

Chapter 9: Understanding Our Changing Public Values, Resource Uses, and Engagement Processes and Practices

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Introduction

The Northwest Forest Plan (NWFP, or Plan) signified a movement away from intensive focus on timber management that was common through the 1980s and toward an ecosystem management approach, which aims to conserve ecological conditions and restore natural resources while meeting the social, cultural, and economic needs of present and future generations (Brussard et al. 1998). The NWFP emerged in response to expanded scientific knowledge about forests and shifting public values about resources and their management. An important goal of the NWFP was to protect forest values of late-successional, old-growth, and aquatic ecosystems. These may include amenity values (scenery, quality of life), environmental quality (clean air, soil, and water), ecological values (biodiversity), public-use values (outdoor recreation, education, subsistence use), and spiritual values (cultural ties, tribal histories) (Donoghue and Sutton 2006). This synthesis looks at the latest research on many of these forest values and adds to our thinking about how the NWFP has contributed to their protection.

Since the NWFP was instituted, the social context of the Plan area has changed. The social dimension of natural resource management in the NWFP is dynamic and

inherently complex, resembling what some have referred to as “wicked problems” (Head 2008, Weber and Khademan 2008) or resource challenges that are unstructured (where it is difficult to identify causes and effects), crosscutting (multiple stakeholders, across jurisdictions, social complexity), and relentless (with no final solution). These wicked problems are often characterized by a high degree of uncertainty and potential for conflict, with little agreement on the solution (Weber and Kahdeman 2008). Effective management of wicked problems in the NWFP area requires significant resources, strong social networks, and collective engagement of actors (agencies, institutions, and individuals) in diverse policy arenas within the planning area (Weber and Kahdeman 2008).

At the same time, U.S. society has become polarized by both ideology and vocal partisanship, which have been linked to economic insecurity in the postindustrial era, and the potential for shifting power relations among socio-cultural groups, including gender, ethnicity, and religion, referred to as “cultural backlash” (Inglehart and Norris 2006). Collaborative management and expanded emphasis on public processes that engage diverse stakeholders where objectives are transparent and sideboards are visible can help navigate the terrain of wicked problems. However, there is no guarantee that these efforts will result in an outcome that is widely embraced. Still, a process that generates mutual understanding, leads to informed decisions, incorporates new knowledge, and recognizes diverse uses and values would be a step forward.

Also since the NWFP was developed, scientists have explored and embraced new conceptualizations of ecosystems and ways to understand their benefits to people. Resource governance increasingly has adopted a framework of ecosystem services—the conditions, processes and components of the natural environment that provide tangible and intangible benefits to sustain and enhance human life (Daily 1997). Scientists and forest managers are updating their thinking about the variety of forest benefits

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that serve society and developing ways of measuring and comparing a diverse array of tangible and intangible benefits. As managers seek strategies for more integrated and holistic resource management using an ecosystem services approach, the importance of considering an array of public values (including aesthetic, recreational, spiritual, and heritage) becomes paramount.

Scientists increasingly recognize that conservation initiatives are more likely to lead to better informed decisions when ecological and social elements are integrated (Charnley 2006) (see chapter 12). Socioecological systems (SES) science recognizes the inextricable linkages between human societies and ecological systems (Berkes et al. 2000), and that ecosystems are embedded in levels of social organization (Brondizio et al. 2009). Halliday and Glaser (2011) considered an SES to be “a system composed of organized assemblages of humans and non-human life forms in a spatially determined geophysical setting” (2011: 2). Changes to social systems, such as population dynamics, market shifts, or changes in structural relations among natural resource institutions, can affect the natural environment. Conversely, changes to the ecological system, such as fire, flood, or diminished forest health, can affect human-nature interactions and settlement patterns (Gunderson and Holling 2002, Machlis et al. 1997). The social component of the SES refers broadly to property and access rights; land and resource tenure systems; resource knowledge systems, including local and traditional ecological knowledge; subsistence uses; worldviews; values; and perceptions about the environment (Berkes et al. 2000). An SES encompasses a variety of agencies and actors as they interact with the natural environment at multiple scales in ways that are dynamic, complex, and continuously adaptive (Folke et al. 2005, McGinnis and Ostrom 2014). An understanding of public values is essential to understand the complex influences of social values and choices on ecosystem uses and condition (Ives and Kendal 2014).

By thinking of the NWFP area as an integrated SES, with a complex web of interactions, forces, dynamics, and elements, we can begin to recognize and address major shifts in that system and understand their corresponding effects

on the natural and social environment. This system includes public and private lands, governing agencies (federal, state, tribal), communities of place (municipalities, counties), and communities of interest (stakeholders, user groups). We recognize that the social dimensions of the Plan area influence how ecological goals are established, pursued, and met or not met (Lange 2016, Spies and Duncan 2012).

A science synthesis of the Plan area is not complete without a comprehensive understanding of the region’s complex social ecology, particularly with regard to public values, citizen engagement, and governance of federally managed lands. Governance is a term widely used in political science and public administration to describe formal and informal processes, decisionmaking norms, and interactions among institutions involved in a collective problem (Hufty 2011). Governance may be undertaken by governments, tribes, legal corporations, multilateral commissions, collaborative groups, boards of directors, or social organizations. Governance explains how rules, norms, and decisions are structured, maintained, regulated, and monitored. Governance can be accomplished using a variety of tools, including laws, rules, markets, social norms, contracts, collaborative agreements, and public-private partnerships, as well as through symbols, maps, and language (Bevir 2013). In this chapter, we discuss governance as a formal process managed by government institutions like the U.S. Forest Service, primarily through laws and regulations. We also refer to “collaborative governance,” which describes the contribution of collaborative groups, which engage federal, tribal, state, and municipal governments, citizen groups, and corporations in deliberation over common resource problems.

Public values, attitudes, and beliefs about forests and the management of forest resources are not fixed, but can shift over time, owing to a multitude of complex factors (e.g., economic, political, social, cultural) (Manfredo et al. 2003, Vaske et al. 2001). Changing demographics related to urbanization, amenity migration, or regional population shifts in response to economic opportunities all can alter the makeup of a population and result in a potential shift in environmental values, beliefs, and behaviors, as well as in the kinds of connections people have to place (Gosnell and Abrams 2011, Jones et al. 2003). Public uses and outdoor

experiences in national forests and other federal lands also evolve in response to emerging consumer trends, economic factors, new technologies, or changes to geophysical or climate conditions (Cordell et al. 2002, Tuan 2013). In addition, the ways that citizens engage in natural resource management and share their views with land management agencies have changed, as people express a desire to be involved in decisionmaking about public lands (Stern and Dietz 2008). American politics since the 2000s has been characterized by increasing partisanship, identity politics, and ideological divides that have pulled people apart and presented mounting challenges to public lands management (Abramowitz and Saunders 2006, Iyengar and Hahn 2009). Emerging collaborative structures that attempt to bring together multiple agencies and stakeholders to deliberate and plan for resource management have become prevalent (Emerson and Nabatchi 2015).

Public land management agencies are finding new ways to measure and evaluate the variety of benefits that ecosystems provide. The concept of ecosystem services has developed more over the past 10 years in resource management as a useful framework. The ecosystem services framework assigns economic and noneconomic values to ecological functions, allowing policymakers to evaluate ecosystems using comparable metrics (Carpenter et al. 2009). The MEA (2005) framework describes four categories of ecosystem services: supporting, provisioning, regulating, and cultural. Ecosystem services featured prominently in the National Forest System land management planning rule, which guides how forest management plans for each national forest are developed (USDA FS 2012). The new planning rule is historically significant in that it signals a shift toward valuing resources more broadly (using the ecosystem services framework) as well as a greater emphasis on public engagement, which recognizes the importance of public values, attitudes, and beliefs. This is especially relevant for the NWFP, which exists as amendments to 17 forest plans that are due for revision.

One goal of the NWFP was to provide a “balanced and comprehensive strategy for the conservation and management of forest ecosystems, while maximizing economic and social benefits from forests.” An updated understanding

of these complex dynamics related to humans and their myriad interactions with public lands in the NWFP area is an essential component of this chapter, particularly with regard to public lands. This chapter illuminates how public perceptions, attitudes, beliefs, and values regarding forests and their economic and social benefits may have changed over the past 20 years. While chapter 8 speaks to socioeconomic ties between communities and forests, this chapter identifies what we know about shifting values, place meanings, outdoor recreation trends, and ways of public engagement. The focus of chapter 9 falls into the basket of “cultural ecosystem services,” (also referred to as cultural services) (Costanza et al. 2014). Cultural services include benefits gained through spiritual enrichment, outdoor recreation, religious or spiritual value, reflection, learning, sensory enhancement, and socializing, as well as place-based benefits such as identity, cultural heritage, and sense of place (Chan et al. 2012, Klain and Chan 2012, MEA 2005, Satterfield et al. 2013) and often emerge as a result of enduring relations between people and a landscape over many generations (Fagerholm et al. 2012).

Several chapters in this volume address other aspects of the sociocultural aspects of the SES, with many points of articulation with chapter 9. Chapter 8 focuses on the socioeconomic well-being of rural communities, the role of forest industries, and implications for private landowners in the Plan area. The discussion of recreation’s contributions to rural economies in chapter 8 can be considered alongside discussion of recreation trends in chapter 9. In addition, both chapters touch on notions of trust and its importance for effective resource governance. For an indepth discussion of challenges and opportunities related to environmental justice, poverty, and resource access in the NWFP area, see chapter 10; for discussion of tribal resource governance, resource use, and indigenous knowledge systems, refer to chapter 11. As we consider elements of public involvement and collaboration in this chapter, it may be useful to inquire whether existing governance mechanisms promote participation from underserved communities. These discussions can be considered alongside findings related to collaboration in this chapter. These points of overlap are intentional and desirable to fully understand the SES as an integrated whole.

Guiding Questions

A goal of SES science is to better understand the social context in which ecological goals are identified and achieved. The questions below were given to the chapter 9 science team by managers. The authors used these questions to frame chapter contents and relied on available literature to address and respond to these questions.

- What does social science tell us about how stakeholders' attitudes, beliefs, and values have changed over the past 20 years? How are these attitudes, beliefs, and values associated with resource management (recreation, resource use, protection)?
- How have stakeholders' relationships to the landscape and natural resources changed in the NWFP area?
- What value do people place on cultural ecosystem services from public lands, including recreation?
- What has been learned about the importance of valuing place?
- How have public uses and interactions with forests and grasslands changed over the past 20 years?
- What are the drivers that shape public uses of forest lands for recreation?
- How have recreation values and uses changed in the past 20 years?
- How does the body of science inform sustainable recreation?
- What strategies are effective in engaging communities and the public in the NWFP area?
- What kinds of collaborative groups and processes are engaged in the NWFP area?
- How is collaborative forest management changing?
- What elements contribute to successful collaboration in forest management? What examples exist of successful collaboration?
- How much has collaboration contributed to achieving objectives in resource management and socio-economic well-being?

Two additional topics were added later by the science team to address the specific themes considered of importance to understanding the scientific basis of forest planning and management. These topics included a discussion of

trust as well as social acceptability of various harvest practices. We structured the chapter into seven subsections: public values, attitudes, and beliefs; valuing place; cultural ecosystem services; outdoor recreation; trust; involving the public; and agency-citizen collaboration. Each subsection deals with a set of topics that contribute to the questions asked and concludes with a brief summary. The chapter concludes with an overview of research needs, uncertainties, and information gaps, as well as a discussion of management considerations.

The study team used standard social science perspectives rooted in geography, anthropology, sociology, environmental psychology, and public administration. It was not our intent to collect primary data, but rather to synthesize existing literature in these five topic areas assigned to this chapter. We relied on the best available social science to highlight current knowledge about these important topics. For some topics, there is little or no empirical research conducted in the Plan area. Authors drew from case studies, dissertations, or technical reports when peer-reviewed publications for a given topic were not available. We focused foremost on scientific findings relevant to the Plan area. However, we did include a few seminal works which offered theoretical or methodological contributions or relevant research results from other parts of North America to demonstrate a trajectory of inquiry with bearing on the Plan area. Data synthesized here are based on scientific publications and case studies that occurred since the previous NWFP science synthesis in 2006 (Haynes et al. 2006), except in cases when current research was not available.

Key Findings

Public Values, Attitudes, and Beliefs

Understanding values, attitudes, and beliefs has become increasingly important in environmental decisionmaking and natural resource governance (Allen et al. 2009).

Recognizing how and why people value different aspects of ecological systems potentially can allow resource managers to gain awareness about how different forest management goals and strategies may be viewed by the public and potentially understand the roots of conflict among stakeholders. Values inform how people interact with the landscape and

engage with conservation issues (Brown and Reed 2012). Values are known to predispose attitudes, management preferences, and behaviors. Thus, values can indicate whether proposed activities or goals in a plan would be socially acceptable and to whom (Allen et al. 2009, Fulton et al. 1996, Vaske and Donnelly 1999). By understanding public values, land managers will be better equipped to reach informed decisions (Tarrant et al. 2003).

Understanding values, attitudes, and beliefs—

Values are most commonly understood as enduring beliefs about the world that are often formed in childhood and serve as guideposts for desirable actions (Rohan 2000, Rokeach 1973, Schwartz 1994). Values are “modes of conduct” or end-states of what is desirable (Manfredo et al. 2004). Two types of values are discussed by natural resource social scientists. “Held values” represent an embedded human characteristic that shapes the judgments people make about the world and the subsequent actions they take (Bengston and Xu 1995, Rokeach 1973). Held values are associated with desirable goals, standards, guidelines, or criteria that help people decide what is right or wrong, worthy, or undesirable (Schwartz et al. 2012). “Assigned values” can be attached to a specific object or physical place in the world, as well as to intangible concepts (i.e., an economic system or political institution) whereby a person attempts to denote relative worth to an object or place on the landscape (Bengston 1994, Brown 1984, Rokeach 1973). Both held and assigned values are important

for land managers because they have been shown to predispose people to certain attitudes toward forest management practices and certain patterns of resource use and other environmental behaviors (Fulton et al. 1996).

The cognitive hierarchy model provides a logical structure for understanding the relationship between values, attitudes, and beliefs, and how these in turn influence human behaviors and actions (Dietz et al. 2005, Rokeach 1973, Vaske and Donnelly 1999) (fig. 9-1). Originally developed by Rokeach (1973), the model was fleshed out more fully by Fishbein and Ajzen (1975) as the “Theory of Reasoned Action” and later the “Theory of Planned Behavior” (Ajzen 1991, Ajzen and Fishbein 2005).

The cognitive hierarchy offers a reasoned conceptual framework that allows social scientists to explore the relationship between values, attitudes, and goals for forest management (Brown and Reed 2000). The components of the model include beliefs, value orientations, attitudes, intentions, and behaviors (box 1). Beliefs are statements of a person’s understanding of the world; “they are facts as an individual perceives them” (Dietz et al. 2005: 346). Beliefs are a person’s judgment about what they consider to be true or false. They can be shaped by science, feelings, experiences, intuition, or social norms (Zinn et al. 1998). Value orientations are the aggregation of beliefs about a particular issue or topic (Allen et al. 2009). Values are not directly measured, as they are often difficult to express, but social psychologists do measure value orientations as the basic set of beliefs (Fulton et al.

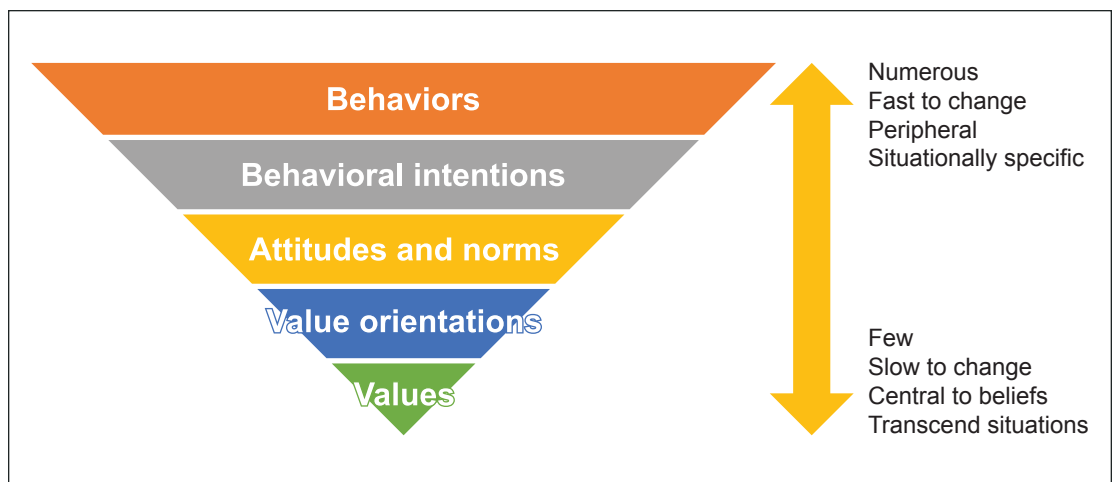


Figure 9-1—Cognitive hierarchy model of human behavior. Source: Adapted from Fulton et al. 1996.

Box 1—Key Definitions

Values: Enduring, consistent principles, often formed at an early age, about the important elements in life, including, what is good or bad; desirable or undesirable (Manfredo et al. 2009) (e.g., inclusiveness, justice, integrity, equality).

Value orientations: Set of beliefs about nature and the environment (Fulton et al. 1996). (e.g., orientations toward nature, human's role in the environment, public land management).

Beliefs: Judgments about what is true or false and what attributes are associated with someone or something, or the consequences of an action. (Ajzen 2002). (e.g., beliefs about land management agencies, forest conditions, or effects of actions).

Attitudes: Learned tendencies to react favorably or unfavorably to a situation, conditions, people, objects or ideas (e.g., level of support for an agency's actions; preferences for particular activities or actions).

Intentions: Convictions, aims to act in a particular way.

Behaviors: What people do, actions they take (e.g., participate in environmental activism, voting, stewardship behaviors, recycling, littering, outdoor recreation use, consumptive use of resources).

Norms: Implied or explicit rules or guidelines that regulate behavior and prescribe what people do (Stern et al. 2000). Norms can be individual (personal guidelines) or social (societal expectations).

1996, Rokeach 1973). Beliefs form the basis for attitudes. Attitudes are statements of people's positive or negative evaluations of a specific object or situation and are typically expressed as likes or dislikes, or preferences (Hoult 1977). Attitudes stem from values and also from lived experiences that shape a person's typical response or approach to something. They reflect one's dominant personality traits (e.g., optimistic vs. pessimistic; internal responsibility vs. external responsibility) (Ajzen and Fishbein 1975). Environmental attitudes have shown to be more predictive than values for understanding management preferences. The relationship between values, beliefs, and attitudes has been explored in many studies in natural resource settings (Bright et al. 2000, Fulton et al. 1996, Vaske and Donnelly 1999).

Fishbein and Ajzen (1975) set out to develop a framework that could predict intentions (the aim of a particular action) and behaviors (actions people take in nature, and may include stewardship, recreation, or consumption of forest resources). In their Theory of Reasoned Action, their focus is on antecedents to behavior, including beliefs about the consequences of a specific behavior and generalized attitudes (favorable or unfavorable) about a specific behavior (Fishbein and Ajzen 1975). For example, the behavior of riding motor-

ized vehicles off developed roads would depend on a person's understanding of how that action affects the biophysical and social environment as well as overall attitudes about off-highway vehicles. They also introduce the concept of normative beliefs and subjective norms. The normative beliefs are judgments held by others about the appropriateness of a particular behavior. The subjective norm is a combination of beliefs about the existence of social norms and individual motivations to comply with norms (Ajzen 2000). The interaction among beliefs, attitudes, intentions, and behavior is shown as a feedback loop, whereas when a particular behavior (behavior X) is performed, this affects one's normative beliefs about what is appropriate, which is guided by social norms, which then shapes intentions (fig. 9-2). The next iteration of the model, the Theory of Planned Behavior, added a component of individual agency or power, noting how the role of an individual's perceived control over their behavior can affect behavioral intentions (Ajzen and Fishbein 2005).

Values, attitudes, and beliefs can affect human intentions and actions (behaviors), but other factors play a role, including norms. Another concept used commonly in natural resources settings, particularly with emphasis on understanding pro-environmental behavior, is the

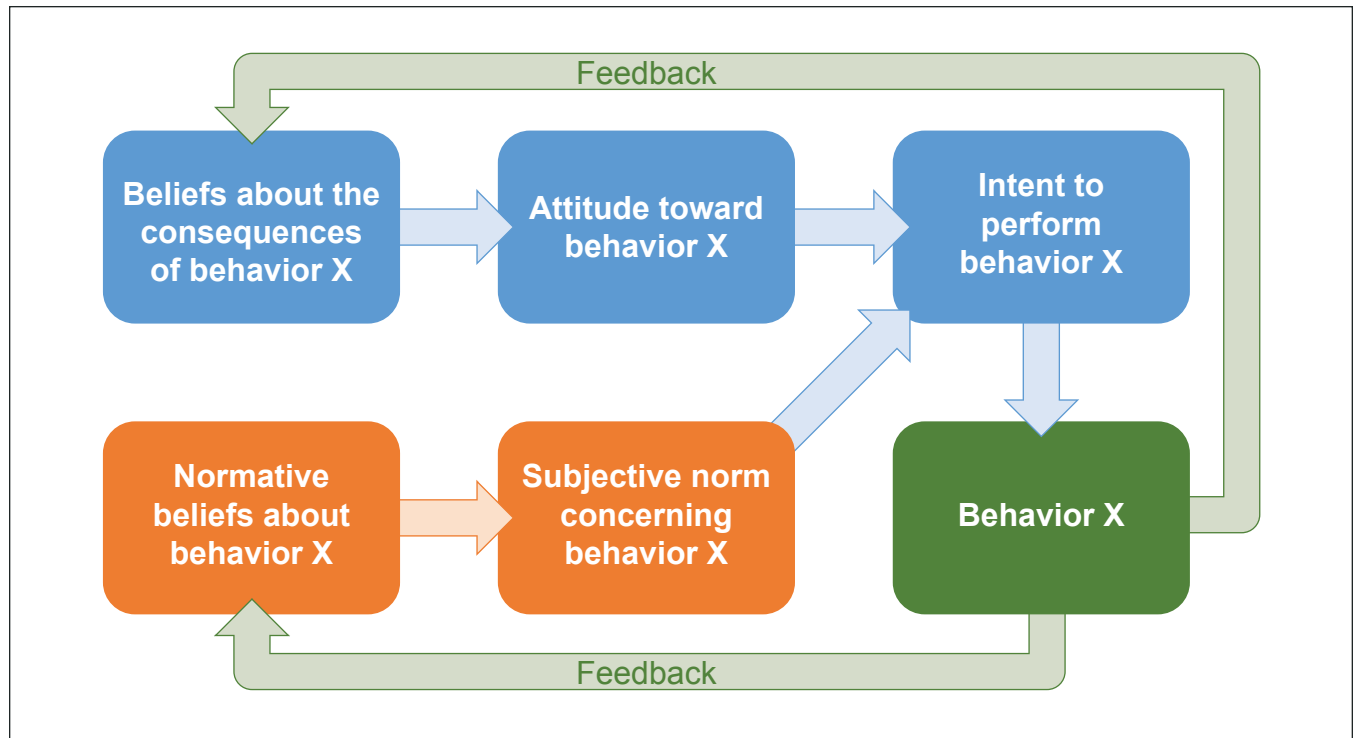


Figure 9-2—Theory of reasoned action (Fishbein and Ajzen 1975).

values-beliefs-norms (VBN) theory of environmentalism (Stern 2000). The VBN theory has been successful in explaining different types of environmental actions (Stern et al. 1999) and the acceptability of social or environmental policies or actions. This theory suggests that values do not directly predict behavior, but are indirectly implicated through beliefs and norms (de Groot et al. 2008, Steg and Vlek 2009). The idea is that values affect behavior indirectly by activating personal norms (moral obligations to perform a particular action). Personal norms are activated when someone acknowledges that (a) not acting pro-environmentally will lead to negative consequences, (b) when someone feels personally responsible for those negative outcomes, and (c) they believe their own efforts will help to mitigate the problem or minimize consequences (taking responsibility). One should first be aware of problems caused by the relevant behavior before considering to what extent one personally contributes to the problems and whether one could possibly be part of the solution, which in turn determines the extent to which personal norms are activated. Values thus influence the extent to which one is

aware of the problem, but also may predict variables about how they respond to the problem (de Groot and Steg 2008). Our awareness of those norms influences or fine tunes our ultimate actions (Stern 2000).

Steg et al. (2014) discovered four value types important for understanding beliefs, norms, intentions, and behaviors: hedonic (concern for achieving personal needs or exerting minimal effort), egoistic (concern for costs and benefits for the individual), altruistic (concern for human welfare), and biospheric (concern for quality of nature and the environment). Biospheric and altruistic values were found to promote pro-environmental attitudes and behaviors (Stern and Dietz 1994). In contrast, egoistic and hedonic values were negatively related to pro-environmental attitudes and behaviors. Those with altruistic and biospheric values are likely to be more aware of the problem, while awareness is lower with those who have hedonic and egoistic values (de Groot and Steg 2008). Whitmarsh and O'Neill (2010) learned that self-identity as an environmentalist is a significant predictor of behavior, especially in combination with values, attitudes, and beliefs. Yet, others have shown

that self-identity has a minimal effect (Rise et al. 2010). More research is needed to show whether self-identity as an environmentalist is a useful variable.

