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Public attitudes toward sustainable forest management: Opinions from forest-dependent communities in British Columbia

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Abstract

Although public participation is a requirement of sustainable forest management (SFM), it can be difficult for forest managers to obtain broad levels of representation through traditional public participation mechanisms, such as open houses, information sessions, and public advisory groups (PAGs). Some of the difficulties stem from barriers to participation, (e.g., knowledge, time availability, accessibility, and household income). There is a need for social science tools, such as public opinion surveys, to complement existing approaches by soliciting the attitudes, beliefs, and perceptions of broad sections of the public: getting closer to "the silent majority." We examine the opinions of residents of nine forest-dependent communities in British Columbia to better understand attitudes toward public participation in forest management decision making, beliefs about SFM and the appropriateness of certain trade-offs, and perceptions of the role of forest managers. Results suggest a need to develop better methods of engaging and communicating with people beyond the PAGs; to increase the public's knowledge of SFM; and to increase trust in forest companies as stewards of the forest.

KEYWORDS: *human dimensions, public advisory groups, public opinion surveys, public participation, sustainable forest management.*

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Introduction

For years, there has been an expectation that the management of forest lands in British Columbia addresses multiple values. The recognition of the value of forests (e.g., quality of life, biological services, and non-timber values) has been formalized through provincial legislation and forest certification frameworks. In recent years, the management of multiple forest values has typically been framed in terms of sustainable forest management (SFM).

The shift in focus from timber to a broader range of values (McFarlane and Boxall 2000) makes the representation of public interests, needs, and desires an important consideration in forest management decision making. Generally, the "public" refers to everyone (e.g., all British Columbians); however, Beckley et al. (2006) argue that there are in fact multiple "publics" that are typically categorized by their interests (i.e., stakes). These stakeholders have identifiable concerns about, or issues with, aspects of forest management, and may include local and non-local people. However, it is important to note that First Nations are distinct from stakeholders as they have formal rights and interests that have been recognized at national and international scales (Stevenson and Webb 2003). In British Columbia, these rights and interests have been formalized through a commitment that land use decisions involving the province and First Nations will be pursued in the context of government-to-government negotiations (British Columbia Ministry of Agriculture Integrated Land Management Bureau 2006).

The role of public participation in regional land use planning initiatives in British Columbia became formalized, first through the Commission on Resources and the Environment (CORE), and then through Land and Resource Management Plans (LRMP). Public participation has become a critical aspect of SFM (Canadian Council of Forest Ministers 2000; Hunt and Haider 2001; Sheppard and Achiam 2004). Importantly, "… an informed, aware and participatory public is indispensable to promoting the sustainable management of forests" (Montreal Process Working Group 1999:2).

The forest industry's adoption of certification frameworks, such as the Canadian Standards Association (CSA) and the Forest Stewardship Council (FSC), has changed how land use planning is practiced on forest tenures. Sustainable forest management plans developed under these frameworks recognize the role of non-timber products and amenity values (e.g., outdoor recreation, aesthetics, or botanical products), and surpass existing regulatory requirements that incorporate public participation in the development of criteria and indicators of SFM (e.g., Montreal Process Working Group 1999; Jeakins et al. 2006). Sustainable forest management plans also articulate strategies for monitoring management practices to ensure that sustainability requirements are met (Canadian Standards Association 2002; Forest Stewardship Council Canada Working Group 2004).

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Many SFM certification frameworks provide mechanisms for discussions about the distribution and management of forest resources and amenities through organized public advisory groups (PAGs) that are meant to represent public interests. PAGs are citizen committees that seek broad-based representation from the local community to provide comments on local forest management plans and to address issues of concern to the general public. PAGs provide opportunities for ongoing dialogue between public representatives and laypeople, research managers, and the scientific community (Parkins 2002). Despite these opportunities for participation, it is not clear whether the issues, concerns, and opinions of the wider public are being heard or adequately represented at forest land use planning tables (Parkins 2002).

It is important to recognize that forest planning occurs at different levels and, as a result, different intensities of public participation may be appropriate. Regional or strategic-level planning creates broad goals and objectives, and typically involves stakeholder groups and members of the general public, as in the development of land and resource management plans. Tactical-level planning typically occurs at the operational scale and can require

specialized information, some of which can be provided by forest certification PAGs (Jeakins et al. 2006). However, while the number of forest certification PAGs has increased dramatically over the past decade, and although the public holds the legal right to comment on proposed harvesting and road-building plans, there are as yet few formal processes in place to obtain broad public input at a community level in British Columbia.

The British Columbia Sustainable Forest Management Public Opinion Survey represents a tactical approach to determine what the opinions and priorities of the public are at the community level. The survey consisted of twelve sections that asked more than 225 discrete questions on the overall SFM approach, species at risk protection and recovery, climate change, and outdoor recreation participation.

This paper examines the results of a subset of the questions asked of residents in nine forest-dependent communities on various aspects of SFM.[1] These communities were not randomly selected. They were communities where Canadian Forest Products Ltd. (Canfor), the study's proponent, had operations. The communities included Fort Nelson, Fort St. James, Fort St. John, Houston, Mackenzie, Prince George, Quesnel, Radium Hot Springs/Invermere[2], and Vanderhoof. The survey was initiated to inform the PAGs in these communities of local and regional opinions and beliefs about SFM. The intent was that the PAG members could better understand and represent community interests on a range of issues critical to forest management. This project sought to improve how PAGs deliberate SFM issues and address appropriate forest management practices in and near their communities by providing current information about the attitudes, opinions, and preferences of local residents.

To provide further context for this study, a review of literature examines previous studies of public participation in SFM, democratic concepts in public participation, and approaches to public participation.

Literature review

Previous studies on public participation in SFM

In a household survey assessing public familiarity with resource planning processes in British Columbia, Halseth and Booth (2003) found that that less than one-quarter of respondents had attended a local planning meeting, and that the most common form of communication about these planning processes were media reports (i.e., local newspapers and newsletters). Respondents felt the communication methods used to keep the public informed about land use planning processes needed improvement. Planning process participants suggested an increase in flow of information, provisions for understandable information for planning table participants, and the adoption of a broader array of mechanisms to communicate with the general public.

Sheppard et al. (2006) in a mail survey in the Kootenays found that respondents' overall satisfaction with the management of forest resources was moderate and generally lower than both their knowledge of these forest resources and the importance placed on them. They also found that just more than two in five respondents had ever attended a public meeting in the five years prior to participating in the survey. These results suggest that surveys can capture opinions that may not have otherwise been expressed.

A provincial survey of forest values and concerns about forest management in British Columbia indicated that foresters have less diverse and weaker social ties (i.e., relationships with people in a variety of different careers and backgrounds) than non-foresters. Consequently their social identities and set of forest values are not as diverse as those who have broader, stronger social ties (Harshaw and Tindall 2005). This suggests that incorporating a broad cross section of stakeholders into decision making is essential for addressing a broad range of social values.

