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Community and landscape change in southeast Alaska

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Abstract

Since the early 1970s, social science research has addressed issues concerning the nature and distribution of values and uses associated with natural resources. In part, this research has tried to improve our understanding of interconnections between resource management and social and cultural change on the Tongass National Forest in southeast Alaska. In 1997, scientists at the Pacific Northwest Research Station (PNW) initiated a number of social science studies in response to information gaps identified while developing the Tongass Land Management Plan. Results presented here summarize findings from studies of traditional ecological knowledge, subsistence use of natural resources, tourism trends and the effects of tourism on communities, and social acceptability of alternative timber harvest practices. Management implications are discussed along with suggestions for further study.

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Keywords: Subsistence; Traditional ecological knowledge; Tourism; Community change; Social acceptability

1. Background and purpose

Since the early 1970s, social science research has addressed the nature and distribution of values and uses associated with natural resources. In part, this research has tried to improve our understanding of interconnections between resource management and social and cultural change on the Tongass National Forest in southeast Alaska. Applied social science research fills an important role in resource planning activities. Pacific Northwest Research Station (PNW) scientists initiated a number of social science studies

to respond to needs identified during the revision of the Tongass Land Management Plan from 1995 to 1997. These became known as the follow-on studies.

This summary is limited in its coverage. Only social science studies completed as part of the follow-on studies are summarized here. Summaries from economic studies are provided elsewhere in this collection (Crone, this issue). A clear and common thread is the close connection between the Tongass National Forest and its management to life in southeast Alaska. I have summarized findings from studies of traditional ecological knowledge, subsistence use of natural resources, tourism trends and the effects of tourism on communities, and social acceptability of alternative timber harvest practices. Other than the alternative

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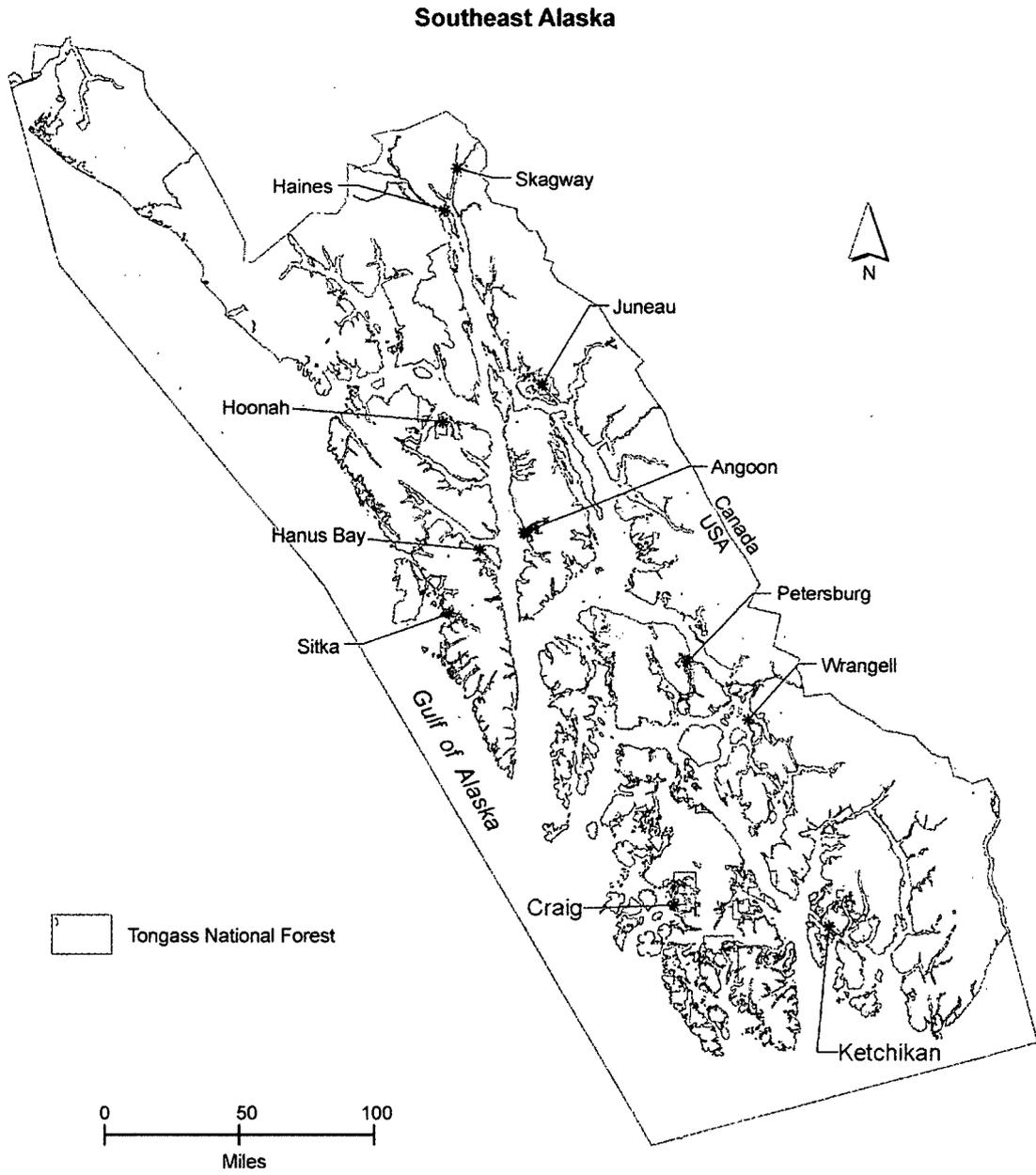


Fig. 1. Study locations in southeast Alaska.

timber harvest practices study, social aspects of timber harvest were not addressed in the studies. The studies offered here are not meant to imply that these are the only social science topics of importance. Findings are available for managers to use in future planning and decision-making. Management implications are discussed along with suggestions for further study.