Recent studies of values have combined perspectives from cultural anthropology with systems theory. Anthropologists have long suggested that values are relatively stable and enduring and are developed through collective processes of socialization (schools, religious organizations, traditions, etc.) and that are shared with communities, cultural groups, or societies (Kenter et al. 2015, Kluckhohn 1951, Schwartz 2006). Values do not exist alone, but are deeply embedded in our social institutions, governments, collective behaviors (cultural practices), and the media (Schwartz 2006). Values exist at multiple levels and locations throughout our socioecological system and are mutually reinforced (Manfredo et al. 2017). One's individual values may guide one's actions or determine one's membership in a particular organization, but that organization reflects and reinforces the shared values deeply embedded in the social system. For values shift to occur, multiple entities at various levels of the socioecological system would need to be engaged (Manfredo et al. 2017). This systems theory framework views values as resistant to rapid change, but recognizes that major socioecological events, such as mass migrations resulting from changing environmental conditions (Kitayama et al. 2010), modernization (Inglehart 1997), or urbanization (Manfredo et al. 2009) can result in a gradual shift in values (Manfredo et al. 2009, 2017). New research, such as that offered by Dietsch et al. (2016), is needed to explore the influence of macro-level organizations on one's values and the ways that shared values emerge.

We know that values can evolve during processes of deliberation and discussion, where mutual learning takes place among people who have different backgrounds and experiences (Daniels and Walker 2001). Deliberation allows participants to consider their own arguments and the assumptions behind them, hear the perspectives and experiences of other participants and understand the reasoning behind their views, evaluate various positions, and reach informed decisions. Deliberation results in social learning (Cundill and Rodela 2012). Deliberation through organized workshops and stakeholder engagements can lead to

exposure to different perspectives and result in new insights and knowledge about how people value natural resources (Steyaert et al. 2007). Deliberative processes are useful for identifying values that are difficult to pinpoint (Kenter et al. 2016a). Collaborative groups, public engagement opportunities, and other processes can result in individual and group learning. Efforts to engage citizens in collaborative and deliberative processes are discussed later in this chapter.

Exploring environmental values and attitudes—

Environmental values have been measured in a variety of ways. Table 9-1 features several approaches in the literature that are the most common. This is not meant to be an exhaustive list, and there are new approaches to measuring environmental values, attitudes, and beliefs that are not included here, because they have not been widely used.

Many scholars measure “value orientations,” which are sets of values that link together based on a common orientation to nature and the environment. Environmental value orientations are clusters of interrelated values that reflect an overall relationship between humans and the environment (Fulton et al. 1996, Vaske et al. 2001). Many classification systems have been used to explore value orientations. Xu and Bengston (1997) classified values into instrumental (the usefulness of forests as the means to a further end, such as logs for housing or recreation use for people); and noninstrumental (forests are valuable in themselves), which Moore (2007) also calls intrinsic values. Stern and Dietz (1994), Schultz et al. (2005), and others used three value categories: egocentric (self-oriented), altruistic (public good), and biospheric (for nature itself) to predict environmental behavior. A widely used framework of value orientations used by Vaske et al. (2001) identified anthropocentric (utilitarian) and biocentric (nature centered) (Steel et al. 1994). Later studies added a third orientation, moral/spiritual/aesthetic, which also encompasses sacred values and heritage values as well as bequest values (Bengston et al. 2004). This category of values includes both religious values as well as spirituality that relates to people's respect for natural forces, as well as a spirituality that exists without humans (Proctor 2009). Winter and Lockwood (2004) developed a natural area scale, which included intrinsic, use, and non-use values.

Table 9-1—Various approaches to exploring environmental values

Values approach	Goal	Tools or methods	Relevant studies
Value orientations	Quantifying values and classifying respondents into similar groups based on their orientations to the natural environment	Various Likert scales	de Groot and Steg 2008, Dietz et al. 2005, Fulton 1996, Steel et al. 1994, Stern and Dietz 1994, Stern et al. 1995, Xu and Bengston 1997
New Ecological Paradigm, also known as “New Environmental Paradigm”	Measures anthropocentric and biocentric orientations to the natural environment	15-item scaled survey	Cordano et al. 2003, Dunlap 2008, Dunlap and van Liere 1978, Dunlap et al. 2000, Stern et al. 1995
Natural area values scale	Measures values relevant to natural areas, including intrinsic, use, non-use, recreational, and aesthetic	20-item scaled survey	Ford et al. 2012, Winter and Lockwood 2004
Values suitability analysis Values compatibility analysis	Evaluates consistencies between land management prescriptions and public values	Numerical rating system	Brown and Reed 2012, Reed and Brown 2003
Public values of forest	Predicts public values based on forest outputs, amenities, and protection	12-point scaled survey	Tarrant et al. 2003
Landscape values mapping	Shows what values are associated with places on the landscape using maps	Maps and other spatial tools	Alessa et al. 2008; Brown and Kyttä 2014; Brown and Reed 2000, 2012
Valued attributes of landscape scale	Emphasis on the value of site attributes (natural, social, experiential, cultural, productive)	Measures 26 value attributes	Kendal et al. 2015
Deliberative Value Formation Model	Based on the notion of shared values. Use of a deliberative process to generate learning and values shift.	Value orientation scales and deliberative process	Kenter 2016; Kenter et al. 2016a, 2016b

Value orientations provide the foundation for specific attitudes toward forest management (McFarlane and Boxall 2000, Steel et al. 1994, Tarrant and Cordell 2002). Environmental value orientation scales approaches distinguish between anthropocentric (oriented to human well-being) and biocentric (oriented to ecological well-being). Others identified an ecocentric orientation that emphasizes ecosystems (Surmeli and Saka 2013). Value orientations can often predict attitudes toward forest management practices and support for natural resource policies, although particular circumstances can override values, such as a person’s unique relationship to a particular setting or if their income depends

on the decision outcome. Individual motivations sometimes override value preferences. While some of these studies have successfully shown that people hold shared sets of values, they have not been able to explain why distinct stakeholder groups (e.g., fishermen and biologists) holding the same set of value orientations exhibit divergent behaviors.

Studies have shown that some factors can predict attitudes toward management outcomes. One of the most consistent predictors of values is gender. Several independent studies have shown that women tend to favor biocentric (noneconomic) values more often than men, although the differences are small in most cases (Kellert and Berry 1987,

Steel et al. 1994, Tarrant et al. 2003, Vaske et al. 2001). Other linkages have been found between value orientations and the visual impacts of resource management (Tindall 2003), perceived threats to forest health (Abrams et al. 2005), and participation in activism directed at the forest sector (McFarlane and Hunt 2006). Working in Australia, Ford et al. (2009) showed that the public's acceptance of clearcutting was related to their value orientation. Those with stronger "use values" (timber production) were more likely to find clearcutting acceptable than those with stronger "intrinsic values" for nature. In Canada, Tindall (2003) also found that those with a biocentric orientation tended to support policies aimed toward resource protection and view commercial forest practices as unsustainable, and its visual impacts unacceptable. Steel et al. (1994) conducted a study in Oregon about whether value orientations predict public attitudes toward various forest management practices. They observed that respondents with an anthropocentric values orientation support resource use for economic gain, and view forest management as sustainable and its visual impacts acceptable (Steel et al. 1994). From their work on public acceptance of clearcutting in Australia, Ford et al. (2012) learned that a person's aesthetic experience in nature is filtered by values and that this experience directly shapes their attitudes toward management actions.

Clement and Cheng (2011) used a random household survey (response rate 34 percent) in Colorado and Wyoming to explore values and attitudes toward forest management, and preferences for specific management activities (logging, oil and gas drilling, and off-highway vehicle use) in three national forests. Overall, respondents scored highest on the values "aesthetic," "recreation," and "biodiversity." Statistical analysis showed that both values and attitudes influenced management preferences. Specifically, they found that certain values were more prevalent in classifying respondents for each management issue. Understanding one's values was helpful in predicting responses to management preferences. Respondents that shared similar value orientations sometimes held different and even opposing policy preferences (Clement and Cheng 2011), which suggests that values and attitudes/preferences are most powerful when examined together. For example,

those with stronger values in "recreation" and "economic" were positively correlated with oil and gas leasing. Interestingly, the same two values also correlated positively with sport hunting and fishing and negatively with wilderness designation. They also found that those who ranked recreation, economic, historical, and cultural values high are more comfortable with forest treatments to reduce wildfire risk. This approach is a useful example of how to tease out the relationship between values, attitudes, and management preferences. Results show that members of the public have a range of values and may share many in common, while holding different management preferences.

The New Ecological Paradigm (NEP), also referred to as the New Environmental Paradigm, is another widely used scale that measures environmental attitudes along a **biocentric to anthropocentric** continuum. The original scale developed in 1978 used 12 items and measured along three facets of internalized beliefs and values: beliefs about humans' ability to upset the balance of nature, recognition of limits to growth, and beliefs about humanity's rights to rule over nature (Dunlap and van Liere 1978). The scale was later updated and renamed to constitute a 15-item scale that measured values along five facets: beliefs that humans affect the balance of nature, beliefs that humans are causing harm to the environment, beliefs that humans are not exempt from constraints of nature, beliefs that the Earth's resources are limited, and beliefs that humans have the right to modify and control the environment (Dunlap 2008, Dunlap et al. 2000). Respondents agreed or disagreed with statements related to each facet to develop a score for each facet and an overall NEP score. In a meta-analysis conducted in 2009 (Hawcroft and Milfont 2010), the authors found 69 distinct studies (52 in the United States) that used NEP in 36 countries. Despite its widespread use, Hawcroft and Milfont (2010) found a lack of empirical and theoretical integration in studies that used NEP to measure environmental attitudes. Partly this is due to variations in the implementation of NEP (differences in sample size and context). Others who tested the validity of NEP found variation among the five facets, with the most reliable being the scale measuring the "balance of nature." Moreover, they found that the five subscales were more useful than the cumulative NEP score

(Amburgey and Thoman 2012). Still, it is not clear that the NEP scale is adequately measuring environmental attitudes.

The Natural Area Values Scale has been used primarily in Australia. This approach identifies five factors (intrinsic, use, non-use, recreational, and aesthetic) (Ford et al. 2012, Winter and Lockwood 2004). Values suitability analysis (also called values compatibility analysis) is an approach that evaluates the extent to which public values and attitudes are consistent with agency management actions. Brown and Reed (2012) determined where all-terrain vehicles (ATV) could occur within a national forests that would not compromise other values. These data helped land managers establish areas that were compatible with ATV use and areas that would require tradeoffs with other forest uses. Acknowledging distinct values sets and their compatibility with management actions is useful, but in many cases, resource users have conflicting values. Collaborative learning processes can raise awareness of values to the surface and acknowledge the tradeoffs among values that exist, achieving solutions that reflect a multiplicity of coexisting values (Daniels and Walker 2001).

The Public Values of Forest Scale (Tarrant et al. 2003) is a survey based on a 12-item scale that considers three factors: outputs (timber, roads, raw materials, range, recreation), amenities (quiet, education, aesthetics), and protection (clean water, fish and wildlife, endangered species). The survey was found to have predictive validity for discerning values among demographic variables and in predicting attitudes toward wilderness. Understanding attitudes is helpful, yet one's attitudes do not necessarily predict whether one accepts a particular management approach or outcome, which can be influenced by contextual conditions and learned behaviors (Oreg and Katz-Gerro 2006).

Landscape values mapping (LVM) is an approach used to understand what values people attach to places on the landscape (Brown and Reed 2000). The LVM approach is used to capture values across a landscape for use in planning and decisionmaking (Brown and Reed 2009, Raymond and Brown 2006). The approach understands humans as cognizant actors who experience the landscape directly through their senses, and assign meaning to places based on these experiences (Zube 1987). Brown and Reed (2000) built

a landscape values typology derived from work of Rolston and Coufal (1991). They defined 13 landscape values: economic, learning, historic, cultural, future, intrinsic, spiritual, therapeutic, subsistence, life supporting, biodiversity, recreation, and aesthetic, and asked respondents to place colored dots on a map for each value. Brown and Reed (2000) validated their landscape values typology by demonstrating that each landscape value represented a discrete construct, and that the values could not be organized into higher order factors. The study also showed that respondents were as likely to select noncommodity values (aesthetic, spiritual) as commodity values (economic, subsistence). The assigning of landscape values to a map requires that the respondents recall their direct experiences or the images from stories told about these places and the meanings generated by these experiences, which are influenced by held values.

LVM has been applied in a wide variety of countries, spatial scales, and sociocultural settings and has achieved some level of standardization through replication (Alessa et al. 2008; Beverly et al. 2008; Brown 2006, 2012; Brown and Raymond 2007; Brown and Weber 2012; Clement and Cheng 2011; Fagerholm et al. 2012; Nielsen-Pincus 2011; Reed and Brown 2003, Reed et al. 2009; Sherrouse et al. 2011). The landscape values typology is commonly used in conjunction with spatial attributes mapping (Brown 2004) where participants have options to assign multiple values across a landscape (using points or drawing shapes). Across the studies, there has been fairly consistent application of the original 13 landscape values, with some customization to suit sociocultural or biophysical conditions. For example, in Alaska and Washington, the value "subsistence" was used because of the cultural, political, and economic importance of food gathering as a cultural practice (Alessa et al. 2008, Cervený et al. 2017). Another value that has been sometimes added is "wilderness," which is appropriate in Euro-American settings, but is less meaningful in non-Western societies (Brown and Alessa 2005). Several studies employing the landscape values typology have included "special places" as an additional mapped feature, often designated with a special symbol ("X") and described using narrative description. (See Brown and Kyttä [2014] for a comprehensive overview of existing public participation geographic information systems studies).

The Valued Attributes of Landscape Scale represents a tool that measures the value of site attributes, features, or properties (Kendal et al. 2015). Site attributes may be understood as natural, social, experiential, cultural, or productive. This scale uses a standardized approach that can be compared across groups of people and in diverse landscapes (Kendal et al. 2015). The approach is an attempt to bridge held values (core values) and assigned values (attached to places or objects). More tests are required to establish the reliability of this approach.

Values are known to shift or change in response to new learning and deliberative engagement (Manfredo et al. 2017). The Deliberative Value Formation Model (DVF) is built upon the idea that group interactions and deliberative processes can result in new learning that results in a shift in values (Kenter et al. 2016a). Through deliberation, people can learn from each other and gain practice in forming reasoned opinions and evaluating arguments, resulting in new knowledge and insights (Steyaert et al. 2007). In group processes, members can express their views, reflect upon their own opinions as well as others, share experiences, and engage in meaningful debate (Kenter et al. 2016a). The DVF approach integrates deliberation with structured valuation to inform both individual values and group values (Kenter et al. 2016a). The model is based on an understanding of shared values, or those values held in common as communities, societies, and cultures (Kenter et al. 2015). The model has been tested in studies focused on monetary valuation and ecosystem services (Kenter 2016, Kenter et al. 2016b), as well as deliberative decisionmaking by communities for marine-protected areas (Ranger et al. 2016). Although different, these studies all showed the emergence of shared values among deliberative groups. DVF has not been tested in the NWFP area to date, but represents a promising approach, particularly given the preponderance of collaborative groups engaged in shared learning about resource management, discussed later in this chapter.

Each of the approaches described above and presented in table 9-1 have potential value or application to attempts to manage resources in the Plan area. Some approaches, such as LVM, which highlights the public's connection to landscape and places at various scales, have already been

used extensively in the Plan area, as this chapter describes below. We note later in the chapter that longitudinal social values data for the Plan area would be useful for understanding if or how the social context may be changing since the inception of the NWFP. Approaches that use surveys to measure value orientations and a sampling scheme that allows for a representative sample would illuminate the range of value orientations throughout the Plan area and enable comparisons between urban and rural communities, among different counties, states, or subregions, or by demographic factors.

The diversity of stakeholder values, attitudes, and preferences associated with land management are a source of ongoing difficulty for resource managers. Assessing the range of social values orientations and attitudes toward forest management goals held by the public and how these values may be changing is important to inform resource management decisions. Yet, as studies have shown, stakeholders can share common attitudes or beliefs, but possess different sets of values, while some constituents who disagree about forest management practices may share common values. The relation to place can be a factor, as studies have shown differences in attitudes among stakeholders who have a specific knowledge or keen interest in a particular ecosystem, place, issue, or activity (Ford et al. 2009, Seymour et al. 2011). Understanding the relation between values and attitudes and behaviors will help resource managers understand the implications of actions and decisions on various stakeholders.

Changing relationships to the landscapes and resources in the NWFP area—

Over the past 12 years, very few studies have been conducted in the NWFP region that relate to environmental values, attitudes, or beliefs about forest management practices. National studies in value orientations and environmental attitudes demonstrate a shift away from commodity values and toward a mix of resource production and protection (commodity and noncommodity), sometimes referred to as “green drift” (Klyza and Sousa 2010, Sousa 2011). Few such studies have been conducted in the Plan area in recent years, and those that have been published are summarized below.

Beliefs about the ecological value of old-growth forests began to change in the 1970s as new science revealed important information about forest structure and composition (Spies and Duncan 2012). Steel et al. (1994) compared Oregon residents ($n = 872$; 75.7 percent response rate) with a national sample ($n = 1,094$; 68.4 percent response rate) to understand value orientations and attitudes toward forest management. The study found that respondents both in Oregon and the national sample held biocentric values more so than anthropocentric values. The study also found that respondents in the national sample held stronger biocentric views compared to Oregon residents. In other words, overall, the U.S. population leaned more toward valuing nature for the sake of nature than valuing the human use of nature. The study also found that the national sample universally opposed traditional resource management (regardless of values orientation), whereas in Oregon, primarily those with biocentric orientations opposed traditional forest management practices while those with anthropocentric values were more likely to favor policies that promote jobs and rural communities (Steel et al. 1994). These studies show that regional differences in value orientations exist.

Another study in the NWFP area showed that variations can exist at the county level. Dietsch et al. (2016) explored wildlife conservation values in Washington state ($n = 4,183$) in relation to wolf management. The goal of the study was to understand the relationship between modernization (urbanization, wealth, and education) and wildlife value orientations. Wildlife values were measured on a scale that examined degrees of mutualism (prioritizing the needs of wildlife) and domination (prioritizing human needs). The study found a positive association between modernization and mutualism and a negative association between modernization and domination at the county level, but variations existed among counties, with some areas exhibiting more domination values and others with a mix of values. This implies that setting influences values. In particular, counties in northwest Washington had a higher prevalence of mutualism than other regions, with the exception of one county (Shelton), which had a lower level of mutualism. Meanwhile, counties in eastern Washington had the lowest

support for mutualism. Yet, one county in eastern Washington had strong support for mutualism, demonstrating that variation is not entirely based on regional setting. These results suggest that a variety of value orientations exist throughout the region.

In 2013, the Oregon Values Project, cosponsored by Oregon State University, surveyed more than 9,500 Oregonians about their beliefs related to various issues, including the environment (DHM Research 2014). Study results have not been published in peer-reviewed journals, and it should be noted that no response rate was reported and a quota sampling scheme was used (DHM Research 2014). Survey results indicated that 57 percent of Oregonians believe that environmental protection should be prioritized even at the risk of slowing economic growth, although there were variations statewide with 62 percent of metropolitan Portland respondents favoring environmental protection, compared to 50 to 54 percent in other parts of Oregon. Statewide, 35 percent said that economic growth should be given priority, even if the environment suffers. Responses also varied regionally, ranging from 30 percent in metropolitan Portland to 49 percent in eastern Oregon. Again, these results show variation in conservation attitudes among regions within a state. The study also inquired about support to increase timber harvests in forest stands that were described as “dense and overcrowded.” Statewide, 53 percent were in favor of timber harvest in overcrowded stands, but responses ranged with less support from Portland (48 percent) and more support in other parts of Oregon (60 to 67 percent). It is possible that the wording of this question, framing the forests as “overcrowded” influenced responses. Still, findings suggest uniquely rural and urban patterns in values related to the environment.

One study in the NWFP area investigated public attitudes toward policies that favor environmental preservation or economic opportunity on public lands. Williams et al. (2017) explored public attitudes toward forest management in the Mount Baker–Snoqualmie National Forest, an urban-proximate forest in the northwest Cascade region. Respondents ($n = 1,796$) participated in an online survey and in community workshops, answering a series

of questions about the importance of 26 forest management goals on a five-point scale. Water quality, wildlife habitat, clean air, aesthetics, and human-powered recreation were in the top five management goals, compared to wood (ranked 18th), energy (19th), and mining (24th). The study found few significant differences in management preferences between rural, suburban, and urban respondents. In a different study, which also featured a participatory mapping component identifying special places and resource interactions, responses of urban and rural residents were compared (McLain et al. 2017a). The study found that special places identified by urban residents were scattered throughout the entire national forest, while rural residents identified special places close to home. Resource uses among urban and rural residents were largely similar; however, rural residents were more likely to use the area for hunting and gathering foods, while urban residents were more likely to engage in active recreation (McLain et al. 2017a). While this study did not explore values, the results suggest different orientations to forests and their use.

Landscape values mapping and public participation geographic information systems (PPGIS) have been used to understand public values in the NWFP area. Brown and Reed (2009) used random household surveys of area residents to explore landscape values using a 13-item scale in three Oregon national forests in the Plan area: Deschutes/Ochoco (n = 1,916; 11.8 percent response rate), and Mount Hood (n = 1,350; 11.4 percent response rate). Based on the frequency of responses, they found the top five values to be consistent in all three forests: developed recreation, primitive recreation, aesthetic, wilderness, and biodiversity. Economic values were ranked seventh (Deschutes/Ochoco) and eighth (Mount Hood) (Brown and Reed 2009).

McLain et al. (2013a) studied landscape values for residents of Washington's Olympic Peninsula using a community workshop approach that included 169 respondents who were recruited using key informants and a snowball approach. Eight community workshops were held. Collectively, respondents identified 880 mapped places and labelled each with a primary landscape value from a list of 14. The most frequent "primary" landscape value

assigned was **recreation** (56 percent), followed by **economic**, **aesthetic**, and **home**. When secondary values were combined with the primary values, recreation remained the most prominent value, followed by aesthetic and economic (Cervený et al. 2017). These results suggest a balance of commodity and noncommodity values associated with this particular region.

We also looked at studies conducted in regions adjacent to the Plan area to understand values, attitudes, and beliefs. Hamilton et al. (2012) conducted a household survey of 1,585 northeast Oregonians and compared findings to a national sample (no response rates reported.) Although outside the Plan area, these results provide some insight into the views of rural residents in other parts of the state. This study asked respondents to rank management goals and found that northeastern Oregon residents were more likely than Americans nationwide to prioritize jobs and "use of forest resources" over resource conservation. Respondents also were more likely than the national population to believe that conservation practices and environmental rules that restrict development had negative effects on their local community. Moreover, in prioritizing a list of environmental problems facing their community, northeastern Oregonians identified "forest jobs" over a multitude of resource issues, including wildfire, insects, population growth, forest fragmentation, global warming, and overharvesting (Hamilton et al. 2012). Working in the Inland Northwest region, which includes eastern Oregon, Nielsen-Pincus (2011) conducted a household survey (n = 767) that also used an LVM approach to explore values attached to public lands. The study determined that the most important values were recreation, aesthetic, and economic. These results are similar to those found by McLain et al. (2013a) and demonstrate the mix of values that acknowledge forests for their recreation and scenic benefits, but also value income and employment opportunities associated with forests.

Changing relationships to the landscapes and resources outside the NWFP area—

Changes in environmental values in the NWFP area and the Pacific Northwest may be understood in the broader context of changes in American values. In the 1990s, scholars

documented a paradigm shift in American public attitudes toward forest management away from a focus on economic values, outputs, and commodities, and toward more diverse values that include noneconomic values, especially protection of ecosystems and aesthetic values (Bengston and Fan 1999, Brown and Reed 2000, Brunson and Steel 1996, Manning et al. 1999, Rolston and Coufal 1991, Tarrant and Cordell 1997). These studies suggest that survey respondents favor a balance of protection and production in forest management. In a national study, Bengston et al. (2004) relied on computer-assisted media analysis between 1980 and 1990. The authors observed a decline in the expression of **anthropocentric** values and an increase in **biocentric** value expressions.

Shields et al. (2002) surveyed North American households and found that respondents were strongly oriented toward environmental protection, and nonconsumptive services were rated as more important than consumptive goods and services. Another study explored national forest policy decisions through the mid-1990s and noticed a shift toward greater ecological sensitivity, attributed to the success of environmental organizations disseminating information to legislators (Burnett and Davis 2002). Studies conducted in other regions of the United States, taken collectively, shed light on trends in the NWFP area, especially given the dearth of empirical studies in the NWFP area. Several studies in other parts of the country echo these national trends. Brown and Reed (2000) surveyed Alaskans and found that the most important values were aesthetic, recreation, life sustaining (ability to provide air and water), and biological. Manning (1999) found that rural Vermonters living near a national forest were more likely to identify aesthetic, ecological, and recreational values over economic values. Bliss et al. (1997) found that the public favored a balance of values but leaned heavily toward environmental protection. Collectively, these studies suggest a broader shift in American public values. Still, as Rentfrow (2010) noted, regional clusters of environmental values and beliefs exist, and caution should be exercised in conveying national trends.