Williams et al. (1998:861) claim "BC has been the site of some of the most contentious land use conflicts in Canada's history." During this contentious period (encompassing the 1980s and mid-1990s), environmental interests gained prominence over the forest industry's hold on the framing of forest land use through media and market campaigns that resulted in what has been characterized as the "war in the woods." Evidence of

[1] A report synthesizing the results of the nine communities for all questions can be found at *www.sfm-pos.ca/SFM-POS_reports.html*

[2] Invermere was the initial community of interest due to the large role that forestry plays in that community. However, due to increasing pressures on forestry from recreation and tourism in the area, the adjacent community of Radium Hot Springs was incorporated into the sample to reflect the broader regional context of Invermere.

this conflict included protracted court actions; public demonstrations; acts of sabotage of logging equipment; economic boycotts of forest products; public conflicts between conservationists and industrial interests; and legal battles over native land claims and wilderness protection, such as Clayoquot Sound, the Stein Valley, and Gwaii Haanas (Wilson 1998). A result of these conflicts was uncertainty (Williams et al. 1998). Uncertainties about strategic directions of land use plans and requirements for practice made it difficult for the forestry industry to attract investment. Penrose et al. (1998) suggest four reasons why these land use conflicts had escalated: 1) a lack of co-ordination between provincial government ministries; 2) an institutional framework that was driven by economic interests; 3) a lack of stakeholders' trust in land use managers; and 4) a lack of understanding among stakeholders about how land use decisions were made. Day et al. (2003) suggest that a lack of opportunities for the public to participate contributed to the public's mistrust of centralized decision making in British Columbia.

One common mechanism for formalizing the role of public participation in forest management decision making has been the PAG (Beckley et al. 2006), which has been characterized as the "primary mode of public participation in forest management decision making" (Parkins 2002:181). Although their members are drawn from local communities, PAG members are not necessarily representative of the public, differing in demographic characteristics and spatial distribution (Parkins 2002). Additionally, not every public interest is represented on PAGs, only those that are related most directly to forests or forestry (Jeakins 2008). Although stakeholder groups (i.e., constituencies) typically share a common characteristic (e.g., they are all union members or they all pursue motorized recreation, etc.), they are not necessarily homogenous in their opinions, desires, or concerns. One of the difficulties facing PAGs is that their members must be able to represent multiple interests, concerns and values, yet information (and perhaps knowledge) about the characteristics of these interests is not generally available.

Driven by market forces influenced by the organized environmental lobby, forest certification has become a significant influence on forestry practices in British Columbia, with standards being adopted by forestry companies that seek third party verification that their management and operational practices are ecologically and socially sustainable (Cashore et al. 2001). Public participation is a requirement of CSA certification, due in part to the recognition of the high degree of public ownership of Canadian forests, and the public's subsequent right to help determine planning outcomes on public land through the development of indicators, targets, and thresholds. The CSA Z809 standard requires that any organization pursuing CSA's SFM certification standard establish and implement a public participation process that seeks representation from a broad range of interested parties and "…be complemented by communication with a broader public to increase awareness and understanding of SFM and to provide a mechanism for soliciting a wide range of input" (Canadian Standards Association 2002:12). The importance of public participation is also addressed in the FSC's Boreal and British Columbia standards, which seek meaningful opportunities for a broad and balanced range of public interests to help inform forest management strategies, plans, and monitoring efforts (Forest Stewardship Council Canada Working Group 2004). The FSC British Columbia Standard also seeks ongoing opportunities for public participation. People directly affected by forest management plans are identified, and their concerns incorporated into a management plan (FSC Canada Working Group–British Columbia Regional Initiative 2003).

Democratic concepts in participation

Fundamental to democratic governance is the opportunity for citizens to participate in discussions of issues and decisions that affect them—it is a matter of fairness (Lauber and Knuth 1999; Hunt and Haider 2001). In the context of decision making, fairness is concerned with judgments about the legitimacy and relevance of a decision. People's perception of fairness influences how they evaluate the procedures that govern the decision-making process (i.e., procedural fairness), such that if the procedures are deemed to be fair, then it is more likely that resultant decisions (i.e., outcomes) will also be deemed to be fair (i.e., distributive fairness) (Lauber and Knuth 1999). This conception of fairness requires that decision-making processes be open and transparent (Wondolleck and Yaffee 2000).

The democratic tradition can be characterized as a continuum from participatory democracy to representative democracy wherein the degree of

actual citizen participation and commitment varies (Hemingway 1999). Participatory democracy requires the direct involvement of citizens in decision making and assumes that citizens have the capacity (e.g., knowledge, skill) and desire to engage in meaningful discussions about the issues at hand. The objectives of participatory democracy include: involvement of a broad cross section of the public; rebuilding of a sense of community; and restoration of a sense of self-reliance and self-worth to communities and their members (Overdevest 2000). As Hemingway (1999: 153) has noted, "[p]articipatory democracy is in this sense a communicative process, and the citizen, rather than groups, is assumed to be the basic unit in it."

Representative democracy on the other hand employs citizen proxies to represent and advocate for the interests of their constituencies, or stakeholders, with "the basic acts entailed being the calculation of interest and the manipulative persuasion of others" (Hemingway 1999:152). Overdevest (2000) suggests that representative democracy arose out of a need for proxy representatives as citizens' time is typically constrained, and that members of the public generally have limited capacities to understand the complexities of decisions. For example, in forest land use planning, people may find it difficult to choose among alternative management scenarios and relate potential outcomes to personal preferences. Other possible constraints on people's availability include their geographical distance from the locus of planning and the financial costs associated with participation.

Regardless of which democratic tradition frames a decision-making process, it is important that meaningful opportunities for public involvement be explicitly incorporated into that process. Hunt and Haider (2001:874) conclude that "[d]espite the different rationales for increased public involvement in decision making, the resonate echo is that people must be involved in these processes."

Approaches to public participation

Although some authors contend that "[i]t is now widely accepted that members of the public should be involved in environmental decision-making" (Tuler and Webler 1999:437), there is less consensus about what public involvement entails. For example, what degree of involvement should be accorded to individual members of the public?

Public participation in resource and land use decision making has been defined as "any of several 'mechanisms' intentionally instituted to involve the lay public or their representatives in administrative decisionmaking" (Beierle and Cayford 2002:6). Many authors have discussed the importance of incorporating opportunities for meaningful input into land use planning processes (e.g., Wondolleck and Yaffee 2000; Daniels and Walker 2001; Hunt and Haider 2001; Beierle and Cayford 2002; Halseth and Booth 2003), and divesting technical details from policy making. "Rather than seeing policy decisions as fundamentally technical with some need for public input, we should see many more decisions as fundamentally public with the need for some technical input" (Beierle and Cayford 2002:75).

Public participation potentially constitutes a redistribution of power such that the general public is accorded opportunities to engage in decision making through the sharing of information, knowledge, and ideas to effect change. For Arnstein (1969), public participation was an inclusive mechanism in decision making that empowered citizens that typically do not have power. An important distinction of public participation in natural resources and forest land use decision making is that the decisions are about the allocation of scarce resources amongst a host of differing stakeholders, including commercial (e.g., timber, oil and gas, and minerals) and public (e.g., outdoor recreation, aesthetics, and access) interests.

