United States
Department of
Agriculture

Forest Service

Pacific Northwest
Research Station

General Technical
Report
PNW-GTR-515
August 2001

A Research Framework for Natural Resource-Based Communities in the Pacific Northwest

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Abstract

Christensen, Harriet H.; Donoghue, Ellen M. 2001. A research framework for natural resource-based communities in the Pacific Northwest. Gen. Tech. Rep. PNW-GTR-515. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 21 p.

The Pacific Northwest (PNW) Research Station developed a problem analysis to direct the research on natural resource-based communities in the Pacific Northwest over the next 5 years. The problem analysis identifies four problem areas: (1) social values related to rural peoples, communities, and development, and their ties to resource management are largely unknown; (2) traditional concepts of rurality do not reflect the complex, varied socioeconomic structures of today's rural places and peoples; (3) the theories, models, and practices of collaborative stewardship as they relate to ecosystem management are largely unknown; and (4) patterns, processes, causes, and effects of socioeconomic change across rural communities and regions of the Pacific Northwest are poorly understood.

Keywords: Rural development, rural communities, research and development, social values, socioeconomic well-being, Pacific Northwest, natural resource management, Montreal Process criteria and indicators.

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Introduction

The USDA Forest Service Pacific Northwest (PNW) Research Station established rural development as a research program in 1991. The years 1991 through 2000 brought substantial changes to forest and rural development policies, activities, and research in the Pacific Northwest. The shift from single-species to ecosystem management and to incorporating social, cultural, and economic values is an attempt to integrate biophysical and social systems and to help "make decisions about dynamic systems in the face of uncertainty" (FEMAT 1993; Graham and others 1999, Haynes and others 1998a, 1998b; Pipkin 1998). Given these changes and the multiple rural development and research directives that guide the efforts of the PNW Research Station, this problem analysis sets forth an agenda for rural development research for fiscal years 2001-6. This paper consists of three main parts: the first part outlines the context in which rural development research has developed in the USDA Forest Service; the second part presents a research agenda for fiscal years 2001-6, specifically, four research problems are described; and the third part presents recent research accomplishments in relation to rural development. The PNW Rural Economies and Communities Team will conduct the research.

The Context for Rural Development Research

Forest Conservation and Rural Development in the Forest Service

> It is the duty of the Forest Service to see to it that the timber, water, mines, and every other resource of the forests is used for the benefit of the people who live in the neighborhood or who may have a share in the welfare of each locality. It is equally its duty to cooperate with all our people in every section of our land to conserve a fundamental resource, without which this nation cannot prosper.
>
> —Gifford Pinchot (1910: 51-52)

Origins of the U.S. Department of Agriculture, Forest Service—The legislative authority that provided the foundation for national forest management explicitly allowed for national forest resource harvest and use and focused specifically on local settlers and residents.[1] Subsequent legislation established a system for sharing national forest revenues with local counties[2] and permitted the purchase of lands for watershed and timber purposes that would be managed as national forest lands.[3] The establishment of the USDA Forest Service and forest conservation measures in this Nation, as Pinchot's 1910 statement indicates, were based in social concerns for the welfare of the Nation and the welfare of rural, forest-based communities. The forest conservation movement developed in response to "cut out and get out" forest harvesting in the Great Lake States and Appalachian Mountains during the late 1800s and early 1900s. This harvesting method left bare ground and stranded communities in its wake (FEMAT 1993). As the timber industry moved to the Pacific Northwest, the social consequences of its itinerant operations and economic instability became a matter of public concern. Hibbard and Elias (1993) recount from writings of that era:

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[1] Organic Administration Act. Act of June 4, 1897 (30 Stat. 34, as amended; 16 U.S.C. 473-478, 479-482, 551).

[2] Twenty-Five Percent Fund. Act of May 23, 1908 (P.L. 60-136, Ch. 192, 35 Stat. 260, as amended 16 U.S.C. 500, 553, 556d).

[3] Weeks Law. Act of March 1, 1911 (36 Stat. 961, as amended; U.S.C. 480, 500, 513-517, 517a, 518, 519, 521, 552, 563).

> Contemporary studies found that the strikes, lockouts, and riots which had become commonplace were intrinsic to the organization of the [Pacific Northwest timber] industry. The timber industry "being itself a tramp industry, is a breeder of tramps; it is an industry of homeless men" (MacKaye 1919: 22). The social consequences of the tramp industry were unavoidable. "Permanent homes and normal family life have been the exception rather than the rule, and the standard of citizenship has been lowered" (Dana 1918: 22). [Cited in Hibbard and Elias 1993: 198.]

The sustained yield era—In response to the social problems that resulted from unregulated forest harvesting, a floating workforce, and great economic instability in the timber industry, David Mason and Gifford Pinchot, among others, began to promote sustained yield management adopted from German models of forestry (Drielsma and others 1990, Hibbard and Elias 1993, Lee 1990). Pinchot argued for the advantages of such a forest policy for forest workers and communities:

> When the owner of a forest is prohibited from devastating it, when he is required to make one crop of timber follow another, then, and only then, can the lumber camp and lumber town become permanent, and only then can forest labor be assured of a chance at those living conditions to which every worker is justly entitled, a chance at a real home (Committee on Forest Policy 1919). [Cited in Drielsma and others 1990: 58.]

The Sustained Yield Act of 1944 brought this model of forest management, with its implicit goals and assumptions of community stability, into national law (Drielsma and others 1990, Lee 1990).

Questioning community stability—Although forest managers and researchers began to question sustained yield as a forest management policy and goal as early as the 1950s on economic and environmental grounds (Drielsma and others 1990), sustained yield goals and assumptions related to community stability did not receive widespread scrutiny until the 1980s. By this time, it had become clear that traditional assumptions about a clear, cause-and-effect relation between timber harvest levels and local employment and welfare were overly simplistic (LeMaster and Beuter 1989). Although substantial literature continues to suggest that a link between forest policies and rural social and economic conditions does exist, the nature and strength of the connection remain ambiguous and seem to differ across time and space (Beckley 1996, FEMAT 1993, Field and Burch 1988, Force and others 1993, Kaufman and Kaufman 1946, Kusel and Fortmann 1991, Lee and others 1990, LeMaster and Beuter 1989, Machlis and Force 1988, Machlis and others 1990).

The 1990 Farm Bill—Throughout the past century, the responsibility of the USDA Forest Service to rural communities has often been alluded to but has rarely been clearly defined in law or regulation (except for a small number of specific local arrangements such as the Shelton Sustained Yield Unit). Some clear direction emerged in late 1990 when Congress passed the Food, Conservation, and Trade Act, which contained new authority in the Rural Development Title (Title XXIII) for the USDA Forest Service to assist eligible national forest-dependent rural communities. Subtitle G, Chapter 2, cited as the "National Forest-Dependent Rural Communities Economic Diversification Act of 1990," refers to the well-being of rural communities in several instances, and though its main intent is to promote economic diversification strategies, a more general purpose

of the act is stated “to improve the economic, social, and environmental well-being of rural America” (sec. 2373.b.1). This act directed a new focus on rural development across all branches of the USDA Forest Service (McWilliams and others 1993) and was the impetus for the creation of the PNW Rural Development Research program in 1991, which was expanded from a previous program in regional economics and economic impact analysis.