A variety of studies conducted in rural, resource-dominated regions throughout the United States and Canada

may shed light on value subsets of the NWFP area. It often is assumed that urban residents have a more biocentric values orientation, while residents of rural, resource-based communities are more anthropocentric. Recent studies have proven that these divisions are not clear cut. Racevskis and Lupi (2006) found that timber-dependent communities in Michigan did not uniformly fall into an anthropocentric orientation of commodity production and utilitarian use. Also, urban residents did not express a strong preference for resource protection. This diversity may be explained by immigration of new residents with biocentric orientations into resource-dependent regions. McFarlane et al. (2011) studied forest-dependent communities in New Brunswick and uncovered a wide range of values in both rural and urban communities. Residents of forest-based communities did not always prioritize economic benefits over the natural environment, and urban communities did not always prioritize resource protection. Nadeau et al. (2008) found that urban residents in New Brunswick had strong ties to rural forest lands through family connections, woodlots, and second homes.

Amenity migration also may be associated with localized shifts in values. Jones et al. (2003) in a national study learned that urban residents are drawn to amenity-rich areas to improve their quality of life. This migration diversifies value orientations and increases potential for conflict. Smith and Krannich (2009) found more similarities than differences in environmental values among new and long-term residents in amenity-rich places in the Rockies. Fortmann and Kusel (1990) studied California communities and found that migrants to amenity-rich areas with biocentric orientations shared values with a subset of existing residents whose voices had been previously dominated by more anthropocentric views. The new arrival of urban residents led to increased conflict as long-time residents with biocentric views became more outspoken. These studies on amenity migration and shifting values present mixed results but reinforce the notion of regional variation in value orientations and attitudes. Although these studies occurred outside the NWFP area, several cities in the NWFP are facing growth in amenity migration, and results from these studies can inform our overall understanding.

Changing values around forest harvest practices—

Over the past three decades, a number of studies have explored public response to forest treatments and the acceptability of various harvest practice (see Burchfield et al. 2003; Ford et al. 2009; Kearney 2001; Shindler et al. 2002, 2004). Social acceptability refers to public judgments about the appropriateness of a given management action, policy, practice, or resource condition (Allen et al. 2009, Brunson 1996). When there is a lack of public acceptance of a policy or management action, it is likely to fail or lead to conflict (Shindler et al. 2002, Wondolleck and Yaffee 2000). Social acceptability includes both individual beliefs about what is right and social norms of what is appropriate (Allen et al. 2009). Shindler et al. (2004) have identified several important themes associated with social acceptability. Social acceptability is (a) a dynamic process, (b) a result of multiple factors (ecological knowledge, prior experience, place attachment, risk perception), (c) context dependent (what is acceptable in a neighboring county may not be acceptable in my backyard), (d) process-dependent (if the process is more transparent, there is likely to be greater acceptance), and (e) based on the degree of trust among the public in land management agencies (Shindler et al. 2002, 2004).

An abundance of early research explored the scenic qualities associated with landscape treatments (See Ribe 1989 for a complete review.) This work continues with focus on alternative silviculture treatments (Ribe 1989, Shelby et al. 2003) and scenic beauty as an indicator of social acceptability (Gobster 1996). Despite the power of visual images, judgments based on scenery can be influenced by the degree of ecological knowledge, environmental communication, and individual value orientations (Brunson and Reiter 1996). Acceptability judgments about forest harvest treatments were linked to how sites appear once practices have been implemented, how the natural characteristics of sites might change, the level of trust in information offered, perceived community benefits, and citizen engagement in the process (Olsen et al. 2012, Shindler and Collson 1998). Trust appears to be critical to social acceptability. Trust can be both broad based (trust in an agency to manage resources and serve public interests) and project based (trust that

the project will not cause undue harm to the environment or change in resource use) (Ribe 2013). The public can be influenced by local political narratives and debates, perceptions of trust and justice, and fears about potentially adverse effects of management (Ford et al. 2009, Tindall 2003). Ribe (2013) emphasized that resource managers design forest treatments that express visible stewardship and public education in a way that broadens understanding of ecological aesthetics (naturalistic treatments). Existing studies about forest perceptions deal primarily with visual aesthetics and are not focused on social acceptability based on management goals, such as restoring ecosystem health.

In one NWFP study, perceptions of scenic beauty were compared among respondents grouped based on their orientation to resource conservation. Ribe (2002) used images of coastal mountain ranges to evaluate perceptions of scenic beauty as they corresponded to management acceptability among three groups: those favoring resource production, those favoring resource protection, and moderates. Respondents in Washington and Oregon (n = 1,035) rated photographic images for scenic beauty and acceptability, using fixed categories ranging from “very beautiful” to “unattractive” to label scenes based on their subjective perceptions. The authors found that all respondents (regardless of values) determined “very beautiful” scenes to be acceptable. Participants with views that favored resource production had lower standards for what is acceptable to them and what is beautiful, compared to those favoring resource protection. Those favoring resource production were more likely to perceive “unattractive” scenes as acceptable.

The potential effects of timber harvesting on ecosystems historically has been a focus of public attention and some contention in the NWFP area (Brunson et al. 1997). As Ribe (2006) observed, research on harvest practices has historically considered timber harvesting and forest preservation as two ends of a continuum (Manning et al. 1999) or positioned clearcutting against other types of forest treatments (Bliss 2000). A growing body of work has focused on what non-clearcut harvests look like and how the public responds to these treatments. New types of forestry, including ecological forestry (chapter 3 and described below) have gained momentum in the past 10 years, providing an array

of options to harvest some trees in a stand in a way that sustains ecosystem function (Franklin et al. 2007). Ford et al. (2009) provided simulations of various harvest types along with information about logging plans and outcomes in Tasmania. They found environmental value orientations to be the most reliable predictor of perceptions of acceptability, with “protectionist” respondents finding clearcuts least acceptable, and selection harvests most acceptable and “productionist” respondents having the reverse pattern.

Research has shown that clearcutting is not an acceptable management strategy for a large portion of the public in the United States (Bliss 2000), and specifically in the Pacific Northwest (Ribe and Matteson 2002). This lack of support for clearcutting was also evident elsewhere (Clement and Cheng 2011). Hansis (1995) surveyed residents of northwest Oregon and southwest Washington and found general opposition to clearcutting practices, with particular opposition by women, urban residents, educated residents, and those with a liberal ideology. Meanwhile, Ribe (2006) used photographs of forest treatments to evaluate the social acceptability of various forest treatments (19 scenarios) that included combinations of age, harvest intensity, retention pattern, and down wood level. Respondents were shown four photographs per treatment type and asked to rate treatments for scenic beauty, service to humans, service to wildlife, and overall acceptability. A survey (n = 272) of western Oregon residents was conducted with the photo elicitation. The study revealed that 9 of the 19 forest treatments were of “conflicted acceptability,” including all three treatments involving old-growth forests. Results also showed widespread opposition to clearcutting and some acceptance of retention harvests and forest thinning. This methodology, adapted from Ford et al. (2007), has been used in several other studies in the Pacific Northwest, with similar results (Ribe 2009, Ribe and Matteson 2002, Ribe et al. 2013).

Meanwhile, Abrams et al. (2005) conducted household surveys (stratified random sample) in Washington and Oregon studying the relationship between self-ascribed environmental or economic priorities and two variables: the acceptability of forest management practices and perceived threats to forest health. They analyzed surveys from

492 respondents (51 percent response rate). They found that selective thinning was generally accepted by most respondents, regardless of their prioritization of policies in favor of environmental preservation or economic opportunity. Respondents with a pro-environmental viewpoint perceived human-caused factors (overharvesting, motorized vehicle use, road building, and fire suppression) as the greatest threats. Those who supported jobs and employment opportunities over environmental preservation saw naturally occurring processes (disease, wildfires) as the greatest threats.

Olsen et al. (2012) studied public opinions of alternative management strategies in the McKenzie River watershed of western Oregon, specifically disturbance-based management (DBM). The study included surveys (n = 230) of the “local attentive public” who had shown past interest in forest management issues based on attending public meetings or other events. Overall, support for DBM was mixed in the study population. The authors found that members of the public had varying degrees of knowledge about landscape-level disturbance processes or concepts, with most having low to moderate levels. In addition, they observed low levels of confidence in the information provided by agencies, and trust levels of local officials appeared to be higher than trust levels in the agency as a whole. Study participants worried that national level policies and directives would affect their communities. They also had fears about DBM being used to harvest old-growth forests. The authors suggested that transparent decision-making processes and public engagement opportunities that feature clear discussion of the risks may increase support for forest treatments.

Although outside the NWFP, a study of perceptions in the Rocky Mountains supports this trend (Clement and Cheng 2011). In a study of three national forests in Colorado and Wyoming, the researchers found that support for mechanical thinning treatments depended largely on management goals associated with those treatments. There was support for logging when it was done to protect human life and private property, to remove dead trees or insect-infested trees, or to improve wildlife habitat. However, there was less support for logging for commercial profit or for

clearcutting as a management technique. These results are important because they emphasize the need for clear communication of management goals to public audiences.

Although few in number, these studies suggest that residents of the NWFP area embody a range of views related to the social acceptability of timber harvest and that these views are based on their values as well as connections to place. Although it appears that the public in the Plan area does not generally support clearcutting as a management strategy, there does appear to be potential for public support for alternative harvest strategies, such as DBM (Olsen et al. 2012), especially when efforts to expand public knowledge and share accurate information are included in the management effort. It also appears important that any harvest strategy avoid old-growth forests and old, large individual trees.

Ecological forestry—Ecological forestry represents a recently emerging framework for attacking the “wicked problems” associated with forest conservation and management (Weber and Khademian 2008). The framework uses a systems approach that recognizes the interlinkages and mutually modifying processes among various entities to create a networked system. The framework also relies on ethical guidelines for managing forests around ecological objectives (Franklin et al. 2007). The approach recognizes forests as dynamic systems adaptive to new conditions and that exist as one part of a broader landscape that is managed (by multiple actors) to achieve various objectives (Batavia and Nelson 2016). This approach assumes a socioecological standpoint, acknowledging humans as part of the ecosystem and the need for integration of social and ecological elements.

The goal of ecological forestry is to sustain healthy and productive forests, retain native species, and provide a range of ecosystem services (Batavia and Nelson 2016). This goal is met by “managing forests in ways that bring them closer ... in structure, function, and composition to healthy, natural forests at all stages of successional development” (Palik and D’Amato 2017: 51). Ecological forestry strives to mimic the effects of natural disturbance and succession processes, which includes retaining some elements of

the existing stand (Batavia and Nelson 2016). Ecological forestry is based on (a) continuity of forest structure and function between pre- and postharvest systems; (b) structural and compositional complexity biodiversity, and spatial heterogeneity at a variety of scales; (c) carefully timed treatments based on understanding of ecological processes; and (d) planning forest management with understanding of the broader context at the landscape scale (Palik and D’Amato 2017).

Traditional forestry was based on utilitarian or anthropocentric views of forests as producing benefits for human use and consumption (Nocentini et al. 2017). Although research in this area is ongoing, presumably the ethic of ecological forestry would lean toward a biocentric orientation with timber output being a byproduct of more holistic landscape management. This approach also acknowledges humans as active ecosystem participants with specific wants and needs including a broad range of ecosystem services that forests provide. Batavia and Nelson (2016) argue that “ethics need to be institutionalized in the routine practice of natural resource management” (2016: 8). Ecological forestry also emphasizes the integration of social and ecological elements, which makes understanding of values, attitudes, and beliefs important. The framework recognizes the need for multiple actors to be coordinated and engaged around the task of integrating ecological, social, and economic sustainability and developing an ethical framework (Nocentini et al. 2017). Ecological forestry has been proposed in the NWFP area (Franklin et al. 2012); however, the practice has received limited testing, and few known studies, with the exception of Olsen et al. (2012), have evaluated the social acceptability or public attitudes toward these treatment practices. More work in this area is needed to understand the potential applications of ecological forestry in the Plan area.

Summary—

Differences in stakeholder values and attitudes are at the root of many forest management conflicts. Building consensus among stakeholders with different sets of values often is difficult and time-intensive. Values can change over time in response to major societal changes. Values and attitudes

differ among geographic regions, residential classifications (urban or rural), and proximity to public lands. Moreover, national values are sometimes perceived to be in conflict with local interests, which suggests the importance of understanding the multitude of values and attitudes. Findings show that the United States has experienced a measureable values shift since the 1950s that is related to a wave of policies diminishing the importance of utilitarian values and increasing the importance of experiential, aesthetic, and biocentric values. Ongoing monitoring of public values will enhance our understanding of what is important to people vested in the NWFP area. Awareness of these values shifts allows resource managers to consider public needs in planning and decisionmaking and allows managers to anticipate conflict and consider diverse communication strategies. Land managers who acknowledge the diversity of values, attitudes, and beliefs among stakeholders and socioeconomic groups at the appropriate geographic scale will be better equipped to understand characteristics of the social system and anticipate the need for change. Growing understanding of human-resource connections can strengthen relations between agencies and communities and contribute toward trust building.

Valuing Place

The NWFP's signature characteristic is its focus on ecosystem management, a management approach that is fundamentally place based (Williams et al. 2013). Place has increasingly been used as a concept in national forest planning and public engagement efforts (Farnum et al. 2005, Kruger and Williams 2007, Williams et al. 2013). The term "place" embodies both biophysical characteristics and sociocultural meanings that are critical to quality of life and social identity. This section describes current research related to place and lessons learned of relevance to forest planning and plan implementation in general, and to forest plan revisions within the NWFP area.

Defining place—

Places are not merely geographic locations but rather are produced when individuals and groups assign value or meaning to undifferentiated space (Tuan 1977). Places and

the meanings that one attaches to them help people to make sense of the world and motivate the actions they take with respect to particular locales (Sack 1992). Sense of place, or "the perception of what is most salient in a specific location" (Cantrill and Senecah 2001: 187), is manifested in our views about the kinds of activities and uses we consider acceptable in that location.

The tools and conceptual frameworks for assessing and inventorying place meanings in natural resource settings are still in the early stages of development. Studies about the roles that place plays in environmental and land use management have examined the factors that contribute to the production of place (Ardoin 2014), the role of place in the formation and maintenance of self and group identities (Twigger-Ross and Uzzell 1996), the ways in which place meanings connect people to particular landscapes or ways of life (Davenport and Anderson 2005, Kil et al. 2015), and how place meanings are mobilized to support or contest land management or economic development objectives (Stokowski 2002). Places are multidimensional and produced through a melding of the individual and group histories, memories, values, and beliefs associated with a locale and its biophysical attributes (Ardoin et al. 2012, Cheng et al. 2003, Jorgensen and Stedman 2001, Stedman 2003).

It is generally understood that sense of place has three major elements: (1) a biophysical setting (array of physical features and amenities embodied in a particular place); (2) the individual meanings associated with the location, produced through a combination of individual personality traits and lived experiences; (3) and the sociocultural or shared meanings linked to that location (Smaldone et al. 2005). Of these, only biophysical features are relatively straightforward for land managers to assess and integrate into planning. Yet, the individual and cultural meanings associated with specific locations are equally important to understand if politically viable environmental policies and management actions are to be implemented under the revised NWFP or other management plans.

A place meaning is the significance that people assign to places (Davenport et al. 2010). Place meanings can be positive or negative, specific to an individual, or shared

within and across groups (Scannell and Gifford 2010). Place meanings are critically important to understanding people-place relationships, which in turn influence whether policies and management actions will have broad-based acceptance among interest groups and the general public. Assessing place meanings, however, is challenging in part because although relatively stable, they are not static as individuals and groups respond to changes in their social and physical surroundings (Smaldone et al. 2005: 397; Williams 2002: 17). Over the past decade, social scientists have developed conceptual frameworks and practical tools that managers can draw upon to understand the type and intensity of connections that different segments of the public have with places in their management jurisdiction (fig. 9-3).

Key concepts: place attachment, place dependence, and place identity—

Place researchers often distinguish between three concepts linked to the notion of place (box 2): place attachment, place dependence, and place identity, with place dependency and place identity considered subcomponents of place attachment (Anton and Lawrence 2014). Understanding the difference between these three concepts is important for resource managers because they shape how different segments of the public are likely to respond to proposed policy changes, such as revisions to the NWFP as well as proposed management actions.

Place attachment is the process by which individuals or groups become connected, whether emotionally or for instrumental purposes, to a specific geographical location

Lee Cerveny



Figure 9-3—Observing the surf from the Siuslaw National Forest.

Box 2—Key Concepts About Place

Place attachment—people develop strong connections to a place based on repeated experiences and in-depth knowledge of that place.

Place dependence—people have places they rely on to provide services and products that sustain their livelihoods or lifestyles or provide desired experiences.

Place identity—people sometimes have places that have such deep symbolic meaning (cultural, historical, spiritual) that those places help define who they are in the world.

(Scannell and Gifford 2010). For groups, place attachment is considered “a community process in which groups become attached to areas wherein they may practice, and thus preserve, their cultures” (Scannell and Gifford 2010: 2). Empirical research on place suggests that strong positive person-place bonds can motivate individuals and groups to care for, protect, and defend particular places or types of settings (Eisenhauer and Kra 2000, Kil et al. 2014, Stedman 2002). Place attachment also is important because it is sometimes associated with negative social and environmental outcomes (Lewicka 2011, Yung et al. 2003). For example, strong attachments to place may lead to intense conflict between long-time residents and newcomers who bring with them very different ideas about what uses and activities are desirable for that place (Hurley and Walker 2004). Indeed, the conflicts over timber that led up to the NWFP arguably were partly struggles between two groups with very different, but equally strong, attachments to place. Proctor (1995) described how disagreements in the early 1990s between loggers and environmentalists were linked to their very different experiences and connections with the Pacific Northwest forest landscape. A regional socioeconomic assessment of the impacts of the NWFP found that feelings of a loss of cultural identity were common among residents in rural Oregon and Washington communities that had been heavily affected by the shift in forest management practices brought about by the NWFP (Charnley et al. 2008).

Studies of place attachment among transient residents and tourists indicate that even short-term visitors can develop strong attachments to places such as seasonal homes, parks, or natural areas (Lewicka 2011). Evidence is mixed, but overall, it appears that visitors with stronger local social ties or who visit more frequently develop stronger place attachments (Lewicka 2011). People can become attached to places that they have only heard about or imagined, a concept that Kruger (2008: 2) refers to as “existence attachment.” Just as people can have an “existence value” (a willingness to pay to ensure someplace exists even though they have never visited) for resources, so too can people develop attachments to places they have never visited (Kruger 2008). Attachment to places not visited has important management implications for NWFP implementation as it points to the need for land managers to take into account the place meanings of stakeholders who do not use an area, as well as those who do.

Place dependence has to do with the “importance of place in providing features and conditions that support specific goals or desired activities” (Ujang and Zakariya 2015: 712), and is related to how well the physical characteristics of a place fulfill an individual’s goals and needs (Scannell and Gifford 2010). The better the conditions at a place meet a person’s needs or goals, the more attached that person is likely to be to that particular location. The degree to which an individual is place dependent also hinges upon how well the quality of a place they are currently using compares with the quality of potential substitute places (Smaldone et al. 2005). However, the **meanings** associated with the physical features of a place may be what cause people to value that place rather than the features themselves (Stedman 2003). Changes in biophysical features as a result of forest management actions or policies may trigger strong negative reactions among those segments of the public for whom that particular suite of biophysical characteristics is imbued with deeper meaning.

In some circumstances, bonds to places or settings are so strong that those places become intimately bound up with the person’s or group’s core sense of self (i.e., personal or social identity), a phenomenon known as **place identity** (Proshansky et al. 1983). Place identity is closely linked

with the symbolic meanings of place rather than its utilitarian values and “is based on the notion that places serve various functions in identity development that promote a sense of belongingness” (Davenport and Anderson 2005: 628). In situations where the symbolic meanings of place are spiritual in nature, such places are sometimes viewed as sacred in the eyes of those for whom they have spiritual meaning. In the late 20th century, so-called old-growth forests of the Pacific Northwest became imbued with religious meaning for many Americans (Lee 2009, Proctor 2009), and efforts to protect what many people had begun to see as sacred forests arguably contributed toward policies such as the NWFP.

Droseltis and Vignoles (2010) described the distinction between place attachment and place identity, a subset of place attachment, as the difference between a place where someone feels “at home” (place attachment) and a place that one feels is a fundamental part of one’s self (place identity). When individuals identify with a place or have a particularly strong attachment to it, place disruptions, or changes in the fit between place meanings and its physical and social characteristics, may lead to feelings of severe anxiety and loss (Devine-Wright 2009, Proshansky et al. 1983, Stedman 2002, Twigger-Ross and Uzzell 1996). Denial, detachment, and taking part in place-protective actions, such as forming protest groups or signing petitions against proposed changes, are among the strategies used by individuals and groups to cope with threats to place meanings (Devine-Wright 2009). The resource conflicts associated with the development of the NWFP are just one example of the intense social tensions that can emerge when place identities are threatened. Proactively identifying which places (or types of places) are likely to trigger large-scale place identity crises if they are fundamentally changed through forest management actions is one strategy that managers could use to reduce the likelihood of major land use conflicts and intense polarization. Like social identities, which are generally relatively stable but which can change under some circumstances for some individuals (Amiot et al. 2015, Carlsson et al. 2015, Cohen and Sherman 2014, Miller and Caughlin 2013, Perozzo et al. 2016), place identities

tend to be stable but can change as individuals and groups have new experiences or engage in dialogue with others for whom a place has different meanings (Coen et al. 2017, Wheeler 2017).

Salience, or the “probability that an identity will be activated in a situation” (Stets and Burke 2000: 229), is an important concept in social identity theory that has implications for how place identity can provide the seed for constructive collaboration as well as conflict (Bryan 2008). Social identity is “a person’s knowledge that he or she belongs to a social category or group” (Stets and Burke 2000: 225). Characterization, another important social identity theory concept, is “what an individual or group perceives another individual or group to be” (Wondolleck et al. 2003). All individuals’ social identities are derived from membership in multiple categories (Stets and Burke 2000). Which social identity is salient for an individual or group depends on the social context, or the degree to which an individual perceives that a social category they have characterized themselves as fits with reality (Turner 1987). As described earlier in this section, geographical context can serve as the basis for social identity, with place identity arising from the link between groups of individuals and specific locales (Proshansky 1983, Wondolleck et al. 2003).

Social identity theory further suggests that “conflict derives in part from social group comparisons in which in-groups portray themselves (identity) more positively and out-groups (characterization) more negatively” (Bryan 2008: 54), processes known respectively as identity or characterization framing (Wondolleck et al. 2003). Identity and characterization framing can be used to describe the roles that an individual plays without assigning judgment, to draw connections with others, or to distinguish one’s self or one’s group from others (Wondolleck et al. 2003). The Quincy Library Group is a place-based collaborative planning group that emerged in California’s northern Sierras in the 1990s in response to a major reduction in timber harvested on federal lands. The Quincy Library Group helped shift participants’ salient identities from the previously conflictual identities of “logger,” “environmentalist,” or “Forest Service employee” to a common identity

linked to place, i.e., “resident of Plumas County” (Bryan 2008). A similar process of identity reframing where “us vs. them” moved toward “we” occurred in the Applegate Valley of southwestern Oregon during the same period (Rolle 2002).

Place-making is a political process (Manzo 2003, Yung et al. 2003) and some natural resource conflicts are as much struggles about place meanings as they are about how those resources should be allocated (Cheng et al. 2003). When place meanings are threatened by prospective land management actions, groups or individuals whose identities are tied to them may try to defend those meanings or create new ones (Hurley and Walker 2004, Manzo 2003). Through the process of place creation and maintenance, individuals and groups promote their values and beliefs about what landscapes should look like, what activities should take place where, and who belongs (or does not belong) in particular places (Cheng et al. 2003). Understanding the dynamics of the politics of place can provide managers with insights on the fundamental issues underlying natural resource conflicts and facilitate the development of natural resource decisionmaking processes that are less contested (Austin 2004, Kemmis and McKinney 2011, Yung et al. 2003).

People often use symbols, myths, and narratives as tools for supporting or resisting place claims (Cheng et al. 2003, Stokowski 2002). Such techniques typically rely on the “moral language of ecology or community” (Williams 2002: 21). To understand conflicts over place meanings—and take a step toward potentially finding solutions to those conflicts—it may be helpful to pay attention to the language and stories that different stakeholders use to create and maintain place meanings (Stokowski 2002, Yung et al. 2003). During the past two decades, collaborative forest management groups operating in the NWFP region have provided new venues where stakeholders with diverse interests can create shared meanings and common ground as to what activities are considered acceptable in particular locations (Moseley and Winkel 2014). However, Yung et al. (2003) point out that in contexts of intense resource conflict, multiple and incompatible senses of place often lie at the heart of the conflicts. In such

contexts, creating shared meanings will be challenging, and in some cases, impossible. Managers may find it useful to develop the capacity to identify when collaborative management is likely to be a successful strategy for creating shared meanings and when other strategies are called for. A rich body of research on place-related concepts has emerged over the past 20 years. However, examples of how place-related concepts have informed the design and implementation of planning processes or how data regarding place meanings, attachment, identities, or dependence have been used in planning or management processes are rare.