Opportunities for public participation in decision making have had an increasing role in land use policy making over the past thirty years. In their review of 239 case studies of public participation in American environmental decision making, Beierle and Cayford (2002) describe the transition of environmental decision making from that of the managerial model, to decision-making processes that recognized pluralism, to an atmosphere that recognized popular democratic theory. The managerial model is a largely utilitarian approach to resource management that relied upon experts to identify planning goals and objectives and make decisions that would provide social welfare maximization. Beierle and Cayford (2002) argue that planning success is a function of the intensity of the mechanisms employed for involving the public in decision making and not the context of the planning. They conclude that more intensive participatory mechanisms are more likely to succeed; here success could entail a reciprocal process that provides opportunities for meaningful dialogue among

participants and feasible solutions for forest management.

However, as the intensity of participation increases, the process moves away from the tradition of participatory democracy toward that of representative democracy. Mechanisms, such as open houses, often involve large numbers of people, but may be perceived as hostile settings by some members of the public and resource managers. Open houses can devolve into opportunities for announcing and defending decisions that have already been made, and may not provide meaningful opportunities for participation. On the other hand, more intensive processes, such as negotiations, engage fewer people, are less likely to be reflective of socioeconomic characteristics, and are more limited in outreach to constituencies and communities (Buchy and Hoverman 2000; Overdevest 2000; Beierle and Cayford 2002). Beierle and Cayford (2002:48) note that more intensive processes "demonstrate a strong tendency to reach consensus by leaving out participants or ignoring issues," and that "as processes intensify, the range and representativeness of voices heard—as well as the social benefits of education, conflict resolution, and trust formation—tend to narrow down to the relatively small group of active participants." They also contend that more intensive processes can be more successful at overcoming pre-existing conflict amongst constituencies.

The inclusion of a broad array of interests and ideas in planning processes that have high degrees of public participation permits the incorporation of diverse sets of experience and knowledge that can serve to produce innovative planning outcomes that are more reflective of community interests (Day et al. 2003; Finnigan et al. 2003; Frame et al. 2004). Further, the sharing of knowledge through these collaborative processes can help to increase the knowledge and social capital of participants (Beierle and Cayford 2002; Finnigan et al. 2003; Sheppard and Meitner 2005).

Among the benefits advocated for the incorporation of public participation into natural resource decision making are:

- decisions are more acceptable to the public and more likely to be implemented;[3]
- relationships between management agencies and the public are improved; and
- resource management conflicts are reduced (Lauber and Knuth 1999; Buchy and Hoverman 2000).

Although there are pragmatic reasons for adopting public participation mechanisms into land use decision making, such as increased ownership of outcomes by participants (Wondolleck and Yaffee 2000), Beierle and Cayford (2002:6) identified five goals of public participation that should also serve to produce more effective planning solutions:

- "incorporating public values into decisions…,
- improving the substantive quality of decisions…,
- resolving conflict among competing interests…,
- building trust in institutions…, [and]
- educating and informing the public."

Wondolleck et al. (1996) note that a broader representation of interests at planning tables can lead to a broader set of potential solutions. It is also important to recognize that in British Columbia, land use is forestry-centric despite broader resource use and development (e.g., oil and gas, recreation, and energy such as independent power projects).

Land use planning is a complex undertaking. This complexity stems from bringing together multiple constituencies, each with their own deeply held values and world views, to discuss and resolve multiple issues, which are governed by multiple policies, that require a certain degree of scientific and technical knowledge in settings that are often plagued by scientific and technical uncertainty (Daniels and Walker 2001). Although current land use planning processes are an improvement over past processes, especially in terms of the degree of available information and opportunity for public involvement (Wondolleck et al. 1996), challenges remain. For example, people with lower incomes or little discretionary time are less able, and less likely, to become involved in land use planning exercises (Finnigan et al. 2003).

Although direct public involvement methods, like PAGs or stakeholder focus groups, are generally preferred, they can be costly, time consuming, and may not reflect the full range of opinions at the community level. Yet, anecdotal evidence suggests

[3] However, this presumes that the public is aware that the processes took place, and/or are concerned about sustainable forest management issues.

that with the public participation vehicles that are more commonly employed (e.g., open houses, public meetings, and public comment periods), public turnout is low. Drawing out the public and engaging them in meaningful discussions of SFM can be challenging. Inexpensive alternatives, such as public opinion surveys, have the ability to complement direct approaches by canvassing a broad spectrum of the public, hearing from elements of the "silent majority," and providing opportunities for quantitative analysis of public and stakeholder attitudes and values (Beckley et al. 1999; Beckley et al. 2006). A combination of such participatory approaches will address the various levels of planning that public participation informs: the strategic level (i.e., development and adoption of broad standards and guidelines), the tactical level (i.e., spatially explicit objectives and information management), and the operational level (i.e., localized and detailed plans that guide on-the-ground actions) (Jeakins et al. 2006).

In the remainder of this paper, we describe the implementation of the mail-based British Columbia Sustainable Forest Management Public Opinion Survey, and discuss its results and implications. For more comprehensive details, see Harshaw (2008a) and Kozak et al. (2008).

Methods

Survey design

Questionnaires were mailed out to nine British Columbia forest-dependent communities in British Columbia: Fort Nelson, Fort St. James, Fort St. John, Houston, Mackenzie, Prince George, Quesnel, Radium Hot Springs/Invermere, and Vanderhoof. The communities were selected according to the following criteria: forestry was the main employer and made a substantial economic contribution to the local economy; the existence of a local PAG; and major Canadian Forest Products Ltd. (Canfor, the study's proponent) forest management operations were close by. The questionnaire sought attitudes, beliefs, and perceptions about SFM at the strategic and tactical levels.

The survey design followed the principles of the Tailored Design Method, which identifies procedures to maximize survey return rates and minimize survey error (Salant and Dillman 1994; Dillman 2000). This method captures broad ranges of opinions and beliefs typically found in communities, and draws inferences about the communities. Working drafts of the questionnaire were reviewed by forest sector employees (including Canfor corporate managers, district managers, and district staff), representatives from forest certification PAGs, and academics. A pilot questionnaire was completed by members of the Canfor Radium Hot Springs PAG to test the questionnaire and identify any difficult questions (e.g., difficult to respond to or interpret consistently), and to gauge the amount of time necessary to complete the questionnaire.

Based on the feedback that was received, minor revisions were made to the questionnaire. The final questionnaire took a 12-page booklet format. Although the questionnaire sought opinions and beliefs about a wide range of forest values and functions, the results reported here focus on residents' opinions and beliefs about local issues facing sustainable forest management.

In keeping with the Tailored Design Method (Dillman 2000), a multiple-contact approach was used to maximize response rates. Four contacts—an initial contact letter, a questionnaire, a reminder postcard, and a replacement questionnaire—were used for the communities of Fort Nelson, Fort St. James, Fort St. John, Prince George, Quesnel, and Radium Hot Springs/Invermere. A questionnaire and a replacement questionnaire were used for Houston as a result of a large number of invalid mailing addresses that necessitated redelivery. To avoid the issue of invalid mailing addresses for the communities of Mackenzie and Vanderhoof, the sample was broadened to include everyone that had a post office box. A questionnaire, a reminder postcard, and a replacement questionnaire were used in these two communities.

