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Social Implications of Alternatives to Clearcutting on the Tongass National Forest

An Exploratory Study of Residents' Responses to Alternative Silvicultural Treatments at Hanus Bay, Alaska

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Abstract

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After a series of eight harvest treatments were completed at Hanus Bay, Alaska, on the Tongass National Forest in 1998, 27 respondents representing nine interest groups were interviewed to understand their reactions to the various harvest patterns in the eight treatment areas. Harvests patterns included three stands with 25 percent retention of basal area; three stands with 75 percent retention of basal area; a clear-cut; and a full retention, or no-harvest, option. A special poster board that displayed estimates of consequences of the harvests in six areas (fish productivity, deer productivity, timber yield, appearance, biodiversity, and residual stand damage) was provided to assist respondents in articulating their evaluations. There were no significant differences in preferred treatments among the nine interest groups sampled, although responses identified specific preferences based on individual interests. Analysis of narrative responses identifies that the basis for acceptance follows three major elements of emerging social acceptability theory: (1) treatments achieve a balance of positive effects, (2) natural conditions are sustained, and (3) contextual attributes are thoroughly considered. Sustaining benefits to rural communities and subsistence lifestyles also emerge as important considerations in judging the acceptability of harvest treatments.

Keywords: Clearcutting, subsistence, timber harvests, social acceptability.

Introduction

This research focuses on the factors that affect people's judgments on a range of alternative, stand-level harvest practices on the Tongass National Forest in southeast Alaska. Results are based on the preferences of 27 selected southeast Alaska residents to a series of experimental harvest treatments on national forest lands at Hanus Bay, on the north-northeastern edge of Baranoff and Catherine Islands, approximately 25 air miles northeast of Sitka, Alaska. The selected residents possessed prior familiarity with forest management issues in the region and were purposefully sampled to reflect a diversity of views on the use of national forests. Respondents were interviewed in 1998 and 1999, shortly after the harvest treatments had been applied.

This study is intended to frame the range of consequences and tradeoffs that knowledgeable observers consider in their evaluation of forest treatments. It is one part of the Forest Service's alternative to clearcutting (ATC) research project, an ongoing research effort of the Pacific Northwest Research Station. The ATC project aims to generate greater understanding of how the Tongass National Forest can be managed in a sustainable and socially acceptable way.

The study demonstrates both the complexity and sophistication of people's evaluation of forest management activity. Although the intent of the social research process within the ATC project was to learn about the expectations and concerns of Alaskans for a mix of silvicultural techniques (Allen 1996), this study reveals that responses of residents to timber harvest in southeast Alaska are closely linked with the social, economic, geographic, and cultural context in which these harvests occur. This report does not provide conclusive evidence that one type of treatment is more acceptable than any other. Instead, it uses the testimony of thoughtful observers to illuminate deeply felt social expectations of forest management. The interests of Alaskan residents are multifaceted, driven by potentially complementary desires for independent lifestyles and vital communities. The issues and ideas raised through the interviews conducted in this study will help researchers, planners, and policymakers better consider the broad implications of future timber management programs.

Background

The issue of socially acceptable forestry is of increasing concern to policymakers. Forest managers recognize that success depends on practices that respect the values of people near forest operations (Brunson 1996a, FEMAT 1993, Hansis 1995). Many researchers have studied the acceptability of forest management practices, ranging from site-specific studies to more broad-scale studies. Shindler and Reed (1996) provide an example of a local approach, as they examined local public support for use of prescribed fire and mechanical thinning in the national forests of the Blue Mountains in eastern Oregon and Washington. Respondents showed more support for thinning than prescribed fire, likely owing to the perceived increase in economic returns. Shindler and Reed (1996) concluded that people need to see management practices with their own eyes, that credible information is essential, that people desire both natural conditions and forest products, and that understanding the rationale for management practices is a prerequisite for support.

The social component of the demonstration of ecosystem management options (DEMO) study (Ribe 1994) is an example of a more broad-scale study. It looked at alternative timber harvest treatments to explore perceptions of scenic effects, perceived naturalness, and uses for recreation. The primary method was a multiphase mail survey of Oregon, Washington, and national residents. Key characteristics

influencing respondents' ratings of acceptability included forest recreation preferences, consumptive vs. amenity uses of forests, the degree of knowledge about forests, rural or urban residency, and income.

Perhaps the most relevant study to support this research was the work conducted during 1994 specifically on the acceptability of alternative harvest practices on the Tongass National Forest (Shindler and others 1996). The study was an exploratory study to identify issues and areas of concern about alternative harvest practices; it was designed more to identify questions than to answer them definitively. A limited number of small group meetings and individual interviews were conducted with residents of the Stikine area (Petersburg, Kupreanof, and Kake, with an additional sample of timber industry representatives from Ketchikan). Photographs of alternative harvest treatments from the Pacific Northwest were used to stimulate discussions but were not rated or compared to each other. Participants responded to a wide range of values and uses of the forest, including scenic values and attitudes toward clearcuts, timber production, recreational uses, tourism, habitat and biodiversity, subsistence, cultural resources, education, and existence and spiritual values.

The Stikine area study demonstrated that a wide range of values affect peoples' perceptions of timber harvest. From a scenic quality standpoint, most people preferred conditions resulting from alternative techniques to those resulting from clearcuts; slash was a negative element in general, as was the network of roads required. People were concerned about cost effectiveness, the viability of alternative practices, the effects on timber industry employment, and the manner in which alternative harvest practices would support fish and wildlife populations. The study also demonstrated that people preferred mature forests over young ones, natural looking over managed stands, and partial cutting over clearcuts. This investigation summarized the attitudes of southeast Alaskans as follows:

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 others 1996).

Shindler and others (1996) concluded that discovering socially acceptable alternative forest harvest practices may be primarily a matter of "working through" complex issues with specific, individual communities to find durable solutions.

One of the more recent definitions for social acceptability was crafted by Brunson (1996a), who has collaborated with Shindler and others (1996) on the components of the concept:

Social acceptability in forest management results from a judgmental process by which individuals (1) compare the perceived reality with its known alternatives and (2) decide whether the "real" condition is superior, or sufficiently similar, to the most favorable alternative condition. If the existing condition is not judged to be sufficient, the individual will initiate behavior—often, but not always, within a constituency group—that is believed likely to shift conditions toward a more favorable alternative.

Although Brunson (1996b) identified that acceptability judgments are made at the individual level, he recognized in a companion work that these are susceptible to group influences that provide a motivation for group behaviors. Because of group influence,

social acceptability can be expressed as an aggregate form of shared judgments formalized by an identifiable and politically relevant segment of the public. Acceptability is further complicated by place-based or a situationally specific context. This would imply that those citizens who are on the front lines of forest plans or proposed actions will be the first to pass judgment as a result of how the action (or actions) will affect themselves, their families, their communities, and the ecological environment. The influence of the actions may cause a political reaction, validated by the average citizen joining an interest group (or groups) or becoming active in the political process of decisionmaking.

Shindler and others (2002) continued to research the social acceptability question beyond their geographically focused studies, completing a problem analysis that identifies 10 broadly stated problems relevant to the concept of acceptability. The 10 problems are:

- Problem 1. Achieving socially accepted conditions and practices is hampered by a focus on decisions rather than decisionmaking processes.
- Problem 2. Many citizens do not trust natural resource agencies, and therefore do not support their decisions or the way those decisions are made.
- Problem 3. Adequate attention has not been given to all contextual aspects—spatial, temporal, and social—when evaluating acceptability practices and resource conditions. For example, the uniqueness of a place and its meaning are particularly important for citizens, but prescriptive, one-size-fits-all policies ignore most all contextual circumstances.
- Problem 4. The promise of ecosystem management suggests some balance can be reached among multiple (and often competing) resource objectives. But attempting to achieve multiple objectives increases the difficulty of finding acceptable strategies.
- Problem 5. The rational, technical-scientific decision model does not adequately incorporate public concerns; thus, it is difficult to reach decisions that are acceptable to citizens.
- Problem 6. Efforts to maintain or achieve natural conditions are confounded by a wide range of perceptions about what “natural conditions” might be.
- Problem 7. Natural resource management involves much uncertainty about how systems work as well as a degree of risk in their implementation. Few places exist where discussions can occur to help people understand the risks, allow them to weigh the tradeoffs, and thus increase the acceptability of management approaches.
- Problem 8. Confusing information provision with increased public understanding, and ultimately with public acceptance, is a mistake. Information alone is rarely sufficient to produce change. Public understanding is based on a variety of factors and considered in the context of personal experience.
- Problem 9. The initial basis for personal judgments of forest landscapes is often visual, but a more comprehensive, holistic form of public evaluation of conditions is needed.

