having high wildfire risk and low social vulnerability (Johnson Gaither et al. 2011, Poudyal et al. 2012). Similarly, research from Arizona found that participation in wildfire mitigation programs is lower among socially vulnerable communities located in areas of high wildfire risk, than among communities with low social vulnerability located in high wildfire risk areas (Ojerio et al. 2011).
3. In Washington state, a higher percentage of poor households than non-poor households live in areas having few to no wildfire response resources that provide wildfire protection (Lynn and Gerlitz 2006). In Florida, Mercer and Prestemon (2005) found that the more poverty in a county, the lower the rate of wildfire ignitions but the larger the wildfire (acres burned) when an ignition occurs. They attribute the lower rate of ignitions to the fact that poorer counties have more rural WUI, and federal and state lands dominated by pine forests that are intensively managed for timber production, where prescribed fire is commonly applied. These management actions lower wildfire hazard. However, wildfires burn more acres when an ignition occurs because poorer counties have fewer firefighting resources available for initial attack.

4. Research from Utah (Roberts 2013) and Florida (Mercer and Prestemon 2005) found that people living in higher income WUI locations prefer dense forest stands for aesthetic reasons, increasing wildland fire risk; however, they are less vulnerable to wildfire because they can afford insurance policies and have better access to fire mitigation and suppression resources.

5. In the Northwest and elsewhere in the Western United States, 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 WUI 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 (Lynn and Gerlitz 2006).

6. Research from the Southern United States (Johnson Gaither 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. 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. Initial results from two national forests in central Oregon found no systematic evidence of disproportionate benefit or lack of benefit to environmental justice populations from fuels reduction treatments (Adams and Charnley 2018). However, localized areas of potential concern were identified where further inquiry is warranted.

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

These research findings indicate that wildfire management actions can have differential impacts on people living adjacent to or near federal forests because of differences in social vulnerability to wildfire that may be associated with low-income and minority status. Wildfire management is but one example of how the environmental effects of agency management actions such as timber harvesting and watershed management, and associated changes in ecosystem services, have environmental justice implications.

**Research Needs, Uncertainties, Information Gaps, and Limitations**

The vast majority of scholarly research on environmental justice has focused on unequal exposure to environmental toxins, largely in urban areas. There is only a small subset of research that focuses on environmental justice in the context of unequal access to environmental benefits, and that work mostly concerns parks, outdoor recreation opportunities, and street trees in urban areas (e.g., Landry
and Chakraborty 2009, Montgomery et al. 2015). Furthermore, there is virtually no research or monitoring data that concern the specific impacts of the NWFP on low-income or minority populations apart from American Indians (see chapter 11). If federal forest managers wish to fill this information gap, perhaps environmental justice inquiry could be integrated into NWFP socioeconomic monitoring. However, this would require revising the current monitoring approach to explore links between federal forest management and socioeconomic well-being. This chapter provides 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 forest plan revisions for NWFP-area national forests.

Most of the research reported here about how environmental justice populations relate to federal forests comes from Washington and Oregon; this literature is more limited for the California portion of the NWFP area, except for American Indian tribes. 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) and recreation. However, neither the complexity of forestry work impacts on forest worker vulnerability, nor the relationship between changing agency and contracting business employment structures and forest worker vulnerability, are well studied or understood. Also missing in the literature are explorations of how and which environmental justice populations have input into provisions in the NWFP, and associated regulations and management approaches regarding NTFPs. Most of the literature on NTFP harvesting is from the 1990s or early 2000s, and may not reflect current conditions. Little information is available about uses (recreational, subsistence, and cultural) 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, including cultural and spiritual connections, except for American Indians. This gap could potentially be filled through additional research, including using methods such as focus groups with populations of interest that include participatory values mapping exercises to document how different populations use and value federal forests (e.g., Biedenweg et al. 2014).

Regarding the impacts of forest management activities on environmental justice populations, research is beginning to fill the gap in knowledge about the environmental justice implications of Forest Service hazardous fuels reduction activities. However, 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. There is also a research void regarding how other federal forest management activities such as timber harvesting, travel management, and watershed management affect environmental justice populations. Finally, there is a void in the literature about the role of environmental justice populations in forest governance, particularly collaborative decisionmaking processes associated with federal forest management and planning.

It is 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, as would research to better understand the variation within minority groups regarding their interactions with federal forests in particular places. Another large gap in the literature on environmental justice and forests from the NWFP area and nationwide is how low-income or minority status intersect with subgroup characteristics (i.e., gender, age, religion) to influence forest values, uses, and management impacts. The only related research we are aware of in this area is a handful of recreation studies conducted in urban and rural parks (e.g., Casper et al. 2013, Cronan et al. 2008, Larson et al. 2014, Perry et al. 2011). Growth in environmental justice populations throughout the NWFP area calls for reassessing earlier findings, and ongoing research into how these populations relate to federal forests and are affected by their management in order to address the information gaps and limitations of existing research identified in this chapter.
Conclusions and Management Considerations

Environmental justice populations in the NWFP area are growing. Census data reflect the changing demographics of the region, and research from within and outside the Plan area provides insight into 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. Inevitably, there will be variation within groups, some of it influenced by gender, age, length of time in the United States, and other factors. The research synthesized here can be used to increase awareness and flag potentially relevant topics for agency staff to examine more closely at the local level. It also raises a number of issues that are relevant to federal forest management.

Management Considerations

The environmental workforce—
As the demographic composition of the NWFP area continues to change, and the forestry workforce is increasingly represented by Hispanics or 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. Based on the literature synthesized in this chapter, the following actions might help improve working conditions for forest workers.