To establish that the sample broadly reflected a wide range of opinions, efforts were made to maximize the return rate in order to reduce sample error. A desired threshold for the number of returns was identified for each community, based on their population and the associated 95% confidence interval (Salant & Dillman 1994), and an estimated response rate of 30%.

Questions posed to respondents

Two questions consisting of several statements each were presented. The order of the statements was randomized to reduce bias. Respondents were asked

to indicate their level of agreement with each statement on a five-point scale from "Strongly Agree" to "Strongly Disagree," and had the option of indicating that they did not know enough, or did not have an opinion about a particular statement. Information was also collected about respondents' demographic characteristics, including age, gender, education, occupational sector, and household income.

The first question addressed public opinions and beliefs about strategic-level provincial forest management issues in terms of general forest management activities; public involvement effectiveness; the role of forest managers and companies in SFM; and certain trade-offs between forest resources or values. The question listed ten statements about these forest land management and environmental issues in British Columbia.

1. There are enough checks and balances in place (e.g., legislation, professional ethics, forest certification) to ensure responsible forest management.
2. The forest industry controls too much of British Columbia's forests.
3. I know enough about forests and forestry to provide meaningful input into forestry planning decisions.
4. British Columbia has enough protected areas such as provincial and national parks.
5. The citizens of British Columbia need to have more opportunities for input into forest management.
6. If forests are well-managed to protect aesthetic values, the ecosystem is being managed well also.
7. Providing long-term security of forest lands to forestry companies will promote sustainable forest management.
8. Forest management currently focuses too much attention on timber resources and not enough attention on non-timber resources (e.g., recreation, visual quality).
9. There will be sufficient wood in British Columbia to meet our future needs.
10. Forest companies have earned the trust to manage forests for the long term.

The statements reflected a balance of positive and negative comments to reduce bias. The statements were informed by a review of the scientific literature and previous survey precedents, with a focus on local- and provincial-level forestry activities (McFarlane and Boxall 1999, 2000, 2003; Canadian Council of Forest Ministers 2000, 2003; Sheppard et al. 2001; McFarlane and Stedman 2003; Forest Stewardship Council Canada Working Group 2004; Sheppard et al. 2004; Sheppard et al. 2006; Tindall and Lavallee 1999).

The second question presented respondents with seven statements about local-level forest management issues. The statements addressed potential community benefits of SFM; the perceived role of forest managers and companies; and concerns or trade-offs on local issues such as the mountain pine beetle infestation, visual and ecological values, and recreation access.

1. Local forest managers are responsive to public concerns.
2. Overall, sustainable forest management practices produce positive results for the local community.
3. It is a priority to manage the mountain pine beetle situation even if there is a negative impact on other resource values in the short term.
4. Local communities should receive a fair share of locally generated government income.
5. In general, the forest industry is more environmentally sensitive than other industries in my area.
6. You would be prepared to accept some visual change in views from your community if it reduced ecological impacts in the backcountry.
7. Forest roads that are no longer in use by forestry companies should be deactivated, even if that means less access to remote areas.

No negative statements were included in this set. Statements in this section were informed by the review as described above and by suggestions from the nine Canfor Divisions participating in the survey.

Analysis

Tests for non-response bias were conducted by comparing early and late respondents on a number of demographic variables and for each of the statements.

The mid-point for the date of questionnaire returns by community was identified, and responses grouped as either early respondents or late respondents. This approach assumes that late respondents are more similar to non-respondents as late respondents required more persuasion to complete the survey than early respondents did, making them suitable proxies for non-respondents (Armstrong and Overton 1977). T-tests were used to identify any differences between early and late respondents for age, levels of agreement with the ten statements about forest management, and levels of agreement with the seven statements about local forest management issues. Chi-square tests were calculated for gender, education, and household income. Nominal post hoc tests (i.e., Cramer's V and Phi) were also calculated to test for the strength of any significant associations.

Descriptive statistics were calculated for each question. For those questions that asked respondents to indicate their level of agreement, satisfaction, or importance, the proportion of responses was calculated for each interval. The mean response and 95% confidence interval, and standard deviation were also calculated for each statement. An analysis of variance (ANOVA) was used to test for differences between the mean scores of the nine communities. Games-Howell and Scheffe post hoc tests were employed to discern where those differences (if any) lay.

Results

A total of 2750 responses were received between January 16, 2006 and March 29, 2007, which represents an overall response rate of 27.2% after correcting for undeliverable addresses (corrected sample size = 11 138); the estimate of sample error is ±1.9% at the 95% confidence interval [i.e., 19 times out of 20; Table 1]). Undeliverable addresses included invalid mailing addresses, respondents who had moved, respondents who were deceased, and respondents who were aged or of poor health and unable to complete the questionnaire.

TABLE 1. Populations and sampling characteristics in nine forest dependent communities of British Columbia.

Community	Population (2001)[†]	Target sample size[††]	Initial sample[†††]	Corrected sample[††††]	Number of responses	Response rate
Fort Nelson	4 188	357	1 190	521[a]	131	25.1%
Fort St. James	1 927	333	1 110	581[b]	176	30.3%
Fort St. John	17 781	377	1 257	998	255	25.6%
Houston	3 575	357	1 190	1 172	310	26.5%
Mackenzie	5 454	361	2 055	2 055	236	11.5%
Prince George	85 035	370	1 277	1 206	401	33.3%
Quesnel	10 044	370	1 233	1 155	452	39.1%
Radium Hot Springs/Invermere	3 441	357	1 190	939	329	35.0%
Vanderhoof	4 727	361	2 511	2 511	460	18.3%
Total	**136 172**	**3 243**	**13 013**	**11 138**	**2 750**	**27.2%**

[†] 2001 figures from Statistics Canada (2003a–j)

[††] Based on the population and precision required for 95% confidence interval (Salant and Dillman 1994)

[†††] Based on an estimated 30% response rate

[††††] Corrected sample size after undeliverable questionnaires were taken into account

[a] Sample size was reduced to 521 due to a lack of valid mailing addresses for community residents

[b] Sample size was reduced to 581 due to a lack of valid mailing addresses for community residents

TABLE 2. Mean differences in age between early and late respondents (significant differences in **bold**).

Community	n	t	p	Mean difference
Fort Nelson	127	1.014	0.272	2.32†
Fort St. James	165	0.558	0.578	0.97†
Fort St. John	**240**	**2.222**	**0.027**	**4.28**†
Houston	**293**	**3.644**	**0.000**	**5.64**†
Mackenzie	226	–0.920	0.359	1.41††
Prince George	381	1.951	0.052	2.87†
Quesnel	**433**	**2.653**	**0.008**	**3.47**†
Radium Hot Springs/Invermere	311	1.714	0.088	2.77†
Vanderhoof	**449**	**2.148**	**0.032**	**2.86**†
All communities combined	**2 641**	**5.262**	**0.000**	**2.82**†

† Early respondents older than late respondents

†† Early respondents younger than late respondents

Non-response bias

An examination of demographic characteristics for the combined sample of all nine communities indicated that the only significant difference between early and late respondents was for respondents' age. When the communities were examined individually there were significant differences between early and late respondents for age in four communities (Table 2). There were significant differences between early and late respondents for several categories of household income in Vanderhoof ($n = 405$; $\chi^2 = 20.546$; $df = 11$; $p < 0.05$; Cramer's $V = 0.225$). There were not any significant differences between early and late respondents for gender and education in individual communities. Thus we may conclude that there was little, if any, non-response bias based on demographic characteristics in relation to each community's population. Consequently, inferences from the data can be made about the communities.