- Problem 10. People respond to unacceptable conditions in both thought and action. Their behavior is important because it is more easily observed and is how salience of concern is measured. But an early warning system is needed, one that helps in understanding which factors push someone from thoughtful inaction to behavioral response.

A review of this set of problems reveals that both the decision **process** as well as the decision **outcome** affect social acceptability. Problems 1, 2, 5, 7, 8, and 10 as described by Shindler and others (2002) recognize that interactive, deliberative processes (and early-warning monitoring systems) are necessary to generate the trust and confidence among residents and other interests that forest management proceeds in a fair and beneficial manner. These features of the decision process are vital to acceptability of a decision, regardless of the outcome. Conversely, problems 3, 4, 6, and 9 concentrate on the consequences of actions that may be taken. These four problems are relevant to the research frame of this study because the areas affected in Hanus Bay had already been harvested before respondents were engaged in the research. It would be counterproductive to test the process-related issues within the above framework because the process for the decision had already been completed. Therefore, this research will examine only the four problems that address potential outcomes: the resource context, the balancing of resource objectives, the maintenance of naturalness, and the appearance of the treatments. Because the manner in which the inquiry was designed combined photographs of the experimental treatments with information about treatment consequences, problems 4 and 9 have been conflated in the data analysis for clarity (visual effects are being “balanced” against the other treatment impacts on wildlife, fish, and the residual stand vigor).

The problem framework presented by Shindler and others (2002) stands as the most current articulation of knowledge on the social acceptability of forest management practices on public lands. The findings of this research will be organized around these authors’ outcome-based problem statements, although the problems have been re-ordered to follow the sequence of questions offered to respondents. Thus, research findings for social acceptability in this case in southeast Alaska will be expressed in three major areas: (1) achieving balance among multiple-resource objectives, (2) perceptions about natural conditions, and (3) contextual aspects of treatments. The discussion section at the conclusion of this report provides a cross-walk between interdependent evaluations of social acceptability.

The Setting

The social context in southeast Alaska is unique because of the area’s geographic isolation, the extraordinary biophysical setting, and the dominance of the Tongass National Forest in the pattern of land tenure. Presently, about 74,000 people live in the towns, communities, and villages of Alaska’s southeastern panhandle (Allen et al. 1998). There are about 33 small communities in southeast Alaska, scattered throughout the archipelago, with only 8 with a population greater than 1,000 (Baker 2000).

The forest has always played an important role in the lives of southeast Alaskans. Timber from the coastal forest provided native Tlingit and Haida populations with building materials for housing and boats, for fuelwood, and for religious items such as totem poles (Baker 2000). Subsequent Russian and later American settlers remained dependent on wood fuel and wooden building materials for their most basic needs for energy and shelter. After the establishment of the National Forest System, the

Tongass National Forest continued to provide both economic and social contributions to residents through habitats and water regulation affecting subsistence game and fish species as well as a supply of raw material for timber processing facilities.

Tension has always existed between the residents and the Forest Service. As Lord (1997) identifies, "To this day distrust of the federal government and outside influences dominates both the Alaskan psyche and the state's politics." The Tongass National Forest is subject to its own authorizing statutes (e.g., the 1980 Alaska National Interest Lands Conservation Act, and the 1990 Tongass Timber Reform Act, which were intended to bring peace, stability, and a degree of certainty into the forest, and to the people who live adjacent to the forest (U.S. Senate Committee on Energy and Natural Resources 1996). Yet there is still much disagreement about appropriate management activities on the forest, which is played out in settings from local cafes in Sitka, Alaska, to the halls of the U.S. Congress.

Within the context of forest management in southeast Alaska, the issue of clearcutting takes on added significance as it remains the dominant harvest method on the Tongass National Forest, state and private lands, and Native corporation holdings throughout the region. Through fiscal years 1997 and 1998, 5,549 acres were harvested on the Tongass National Forest; of this total, 4,317 acres were clearcut—78 percent (USDA Forest Service 1999). Between 1983 and 1995, 52 percent of the area's timber harvest volume came from Native Corporation Lands, 45 percent from the Tongass, and 3 percent from other ownerships (USDA Forest Service 2000).

Southeast Alaskans share many of the national public's concerns about clearcutting (Roper 1994), as reflected by 1996 and 1997 referendums in Sitka on a local policy to prohibit the practice in nearby areas. The measures failed both times, but the margin of defeat was narrow enough to demonstrate that clearcutting is a divisive social issue in that Alaska community. Other indicators of the magnitude of the issues include public comments received by the Forest Service on their proposed management actions. For example, a summary of public comments on the revised draft environmental impact statement (USDA Forest Service 1996) for the Tongass National Forest plan concluded the following:

Almost all of those who commented on harvest methods were opposed to the continuation of clearcutting in the Tongass National Forest.... Commenters found clearcuts unappealing and unsightly...others stated clearcutting jeopardizes the natural resources of the Tongass and their subsistence, commercial, and sport use of them.... They cited threats to fish and wildlife, specifically mentioning negative effects to coastal brown bears, wolves, and salmon.

Methods

Finding acceptable alternatives to clearcuts has been an ongoing goal of national forest managers for the past decade. As an initial step, planning for alternative harvest treatments at Hanus Bay began in 1994, and the harvests took place in 1997 (McClellan et al. 2000). Nine treatments were involved in the harvests that applied different patterns of cutting at five levels of intensity. One of the treatments at Hanus Bay (5 percent of basal area retention) was dropped from the study because respondents in pretests could not distinguish this very small proportion of tree retention from a clearcut harvest (frequently, clearcuts leave a small scattering of standing dead trees for wildlife habitat). Thus, there were eight treatments examined, although only two levels of "alternative" residual basal area retention were tested: three treatments with 75 percent basal area retention, and three treatments with 25 percent basal area

Table 1—Treatment descriptions

Treatment no.	Harvest pattern	Percentage of basal area retained
1	No harvest	100
2	Even moderate thinning between unharvested clumps	75
3	Evenly spaced light thinning across the unit	75
4	Full harvest of small clumps across the unit	75
5	Full harvest of small clumps with thinning on remainder	25
6	Full harvest with small clumps unharvested	25
7	Even heavy thinning	25
8	Clearcut	0

retention. Of the six treatments in this “middle-ground” style of harvest (as differentiated between no harvest and clearcutting), several different harvesting patterns inside the harvest boundary were applied to create variation between the treatments. Table 1 shows the treatment number, the harvest pattern, and the percentage of basal area retained in the eight tested treatments (for this report, the treatments have been re-numbered from the original unit designations for ease in tracking a sequence from no harvest to full harvest).

Aerial photographs were taken from a helicopter to provide similar oblique angle views of each of the harvest units. Information was collected on the volume and sale value of each of the harvest treatments. All were harvested via helicopter yarding. Using secondary data from comparable sites, ecologists, hydrologists, and other researchers estimated the effects of each experimental treatment on other key variables, such as subsistence resources, biodiversity, and residual stand damage.