At 6.8 million ha (16.8 million acres), the Tongass National Forest covers about 80% of the land base of southeast Alaska (Fig. 1). Although southeast Alaska is home to about 73,000 people, a million people visit the region each year. The Inside Passage may be the most highly promoted attraction in Alaska. It is certainly one of the most visited areas in the state. Most visitors arrive by boat or airplane. Only 3 of the 33 communities in southeast Alaska, Haines, Hyder, and Skagway, are connected by roads to other parts of the mainland. (For a more detailed overview of the region, see the introductory chapter in this volume.)

The Tongass National Forest directly and indirectly contributes to the livelihood and lifestyle for residents of southeast Alaska, and provides adventure and solitude for Alaskans and nonresident visitors. Therefore, forest management decisions can have wide-ranging effects. Trees harvested from the Tongass sustained a substantial wood products industry for many years, but with shifting global markets and mill closures, fishing and seafood processing surpassed timber as the region's largest private industry in 1994 (Allen et al., 1998). Recently, the success of commercial farming of Atlantic salmon in Canada and Chile has resulted in an economic decline in the Alaska salmon industry (Alaska Department of Labor and Workforce Development, 2003). The state's economic picture is complex, with service growth, export substitution, non-wage income, and government spending driving much of the economy. Results of economic studies are beyond the scope of this paper and are reported separately.

Subsistence activities continue to be an important part of the social, cultural, and economic fabric of southeast Alaska. Participation in subsistence activities sustains traditions and customs, maintains community and family ties, supplements individual and family income, and provides a major source of traditional food. More than 85% of rural households use wild game and 95% use fish (Wolfe, 2000). Since 1990, the Forest Service has had responsibility for managing subsistence harvest of game in the Tongass National Forest; the

Forest Service assumed management of fish for subsistence in 1999. The Forest Service has had an active role in subsistence research in the Tongass National Forest since the early 1980s.

In addition to the extensive temperate rain forest and abundant fish and wildlife populations, Alaska's fjords, icefields, glaciers, wild and scenic rivers, high mountain peaks, and cultural resources draw tourists from around the world. People who will never visit Alaska also value the Tongass, as evidenced by comments received during revision of the Tongass Forest Plan regarding the region's biophysical diversity, cultural, scenic and other values.

During the development of the Tongass National Forest Land and Resource Management Plan, several social science information needs were identified: (1) data on social and economic conditions within southeast Alaska communities, including community character, perceived needs and desires of local residents, and basic social and economic trends; (2) data on subsistence resource patterns, needs, and uses; (3) data on recreation and tourism; and (4) data on the social acceptability of alternatives to clear-cut timber harvesting.

This paper summarizes findings from studies that address these needs, discusses management implications, and identifies topical areas for further studies. Below, I present the social science contributions to southeast Alaska management issues of traditional ecological knowledge, subsistence, regional tourism trends, effects of tourism in selected communities, and acceptability of timber harvest practices. A discussion and conclusions follow the findings.

2. Summary of studies

2.1. *Traditional ecological knowledge*

Berkes (1999, p. 8) provides a useful definition of traditional ecological knowledge (TEK) as "a cumulative body of knowledge, practice, and belief, evolving by adaptive processes and handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and with their environment" (see also Usher, 2000).

Alaska Natives have lived on the land encompassed by the Tongass since the retreat of the glaciers about

11,000 years ago (Langdon, 1987). Cultural knowledge has been passed down from generation to generation and is useful in considering forest management and use and understanding long-term human relations to the land. Research on subsistence activities has a long history in southeast Alaska, as discussed below. This knowledge, because it is embedded in people's minds and culture, is often considered proprietary and not easily accessible by using research methods of Western science.

Efforts to expand understanding of TEK of the Tongass National Forest include (1) documenting Native heritage and improving recognition of where traditional use territories are located; (2) developing traditional territory locations as a cultural layer for Tongass National Forest GIS maps; (3) establishing research relationships with the tribes; and (4) providing scientific expertise for projects sponsored by the Forest Service and the Fisheries Information System (FIS) of the Federal Subsistence Board.

Research entailed a literature review of TEK of Native Alaskan Tlingits living in southeast Alaska and interviews in Angoon, Hoonah, Juneau, and Sitka (see Fig. 1). Researchers worked with the tribes, the Southeast Regional Advisory Council, and the FIS to develop a research design for tribally run TEK projects. Robert Schroeder, at the time a social scientist with the Juneau Forestry Sciences Laboratory, worked with each tribe to initiate the projects. Six projects were funded. Projects in Yakutat, Sitka, and Angoon are near completion. Draft material was prepared by Kake and Hoonah tribal members. Research in Craig started in late 2003. The project may be extended to other tribes in the region under FIS funding. These efforts are designed to examine the accuracy of historical (1947) representations of tribal territory and to determine the contemporary relevance of traditional territory. Completing projects with all southeast Alaska tribes could be a research goal.

Three themes emerged from the literature review (Hensel, 1999, unpublished report on file with author). First, the Tlingit worldview, shared by many indigenous cultures, does not clearly distinguish the animate from the inanimate natural world. Codes of behavior developed from this worldview. A hunter, fisher, or gatherer would establish the appropriate relationship with the animal, fish, or plant and express appreciation before harvesting it. The notion of an overriding

spirituality in the natural world continues to provide guidance for the actions of Tlingit people.

- Second, Tlingits maintained a system of clan and tribal property that included rights to use resources in a given location. These concepts of use rights provide the foundation for Native resource management. In Tlingit society, land, streams, rights to harvest resources, songs, dances, and stories are owned as property and held by local matrilineal clans and houses. Territory has historically been central to tribal and personal identity, playing a role in celebrations, traditional dancing, and singing.

Clan membership and kinship influence the interactions between people and natural resources. Through a complex system of kinship, a person has clan membership through one's mother's family and other relationships through the clans of one's father, grandfather, spouse, and any other to which these family members are related. In small communities, a person could be connected to all the other local clans, and thus have access to some portion of these clans' territory.