Public participation GIS and how “place” connects to participatory mapping—

During the past decade, public participation GIS (PPGIS) has increasingly been used as an approach for collecting data about place attachment, place dependence, place identity and other place-related constructs (McLain et al. 2013b). PPGIS links computerized mapping technology with broad-based public participation processes to generate spatial data about human-environmental connections. The discussion of LVM studies earlier in this chapter focuses on how PPGIS has been used to study values. However, PPGIS can also help clarify understandings of place meanings (McLain et al. 2013b: 652). Maps created from these data show how place meanings are distributed across the landscape, and spatial analyses can help identify how place meanings are related to certain habitat types, landforms, or other biophysical features (Brown and Brabyn 2012). These tools could be useful to land managers to improve their understandings of the types and intensity of place meanings that different segments of the public associate with forested landscapes.

In the United States, PPGIS is typically structured as a data collection process, with the goal of expanding the opportunities the general public has for providing input into environmental planning processes (Brown et al. 2014). However, in some contexts—primarily in developing countries and among indigenous peoples in industrialized nations—PPGIS is structured so that mapping participants have an opportunity to design the mapping process, analyze alternatives, and empower individuals to have a voice in decisionmaking (Sieber 2006). Public participation GIS

has been used to identify places where social and ecological hotspots are co-located (Alessa et al. 2008), measure changes in place values over time (Brown and Donovan 2014), and understand place meanings associated with forested ecosystems (Gunderson and Watson 2007, Lowery and Morse 2013). However, national forests have been slow to adopt PPGIS (Brown 2012). Brown (2012) attributed the lack of interest in PPGIS on the part of the U.S. Forest Service to organizational culture and regulatory barriers, including the lack of directives calling for the collection of data on place meanings, lack of capacity within the agency to collect and analyze such data, uncertainty about whether such data are considered scientifically valid, and the difficulty of getting approval from the Office of Management and Budget (OMB) for collecting such data.

Place-based planning—

Interest in place-based planning emerged in the late 20th century as resource management shifted from single-species or dominant-use management toward integrated and holistic systems approaches aimed at managing for a diverse set of ecological and human values (Potschin and Haines-Young 2013, Williams et al. 2013). Lowery and Morse (2013: 1423) defined place-based planning as “a process used to involve stakeholders by encouraging them to come together to collectively define place meanings and attachments.” Other scholars view place-based planning as a process that fosters social learning and adaptive management at the scale of the place of interest to the community engaged in planning (Cheng and Mattor 2010, Farnum et al. 2008). The degree to which place-based planning tends more toward information gathering or more toward social learning and participatory adaptive management differs considerably. Most PPGIS efforts fall into the information-gathering category (McLain et al. 2013b); forest collaborative planning processes focus more on social learning (Davis et al. 2017).

Place-based planning is site-specific and takes into account both social and biophysical contexts (Potschin and Haines-Young 2013, Yung et al. 2003). Place-based planning differs from locally based participatory planning in that place-based planning focuses around a particular geographical area or place but may include nonlocal participants,

such as members of regional or national interest groups (Moseley and Winkel 2014). Yet places do not exist in isolation from each other (Flint 2013). Consequently, place-based planning must factor in the socioecological connections that link bounded places to the broader realm in which they are situated (Flint 2013). This might take the form of establishment of a regional or national group composed of participants who are also active in planning at more local levels, and which therefore provides opportunities for the sharing of planning or management priorities and socioecological knowledge across scales (Flint 2013).

Place-based planning acknowledges “the multiple relationships people have with geographic locations, relationships that encompass livelihood and economics, **and** values, symbols, emotions, history, and identity” (Yung et al. 2003: 856). To identify these multiple uses, values, and meanings, place-based planners purposefully set up opportunities for stakeholders coming from multiple perspectives to engage in constructive dialogue with each other (Kruger 2008). Through the conversations that take place between stakeholders, place-based planning reveals the diversity of meanings that people attach to different parts of the planning area. Moreover, through dialogue about those place meanings, participants can engage in place-making, which in some situations may enable them to create a “shared image of place” (Patriquin and Halpenny 2017: 5). Even when place-making is not the goal of place-based planning, knowledge of which meanings are associated with which geographic locations can help managers identify when proposed management actions are likely to be contentious and how management actions might be structured so as to minimize the likelihood or intensity of conflict (Yung et al. 2003). It is important to recognize that the participatory nature of place-based planning will likely create expectations among the public that their recommendations will be incorporated into decisions; these expectations need to be acknowledged and managed (Bruña-García and Maréy-Pérez 2014, McCall 2003).

Cheng and Kruger (2008) describe a place-based planning project on the Grand Mesa, Uncompahgre, and Gunnison National Forests in which a multi-stakeholder participatory mapping approach was used. The working

groups first expanded the range of management options on the table by developing thematic landscape units, categories of land that included a much broader set of values and uses than were included in the forests' traditional management units. The thematic units were places that participants identified as being significant for a combination of social and ecological reasons, and which took into account the special or unique features of those areas as well as future conditions participants envisioned for those parts of the landscape. The themes varied from natural conditions only to permanently altered areas. Maps were used as a starting point for dialogue, and mapping exercises were structured around stakeholder-derived categories, which revealed interdependencies in uses and values at landscape scales (Cheng and Kruger 2008). Although the process provided opportunities for social learning, some stakeholders felt that meaningful participation was hindered by the management framework imposed by the U.S. Forest Service. Moreover, the use of technical language during the meetings functioned as a barrier to widespread participation. And, some stakeholders accustomed to issues-based planning resisted the idea of place-based planning (Cheng and Mattor 2010).

Issues-based planning focuses attention on outputs of individual uses (i.e., timber production, wilderness, recreation, wildlife habitat), and stakeholders organize their participation in planning around "protecting and increasing the output of their favored uses while opposing the output of other uses that are perceived to interfere with their own uses" (Cheng and Mattor 2010: 397). In contrast, place-based planning focuses on acquiring a broad-based understanding of the meanings associated with particular parts of the landscape and managing so as to maintain or create a particular sense of place (Cheng and Mattor 2010). Presumably through the process of place-based planning, participants revise their expectations as to what outputs can be derived from the planning area. However, a report on forest restoration occurring as a result of the Quincy Library Group planning process mentioned earlier in this chapter found that timber production goals fell short of what the timber industry participants in the group had hoped to achieve (Pinchot Institute for Conservation 2013). A more detailed discussion about the challenges

of place-based collaborative planning is provided later in this chapter.

Another challenge associated with place-based planning is the difficulty in scaling locally successful planning processes up to regional and national scales (Potschin and Haines-Young 2013). Moreover, local-level data required for planning are often inadequate or unavailable (Potschin and Haines-Young 2013). Additionally, place-based planning can be costly in terms of the time and resources needed to involve a diverse set of stakeholders in deliberative planning processes over a sustained period (Cheng and Mattor 2010). In the NWFP area, the most salient examples of place-based planning are the forest-level collaborative planning groups that have emerged since the mid-1990s (Moseley and Winkel 2014). Many of these collaboratives emerged out of a desire to find common ground through creating a shared sense of place, partly as a means to reduce tensions perceived as unproductive. The collaboratives and their relationship to the NWFP are described in greater detail later in this chapter.

Studies about place in the NWFP region—

We located several studies that focused on or incorporated elements of place and place-based planning from the NWFP area conducted since 2003. Using a psychology-of-place approach, White et al. (2008) looked at the relationship between place identity and place dependence on visitor perceptions of ecological, social, and depreciative impacts (i.e., littering, vandalism, dumping garbage) linked to recreation activities in the Molalla River Corridor Recreation Area and Table Rock Wilderness in western Oregon. They also looked at the relationship between the length of time visitors had been coming to the area and the intensity of their place identity and place dependence. They found no association between place identity or place dependence and perceptions of recreation-linked social, ecological, or depreciative impacts. However, individuals who had been coming to the recreation area longer had higher levels of place identity and, to a lesser extent, place dependence. Specifically, White et al. (2008) found that visitors' sense of place identity increased by 7 percent on the five-point scale used in the interviews for every additional year they had been coming to the site. One important implication of this study for forests in

the NWFP area is that longer term recreation users (and likely other types of forest users as well) are likely to have stronger attachments to particular locations, and are likely to react negatively to any management actions that change those places unless they have a voice in the planning processes that lead to those changes.

Rudestam (2014) examined links between sense of place, regional identity, watershed perceptions, and water-use behavior in the Willamette River basin. She found that landowners consistently described the water supply as being limited and scarce, belying the region's reputation for excessive rain. Although most interviewees articulated deep connections to water in the Willamette basin, few were willing to change their water-use behavior. A take-home lesson for planners is that strong place attachments are not necessarily associated with actions that improve the ecological conditions at a particular location, and that other incentives may be required to encourage ecologically beneficial behaviors.

Cheng and Daniels (2003) looked at how geographic scale and ways of knowing about watersheds are linked in place-based collaborative planning venues in the McKenzie River valley. They found that participants in the watershed group working at a smaller geographic scale were much more place oriented than their counterparts that covered a larger area. They concluded that people know places in multifaceted ways, and the scale at which a collaborative group operates affects place knowledge. However, because participants differed between the two groups, the extent to which the study's observed differences in place orientation can be attributed to scalar differences rather than differences in participants is unclear.

One of the challenges of place-based planning is the mismatch between traditional administrative boundaries and the way in which people inhabit places. Farnum et al. (2008) describe an effort by the Willamette National Forest to develop a set of place-based planning units corresponding to three geographic scales: an overarching "social resource unit" made up of three "human resource units," each of which in turn was composed of several "community resource units." The project was undertaken as a proactive step toward identifying community priorities, but the data

and analytical tools it produced were never integrated into the forest's planning or assessment processes. The authors attribute this to a combination of factors, including managers' reluctance to accept anthropological data as "scientific," loss of support for the project owing to leadership turnover, and the lack of planning directives calling for this type of analysis. Brown and Reed (2009) also identified a serious gap in the U.S. Forest Service's capacity to incorporate data about place meanings into its planning processes. Given that place meanings can significantly affect whether forest policies and management actions are viewed as socially acceptable, filling this gap in agency capacity would be one way to reduce controversy and build stronger partnerships and collaborations. The discussion of agency capacity in chapter 8 helps to illuminate the challenges and opportunities that exist to build partnerships.

McLain et al. (2013a, 2017b) conducted a study that mapped meaningful places on the Olympic Peninsula. The authors found that east-side residents on the Olympic Peninsula differed noticeably from west-side residents in how they mapped their meaningful places (McLain et al. 2013a). The west-side residents drew much larger polygons, often covering entire watersheds, while east-side residents typically used smaller polygons, points, or lines, to mark places. The authors speculate that the differences in the sizes and shapes of meaningful places reflect differences in how the two groups connect with and use the landscape, as well as topographical differences. The mapping study also revealed social identities linked to residents' relationship with place, particularly in the western part of the peninsula, which has historical roots in the timber industry (McLain et al. 2017b).

Todd (2014) collected data on meaningful places from Olympic Peninsula visitors. Intercepts were done at major trails, campgrounds, and visitor centers as well as on the ferries. Todd's research showed that the visitors' meaningful places tended to be located in Olympic National Park. In contrast, the places marked by residents in McLain et al.'s (2013a) study were heavily concentrated on the Olympic National Forest or on state trust lands. Todd also found that less-frequent visitors tended to map fewer places, and the places they mapped were generally limited to the major

tourist destinations. More frequent visitors and locals mapped more places and covered a broader geographic range. These results suggest differences in stakeholder connections to the area based on visitation frequency and residency.

McLain et al. (2017a) explored special places and associated resource uses on the Mount Baker–Snoqualmie National Forest as part of a study in support of travel management planning (USDA FS 2015c). Among other findings, this study showed that special places for rural residents tend to be more concentrated close to home, while urban residents identified special places with more geographic diversity. Resource uses were similar between urban and rural residents, with hiking being the predominant activity; however, urban forest visitors were more likely to engage in strenuous recreation (mountain biking, backpacking, climbing) while rural residents were more likely to be involved in hunting and berry picking, which are important both for food, lifestyle, and recreation (McLain et al. 2017a).

The projects by Farnum et al. (2008), McLain et al. (2013a, 2017a), and Todd (2014) resulted in the development of methods useful for identifying the range of ways that people connect with particular landscapes, information that can help guide forest planning and management actions. However, the process by which this information is then considered and incorporated will ultimately determine whether tradeoffs are acceptable and conflict minimized. Todd (2014) showed that residents and visitors have very different relationships to their landscape, underlining the importance of ensuring that efforts to inventory place meanings are structured in ways that capture place meanings from a broad spectrum of forest users. Moreover, McLain et al. (2017a) noted differences in landscape connections between urban and rural stakeholders.

Brown and Reed (2009) observed that differences in locations of special places differed depending on familiarity with the forest, whether the respondent worked in the forest products industry, and membership in an environmental organization. They concluded that the location of special places differs by subgroups, and recommended the use of multiple data collection approaches (Internet, mail survey, meetings). Barriers they identified to the use of LVM in forest planning included (a) lack of directives specifically

mentioning collecting data on landscape values and special places, (b) costs associated with conducting surveys, (c) difficulties with getting approval from the OMB to administer surveys, (d) unfamiliarity of Forest Service personnel with this approach, and (e) uncertainty about whether LVM data will stand up in court.

Regional studies of place and place-based planning—

Given the small number of studies falling within the NWFP area, we also examined studies that took place in the broader region. These include one study from eastern Washington, one from the region where Idaho, Oregon, and Washington intersect, and one from the Sierra Nevada region of California.

Nielsen-Pincus et al. (2010) drew on psychology of place theory to examine whether place identity and place attachment differed between local and absentee property owners in three rural counties in northeastern Oregon and northern Idaho. They found the models could not distinguish between place dependence and place attachment and concluded that at landscape scales, the two may be indistinguishable. Their study also showed that place identity was slightly stronger among local landowners when compared with absentee landowners, but not enough to be meaningful. Findings suggest that place identity is likely more influenced by self and social identity than by day-to-day experiences. For place attachment, their analyses showed that the number of months spent in the place each year was more important than the amount of time spent in residence. This study points to the value of ensuring that planning processes are structured in ways that include long-term seasonal residents, as well as year-round residents.

Donovan et al. (2009) captured the full range of landowner and stakeholder views about the landscape in the Palouse region of eastern Washington, and overlaid the resulting maps on ecological and land cover GIS layers. They asked participants to assign one value to each mapped location, but found that participants resisted this restriction, wanting to assign multiple values, which is consistent with previous findings, that multiple factors draw people to a place (Cervený et al. 2017, McLain et al. 2013a). The values mapped fell into two distinct clusters: (a) historical/cultural/agriculture/private land; and (b) outdoor recreation/natural

diversity/scenic views. Donovan's study points to the importance of using methods that can capture and adequately describe a range of place meanings. Practically, this implies that few places have just one meaning, even for individuals, and that it may be the suite of meanings that needs to be maintained in order for management actions to be socially acceptable, rather than just a dominant meaning.

Brown (2013) piloted a Google Maps™ values mapping application on the Sierra, Sequoia, and Inyo National Forests in northern California, using both a LVM survey and volunteered data. Outreach targeted diverse stakeholders, including a conservation group, forest industries organization, and resource managers. Brown et al. (2014) also asked respondents to map acceptable and unacceptable forest uses. Comparing survey data from randomly selected households with Web link respondents, Brown et al. concluded that the volunteer-Web mappers had mobilized to ensure that their values were strongly represented, concluding that PPGIS practitioners should not assume that the data received through open Web links are representative of the general public's views (Brown 2013, Brown et al. 2014).

Collectively, these studies have important implications for forest plan revisions in the NWFP area and subsequent implementation: (1) place meanings are likely to differ for different subgroups of the public (i.e., visitors, residents, rural, urban), (2) methods used to collect place-related data differ in terms of the types of publics that they are likely to reach, (3) use of multiple data collection approaches can help to diversify participation, which allows a broader range of place meanings to emerge, (4) institutional barriers exist within the Forest Service (and likely within other land management agencies as well) to the collection and use, and long-term storage of social science data, and (5) challenges in the agency's ability to collect and use place-based data may hinder the agency's capacity to develop socially acceptable policies, plans, and management actions.

Summary—

People have the capacity to derive symbolic meanings and develop emotional ties with outdoor places. Place meanings, whether derived through stories, histories, or experiential knowledge, have implications for forest

ecosystem management. The positive power of place motivates people to engage in forest stewardship projects, planning processes, and collaborative groups. The variety of place meanings held by diverse stakeholders suggests the need for broad-based public engagement processes. Because place meanings are dynamic and constantly being renegotiated, a public engagement process that emphasizes multiple ways of gathering information about place meanings and that is deliberately designed to reach out to a broad spectrum of the public is far more likely to capture the range of meanings than processes that rely on only one approach.

Cultural Ecosystem Services

Ecosystem services describe the wide range of benefits that forests and landscapes provide to people and that help to sustain human life (Brown et al. 2007). Ecosystem services provide a comprehensive and holistic framework for considering and evaluating multiple resource benefits (MEA 2005). The significance of ecosystem services for resource governance in the United States is becoming increasingly evident. A presidential memorandum issued in 2015 directs all federal land managers and regulatory agencies to use an ecosystem services framework for planning, policymaking, and decisionmaking (OMB 2015). Consideration of ecosystem services also is mandated in the national forest planning process under the 2012 forest planning rule (USDA FS 2012). Ecosystem services is a category for consideration in the forest assessment phase, although studies of early adopter forests demonstrate an uneven treatment of the ecosystem services principles (Ryan et al., in press). For more discussion of ecosystem services, see chapters 8 and 12.

Key concepts—

The Millennium Ecosystem Assessment (MEA) defined cultural ecosystem services as “the nonmaterial benefits people obtain from ecosystems through spiritual enrichment, cognitive development, reflection, recreation, and aesthetic experiences” (MEA 2005: 5). Many of these human benefits are intangible, such as spiritual benefits, cultural benefits, symbolic benefits, or heritage benefits

(de Groot et al. 2010, MEA 2005). Cultural ecosystem services are the products of people's interactions with landscapes and ecosystems (Chan et al. 2011, Fish et al. 2016). They are shaped by direct human perceptions and senses (Braat and de Groot 2012) and are further shaped by human values, norms, and beliefs (Fish et al. 2016). Cultural ecosystem services can inspire “deep attachment” between communities and landscapes (Chan et al. 2011) and serve as points of entry for public involvement processes related to ecosystem management (Daniel et al. 2012).

Cultural ecosystem services (also referred to as “cultural services”) have proven to be challenging to operationalize and measure (Hernández-Morcillo et al. 2013). Analysis of cultural ecosystem service indicators

has found that some are more readily captured, such as education and recreation, while others are more difficult to quantify or are often conceptualized inconsistently (de Groot et al. 2010, Hernández-Morcillo et al. 2013). Efforts to assign value to both tangible and intangible aspects of cultural services have been fraught with challenges; new methods of operationalizing cultural services are sought (Daniel et al. 2012, Hernández-Morcillo 2013, Plieninger et al. 2013). Cooper et al. (2016) observed that aesthetic and spiritual values are frequently mentioned in MEA reports as important, but there has been very little research to explore how these values may be best characterized, operationalized, quantified, or measured (fig. 9-4). Cultural services are rarely considered in ecosystem



Keith Routman

Figure 9-4—Dawn on the Hoh River, Washington.

services assessments, or if they are included, they often are given a cursory treatment (Feld et al. 2009). Some cultural services are considered vague and difficult to capture or quantify. And, cultural services are not always singular, but are intertwined or “bundled” with other services. As Klain et al., 2014) noted, Pacific salmon have cultural value as well as provisional value to Northwest coast indigenous people. They can be quantified based on price, but this ignores the spiritual value of salmon (Klain et al. 2014). Because of the lack of conformity of cultural services to a reliable metric, there has been a tendency to relegate cultural values to an afterthought, which has impacts for stakeholders who rely on ecosystems for a variety of cultural benefits (Chan et al. 2011). New studies are investigating ways to capture cultural services (Bryce et al. 2016, Daniel et al. 2012). Cultural services should not be overlooked because they play an important role in building public support for ecosystem management (Plieninger et al. 2013). An analysis of ecosystem services that does not fully maximize the measurement of cultural services is incomplete.

Managing for cultural services—

The MEA framework provides a useful template for land managers to consider the vast array of ecosystem benefits and to prioritize benefits for their management unit. The identification of cultural services as a critical component of that framework encourages even greater attention to the less “tangible” benefits associated with forest ecosystems, which often get overlooked in the planning process or when identifying forest management objectives and targets. The research on cultural services is emerging, and there have been some attempts to develop a management framework (see Fish et al. 2016).

Several studies have explored how PPGIS can be used to explore cultural services for use in land and resource planning (Brown and Fagerholm 2015, Brown et al. 2012, Bryan et al. 2010; Klain and Chan 2012, Plieninger et al. 2013, Raymond et al. 2009, Sherrouse et al. 2011). Mapping stakeholder preferences provides understanding of how cultural services attach to places on the landscape (Fager-

holm et al. 2012). Klain et al. (2012) found that it was much more common to identify areas that were associated with tangible values (recreation, cultural heritage, aesthetics) than intangible values (spiritual, sense of place, identity). Recreation values are often associated with developed recreation facilities, just as cultural heritage values can be evaluated by the number of heritage sites in a landscape and scenic areas can be used as a proxy for aesthetics. However, it may be more difficult to operationalize concepts like “social identity” or “sense of place,” which are typically measured through qualitative investigations. More research is needed to understand the distribution of cultural services across landscapes and implications for resource managers. Potentially, PPGIS would be useful to explore cultural services spatially.

A useful framework for investigating cultural ecosystem services was developed by Fish et al. (2016), who created four categories of cultural ecosystem services: **environmental spaces** (localities, places, landscapes where people and nature interact); **cultural practices** (symbols, signs, interpretation, and other expressions about the relations between people and nature); **cultural benefits** (areas where human health and well-being are linked to interactions between people and forests, such as spirituality, inspiration, freedom); and **cultural goods** (or services), where the interaction between people and nature result in market transactions or other exchange that results in income or other benefit (e.g., guiding, tourism, sporting events, festivals). This framework may be useful for exploring the diverse human connections of forests in the NWFP area.

The Forest Service has begun to use an ecosystem services framework to describe forest values (monetary and nonmonetary) provided by public lands (Deal et al. 2017). Forests using this framework have found it helpful to identify relevant ecosystem services for their forest, assess tradeoffs among services associated with proposed forest treatments and management activities, and engage partners who share mutual benefits from particular services (Deal et al. 2017). Several projects in the NWFP area incorporated an ecosystem services framework as a way

to assess benefits, develop metrics, and monitor outcomes for a particular planning area (Deal et al. 2017, Smith 2014, Smith et al. 2011). One project in the Big Marsh area of the Deschutes National Forest emphasized the tradeoffs between water quality, aquatic habitat, recreation activity, and mushroom harvest, to name a few (Smith et al. 2011). Another project involving active forest management on the Willamette National Forest engaged tribes to identify values associated with timber harvest, cultural heritage, recreation, wildlife, water quality, and harvest of special products (i.e., huckleberries, beargrass).

Two empirical studies explored public perceptions of ecosystem services in the NWFP area. Asah et al. (2012) investigated how people identify and construct forest ecosystem services in Deschutes County, Oregon. Results revealed that the public view of ecosystem services is similar to the MEA framework, with some notable differences. Although this framework categorizes mushroom picking and Christmas tree harvest as “provisioning services,” local residents view these both as provisioning and cultural services, providing opportunities to nurture social relationships and develop forest connections. The study also revealed that respondents viewed the national forest lands as both a source of affordable housing (temporary residence) and as a hedge against urban sprawl (Asah et al. 2012).

In a related project, Asah et al. (2014) investigated perceptions of ecosystems benefits by the Confederated Tribes of Warm Springs. Respondents emphasized both provisioning services (especially fish, game, and plants) and cultural services (especially spiritual, aesthetics, and place attachment), with less attention to regulating and supporting services (Asah et al. 2014). They also described direct and indirect connections between provisioning and cultural services, whereby the gathering of provisions provides an opportunity to solidify ties among tribal members and strengthen intergenerational connections. Tribal members emphasized items as cultural services that are not featured on the original MEA list, including sense of place, sense of community, and political license to exercise historical tribal rights (Asah et al. 2014). More research in the NWFP area is needed to understand public perceptions of cultural

services. Chapter 11 addresses many of the cultural aspects of forests and landscapes for American Indian tribes in the NWFP area.