Directives to the Rural Development Research program—The PNW Rural Development Research program and the research agenda proposed below are guided by several goals and objectives that have been defined at different levels of the USDA Forest Service. The following sections outline goals and objectives that the Rural Economies and Communities Team intend to address through its research.

National programs—Goal 3 of the Forest Service strategic plan 2000 (USDA Forest Service 2000) is to develop and use the best scientific information available to deliver technical and community assistance and to support ecological, economic, and social sustainability.

The four objectives of goal 3 are to:

- Better assist in building the capacity of tribal governments, rural communities, and private landowners to adapt to economic, environmental, and social change related to natural resources (objective 3a)
- Increase the effectiveness of scientific, developmental, and technical information delivered to domestic and international interests (objective 3b)
- Improve the knowledge base provided through research, inventory, and monitoring to enhance scientific understanding of ecosystems, including human uses, and to support decisionmaking and sustainable management of the Nation’s forests and grasslands (objective 3c)
- Broaden the participation of less traditional research groups in research and technical assistance programs (objective 3d)

“A Strategic Plan for the ‘90s: Working Together for Rural America” (USDA Forest Service 1990) and “Enhancing Rural America: National Research Program” (USDA Forest Service 1991) direct rural development projects and research across the USDA Forest Service.

Our proposed research addresses three of the five goals in the USDA Forest Service National Research Program for rural America:

- Understand the values and way of life of rural communities
- Understand the dynamics of resource, economic, social, and technological change in rural America
- Understand the institutional barriers and opportunities that affect rural communities

Pacific Northwest Research Station program goals—The Rural Development Research program responds to the following research gaps identified by the PNW Research Station:

- Improving society’s understanding of societal values, desires, and needs related to natural resources
- Improving society’s understanding of the effects of resource management on the social and economic well-being of people at local, regional, and national scales

- Finding ways of measuring economic performance and social change at the community level
- Understanding ways economic development can be compatible with ecosystem and social values
- Understanding the effects of changing demographic characteristics on natural resource demands and use
- Understanding how organizations respond and adapt to changes in social, cultural, and economic values
- Understanding the interactions among individuals, communities, resources, and ecosystems
- Developing conceptual frameworks for the integration of ecological, biological, and social science research

The research proposed in this problem analysis is aligned with two Station priorities: "social and economic processes" and "application of science to policy issues" (see "USDA Forest Service 1997" for further information about these priorities). The PNW Research Station is currently undergoing a strategic planning process and expects to finalize a plan by summer 2001.

Social and Economic Values Program Charter—The Rural Development Research program at the PNW Research Station is part of a larger research program—Social and Economic Values (SEV) Program. The Rural Economies and Communities Team conducts the rural development research. Of the five problem areas identified in the SEV Charter, two direct the work of the Rural Economies and Communities Team. These problems and their related objectives are:

- Understand the links between natural resource policies and rural economic and social development.
    - Improve methods and information to better identify and evaluate the causal links between resource policies and rural economic and social development at the community level as well as other broader levels.
    - Develop methods, techniques, and information about resource management choices that can help mitigate negative changes in the economic and social life of rural, resource-dependent communities.
    - Improve understanding of the relation between resource conservation and rural economic and social development.
- Understand the social and economic dimensions of ecosystem management.
    - Develop methods to incorporate the needs of rural communities, industries, and people into the design of ecosystem management strategies to achieve a favorable rural social and economic response.

This history of rural development research and the current national and PNW Research Station strategies, plans, and directives all influence the selection of four problem areas to be studied by the Rural Economies and Communities Team over the next 5 years.

Research Problems Related to Rural Economies and Communities

The research problems and associated research questions outlined below will direct the work of the Rural Economies and Communities Team for fiscal years 2001-6. We recognize many social science problems including questions surrounding social capital; how to link communities to the Montreal Process criteria and indicators; recreation and tourism and the subsequent effects on communities; fire dynamics and recovery efforts and the associated similarities, differences, and interactions among multiple values and beliefs; and salmon recovery efforts and the role of stakeholders and communities. This problem analysis is not an exhaustive list of research problems and needs, but it is a starting point from which to proceed that will be flexible enough to incorporate additional problems and questions identified during the course of research. The problems and questions are necessarily interrelated, but they serve to highlight different facets of the complex socioeconomic structures and processes of rural regions, communities, and development in the Pacific Northwest. Problems and questions will be addressed through a series of interrelated studies undertaken directly by the Rural Economies and Communities Team in cooperation with other research institutions and units including the National Forest Systems. Although the focus of the research will be on California, Oregon, Washington, and Alaska, this does not preclude national or international collaboration.

Problem 1. Social values related to rural peoples, communities, development, and their ties to resource management are largely unknown.

Changing social values seem to be a common reason public agencies are reexamining their management goals and methods. (Fight and others 2000, Haynes and others 1998b). Over the past twenty or more years, many studies have been done of the changing environmental values and attitudes of the American public; these changing attitudes and values are now often cited as the reason for changes in federal resource management agencies (Dunlap 1991, FEMAT 1993, Steel and others 1994). Such studies, however, have generally examined only one aspect (admittedly a long-neglected part) of the moral universe of individuals. Public opinion and environmental attitude surveys conducted in the Pacific Northwest over the past several years, for example, have often phrased questions in terms of jobs vs. owls or rural communities vs. environment (FEMAT 1993, Oregon Business Council 1993). Although support for owls or the environment has often been observed, so too has support for jobs and rural communities (Harris and others 1996). These surveys have not sought an articulation of values or vision about rural peoples and communities that would complement these changing environmental values. What are the values and attitudes of the American public and natural resource decisionmakers—urban, suburban, and rural—toward rural communities, economies, and people? Are these values and attitudes worth protecting? In what form? At what cost? How have these values and attitudes changed over the past century, and how are they changing now?

Questions include What is development? Who decides, what development is? Who wants it, in what form, and for whom? “Development” is a value-laden term whose meaning has been argued from philosophy departments to the United Nations to town and village meetings across the world. Internationally, “development” often has been defined by first-world “experts” who have tried with variable success to bring other peoples and economies in line with their own models of development. More participatory-facilitative models of development planning that encourage locals to articulate their own desired futures help to reduce this dynamic (Cernea 1991). How do rural peoples, the American public, and those who decide rural development funding, policies, and programs envision rural development in this country? What are their goals?

Discussions integrating environment, social justice, and development concerns in recent years generally have occurred within some framework of sustainable development (Gale and Cordray 1994). Much of the work to date on sustainable development and community-based forestry has been in the realm of concept and theory, and researchers and community, business, and environmental leaders are just beginning to explore what "sustainable" might look like in particular places in this country (Flora, n.d.[4]; Gale and Cordray 1994; Sargent and others 1991; USDA Forest Service 2000). As with more general discussions of development, we have much to learn from international experiments and experiences with sustainable development (Krishnaswamy 1995, World Commission on Environment and Development 1987). Integrating USDA Forest Service goals for ecosystem management and sustainability provides both a theoretical and practical challenge for researchers, policymakers, and managers.