Knowledge of traditional subsistence resources formed the third theme. The location, abundance, distribution, and other characteristics of these resources have a theoretical and practical importance. Documenting the condition of resources and who used them for what, when, and in what quantities can help build understanding of resource conditions over time and the relation between resources and human populations. Interview respondents often provided explanations for natural phenomena such as the reason salmon in one stream system were smaller than in other systems. This type of knowledge can inform understanding of subsistence activities and the relationship between subsistence and ecological conditions.

2.2. *Subsistence*

Rural southeast Alaska residents are highly dependent on subsistence resources, and competition between subsistence users and nonsubsistence users of fish and wildlife is increasing. Understanding subsistence use, needs, and patterns is critical to effective and appropriate resource management. Ethnographic studies conducted in the early 1900s provide some of the earliest information about the use of subsistence resources in southeast Alaska. In the 1980s, federal and state agencies began to document subsistence uses

in order to better manage for subsistence use. Research has included ethnographic community studies, use area mapping, retrospective house surveys in which residents are asked about the previous year's harvest, and examinations of specific subsistence harvests.

The findings reported here come from subsistence studies completed between 1997 and 2001. Members of 1064 households in 24 small southeast Alaska communities were interviewed, although residents of the larger communities of Juneau and Ketchikan were not. The Alaska Department of Fish and Game, Division of Subsistence (2003) and area tribes and communities conducted interviews cooperatively with tribal members. Summary data are available in a community profile database at <http://www.subsistence.adfg.state.ak.us/geninfo/publctns/cpdb.cfm>.

Researchers analyzed data to identify intercommunity differences in harvest, spatial relation of harvesters to traditional harvest areas, diet variety, species dependency, and concentration of harvest by high harvesters (Schroeder and Mazza, n.d., on file with author). They compared the recent data with data collected in the 1980s to look for trends.

Schroeder and Mazza identified four key findings. First, subsistence harvest of wild foods continues to provide a large portion of the diet for residents of southeast Alaska communities. In most communities studied, consumption of wild game and fish meets or exceeds the national average for consumption of meat, fish, and poultry. Second, per capita harvest levels in Native communities and larger communities remained consistent from 1980 through the recent study. In some smaller communities there was a notable difference, but it could be explained by special events or changes in harvest behavior of a small number of people. Third, subsistence harvest levels differed across the region. The differences in harvest levels among communities cannot always be explained by differences in ethnicity, income, community size, or access to resources. The differences may be related to community demographic composition, cultural traditions, and community history. Additional research is needed to help identify this complex relationship. Finally, some households harvest more fish and wildlife than the household can consume. The surplus is distributed through customary distribution practices including kinship networks, barter, and trade. In Yakutat, 25% of households harvest about 75% of the total community subsistence harvest

by weight. The lowest harvesting 50% of all households harvest just 8% of the total community harvest.

Schroeder and Mazza also found continued high reliance on marine resources. Fish, marine mammals, and marine plants made up about 80% of the subsistence harvest in all communities when measured in food weight. Subsistence harvesters also use at least 77 different plant species. Over 80% of households studied use nontimber forest products, mostly edible berries, each year (Schroeder and Mazza, n.d., unpublished report).

In addition to dependence on subsistence resources for food, many southeast Alaska communities are becoming increasingly dependent on tourism for income. Some southeast residents are voicing concerns about the effects of the growing tourism industry on subsistence and local lifestyle.

2.3. Tourism growth, trends, and issues

Tourism is one of the largest industries in the world. Travel and tourism contribute nearly 11% of the world's gross domestic product (UNEP, 2002). Cruise ships play a major role in transporting tourists to southeast Alaska. Growth of cruise ship travel in Alaska averaged about 9.2% per year between 1987 and 2002, slightly more than global cruise travel (8.5%) during the same period (Cruise Lines International Association, 2003). Even the 2001 terrorist attacks in the United States did not negatively affect the number of cruise visitors to the state (Northern Economics Inc., 2003). Alaska continues to be one of the two tourist destinations most frequently identified by travelers interested in future cruises (Cruise Lines International Association, 2003). The information presented in this section is based on three unpublished reports on file with the author: Schroeder, Cervený, and Roberston, Forest Service employees; Behnke, a contractor; and Cervený. The three papers will be available as PNW general technical reports.

2.3.1. Tourism characteristics, growth, and trends

Behnke explored the scope of tourism issues and likely growth of tourism in the region. He identified five characteristics of Alaska tourism. First, the presence of a public infrastructure to access public lands is important to tourism. Second, the places that support tourism are also home to Alaskans; these same places

are where residents live, work, play, and harvest resources for personal and commercial purposes. Third, Alaskans travel throughout the state and use the same visitor facilities as tourists. Fourth, tourism is location-specific; it can be difficult to encourage in some places and almost impossible to stop or slow in others. Finally, no single entity can manage and direct tourism growth. In southeast Alaska, the Forest Service manages 80% of the land, and Native corporations, National Park Service, private owners, and the state (Department of Natural Resources manages tidelands) manage the remainder. Local governments control docks, shore facilities, entry portals, and main retail sites; however, they manage only small amounts of land under their jurisdictions. This multitude of authorities and lack of coordination results in piecemeal planning and management that may be counterproductive or contradictory.

As mentioned above, cruise ship visitation has grown substantially in southeast Alaska. Not only did the number of cruise ships visiting Juneau almost double between 1987 and 2002, but many of the ships docking in 2002 were larger than those in use in the late 1980s. Most cruise ships visiting southeast Alaska stop in Juneau, making Juneau a good indicator of levels of visitors into the region as a whole. Other communities within the region receive varying levels of cruise ship traffic. Some communities have no cruise ship visits but benefit from shore excursion activities when ships dock in neighboring communities. Still other communities that are remote from cruise ship stops may experience neither the potential costs nor benefits from the growth of the cruise ship industry.