Finally, in a study described earlier, Williams et al. (2017) used principal component analysis to create bundles or clusters of management preferences for residents of northwest Washington ($n = 1796$). Respondents were asked to evaluate the importance of 26 management preferences for the Mount Baker–Snoqualmie National Forest. The authors revealed six preference bundles: environmental quality, utilitarian, heritage, general recreation (hiking, scenic viewing), specialized recreation (mountain biking, equestrian, winter), and access/roads. The bundles were fairly consistent across sociodemographic categories and residential classifications (rural, suburban, and urban). Notably, some management preferences did not bundle, including nature study and food/fuel gathering. These bundles roughly coincide with the ecosystem service items described in the MEA (MEA 2005).

Summary—

Ecosystem services, and cultural services in particular, could be a very useful framework for land managers in the NWFP area to consider the diversity of spiritual, aesthetic, recreation, heritage, discovery and learning, and therapeutic benefits associated with forest settings. Currently, the agency emphasizes one aspect of cultural services, recreation benefits, which are discussed below. Recreation is quantifiable and measurable within standard agency practices. Also commonly considered are scenic resources and heritage sites, although budgetary and personnel constraints limit these functions. Other aspects of cultural services, like spirituality, solitude, wilderness therapy, and education, are managed but not actively tallied, which is a missed opportunity. A growing emphasis on cultural ecosystem services will allow resource managers to recognize the various benefits associated with a forest and stakeholder attachment to sets of benefits. The ecosystem services framework can be useful in identifying and measuring a full range of benefits and values assigned to forests and landscapes.

Outdoor Recreation

This section focuses on how society uses forests generally, and specifically within the NWFP area, for outdoor recreation and leisure. It addresses trends in who is recreating on forests and what they are doing, how technology and changes in leisure time are changing recreation patterns, and recreation sustainability.

Recreation is viewed as an important forest benefit and is a critical component of the cultural services model. Hiking, camping, and nature study are important activities that allow people to experience the benefits of forests (de Groot et al. 2006). Additional forest benefits include mental health and well-being, aesthetic encounters, cognitive development, and others (Chan et al. 2011) (fig. 9-5).

Recreation benefits of parks, forests, and public lands have been widely recognized (Nielson et al. 2007, Stein and Lee 1995). Numerous studies acknowledge the positive effects of nature exposure to human health and well-being (Bowler et al. 2010; Hartig et al. 2003, 2011; Karmanov and Hamel 2008; and others); and green spaces are important venues for promoting exercise that leads to improved health (Henderson and Bialeschki 2005). Recreation use is facilitated by the presence of built amenities (Donovan et al. 2016) and access, but also depends on ecological factors (Fuller et al. 2007). Various monetary and nonmonetary approaches have been used to characterize recreation values, most of which rely on knowing frequency of visitation, intensity of use, and visitor recreation spending (Stynes 2005).

Lee Cerveny



Figure 9-5—Hiker in the Mount Baker–Snoqualmie National Forest.

The 20th century was a prolific period for recreation research and assessment, especially in the latter half of the century, which saw the establishment of the Outdoor Recreation Resources Review Commission in 1958, as well as the establishment and findings of the President's Commission on Americans Outdoors in 1985. In the 21st century, the Federal Interagency Council on Outdoor Recreation, established in response to the America's Great Outdoors Report, continues the coordinated, multi-agency effort to better understand recreation and its management. Management issues and challenges faced by all of the federal land agencies have been the focus of recreation research over the past several decades. However, the National Park Service and the U.S. Forest Service's National Forest System (NFS) have received the greatest research attention. This section will draw primarily on research in the Pacific Northwest on national forest lands, but will also include broader studies of recreation trends and recreation behavior elsewhere in the United States and on other public lands.

Trends in outdoor recreation and visitation to national forests in the NWFP area—

The degree to which Americans are recreating outdoors generally, and on federal public lands specifically, has been the source of discussion in mainstream books, such as *Last Child in the Woods* (Louv 2005), as well as scientific literature (Pergams and Zaradic 2008, Stevens et al. 2014). Special attention has been given to the extent to which youth are recreating in nature and the implications for future attitudes about natural resources and recreation use. Although some (Pergams and Zaradic 2008, Stevens et al. 2014) contend that outdoor recreation on public lands has been declining, a number of researchers have disputed that notion, suggesting instead that visitation is flat to slightly increasing (Jacobs and Manfredo 2008; Larson et al. 2011; Siikamaki 2011; Warnick et al. 2010, 2013).

Visitation levels—

Studies based on data from the National Survey on Recreation and the Environment in the United States have found that the percentage of the population participating in outdoor recreation on public and private lands has remained relatively flat in recent years and is projected to remain that

way in coming decades (Bowker et al. 2012, Cordell 2012, White et al. 2016). Future increases in the total U.S. population will overcome the steady, or even slightly declining, participation rates, so the total number of people recreating in the outdoors is projected to increase over time (Bowker et al. 2012). If potential climate changes are also considered in those projections, participation rates for undeveloped skiing and snowmobiling are projected to decline by 6 percent and 18 percent, respectively, but the general projection of greater number of participants in the future remains largely unchanged nationally. Within specific regions (e.g., the Northeastern United States), the effects of climate change on recreation use may be more pronounced, and the number of participants in some regions may decline markedly (Bowker et al. 2012).

Activities such as viewing nature, visiting developed sites (which includes developed-site camping and picnicking), and visiting interpretive centers are projected to have the greatest numbers of participants across the Nation (each having more than 200 million participants) in 2030 (Bowker et al. 2012, Cordell 2012, White et al. 2016). In addition, more than 100 million people are projected to participate separately in hiking, visiting primitive areas (primitive camping, backpacking, visiting wilderness areas), and birding. As is the case presently, most future participants in outdoor recreation are expected to be participating in general activities, such as hiking, picnicking, or viewing nature. Participation in specialized activities like undeveloped skiing (10 million participants), motorized snow use (11 million participants), horseback riding (16 million participants), and challenge activities (e.g., rock climbing—25 million participants) is projected to continue to be small in 2030 relative to participation in general activities (Bowker et al. 2012, White et al. 2016).

Long-term assessments of recreation use and activity patterns are made difficult by variations in measurement systems and the missions and monitoring resources of federal land management agencies. The National Visitor Use Monitoring (NVUM) program, used by the NFS to monitor recreation, has been in place since 2000, although pilot testing on some national forests started in 1996. Estimates of recreation use under NVUM are not

comparable to estimates under prior recreation monitoring systems used by the NFS. Further, comparisons of NVUM results for individual national forests can only reliably be made between two periods, 2005–2009 and 2010–2014, because of refinements to its methods after the initial 2000 to 2004 monitoring period and the 5-year sampling cycle of NVUM. The most recent visitation estimate for the NFS using data collected between 2011 and 2015 was 149 million visits. This visitation has been trending upward since 2010 (the earliest comparable year for analysis) with 2015 estimates about 4 percent greater than 2010 (USDA FS 2016b) (table 9-2).

Forest Service recreation monitoring indicates that use has been relatively stable over the last 10 years in the NWFP national forests. National forests within the NWFP area have received about 15 million recreation visits per year in recent years (USDA FS 2016b) (table 9-3). Day-use developed sites and the undeveloped (but nonwilderness) portions of national forests account for the greatest numbers of recreation visits. Recreation use in wilderness areas of NWFP-area forests is about 1 million visits per year. The difference in visit estimates between 2006–2010 and 2011–2015 cannot yet be interpreted as a trend because it is based on only two points in time and they are not statistically different.

Recreation use on NWFP-area national forests is consistent with the pattern of high participation in outdoor recreation by residents of the three-state region (California State Parks 2014, Oregon Parks and Recreation Department 2013, Washington State Recreation and Conservation Office 2013). The most recent statewide comprehensive outdoor recreation plans for Oregon and Washington found that more than 90 percent of state residents participate in some form of outdoor recreation (including activities such as hiking/walking, picnicking, camping, outdoor sports,

Table 9-3—Recreation use at national forests in the Northwest Forest Plan (NWFP) area by forest/site type for two recent periods^a

Forest/site type	2006–2010	2011–2015
<i>Millions of visits</i>		
All NWFP-area national forests	15.6	14.6
Site visits:		
Day-use developed sites	7.5	8.5
Overnight-use developed sites	2.4	2.0
Undeveloped areas	10.0	8.4
Wilderness	0.9	1.4

^a Visitors typically complete multiple site visits during their visit to the national forest so the sum of site visits is more than the “all NWFP-area national forests” value.
Source: USDA FS 2016b.

and general relaxing) at least once a year. The statewide comprehensive outdoor recreation plan for California focused specifically on outdoor recreation that took place in parks and public lands (i.e., open space provided for natural environments and/or leisure opportunities), unlike in Washington and Oregon, but more than 90 percent of California’s population reported using an outdoor park at least once in the prior year.

Recreation activities—

Hiking, downhill skiing, and nature-related pursuits (i.e., viewing natural features, visiting nature centers, and nature study) are the most common primary recreation activities on national forests in the NWFP area (table 9-4). A primary recreation activity is defined as the single activity that prompted the recreation visit to the national forest. The relative popularity of those three activities is generally consistent with patterns of use on other national forests throughout the NFS. More specialized activities, such as cross-country skiing, camping, hunting, off-highway-vehicle (OHV) use, boating,

Table 9-2—Trend in visits annually to the National Forest System^a

Year	FY 2006–2010	FY 2007–2011	FY 2008–2012	FY 2009–2013	FY 2010–2014	FY 2011–2015
<i>Millions</i>						
Visits	143.6	145.5	147.5	146.7	146.8	149.0

^a The National Visitor Use Monitoring Program runs on 5-year cycles. National-level visit estimates are calculated for these 5-year periods.
Source: USDA FS 2016b.

Table 9-4—Participation in primary recreation activities in Northwest Forest Plan (NWFP)-area national forests for two recent periods

Primary activity	NWFP area		National averages 2011–2015
	2006–2010	2011–2015	
	-----Percent-----		
Hiking	18	25	24
Nature related	18	15	14
Downhill skiing	12	15	16
Hanging out/relaxing	7	6	5
Some other activity ^a	6	6	4
Fishing	7	5	6
Cross-country skiing	3	5	2
Hunting	4	3	5
Developed camping	4	3	3
Driving	3	3	5
OHV use	4	2	2
Boating	3	2	2
Biking	2	2	4
Other nonmotorized	2	2	2
Primitive camping/backpacking	2	2	1
Picnic	1	1	2
Snowmobile	1	1	1
No activity provided	2	< 1	1
Resort use	< 1	< 1	< 1
Horseback riding	< 1	< 1	1
Total	100	100	100

^a Some outdoor recreation activities are not listed directly and would fall into the category of “some other activity” such as orienteering, geocaching, parasailing, and other forms of recreational aviation.

Source: USDA FS 2016b.

and bicycling are less common primary recreation activities on NWFP-area national forests. The patterns found for those specialized activities are also consistent with national-level patterns. The Plan-area forests differ slightly from national patterns in the share of visits that are nature related (a higher share of visits), and hunting and biking (smaller shares of visits). Within the Plan area, between the two NVUM periods, the share of visits with hiking or downhill skiing as the primary activity increased slightly, while the share of visits in nature-related activities decreased slightly. Those differences cannot yet be interpreted as trends because they represent only two points in time.

The patterns in recreation activities on the NWFP-area national forests are consistent with patterns in outdoor recreation activity of the general populations of California, Oregon, and Washington (California State Parks 2014, Oregon Parks and Recreation Department 2013, Washington State Recreation and Conservation Office 2013). Walking for pleasure is the most commonly reported activity in each state, with between 64 and 73 percent of residents of each state reporting walking for leisure at least once during the year. About 50 percent of the populations in each state report hiking on unpaved trails at least once during the previous year. More than half of each state’s population

reported participating in general, nature-based recreation activities, such as sightseeing or picnicking. About half of Oregon residents and 40 percent of California and Washington residents reported that they had camped in a developed camping site in the past year. Participation in more specialized nature-based outdoor recreation activities, such as hunting, fishing, backpacking, biking, and freshwater boating, was generally reported by less than half, and typically less than one-quarter, of residents in the three states.

Research conducted elsewhere shows that volunteers can be motivated by a variety of factors, including the desire to expand public access and recreation opportunities, social engagement, and commitment to the environment (Bruyere and Rappe 2007, Lu and Schuett 2014, Propst et al. 2003). Volunteer organizations in the NWFP area have sizeable memberships and work closely with public land managers to identify mutually desired projects. Nationwide, reliance on partners and volunteers has played an important role in bolstering the capacity of national resource agencies, which face maintenance backlogs on recreation infrastructure (Seekamp and Cervený 2010, Seekamp et al. 2011). The National Trails Stewardship Act of 2016 (P.L. 144-225) directs the Forest Service to expand volunteerism and partnerships further in support of trail maintenance. Volunteering and stewardship have also been studied in relation to place attachment, with stewardship in a forest or park generating stronger feelings of connection (Caissie and Halpenny 2003, Dresner et al. 2015, Ryan 2005).

Population aging and implications for forest visitation—

Most recreation visits to NWFP-area national forests are by those between the ages of 30 and 60 (table 9-5). Those less than 20 years old account for about 17 percent of visits. For comparison, those under age 18 represented about 23 percent of the U.S. population in 2014 (U.S. Census) (Colby and Ortman 2015). In most cases, those visits from someone under the age of 16 likely involve family recreation with children. The age distribution of those recreating at NWFP-area forests is consistent with patterns on all national forests, although there are slightly more visits in the 20 to 40 age group in the plan area compared to the national pattern

Table 9-5—Percentages of Northwest Forest Plan (NWFP) area and national recreation visits by age groups for two recent periods

Age group	2006–2010 NWFP	2011–2015 NWFP	2011–2015 National
----- Percent -----			
Under 16	17	13	16
16–19	4	4	4
20–29	14	16	13
30–39	17	17	15
40–49	18	17	17
50–59	16	17	17
60–69	10	13	13
Over 70	3	4	5

Source: USDA FS 2016b.

(table 9-5). Compared to the national median age of 37.7 in 2014, Oregon's residents are slightly older, Washington's residents are about the same age, and California's residents are slightly younger.

The average ages of the populations of California, Oregon, and Washington are expected to continue to increase over time. Age is consistently found to be a factor in recreation participation and correlates with differing perceived barriers to participation in recreation (Bowker et al. 2006, Child et al. 2015). Considering outdoor recreation anywhere, not just on Forest Service land, those over 45 years of age participate in a smaller set of recreation activities than those who are younger and, as people age, they continue to reduce activity participation (Cordell 2012, White et al. 2016). Recreationists in age groups over 45 are most commonly participating in developed-site activities and viewing and photographing nature (table 9-6). Those over age 45 have moderate rates of participation in motorized activities, hunting, and fishing that decline steadily as they age. Older people are more likely to feel that personal health, safety, and disability are barriers to participating in outdoor recreation; younger people view the amount of leisure time, limited information about recreation opportunities, and lack of transportation as barriers to participating in outdoor recreation (Ghimire et al. 2014).

Table 9-6—Percentage of age groups 45 and older participating in outdoor recreation by site/activity type

Site/activity type	Age 45–54	Age 55–64	Age 65+
	----- Percent -----		
Visiting developed sites	81	75	62
Viewing and photographing nature	80	75	65
Backcountry activities (including hiking)	48	37	22
Motorized activities	37	27	17
Hunting and fishing	38	29	20
Nonmotorized winter activities	10	5	2
Nonmotorized water activities	22	15	7

Source: Cordell 2013, adapted from White et al. 2016.

Those under age 20 account for about 17 percent of the recreation visits on NWFP-area national forests (see table 9-5). That rate of outdoor recreation participation is generally consistent with what was found nationally. In a national study of the outdoor recreation behavior of those under age 20, Larson et al. (2011) found that the majority of children do spend time in outdoor recreation each week and that 62 percent spend at least 2 hours recreating outside daily. Of those under 20, those between 16 and 19 had the lowest rates of being outdoors for recreation: most of respondents at that age spent less than a half an hour outdoors daily (Larson et al. 2011). Hispanic youth had the highest rates of spending time in outdoor recreation. Across all groups, those under 20 were focused on general recreation in the outdoors, e.g., playing or hanging out (84 percent of participants); biking, walking, jogging (80 percent); and using electronic devices outdoors (65 percent). More specialized outdoor recreation activities such as wildlife viewing (31 percent), hiking/camping/ fishing (29 percent), and snow sports (9 percent) were reported by lesser shares of young participants (Larson et al. 2011). The greatest impediment to participating in outdoor recreation for those under 20 was interest in other activities, including using electronic media indoors. Issues with limited access, lack of transportation, or concerns about safety were cited as reasons for not recreating outdoors by less than one-fourth of those under 20 (Larson et al. 2011).

Work patterns and leisure time—

Lack of time has been identified as the key reason that some Oregon and Washington residents never visit national forests for recreation, or visit them less frequently than desired (Burns and Graefe 2007). Lack of time was also found to be a moderate impediment to youth participation in outdoor recreation generally (Larson et al. 2011). Time availability was identified as a much stronger factor in constraining recreation use of national forests than perceived recreation site characteristics or crowding (Burns and Graefe 2007). In the NWFP area, the median duration of a national forest visit is about 4 hours (table 9-7). However, that figure is influenced by the length of stay of those camping in national forest campgrounds. Excluding campground use, the median length of stay of visitors to Plan-area national forests is less than 3 hours for day-use sites and general forest areas, and less than 4 hours for those recreating in wilderness. The vast majority of recreation visits to Plan-area forests are short-duration

Table 9-7—Median duration of visits to NWFP-area national forests

Category	2005–2009	2010–2014
	----- Hours -----	
National forest visit (all sites)	4.5	4.1
Day-use developed sites	1.7	2.1
Overnight-use developed sites	44.2	41.8
Undeveloped areas	3.5	3.0
Wilderness	4.4	4.0

Source: USDA FS 2016b.

trips. The preponderance of short-visit durations is consistent with the patterns of high use in developed sites (where visits are likely focused on viewing natural features or a brief hike).

Sustainable recreation—

For natural resource management, broadly, sustainability is typically thought to relate to the capacity of the landscape (comprising human and natural systems) to provide desirable social, ecological, and economic outcomes now and into the future under current management. Research addressing the sustainability of recreation has largely focused on (1) the ability of the resource and managers to provide current recreation opportunities (especially winter recreation) in the face of a changing climate (e.g., Beaudin and Huang 2014, Buckley and Foushee 2012, Smith et al. 2016); (2) how alteration of environmental conditions through disturbance, recreation use, or resource management affects the conditions of recreation resources and user experiences (e.g., Brown et al. 2008, Cole 2013, Shelby et al. 2005, White et al. 2008); (3) how high use levels at recreation sites may change the behavior, experience, and satisfaction of visitors (e.g., Cole and Hall 2009, Fonner and Berrens 2014, Lawson et al. 2003); or (4) the social and economic conditions in recreation gateway communities and reliance of those communities on tourism for economic activity (e.g., Andereck et al. 2005, Frauman and Banks 2011, Kurtz 2010). Within the recreation scientific literature, perhaps the greatest attention has been paid to items 2 and 3. The scientific literature lacks a definition of “sustainable recreation,” and integrated studies of recreation sustainability that look at a suite of sustainability factors. This lack of scientific research into sustainable recreation contrasts with the fairly extensive use of the term in management and policy directions in recent years. Unlike the focus of scientific literature, which is more broad, managers tend to view recreation sustainability in terms of capacity to provide desired recreation opportunities in the face of declining agency budget allocations and perceived greater recreation use.²

² U.S. Department of Agriculture, Forest Service [USDA FS]. 2016. Region 6 sustainable recreation strategy. Unpublished report. On file with: Lee K. Cerveny, U.S. Forest Service, Pacific Northwest Research Station, 400 N 34th Street, Suite 201, Seattle WA 98103, lcerveny@fs.fed.us. 20 p.

Visitor satisfaction with recreation site conditions and the recreation experience is a component of sustainable recreation. Oregon and Washington residents have rated recreation conditions on the national forests they visited most frequently at moderate to high quality (Burns and Graefe 2006). The highest quality rankings were given for the undeveloped characteristics of views, courteous and friendly staff, and safe sites with clearly posted rules and regulations. The lowest quality scores were given for availability of multilingual services, accessibility of uniformed Forest Service personnel, risk of vandalism and theft to vehicles, and assistance for people with special needs. However, even for those items, the most common quality ranking was “fair” (the second lowest rating on a scale from “awful” to “excellent”). In a separate study, Burns and Graefe (2007) found that 60 percent of households in Oregon and Washington with a person having a disability felt hampered in their ability to use national forests for recreation. However, 21 percent of those who felt national forests were not accessible for recreation also stated no interest in outdoor recreation (Burns and Graefe 2007). The conditions of roads and trails and conditions of facilities were rated as good to very good (Burns and Graefe 2006). Recreationists stated their perception of site quality was highest when there was (1) minimal litter, (2) a feeling of safety and security, (3) clearly posted rules and regulations, and 4) clean restrooms and toilets (Burns and Graefe 2006). The presence of litter, trash, or vandalism was the key factor in explaining recreationists’ perceptions of recreation site quality and environmental condition at Bureau of Land Management recreation sites in the northwest Oregon Cascade foothills (White et al. 2008). Visitors who have visited those sites with litter over increasingly long time frames appear more sensitive to deterioration in site conditions (White et al. 2008).

Recreation and climate change—

Changing climate can change (increase or decrease) the availability and quality of recreation opportunities (Shaw and Loomis 2008). Changing environmental conditions that result from weather and climate patterns can affect the ability of people to participate in certain recreation activities with implications for quality of life and future public health

(White et al. 2016). Climate change models project warmer weather conditions for longer periods, which are expected to increase participation in summer and warm-weather recreation activities (Bowker et al. 2013, Farley et al. 2011). Temperature and precipitation changes directly change the availability and quality of recreation sites. Based on preliminary research conducted in the northern Rocky Mountains (Hand and Lawson 2018) and more generally (Shaw and Loomis 2008), it is understood that climate change can alter ecological conditions and may affect optimal recreation conditions. Recreation visitors are likely to engage in substitution as an adaptation strategy to climate change—substituting one location for another, changing the timing of their recreation visits, or shifting into new activities as opportunities for their favorite activities decline (Loomis and Crespi 2004). However, substitution may represent a net benefit loss, even when participation changes only subtly. For example, the substitute site may be more expensive to access, take more time to reach, or offer inferior quality. Studies conducted in central Oregon are underway and have identified certain recreation activities that may be more sensitive to a warming climate as well as implications associated with the possible expansion of shoulder seasons.

Summary—

Recreation visits are expected to grow in day-use settings and developed facilities. At the national level, the number of outdoor recreation visits will increase in the coming decades in accordance with population growth. The majority of outdoor recreation use is for general recreation activities, like hiking, viewing nature, visiting nature centers, viewing wildlife. Most recreation visits to national forests are relatively brief, lasting less than one-half day, and tend to occur at developed sites. These are important trends to consider when managers are asked to allocate resources to recreation facilities. The greatest barriers to outdoor recreation participation are lack of time and travel distance to national forests. Other barriers include concerns for personal safety, signage, and accurate information, all of which have positive effects on visitor perceptions of site conditions. Natural resource

agencies like the Forest Service seek information about the ecological effects of recreation in efforts to promote sustainable recreation. Lack of conceptual development of what sustainable recreation means or tested sustainable recreation models or tools is inhibiting use of this concept in planning.

Trust

Trust is one of the key foundations of human social order and is viewed as critical for personal development, interpersonal relationships, mutual cooperation, and enduring institutions, such as governments, financial markets, and religious organizations (Lewicki et al. 1998). Humans operate in an environment often characterized by ambiguity, complexity, risk, and change (Lewicki et al. 1998). Trust and distrust are distinct emotional responses that allow individuals and entities to navigate uncertainty, manage efficiently, and survive.

Defining trust—

Trust is defined by early social psychologists as expressions of confidence in others' intentions and motives. Trust was understood as the sincerity of a person/institution's word (Mellinger 1956), and was seen as dependent upon the confidence that one's interests would be protected and promoted by another and with an agreement on full information sharing (Read 1962). Predictability was also seen as integral to the notion of trust (Deutsch 1958). Scholars later explored trust as an aspect of actual behavior, rather than as a primary motivation, understanding trust as one's hope of another's favorable behavior in a situation of vulnerability (Hosmer 1995). Regardless of their motivations, there is an expectation that, in a position of dependence, one will not injure or ignore the interest of another (Hosmer 1995). Lewicki et al. (1998) suggested that trust and distrust are best understood not as a binary construct in polar opposition, where trust is good and distrust is bad. Nor is trust/distrust viewed as an inverse relationship, where trust increases only when distrust decreases and vice versa. "There are elements that contribute to the growth and decline of trust, and there are elements that contribute to the growth and decline of

distrust” (Lewicki et al. 1998: 440). These elements are repeatedly modified through frequent human encounters and transactions. Because of the many layers and facets of human interactions, it is possible to both have trust and distrust for a person or entity simultaneously—trusting some aspects of the relationship, but not others. Understanding that trust and distrust can coexist has important implications for public engagement in forest management, in particular the critical importance of creating processes that are trusted.