Research Questions

How have concepts related to rural areas such as community well-being, resiliency, sustainability, social capital, development, ecosystem health, and community capacity, evolved in resource management?

What are the links, interdependencies, and political and institutional realities to integrating human systems well-being and ecosystem management—in theory and in practice?

What are the values and attitudes about forests, forest resources, and management among diverse groups of resource users and managers?

What are the values and attitudes toward rural peoples and development across agencies, academic disciplines, rural communities, and the American public?

What is environmental justice and how are these values associated with alternative land management practices?

Problem 2. Traditional conceptions of rurality do not reflect the complex, varied socioeconomic structures of today's rural places and peoples.

What is rural? Who is rural? At one time, the characteristics of rural places and peoples seemed to be fairly clear: a workforce primarily engaged in direct production from the natural environment, low population densities, isolation from central places and economies, perhaps a distinct set of values or perceptions of the world. But what does "rural" mean today when so few people work in agriculture, forestry, fishing, and mining? When modern telecommunications and transportation systems enable people to transcend environmental constraints that once limited communication and mobility? When city dwellers with a lifetime of values and behaviors shaped in urban places retire to the coast or the mountains? When changes in primary production sectors force small-town natural resource industry workers to move to cities in search of new employment? Is "rural" even a useful concept anymore?

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[4] Flora, C.B. [N.d.]. Sustainable agriculture and sustainable communities: social capital in the great plains and corn belt. Unpublished paper. On file with: Iowa State University, Department of Sociology, Ames, IA 83209.

Researchers have been exploring the changing dimensions of rurality across the Nation and the world on various levels, but well-considered answers to the questions posed above are still needed for the Pacific Northwest and could help direct rural development research and efforts within the region and beyond. Bell (1992: 66) provides an answer to the final question posed above in his observation that regardless of the socioeconomic transformation of an English village over the past several decades, residents "are firm in their belief in the reality of urban and rural differences." If the concept of "rural" is one in which people find identity and which they use to orient themselves in the world, as Bell (1992) suggests, then it remains a useful concept for social research. The continued use of the term "rural" in agency, legislative, and everyday parlance across the country indicates that however much rural places and people may have changed in this century, it is still a term that carries meaning for many people.

Some researchers who have examined rurality as an attribute of individuals have found that a person's place of origin is a far better predictor of "rural" qualities and attitudes than a person's current place of residence. For example, Hanson (1982) documented the negative effect of rural origin on the socioeconomic attainment of married women throughout their careers and reviewed studies of careers of male workers that showed a similar effect. In constructing a typology of rural-urban culture, Miller and Luloff (1981) found that place of residence at age 16 is a more effective predictor of a set of social attitudes than current residence of an individual. Lowe and Pinhey (1982) also found that urban-rural socialization is significantly related to the expressed environmental concerns of individuals, whereas current urban-rural residence is not.

Rurality also may be examined as an attribute of places, groups of people, or economies, as measured through qualities such as population density, transportation infrastructure (measure for physical isolation), education levels, employment in service vs. primary production and manufacturing sectors, and presence of local news media (measure for informational isolation). (Cleland 1994). Economic and political connections between rural areas and urban centers have long been considered in applications of core-periphery theory and central place theory to the study of rural places (Preston 1971, Robison and others 1993, Smith and Steel 1995). In the past several years, the issue of persistent poverty in rural areas, including resource-based communities, has received considerable theoretical and some empirical attention, but a full understanding of the dynamics of poverty in rural places is still lacking. Is poverty an inevitable consequence of rurality, or some aspects of rurality; why or why not? What helps to alleviate poverty? (Belsky 1994; Bliss and others 1993; Cook 1993[5]; Fitchen 1992; Freudenburg and Gramling 1994; Humphrey 1994a, 1994b, 1994c; Johnson and Stallman 1994; Lichter and Eggebeen 1992; Nord 1994; Peluso and others 1994; Rural Sociological Society 1992; West 1994).

Research Questions

How do communities perceive and understand fire and its uses, and how does this shape public reaction to fire? What are the indicators to characterize community preparedness for hazardous fire events?

How do classifications of rural places across the Northwest change with different measures of rurality (e.g., population density, economic structure, sustainable community-based forestry, isolation, and resilience)?

[5] Cook, A.K. 1993. Changes in employment and poverty: differences between timber-dependent and metro areas in western Washington. On file with: Washington State University, Cooperative Extension Service, Pullman, WA 99164.

What is the current resiliency-social capital in western Washington and Oregon? What are the links between resiliency and federal natural resource actions?

What is meant by the rural-urban interface? How are the relations between rural and urban economies changing? How is this concept related to and what are the implications for socioeconomic research and federal land management policy?

What are the effects of international trade, technological change, work patterns, and telecommunication on rurality?

How have different measures of rurality changed over time for given places and regions of the Northwest? Is rurality increasing or decreasing at different rates in different areas?

What are characteristics and migration patterns of people of rural origin in the Pacific Northwest? For people who migrate to rural areas in the Northwest?

What are the dynamics of poverty in rural areas, and how are they related to urban and rural disparities?

What role do natural resource industries and amenities play in peoples' conceptions of rurality?

What does "rural" mean to people of the Northwest—urban and rural publics, policymakers, resource managers?

Problem 3. The theories, models, and practices of institutional arrangements such as collaborative stewardship activities as they relate to ecosystem management are largely unknown.

Public policymaking, institutional change, and agency culture are important areas to understand in resource management (Cortner and Moote 1999). Because they represent broad areas of research, we have narrowed our focus in this area to one critical and current topic—collaborative stewardship. Collaborative stewardship arrangements between federal agencies and locality-based groups or user groups are rapidly forming across the United States (Moote and others 2000, Weber 2000). Stewardship partnerships emerge out of mutual interest to manage natural resources in ways that integrate ecological, social, and economic objectives. Many developing countries have been experimenting with various forms of collaborative management for several decades (Adhikari 1990, Gibbs and others 1990, Hafner and Apichatvullop 1990, Peluso and others 1990, Poffenberger 1996, Poffenberger and McGean 1996, Rao 1985). The similarities, differences, and lessons learned from the international models of collaborative stewardship provide a basis for understanding collaborative resource management in the Pacific Northwest. A better understanding of the theories and models of collaborative management will help resource managers determine when collaborative stewardship strategies are appropriate.