There is no way to sort tourists who travel by air, use the Alaska Marine Highway, or cross the borders near Haines and Skagway in cars and buses from residents who use these modes of travel. Records for air traffic at the Juneau International Airport show that between 1992 and 2002 air travel grew at a mean annual rate of 1.4% (Juneau Convention and Visitors Bureau, personal communication). Following the disruption to air travel after the terrorist attacks in 2001, summer 2002 was the first year more visitors came to Alaska via cruise ship than by plane (Northern Economics Inc., 2003). Analysis of traffic on the Alaska Marine Highway shows a fairly consistent volume. Public ferries operate at capacity during busy summer months, so potential growth is limited until other boats are added

to the fleet. Between 1989 and 2002, summer traffic crossing the Canadian border into Skagway increased 40% (Skagway Visitors Bureau, personal communication). In contrast, summer border crossings at Haines have declined 19% since 1993 (Haines Convention and Visitors Bureau, personal communication).

Juneau is the only community that tracks cruise ship visitors and independent travelers; the number of cruise ship visitors has escalated whereas the number of independent visitors not arriving by cruise ship remained constant between 1993 and 1999 (Juneau Convention and Visitors Bureau, 2000). Although there are no hard figures on visitation to the region, based on known visitors to Juneau and estimates of independent visitors and visitors on cruise ships that do not stop in Juneau, Schroeder et al. estimated total visitation for 2000 was approximately 835,000.

2.3.2. *Key visitor activities*

Several key visitor activities have seen significant growth. Helicopter touring from Juneau to the Juneau Icefield has become one of the most popular attractions in the region. In 1984, fewer than 2000 tourists participated in these excursions. In 2001 over 88,000 took the flight and participated in associated interpretive walks, dog sled rides, and ice climbing.

Sport fishing is also a popular tourist activity. Statewide, there were 1.5 nonresident fishing license holders for every licensed resident fisher in 2002. Survey data show that nonresidents fish on day charter excursions from cruise ships and from fishing lodges around the region. The Alaska Division of Sport Fish (2003) reported that in 2001, nonresidents caught 1.3 times the number of king salmon taken by southeast Alaska residents.

In addition to salmon and halibut fishing, several communities offer opportunities for freshwater fishing, biking, hiking, river rafting, sea kayaking, and canoeing. Native corporations and tribes are becoming major players in the tourism industry, both as owners and operators of tourism-related businesses and in promoting Native culture.

Most visitors are interested in seeing wildlife, especially bears and whales. Although much of the wildlife viewing occurs during other activities such as charter fishing or travel on boats, ships, or ferries, there are also commercial tours to areas of heavy bear use, such as Pack Creek on Admiralty Island, that are man-

aged with limited human access. Maintaining quality bear habitat and creating conditions that enable reliable bear viewing without negatively impacting the bears or creating the potential for bear–human conflicts continues to challenge resource managers. Demand for bear-viewing opportunities is high and the supply is extremely limited. Demand for whale watching also challenges resource managers to find methods or venues that allow viewing without disturbing whales, sea lions, and other marine mammals. Scientists are conducting various studies on interactions between recreation activities and wildlife such as effects of bear viewing on habits of bears and effects of helicopters and airplanes on goats.

2.3.3. *Effects of tourism on communities*

Behnke found that although many communities are promoting themselves as tourist destinations and developing an infrastructure to accommodate more tourism, many residents have concerns about the impact of tourism on their community. This is the paradoxical nature of tourism, not unlike the tension over timber, mining, and other industries. Larger communities have visitor associations or convention and visitor bureaus that promote the community and support tourism development. Together they have formed the Southeast Alaska Tourism Marketing Council to provide additional support for marketing tourism. Many communities have established bed taxes to fund tourism promotion and development to attract independent travelers. The influx of visitors to a community is a mixed blessing: it provides jobs for local residents but requires significant local expenditures for roads, docks, parking for tour buses, health-care facilities, and other services.

There is a perception that independent travelers spend more money but impact communities less than the high volume of visitors off cruise ships. In smaller communities, independent travelers stay at fishing and hunting lodges, often located away from residential and business areas. They also participate in backcountry travel such as rafting and kayak trips and other guided and unguided activities.

As mentioned earlier, most visitors arrive by cruise ships—floating neighborhoods equipped with food, lodging, souvenir shops, and entertainment. In addition, many cruise ship companies own and operate shore excursions and charge other tour operators substantial fees for marketing their products on board.

By using employment data and income for retail activity and short excursions, Schroeder et al. found that the regional average annual growth exceeds the national average and may indicate a trend in economic growth based on tourism. This growth is concentrated in the northern portion of the region. Schroeder et al. developed a tourism proxy measure based on Alaska Department of Labor employment statistics by using sectors thought to be primarily devoted to tourism such as souvenir and jewelry shops, lodges and camps, tour boat and tour bus operations, and other recreational services. The proxy does not include fishing charter operations, other sole proprietors, and more general businesses such as restaurants and hotels that cater to residents and business travelers as well as tourists, so it cannot accurately describe the true contribution of tourism-related employment. Nevertheless, it is useful in assessing trends and distribution of tourism activity among communities.

Using their tourism proxy, Schroeder et al. calculated average regional growth since 1981 of 12% annually. This compares with an average annual growth of 2% for all employment sectors. Tourism's total share of regional employment is only 3% but the proxy does not include hotel and restaurant employment. Tourism employment differs significantly across the region. It is highest in Sitka, Haines, and Skagway and lowest in Wrangell and Petersburg where there is little employment in the sectors that make up the tourism proxy. Use of the proxy helps illustrate that, with the exception of Ketchikan, tourism-related employment is concentrated in northern communities.

2.3.4. *Tourism projections*

Schroeder et al. found a compounding rate of growth of over 10% per year over the past 20 years. With increasingly larger ships and growing numbers of tourists, the rapid expansion of the cruise industry in Alaska is expected to continue. Demographic trends suggest the number of travelers will increase as baby boomers reach retirement age and have the money and time to take cruise vacations. An additional consideration is that Alaska offers a domestic travel option when there is civil unrest or instability in other world destinations.