To develop a better understanding of how people evaluate these new silvicultural systems and the properties and factors that affect people’s judgments, 27 southeast Alaskan residents were purposefully selected for interviews about the experimental treatments. The 27 respondents were selected to be representative of nine important interest groups concerned with forest management in the region, with three respondents interviewed from each group. The scope of data collection was limited to residents of the region for the sake of efficiency and to understand the sentiments of the most directly affected population. The nine groups identified for sampling were (1) managers of logging and timber companies, (2) logging and timber laborers, (3) conservationists and environmentalists, (4) Alaskan Natives active in subsistence, (5) active hunters, (6) commercial fishers, (7) tourist industry operators, (8) sport fishers, and (9) recreational users. These groups seemed to represent a range of perspectives related to forest management, and each group had previously been active in discussions about future policies for the Tongass National Forest.

Informants in this study were not intended to be representative of the 74,000 people that reside in southeast Alaska. This study does not intend to be generalized to the larger population of Alaska, but it aims to discover those underlying values and concerns that affect the attitudes of Alaskans about forest treatments. To provide even greater richness of detail in responses, most of the selected informants had

some knowledge of Forest Service operations in the Hanus Bay area. Twenty-five of the informants were selected from five communities in the northern Chatham area (Juneau, Sitka, Tenakee, Angoon, and Hoonah), with the remaining two informants from Portage Bay in the central Stikine area. Of the 27 informants interviewed, 4 were female and 23 were male. The average age was 48 (from 23 to 76 years of age) and the average length of residency in Alaska was 28 years (3 years at the shortest to 76 years at the longest). Twenty informants are active in subsistence. They use salmon, other fish, clams, cockles, crab, and other fresh and saltwater resources; hunting for deer, moose, harbor seals, geese, ducks and other upland birds and waterfowl; and gathering wild plants including berries, edible forest plants, and edible seaweed as well as spruce roots, cedar bark, and wood for construction and heating. Twenty of the informants regularly or periodically visit the Hanus Bay area to sport fish, hunt, sightsee, hike, camp, subsist, seek anchorage, reconnect to culture, recreate, harvest timber, and commercial fish for crab, salmon, and halibut in the bay. Key respondents' occupations included sporting goods salesperson, fly-fishing shop owner, general manager for a logging company, director of operations for a major tour company, grassroots organizer for a regional conservation organization, retired commercial fisherman, kayak shop owner, and a caretaker of Tlingit ancestral sites.

The first phase of the research entailed compiling and synthesizing relevant information on the known and predicted consequences of each of the timber harvest treatments at Hanus Bay. Development of this information and its verification required extended discussion with biological and physical scientists at the Forest Service and universities throughout the region. Information on harvest consequences was organized along short- and long-term time horizons, and simple ordinal categories (high, medium, and low) were used to summarize complex effects. The goal of information summaries of individual treatments was to communicate to respondents in understandable, yet scientifically accurate terms the effects of the alternative harvest patterns.

The second phase of the research entailed the collection of data from southeast Alaska residents on the acceptability of the various treatments. Responses were collected in a structured interview with each of the selected informants. Interviews used a main stimulus of a 3- by 3½-foot poster board with the summary of information described above. Included on the poster board for each treatment was an aerial photograph of the stand after harvesting was completed. Other consequences were presented in numerical summaries and texts adjacent to the photographs in a left-to-right, top-to-bottom order (see app.). This visual learning approach conformed to the observations of Ehrenhalt (1994) that people need to be given a rational menu of information if they are expected to make a rational choice.

Six predicted consequences of the experimental forest treatments were displayed on the poster in easy-to-read fashion: (1) visual effects (the photograph), (2) timber yield, (3) residual stand damage, (4) estimated effects on deer productivity, (5) estimated effects on fish productivity, and (6) estimated effects on biological diversity and abundance. Respondents were asked to rate, on a five-point Likert scale, the level of importance of each of these consequences (from 1 = not at all important to 5 = very important). They also were asked to explain the reasons for the ratings provided. Respondents were then asked about the acceptability of the eight alternative timber harvest treatments described earlier, and to select their preferred treatment.

Interviews were conducted in locations convenient to respondents: in individual's homes, places of employment, tribal associations, in a church, on a boat, and in the park. All informants were contacted in advance and given an opportunity to review the study goal and context by way of a handout, which included a short narrative and map of the Hanus Bay study area. The interview began with a review of the handout and a short history of the study to assure a common starting point for each informant. A few informants had previous knowledge of the study through reading, attending public presentations, or participating in a tour of the research site. Of the 27 informants, 12 had heard of the ATC study, 14 had not, and 1 individual thought they may have heard something but was not sure if it was information specific to the study.

All interviews were audio tape-recorded and transcribed after the interview was completed. Transcriptions were printed, and an open coding process was used following the procedure outlined by Strauss and Corbin (1990). After an iterative review of transcript data from interviews were sorted into major categories based on the meanings and emphasis in the text, the narrative text was reduced into a more organized network of cause-and-effect associations (Miles and Huberman 1984). Responses that had been coded on the five-level Likert scale were tabulated and run through non-parametric statistical tests, although not surprisingly, the small sample size and limited observations per category (only three respondents per interest group) did not yield differences of statistical significance. Data analysis continued by applying responses to the framework of socially acceptable outcomes as identified by Shindler and others (2002). The repetition of themes by respondents and the common ordering of priorities across respondents led to determinations of the relative importance of concepts. As in other qualitative studies, it is the emergence and emphasis of ideas through the language and perspective of informants that provides insight into the significance of themes (Patton 2002).

Findings

Judgments about the acceptability of alternative timber harvest practices seem to be formed through a complex process that weighs multiple impacts on valued resource attributes. The interactions of the differing effects are recognized by respondents and evaluated along with other contextual factors to lead to conclusions about timber management that reflect personal as well as community-level interests.

This section is organized in two major parts. The first part summarizes the responses of the 27 southeast Alaskans regarding the eight experimental harvest treatments and the importance of the six potential consequences. The second part explores why these evaluations emerged as they did, applying responses to three major principles (problem statements) of socially acceptable outcomes of forest management.

Summary of Informant Responses

Table 2 shows the ratings provided by informants for each of the harvest consequences, ordered by the mean importance scores across all respondents (1 = not at all important to 5 = very important). Perhaps not surprisingly, all of the six consequences possess mean scores that identify these consequences as important. There was a very low frequency of responses in the "not important" or "not at all important" categories. The ordering of the importance of the various consequences could simply be a result of the small sample size and the composition of the sample, so these results are most valuable in demonstrating the salience of multiple aspects of the forest environment.

Table 2—Mean evaluation of consequences of harvest^a

Consequence	Number	Minimum	Maximum	Mean	Standard deviation
Change in fish productivity	21	2	5	4.7	0.77
Change in deer productivity	22	1	5	4.5	1.02
Change in biodiversity	22	1	5	4.3	.99
Damage to stand	22	1	5	4.0	.90
Appearance	22	1	4	3.9	1.15
Wood produced	22	1	5	3.4	1.35

^aResponses were ordered on a 1 to 5 scale where 1 was “not at all important” and 5 was “very important.”

Narrative comments support the scaled ratings, demonstrating that people possess high expectations from management. (An informant identifier, for example, i11, is given at the end of each comment.)

We depend a lot on deer harvest for our subsistence living here. Most of us get most of our protein requirements off the land: deer, fish, shellfish...and I think it's important to maintain a biodiversity...what's left behind after logging; it's pretty important. Those kind of things have to be taken into account. [i11]

For some individuals, certain outcomes outweigh others. For example, a few respondents favored wood production over other consequences. Two of these respondents were timber operators, and the reasons for their conclusions may be attributed to other underlying concerns, such as logging profitability, that apply directly to them as individuals. Others with a less direct stake in the design or yield from a timber harvest were frequently more circumspect about impacts, recognizing the complexity of the issue and striving for fairness and balance in the results of treatments.

Table 3 shows the response pattern based on the eight experimental treatments at Hanus Bay. Again, these responses, ordered in the table by the mean scores from the Likert scaling among the selected respondents, does not necessarily reflect the views of the population of southeast Alaskans.