One of the goals presented in the USDA Forest Service strategic plan is to "promote ecosystem health and conservation by using a collaborative approach to sustain the Nation's forests, rangelands, and watersheds" (USDA Forest Service 2000:9). Increasing the participation of a greater diversity of people and members of underserved and low-income populations is one of the stated objectives. In the United States, underserved and disenfranchised populations, such as Native Americans, urban youth, and rural communities, have specific stakes, interests, and needs pertaining to public lands

making them natural partners for collaborative activities. More traditional stakeholders, such as the timber industry, recreational groups, and special interest groups may be primed to participate in enhanced forms of collaborations. The USDA Committee of Scientists report suggests that we will see greater reliance on collaborative stewardship as we learn from and experiment with knowledge offered up by a diverse public (Committee of Scientists 1999: xxiii). Arguments are made on both sides of the collaborative stewardship debate (Kenney 2000). Needed is scientific inquiry to provide a better understanding of the issues within this debate.

In addition to the questions about how and why rural places take the forms that they do and change as they do is a problem of particular concern to the USDA Forest Service: What difference do natural resources make (or not) in light of all these other influences on the socioeconomic structure and transformation of rural areas? How do socioeconomic changes in rural areas in turn affect natural resources? How, and in what ways, might the USDA Forest Service facilitate, or reduce barriers to, rural development through collaborative approaches to ecosystem management?

A better understanding of the interrelation between natural resource conditions and policies and rural community conditions will be helpful in determining where and how collaborative stewardship may be appropriate. The last several years have witnessed multiple-impact analyses, predicting with greater or lesser confidence what the effects of changes in federal land management, especially timber harvest levels, will be for rural economies and communities in the Pacific Northwest (FEMAT 1993, USDA Forest Service 1992, USDA Forest Service and USDI Bureau of Land Management 1994). These analyses and predictions were based on assumptions about the socioeconomic structure of rural areas, and observing the degree of correspondence between the predictions and actual changes offers opportunity to test the assumptions and theories about rural areas from which the impact analyses were developed. Forest managers and researchers have long assumed a clear relation between resource production and rural community condition, an assumption that is only beginning to be examined empirically (Force and others 1993, Machlis and others 1990). As ecosystem management practices increasingly reflect the diversity of benefits and services that public lands provide, the relation between user groups and communities and resource management strategies continues to evolve.

Research Questions

What are the comparative theories, models, and practices of collaborative stewardship?

What institutional, legal, political, economic, and sociocultural factors influence the development of collaborative stewardship in the Pacific Northwest?

What are the appropriate measures to compare and understand the efficiency and effectiveness of collaborative stewardship approaches?

Identify the effectiveness of collaborative stewardship approaches to achieving environmental and social objectives, and describe how they affect the sustainability of resource management outcomes.

How do collaborative stewardship projects and policies alter or maintain past connections between natural resource management and conditions in rural areas?

Problem 4. Patterns, processes, causes, and effects of socioeconomic change and their connections to ecosystem health across rural communities and regions of the Pacific Northwest are poorly understood.

As mentioned above, the problems associated with the concept of rurality have developed because rural places across the country and the world have been changing in profound enough ways that many no longer fit the definition of what once was considered "rural." These changes in rural places often reflect larger scale societal and economic changes that may affect urban and rural areas across the region, Nation, and world. Yet these large-scale changes can affect different rural places and peoples, within the Pacific Northwest or even within the same county or town, in profoundly different ways (Haynes and others 1998b). Why does one small town thrive while another collapses in the face of a mill closure? What are the similarities and differences between resource-based communities; e.g., mining, fishing, agriculture, ranching, timber? What role does the nontimber forest products industry play in the Pacific Northwest from economic, social, cultural, and ecological perspectives (Von Hagen and Fight 1999, Von Hagen and others 1996)? What are the relations between large-scale socioeconomic processes and local conditions? How and why have rural communities and regions changed in the past, and what might this tell us about their future? What are the dimensions of social capital, community well-being, resiliency and adaptation? How are they measured according to the Montreal Process criteria and indicators?

Researchers and managers have completed a series of bioregional assessments that shape a broader understanding of the interconnectiveness between biophysical and social systems and provide a broader framework for decisionmaking based on regional, national, and international environmental issues. Bioregional assessments we refer to are the Southern Appalachian Man and the Biosphere (SAMAB 1996), the Sierra Nevada (SNEP 1996), and the interior Columbia basin (Quigley and others 1996).

To address this problem, we must first recognize that rural places in the Pacific Northwest display considerable heterogeneity in their socioeconomic structures and, thus, in their potential responses to any given influence (Horne and Haynes 1999, McCool and others 1997, Richardson 1996). Gale (1991) is one of the few to date who has attempted to construct a typology of rural communities in the Pacific Northwest, and his theoretical typology has not been empirically tested. Lee (1991), Jackson and Lee (1998), and FEMAT (1993) also have observed that even within a single geographic community, different social groups may experience a given socioeconomic change in profoundly different ways. Heterogeneity appears across the rural Pacific Northwest and within many rural places in the Pacific Northwest. And, as Kusel and Fortmann (1991) and Machlis and others (1990) demonstrate, heterogeneity appears along a temporal dimension as well, be that within a community or across a region. Christensen and others (2000) have examined the status and trends of counties across Washington, western Oregon, and northern California. Change is a constant, and the authors demonstrate how rural and urban provinces and counties have changed since 1990. Similarly, the socioeconomic effects of rural development programs and projects including the Northwest Economic Adjustment Initiative (NWEAI) of the President's Northwest Forest Plan is documented and serves as a model to be used as a resource-related economic development and mitigation effort in other regions (Christensen and others 1999; Donoghue and others 1999; Raettig 1999; and Raettig and Christensen 1999a, 1999b).

Researchers have documented a wide range of social, demographic, and economic factors and changes that are affecting or occurring in the rural Pacific Northwest: technological change, restructuring, unemployment, and environmental restrictions in the timber industry; outmigration of working-class families; inmigration of retirees, telecommuters, and small business owners; "urban flight" by the wealthy and poor alike; development or expansion of tourism and related amenity sectors in local economies; changing attitudes, values, politics, and laws about resource-based industries, economic growth and zoning, and taxes and provision of educational and social services (Beyers and others 1996, Bronfman and others 1990, Brunelle 1990, Cook 1992, FEMAT 1993, Greber 1993, Greber and others 1990, Salant and Barkley 1993, Salazar and others 1986, Seidel 1993). Fewer researchers have examined what these changes have meant for residents of rural places (Blahna 1990; Brown 1994[6]; Lindberg and others 1994; Richardson 1993; Weeks 1990), and fewer yet have examined how rural peoples may actively work with or against, or seek to transform larger socioeconomic processes to create unique local environments (Carroll and Lee 1990, Fortmann 1990, Fortmann and Starrs 1990, Kusel 1991, Warren 1992).

Other related concerns are what and how to conduct measurements at the community level. Needed is a better understanding of sampling design and indicators to measure the phenomenon under question. Do they measure what they are intended to measure?

Research Questions

What types (typologies) of rural communities may be discerned across the Northwest, and how is each type changing? What are the measures and indicators for social capital resiliency and adaptation?

What are the dimensions of social capital and how do they relate to the cause and effect of socioeconomic change?

What kinds of demographic shifts (e.g., population distribution, lifestyle, and values) are occurring in western Washington and Oregon, and what are the causes?

What are the questions and most appropriate scales of analysis for socioeconomic data for rural development and ecosystem management research?