Based on their analysis, Schroeder et al. estimate a rate of growth between 8.5 and 10.5% per year over the next 10 years. This would mean doubling the cur-

rent volume in 8–10 years or possibly sooner. In addition to new cruise ship passengers, an estimated 20% of cruise ship passengers can be expected to return as independent travelers or on package tours (Carroll, 1996). Questions remain as to the extent and nature of long-term consequences of the terrorist attacks of 11 September 2001, the economic downturn, and more recently the war in Iraq and associated terrorism, and the SARS (severe acute respiratory syndrome) outbreak. These events have taken a toll on tourism in the short term. Understanding potential growth and the variables that affect it is important because the extent and nature of growth affects land management agencies, municipal governments, and others responsible for managing land, resources, and facilities that support tourism.

The rapid expansion of the cruise ship industry has caught many communities by surprise. Overall there has been minimal community and resident participation in decisions about tourism growth. Cruise ship companies, as private corporations, do not go through a public comment process when they decide to increase or decrease visitation to communities, even though these changes can have substantial impacts on communities. In some communities, there are concerns that tourism may be reaching or exceeding a level of acceptable capacity. In other communities, additional facilities are being developed to accommodate an industry that may or may not use the facilities. Cerveny (in press) found that tourism development was an important topic of conversation in many communities, particularly the ways and extent to which it should be encouraged, if encouraged at all.

2.4. *The effects of tourism on three southeast Alaska communities*

Communities in southeast Alaska are changing. Tourism is both a cause and an effect of this change. Sentiment in most communities is mixed as to whether tourism is something to be embraced, avoided, or cautiously encouraged and managed. To understand the changes that take place in community life as a community transitions from a resource extraction and production economy to tourism, Cerveny conducted interviews in three southeast Alaska communities—Haines, Hoonah, and Craig—where tourism has developed in different ways (see Fig. 1 for map).

As tourism becomes more developed in each community, products and services offered become more diversified and opportunities for development attract investment from both long-term residents and entrepreneurs from outside the area. Native corporations have invested in tourism businesses to differing degrees in each of the communities. Tourism growth both depends on and stimulates a growing seasonal workforce.

Cerveny identified the following themes shared across the three communities:

- *Positive economic effect*—Tourism has the potential to create jobs, stimulate business growth, and increase income for local governments.
- *The fishbowl effect*—Many residents who were interviewed felt they were on display for tourists. Often visitors have a romanticized perception of life in Alaska and the aggressive interest some take in everyday activities can be offensive to local residents. Some residents also felt they were unfairly judged about their community and lifestyle.
- *Impacts on wildlife and subsistence resources*—Many residents expressed fear that tourism is negatively impacting wildlife and the environment, particularly the quality and quantity of subsistence resources. Residents who depend on subsistence resources are concerned about effects of cruise ship discharges on fish, shellfish, seaweed, and other resources. In Craig, the expansion of the tourism industry into freshwater fishing and flyfishing might impact subsistence uses of lakes and streams. In Haines, tour groups use the best subsistence fishing spots, displacing subsistence users. Hoonah families voiced concern that their clan's special places for gathering berries, seaweed, cockles, or fish might become tourist stops, impacting both the resource and their experience.
- *Community change and a desire to maintain a rural lifestyle*—Alaska is no stranger to a boom-bust economy. Mining, fishing, and timber are part of southeast Alaska's identity. Tourism is equally tied to the region's natural resources. Much like each of the other industries, tourism has brought newcomers to the area. Although the newcomers may have different values, habits, and priorities than long-time residents, most seem to share a love for

Alaska and find ways to become part of the local community.

- *Pace of life*—Tourism accelerates the pace of life. Activities pick up in the spring as lodges and tourism-related businesses get ready for the summer season. The extended daylight coupled with the influx of seasonal employees and tourists often result in a frenetic pace, especially for those involved in tourism. Some residents welcome the change of pace and infusion of energy whereas others resent sharing the tranquility and beauty of favorite places with outsiders.
- *Commercialization*—Many residents fear that their community will succumb to commercialization. Residents fear that the community will lose its identity and essential character and become simply a tourist attraction.
- *Local control*—Increasing tourism has resulted from and resulted in an influx of nonlocal business owners. Residents of Haines want to minimize the undesirable aspects of tourism and promote community well-being. Hoonah leaders also want to plan tourism growth, so the identity and character of the community will be preserved and the daily lives of residents will not be disrupted. Lodge-based tourism has not had a big impact on the community of Craig, but as tourism becomes more diversified residents might become more proactive to protect the character of the community.
- *Control of natural resources*—Echoing the concerns expressed earlier about impacts on wildlife and subsistence resources, residents felt strongly about the need to control local resources. In Haines, the resources of concern included local recreation areas, remote wild areas, and neighborhood resources such as beaches, water springs, and hiking trails. In Hoonah, residents primarily were concerned about deer, and in Craig concerns centered around fish.

Another theme that deserves mention is the effect of tourism on Native cultural resources, traditions, and lifestyles. There is concern across Alaska about balancing the impacts of tourism on Alaska's Native populations and cultural resources with the benefits of markets for cultural handicrafts and art and rejuvenation of cultural knowledge, stories, dances, and songs.

2.5. *Timber harvesting practices and social acceptability*

Clear-cutting and traditional forestry practices dominate timber harvest activities in southeast Alaska. Over the past 20 years, the clear-cutting debate has focused national and even international attention on southeast Alaska and the coast of British Columbia, and has been divisive among residents within these areas. Public acceptability—or lack thereof—of forest management practices continues to concern forest managers and policymakers, particularly in relation to management of public lands in the Pacific Northwest and Alaska. Researchers in the Pacific Northwest have studied social acceptability of forest management for more than a decade. Researchers began to study acceptability of alternatives to clear-cutting in southeast Alaska in 1993 (Shindler et al., 1996). At that time Shindler et al. (1996, p. 71) found

People are more likely to find a practice acceptable if they can visualize how it will look, understand its effects on sustaining the natural characteristics of the surrounding forest, believe in the information they have received, feel that the practice will benefit the local community, and that they have had an opportunity to interact in the planning process.