Trust also should be understood with both attention to social context and recognizing it as a dynamic process (Lewicki et al. 1998). A person can trust an individual or agency in one sociopolitical setting but be wary of their performance in another setting. For example, an environmental advocate can develop a trusting relationship with a timber industry representative in the context of a small collaborative group focused on forest restoration, but this level of trust may change when the organizations appear in a large public hearing to deliberate a proposed timber sale. And, trust is dynamic and inconsistent. Trust can build and subside with each short-term interaction, which can influence the long-term trajectory of a relationship. For natural resource agencies, which often make decisions in the context of wicked problems, conflicting ideologies, and high stakes, developing processes and protocols that can be trusted is essential, even when trust can be elusive among various actors involved in those processes.

Trust as a topic in natural resource management—

Trust has been a topic of investigation in scholarship related to natural resource management (Beierle and Konisky 2000). Trust between stakeholders has been characterized as a factor that shapes natural resource management outcomes (Cvetkovich and Winter 2003, Davenport et al. 2007, Stern 2008a). At its core, trust is a fundamental component of human relationships that suggests a party’s acceptance of vulnerability related to positive expectations of the behavioral intentions of another party (Rousseau and Tijoriwala 1999). In the context of natural resource governance, scholars distinguish between various types of trust. Davenport et al. (2007) delineated two kinds of

trust: “institutional trust” (trust in agencies to represent and serve the public) and “interpersonal trust” (trust based on personal relationships). Some scholars have focused on “rational trust,” calculated based on an entity’s predictable behavior, accountability, and reliability of performance (Hardin 2002, Stern 2008b). Others emphasize “social (or affinitive) trust,” which grows based on shared experiences and enduring interactions (Braithwaite 1998, Cvetkovich and Winter 2003). Trust in natural resource agencies has been discussed in the context of “broad-level” trust in governing agencies to achieve goals of resource conservation and meeting public needs, and as “project level” trust, which emphasizes whether the agency can be trusted to successfully implement the project goals and minimize harm to the social and natural environment (Ribe 2013). For an agency to craft a socially acceptable management strategy, trust is important both at the broad level and the project level (Olsen and Shindler 2010).

Community-based collaborative groups, which are discussed later in this chapter, have emerged partly in response to perceptions of distrust between communities and public land agencies. In the context of collaborative management, Stern and Coleman (2015) developed a conceptual framework that identified four types of trust: “dispositional” (the predisposition of individuals to trust), “rational” (based on likeliness of predicted behavior as judged by prior performance), “affinitive” (based on shared values and developed through positive interactions), and “systems based” (transparent process, fair and just procedures) (table 9-8). They posited that the diversity of these four trust types within natural resource management contexts is important for successful outcomes. Stern and Baird (2015) used this framework to study variation of degrees and proportions of the four types of trust. They found that explicit attention to the development of three types of trust (rational, affinitive, and systems based) can enhance the efficiency and resilience of natural resource management institutions. They also found that when one type of trust is damaged, having other types of trust can buffer the loss (Stern and Baird 2015). These studies emphasize the importance of trust to the success of collaborative management and suggest the need for deliberate

Table 9-8—Varying interpretations of trust

Types of trust	Definitions	Citations
Institutional trust	Trust in agencies to represent and serve the public	Davenport et al. 2007
Interpersonal trust	Trust based on personal relationships	
Social trust	Trust among people that grows based on shared experiences and enduring interactions	Braithwaite 1998, Cvetkovich and Winter 2003
Rational trust	Based on predictable behavior, accountability, and reliability of performance	Stern and Baird 2015, Stern and Coleman 2015
Affinitive trust (similar to social)	Trust among people that grows based on shared experiences and enduring interactions	
Dispositional trust	The predisposition of individuals to trust (based on one's natural inclinations, values, experiences)	
Systems-based trust	Derived from presence of fair processes; just procedures	

attention to fostering all four types of trust to maximize institutional resilience.

Recent studies have explored the relationship between values and trust in forest management. Although some suggest that the degree of institutional trust can influence the extent to which someone supports forest management actions, we do know that trust expands when agencies make decisions that reinforce an individual's values (Vaske et al. 2008). Trust can be built (and in many cases conflict reduced) through fair participation processes or transparent decisionmaking (Webler and Tuler 2000, Webler et al. 2001). In a comparative study among national forests in northern California, northern Florida, and Michigan, Winter et al. (2004) found a relationship between shared values and social trust in a study of fuel management strategies. In California, Winter et al. (1999) learned that trust predicted attitudes in the public's willingness to pay recreation fees. In their study of prescribed fire burning in Colorado, Vaske et al. (2008) used an approach known as "shared values similarity," which measures the degree of similarity among a set of environmental values (Cvetkovich and Winter 2003). They found that when values were held in common between the public and the land management agency, there was a greater degree of trust. They also learned that when social trust was improved, there was more support for land manager policies of prescribed burning and mechanical thinning. A lack of trust in governing agencies is cited as

a primary barrier in natural resource planning (Lachapelle and McCool 2012) and can potentially lead to litigation or noncompliance (Stern 2008b).

Achieving trust among multiple conflicting parties in resource management can be challenging; still, there is an increasing recognition that trust can be fostered by direct public engagement or participation in a collaborative decision processes where deliberation is encouraged. For trust to flourish, processes should be inclusive, representative, transparent, and predictable (Beierle and Konisky 2000). In addition, trust can be aided by groups having clear objectives, outlined roles and responsibilities, and a tangible and enduring commitment from key partners.

Summary—

Natural resource institutions like the Forest Service often make difficult decisions in uncertain environments in which science is evolving and public sentiment is conflicted. The degree of trust established between public agencies, stakeholders, and communities is an important factor in public support for resource management decisions. Clear objectives, consistent communication, transparent processes, reasonable timelines, maintained commitments, and opportunities for candid deliberation can enhance institutional trust both at the project level and at the national level. Developing processes and protocols that can be trusted is essential, even when trust can be elusive among various actors involved in those processes.

Involving the Public

Public participation in federal agency land management planning processes is required by various laws, regulations, and policies, including the Multiple-Use Sustained-Yield Act of 1960 (MUSYA), National Environmental Policy Act of 1969 (NEPA) and the National Forest Management Act of 1976 (NFMA) (box 3). A national planning rule for the USDA Forest Service stipulates that public participation efforts must “...have significant potential to reach and involve diverse segments of the population that historically have not played a large role in NFS (National Forest System) planning and management” (USDA FS 2012). This contemporary emphasis on robust public participation in land management planning suggests new innovations, strategies, and methods of encouraging diverse public participation, which can generate trust among stakeholders and land managers. This section will review recent trends in public participation, including institutional constraints and best practices. Because peer-reviewed research on this topic is limited in the U.S. Forest Service’s Pacific Northwest Region, this section will also include information from federal agency reports, doctoral dissertations, and standard texts in the field of public administration, conflict management, and collaboration.

Box 3—MUSYA, NEPA & NFMA Requirements

MUSYA requires that management “best meet the needs of the American people,” by identifying the public’s values and desires (US Congress, OTA, p.78).

NEPA requires agencies to inform the public about the possible environmental impacts of their decisions, including the public as a participant in decisionmaking.

NFMA further reinforced the public’s right to participate in Forest Service planning and decisionmaking.

Trends in public participation in natural resource management—

In 1969, Sherry Arnstein published the article, “A Ladder of Citizen Participation.” Although dated, this article remains relevant as a way of describing different types of public involvement. At the core of Arnstein’s argument is the premise that different types of public involvement are directly related to the different levels of power citizens have in determining outcomes (Arnstein 1969). The ladder is a metaphor for illustrating increasing levels of public influence in decisionmaking as one climbs each rung of the ladder. Lower rungs indicate nonparticipatory types of public involvement, such as education, while middle rungs allow participants to share information without assurance that a change in the outcome will occur (Arnstein 1969). The top rungs of the ladder provide increasing levels of influence in decisions affecting the outcome.

A key finding of Arnstein’s work is the recognition that participation without a clearly defined public role (i.e., the type of participation, or identifying which “rung on the ladder”) can lead to a meaningless or frustrating process for all involved. In 1999, the International Association of Public Participation (IAP2 2014) transformed Arnstein’s “ladder” into a “spectrum.” This decision-oriented, objective-driven, and values-based approach to public participation was designed to assist with selection of the appropriate level of public participation in any community engagement program (fig. 9-6). The spectrum seeks to “...legitimize differing levels of participation depending on the goals, time frames, resources and levels of concern in the decision to be made” (IAP2 2014). As described by the IAP2, the spectrum defines the **promise** being made to the public within each level of participation (2014). The arrow at the top of the diagram indicates that as one moves to the right, the level of participation and public influence in the decisionmaking process increases, similar to moving up the rungs of Arnstein’s ladder. Note that while the spectrum covers the full range of public influence in a decisionmaking process, government agencies retain their decision-making authority in all instances and are ultimately

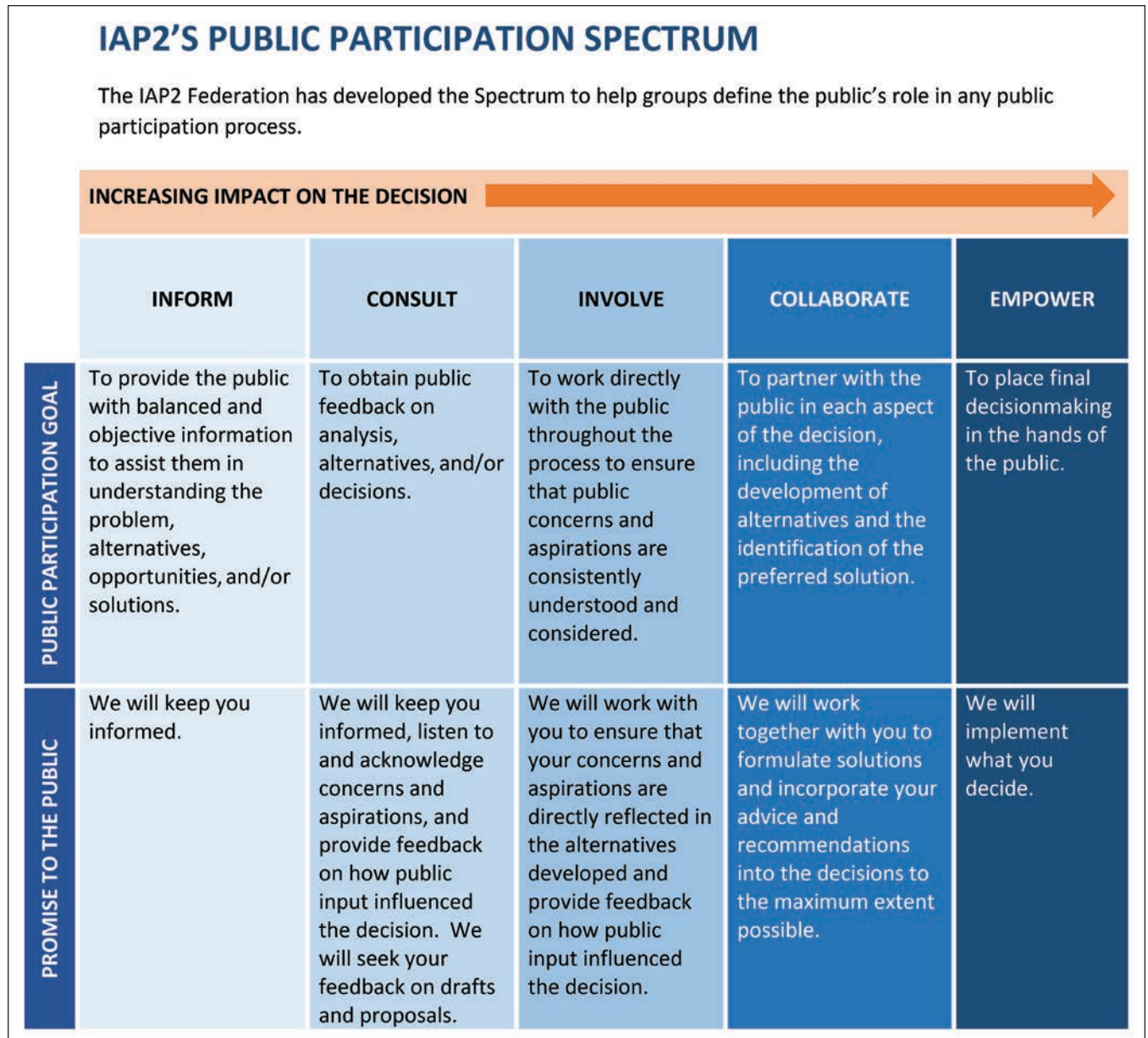


Figure 9-6—The International Association of Public Participation's [IAP2] Public Participation Spectrum.

responsible for their actions (Wondolleck and Yaffee 2000). Thus, government agencies are not authorized to use the “empower” end of the IAP2 spectrum. Bryan (2004: 882) put this into perspective: “While participants may challenge the decisions authorities ultimately make, they do not challenge their authority to make those decisions.”

The IAP2's Public Participation Spectrum can assist with the selection of the level(s) of participation that defines the public's role throughout a forest plan revision effort. Importantly, the amount of effort required among the different spectrum levels can vary widely for both the agency and the public. Imperial (2005: 312) emphasized the importance

of judiciously identifying collaborative opportunities that add public value while minimizing transaction costs, and suggests that “public managers are...cautioned to use collaboration wisely. When used correctly, collaboration is an effective governance strategy. When used inappropriately, it can create more problems than it solves.”

Thus, different phases of plan revision call for different levels of public involvement. For example, in the assessment phase of plan revision, a **collaborative** process could be designed to identify the benefits provided to people by a national forest. Here, the public works in conjunction with agency personnel to identify the unique places, roles, and contributions a national forest provides based on their preferences, interests, and values. English et al. (2004) emphasized the importance of eliciting values early on in public involvement processes and further acknowledged that to be effective, these processes “must be tailored to the place, the people, and the circumstances; there is no single recipe for success.” Collaboratively identifying unique roles and contributions, early in the assessment phase of forest plan revision, can focus forest management on issues that people value most.

Alternatively, during the NEPA phase of plan revision, while the interdisciplinary team is conducting its analysis in compliance with the act, it may be appropriate to **inform** the public as a means of assisting them in understanding issues or alternatives. For example, following the 90-day comment period on the Inyo, Sierra, and Sequoia National Forest draft plans and draft environmental impact statements, the interdisciplinary team spent months analyzing comments, defining issues and resolutions, and preparing responses to comments in preparation for release of the final environmental impact statement and draft record of decision (USDA FS 2016a). During this time frame, little interaction with the public occurs. To fill this gap, a series of informational bulletins provided additional detail on topics of interest identified during the comment period (Long et al. 2014). In the case of the Sierra synthesis, the agency is not asking for public feedback, it is providing information to assist the public in understanding issues or alternatives. As Arnstein and others have found, the key is defining these various levels of public participation prior to initiating the plan revision, and being

clear with the public about what their actual role will be, ensuring them a meaningful and robust participation process.

Newer research continues to support and refine Arnstein’s work and that of the IAP2 (Carpini et al. 2004, Kelshaw and Gastil 2008, Lynam et al. 2007, Rowe and Frewer 2005). Rowe and Frewer (2005) developed a typology that further defines key concepts of public engagement within the IAP2 spectrum based on the direction information flows from the sponsor (i.e., Forest Service) to the public. This typology (Rowe and Frewer 2005) defines three key types of public engagement: public communication (e.g., **inform** on the IAP2 spectrum), public consultation (e.g., **consult** on the IAP2 spectrum), and public participation (e.g., **involve and collaborate** on the IAP2 spectrum). Specifically, Rowe and Frewer (2005) suggested that public communication characterizes information flowing from the agency to the public, public consultation from the public to the agency, and information flowing both directions as public participation. Another aspect of their research is the importance of aligning mechanisms, defined as processes, techniques, and instruments, to the appropriate level of engagement (Rowe and Frewer 2005). Carpini et al. (2004) focused their research on the mechanism of “face-to-face” meetings. They found that face-to-face communication is the single greatest factor in increasing the likelihood of cooperation among participants (Carpini et al. 2004). Kelshaw and Gastil (2008) differentiated face-to-face meetings among the different types of public engagement. For example, informational meetings fall into the “inform” level of the IAP2 spectrum, where the agency initiates conversation with the public. Alternatively, communication flows both directions in collaborative face-to-face meetings initiated by the agency and the public. Finally, Lynam et al. (2007:1) summed up the importance of applying the right mechanism to the right level of public engagement: “...picking the right tool does not guarantee that the data desired will be produced, but selecting the wrong tool does make success less likely.”

As mentioned in the beginning of this section, NEPA requires federal land management agencies, including the Forest Service, to **involve** the public in agency planning processes (Brown and Donovan 2013, Hoover and Stern 2014). Hoover and Stern (2014: 174) argued that although “NEPA regulations do not specifically empower the public

to directly influence the NEPA process,” the public generally becomes involved in these efforts to have a genuine impact, “...or **influence** on decisions that affect them or the public resources they value.” They also acknowledged, “While there are minimum standards related mostly to the timing of involvement and disclosure, the NEPA process grants the implementing agency broad discretion regarding the form and nature of the public involvement process” (Hoover and Stern 2014: 175).

Given this considerable level of discretion, scholars have argued that understanding what motivates the behaviors and actions of key personnel, such as interdisciplinary team leaders as well as the public, has the potential to improve the public participation experience for both agency personnel and the public (Hoover and Stern 2014, Lipsky 1980, Yang 2005). According to Cervený et al. (2011: 202), “The ID team leader is responsible for managing group interactions, synthesizing scientific findings, and coordinating analysis of alternatives.” Hoover and Stern (2014) found that agency team leaders of planning processes across the Forest Service expressed a desire for greater public influence in planning processes through improved “substantive” input to management decisions rather than through objections and litigation. Stern and Predmore (2011) have characterized substantive comment as information that can improve management decisions, as opposed to comments based on opinions or conjecture.

The literature describes four broad and interrelated behavioral factors of participating publics related to their ability to gain influence in decisionmaking (Hoover and Stern 2014). These factors include values and desires, time, trust and prior experience, and the skill to provide comments (Beierle and Konisky 2000, Cheng and Mattor 2006, Creighton 2005, Germain et al. 2001, Halvorsen 2006, Smiley et al. 2010, Smith and McDonough 2001, Whittall 2007, Yang and Pandey 2011). Thus, in understanding and accommodating these inherent behavioral factors, Forest Service team leaders and decisionmakers can improve the public’s level of influence in decisionmaking earlier in the planning process through improved “substantive” comment processes.

To identify key factors that either motivate or constrain an interdisciplinary team leader, Hoover and Stern (2014)

conducted a qualitative case study analysis of interviews with Forest Service employees. Through their research, they found that the following four factors influenced interdisciplinary team leaders’ (IDTLs’) ability “...to go above and beyond the minimum requirements to facilitate public influence: (1) the IDTLs’ personal beliefs and norms; (2) past and present experiences with the public; (3) the IDTLs’ workloads; and (4) the influence of the decision maker” (Hoover and Stern 2014: 181). To enhance motivation of IDTLs, Hoover and Stern (2014) suggested that the agency may be able to improve employees’ ability to cope with stress, assist in maintaining reasonable workloads, and offer training to effectively respond to public concerns about resource management.

The complexity of public participation in the 21st century—

Creating effective public involvement strategies is challenged not only by varying levels of public influence, statutory ambiguity, and consequent agency discretion, but also by socially dynamic systems (Brown and Donovan 2013) (box 4). Changes in demographic patterns are occurring most rapidly in the southern and western regions of the United States, with increasing numbers of young people and immigrants (Colby and Ortman 2015). Along with these changing demographic patterns are changing values and user preferences (Brown and Donovan 2013). Incorporating traditional and emerging values necessitates new methodologies for creating public involvement processes as required by the 2012 planning rule. This section highlights new research in the fields of dispute resolution, stakeholder and social network analyses, as well as public participation GIS.

Box 4—Whom Do You Ask?

Sample bias—The answer you get depends on whom you ask.

In a 2012 PPGIS case study in the southern Sierra Nevada, it was found that responses from a random sample of households preferred forest amenities over the stronger utilitarian values and consumptive use preferences of stakeholders who volunteered to participate in the study (Brown et al. 2013).

Seeking resolution through dialogue: The importance of framing and reframing—

As a science-based organization, the Forest Service has focused much of its attention on increasing the amount of technical information provided to the public as a means to increase understanding of complex environmental issues and associated risks. In other words, the agency uses a technical frame of reference to define and explain environmental issues. Nisbet (2009) and others have argued that this type of information is likely to reach a small audience of already informed and engaged citizens (Ho et al. 2008, Nisbet 2005, Popkin 1991). He further stated, "...the rest of the public either ignores the coverage or reinterprets competing claims based on partisanship or self-interest, a tendency confirmed across several decades by public opinion research" (Nisbet 2009: 14). Nisbet's argument illustrates how technical and lay populations frequently frame environmental issues differently. Framing involves "shaping, focusing, and organizing the world around us" (Gray 2003: 11). Gray (2003: 12) further explained that "through framing, we place ourselves in relation to the issues or events—that is, we take a stance with respect to them." Simply, a frame reflects what we believe is going on and how we see ourselves and others involved in what is happening. The process of framing then offers insights into why some environmental issues are difficult to resolve (Gray 2003).

Elliott et al. (2003) drew conclusions from eight case studies on how framing affects the potential for conflict resolution of intractable environmental disputes. They found that frames may not be permanent and can change through reframing activities (Elliott et al. 2003). In seven of the eight cases studied, they found that efforts were made to consciously reframe the conflict through public dialogue. Lengwiler (2008) found that the lay-technical divide could be transcended by reframing the dialogue within a wider socioeconomic context. In other words, by reframing the environmental issue within a wider socioeconomic context, laypersons have the potential to coalesce around a set of common concerns and effectively engage in problem-solving activities. Thus, they are not expected to become scientific and technical experts, nor are experts expected

to compromise their role in solving environmental issues (McKinney and Harmon 2008). The goal, as stated by McKinney and Harmon (2008: 63), is "...to integrate expert and public knowledge and information to shape decisions that are scientifically credible, politically legitimate, and relevant to the problem at hand."

In another case study, Whitall et al. (2014) used interest-based problem-solving (IBPS) techniques to reframe environmental conflict in the Sierra Nevada ecoregion. Here "IBPS techniques were used to redefine the meaning ascribed to the ecological restoration of the Sierra Nevada ecoregion from two differing points of view. Techniques included focusing the conversation on **why** these individuals wanted something, as opposed to **what** they wanted or needed" (Whitall et al. 2014: 176). In so doing, common interests emerged from intractable positions. Yet Burton (1990) and Maiese (2004) provided a cautionary note when using IBPS techniques: "...while interest-based bargaining is effective in interest-based disputes, it should not be applied to disputes involving deep differences in values."

Thus, this research (Elliott et al. 2003, Lengwiler 2008, McKinney and Harmon 2008, Whitall et al. 2014) suggests that in at least some environmental conflicts, frames can change through intentional actions and interventions. Reframing environmental issues within a wider socioeconomic context has the potential to bridge the gap between technical experts and laypersons. Finally, by reframing dialogue from positions (**what** people want) to interests (**why** people want it) it is possible to render interest-based disputes more tractable.

Public participation and the identification of stakeholders—

Reed et al. (2009) found that the role of stakeholders is becoming increasingly embedded in environmental policy. Yet, they argued, "...stakeholders are often identified and selected on an ad hoc basis. This has the potential to marginalize important groups, bias results and jeopardize long-term viability and support for the process" (Reed et al. 2009: 1933). Thus, they discussed growing interest in a collection of systematic methods that can be used to identify

individuals, groups, and organizations who are affected by a decision and then prioritize these individuals and groups for involvement in the decisionmaking process (Reed et al. 2009). Stakeholder analysis is one way of systematically identifying groups implicated by an environmental policy or decision (Grimble and Wellard 1997, Prell et al. 2009, Reed 2008, Reed et al. 2009).

Reed et al. (2009) identified three critical, sequential steps of stakeholder analysis: (1) identifying stakeholders and their interest in the problem or decision, (2) differentiating between and categorizing stakeholders, and (3) exploring relationships among stakeholders. For each step, a variety of methods exist depending on the knowledge, skills, and resources available. For example, in step one where individuals and groups with a stake in the plan revision or amendment process are widely known, the stakeholder analysis can be conducted without active participation of the stakeholders themselves. Yet, Reed (2008) cautioned that stakeholder participation may be necessary if the agency has incomplete knowledge on the population that may have an interest in the outcome. Identifying stakeholders is an iterative process, where stakeholders are added as the analysis continues using different methods such as expert opinion, focus groups, semistructured interviews, or snowball sampling (Prell et al. 2009, Reed 2008, Reed et al. 2009).

Various methods also exist for step two: categorization of stakeholders. Here, methods may be either top-down or bottom-up. In the top-down approach, stakeholders are classified based on their observations as applied through a predetermined conceptual framework or theoretical perspective (Grimble and Wellard 1997, Reed 2008). The bottom-up approach allows categories to be defined by the stakeholders themselves, allowing the analysis to better reflect their perceptions (Dryzek and Berjikan 1993, Hare and Pahl-Wostl 2002).