When all communities were examined together, there were no significant differences ($p > 0.05$) between early and late respondents among the 17 statements that were presented to them. When the nine communities were examined individually, there were slight, though significant differences among six of the ten statements about forest management in British Columbia (Table 3). Similarly, there were significant differences among early and late respondents for two of the seven statements about local forest management (Table 4).

Although there were some significant differences between late and early respondents for the 17 statements, the differences were small. This suggests that there is little non-response bias in this analysis, and inferences from the data can be made about the communities.

TABLE 3. Significant mean differences between early and late respondents for statements about forest management issues in British Columbia.

Statement	Community	n	t	p	Mean difference
There are enough checks and balances in place to ensure responsible forest management.	Vanderhoof	415	–3.041	0.003	0.454†
The forest industry controls too much of British Columbia's forests.	Prince George	353	–2.222	0.027	0.327†
I know enough about forests and forestry to provide meaningful input into forestry planning decisions.	Radium Hot Springs/ Invermere	272	–3.644	0.000	0.559†
The citizens of British Columbia need to have more opportunities for input into forest management.	Quesnel	436	2.852	0.005	0.309††
Forest management currently focuses too much attention on timber resources and not enough attention on non-timber resources.	Fort St. James	163	–2.328	0.021	0.443†
There will be sufficient wood in British Columbia to meet our future needs.	Fort Nelson	118	2.263	0.027	0.566††
	Mackenzie	217	–2.447	0.015	0.439†

† Early respondents more agreeable than late respondents

†† Early respondents less agreeable than late respondents

TABLE 4. Significant mean differences between early and late respondents for statements about local forest management issues.

Statement	Community	n	t	p	Mean difference
It is a priority to manage the mountain pine beetle situation even if there is a negative impact on other resource values in the short term.	Vanderhoof	433	–2.351	0.019	0.270[†]
Forest roads that are no longer in use by forestry companies should be deactivated, even if that means less access to remote areas.	Quesnel	429	–3.040	0.003	0.422[†]

[†] Early respondents more agreeable than late respondents

Although one objective of this research was to identify local attitudes, beliefs, and opinions about SFM to inform individual PAG representatives, the following results are presented primarily in aggregate across all communities, for illustrative purposes, with limited discussion of individual community differences.

Demographic characteristics

A comparison of respondents' demographic characteristics to Census data (Statistics Canada 2003a–j) revealed that respondents tended to be older than community residents. The proportion of male respondents was, on average, 40% higher than the proportion of male residents in each community. Respondents were generally well-educated, as more than four in five had completed high school. A range of occupations and occupational sectors, and income levels were represented. Many of the communities examined have relatively significant First Nations populations, or are near First Nations communities; 8.4% of all respondents (223 respondents) identified themselves as First Nations in response to the question, "What is your main connection to forests?" However, an examination of the differences between First Nations and non-First Nations is beyond the scope of this paper.

Forest management in British Columbia

Table 5 summarizes the overall patterns of response for forest management in British Columbia with all communities aggregated. With regard to general forest management, 44.0% strongly or mildly agreed that there are enough checks and balances in place to ensure responsible forest management; 30.9% mildly or strongly disagreed. Over half of respondents (52.1%) strongly or mildly agreed that British Columbia has enough protected areas such as provincial and national parks, while 32.1% mildly or strongly disagreed. Less than one-quarter (24.3%) strongly or mildly agreed that there will be sufficient wood in British Columbia to meet our future needs, while 51.9% expressed mild or strong disagreement.

In terms of public involvement, 64.1% strongly or mildly agreed that the citizens of British Columbia need to have more opportunities for input into forest management, while only 12.0% mildly or strongly disagreed. This statement received the highest level of agreement of all ten items—a mean rating of 2.1 on a scale of 1 to 5. Almost half the respondents (49.9%) strongly or mildly agreed that they knew enough about forests and forestry to provide meaningful input into forestry planning decisions, compared with 22.1% that mildly or strongly disagreed. However, almost 28% partly disagreed with the statement or didn't know how to answer.

With regard to the role of forest managers and companies in SFM, 42.8% strongly or mildly agreed that the forest industry controls too much of British Columbia's forests, while 30.2% mildly or strongly disagreed. Less than half of respondents (41.8%) strongly or mildly agreed that providing long-term security of forest lands to forestry companies will promote SFM; one-third (33.6%) mildly or strongly disagreed. Only one respondent in five (20.2%) strongly or mildly agreed that forest companies have earned the trust to manage forests for the long term, while 55.3% mildly or strongly disagreed. This statement received the highest level of disagreement of all ten items—a mean rating of 3.7 on a scale of 1 to 5.

In relation to trade-offs between forest resources or values, more than twice as many respondents (48.9%) strongly or mildly agreed that forest management currently focuses too much attention on timber resources and not enough attention on non-timber resources, than did respondents (22.7%) that mildly or strongly disagreed. Less than one-third (32.2%) of respondents strongly or mildly agreed that if forests are well-managed to protect aesthetic values, the ecosystem is also being managed well, while 41.4% mildly or strongly disagreed.

TABLE 5. Forest management issues in British Columbia (most frequently identified response in **bold**).

Item	n	Strongly agree (1)	Mildly agree (2)	Partly agree/ disagree (3)	Mildly disagree (4)	Strongly disagree (5)	Don't know	Mean	95% CI	SD
There are enough checks and balances in place to ensure responsible forest management.	2686	19.6%	**24.4%**	17.3%	14.8%	16.1%	7.8%	2.82	± 0.055	1.394
The forest industry controls too much of British Columbia's forests.	2687	**24.4%**	18.4%	19.5%	16.9%	13.3%	7.5%	2.74	± 0.055	1.396
I know enough about forests and forestry to provide meaningful input into forestry planning decisions.	2673	22.9%	**27.0%**	18.6%	12.3%	9.8%	9.3%	2.55	± 0.051	1.295
British Columbia has enough protected areas such as provincial and national parks.	2694	**30.0%**	22.1%	12.9%	15.3%	16.8%	2.9%	2.66	± 0.057	1.482
The citizens of British Columbia need to have more opportunities for input into forest management.	2695	**35.5%**	28.6%	21.0%	8.1%	3.9%	3.0%	2.14	± 0.043	1.122
If forests are well-managed to protect aesthetic values the ecosystem is being managed well also.	2691	12.8%	19.4%	20.1%	19.4%	**22.0%**	6.2%	3.20	± 0.053	1.364
Providing long-term security of forest lands to forestry companies will promote SFM.	2696	16.4%	**25.4%**	19.3%	13.2%	20.4%	5.3%	2.96	± 0.055	1.399
Forest management currently focuses too much attention on timber resources and not enough attention on non-timber resources.	2695	21.7%	**27.2%**	22.7%	15.0%	7.7%	5.6%	2.58	± 0.047	1.230
There will be sufficient wood in British Columbia to meet our future needs.	2693	9.0%	15.3%	16.8%	19.8%	**32.1%**	7.0%	3.55	± 0.053	1.360
Forest companies have earned the trust to manage forests for the long term.	2703	6.1%	14.1%	19.6%	21.0%	**34.3%**	4.8%	3.66	± 0.049	1.276

ANOVA results indicated that there were statistically significant differences between the mean responses of the nine communities for four of the ten statements (Table 6).