Differences among the nine sampled groups were examined to determine if harvest responses were associated with the type of respondent. Table 4 demonstrates that membership in any particular interest group had no significant effect on the responses to the alternative timber harvesting options proposed.

Interesting patterns emerge among the commentaries of respondents regarding their favored treatments. A harvest option that was judged as highly acceptable by many respondents was the full retention, or no-harvest option.

It is very acceptable; it leaves open every single option for future management. If we decide at some future date that we have a totally acceptable way to manage or harvest wood from that 50 acres, we have left every option open to do that. [i6]

It is complete, is an intact ecosystem, and it has not been messed with. Which is what I am looking for in terms of maximizing my use and enjoyment with the Tongass. [i1]

Table 3—Mean evaluation of harvest treatments^a

Treatment	Number	Minimum	Maximum	Mean	Standard deviation
1 No harvest	21	1	5	4.10	1.58
2 Even moderate thinning between unharvested clumps	22	1	5	3.36	1.43
3 Evenly spaced light thinning across the unit	22	1	5	3.32	1.36
4 Full harvest of small clumps across the unit	22	1	5	3.00	1.27
5 Full harvest of small clumps with thinning on remainder	22	1	4	2.36	1.18
6 Full harvest with small clumps unharvested	22	1	5	2.59	1.40
7 Even heavy thinning	22	1	4	2.45	1.14
8 Clearcut	21	1	5	2.00	1.48

^aResponses were ordered on a 1 to 5 scale where 1 was “not at all acceptable” and 5 was “very acceptable.”

Table 4—Kruskal-Wallis test for differences in evaluation of treatments by type of informant

Treatment	Chi-square	Degrees of freedom	Significance
1 No harvest	10.756	8	0.216
2 Even moderate thinning between unharvested clumps	8.152	8	.419
3 Evenly spaced light thinning across the unit	8.309	8	.404
4 Full harvest of small clumps across the unit	6.274	8	.617
5 Full harvest of small clumps with thinning on remainder	6.066	8	.640
6 Full harvest with small clumps unharvested	6.352	8	.608
7 Even heavy thinning	7.056	8	.531
8 Clearcut	10.884	8	.208

On the other hand, some respondents objected to this pattern being included in the study because the southeast Alaska landscape commonly reflects “full retention” in areas where human development has not occurred, and the lack of treatment cannot fairly be considered an “alternative” harvest.

It is not acceptable at all. It is not even classified as a harvest treatment. [i22]

I would have to say not at all acceptable, because it is not logging and it is not solving any problems by not taking anything. [i11]

I don't think that is a valid question to not harvest any, because they are going to harvest. The reality is that there is going to be cutting. [i18]

Similarly, there were respondents that favored the clearcut as a very acceptable method. Nearly all were individuals that had a direct connection to the timber industry, and notwithstanding the understandable material benefits or operational efficiencies that these individuals could gain with clearcutting, these respondents insisted that clearcutting was the best method for managing the forest.

The problem with this whole picture to me is we're playing with a loaded deck. It's all overripe. It's just like going out into an apple orchard, which one should you pick first? You don't pick the green ones. You pick the overripe ones and then basically everything's overripe so you should be taking it all out so you can get a new stand started.... To me, they're basically all unacceptable except like where you're clearcutting it and taking everything out of it. [i25]

I am a die-hard clearcut man. [i27]

More germane to the intent of this study are the treatments that occupy the middle ground, where some intermediate level of harvest has been attempted under variable harvest patterns. Between the two levels of residual basal area, the 75 percent retention options appeared more favored than the 25 percent retention options. Several respondents commented on the importance of retaining a higher level of residual stand density than 25 percent, providing very different reasons for their judgments. Even within the 75 percent retention category, one of the treatments, treatment 4 with the full harvest of small clumps, appears to be less desirable than the other two 75 percent retention options. To explore these differences, however, it will be useful to frame the responses via the principles of social acceptability.

**Balance, Naturalness,
and Context Affect
Alternatives to
Clearcutting
Preferences**

The respondents that examined the eight optional treatments provided lengthy commentaries on the considerations affecting their judgments among the eight treatments. These commentaries have been organized around three of the “problems” identified by Shindler and others (2002) in understanding social acceptability. The first problem is the concept of “balance,” or tradeoffs that individuals contemplate when making a judgment on a particular option. This judgment is affected by the information provided, and as the following responses demonstrate, people took into account the summary of effects on the informational poster that accompanied the description of the eight treatments. As respondents evaluated these various treatments, their interpretation of the balance of effects, combined with the visual appearance as displayed in the poster's photograph of the treatment, were influential in coming to judgment. Shindler's (2002) description of the “balancing” problem has been revised in these results to include the

problem statement on visual judgment (combining problems 9 and 4). Thus, the organization of comments on the Hanus Bay treatments will reflect both visual interpretations and the cognitive reflections of respondents when considering the tradeoffs over multiple resource objectives.

The complexity in arriving at an acceptable strategy for timber harvest is highlighted by the Hanus Bay results. When looking at the six intermediate harvest treatments, people weighed several factors simultaneously and would sometimes reconsider their comments as they processed the information presented on the poster. They were able to cognitively embrace the idea of tradeoffs and would articulate multiple issues within a single response:

It is not acceptable if you want to log, but it is acceptable for the way it looks. You can't get it to look any nicer than that. Well, you can; you could get rid of all the dead stuff and it would be a new stand. [i27]

I would say, you know, visually it's somewhat acceptable. On the ground, I don't know. But my guess would be that it would be not acceptable in terms of its change to the forest structure.... If the structure does change significantly, I think then its going to have, absolutely have, significant impacts on diversity and fish and wildlife habitat. [i14]

What we haven't seen here is a major loss or degradation to the deer, fish, or plant biological diversity...it's not a real biological loss, but there is some visual loss, and that's why it's kind of like somewhat acceptable. [i20]

The harvest pattern that coupled unharvested clumps and a moderate level of thinning across the stand (treatment 2) was viewed relatively favorably by respondents. The limited visual impact and the high levels for fish, deer, and biodiversity over the long term affected people's evaluations:

I would say close to very acceptable. It looks like you get a pretty good level of volume and you get good protection for fish and wildlife and it's pretty good for biodiversity. [i5]

I like that. That looks all right to me. I would say, not being a biologist or whatever, I would say that was very acceptable just by looking at your chart there and the deer survival and the visual effect. [i15]

Treatment 3, which retained 75 percent of the stand by harvesting trees evenly across the entire unit, also was viewed favorably by many respondents. Like treatment 2, the visual impact was minimal and other resource characteristics were sustained over the long term. However, a few respondents were concerned that treating the entire area (instead of concentrating the harvest or leaving unharvested clumps), may create impacts that are not well understood. In addition, the harvest operation itself might be more difficult with the tight tree-spacing requirements for the residual stand.

I'm taking into consideration we've got an overall impact to the area. I don't have any little spots where it's unimpacted. It's all impacted. So I'm just a little worried about some of the fragile things—that maybe they are fungus, maybe they are mushrooms. [i27]

Damage has been spread out over the whole area now, and I am not sure that is best. Now I am thinking mainly for the animals, [the menu] says that it is okay...but I am not real trusting. [i12]

You have several different things you have to consider when you are cutting. First off, what to do with the tree to save the tree? Especially in thinning, how to keep from damaging the other tree. And how to get it out after you have got it down and bucked. You need a certain amount of space. [i26]

Of the three treatments that left 75 percent of the stand basal area (treatments 2, 3, and 4), respondents had the most comments about treatment 4, which left visual gaps of small clearcuts punctuating an otherwise unharvested stand. Visual impacts played strongly into people's negative comments about treatment 4, as did lower ratings for the long-term outlook for deer habitat. One person on viewing the photograph called treatment 4 "Swiss cheese."