Finally in step three, two principal methods are used to investigate the relationships among and between stakeholders (both as individuals and groups): social network analysis, which provides insights into patterns of communication, trust, and influence between stakeholders in social networks (Lienert et al. 2013, Prell et al. 2009, Whittall

2007); and knowledge mapping analysis, which examines the flow of information between these stakeholders (Reed et al. 2009). When used in conjunction with social network analysis, Reed argued that knowledge mapping may extend the “who knows who” of social network analysis by providing a visual representation of “who knows what” (Reed et al. 2009: 1940). Social network analysis has been used in the NWFP area to evaluate the structure of fire protection and restoration institutions in the eastern Cascade Range of Oregon (Fischer and Jasny 2017, Fischer et al. 2016).

The increasing use of stakeholder analysis in natural resource management reflects a growing recognition that stakeholders influence environmental decisionmaking (Prell et al. 2009). The literature also shows that stakeholder analysis can be used to minimize conflict, reduce marginalization of certain groups, and provide fair representation of diverse interests (Prell et al. 2009, Provan et al. 2005, Reed 2008, Reed et al. 2009, Whittall 2007).

Participatory mapping and geospatial approaches—

A growing number of scholars and government agencies are interested in the integration of technology and spatial information into public participation strategies (Brown et al. 2013). As an example, the 2012 planning rule encourages the U.S. Forest Service to be proactive and use contemporary tools such as the Internet to engage the public in forest planning (USDA FS 2012). As noted earlier, public participation GIS has featured prominently in forest plan revision efforts in the past decade (Brown and Donovan 2013, Brown and Reed 2009, Brown et al. 2013).

The term “public participation geographic information systems” was conceived in 1996, during the National Center for Geographic Information and Analysis meeting (Sieber 2006). Brown and Reed (2009: 166–167) described the process as “...using GIS technologies to produce local knowledge with the goal of including and empowering marginalized populations.” In 2012, they conducted a public participation GIS case study on the Chugach National Forest as part of the forest plan revision process under the 2012 planning rule. Results of their study indicate the potential utility of public participation GIS to assist forest planners

in identifying areas suitable for various forest uses (Brown and Reed 2012). Essentially, Brown and Reed (2012) found that public participation GIS provides a systematic approach to identifying the social suitability of various forest uses to supplement traditional biophysical analyses and can assist the agency in determining whether particular activities or uses are consistent with desired conditions (box 4; fig. 9-7).

Effectiveness of public involvement approaches—

Reed (2008: 2417) suggested, “The complex and dynamic nature of environmental problems requires flexible and transparent decisionmaking that embraces a diversity of knowledge and values.” Studies suggest that public involvement can improve Forest Service analyses and provide information otherwise unavailable to the agency that may improve the quality of the decision (Creighton 2005, Hoover and Stern 2014). Scholars have identified additional benefits, including enhanced relationships, reduced conflict, public buy-in, and increasing compliance with agency regulations

and removing barriers to project implementation (Koontz 1999, Stern 2008, Whittall 2007). Although these studies suggest that stakeholder participation can improve the quality of decisions, Reed (2008: 2421) asserted that they do so with one strong caveat: “...the quality of a decision is strongly dependent on the quality of the process that leads to it.” What follows is current research concerning institutional constraints as well as public involvement best practices that can either enhance or hinder the quality of public involvement and hence the quality of associated decisions. Another critical consideration affecting the quality of decisionmaking is the perception and effect of public involvement activities on indigenous peoples and nations.

Von der Porten and De Loë (2014) conducted a systematic review of collaboration literature that focused on environmental concerns and referred to indigenous peoples. Through this review they found that many collaborative processes are grounded in assumptions about the roles of

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Figure 9-7—Participatory mapping for travel management planning, Washington.

different members of society in decisionmaking that are incompatible with how indigenous peoples view themselves. While indigenous peoples have been portrayed as “stakeholders,” “minorities,” “groups,” “participants,” or as “nations,” only the recognition of indigenous peoples as nations aligns with indigenous governance literature (Von der Porten and De Loë 2014: 1041). Thus, they affirm, “...how indigenous peoples are characterized and treated in collaborative processes is a sensitive and important issue” (Von der Porten and De Loë 2014: 1041). Chapter 11 discusses tribal governance and efforts to share traditional ecological knowledge and tribal perspectives as part of tribal engagement in resource management.

Institutional constraints—

Scholarly research concerning institutional constraints to public participation and the quality of decisions addresses three different levels within the U.S. Forest Service: agency, unit, and employee (Davenport et al. 2007, Kaufman 2006, Margerum and Whittall 2004, Stankey et al. 2003). Agency-level constraints have been attributed to diminished resources, organizational commitment, centralized power structure, and the statutory and regulatory environment (Davenport et al. 2007, Stankey et al. 2003).

Through their research, Davenport et al. (2007) identified the centralized system of decisionmaking as inhibiting the unit’s ability to be responsive to the public and address their concerns in a timely manner. Unit-level constraints include increased division of labor, use of technical jargon in planning documents, and reliance on traditional forms of public involvement (Davenport et al. 2007). Here, an increasing division of labor, or specialization, among unit employees was found to reduce the unit’s overall responsiveness to communities (Davenport et al. 2007). Additionally, Davenport et al. (2007) found that meeting minimum legal requirements for public involvement was not enough to stimulate local participation.

Employee-level constraints included staff turnover and long-distance commuting (Davenport et al. 2007, Margerum and Whittall 2004, Wondolleck and Yaffee 2000). Studies also acknowledge the difficulty in maintaining long-term relationships with local communities, private entities, and nongovernmental organizations from frequent

turnover of personnel (Davenport et al. 2007, Margerum and Whittall 2004, Wondolleck and Yaffee 2000). Paradoxically, advancement within the Forest Service hierarchy is frequently dependent on personnel moving to different locations within the agency (Wondolleck and Yaffee 2000). Kaufman’s study of the U.S. Forest Service (2006) found that by routinely moving field officers to different agency locations and levels, they formed allegiances to one another, the organization, and specific policies and procedures, allowing a large, dispersed organization with multiple objectives to successfully create a coherent, unified decisionmaking regime. Kaufman (2006) further acknowledged that this unified approach has not been without challenges, especially during times of social change. The 2012 planning rule’s emphasis on collaborative development of land management plans represents a change from previous planning rule public involvement requirements by emphasizing the importance of building and maintaining relationships. Specifically, the planning rule final directives state that “public participation...helps build and maintain working relationships, trust, capacity, and commitment to the plan” (USDA FS 2015b: 3). Building and maintaining relationships takes time and requires access. Margerum and Whittall (2004) found that staff turnover slowed the momentum of collaboration efforts in southwest Oregon because of the time required for new participants to become involved and the different operating approaches that new managers held. Davenport et al. (2007: 47) emphasized these findings, noting, “Staff turnover has reduced the time communities and agency personnel have to get to know and trust one another. Long-distance commuting by agency employees has meant they are not actively participating in the community...”

Assessing success of public involvement and applying best practices—

Current research on the effectiveness of public involvement approaches is divided into two categories: (1) those that evaluate the success of **processes** and (2) those that evaluate the success of **outcomes** of processes (Chess and Purcell 1999, Cundill and Rodela 2012, Muro and Jeffrey 2008, Newig and Fritsch 2009, Renn 2006). Chess and Purcell (1999: 2685) acknowledged that “evaluating the

outcome ... is problematic because researchers cannot be sure if an effect is due to public participation efforts or to other variables.” Yet they take a position in the middle of the process-outcome spectrum by arguing that “...neither “good” process nor “good” outcome is sufficient by itself.” Cundill and Rodela (2012) agreed with this middle ground by suggesting that processes and outcomes work in tandem: improvements in processes such as sustained interaction, shared knowledge, and ongoing deliberation can lead to social outcomes of improved decisionmaking, better relationships, and improved problem-solving capacity. Muro and Jeffrey’s (2008) research found additional social outcomes of participatory learning processes, including the generation of new knowledge, acquisition of technical and social skills, and increased trust. Finally, Newig and Fritsch (2009) supported Renn’s (2006) argument that listening to the public and establishing a two-way communication stream is not alone sufficient: “Discursive processes need a structure that assures the integration of technical expertise, regulatory requirements, and public values” (Renn 2006: 9). In combining these processes effectively, Newig and Fritsch (2009) concluded that the ecological standard of decisions was positively influenced. Yet, Irvin and Stansbury (2004) argued for caution in deciding whether participatory processes achieve better outcomes on the ground. They found that certain situations precipitate “ideal” (low-cost/high benefit) conditions for public involvement, while other circumstances led to “ineffective and wasteful” (high-cost/low benefit) participatory processes (Irvin and Stansbury 2004: 62).

Finally, the literature shows broad consensus over key features of best practices in public involvement processes. Reed (2008) used qualitative methods and a systematic approach to derive key features from existing literature that includes the following:

- Stakeholder participation needs to be underpinned by a philosophy that emphasizes empowerment, equity, trust, and learning.
- Stakeholder participation should be considered as early as possible and throughout the process.
- Relevant stakeholders need to be analyzed and represented systematically.

- Clear objectives for the participatory process need to be agreed among stakeholders at the outset.
- Methods should be selected and tailored to the decisionmaking context, considering the objectives, type of participants, and appropriate level of engagement.
- Highly skilled facilitation is essential.
- Local and scientific knowledges should be integrated.
- Participation needs to be institutionalized, ensuring that decisionmakers are comfortable in committing to an unknown outcome of a participatory process, while understanding that ultimate decision authority resides with the agency.

Summary—

The quality of a resource management decision depends on the quality of the process that leads to it. A public involvement strategy that resonates with a dynamic and diverse range of interests helps to ensure sound resource decisionmaking. Best practices include a philosophy of empowerment, equity, and inclusiveness; systematic assessment of potentially relevant stakeholders and strategies to encourage participation; engaging stakeholders early in the process; iterative or frequent engagement throughout the process; clear objectives, timelines, and parameters; skilled facilitation; integration of local and scientific knowledge; and enduring agency commitment to the process. NEPA grants agencies broad discretion in the structure of public involvement; agencies engaged in resource planning are empowered to take advantage of the spectrum of public involvement approaches. Different planning phases may call for different levels of public involvement. Defining these various levels of engagement prior to initiation of plan revision promotes a robust participation process.

Agency-Citizen Collaboration

Contemporary natural resource management decisions present complex choices among interests and values, so that the choices are political, social, cultural, and economic, as much as they are scientific and technical (Dietz and Stern 2008). As a result, over the past several decades, communities, governments, private organizations, and individuals

have increasingly turned to collaboration as a supplement to traditional planning and decisionmaking processes. By focusing on shared concerns and promoting problem-solving, the intent is to better address complex resource management issues such as watershed management, endangered species management, planning for climate change, or habitat restoration.

Collaboration is defined here as “a process through which parties who see different aspects of a problem can constructively explore their differences and solutions that go beyond their own limited version of what is possible” (Gray 1989: 5). Collaborative approaches are often place based, cooperative, involve multiple parties, and strive to create or improve relationships between individuals and groups, or develop solutions to specific issues or problems. The approach involves interactions with representatives of a variety of stakeholder groups and organizations, often over a period of months or years, depending on the scope and complexity of the group’s efforts. Collaboration requires diverse stakeholder participants (private landowners, American Indian tribes, government organizations, nongovernmental organizations, businesses, and others) to work together over a period of time to identify and address resource management issues. The efforts often rely on outside neutral facilitators to help them work toward their common goals.

Why collaboration?—

The rise of collaborative approaches reflects a shift toward increased civic participation in agency planning and decisionmaking. This shift has occurred because resource management issues are not easily solved, are characterized by incomplete or contradictory information, and are subject to increasing interdependencies between management agencies, nongovernmental organizations, and citizens (Head 2008). Natural resource management also has become extremely complex and networked, as responsibility for many issues has shifted from the federal government to state and local governments as a result of shrinking federal government resources and programs (Emerson and Nabatchi 2015). Frustration with gridlock, declining budgets, and overall lack of trust in government decisionmaking processes have fueled interest in collabora-

tion, as have challenges with the multiple jurisdictions and landowners needed to effectively manage resource issues across landscapes (Dukes and Firehock 2001, Wondolleck and Yaffee 2000).

Societal expectations and policy-driven requirements for public involvement in resource decisionmaking have also increased the use of collaborative approaches. For example, in the Forest Service, “...laws such as NEPA, NFMA, and the Endangered Species Act (ESA) provided important leverage to conservation groups and gave them an empowered seat in collaborative processes” (Nie and Metcalf 2015: 6). Nie and Metcalf (2015) summarized the evolution of collaboration in the Forest Service, noting that “collaboration was increasingly invoked to facilitate a more inclusive dialogue as part of a new focus on ecosystem management in the 1990s,” and the two were linked together by the Forest Service’s Committee of Scientists (1999), which recommended more ecosystem and collaborative-based approaches to forest planning (Committee of Scientists 1999). Collaboration was also called for in the 2003 Healthy Forests Restoration Act, the 2009 Collaborative Forest Landscape Restoration Act, and the 2012 NFMA regulations, which focus extensively on public participation in forest planning, with collaboration encouraged by the agency, and public participation required during plan development, revision, and amendment (Nie and Metcalf 2015).

Collaboration is touted as an appropriate approach because many resource management issues are local, site specific, and often cannot be easily resolved within legislatures, agencies, or courts (O’Leary and Bingham 2003). Proponents of collaboration argue that it is a logical response to policy gridlock and litigation (Susskind et al. 1999) and an alternative to centralized planning and command and control regulation. Collaboration can produce more creative and adaptive solutions to natural resource management problems, encourage shared ownership of the problem, and facilitate implementation of potential solutions (Bacow and Wheeler 1984, Susskind et al. 1999). Such efforts also can garner sufficient resources or expertise to achieve what cannot be accomplished by one single party or a smaller coalition, and is often less costly than litigation

(Dukes and Firehock 2001, Susskind and Ozawa 1984). In many cases, collaboration has proven to be a powerful tool for resolving conflict, building trust, addressing uncertainty, fostering cooperation and coordination, and developing capacity for addressing future resource management issues (Wondolleck and Yaffee 2000). Collaboration is often viewed as part of the solution to increasing trust and social license for forest management.

General critiques and concerns about collaboration—

Critiques of collaborative approaches argue that the process does not necessarily ensure “better” decisions, and that collaboration may reinforce existing power disparities rather than promote truly diverse stakeholder inclusion and meaningful dialogue (Burke 2013, Dukes and Firehock 2001). Not all stakeholders can or will participate; there may not be enough time to resolve the issues; the issues may not be “ripe” or ready for collaboration; and there are serious capacity concerns related to the time and other resources needed for participation (Amy 1987).

Other studies have raised concerns about the devolution of public lands management and suggested that collaboration could potentially weaken environmental protection (Hibbard and Madsen 2003, Kenney 2000). Questions have been raised about the nature and quality of the environmental outcomes from collaborative processes, which is an enduring question across all sectors. Layzer (2008: 5) suggests that “...the initiatives whose goals were set in collaboration with stakeholders have produced environmental policies and practices that are less likely to conserve and restore ecological health than those whose goals were set through conventional politics.” More recently, efforts to understand links between collaboration and performance reveal that while there is a perceived positive link between the two, concerns remain about costs in terms of power, time, conflict, stress, process, suboptimal outcomes, and resources required (Mitchell et al. 2015).

Structures and functions of collaborative approaches—

In practice, collaboration is designed and implemented in a wide variety of ways. Differences in structures and functions across several key factors illustrate multiple interac-

tions, each of which affect the processes and outcomes of a particular effort. Collaborative efforts can vary in several ways including:

- Who sponsors (funds all or part)
- Who convenes (plans and leads)
- Facilitation
- Scope (local, state, regional, national, international)
- Jurisdictions, authorities, and laws
- Geographic scale (related to scope)
- Participants and who they represent (more inclusive or less inclusive)
- Purpose and goals (e.g., policy or issue oriented; or site specific and focused on a specific issue related to a particular place)
- Drivers of the effort, such as direct conflict over an issue, or a perceived opportunity
- Urgency of issues and timeframe for decision
- Formal and informal rules (decisionmaking approaches—ranging from consensus to voting to agency maintaining decision authority, managing interactions over time)

Types of federal forest land collaboration and trends in the Pacific Northwest—

Research on federal forest land collaboration in the Pacific Northwest has covered collaboration at scales from local communities of place to larger landscapes and regions. It has tended to focus on collaboration for wildfire risk reduction and forest health restoration, and particularly on collaboration during planning (e.g., before and during NEPA analysis, or community wildfire protection planning). Although collaborative watershed management for fish habitat and other aquatic restoration goals has also become common practice, most of these efforts have focused on private landownerships and capacity to implement restoration projects on the ground, so science on this topic is not reviewed here.

Because there is no established baseline from which to begin, it is difficult to accurately and completely describe the status of collaborative forest management on national forests, and whether or how this has changed over time. Anecdotally, there are a plethora of types of collaboration

in the region, yet there are few if any studies that comprehensively document this (censuses, statewide assessments, etc.). Some documentation can be found in policy or program reports (Bixler and Kittler 2015, Swezy et al. 2016, White et al. 2015), or student theses (Hughes 2015, Spaeth 2014, Summers 2014), but there is no single standard for defining, identifying, or studying collaboration. Although much of the existing science on collaboration consists of case studies, the research has identified common themes, challenges, lessons learned, and best practices. Two overall trends emerge from the available science:

- Collaboration takes place at a variety of spatial and political scales but is increasingly occurring over larger landscapes as federal policies and programs have focused at larger scales over time.
- Collaboration is increasingly occurring through collaborative groups (“forest collaboratives”) that meet regularly and focus on a specified landscape, rather than individual processes or projects. Organization and leadership of these groups differ greatly by location and context.

Changes in the scale of collaboration over time—

Collaboration often is thought of as occurring at the local community scale, referring to communities of place. This is a very fine-scale approach. Following the NWFP and listing of species such as the northern spotted owl (*Strix occidentalis caurina*) and Chinook salmon (*Oncorhynchus tshawytscha*), community-based collaborative efforts arose in several affected communities in the Pacific Northwest states. These are documented in previous science syntheses covering the period prior to 2003 and are often described as community-based forestry, community forestry, community-based conservation, or grassroots ecosystem management (Baker and Kusel 2003, Weber 2003). Early efforts were often spurred by local community members, typically working on a range of projects including, but not limited to, federal lands management, e.g., local business development or community multiparty monitoring. The goal of these efforts was to improve ecological and socioeconomic conditions in a given place, and leadership was local.

From 2001 onward, there has been a trend toward collaboration driven in part by state and national policies and programs. A primary focus of more community-scale collaboration since 2003 has been community wildfire protection planning, spurred by the National Fire Plan (2001) and Healthy Forests Restoration Act (2003). However, the scale of these processes and plans differed, as some plans covered subdivisions or neighborhoods, while others were for entire counties (Jakes et al. 2007). Currently, there are community wildfire protection plans (CWPPs) in nearly every county and at smaller community scales in the NWFP area, indicating that this form of collaboration has become widespread (Oregon Department of Forestry, Washington Department of Natural Resources, California Fire Safe Council). However, the nature of collaboration around the plans also differed; some were largely developed by consultants and others through extensive community engagement and collective action (Williams et al. 2012). Over time, there has been an increase in community-scale groups collaborating beyond this planning process under the “cohesive strategy” process (USDA FS 2014). Twelve communities (two of which are in the Plan area) are collaborating through the tools provided by the Strategy to become “fire-adapted communities.” They also are participating in a larger nationwide network (Fire-Adapted Communities Network).

No scientific research has comprehensively reviewed these CWPPs, but there has been some case study research. The largest study included 13 CWPP cases at diverse scales, (including two cases from the Plan area), and found that successful CWPP processes emphasized problem framing, choosing tractable scales, and ensuring a path toward implementation (Williams et al. 2012). Other studies found that trust was an essential ingredient in two cases in west-central Montana (Lachapelle and McCool 2012). However, one study of two cases in Oregon (one in the Plan area and one in eastern Oregon) concluded that CWPP processes were not necessarily successful for future wildfire risk reduction, in part because communities could not or did not establish effective decisionmaking processes or have sufficient influence to induce change (Fleeger and Becker 2010).

Collaboration in the Pacific Northwest has more recently shifted to a focus on watershed and landscape-scale restoration. The term “landscape” has multiple definitions and expressions. For the Forest Service, the Forest Landscape Restoration Act (2009) and resulting Collaborative Forest Landscape Restoration Program (CFLRP 2010) allocated funds to national forest units and their collaborative partners to work on landscapes of at least 50,000 ac (20 234 ha) with a 10-year plan of prioritized restoration treatments (Schultz et al. 2012). Within the Pacific Northwest states, there are currently nine CFLRP projects (USDA FS 2015a). These are largely outside the NWFP area, given the program’s wildfire focus. Portions of the Okanogan-Wenatchee and Deschutes National Forests, where two CLFRPs are active, are within the Plan area. Insights about the program, however, may be applicable to future collaborative efforts within the Plan area.

An initial study of the CFLRP suggested that collaborating at the landscape scale and requiring monitoring could result in more efficient future forest management (Schultz et al. 2012); but further research indicates that barriers such as lack of stakeholder and agency capacity may be emerging (Schultz et al. 2014). Another monitoring report identified inconsistent implementation of socioeconomic monitoring among the CFLRs (Swezy et al. 2016). Other recent research has dug more deeply into collaborative processes and collaboration during the implementation stage (Butler et al. 2015). Collaboration during implementation expands possible roles for collaborative groups, which in the past have been confined to planning and monitoring activities. Collaboration during the implementation phase also may strengthen accountability and stakeholder diversity (Butler et al. 2015). Increasing collaboration during implementation may pose new legal tensions; meanwhile, given that ultimate decisionmaking authority remains with the land management agency. Another related study finds that the program’s mandate to collaborate may lead to increased stakeholder engagement and attention to designing effective collaborative processes (Monroe and Butler 2016). Bixler and Kittler (2015) conducted a meta-analysis of CFLR research to identify research gaps. The biggest needs in research were related to leadership, trust, and accountability. Finally,

Urgenson et al. (2017) examined six CFLRP collaborative groups, identifying common challenges (meeting multiple objectives; collaborative capacity and trust; and integrating ecological science and social values in decisionmaking) and strategies used to overcome these challenges.

From “collaboration” to “collaborative”—

There is little scientific documentation of how the organization and structure of federal forest land collaboration may be changing (Davis 2015a, 2015b, 2017) and general knowledge of forest collaborative groups in the NWFP gained from discussions with colleagues in regional and national conferences as well as preliminary (unpublished) research in Washington and Idaho. Numerous forest collaborative **groups** or “collaboratives” are now active on national forests in the NWFP area—working together and with the Forest Service beyond individual processes or projects (fig. 9-8). These groups typically have a recognized name, mission, and a regular process for meeting, reviewing federal land management activities, and providing collective input to the Forest Service. But, there is no single definition of “collaborative” currently found in federal or state policy, and likely a great degree of variability in what these collaboratives do and how they are organized between and among states.

The trend of organized collaboratives groups has been extensive in Oregon, where an estimated 25 forest collaboratives are currently identified as active in all national



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Figure 9-8—South Santiam All-Lands Collaborative, Oregon.

forests (Davis et al. 2015a, 2017). Other Western states (California, Colorado, Idaho, Montana, and Washington) also have growing numbers of identified collaborative groups. Although some of these efforts date to the 1990s, particularly in California and Oregon, a majority appear to have originated more recently (post-2009). No comprehensive assessment or empirical research on these collaboratives has been conducted. Existing research suggests that “collaboratives with formalized structures and workgroups” tend to be more successful at attracting and using resources than less formalized groups (Cheng and Sturtevant 2012). The capacity of these groups to organize and accomplish their goals has not been tested.

Elements of successful collaboration—

Notions of success depend on the particular goals of the participants in the collaborative process, and evaluation is challenging because collaborative efforts produce a variety of different products. The large variation in the structure, function, goals, context, and terminology of collaborative processes poses challenges for researchers, making it difficult to operationalize and measure collaboration and collaborative performance, and there is little agreement about what constitutes effective performance in collaborative arrangements (Emerson and Nabatchi 2015). Further, a majority of existing science on collaborative evaluation examines single or few case studies, and often, only a few factors of success. Therefore, the amount of generalizable or comprehensive information about what constitutes successful collaboration is limited. In particular, little to no research explicitly evaluates collaboration in the NWFP area.

Evaluations of collaboration that do exist have tended to focus on combinations of process, social, environmental, or economic criteria (Conley and Moote 2003). For example, collaborative efforts are often deemed successful based on process outcomes such as whether the effort established a shared vision among participants, had diverse and inclusive participation, used an open and transparent process, made links to groups beyond those participating, and made decisions by consensus. Social outcomes could include relationships built or strengthened, increased trust, whether participants gained knowledge or understanding, increased

capacity for dispute resolution, or changes in existing or new institutions. Process and social outcomes can be particularly confusing to analyze, because they can also be factors in success as well as evidence of success. A study conducted of six projects in national forests in eastern Oregon suggests that four of the six projects that had input from collaborative groups appeared less likely to be appealed (Summers 2014); more research is needed to understand potential intervening variables and to identify a clear definition of “collaboration” among these cases (box 5).