Local forest management

Table 7 summarizes the overall patterns of response for local forest management with all communities aggregated. There was less variation in the pattern of responses than in the previous question. For five of the seven local forest management issues, the most frequently identified responses were strongly or mostly agree.

With regard to potential community benefits of SFM, 89.8% strongly or mostly agreed that local communities should receive a fair share of locally generated government income. This statement received the highest level of agreement of all seven items—a mean rating of 1.46 on a scale of 1 to 5). Only 1.3% mostly or strongly disagreed. More than

TABLE 6. ANOVA results: Forest management issues in British Columbia (significant differences between communities in **bold**).

Item	n	df	F	p	Differences
There are enough checks and balances in place to ensure responsible forest management.	2475	8	1.398	0.192	None
The forest industry controls too much of British Columbia's forests.	2484	8	1.581	0.125	None
I know enough about forests and forestry to provide meaningful input into forestry planning decisions.	**2424**	**8**	**10.535**	**0.000**	The mean response of Houston respondents (2.27) was significantly lower than the mean response for Quesnel (2.58). The mean responses for Radium Hot Springs/Invermere (2.75) and Prince George (2.80) were significantly higher than the mean responses for Houston (2.27), Mackenzie (2.33), and Vanderhoof (2.32). The mean response for Ft. St. John (3.01) was significantly higher than the mean responses for Ft. Nelson (2.47), Ft. St. James (2.40), Houston (2.27), Quesnel (2.58), Mackenzie (2.33), and Vanderhoof (2.32).
British Columbia has enough protected areas such as provincial and national parks.	**2615**	**8**	**11.034**	**0.000**	The mean responses of Houston (2.25) and Vanderhoof (2.33) were significantly lower than the mean responses of Radium Hot Springs/Invermere (2.98), Prince George (2.87), Quesnel (2.66), and Ft. St. John (3.07). The mean response of Ft. St. John (3.07) was significantly higher than the mean responses of Quesnel (2.66) and Mackenzie (2.62).
The citizens of British Columbia need to have more opportunities for input into forest management.	2614	8	0.953	0.471	None
If forests are well-managed to protect aesthetic values, the ecosystem is being managed well also.	**2522**	**8**	**1.948**	**0.049**	Although significant differences between the mean responses of some communities were identified, post hoc tests did not reveal where these differences lay. The mean ranged from 3.05 (Quesnel) to 3.34 (Mackenzie).
Providing long-term security of forest lands to forestry companies will promote SFM.	2522	8	1.039	0.404	None
Forest management currently focuses too much attention on timber resources and not enough attention on non-timber resources.	**2543**	**8**	**5.572**	**0.000**	The mean response of Vanderhoof (2.87) was significantly higher than the mean responses of Ft. Nelson (2.37), Ft. St. John (2.40), Ft. St. James (2.48), Radium Hot Springs/Invermere (2.45), Prince George (2.47), Quesnel (2.56), and Mackenzie (2.53).
There will be sufficient wood in British Columbia to meet our future needs.	2504	8	1.638	0.109	None
Forest companies have earned the trust to manage forests for the long term.	2572	8	1.647	0.107	None

half of respondents (57.5%) strongly or mostly agreed that overall, sustainable forest management practices produce positive results for the local community; 11.1% strongly or mostly disagreed.

In terms of the perceived role of forest managers and companies, 41.0% strongly or mostly agreed that local forest managers are responsive to public concerns; 14.0% indicated that they did not know

enough or had no opinion about this issue. This was the highest value for all seven statements (Table 7). Over half of the respondents (50.8%) strongly or mildly agreed that in general, the forest industry is more environmentally sensitive than other industries in their area, while only 15.1% mildly or strongly disagreed.

With regard to public concerns or trade-offs on local issues, 73.8% strongly or mostly agreed that it is a priority to manage the mountain pine beetle situation even if there is a negative impact on other resource values in the short term. Similarly, more than eight-times as many respondents (62.1%) strongly or mostly agreed that they would be prepared to accept some visual change in views from their community if it reduced ecological impacts in the backcountry than did the percentage that mostly or strongly disagreed (7.4%). One-third (33.9%) reported that they strongly or mostly agreed that forest roads that are no longer in use by forestry companies should be deactivated, even if that means less access to remote areas, but 44.9% mostly or strongly disagreed. This statement received the lowest level of agreement of all seven items—a mean rating of 3.22 on a scale of 1 to 5.

ANOVA results indicated that there were statistically significant differences between the mean responses of the nine communities for five of the seven local forest management issues in this question (Table 8).

TABLE 7. Local forest management issues (most frequently identified response in **bold**).

Item	n	Strongly agree (1)	Mildly agree (2)	Partly agree/ disagree (3)	Mildly disagree (4)	Strongly disagree (5)	Don't know	Mean	95% CI	SD
Local forest managers are responsive to public concerns.	2677	15.2%	25.8%	**28.7%**	9.8%	6.5%	14.0%	2.61	± 0.047	1.128
Overall, sustainable forest management practices produce positive results for the local community.	2666	18.9%	**38.6%**	22.4%	7.0%	4.1%	9.1%	2.33	± 0.041	1.028
It is a priority to manage the mountain pine beetle situation even if there is a negative impact on other resource values in the short term.	2670	**47.5%**	26.3%	13.3%	4.8%	3.3%	4.9%	1.84	± 0.041	1.062
Local communities should receive a fair share of locally generated government income.	2680	**62.4%**	27.4%	6.3%	0.7%	0.6%	2.5%	1.46	± 0.027	0.703
In general, the forest industry is more environmentally sensitive than other industries in my area.	2680	21.9%	**28.9%**	24.7%	8.6%	6.5%	9.4%	2.44	± 0.047	1.162
You would be prepared to accept some visual change in views from your community if it reduced ecological impacts in the backcountry.	2647	22.5%	**39.6%**	23.0%	4.7%	2.7%	7.6%	2.19	± 0.037	0.959
Forest roads that are no longer in use by forestry companies should be deactivated, even if that means less access to remote areas.	2684	18.5%	15.4%	18.0%	16.1%	**28.8%**	3.1%	3.22	± 0.057	1.494

TABLE 8. ANOVA results: Local forest management issues (significant differences between communities in **bold**).