What criteria and indicators (e.g., related to the Montreal Process) are necessary to understand the cause and effect relations between federal forest policy and counties, communities, families, and individuals?

What sampling designs and generalizations are valid for community-level survey research?

What are the trends in harvesting, processing, and use of nontimber forest products (NTFPs)? How is the NTFPs industry changing over time, and what are the implications for land management, rural communities, Native Americans, families, and harvesters?

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[6] Brown, B. 1994. Environmental conflict, urban flight and land tenure in the forested regions of southwest Oregon. Unpublished paper. On file with: The Jefferson Center, P.O. Box 279, Wolf Creek, OR 97497.

Conclusions

Over the past five years, the Rural Economies and Communities team has conducted research that has influenced the development of the four problem areas identified above. The research provides economic development practitioners and ecosystem managers with the foundation for effective ecosystem management and social and economic development in a manner both relevant and respectful to the people of the region. Following are key findings from this work:

- The rapidly growing, affluent and diverse economies and societies that identify the larger metropolitan areas of the Pacific Northwest often do not describe the more rural areas in the region. Growth in jobs, income, and population are lagging in many of the rural resource-based areas of the region. There is a wide spread in economic diversity, economic growth, and social well-being across the region. Dynamic changes in social and economic well-being are occurring that are directly linked to ecosystem management.
- Timber harvests across the region have fallen markedly since 1990. Particularly large decreases in harvest from federal lands have had the most impact, but private harvest in certain areas also has contributed to the fall in total timber harvest. Unlike the harvest decreases in the early 1980s, these decreases have not been associated with recessions in the national economy. Employment in the forest products industry also has decreased in the Pacific Northwest with the largest decreases occurring in the primary processing sectors and in those counties most dependent on federal timber harvests.
- The coordinated economic and community development environment (NWEAI) created as part of the Northwest Forest Plan has effectively delivered services to most counties and communities impacted by changing natural resource policies. The emphasis on multilevel partnerships, seamless service delivery, and active local participation has avoided many of the pitfalls of traditional economic assistance programs. The sharing of lessons learned about what works and what does not has provided a means to effect program improvements. The assessment is used as a model for resource-related economic development and mitigation efforts in other regions.

Management implications include:

- Economic and community development is an integral and continuing part of ecosystem management activities in the Pacific Northwest. The lessons learned from implementing the NWEAI provide economic development specialists with opportunity to replicate institutions, activities and practices that have worked, and discontinue or improve those that have not. These activities include projects that focus on direct natural resource management activities as well as those that enhance local economies directly impacted by changing ecosystem management policies and commodity production levels.
- The location and magnitude of changes in timber harvest levels and associated changes in forest products industry employment are an important consideration in the administration and targeting of ecosystem management activities that offer alternative or enhanced economic development opportunities from natural resource products and services. This information also serves as a basis for managing economic assistance programs and directing funding appropriately and equitably to impacted communities. It is an important element in understanding social and economic change across the Pacific Northwest.

These findings and documenting publications (Christensen and others 1999, 2000; Raettig 1999; Raettig and Christensen 1999a, 1999b,) have been and are being used in the management and administration of economic development activities related to the Northwest Forest Plan. Specific funding agencies such as the USDA Rural Development as well as the teams at the regional (Regional Community Economic Revitalization Teams [RCERT]) and state level (State Community Economic Revitalization Teams [SCERT]) all have actively used the information to develop, prioritize, fund, and manage economic and community development projects under the NWEAI.

The array of information, interpretations, and findings related to regional, state, and county-level social and economic indicators (Christensen and others 2000, McGinnis and others 1996, McGinnis and others 1997, Raettig 1999) is being used by the Regional Ecosystem Office as the foundation and baseline for social and economic monitoring activities mandated by the Northwest Forest Plan. This information also serves as the starting point for scientific and monitoring activities focusing on communities in the Northwest Forest Plan region.

Findings and results serve as a resource for economic development programs and natural resource policy analysis both in other regions of the country and internationally. The Northwest Forest Plan economic development institutions and strategies were considered in a southeast Alaska effort and documented internationally at an International Union of Forest Research Organizations (IUFRO) working party session in Finland (Christensen and others 1995). The social and economic dimensions of changing ecosystem policies served as part of the opening panel at an IUFRO conference in Japan (Christensen and Raettig 1997).

There is growing awareness that ecosystem management decisions and actions must explicitly consider the human dimensions of the ecosystem as well as the biophysical dimensions. The dimensions, locations, patterns, and magnitude of social and economic processes, conditions, and changes including interpretation and analysis is the foundation for including human considerations in ecosystem management and planning. This information in turn provides the knowledge and basis for changing future ecosystem management strategies and proposals at the local level and longer term strategic planning and assessment activities. This research will directly address the integration of human considerations into the overall framework for ecosystem management.

Research selected for the next five years is based on predictable resources and precludes unforeseen opportunities and challenges. Science gaps include knowledge of the social and economic effects of recreation and tourism, salmon recovery efforts, and fire-adapted ecosystems on rural places (including the rural-urban interface). Other gaps include how to link community-level indicators to the Montreal Process criteria and indicators, and a better understanding of the effects of federal forest policy on human communities.

Acknowledgments

Thanks go to Catherine Woods Richardson and Terry Raettig for their contributions to this manuscript. This paper also reflects the reviews and comments of Ron Saranich, Dick Phillips, and Richard Haynes.

Literature Cited

Adhikari, J. 1990. Is community forestry a new concept? an analysis of the past and present policies affecting forest management in Nepal. Society and Natural Resources. 3: 257-265.

Beckley, T.M. 1996. Community stability and the relationship between economic and social well-being in forest-dependent communities. Society and Natural Resources. 8: 261-266.

Bell, M.M. 1992. The fruit of difference: the rural-urban continuum as a system of identity. Rural Sociology. 57: 65-82.

Belsky, J. 1994. Soil conservation and poverty: lessons from upland Indonesia. Society and Natural Resources. 7: 429-443.

Beyers, W.B.; Lindahl, D.P.; Hamill, E. 1996. Lone eagles and high fliers in rural producer services. Rural Development Perspectives. 11(3): 2-10.

Blahna, D.J. 1990. Social bases for resource conflicts in areas of reverse migration. In: Lee, R.G.; Field, D.R.; Burch, W.R., Jr., eds. Community and forestry: continuities in the sociology of natural resources. Boulder, CO: Westview Press: 159-178.

Bliss, J.C.; Howze, G.R.; Teeter, L.; Bailey, C. 1993. Forestry and poverty in Alabama's black belt. In: Policy and forestry: design, evaluation, and spillovers: Proceedings, Southern forest economics meeting. Durham, NC: [Publisher unknown]: 221-228.

Bronfman, L.M.; Rufolo, A.M.; Strathman, J.G. 1990. Effects of change in the wood products industry on workers: a study of mill operators and workers in southern Oregon. In: Proceedings, 24th annual Pacific Northwest regional economic conference. Bellingham, WA: University of Washington, Northwest Policy Center: 105-109.