Shindler and his colleagues found that both the residual effects of harvest and the decision process itself were important factors in determining the social acceptability of a practice. When people felt they had an opportunity to participate and were heard, they were more likely to feel a practice was acceptable.

A problem analysis by Shindler et al. (2002, pp. 12–42) identified 10 problems related to the issue of acceptability. The problems, paraphrased here, provided a foundation for the research reported in this section and inform management of public land in Alaska, as elsewhere. Shindler and his colleagues found that focusing on the decision-making process is important. A lack of trust in resource agencies results in lack of support for decisions. Context is important. For example, the uniqueness of a place and its meaning is particularly important for citizens, but prescriptive, one-size-fits-all policies ignore most contextual circumstances. Attempting to achieve multiple objectives increases the difficulty of finding acceptable strategies. A rational,

technical decision approach does not effectively engage citizens or incorporate their concerns. There is a range of definitions of “natural conditions” such that managing for natural conditions is difficult. Natural resource management is an experiment involving uncertainty and risk. Few places exist for shared learning about the risks, the tradeoffs, and thus the acceptability of management approaches. Providing more information or “educating” the public will not lead to acceptability.

Information alone is rarely sufficient to produce change. Public understanding is based on a set of factors wrapped in the context of personal experience. Personal judgments of acceptability often originate from responses to visual perceptions; however the judgment process is complex, with people considering a variety of aspects in their assessments. People often take action in response to unacceptable conditions or processes.

The appropriateness of clear-cut logging as a management tool continues to elicit debate. Clausen and Schroeder (2004) discussed the literature on the social acceptability of alternatives to clear-cutting and compiled an annotated list of references pertinent to southeast Alaska. In this same vein, Burchfield et al. (2003) also examined human reaction to different types of harvest treatments.

In a field study, Burchfield et al. (2003) studied participant reactions to a series of eight harvest treatments completed at Hanus Bay in 1998 (see Fig. 1). In 1998 and 1999, 27 respondents from nine interest groups were interviewed to solicit their reactions to eight harvest treatments. The nine groups, selected to represent a diversity of perspectives on the appropriate use and management of national forests, were managers of logging and timber companies, logging and timber laborers, conservationists and environmentalists, Alaska Natives involved in subsistence, active hunters, commercial fishers, and recreational users. Participants within these groups were selected based on their familiarity with forest management issues in general and Hanus Bay in particular. A posterboard displaying the estimated consequences of each harvest treatment was used to provide each participant with the same information and to help respondents think about each treatment. Estimated consequences were displayed in terms of fish productivity, deer productivity, timber yield, biodiversity, residual stand damage, and visual appearance. Aerial photos taken

after the harvest were provided for each of the eight treatments. Respondents were asked to (1) rate the importance of each consequence, (2) explain the reasons for their rating, (3) discuss the acceptability of each of the treatments, and (4) identify their preferred treatment.

Burchfield and his colleagues found responses differed based on individual preference with no significant differences among the nine interest types. They found that acceptability was tied most strongly to three elements: achieving a balance of positive effects, sustaining natural conditions, and thoroughly considering contextual attributes. In addition, sustaining benefits to rural communities and to subsistence lifestyles were also important considerations.

Residents who were interviewed were concerned about the vitality of the forest and their communities, and these concerns influenced their judgments of acceptability. Each of the six areas of possible consequences (fish, deer, timber, biodiversity, stand condition, and visual appearance) was important to those interviewed. Clear-cutting was at one end of the continuum of alternatives presented, with full retention no-harvest at the other. Many judged the no-harvest alternative as highly acceptable whereas others said it was inappropriate to even consider no-harvest as an option. Those with direct ties to the timber industry supported the clear-cutting option as the best approach. The remaining six treatments involved an intermediate level of harvest in a variety of harvest patterns. For most respondents, 75% retention was more desirable than 25% retention. Respondents had a variety of reasons why they preferred the higher level of retention. Burchfield et al. classified underlying reasons within three areas identified by Shindler et al. (2002): balance, naturalness, and context.

2.5.1. Balance

Respondents evaluated the treatments based on their interpretation of the balance of effects on fish productivity, deer productivity, timber yield, biodiversity, residual stand damage, and visual appearance. Many respondents commented that although the 25% retention provided more timber volume and concentrated harvest activities, the tradeoffs of degraded visual appearance, possible erosion, residual stand damage, negative impacts on deer and fish productivity, and potential for blowdown outweighed the benefits.

2.5.2. *Naturalness*

Residents of southeast Alaska are connected to the forest in many ways. Many people spoke of the natural environment and its importance to quality of life. How people define what is natural played an important role in how they judged the treatments. Treatments that harvested timber in small clumps were seen as unnatural and, for this reason, they were unacceptable to many respondents. For some respondents, natural disturbances, such as blowdowns that leave openings in the forest, were perceived as natural and thus acceptable. These respondents liked the treatments that more closely resembled clear-cuts because these fit their definition of natural.

2.5.3. *Context*

Respondents mentioned several contextual elements associated with location and extent of the harvest operation or the link between the harvest and community well-being and lifestyles. Considerations related to location and extent included adjacent land-use; cumulative effects; potential for ecological deterioration; historical, social, and political forces; economic feasibility; the effect on ecological processes; and the spatial and temporal dimensions of the operation. Site-specific meanings and significance of the place to individuals and communities were also important to the context. Most respondents voiced concern about the effect of harvesting on lifestyles of residents and local communities. Even though many preferred the no-harvest treatment, they recognized the contributions of timber harvesting to economic diversity and community vitality and the need for timber to be harvested somewhere to satisfy consumer needs.