First it is visually offensive. It just does not look right. You are getting about the same amount of board feet out as you are thinning the area [in treatment 3].... I would just as soon not answer questions about why there is little dots with no trees. [i2]

I see degradation in the mid- and long-term impacts on deer [in comparison] to the no-cut group of information. And, everything else is comparable with that. Your major degradation here is in your mid and long term on the deer, so I guess that plus the visual impact. [i1]

Flying over, I'd much rather not see bare spots like that because that's a microcosm of a clearcut. [i17]

Conversely, a few respondents liked the small openings left behind in the full harvest of small clumps under treatment 4 and preferred this method of harvest as it concentrated harvesting in small clumps instead of spreading it out across the area (such as treatments 3, where 75 percent is retained, but the entire unit is affected). It also produced the greatest amount of timber of the three 75 percent retention options (treatment 4 yielded 253 thousand board feet (MBF), where treatment 2 produced 214 MBF and treatment 3 produced 201 MBF).

If you can get more board feet and less damage, then that's probably the better way to go. [i18]

We could have left big pockets of yellow cedar ready that are eligible for harvesting (for the future)...you know that kind of cutting where it's splotches would be quite acceptable with the harvesting I do, because I'm not going to kill that tree.... I find those smaller clearcut areas tend to keep the continuity, the structure that is there.... [i27]

I think number [treatment] 4 is acceptable, mainly because [harvests are] small enough that the animals can get around and they can find—there's still habitat there. If you have to harvest something, it seems it'd be a lot more manageable situation for the animals. [i6]

For many respondents, the harvests that left only 25 percent retention did not seem to balance important forest attributes as well as the 75 percent retention harvest patterns. Although respondents acknowledged a higher level of timber volume and the ability to concentrate activities (see the contextual factors below), there were still other characteristics that did not outweigh those consequences perceived as negative. Comments on the acceptability of treatments 5, 6, and 7 reflect both visual concerns and worries about higher anticipated levels of erosion, residual stand damage, and long-term deer and fish productivity.

Cut 75 percent of 55 acres? Yeah, well, that's a lot.... To me it looks like a sacrifice area. [i15]

Visually it's hosed. We're getting low and mid yield on deer. We're getting complete degradation of the fish from high to medium. Plants' biological diversity seems to have some disruption as well. [i20]

Your fish subsistence levels drop from high to medium. Your deer subsistence, while it's good in the short term, goes downhill.... And I see a lot of potential for runoff, for just all kinds of mess problems. [i12]

It is not acceptable [because of] the erosion. Even though they did leave some trees, it is just too open. [i9]

I would find it not acceptable, because you get a lot of board feet, and the impact on the deer and the fish really is not that much, but the damage to the trees around it, it looks like it is pretty high. Maybe in the long run a lot of those trees would not survive because the damage is too great. [i11]

But it is just an eyesore too, and look at your deer: short-term, high and the mid-term and long-term, low. You dropped your fish down to medium. Not worth it to me. I obviously see that on these [75 percent harvest treatments] you are starting to take out four times as many board feet of wood. Not worth it to me. [i2]

In addition, some of the experienced loggers were very concerned about blowdown in areas where only 25 percent of the basal area remained.

If anything else, the more you open it up, the more you are going to have problems.... Anyplace you get this thinned down like you got here and leave 25 percent, this is going to blow down. [i25]

Conversely, a few respondents approved of the 25 percent retention, thinking that even though the visual result was not as acceptable, other factors were more important.

You know, it's [treatment 7] not as nice to look at as treatment 2 or 3, but you do get a lot of board feet out of it with fairly minimal damage.... I mean, you want it to stay beautiful, but you want to meet the people's needs.... [i18]

I think that's a waste of time and effort to cut 25 percent of 40 acres and leave all the rest there, unless you are high-grading.... I would be more comfortable with leaving enough there for the wildlife to survive, and [cutting] maybe 75 percent. If you're an economic company, 75 percent makes sense. [i23]

Responses of southeast Alaskans about the relative acceptability of intermediate harvest treatments demonstrate a diversity of internal weighting mechanisms about the consequences of timber harvests. Yet this balancing of stand-level effects is tempered by other judgment mechanisms, most notably people's considerations of "natural" conditions and the context in which the harvests take place.

Perceptions differ about "natural conditions"—The importance of natural characteristics to the residents of southeast Alaska cannot be overstated. Respondents frequently discussed their connection to the land and the importance of a high-quality environment, and several respondents extended the concept of "natural" to include the pattern of human relations to the forest.

The natural environment. Here, the ecosystem, the mountains, fjords, and the waterways are a special place in North America. [This is what] has kept me here and was the principal reason for coming here in the first place. This was never an economic decision to move here. I moved here specifically for the ecosystem and the lifestyle that the Pacific Northwest coast offered. [i1]

When you listen to elderly people or church people they talk about Noah's Ark. I view southeast Alaska as Noah's Ark, in that maybe the people who live here never really got off the Ark, that they are still here and this land still provides for us. That is how I view southeast Alaska, as Noah's Ark. [j9]

The consideration for what is "natural" in the forest affected people's evaluations of the various treatments. Among the three treatments that retained 75 percent of the stand basal area, treatment 4 received the most negative comments, partly because the visual impact of the small harvested clumps seemed "unnatural."

I do not like that. You can see it, the blotches, those are not natural. It is just that you can see it. [i14]

The three treatments that sustained only 25 percent of the basal area also were criticized by respondents as not reflecting a natural look, especially treatment 7 with its evenly spaced, heavy thinning.

Number [treatment] 5 is much more random. If you went by there pretty quickly in a skiff you could easily mistake it for, you know, kind of a mix muskeg, wetland forest landscape that is pretty common around here. Whereas number [treatment] 7 definitely does not look like anything that I've ever seen on the Tongass. [i19]

On the other hand, a few respondents felt that the closer to a clearcut pattern of harvest, the better, because that type of treatment was the most consistent with common disturbances or the manner in which timber stands could be the most effectively treated. This operational view of "natural" strongly influenced their responses.

I basically do not find any of those [treatments] acceptable at all, except for clearcutting. We have worked around it, we have experimented here and there, up here with patches of wood here, and patches of wood there...there is a lot of foolishness going on. [i22]

When I am looking at the condition of the timber and the condition of the land here, and how the timber comes back—I think the total clearcut is by far the best option, even whether you did it with a helicopter or high lead, I still think it is the best option. [i23]

The strong support among respondents for treatment 1, where no harvest occurred, also related to a sense that the best way to treat the forest for the long term was to leave it intact, to sustain what had been perceived over time as a natural condition.

The selling point for people coming here is the fact that it is not like any other place in terms of still being somewhat intact as habitat and wilderness. The more we lose from that, the more we are going to lose those opportunities. [i8]

The perceptions of naturalness also extend beyond the sentiments of the respondents of southeast Alaska; one respondent who guides visitors recognized that his income depends on visitors who expect to see a wild Alaska. The judgments of this person are affected by what his customers view as valuable, and thus, he considered the no-harvest option (treatment 1) as the most desirable.

You have a healthy ecosystem for deer and fish, that leads to an area I want to recreate in, and I could take people to professionally as a guide, or book trips too, as a business owner [i2].

Conversely, another respondent felt that a “natural connection” to the land included harvesting trees, and that some type of treatment would be necessary to sustain the character of southeastern Alaska communities.

One of the biggest problems I think that we have as a culture is our separation from that natural connection, and I think harvesting in the forest is a direct contact that is really valuable for not only people that actually go into the woods but for the rest of the community. So as many of those connections as we can have—direct connections to the land, the better I think that is. The healthier kind of social situation it is, the healthier community situation it is. [i6]

Contextual aspects of timber treatments include spatial, temporal, and social dimensions—When responding to the acceptability of any of the given treatments, informants frequently advanced other issues of concern that revolved around the physical or institutional context in which these harvest units were proposed. Even in a small area like Hanus Bay, there is enough diversity in physiographic features to allow for slope position, slope percentage, or adjacent stand conditions to influence what had been intended to be a stand-level analysis. Informants in this study frequently mentioned a series of contextual elements that affect the acceptability of a harvest operation. Many of these elements can be grouped under two broad categories: (1) the location and extent, or scale, of the harvest operation and (2) the link between harvest and community well-being and lifestyles.