1. The Forest Service and BLM already stipulate in service contracts that contractors must comply with all relevant labor laws. These agencies have the authority to enforce the provisions of their own contracts, which includes the labor law provisions, and could do so more rigorously.

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

3. Agencies could strengthen 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).

4. The competitive low-cost bid process could be changed to reduce contractor incentives for cutting costs and explicitly incorporate 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, which would 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 wildfires. 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.

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) offered numerous insights into how to address issues associated with NTFP gathering and management on public forest lands in the Pacific Northwest, and 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 during hunting season), 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—
The growing ethnic and racial diversity of the American population, reflected in NWFP area statistics reported in tables 10-4 through 10-6, 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 underrepresented 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. However, it is also important to recognize the diversity in values within individual ethnic and racial minority groups and not view these groups as homogenous (Li et al. 2007). The management considerations discussed here focus on how to foster more recreation participation by environmental justice populations on federal forests in the Plan area.

Constraints to recreation participation by these populations 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 or Latino communities related to volunteer and employment opportunities could strengthen the relationship between federal forests and Hispanic or 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, and 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). However, increasing the presence of law enforcement may create an environment in which some racial and ethnic minority groups feel threatened. Increasing the presence of Forest Service or BLM employees in uniform on federal forests could also be helpful.

Several strategies to help alleviate cost barriers to recreation participation on national forests by low-income visitors have been suggested: (1) offer people who cannot 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).

Roberts et al. (2009) provided a resource guide to help land management agencies better serve culturally diverse populations in California by improving communication and outreach, providing appropriate facilities and services, developing partnerships and relationships with organizations that promote outdoor experiences for low-income and minority groups, and taking advantage of other available resources. For example, some specific suggestions include: (1) use international symbols for facilities that are easily understood across cultures; (2) hire multilingual field personnel with strong cultural competency; (3) cultivate a partner to sponsor a van or minibus to transport local diverse populations to recreation sites; and (4) engage with community centers in hard-to-reach communities (Roberts et al. 2009). The suggestions contained in the guide are relevant to the NWFP area as a whole.

Nonrecreational camping and homelessness—
U.S. Forest Service law enforcement officers surveyed by Cerveny and Baur (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 fall 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. Recognition by agency management of the resource impacts and social effects associated with long-term camping would spotlight the concerns raised by law enforcement. Treating homelessness as a chronic and systemic phenomenon in which the agency plays a critical role would potentially lead to greater acceptance of responsibility and action. For example, law enforcement officers surveyed 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.

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 important to consider whether certain populations disproportionately benefit from wildfire risk mitigation and wildfire suppression activities and resources so that these benefits may be more equitably distributed. Poverty and minority status are among the social variables that researchers use as indicators of social vulnerability. Research indicates that socially vulnerable populations living in fire-prone forest ecosystems in which the fire hazard is high tend to be more vulnerable to wildfire than less socially vulnerable populations because they often have fewer resources to invest in wildfire mitigation actions, have lower participation rates in wildfire mitigation assistance programs, and have less access to wildfire response resources when a fire ignites. These findings suggest that not only is it important for fuels reduction treatments to be proportionately distributed to places where low-income and minority populations border or live near fire-prone federal forests characterized by high wildfire hazard; but treatments might target these locales because of higher social vulnerability to wildfire. Furthermore, given research that indicates that low-income and minority populations may have less access to assistance programs that support wildfire mitigation strategies, directing outreach as well as financial and technical assistance to these populations may help them increase fire-safe practices around their homes for greater protection from high-severity fire.

Conclusions
This chapter responds to federal forest managers’ request for information about trends in the size of environmental justice populations in the NWFP area, and the implications of these trends for federal forest management. We found that poverty rates grew in the Washington, Oregon, and California portions of the Plan area between 1990 and 2012, and were most pronounced in northern California and southern Oregon. Poverty rates were uniformly higher in nonmetropolitan counties than in metropolitan counties in the Plan area during the analysis period, and were also higher than the national average. Minority populations also increased in size and percentage of the regional total, and this increase was greatest among the Hispanic or Latino population. The percentage of the population identifying as Hispanic or Latino doubled in nonmetropolitan counties, and nearly tripled in metropolitan counties in the NWFP area.

The published literature about environmental justice populations and their relations with federal forests in the Plan area focuses primarily on the environmental workforce, commercial NTFP gathering, and recreation. Low-income and minority populations are prominent in the environmental workforce and in commercial NTFP gathering on federal forest lands. However, as forest workers, they often experience low job quality, and they are underrepresented when it comes to developing regulations and management guidelines for NTFP harvesting, suggesting a need for more oversight and outreach by forest managers. In contrast, low-income and minority populations have low participation rates in recreation on national forests in the Plan area. The literature addresses constraints to their participation and provides suggestions for how forest managers can overcome some of these constraints. Two emergent
topics that are less well documented but where research is ongoing are nonrecreational camping on federal forests, particularly homelessness, and the impacts of wildfire management activities on environmental justice populations.

Important information gaps remain, however. There is virtually no information about how the NWFP or forest management activities more broadly have affected low-income or minority populations apart from American Indians. Aside from recreation, research gaps exist regarding noneconomic relations between environmental justice populations and federal forests. More research is needed to increase understanding about variation within minority groups regarding their interactions with federal forests in particular places, including how low-income or minority status intersects with subgroup characteristics (i.e., gender, age, religion) to influence forest values, uses, and management impacts. The growth in environmental justice populations throughout the NWFP area calls for ongoing investigation into how these populations relate to federal forests and are affected by their management.

References


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

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<td>Oregon, Multnomah County (metropolitan)</td>
<td>Washington, Yakima County (metropolitan)</td>
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Roasting salmon over an open fire.
Photo by Jon Ivy, Coquille Indian Tribe.