3. **Conclusion**

Managers and others concerned about forest management recognize the need for both better and more site-specific information (Kohm and Franklin, 1997). There is a particular need to better understand the complexity of ecosystems and the relations between social systems and biophysical systems. “Appreciating the complexity of systems and managing for wholeness rather than for the efficiency of individual components place forestry in the context of a much broader move-

ment toward systems thinking” (Kohm and Franklin, 1997, p. 3).

One factor contributing to this complexity is the continual evolution of social systems and the ecosystems in which they are embedded. “Evolving systems require . . . continually modified understanding of the evolving conditions and . . . flexibility for adapting to surprises” (Holling, 1995, p. 14). Change in individual systems and the interactions among them necessitate ongoing studies.

Management of national forests requires understanding communities; this includes knowing what people do on the forest, what they know and care about, the values and perceptions they hold about the agency and its management, the resource management activities they find acceptable, and how these each of these affects and is affected by resource management. Effective and responsive resource management recognizes the value of multiple types of knowledge (e.g., scientific, managerial, traditional). Social science researchers can help identify and access the knowledge that exists and design processes for integrating this knowledge into the decision-making process. Understanding the role of stories and the importance of special places in documenting knowledge is especially important in cultures such as the Tlingit, Haida, and Tsimshian who have had close connections to the land for generations.

The scenarios of limited access and dominance of federal ownership found in Alaska are comparable to such scenarios across the Western United States. This increases the utility of research addressing these issues in Alaska, and also means there is much we can learn from research done outside the state. There may be issues and questions, however, distinctly linked to Alaska’s geographic and political situation that require research in Alaska. In some cases, the questions may not be unique to Alaska, but the results and implications may be quite different from what is found elsewhere. Social science research in Alaska is important because we need knowledge specific to the management situation here. Studies in Alaska provide us with knowledge of community structure, function, and change, subsistence and other uses of natural resources, and tourism and recreation development and impact. Second, some studies are possible only in Alaska; much of the traditional ecological knowledge and subsistence work is such that there are few or no comparable study sites

available outside the state to explore aspects of these topics.

Partnering with tribes to gather information on tribal use of resources has been beneficial for all parties. Clan and tribal territory remains central to Tlingit culture and society. Most hunting, fishing, gathering, and other cultural activities take place within tribal territory. Documentation of territories provides a starting point for determining which tribes should have legally recognized subsistence use in particular geographic areas. Recognizing territories also will help agency land managers identify tribes and clans most likely affected by land management decisions.

Tourism, recreation, subsistence activities, commercial fishing, and other uses of public lands and waters form a complex and ever-changing mosaic. Rapid growth in cruise ship and tour boat tourism has shifted patterns of resident recreation and subsistence activities as residents begin using new areas to avoid tourists. A large portion of resident recreation and subsistence activities are accessed by boat. According to a Forest Service inventory of recreation places (USDA, 1997), about 43% of the sites are saltwater-oriented. The Forest Service (USDA, 1997, pp. 3–137) identified 59% of the same sites as important for tourism. Tourism, resident recreation, and subsistence activities often involve shoreline use. Although the shoreline in southeast Alaska seems unlimited, most is not physically suitable for every activity. Heavy use in some areas is raising concerns about experience quality and displacement of residents to fewer and more remote areas.

Most communities see tourism as a necessary component of a healthy economy, while at the same time they are concerned about the impact of increasing levels of tourism on the quality of life and the environment. Although communities want the benefits of jobs and business opportunities, they do not want to sacrifice community culture and identity, access to subsistence resources and resident recreation, environmental quality, or privacy.

Residents have voiced several concerns about tourism. The increase in flights to the Juneau Icefield has been accompanied by an increase in community opposition primarily owing to the noise of frequent flights over residential areas. Even though fish stocks in Alaska are healthy and abundant, tension is building in some communities as commercial fishers see a

larger percentage of king salmon allocated to sports fishing and large quantities of salmon shipped home by tourists.

Other tourism-related concerns include commercial use and crowding of trails and parks, growing potential for human–wildlife conflicts, development of large lodges and other seasonal businesses, control of businesses by out-of-town interests, interference with commercial fishing and subsistence activities, increasing numbers of people in remote places, and loss of small town character. Some smaller communities are overwhelmed when a tour boat arrives carrying more people than live in the town. Those voicing the loudest concerns appear to be people whose experiences have already been negatively affected in some way. This group of concerned citizens is bound to grow as the industry brings more visitors to more locations and diversifies to include more types of activities.

The type of tourism and the level of development influence how tourism affects community life. Communities will not have the same experiences. However, communities in southeast Alaska share many similarities and can learn from and with each other ways to encourage (or discourage) tourism, minimize negative impacts, and maximize community well-being.

As tourism increases, encounters between residents and tourists will increase. New businesses will compete with existing operators for clients and resources. Businesses will diversify and expand into new markets and geographic areas to find a niche that is less crowded. Newcomers who come to work in tourism and tourists themselves bring new ideas, consumer preferences, and interests to the area. Tourism can transform the look and feel of a community, changing the way people relate to their community. Some local people will embrace the change, and others will resist.

Forest management also can transform the look and feel of places important to residents. Judgments of acceptability of forest management are complex. Arriving at judgments can include consideration of visual appearance, perceived naturalness, cumulative effects, impact on unique resources, location and extent of operations, effect on subsistence resources and uses, and tradeoffs that involve effects on ecosystems and human communities. For many residents, there is a close tie between the quality of life in their communities and what happens on the forest.

3.1. *Social science information needs*

As the Forest Service moves to a more holistic and socially oriented approach to public land management, it is essential to support social science research as part of formal resource management planning activities. Changing social, economic, and biophysical conditions require ongoing studies that provide relevant, timely, and useful information to support planning and decision-making. Through the studies reported here and a variety of workshops and discussions with managers, researchers, and interested citizens, a number of additional social science information needs have been identified.