Harvest location and scale of operation—Both the location and the scale of harvest operations incorporate other issues of great salience to forest management: adjacent land use, cumulative effects, potential for ecological deterioration, the political forces that prevent harvests in popular places, economic feasibility, and the effect on ecological processes. A simple focus on stand-level patterns may miss the pressing issues affecting people’s judgments. Potential for cumulative effects, that combination of past and adjacent land use histories, affects an evaluation of a particular treatment.

It may be one thing to impose a rather intensive harvest treatment in an undisturbed watershed, but the same treatment may have different aggregate effects in a situation where a dramatic human presence already exists. Even in evaluating the Hanus Bay treatments, people were thinking more broadly.

If there [are] some places that are less valuable than others, those are places where I could handle a little more activity, a little more intense development. [i5]

I could see it not being acceptable if it was the whole [watershed], if there was a huge area. But if it was in the middle of an area where there [were] not other harvests. The visual damage seems pretty significant, but from the context, if it was only a few of these in a big block, that would not be as significant. [i21]

But when a [Forest Service clearcut] is right adjacent to [a native clearcut], that is unacceptable, and [to have the Forest Service say] we did not do that and stand behind their philosophy and their respect for the community. But you get cumulative effects. [i25]

Proportionally there is not that much that has not been cut there, so probably that is the way it should remain. If it is going to be managed for a balance at all, the balance has already been blown.... Yeah, context is important in every one of those [experimental treatments].... If you are going to say, okay, we will do treatment 3 on only those 47 acres and the rest of the watershed will be intact, then that is different than doing treatment 4 on an entire watershed. [i16]

Also, many areas within the southeastern Alaska landscape have highly productive capacities for other valued resources, such as fish, deer, bear, or moose. Some locations are protected for their scenic character, and visitors may not appreciate harvest operations in full view of these valued locations. One respondent recognized the unique characteristics of some watersheds.

I feel like every watershed is a little bit different too. When you mentioned at one point that what if it [a treatment] did not have any salmon streams. Well, that makes it a little bit different watershed. What if it has a couple of salmon runs that are on the brink. That makes it different again the other way. Maybe you need to stay out of one, and be a little more in another then. [i2]

Even site-specific considerations can affect a judgment of acceptability. One respondent did not have a favorable impression about one of the Hanus Bay treatments, not because of the harvest pattern, but because of the lay of the land:

I can tell you, you should not be here in the first place because it is too steep. You can see here, they cut here, and that is too steep. And when you cut too steep a bank, it takes a long time if ever to come back, because it keeps, every once in a while, it keeps washing back out again. [i20]

The placement of a harvest unit on a hillside can make a difference to some people, especially if an improper placement negatively affects another resource that people wish to sustain. With the attention that people give to subsistence resources in Alaska, harvest patterns, the intensity of harvest, and unit locations will need to complement the annual survival needs of important subsistence species such as deer.

You see when you talk about deer mortality, it depends on where these cuts are...down low, your deer cannot survive that [cut] in the winter time. It would make for good grazing up high in the summer, but [the deer] need to have old-growth down low in the winter time. It would be somewhat acceptable up high and not at all acceptable down low. [i25]

It also depends on what plants are in that area or what animals are in that area. I think an area where you don't have a lot of fish streams and you maybe have some steep grading, something between 75 percent [of timber harvested] and up would be okay. [i16]

The acceptability of timber operations also is influenced by the issue of scale from both spatial and temporal dimensions. In terms of spatial distribution, people are quite aware of the extensiveness of harvests in certain locations, and the complete absence of harvests in others. People also recognize that forests are a dynamic resource, requiring time to grow through stages of development from a seedling to an old-growth tree. Thus, judgments about a timber harvest treatment are affected by how the pattern will be played out on the landscape for a long period. Responses to the questions about preferred harvest treatments portrayed careful attention to long-term impacts on fish and deer productivity. The comment below identifies how a respondent had to consider the interaction of space and time when making a judgment:

I'm thinking more in terms of dimensions instead of area. And if that kind of approach is used, I think it's really important that the openings be no bigger than a tree height so that trees can fall across it from the fringe and reestablish large woody debris on the forest floor. And the other thing that comes in very importantly here...is your rotation. Without knowing that, it's really hard to answer the question. I think it needs to be very long. And basically, the idea is to build up large woody debris and maybe, you know, provide a few additional openings that weren't there, but I wouldn't want to see this applied on a wide scale. It might be appropriate on a small scale in a few places, as long as the openings are small. [i8]

The context also includes place-specific considerations, those things that characterize the meaning and value of place to a particular individual.

Hanus Bay is a lot more than just a logging area. It has got that lake (Lake Eva), and then all of that good fishing. [i20]

There [are] different areas that have special meaning to you, and part of it is just the experience you have had there, what you have seen and what animal encounters you have. And other places just really move you because of their intrinsic value, you know, you either get it or you don't. [i16]

The context also may be affected by other historical, social, or political factors. One observer recognized that some places are not going to be affected by timber harvests because of their political clout.

The problem that I am having with logging is that the bigger communities are forcing logging towards us, like Sitka. Then there is no logging at all in Juneau; so all the logging gets pushed off on the smaller communities. It is like, do not

log in my backyard...the Forest Service employees have to live within their community, and they get a lot of pressure to do that. I do not mind if they log, but I guess I feel like everybody else, not in my back yard. [i19]

Community well-being and lifestyles—A special consideration for nearly all respondents was the effect of harvesting on the lifestyles of residents and the communities in which they live. Because timber operators in southeast Alaska possess a strong sense of occupational identity, and the economic flows from timber harvesting have contributed to labor income, the judgment of people on the acceptability of a harvest treatment cannot be segregated from the perceived contributions of the treatment to people's lifestyles and livelihoods.

The lifestyle of southeast Alaskans is cherished in many ways, and it is described repeatedly as a key interest among the study respondents. Although not all southeast Alaskans embrace a single lifestyle, there is a respect for some of the unique features that accompany residence in Alaska, and even if a person's occupation might change, there remains an attachment to the character of Alaskan living.

I have done everything, I have worked in the cannery, I have fished, but I have never been a logger. It is the lifestyle. That is the reason we live here now; I could live anyplace. I am a retired worker, did fairly well, I do good in the stock market...and I told them, well, what if you could retire your whole life? [i20]

Part of the lifestyle of southeast Alaskans is the utilization of subsistence resources. The isolation of the area, the quality of the natural environment, and the abundance of natural resources provide a deep sense of security and satisfaction.

I think the subsistence lifestyle. Yeah, I think that is really imperative. The quality of life we have because of the natural resources around us are just really a treat, and I am fortunate enough that I have a lifestyle and livelihood that I have a real intimate relationship with the plants, primarily spruce and the cedar and some of the ferns and grass, those kinds of things. [i10]

My whole life revolves around Chatham Straits, Peril Straits, and deer hunting and fishing and guiding. I am real comfortable and I know the area, and I know how to catch fish and I know the history of many of the areas because of my profession and because of my father and my mother. [i18]

You look around you and you say this guy is not a subsistence fisherman, but I am. I am a subsistence hunter, because that is what I do. If I could not hunt in the fall, my fishing season only lasts four months out of the year. What is a person going to do for the rest of the time? You go out and you hunt, otherwise you might as well move to Arizona and go golfing or something. This is my life. [i25]

There is also the recognition of the need to balance uses within the forest to sustain communities. Although many respondents to the proposed treatments at Hanus Bay found the full retention (no-harvest) option to be acceptable, there were reservations within this acceptance that a "hands-off" relation with the forest was not realistic. The size and value of the resources were observed by some to be of such magnitude that they could not be ignored. Several of these respondents recognized the role that timber harvesting can play within the region, especially its contribution to economic diversity and the vitality of their communities.