Brunelle, A. 1990. The changing structure of the forest industry in the Pacific Northwest. In: Lee, R.G.; Field, D.R.; Burch, W.R., Jr., eds. Community and forestry: continuities in the sociology of natural resources. Boulder, CO: Westview Press: 107-124.

Carroll, M.S.; Lee, R.G. 1990. Occupational community and identity among Pacific Northwestern loggers: implications for adapting to economic changes. In: Lee, R.G.; Field, D.R.; Burch, W.R., Jr., eds. Community and forestry: continuities in the sociology of natural resources. Boulder, CO: Westview Press: 141-156.

Cernea, M.M. 1991. Putting people first: sociological variables in rural development. 2nd ed. rev. and expanded. New York: Oxford University Press. 575 p.

Christensen, H.H.; McGinnis, W.J.; Raettig, T.L.; Donoghue, E. 2000. Atlas of human adaptation to environmental change, challenge, and opportunity: northern California, western Oregon, and western Washington. Gen. Tech. Rep. PNW-GTR-478. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 66 p.

Christensen, H.H.; Raettig, T.L. 1997. Change in public and private forest management: social and economic implications: Proceedings, sustainable management of small-scale forestry, IUFRO group 3.08.00, small-scale forestry; IUFRO Group 6.11.03, forestry and rural development in industrialized countries. Kyoto, Japan: Graduate School of Agriculture, Kyoto University: 5-11.

Christensen, H.H.; Raettig, T.L. 1999. Extending the Northwest Economic Adjustment Initiative to other regions: utilizing the initiative and the institutions. In: Christensen, H.H.; Raettig, T.L.; Sommers, P., tech. eds. Northwest Forest Plan: outcomes and lessons learned from the Northwest Economic Adjustment Initiative. Gen. Tech. Rep. PNW-GTR-484. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station: 83-96.

Christensen, H.H.; Raettig, T.L.; Sommers, P., tech. eds. 1999. Northwest Forest Plan: outcomes and lessons learned from the Northwest Economic Adjustment Initiative: Proceedings of a forum. Gen. Tech. Rep. PNW-GTR-484. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 103 p.

Christensen, H.H.; Richardson, C.W.; Raettig, T.L.; McGinnis, W. 1995. Forest-based communities, economic revitalization, and ecosystem management: the story of experimental institutions and strategies in the Pacific Northwest. Proceedings of working party technical session meeting, IUFRO 20th world congress, S 6.11-02. Ottawa, ON: Canadian Forest Service: 16-29.

Cleland, C.L. 1994. Measuring rurality. In: Meeting of the Southern Demographic Association. Atlanta, GA: [Publisher unknown]: [Pages unknown]

Committee of Scientists. 1999. Sustaining the people's lands: recommendations for stewardship of the National Forests and Grasslands into the next century. Washington, DC: U.S. Department of Agriculture: 193 p.

Cook, A.K. 1992. Timber-dependent counties: economic and social change in Washington. Report EB 1674. Pullman, WA: Washington State University, Cooperative Extension. 18 p.

Cortner, H.J.; Moote, M.A. 1999. The politics of ecosystem management. Washington, DC: Island Press. 179 p.

Donoghue, E.M.; Christensen, H.H.; Saranich, R. 1999. The Northwest Economic Initiative: lessons learned and questions remaining. In: Christensen, H.H.; Raettig, T.L.; Sommers, P., tech. eds. Northwest Forest Plan: outcomes and lessons learned from the Northwest Economic Adjustment Initiative. Gen. Tech. Rep. PNW-GTR-484. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station: 59-64.

Drielsma, J.H.; Miller, J.H.; Burch, W.R., Jr. 1990. Sustained yield and community stability in American forestry. In: Lee, R.G.; Field, D.R.; Burch, W.R., Jr., eds. Community and forestry: continuities in the sociology of natural resources. Boulder, CO: Westview Press: 55-68.

Dunlap, R.E. 1991. Trends in public opinion toward environmental issues: 1965-1990. Society and Natural Resources. 4: 285-312.

Field, D.R.; Burch, W.R., Jr. 1988. Rural sociology and the environment. New York: Greenwood Press. 135 p.

Fight, R.D.; Kruger, L.E.; Hansen-Murray, C. [and others]. 2000. Understanding human uses and values in watershed analysis. Gen. Tech. Rep. PNW-GTR-489. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 16 p.

Fitchen, J.M. 1992. On the edge of homelessness: rural poverty and housing insecurity. Rural Sociology. 57: 173-193.

Force, J.E.; Machlis, G.E.; Zhang, L.; Kearney, A. 1993. The relationship between timber production, local historical events, and community social change: a quantitative case study. Forest Science. 39: 722-742.

Forest Ecosystem Management Assessment Team [FEMAT]. 1993. Forest ecosystem management: an ecological, economic, and social assessment team. Portland, OR: U.S. Department of Agriculture; U.S. Department of the Interior [and others]. [Irregular pagination].

Fortmann, L. 1990. Locality and custom: non-aboriginal claims for customary usufructuary rights as a source of rural protest. Journal of Rural Studies. 6: 195-208.

Fortmann, L.; Starrs, P. 1990. Power plants and resource rights. In: Lee, R.G.; Field, D.R.; Burch, W.R., Jr., eds. Community and forestry: continuities in the sociology of natural resources. Boulder, CO: Westview Press: 179-194.

Freudenburg, W.R.; Gramling, R. 1994. Natural resources and rural poverty: a closer look. Society and Natural Resources. 7: 5-22.

Gale, R.P. 1991. Forest resource-dependent communities and new forestry: how wide the welcome mat in the Pacific Northwest? The Northwest Environmental Journal. 7: 7-33.

Gale, R.P.; Cordray, S.M. 1994. Making sense of sustainability: nine answers to "What should be sustained?" Rural Sociology. 59: 311-332.

Gibbs, C.; Payuan, E.; Del Castillo, R. 1990. The growth of the Philippine Social Forestry Program. In: Poffenberger, M., ed. Keepers of the forest. Hartford, CT: Kumarian Press: 253-265.

Graham, R.T.; Jain, T.B.; Haynes, R.L. [and others]. 1999. Assessments for ecological stewardship. In: Sexton, W.T.; Malk, A.J.; Szaro, R.C.; Johnson, N.C., eds. Ecological stewardship. Kidlington, Oxford, United Kingdom: Elsevier Science Ltd.: 535-549.

Greber, B.J. 1993. Impacts of technological change on employment in the timber industries of the Pacific Northwest. Western Journal of Applied Forestry. 8(1): 34-37.

Greber, B.J.; Johnson, K.N.; Lettman, G. 1990. Conservation plans for the northern spotted owl and other forest management proposals in Oregon: the economics of changing timber availability. Corvallis, OR: Oregon State University, College of Forestry, Forest Research Laboratory, Papers in Forest Policy no. 1. 50 p.

Hafner, J.A.; Apichatvullop, Y. 1990. Migrant farmers and the shrinking forests of northeast Thailand. In: Poffenberger, M., ed. Keepers of the forest. Hartford: Kumarian Press: 197-219.