3.1.1. *Needs related to subsistence and traditional ecological knowledge*

There is an ongoing effort to understand subsistence use of fish and wildlife in southeast Alaska, to describe and understand Native cultures, and to provide tribal governments with assistance. To achieve this, it is important to continue to work with tribes to help them document traditional territory and uses. Foundational questions might include: How has Alaska Natives' relationship to the land and traditional resources changed under the pressures of modern society? What changes might occur? What are the impacts of the growing tourism industry on subsistence resources and activities? How has timber management affected subsistence values and uses? What role does subsistence play in community well-being and resilience?

The Forest Service needs this information to meet its responsibility of managing subsistence fishing and hunting on federal land and to comply with requirements to examine the effect of land-use actions on subsistence uses. New knowledge of subsistence uses may inform understanding of changing subsistence patterns and the role subsistence plays in community well-being in other locations around the world. How are changes in subsistence-use in Alaska similar or different from changing patterns elsewhere in the world, and what contributes to the similarities and differences?

Additional work is needed to better understand the ecological importance of key cultural sites associated with subsistence harvesting activities. Studies of TEK might focus on issues such as historical Tlingit experience with Hubbard Glacier surges; current and future surges may affect subsistence patterns and, in turn,

the Yakutat community. Studies of TEK also might improve understanding of historical use of sockeye salmon and significance of declining sockeye salmon systems to subsistence users, possible causal events, and remediation. Studies with tribal groups might explore links between TEK, cultural sites, and opportunities in the growing cultural tourism market. Which sites could be interpreted and celebrated with wider audiences and which sites should be protected and unadvertised?

Any future TEK work needs to be jointly developed by the tribes and the cooperating social scientist. Extending the traditional territory project to other tribes would be a likely direction. Studies of specific places or particular subsistence harvests might also be possible. There is much to be learned in the area of stewardship and property rights. This is a topic of increasing concern and interest around the world. Another productive direction would be to work with tribes and with Forest Service archeologists on basic science questions concerning the area's habitation sites, petroglyphs, and caves. Scientists with the PNW may be able to operate as boundary-spanners between field and academic archeologists and tribal members in investigating historical use and shifting-use patterns.

3.1.2. *Needs related to tourism*

A better understanding of visitor characteristics, recreation and tourism businesses, residents' attitudes about tourism growth, collaborative planning, social and economic impacts of tourism, patterns of use, and carrying capacity is needed. The size of the local tourism industry, stage and type of development, and its growth rate affect the social impact of tourism. This has implications both for communities and forest management. It is imperative that forest managers and community leaders talk about their concerns and ways to work together more effectively on tourism issues and concerns. Questions to which managers are seeking answers include: What is the Forest Service's role in tourism? What types of tourism should the agency encourage, accommodate, restrict, or prohibit and where and for what reasons? What visitor management is appropriate in areas that accommodate tourism, resident recreation, and subsistence uses? Should the agency create noncommercial zones? Should tourist activities be concentrated or dispersed? Should the forest be zoned by activity? Should agency land be leased for

commercial development? How should priorities be determined? Should existing facilities be maintained or capacity expanded and new facilities developed? How can effects on subsistence be minimized? How can tourism be managed so that the well-being of communities is maintained and even improved? What does sustainable tourism look like?

It is important to understand the expectations of these visitors, how these expectations will be satisfied, and the implications for local communities. The impact visitors and their activities may have on natural resources (water, air quality, whales), community infrastructure, sense of identity, cultural traditions, local businesses, and other threads in the complex fabric of the community is of concern and interest. Researchers and managers need to explore the relations among tourism, resident recreation, and subsistence activities, and the impact each may have on the others. The National Environmental Policy Act (1969) and Alaska National Interest Land Conservation Act (1981) provide strong directions on how the Forest Service will manage natural resources and regulate subsistence harvests; however, the cruise industry operates fairly independently with no requirements for community participation in decisions that can have substantial impacts on small communities.

3.1.3. Needs related to forest management

Although tourism is resulting in community change, the most visible landscape changes result from forest management activities. The social acceptability of forest management practices is an issue across the Western United States. In southeast Alaska, the controversy is focused around methods of timber harvesting and economic viability. Judgments of acceptability are highly complex. Managers need to consider the multiple issues involved and the overall impacts of timber harvest and other landscape-altering activities in order to address the interests and concerns of the local population.

As a society, we are in transition from how we think about, use, and manage our national forests including the Tongass National Forest. Once a major timber producer, the forest is increasingly recognized for its ecological, scenic, and cultural values. Tourism and recreation have become the dominant uses of the forest, and it is important for managers and policymakers to explore what this means in terms of management.

How can management better position itself to respond to this shift in how the forest is perceived and values?

3.1.4. Placing the research in a management context

The studies summarized here were strongly field-based. They provide information to help managers better understand subsistence uses, traditional territories, tourism trends and accompanying challenges, and the complexity of judgments of acceptability. The findings will inform management decisions as well as the next round of forest planning. They provide insight into how people consider, value, and use natural resources and what they think of alternative approaches to management. The studies provide a snapshot of what community members are thinking about the growing tourism industry. Several of the studies demonstrate the importance and value of participatory, inclusive processes.

The studies also have helped expose gaps in our knowledge. Possible future studies include extending this work beyond Alaska to explore the relevance of these findings elsewhere. How are rural communities in Canada (and other countries) that are also faced with economic downturns in timber and fishing adapting? What transition strategies work for rural communities? Native and non-Native rural communities in Alaska are in transition. What factors contribute to their capacity to adapt to change? How are land managers in other countries gathering and using traditional ecological knowledge? What lessons can we learn from communities that have pursued ecotourism and cultural tourism? What lessons can we share with other parts of the world? Does the use of participatory processes improve social acceptability of management decisions? What processes work and why?

There is increasing global awareness of the importance of achieving sustainable communities. Discovering what this means in Alaska will require collaboration across all levels of government, multiple agencies, tribes, and will need to engage citizens across the state.

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