I think the Tongass is vast, so I think that there has to be some economic opportunity there. I am not against timber—I am not against the timber industry.... So I think there is an opportunity to make it an economic factor in the economy of southeast Alaska and continue to harvest timber, but do it in a responsible manner. [i4]

I think that I like the fact that people are able to make a living from the forest harvesting wood.... I think there are benefits to diversified communities; diversified economies in communities and the fact that people are intimately engaged through their work in the forest is really important to me. It is like my taking subsistence fish and deer from the forest. If there are people in my community that depend on taking trees from the forest for their living, I think that helps build stronger communities and it helps build the community's understanding that they rely on a healthy forest and a healthy ecosystem. I think that is really important for us. [i6]

I have mixed feelings. On the one hand I think there is a need for [logging]. I think that the Tongass can make a contribution to local economies, and so I support the idea of an appropriate scale of logging.... I would like to think that a healthy economy in southeast Alaska requires a natural resource that can be harvested, can be used. [i21]

Timber harvesting also was identified as a foundation of community infrastructure. The effects of the revenue generated from harvesting operations and the available personal income have made many types of community services and facilities possible. An acceptability judgment of a timber harvest can be bound with the realization that the financial resources from the timber sale can affect highly valued services in the towns where people live.

All of the infrastructure. I do not think you can alienate any of it even in a community that is not active in the timber industry, whether it be the money that comes in from the stumpage or whether it is peripherals having to do with logging camps nearby. I think it is a very big part of the economy...you need to have that give and take for the health of the community. Again, even though it is uncomfortable because they are not all—we are not all loggers and we are not all environmentalists, but we have to live together. But it is just exactly that diversity that is going to be our strength. I think we have to have some logging. [i10]

People also recognized themselves as consumers of wood products and participants in economic activity on a scale much larger than their own communities. Although the subsistence lifestyles and environmental qualities of life in southeast Alaska were commonly emphasized, the role of the region in providing consumer goods has not been lost on residents. These realizations of the complexity of the situation set up a series of crosscurrents in people's judgments, revealing the sophistication of individual evaluations and the potential dynamism in how these evaluations are made.

I started out being real antilogging, because you look at these areas where they have logged, and it is real hard on the eyes. But then I realized myself, you know, I kind of felt like I was being hypocritical because I see all this logging and it upsets me, yet I live in a wood house, and I use paper all the time.

And even though I know that there are alternatives to clearcutting, no one ever wants to pay the price. If that would mean like a price increase per sheet of paper or whatever, nobody ever wants to pay. You grumble if a board goes up 5 cents, so I really do not know where I stand anymore. It is kind of complicated. [i11]

The context of timber harvest also includes what are perceived to be advances in the way that forests are managed—that we have learned collectively over time not to make harmful mistakes in treating forests. The large-scale clearcuts of the past resonate in people's memories and are still apparent in many locations. There is a sense that timber harvesting could be done much better in the future.

I would like to see it maintain its old-growth characteristic as much as possible but still allow a sustainable level of timber harvest. I am not opposed to timber harvest. I worked in the woods for years. I do think that the forest was mismanaged for many years. Under the long-term contracts, I think they were cutting...high-volume old growth and they were cutting at a level that cannot be sustained over the long term. So I am happy to see them attempting some of these alternatives to clearcutting. [i19]

I think that they have to be more selective and more careful than they were 20 years ago when they came in and clearcut a lot of areas. These were not issues back then, and they are now and they should be. [i4]

In general I am in favor of a level of activity. I am not in favor of the previous level of activity where they were logging 400 million feet a year, 300, 400 million feet a year, I think, is too much. [i13]

There is not complete agreement among respondents, however, that timber harvesting is the only path to a sustainable community. All respondents made reference to their desire to sustain healthy communities, but as the following comment reflects, other economic opportunities may be more valuable.

So the forest has a lot of values jobwise, but not always in cutting trees down. We need to look ahead. Economics change over time. As is well known, ours is changing more towards tourism at present. [i8]

Some respondents considered the manner in which benefits are distributed to be an important factor in determining how and where timber is harvested. Several respondents identified a clear local preference for benefits, and this might even affect how timber is harvested and the scale of the operations. Even if tourism replaces timber harvesting completely as a form of revenue generation, there is skepticism about how the industry will be structured, and whether or not it will actually benefit small communities.

The other thing I am worried about with tourism is it is starting to look like old timber, which is really centralized and it is very...and it is dominated by big companies. You know, I mean we have always advocated for, small-scale, high value-added, locally owned timber processing and you would like to see some of that happen in tourism. And I think the trend is going away from that. That is disturbing. Cause I think that actually hurts community stability over the long term. [i5]

My thinking in terms of the ideal, which I do not think is realized very often, more historically than now, but the idea of using some of those resources to create local jobs and local employment and local business, to me that is valuable. [i21]

Respondents emphasized that the quality of their community life was associated strongly with what occurs within the forest. The fact that communities are embedded in the forest in southeast Alaska highlights the importance of these broader contextual factors in making judgments about the acceptability of timber harvest practices.

Discussion

The major findings of this study are not that residents favor one harvest treatment over another but that deeper concerns about the vitality of the forest and their communities influence judgments.

Responses of southeast Alaskans demonstrate that people make complex assessments when evaluating the acceptability of a forest management practice. They care about how something appears from a visual standpoint, but they also weigh multiple tradeoffs that include considerations about what may be right for both nature and human communities. Perhaps most importantly, the contextual attributes of a timber harvest have a strong bearing on people's judgments, and the location of the harvest as well as its potential to sustain desirable community attributes can frequently outweigh other factors that might, in other contexts, prove to be more decisive. Special features of the southeast Alaska setting, such as subsistence uses of fish and deer populations, identify how specific attributes of a situation can affect considerations of acceptability.

The work of Shindler and others (2002) has proved useful in providing a framework to understand the dimensions of social acceptability. The respondents in southeast Alaska demonstrate that outcomes are evaluated on the basis of four of the problems that have been identified—visual character, balance, perceived naturalness, and the context of the operation.

The capacity to support multiple values remains a powerful principle in the management of public forests, and the evidence presented by residents of southeast Alaska reinforces the significance of balanced use.

The tradeoff there or the balancing act is how you balance tourism and how you balance the timber industry within that scope or within that idealist type of idea of what you like about the Tongass. I like to think that there are ways to be able to balance the use of the Tongass through tourism as well as through timber harvest and the timber industry. You know, everyone's opinion will vary on how much should be happening in the Tongass. I think there can be a balance that can be struck. I do not know what that is, but hopefully there is a balance. [i4]

Like I said, I am not totally against logging. I just would like to find out some way that we can both log and preserve the forest at the same time, and maybe that is what we do. [i9]

No matter how new harvest patterns are applied, they will need to address important contextual issues, regarding cumulative effects, the impact on unique resources, the location and extent of harvest operations, and the effect on subsistence resources.

This latter consideration seems to carry particular weight in Alaska, as the importance of subsistence harvests to the resident population recurs in both narrative comments and the relative ranking of consequences of harvest. Further, sustaining lifestyles is a key interest among residents of southeast Alaska. The amount of timber that is harvested plays a role in sustaining these lifestyles, by providing important income, skills, and infrastructure in a remote, highly interdependent set of rural communities. Any management intervention on the Tongass National Forest will require careful and repeated observation of its effects on the well-being of these existing settlements. Although this implies a quite complex analysis prior to harvest scheduling and design, there is a belief among residents that it can be done right.

I think it can be done right. I do not want to come out and say that there should not be any [harvests]. But there [are] ways they can do it. I know they have done selective logging in areas that we used to fly over with clients and where I walked in those areas and seen the stumps and seen the trees down, but when you flew over, you could not even tell they were there. [i2]

In addition, the social acceptability of the adoption of new types of timber management practices is caught up in a much larger set of issues that are under continual evaluation as people observe the management of the Tongass National Forest. Timber harvesting cannot be separated from other important social and economic trends, or the patterns by which economic institutions regulate their business and investment decisions. Historical uses of the forest and perceived past abuses are too recent to have been forgotten by southeast Alaskan residents, and alternative timber harvesting approaches may be viewed with some skepticism for a considerable period.