Hanson, S.L. 1982. The effects of rural residence on the socio-economic attainment process of married females. Rural Sociology. 47: 91-113.

Haynes, R.W.; Graham, R.T.; Quigley, T.M. 1998a. A framework for ecosystem management in the interior Columbia basin. Journal of Forestry. 96(10): 4-9.

Haynes, R.W.; Reyna, N.E.; Allen, S.D. 1998b. ICBEMP: social and economic systems. Journal of Forestry. 96(10): 28-32.

Harris, C.; Brown, G.; McLaughlin, W. 2000. Rural communities in the inland Northwest: an assessment of small rural communities in the interior and upper Columbia River basins. Gen. Tech. Rep. PNW-GTR-477. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. (Quigley, T.M., ed.; Interior Columbia Basin Ecosystem Management Project: scientific assessment). 120 p.

Hibbard, M.; Elias, J. 1993. The failure of sustained-yield forestry and the decline of the flannel-shirt frontier. In: Lyson, T.A.; Falk, W.W., eds. Forgotten places: uneven development in rural America. Lawrence, KS: University Press of Kansas: 195-217.

Horne, A.L.; Haynes, R.W. 1999. Developing measures of socioeconomic resiliency in the interior Columbia basin. Gen. Tech. Rep. PNW-GTR-453. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 41 p.

Humphrey, C.R. 1994a. Introduction: natural resource-dependent communities and persistent rural poverty in the U.S.—Part I. Society and Natural Resources. 7: 1-4.

Humphrey, C.R. 1994b. Introduction: natural resource-dependent communities and persistent rural poverty in the U.S.—Part II. Society and Natural Resources. 7: 201-204.

Humphrey, C.R. 1994c. Introduction: natural resource-dependent communities and persistent rural poverty in the U.S.—Part III. Society and Natural Resources. 7: 411-414.

Jackson, J.E.; Lee, R.G. 1998. Big changes in small places: a report on trends in social and economic indicators for local areas of Clallam and Jefferson Counties. [Place of publication unknown]: [Publisher unknown]. On file with: Chris Christensen. USDA Forest Service, Pacific Northwest Research Station, 4043 Roosevelt Way, N.E., Seattle, WA 98015. 102 p.

Johnson, T.G.; Stallman, J.I. 1994. Human capital investment in resources-dominated economies. Society and Natural Resources. 7: 221-233.

Kaufman, H.F.; Kaufman, L.C. 1946. Toward the stabilization and enrichment of a forest community. In: Lee, R.G.; Field, D.R.; Burch, W.R., Jr., eds. Community and forestry: continuities in the sociology of natural resources. Boulder, CO: Westview Press: 27-39.

Kenney, D.S. 2000. Arguing about consensus: examining the case against western watershed initiatives and other collaborative groups in natural resource management. Boulder, CO: University of Colorado School of Law, Natural Resource Law Center. 72 p.

Krishnaswamy, A. 1995. Sustainable development and community forest management in Bihar, India. Society and Natural Resources. 8(4): 339-350.

Kusel, J. 1991. Well-being in forest-dependent communities, vol. 2. Sacramento, CA: California Department of Forestry and Fire Protection, Forest and Rangeland Resources Assessment Program; report; contract 8CA85064. 130 p.

Kusel, J.; Fortmann, L. 1991. Well-being in forest-dependent communities, vol. 1. Sacramento, CA: California Department of Forestry and Fire Protection, Forest and Rangeland Resources Assessment Program; report; contract 8CA85064. 245 p.

Lee, R.G. 1990. Sustained yield and social order. In: Lee, R.G.; Field, D.R.; Burch, W.R., Jr., eds. Community and forestry: continuities in the sociology of natural resources. Boulder, CO: Westview Press: 83-94.

Lee, R.G. 1991. Four myths of interface communities. Journal of Forestry. 89(6): 35-38.

Lee, R.G.; Field, D.R.; Burch, W.R., Jr., eds. 1990. Community and forestry: continuities in the sociology of natural resources. Boulder, CO: Westview Press. 301 p.

LeMaster, D.C.; Beuter, J.H., eds. 1989. Community stability in forest-based economies: Proceedings of a conference. Portland, OR: Timber Press. 191 p.

Lichter, D.T.; Eggebeen, D.J. 1992. Child poverty and the changing rural family. Rural Sociology. 57: 151-172.

Lindberg, K.; Johnson, R.; Rettig, B. 1994. Attitudes, concerns, and priorities of Oregon Coast residents regarding tourism and economic development. Oregon Sea Grant ORESU-T-94-001. Corvallis, OR: Oregon Sea Grant. 48 p.

Lowe, G.D.; Pinhey, T.K. 1982. Rural-urban differences in support for environmental protection. Rural Sociology. 47: 114-128.

Machlis, G.E.; Force, J.E. 1988. Community stability and timber-dependent communities. Rural Sociology. 53: 220-234.

Machlis, G.E.; Force, J.E.; Balice, R.G. 1990. Timber, minerals, and social change: an exploratory test of two resource dependent communities. Rural Sociology. 55: 411-424.

McCool, S.F.; Burchfield, J.A.; Allen, SD. 1997. Social assessment of the interior Columbia basin. In: Quigley, T.M.; Arbelbide, S.J., tech. eds. An assessment of ecosystem components in the interior Columbia basin and portions of the Klamath and Great Basins. Gen. Tech. Rep. PNW-GTR-405. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station: 1871-2009. (Quigley, Thomas M., ed.; Interior Columbia Basin Ecosystem Management Project: scientific assessment).

McGinnis, W.J.; Christensen, H.H. 1996. The interior Columbia River basin: patterns of population, employment, and income change. Gen. Tech. Rep. PNW-GTR-358. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 43 p. (Quigley, Thomas M., ed.; Interior Columbia Basin Ecosystem Management Project: scientific assessment).

McGinnis, W.J.; Phillips, R.H.; Raettig, T.L.; Connaughton, K.P. 1996. County portraits of Oregon and northern California. Gen. Tech. Rep. PNW-GTR-377. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 315 p.

McGinnis, W.J.; Phillips, R.H.; Raettig, T.L.; Connaughton, K.P. 1997. County portraits of Washington State. Gen. Tech. Rep. PNW-GTR-400. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 262 p.

McWilliams, R.; Saranich, R.; Pratt, J. 1993. The Forest Service's investment in rural communities. Annals of the American Academy of Political and Social Science 529: 128-139.

Miller, M.K.; Luloff, A.E. 1981. Who is rural? a typological approach to the examination of rurality. Rural Sociology. 46: 608-625.

Moote, A.; Conley, A.; Firehock, K.; Dukes, F. 2000. Assessing research needs: a summary workshop on community-based collaboratives. Udall Center Publications 00-5. Tucson, AZ: Udall Center for Studies in Public Policy, The University of Arizona. 10 p.

Nord, M. 1994. Natural resources and persistent rural poverty: in search of the nexus. Society and Natural Resources. 7: 205-220.