Item	n	df	F	p	Differences
Local forest managers are responsive to public concerns.	2300	8	1.151	0.326	None
Overall, sustainable forest management practices produce positive results for the local community.	**2422**	**8**	**2.904**	**0.003**	The mean response of Vanderhoof (2.15) was significantly less than the mean responses of Prince George (2.37), Quesnel (2.38), and Ft. St. James (2.52).
It is a priority to manage the mountain pine beetle situation even if there is a negative impact on other resource values in the short term.	**2539**	**8**	**3.461**	**0.001**	The mean response of Vanderhoof (2.03) was significantly greater than the mean responses of Ft. St. James (1.68), Ft. St. John (1.76), Houston (1.76), Quesnel (1.77), and Prince George (1.78).
Local communities should receive a fair share of locally generated government income.	**2611**	**8**	**8.826**	**0.001**	The mean response of Radium Hot Springs/Invermere (1.63) was significantly greater than the mean responses of Ft. St. James (1.27), Houston (1.31), Vanderhoof (1.35), and Quesnel (1.42). The mean responses of Prince George (1.57) and Ft. St. John (1.57) were significantly greater than the mean responses of Ft. St. James (1.27), Houston (1.31), and Vanderhoof (1.35).
In general, the forest industry is more environmentally sensitive than other industries in my area.	**2428**	**8**	**3.017**	**0.002**	The mean response of Ft. St. James (2.23) was significantly less than the mean responses of Radium Hot Springs/Invermere (2.62) and Ft. Nelson (2.67). The mean response of Radium Hot Springs/Invermere (2.62) was significantly greater than the mean response of Mackenzie (2.31).
You would be prepared to accept some visual change in views from your community if it reduced ecological impacts in the backcountry.	2446	8	1.710	0.091	None
Forest roads that are no longer in use by forestry companies should be deactivated, even if that means less access to remote areas.	**2599**	**8**	**3.026**	**0.002**	The mean response of Vanderhoof (3.44) was significantly greater than the mean response of Ft. St. John (2.95).

Discussion

Given the relatively limited substantive differences between the nine communities in the responses, the bulk of this discussion focuses on the amalgamated results. We consider the implications of the results for the role of public engagement in SFM, including issues of communication, knowledge, and public perceptions of forest management trade-offs and community benefits. We then consider implications for forest managers and the forest industry, before turning to a brief discussion of patterns in public attitudes that vary between communities.

Public attitudes and implications for public engagement in SFM

Although this survey revealed several important aspects of public attitudes and preferences for SFM, perhaps the most telling is the recurring theme of engagement and communication. The public feels strongly that they need more opportunities for input into forest management, with better communication between the public and forest management. As many of the SFM certification frameworks require a high degree of public participation, it is important that communication strategies that inform local residents of forest management issues and opportunities for

public participation resonate with the public and not just with the PAGs. Forestry is practiced on public lands; the public expects to be informed of forest management approaches and that their concerns are reflected in forest management. Other studies (e.g., Penrose et al 1998; Halseth and Booth 2003) have shown similar trends in terms of dissatisfaction with communications, the level and type of involvement, and the outcomes of public involvement processes. Yet, members of the public have not always taken advantage of the opportunities for input that have been made available. Despite the efforts of forest managers, the public either remains largely unaware of opportunities that exist for them to provide input, or they are not comfortable with traditional forums for public dialogue. The former suggests that more effort and creativity is required to publicize these opportunities. The latter may suggest that a wider range of vehicles for identifying and including public values into discussions about SFM, such as public opinion surveys, focus groups, participatory multi-criteria analysis, and visioning workshops, might be more engaging and effective.

A related key issue highlighted in this study is perceived lack of adequate knowledge of forests and forestry among many respondents. This is perhaps surprising given that forestry has traditionally played a large role in the economies of the nine communities that were examined. Urban communities that are further removed from forestry operations may be expected to have still lower levels of knowledge. Other studies (e.g., McFarlane et al. 2006) have found similar results. This lack of knowledge could be an important factor contributing to the often low level of engagement that people exhibit in forest planning processes. If half of respondents from communities with generally high levels of forestry dependence feel that they do not know enough about forests and forestry to provide meaningful input into forestry planning decisions, it raises serious questions about the utility and effectiveness of incorporating public input into forest management including:

If half of respondents from communities with generally high levels of forestry dependence feel that they do not know enough about forests and forestry to provide meaningful input into forestry planning decisions, it raises serious questions about the utility and effectiveness of incorporating public input into forest management.

1. What confidence can managers have in public input?

Public input via surveys of this type can provide valid information. Providing a "don't know/no opinion" option allows one to distinguish those with knowledge about a particular question from those without knowledge (Dillman 2000). In this survey, respondents were clear about what they did not know. This level of self-awareness suggests that respondents' opinions about forest management can be taken at face value. Although there may be differences between what the public perceives of forest management and what is practiced, forest managers can be fairly confident that the opinions expressed by the public accurately reflect their real concerns. The complete questionnaire was relatively long and detailed—10 pages with more than 200 individual items to respond to. The fact that people took the time to consider each item, and indicate areas where they were uncertain or did not know, suggests that the responses are a reasonable gauge of public opinion about SFM. However, there seems to be a strong need to increase the knowledge base and capacity of the public to engage in processes for review and decision making on SFM planning.

In recognition of this need, efforts have been made to disseminate results of this study to the public in order to provide feedback about their attitudes, beliefs, and perceptions. The results of the survey are publicly available through the project's website (*www.sfm-pos.ca*), through Canfor's local offices, and in summary articles prepared for certain local newspapers. Advertised presentations that were open to the public were given to six of the nine PAGs, as well as privately to the Canfor SFM Working Group (senior managers) who are refining and harmonizing SFM criteria and indicators across Canfor's divisions. Presentations have also been given to the Outdoor Recreation Council of British Columbia and the British Columbia Forest Practices Board who were interested in improving public participation in forest management.

2. Has forestry ceased to be relevant to the public?

No, the data suggests that forests and forestry are relevant to the public. At the time that the survey was administered, forestry and related sectors were directly responsible for employment for two out of five respondents. Forests also play an important role in supporting quality of life, or amenity values. Average annual outdoor recreation participation among respondents was high (roughly twice a week), and both motorized and non-motorized recreation served as the main connection to forests for the majority of respondents (Harshaw 2008b). There is a widespread belief that SFM yields positive results for local communities, but also a strong expectation that locally generated government income (i.e., stumpage) be shared with communities. Perhaps the strongest indication that forestry is relevant to people is their desire to become more involved in SFM processes.

Access issues are certainly relevant. Although there was agreement by a majority of respondents that there were enough parks and protected areas in British Columbia, most wanted access to Crown lands outside of parks and protected areas to be maintained. They think forest roads that are no longer in use by forestry companies should not be deactivated. Access to forested areas for recreation seems to be an important, though divisive, issue to residents of timber-dependent communities.

The mountain pine beetle epidemic is of great concern to residents of timber-dependent communities. Not surprisingly, given the magnitude of the problem, respondents' proximity to affected areas, and the broad media coverage, there was a strong sense that managing the mountain pine beetle situation is a priority over other resource values. Perhaps due in part to these perceptions, there is also concern over the availability of wood in British Columbia to meet our future needs. However, the majority of respondents agreed that forest management currently focuses too much attention on timber resources and not enough attention on non-timber resources.