Support among respondents for the full retention, or no-harvest, option cannot be ignored. The justification for harvesting timber needs to be clear. Alternative management technologies and practices do not have highly predictable outcomes—perhaps they could create unforeseen impacts or the extensive “blowdown” predicted by a few informants. The support for no harvest could portray a desire to be cautious about the future and to make sure that adequate research on resource impacts is carried out.

It is possible that an “ideal” harvest treatment was not presented to respondents in this study, especially when one considers the small number of treatment options included at Hanus Bay. A few respondents asked why a 50-percent harvest level was not included as an option. Although it appears that treatment option nos. 2, 3, and 4, which allow a moderate amount of harvest coupled with minimal disturbance to other resources, are more acceptable than others, there are still people that disagree about the appropriate pattern and intensity of harvest.

A single, optimal type of timber harvest treatment for the Tongass National Forest does not appear to be a viable goal for attaining social support among the residents of southeast Alaska. Timber harvest occurs within a complex geographic and social context in which timber output is but one consideration. Rather, managers of the Tongass National Forest will be forced to consider the setting, prior land use history, and the potential beneficiaries of the harvest operation. People’s interests are not singular, and the sophistication necessary to address the multiple demands and concerns of even a local population will require more than a “cookie-cutter” approach to harvest patterns. In addition, those elements of social acceptability not examined in this report—the multiple aspects of decisionmaking processes—will have as significant an impact on acceptability as the various potential outcomes. These elements, such as the procedures to identify problems, the role of science, and the explication of risks, will remain

important in public acceptance of harvest operations on the Tongass National Forest, but they represent a separate, more administrative dimension that could not be addressed in the scope of this study.

It is difficult to imagine a place where any forest is more thoroughly interwoven into the fabric of everyday life than it is in southeast Alaska. Resolving the use of the forest is resolving a large share of people's vital concerns.

The forest is what sustains life here in southeast. And in one respect or another, it all comes down to the forest whether you are a fisherman, a hunter, a tour guide, or a logger. Southeast is the [Tongass] National Forest, it is us, we are them. [i13]

Balancing uses on the Tongass National Forest may include the harvest of timber, and a necessary task of land managers will be to design these harvests with full consideration of other procedural and contextual attributes. Southeast Alaska residents concur that the forest is important in their lives, allowing occupations and lifestyles to persist and sustaining desirable, day-to-day rhythms of rural community life. Any harvest treatment on the Tongass National Forest will likely yield both desirable and undesirable outcomes, making decisions about "acceptable harvests" more of an art than a science.

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This work was part of Jeff Miller's Master's thesis at the University of Montana.

Metric Equivalentents

When you know:	Multiply:	To get:
Acres	.405	Hectares
Miles	1.61	Kilometers

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Appendix 1

Table 5—Alternative harvest treatments on the Tongass National Forest

Harvest treatments	Timber	Deer productivity^a	Fish productivity^a	Biological diversity^a
Photo treatment 1: Cut 0% of 50 acres	Board feet = 0 Residual damage = 0%	Short = high Mid = high Long = high	Short = high Mid = high Long = high	Short = medium Mid = medium Long = medium
Photo treatment 2: Cut 25% of 50 acres	Board feet = 213,990 Residual damage = 5.9%	Short = high Mid = high Long = high	Short = high Mid = high Long = high	Short = medium Mid = medium Long = medium
Photo treatment 3: Cut 25% of 47 acres	Board feet = 201,180 Residual damage = 4.3%	Short = high Mid = high Long = high	Short = high Mid = high Long = high	Short = medium Mid = medium Long = medium
Photo treatment 4: Cut 25% of 46 acres	Board feet = 253,260 Residual damage = 3.8%	Short = high Mid = medium Long = medium	Short = high Mid = high Long = high	Short = high Mid = medium Long = medium
Photo treatment 5: Cut 75% of 55 acres	Board feet = 818,330 Residual damage = 19.2%	Short = high Mid = low Long = medium	Short = medium Mid = medium Long = medium	Short = high Mid = medium Long = medium
Photo treatment 6: Cut 75% of 54 acres	Board feet = 792,000 Residual damage = 5.6%	Short = high Mid = medium Long = medium	Short = medium Mid = medium Long = medium	Short = high Mid = medium Long = medium
Photo treatment 7: Cut 75% of 46 acres	Board feet = 740,230 Residual damage = 8.2%	Short = high Mid = low Long = low	Short = medium Mid = medium Long = medium	Short = high Mid = medium Long = medium
Photo treatment 8: Cut 100% of 48 acres	Board feet = 978,000 Residual damage = 0%	Short = high Mid = low Long = low	Short = medium Mid = low Long = low	Short = medium Mid = low Long = low

Appendix 2

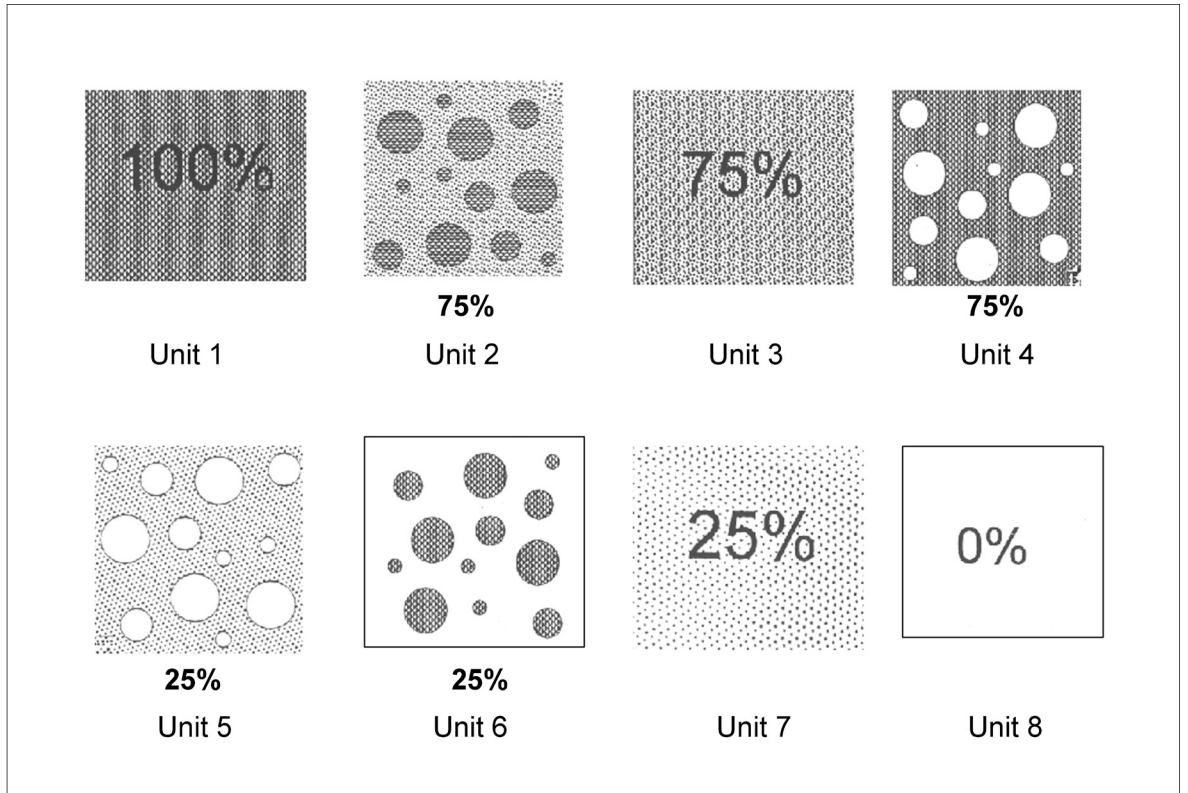


Figure 1—Treatment patterns and percentage of basal area retention at Hanus Bay.

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