The environmental outcomes of collaboration are also difficult to evaluate owing to monitoring challenges, relatively long time frames between implementation of collaborative outputs and detection of environmental responses, and demonstrating that implementation of collaborative involvement (rather than other factors) changed environmental conditions (Koontz and Thomas 2006). Further, scientific studies of economic impacts of collaboration are also limited, although some policies and programs are increasingly requiring monitoring of job creation and economic activity. Similar to the environmental outcomes challenge, linking specific collaborative activities to economic outcomes is quite difficult.

More recent efforts to understand links between collaboration and performance reveal that while there is a perceived positive link between collaboration and performance, concerns remain about costs in terms of power, time, conflict, stress, process, suboptimal outcomes, and resources required (Mitchell et al. 2015). Margerum (2011) presented an overview of the principal elements of successful collaboration (see box 5), which can focus on inputs (information for decisionmaking); process (such as the equitability, diversity of participation, and other aspects of the decisionmaking process); outputs (assessing products, such as plans or agreements); performance (measuring plan and policy performance); outcomes (monitor actual results); and program logic (linking outputs to outcomes).

The available research on successful collaboration in federal forest lands is quite limited, and focuses on selected factors of success. No research is available that addresses all possible factors of success. From the available research, the following can be important ingredients for success:

Box 5— Factors Identified With Successful Collaboration

Inputs:

- Clear goals
- Available information
- Appropriate scope
- No fundamental value differences
- Issues are “ripe” for collaboration
- Appropriate scale
- Appropriate authority

Process:

- Shared information
- Trust/good faith in participation
- Decision rules
- Shared vision/goals
- Diverse participation
- Satisfaction
- Membership
- Facilitation
- Legitimacy
- Support for agreement/process

Outputs:

- Plan, agreement or project
- Implementation plan
- Monitoring or enforcement
- Clear communication
- Shared, high-quality fact base
- Intervention strategy

Outcomes/performance:

- Difficult to evaluate because of time lag associated with implementation
- Difficult to link to collaborative effort unless well documented and monitored
- Research needed linking outcomes to specific actions of collaborative groups

- Collaborative capacity, or the ability to “organize, coordinate, and manage people, resources, and tasks to achieve desired outcomes” (Cheng and Sturtevant 2012: 2).
- A shared culture and set of behaviors (Cheng 2006).
- Inclusion of all interests (Hibbard and Madsen 2003)
- Undertaking monitoring, joint fact-finding, or other information gathering and learning activities, which has been found to lead to shared understanding, social learning, a sense of community, and trust; however, research also finds that monitoring data are often not being used or rarely results in adaptive management (Fernandez-Gimenez et al. 2008).
- Agency participation, which can demonstrate commitment and bring technical knowledge and support (Butler 2013, Wondolleck Yaffee 2003).
- Genuine non-agency, community leadership (Cheng 2006).

Summary—

Collaboration has been widely accepted as a useful model for engaging diverse stakeholders in the process of deliberation over critical forest issues, including fire, forest restoration, and wildlife protection. Collaboration requires time, resources, and enduring commitment. Managers choosing to participate in collaborative efforts may want to ensure they have adequate resources and provide support to staff to enable them to build these relationships over time. Successful agency participation in collaboration includes open communication, clear expectations, and realistic information about internal priorities, plans, schedules, and decision points. Collaborative groups may be part of the solution to increasing trust and social license for forest management to meet NWFP and other goals. Yet, not every stakeholder is eager to participate in a collaborative. The scope, scale, and end goals of a given collaborative effort may make it more relevant and accessible to some stakeholders than others. Currently, collaboratives in the NWFP area exist in a variety of forms and are engaged in a diversity of

activities, including stewardship contracting, environmental assessment for NEPA, and monitoring (Davis et al. 2015b). Federal land management agencies have committed resources to collaboration and have invested in its long-term success. Collaboration is often viewed as part of the solution to increasing trust and social license for forest management. Yet, we do not have consistent evidence that collaboratives are achieving the goals that proponents have espoused, including trust building, better results on the ground, a reduction in appeals or litigation, or improved forest health.

Research Needs, Uncertainties, Information Gaps, and Limitations

Socioecological systems science recognizes that human societies and ecological systems are interwoven and interdependent (Berkes et al. 2000). We understand that ecosystems are embedded in levels of social organization (Brondizio et al. 2009). Although contemporary resource management is built from a strong foundation of ecological information, knowledge of our social systems and how they integrate with ecological elements at the appropriate geographic scale is sorely lacking. The need is great for data that describe the socioeconomic, psychological, cultural, and political landscape in the NWFP. This chapter characterizes the current state of knowledge in the planning area and identifies the gaps.

In this section, we identify the most high-priority research needs and significant gaps in knowledge for each of the five key findings of this chapter. The dearth of social science research in the NWFP area creates a need for a wide variety of studies to understand more about changing values and relations with place, changing recreation patterns, and changing expectations for public involvement in resource management. The recent emergence of collaborative forms of governance is creating new opportunities for the public to engage in resource management, although the science has not yet captured the benefits and challenges of collaboration.

Public Values, Attitudes, and Beliefs

Values orientations of North Americans are said to be shifting from an emphasis on resource production to a balance of resource protection and production. However, little research has been conducted in the past 20 years to assess the current status of environmental values, either nationally or regionally. Longitudinal data is sorely lacking in the social sciences, as most research studies focus on a single case (Stidham et al. 2014). Longitudinal social values monitoring in the NWFP area would help to evaluate regional trends and identify any subregional variations or disparities among urban, amenity-migrant, and rural residents. Values research also would be useful to identify value sets held by sociocultural groups and stakeholders with a keen interest in management of the NWFP lands. A better understanding of stakeholder values will help land managers identify and predict attitudes toward resource management practices such as restoration.

Constraints to conducting this work are primarily budgetary and regulatory. First, the cost of random-sample survey work has escalated in recent years, and societal trends in favor of privacy have made it challenging to collect survey data with an adequate response rate from the study population. New ways to budget for this type of consistent social data might be considered as well as ties with existing agency monitoring programs. Second, any survey being conducted by federal government agencies or on behalf of federal agencies is required to undergo review by the OMB per the Paperwork Reduction Act of 1995. This OMB approval process must ensure that the public is not being unduly burdened or harmed by the study or that the project is not redundant. Interagency coordination of public values studies within the NWFP area may help to increase efficiencies associated with obtaining OMB approval.

If a process was established to monitor public values at reasonable iterations (every 10 years, for example), data collection and analysis could be standardized and institutionalized, with efficiencies gained. These data would benefit multiple resource agencies and provide the opportunity for

public values and environmental beliefs to be considered by federal, state, and municipal land managers. Without these data at the regional or local scale, land managers are left to make decisions based on information gathered in public meetings or in small studies that are not coordinated regionally and may not accurately reflect the definitive views of a diverse public.

Finally, new research about the social acceptability of forest management practices is warranted, with emphasis on public knowledge and perceptions of ecological forestry as well as traditional forms, reactions to a diversity of treatment types and setting conditions, and with a focus on understanding the role of trust and communication on shaping public responses.

Valuing Place

Extensive literature exists on the concept of place and its relationship to natural resource management. However, very little of this research has taken place in the Pacific Northwest or California. The need for applied research that helps managers and policymakers capture and integrate into planning the place meanings associated with forest socioecological systems is therefore great. Findings from such studies can be applied to the NWFP area.

One area for place research that has immediate practical utility for land managers is improving understanding of the physical and social characteristics associated with places that tend to trigger place-protective behaviors. This knowledge would be useful for land managers making decisions about what places to emphasize for protection through management, where to focus management, or where to allow certain activities to occur. Places mean different things to different people. A related research topic has to do with identifying how place attachment differs within forest user groups. For example, boaters residing near a lake may resist proposed closures of picnic areas on the lakeshore, whereas boaters who come from a distance may be indifferent to those closures. More broadly, place research can also help managers better understand where to allow certain activities by forest users and where to focus vegetation management and other activities.

A gap exists in our knowledge about which public engagement methods are most effective for capturing place

meanings for different segments of the public. Studies suggest that Internet and mail surveys as well as standard mapping workshops tend to be biased toward forest users who are older, better educated white men with relatively high incomes. A workshop format proved successful at reaching Latino forest product harvesters on the Olympic Peninsula (Biedenweg et al. 2014), forest users who were not reached through a broader mapping workshop process. However, only the tip of the iceberg has been seen so far, and more work needs to be done to determine which methods work for which segments of the population. Additionally, there is a mismatch between the techniques likely to be effective at reaching nontraditional forest users and the capacity of the land management agencies to conduct such outreach. A grassroots-driven mapping project on the Mount Baker–Snoqualmie National Forest offers a promising avenue for how land management agencies can work with partners to augment their capacity for developing place meaning inventories (McLain et al. 2017a).

Finally, a regional or forestwide sense of place assessment might usefully inform forest management decisions and public engagement processes. Key questions might be: What places matter to people? To whom do they matter, why, or for what? How much do they matter? And, under what social, economic, political, and ecological circumstances do they matter? Because the answers to these questions are likely to differ depending on the socioecological context, a clear need exists for research that moves beyond isolated case studies toward a coordinated set of regionwide applied research projects. There is a need for applied research on place meanings and related concepts, such as place attachment, place identity, and place dependence. By applied research, we mean the systematic collection and analysis of data that are deliberately structured so as to inform land management and policy.

Cultural Ecosystem Services

A 2015 presidential memorandum directs all federal land managers and regulatory agencies to use an ecosystem services framework for planning, policymaking, and decisionmaking (OMB 2015), and consideration of ecosystem services is also required by the 2012 forest planning

rule (USDA FS 2012). New research on cultural ecosystem services has drawn attention to the less tangible benefits associated with forest ecosystems. However, there have been few empirical studies that explore how people perceive cultural services, how cultural services may be operationalized, measured, and monitored, and how to integrate cultural services into the planning process. Case studies in ecosystem services management with inclusion of cultural services are needed to build a foundation of knowledge. In addition, tools and applications are needed that reinforce concepts in cultural ecosystem services. Early studies and cases in the NWFP area offer new insights and promising prototypes. In particular, it would be helpful to learn more about how cultural services have been bundled in various ways and whether it makes sense to unbundle them.

Outdoor Recreation

Much of recent scientific literature on U.S. outdoor recreation is at the national level or from studies in other U.S. regions. Just because those studies were not completed in the NWFP area does not mean their findings are not transferable to the NWFP area. However, it would be useful to increase the amount of recreation research in the NWFP area to learn whether there are unique patterns locally. Much of the traditional scientific literature on national forest recreation focuses on what the authors thought were traditional national forest recreation activities, such as backpacking, primitive camping, and hunting. Contemporary recreation use is much more focused on short visits, often to developed recreation sites, and focused on generalist activities. New research is needed to understand how the Forest Service fits into current and future demands for the full suite of leisure patterns by Americans, and specific desired outcomes from national forest recreation. The recreation research literature lacks comprehensive studies of multiple, combined factors of sustainable recreation; most of the current literature has focused on one or two factors (e.g., economic impacts, social impacts) individually, and does not look at the whole array of factors in an integrated fashion. Comprehensive studies that consider integrated factors of sustainable recreation will inform managers as they respond to policy direction to manage for sustainable recreation.

Trust

Research on trust has identified and defined multiple types of trust in the context of natural resource governance. Stern and Coleman (2014) identified four types of trust: dispositional (one's natural inclination to trust); rational (stemming from predictable behavior, past performance, and reasoned logic); affinitive (based on personal relationships that develop through repeated encounters); and procedural (based on having processes that are viewed as fair, just, and open). A follow up study found that at least three types of trust needed to be present for broader institutional trust to be acknowledged (Stern and Baird 2015). Although this study was conducted in the context of natural resource collaborative groups, the trust typology is applicable to other forms of forest governance. More research is needed to understand the various types of trust and how they interact. For example, how does affinitive (interpersonal) trust relate to broader agency trust? What happens when rational trust declines, while procedural trust grows? What types of processes and protocols help to enhance procedural trust?

There are opportunities to explore how broad-based trust for a public agency affects project-level trust, and vice versa. In other words, what happens when the public distrusts the agency at the national policy level but has greater trust in the ability of local officials to manage a project? And, what happens when there is high broad-based trust in an agency's purpose, but lack of trust at the project level? In addition, more information is needed about the ways that public trust can influence social acceptability of forest management practices, such as active management and forest restoration as well as prescribed burns. Finally, trust can be enhanced through participation in various types of public engagement opportunities and in collaborative or comanagement groups. Yet, it is not clear what types of trust may be generated by these different types of processes.

Public Involvement

Peer-reviewed research on public involvement is limited in the NWFP area. Broad-scale questions exist concerning the disconnect between participatory requirements and Forest Service structures and cultural norms. Practical policy implications of public involvement in decisionmaking lead

to questions of accountability, such as: To what degree does the agency give up some control and still maintain or improve social, economic, and ecological outcomes? Perhaps more fundamental is the question: What results are important to achieving socially sustainable outcomes? The application of stakeholder and social network analysis within the government sector remains largely untapped, and could provide a wealth of knowledge about building effective networks in support of the public good. Specific questions also exist concerning public involvement methods employed by the “early adopter” national forests engaged in planning under the 2012 planning rule.

Forest Service social scientists can play a much greater role in assisting the agency develop innovative public involvement strategies. Although the field of social science is diverse, expertise exists in the methods and practice of understanding values, attitudes, and beliefs; stakeholder and social network analysis; and place identity and attachment through tools like public participation GIS. Integration of these foundational methods and practices into programmatic forest planning can increase the likelihood that land management decisions better reflect the diverse range of public and tribal interests.

Agency Collaboration

Very little research has been conducted on forest collaboration in the NWFP area, and our synthesis only examines research on Forest Service-related collaborative efforts. Therefore, many gaps and research needs exist. First, large-scale, comprehensive studies of collaborative forest management and how it has changed are needed, including basic information about how many collaboratives exist and how they are defined and function. It is not possible to say whether communities are more engaged with the agency than before, or how, as there is no commonly accepted definition of “engagement” or what would indicate “more engagement.” Research on collaboratives tends to occur via case studies, and single case studies are not generalizable to broader scales. Further, because much collaboration has occurred around wildfire in dry forests, few studies have focused on the NWFP area, which means there is even less clarity about the drivers, activities, outputs and outcomes of

collaboration. Many NWFP forests differ from their east-side counterparts in terms of higher annual precipitation, longer historical fire-frequency intervals, diverse moist/wet forest types, presence of endangered species, different forest health challenges, increased population density, and proximity to urban areas; southern Oregon and northern California forests have more frequent fire and a mixture of east- and west-side characteristics.

Second, no scientific evaluations have been conducted on whether, or how, collaboratives are achieving resource management goals or social or economic objectives. No studies measure these goals or outcomes, or identify what can be attributed specifically to collaboratives as opposed to other variables such as economic change, agency or other organizational change, efforts from programs and activities occurring outside the collaboratives, etc. One study monitored changes in several indicators such as timber harvest, acres restored, and jobs created as a result of the state’s Federal Forest Health Program in Oregon, but it did not clearly link these outcomes to specific activities of collaboratives (White et al. 2015). One master’s thesis examined the question of whether collaboratives in eastern Oregon are decreasing appeals—a topic of great interest to managers and policymakers—but the evidence was largely inconclusive (Summers 2014).

Beyond these broad questions, additional questions about collaboratives remain unanswered and present rich opportunities for future research. Some of these relate to process: How do collaboratives build, codify, and use social agreement? Does the agency use the agreements that collaboratives make, and if so, how? Other questions relate to the roles of various stakeholder types (e.g., industry, conservation, American Indian tribes) and whether and how they participate. How collaboration relates to other processes such as consultation with tribes or the established public process used during environmental planning is not well understood. Moreover, the potential tradeoffs of forming an enduring collaborative group versus a collaborative process for specific issues or decisions have not been assessed. For example, do the investments in capacity and organizational development of collaborative groups pay off in outcomes? Do collaborative groups offer input

that accurately reflects the spectrum of public values? In general, the need for collaborative groups or processes may differ and collaboration may not provide solutions for all issues in all places. Additional questions concern collaboratives and knowledge production, as many collaboratives focus on “science-based restoration.” How compatible are scientific and collaborative processes? What role do collaboratives and agencies have in bringing science to bear on management? Finally, few if any studies have examined the ability of collaboratives to endure and adapt in the face of shocks and stressors, such as large wildfires, climate change, or community social discord.

Conclusions and Management Considerations

Conservation goals are most often met when ecological and social elements are integrated (Charnley 2006). Socioecological system (SES) science recognizes that changes to society, including demographic shifts, changes in human settlement patterns, new governance structures or regulations, can affect interactions with the natural environment and likewise, large-scale landscape and climate variations can affect human institutions, such as markets and communities. Greater awareness of how social and ecological systems intersect will help resource managers improve the quality of their decisionmaking. This includes greater understanding of human values and management preferences, place-relations, resource uses, and visitation patterns. New participatory strategies have attempted to democratize and deepen citizen engagement in environmental decision-making. The proliferation of collaborative institutions has the potential to influence future management of ecological systems. As agencies expand their conceptualizations of forest resources from “sustained yield” to “ecosystem management” to “ecosystem services” in the NWFP area, there are no doubt implications for what this means on the ground. A greater recognition of diverse stakeholder values and place attachments, of shifting visitation patterns across the forest landscape, and of the opportunities for public expression of these values will enhance efforts to understand the NWFP area as a dynamic and integrated system. This chapter notes several highlights of interest to resource managers.

Systematic and steady research and monitoring of public values will enhance our understanding of what is important to people living in and around the NWFP area, or who have a stake in the future of these lands. A greater understanding of environmental values associated with public lands can improve the ability of land managers to weigh public needs alongside the best available science to make management decisions. Information about public values, attitudes, and beliefs also allows managers to anticipate conflicts in values and develop strategies for communicating with stakeholders. As societal values shift, public responses to resource policies and decisions will also likely evolve. And, as population changes occur, new migrants can influence the existing composition of values and value orientations within a particular subregion. Land managers who have access to up-to-date information about the values, beliefs, and preferences of both the general public and a variety of stakeholders and socioeconomic groups at the appropriate geographic scale will be better equipped to understand characteristics of their social system and anticipate the need for change. Moreover, social system data gathered at the appropriate scale can be integrated with biophysical data about ecological conditions to expand understanding of the complex socioecological system and identify possible barriers and opportunities in implementing management plans.

Residents of the NWFP area embody a range of views related to the social acceptability of various land uses, including timber harvest and these views are based on their environmental values, connections to place, knowledge of harvest practices, awareness of goals and outcomes, and degrees of trust. Existing research suggests that stakeholders and citizens in the NWFP generally do not support clearcutting as a desirable silviculture strategy. There does appear to be potential public support for alternative harvest strategies, such as disturbance-based management and other practices that mimic natural processes, particularly when old-growth forests can be avoided.

Recognition of the symbolic meanings and emotional ties that people have with places is important for engaging people in stewardship efforts, encouraging collaboration, and engaging the public in resource management.

The scientific evidence about the importance of place is unequivocal. Places and the meanings that are bound up in them have real implications for forest ecosystem management. Managers can take advantage of the positive power of place as the bonds that people have with places can also motivate them to engage in forest stewardship projects. By recognizing and appealing to these bonds, managers may be able to attract volunteers with substantial knowledge of local conditions to accomplish objectives.

The variability that exists in place meanings, together with the strong feelings that are bound up in people-place relationships, suggests that broad-based public engagement processes are critical at an early stage of the planning process. There are great benefits in considering the dynamics of place in a systematic way. For example, a conflict over forest management that threatens the social identity of stakeholders may call for a very different outreach and involvement approach than another type of conflict where place is important, but not critical to social identity. Because place meanings are dynamic and constantly being renegotiated, a public engagement process that emphasizes multiple ways of collecting data about place meanings and that is deliberately designed to reach out to a broad spectrum of the public, is far more likely to capture the range of meanings than processes that rely on only one type of information gathering approach.

Cultural ecosystem services provides a framework for land managers in the NWFP area to consider the diversity of spiritual, aesthetic, recreation, heritage, discovery and learning, and therapeutic benefits associated with forest settings. Recreation is one example of a quantifiable and measurable benefit that currently is monitored by federal agencies, along with scenic resources and heritage sites. Other aspects of cultural ecosystem services, like spirituality, solitude, wilderness therapy and education, are managed, but not actively tallied, which is a missed opportunity. A growing emphasis on cultural ecosystem services will allow resource managers to recognize the variety of benefits associated with a forest and stakeholder attachment to sets of benefits. The ecosystem services framework may prove useful in identifying and measuring a full range of benefits and values assigned to forests and landscapes.

Recreation visits are expected to grow in day-use settings and developed facilities. At the national level, current scientific literature indicates that the numbers of people participating in outdoor recreation will increase in the coming decades with continued population growth, although participation rates will be relatively flat. From general public surveys and NFS visitor monitoring, we know that the vast majority of outdoor recreation use is for general recreation activities, like hiking, viewing nature, visiting nature centers, viewing wildlife. Further, NFS recreation monitoring indicates that the vast majority of recreation visits to national forests are relatively brief, lasting less than one-half day, and the majority are focused on recreation at developed sites (e.g., day-use areas, campgrounds, visitor centers). Recognition of that pattern of use is helpful when considering the amount of resources committed to managing general, common recreation activities versus more specialized, but perhaps higher profile, activities in which fewer people are engaged. The greatest barriers to participating in outdoor recreation identified in the literature are items over which Forest Service managers have limited control: lack of time and distance to national forests. For items the Forest Service can control, expanding personal safety at recreation sites, improving signage, and providing information, all have been found to have positive effects on user perceptions of site conditions.

Developing decisionmaking processes and protocols that are consistent, reliable, fair, and transparent can help to improve institutional trust. The degree of trust established between public agencies, stakeholders, and communities is an important factor in public support for resource management decisions. Trust is not fixed, but rather is dynamic and iterative—modified by each encounter and shared experience. Public trust of natural resource agencies may vary between the local (or project) level and the national (broad-based) level. Trust exists in multiple forms: dispositional (based on inclination), rational (based on predictability), affinitive (based on relationships), and procedural (based on process), and although trust levels between entities can vary among those four types, enduring trust cannot exist without at least three of these present. Having clearly stated objectives, consistent communication, transparent

processes, reasonable timelines, honored commitments, and opportunities for candid deliberation can enhance trust. Enduring personal relationships also are important.

The quality of a resource management decision is strongly dependent on the quality of the process that leads to it. The necessity of designing public involvement strategies that resonate with a dynamic and diverse range of interests is imperative to ensuring sound decisionmaking affecting Forest Service lands. Best practices provide critical components of an effective public participation strategy, and offer useful guidance for incorporation into decision processes (Reed 2008), including: a philosophy of empowerment, equity, and inclusiveness; systematic assessment of potentially relevant stakeholders and strategies to encourage participation; engaging stakeholders early in the process; iterative or frequent engagement throughout the process; clear objectives, timelines, and parameters; skilled facilitation; integration of local and scientific knowledge; and enduring agency commitment to the process. The NEPA grants the Forest Service broad discretion in the public involvement process, and therefore this process should take full advantage of the spectrum of opportunities available.

Inconsistent use of “collaboration” as a catch-all term for public involvement has often led to conflicting expectations on the part of agency employees, stakeholders, and tribal entities. These different expectations can result in reduced trust, and more importantly, less willingness to participate in long-term planning. The IAP2 Public Participation Spectrum can assist in selecting the level(s) of participation that define(s) the public’s role throughout a forest plan revision effort. Different phases of plan revision or any management decision process may call for different levels of public engagement. The key is defining these various levels of public participation prior to initiation of plan revision, ensuring the public a meaningful and robust participation process (Arnstein 1969).

Collaboration takes time, resources, and long-term commitment from all parties. Managers seeking to initiate or participate in a collaborative process or group may want to consider that collaboration, particularly through an organized group, is typically time consuming, requiring tremendous commitment and effort to build and maintain

relationships. Managers choosing to participate in collaborative efforts may want to ensure they have adequate resources and provide support to staff who collaborate, so they can build these relationships over time.

Successful agency participation in collaboration includes open communication, clear expectations, and realistic information about internal priorities, plans, and timelines. If plans or timelines change, it helps to provide timely and transparent information. Managers can also aid collaborative efforts by notifying participants of future decision points, and how they may use any collaborative input that they receive. Collaborative groups may be part of the solution to increasing trust and social license for forest management to meet NWFP and other goals.

Collaboration is not the answer for every situation. Not every stakeholder for a management unit will be eager to participate in an organized collaborative group or process. If the alternatives to collaboration are expected to be better than participation, some stakeholders may opt out. In some cases, the outcome from an agency appeal or court decision process may be preferred over collaboration. Moreover, the scope, scale, and end goals of a given collaborative effort may make it more relevant and accessible to some stakeholders than others. Research about the effectiveness of collaborative groups for achieving social and ecological goals is still underway. Until we have definitive results, we do not really know yet whether collaboration is the ultimate answer.

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