3. Have forest management practices and planning processes become too technical and esoteric for non-practitioners?

Despite the increasing complexity of forestry in considering multiple sustainability criteria and self-reported deficiencies in the public's knowledge, respondents seemed able to recognize some of the complexities and connections between various forest management outcomes. They appeared willing to make trade-offs among the identified outcomes—something that is a regular part of what forest managers do. For example, although most respondents were prepared to accept some visual change in views from their community if it reduced ecological impacts in the backcountry, for the most part respondents did not confuse aesthetics with ecological integrity, recognizing that the protection of aesthetic values did not necessarily ensure the good management of ecosystem values. The questions considered in this paper did not ask respondents to consider (or trade-off) multiple criteria at the same time—instead criteria were considered discretely—so the responses may mask a lack of understanding of the complexity inherent in modern SFM or that it is predicated on long-term management (for an example of questions that asked respondents to consider/trade-off multiple criteria at the same time and responses to other questions that explore trade-offs between multiple SFM indicators, see Kozak et al. 2008).

Role of forest managers and industry

The results present a mixed picture of public perceptions of the role of forest managers and companies. The majority of respondents did not agree that there were enough checks and balances in place to ensure responsible forest management. This might be related to the perception that the forest industry controls too much of British Columbia's forests or that respondents felt that local forest managers' responsiveness to public concerns is an area requiring improvement. As has been shown in other studies (e.g., Sheppard 2003), levels of trust in forest companies are not high. The majority of respondents to this survey felt that forest companies have not yet earned the trust to manage forests for the long term. Perhaps, this is due to the relatively recent

The results present a mixed picture of public perceptions of the role of forest managers and companies. The majority of respondents did not agree that there were enough checks and balances in place to ensure responsible forest management.

switch to forest certification and SFM frameworks and their requirements for public participation. Fewer than half of the respondents indicated that providing long-term security of forest lands to forestry companies would promote SFM. This may be due to limited public understanding of the effect of extending the duration of tenure arrangements and increasing temporal certainty for forestry companies. On the other hand, almost half of the respondents felt that the forest industry was generally more environmentally sensitive than other industries in their area. A large minority of respondents agreed that local forest managers are responsive to public concerns, and most recognized the benefits of SFM practices to the community.

Variation in public attitudes between communities

It is not within the scope of this paper to review in detail the differences that did emerge between communities, but certain broad patterns can be observed in statistically significant differential responses to the general questions and some of the local issues. There appears, for example, to be a clustering of the communities of Prince George, Fort St. John, and Radium Hot Springs/Invermere at one end of the spectrum on statements about respondents' knowledge on forestry (relatively low), adequacy of parks and protected areas (insufficient), and focus on timber resources (too great). At the other end of the spectrum, communities such as Vanderhoof, and to some extent Houston, tended to have the opposite views. Perhaps, this reflects the difference between larger or more diversified communities and smaller more heavily forest-dependent communities which identify more strongly with forestry.

Patterns were less clear-cut for local issues. Significant differences between Prince George and Vanderhoof reappear in three of the five statements. Vanderhoof respondents agreed more with the community benefits of SFM, felt more strongly that communities should receive a share of government income, and agreed less about prioritizing the management of the mountain pine beetle over other values than did respondents from Fort St. James, Fort St. John, Houston, Quesnel, and Prince George. Although Vanderhoof respondents' were somewhat less agreeable about the prioritization of mountain pine beetle management than these other communities, it is important to note that more Vanderhoof respondents agreed with prioritizing mountain pine beetle management than disagreed.

There is a mismatch between the desired degree of engagement and actual participation by the public—they do not seem to be voting with their feet.

Conclusions and recommendations

Although SFM certification explicitly requires public participation in forest management decisions, suitable opportunities for input are not being adequately provided to, or utilized by, the public. Unless there is a sense of urgency around a topic, most local residents do not take advantage of the existing public processes. The public will only be engaged if they trust that their input will be seriously considered in decision making. Several of the concerns identified by respondents relate to the level of public participation and communication efforts. As one valuable approach, forest managers could link in-depth tools, such as public opinion surveys, to certification and strategic land use planning processes. This would develop an effective feedback loop between the public who are interested but not participating, and those who actively participate at PAG meetings.

The use of surveys of public attitudes, beliefs, and perceptions can complement the representation of public values in PAGs, and help to incorporate the opinions of a broader range of stakeholders in forest management decision making. By considering the attitudes and beliefs of a broader segment of the public, forest managers can identify issues that are relevant to the public, and work to resolve these issues. Such an approach might reduce conflicts, help to increase the certainty of management decisions, and gradually build trust in the forest managers over time.

The desired degree of public engagement by respondents demonstrates that forestry and forests are relevant to local community residents and that the public wants to be engaged. However, there is a mismatch between the desired degree of engagement and actual participation by the public—they do not seem to be voting with their feet. The survey confirms an overarching desire on the part of the public to be

included in forest management decision making. This requires effective public participation mechanisms that go beyond PAGs and other conventional vehicles such as public reviews of planning documents, public meetings, and open houses. More engaging, collaborative, and informative methods (e.g., participatory multi-criteria analysis with focus groups, open space technologies, Future Search, mind mapping activities, and appreciative inquiry) that build awareness and permit lay people to engage in complex SFM issues and trade-offs are available (Sheppard and Meitner 2005). In addition, structural changes in forest management that reward efforts to involve the public may be required.

As public participation typically takes place at the tactical and strategic levels, there should be a system in place that facilitates the roll-up of operational-level information and planning outcomes to the tactical and strategic levels, through mechanisms such as the State of British Columbia's Forests reports.

There are forest management activities—especially those having to do with non-timber values—relevant to local residents that are not generally recognized by those with the authority to manage public forests. A more co-ordinated effort to inventory, communicate, and plan for all forest values and commercial uses of forest lands (e.g., non-timber products, recreation, carbon storage, and energy production) may help to address the public's unmet priorities for non-timber values.

One way that forest companies might address the issues of trust and long-term security of forest lands is to secure partnerships for the monitoring of SFM outcomes. These partners could include—but are not limited to—other resource industries, government, environmental organizations, and community volunteers, as tested with water quality monitoring in places such as the Slocan Valley (e.g., Yeow 2001). Such partnerships could strengthen monitoring efforts, possibly defray some of the costs of monitoring, and may strengthen links with the local community. Finally, broad involvement of people and organizations in the monitoring of forest management outcomes could demonstrate other areas where public participation in the management of forested landscapes has a role. If local people are actively engaged in monitoring efforts, the public can share the responsibility for forest management, and build capacity for further involvement and social learning on sustainable forestry.

If local people are actively engaged in monitoring efforts, the public can share the responsibility for forest management, and build capacity for further involvement and social learning on sustainable forestry.

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Test Your Knowledge . . .

Public attitudes toward sustainable forest management: Opinions from forest-dependent communities in British Columbia

How well can you recall some of the main messages in the preceding Research Report?
Test your knowledge by answering the following questions. Answers are at the bottom of the page.

1. What mechanisms are best for engaging the public in forest land use decision making?

   A) Public Advisory Groups (PAGs)
   B) Public meetings
   C) Surveys
   D) Multiple mechanisms should be used

2. Why have some members of the public not engaged in forest land use decision making?

   A) Lack of time
   B) Lack of trust in forest companies
   C) Lack of information
   D) All of the above

3. Recognizing that First Nations are distinct within the context of forest land use decision making, who is the public?

   A) Local residents
   B) There are multiple publics, each defined by particular concerns or issues with forest management
   C) Everyone within 50 km of the defined forest area
   D) Forestry workers

Answers

1. D 2. D 3. B