Oregon Business Council. 1993. Oregon values and beliefs: summary. Portland, OR: [Pages unknown].

Peluso, N.L.; Humphrey, C.; Fortmann, L.P. 1994. The rock, the beach, and the tidal pool: people and poverty in natural resource-dependent areas. Society and Natural Resources. 7: 23-38.

Peluso, N.; Poffenberger, M.; Seymour, F. 1990. Reorienting forest management on Java. In: Poffenberger, M., ed. Keepers of the forest. Hartford, CT: Kumarian Press: 220-236.

Pinchot, G. 1910. The fight for conservation. Seattle: University of Washington Press. 152 p.

Pipkin, J. 1998. The Northwest Forest Plan revisited. Washington, DC: United States Department of the Interior. 117 p.

Poffenberger, M., ed. 1996. Communities and forest management: report of the IUCN working group on community involvement in forest management. Washington, DC: The World Conservation Union. 44 p.

Poffenberger, M.; McGean, B., eds. 1996. Village voices, forest choices: joint forest management in India. Delhi, India: Oxford University Press. 356 p.

Preston, R.E. 1971. The structure of central place systems. Economic Geography. 47: 136-155.

Quigley, T.M.; Graham, R.T.; Haynes, R.H., tech. eds. 1996. Integrated scientific assessment for ecosystem management of the interior Columbia basin and portions of the Klamath and Great Basins. Gen. Tech. Rep. PNW-GTR-382. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 303 p.

Raettig, T.L. 1999. Trends in key economic and social indicators for Pacific Northwest states and counties. Gen. Tech. Rep. PNW-GTR-474. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 30 p.

Raettig, T.L.; Christensen, H.H. 1999a. The Northwest Economic Adjustment Initiative: background and framework. In: Christensen, H.H.; Raettig, T.L.; Sommers, P., tech. eds. Northwest Forest Plan: outcomes and lessons learned from the Northwest Economic Adjustment Initiative. Gen. Tech. Rep. PNW-GTR-484. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station: 1-9.

Raettig, T.L.; Christensen, H.H. 1999b. Timber harvesting, processing, and employment in the Northwest Economic Adjustment Initiative region: changes and economic assistance. Gen. Tech. Rep. PNW-GTR-465. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 16 p.

Rao, Y.S. 1985. Community forestry: building success through people's participation. Unasylva. 37(147): 29-35.

Richardson, C.W. 1993. An analysis of the socioeconomic effects of Bureau of Land Management resource management plans in western Oregon. Portland, OR: U.S. Department of the Interior, Bureau of Land Management, Oregon State Office. 171 p.

Richardson, C.W. 1996. Stability and change in forest-based communities: a selected bibliography. Gen. Tech. Rep. PNW-GTR-366. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 36 p.

Robison, M.H.; Hamilton, J.R.; Connaughton, K.P. [and others]. 1993. Spatial diffusion of economic impacts and development benefits in hierarchically structured trade regions: an empirical application of central place-based input-output analysis. Review of Regional Studies. 23: 307-326.

Rural Sociological Society Task Force on Persistent Rural Poverty. 1992. Persistent poverty in rural America. Boulder, CO: Westview Press. 379 p.

Salant, P.; Barkley, P.W. 1993. Cost and contract: social services in the rural Northwest. Seattle, WA: University of Washington, Northwest Policy Center. 27 p.

Salazar, D.J.; Schallau, C.H.; Lee, R.G. 1986. The growing importance of retirement income in timber-dependent areas. Res. Pap. PNW-RP-359. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 10 p.

Sargent, F.O.; Lusk, P.; Rivera, J.A.; Varela, M. 1991. Rural environmental planning for sustainable communities. Washington, DC: Island Press. 254 p.

Seidel, Karen. 1993. Demographic and economic characteristics of Oregon's timber-dependent communities. Oregon Profiles, June 1993. Corvallis, OR: Oregon State University Extension Service. 7 p.

Sierra Nevada Ecosystem Project (SNEP). 1996. Status of the Sierra Nevada: Volume 1. Assessments, summaries and management strategies. Wildland Resources Center Report No. 36. Davis, CA: University of California. 1527 p.

Smith, C.L.; Steel, B.S. 1995. Core-periphery relationships of resource-based communities. Journal of the Community Development Society. 26(1): 52.

Southern Appalachian Man and the Biosphere (SAMAB). 1996. The Southern Appalachian assessment summary report: report 1 of 5. Atlanta, GA: U.S. Department of Agriculture, Forest Service, Southern Region. 118 p.

Steel, B.S.; List, P.; Shindler, B. 1994. Conflicting values about Federal forests: a comparison of national and Oregon publics. Society and Natural Resources. 7: 137-153.

U.S. Department of Agriculture, Forest Service. 1990. A strategic plan for the '90s: working together for rural America. Washington, DC.

U.S. Department of Agriculture, Forest Service. 1991. Enhancing rural America: national research program. Washington, DC.

U.S. Department of Agriculture, Forest Service. 1992. Final environmental impact statement on management for the northern spotted owl in the National Forests. Portland, OR: National Forest System. 2 vols.

U.S. Department of Agriculture, Forest Service. 1997. Research priorities for entering the 21st century: Pacific Northwest Research Station. Portland, OR: Pacific Northwest Research Station. 17 p.

U.S. Department of Agriculture, Forest Service. 2000. USDA Forest Service strategic plan (2000 revision). FS-682. Washington, DC. 73 p.

U.S. Department of Agriculture, Forest Service; U.S. Department of the Interior, Bureau of Land Management. 1994. Final supplemental environmental impact statement on management of habitat for late-successional and old-growth forest related species within the range of the northern spotted owl. Portland, OR. 2 vols.

Von Hagen, B.; Fight, R.D. 1999. Opportunities for conservation-based development of nontimber forest products in the Pacific Northwest. Gen. Tech. Rep. PNW-GTR-473. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 18 p.

Von Hagen, B.; Weigand, J.F.; McLain, R. [and others]. 1996. Conservation and development of nontimber forest products in the Pacific Northwest: an annotated bibliography. Gen. Tech. Rep. PNW-GTR-375. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 246 p.

Warren, K.K. 1992. Role-making and coping strategies among women in timber-dependent communities. Seattle, WA: University of Washington. 45 p. M.S. thesis.

Weber, E.P. 2000. A new vanguard for the environment: grass-roots ecosystem management as a new environmental movement. Society and Natural Resources. 13: 237-259.

Weeks, E.C. 1990. Mill closures in the Pacific Northwest: the consequences of economic decline in rural industrial communities. In: Lee, R.G.; Field, D.R.; Burch, W.R., Jr., eds. Community and forestry: continuities in the sociology of natural resources. Boulder, CO: Westview Press: 125-140.

West, P.C. 1994. Natural resources and the persistence of rural poverty in America: a Weberian perspective on the role of power, domination, and natural resource bureaucracies. Society and Natural Resources. 7: 415-427.

World Commission on Environment and Development. 1987. Our common future. Oxford, New York: Oxford University Press.

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