Social research priorities for forest management

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Abstract

Social research is essential to the development of sustainable forest management practices. Better understanding of ecologically preferable silvicultural systems is not sufficient: we need to understand public evaluations of the relative social, economic and environmental impacts of forest management systems, as well as the values and beliefs that underpin such assessments. This paper reviews recent investigations of the social acceptability of forest management systems and highlights priorities for a regional research program. As with biophysical research, long-term research is required to allow for changes in the outcomes of forest management over time and changes in social values and attitudes toward forests and forestry.

Social research priorities for forest management

An increasingly important dimension of forest management practice, in addition to determining biologically optimal management systems, is a consideration of the views of forest users and other interested public groups. In recent times, forest management agencies have recognised the importance of integrating both biophysical and social indicators in the management of forest resources (Endter-Wada *et al.* 1998). In Australia, such approaches have been

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formalised in Regional Forest Agreements. Public interest and concern about the management of forests is often most overtly expressed in social responses to forest harvesting. Forest users and the more general public, who may not physically venture into a forest, have views as to whether forests should be harvested and, usually less well defined, views as to how forests should be harvested. Such views are often underpinned with considerations regarding the appropriate 'naturalness' of forests both at the mature and harvested stages.

This brief review summarises a more detailed analysis of the assessment of human dimensions of forest management undertaken for Forestry Tasmania (Williams *et al.* 2001). The more substantive analysis was undertaken within the context of the Warra Long-Term Ecological Research (LTER) Site in Tasmania's Southern Forests. The analysis was predicated on the assumption that social assessment of the harvesting regimes, currently being tested for their ecological and economic attributes, is potentially an important component of research at the Warra LTER Site. In this article, we discuss recent findings from social assessment research, highlighting the importance of longitudinal social research for developing a better understanding of dynamic social responses to forest management. The paper also identifies some of the more urgent questions in need of research.

Acceptability of harvesting options

Our understanding of social response to forest management has been developed over 30 years of research. Much of this research has been undertaken in the United States of America and has focussed on the scenic or visual impacts of forest management (much of this is reviewed by Ribe 1989). More recently there has been an interest in the perceived *social acceptability* of forest management systems. The concept of social acceptability is complex (Brunson 1993). Judgements of acceptability are likely to be underpinned by multiple subassessments of salient perceived outcomes of forest management: ecological and visual impacts, timber yield, safety of harvesting practices and so forth. These perceived outcomes may be compared with desired states, and there may be some trade-off of desirable outcomes where it is not possible to maximise all.

A small number of studies have examined the relative acceptability of different harvesting options. A recent example is a study reported by Ribe (1999) that compared clearfell systems with those in which 15% of trees are retained in a dispersed or aggregated form. Participants in the study were from a range of environmental affiliations and assessed a number of silvicultural options via computer edited photographs: a small number of forest terrains were selected and each harvesting system depicted against this terrain. Ribe found that, overall, retention of trees in an aggregated form was more acceptable than either clearfell or dispersed retention options. Ribe's study is intentionally exploratory and the results are not entirely consistent with other similar studies. For example, in a study conducted in Finland, Karjalainen and Komulainen (1999) compared the scenic value of clearfelled areas with those in which a small number of trees were retained individually or in small groups. No differences were reported, but the number and proportion of trees retained appear to be much smaller than that presented in Ribe's (1999) study. Further

research is taking place internationally, much of it associated with long-term ecological research sites that have been established in the USA.

There is a paucity of Australian research regarding social response to native forest management. Williamson and Chalmers (1982) reported research into the scenic quality of forest landscapes in Victoria's north-east. A range of human alterations, including clearfelling and agricultural activity, was found to influence scenic beauty judgements. More recently, the Regional Forest Agreement process has provided some insight into the values and concerns of the Australian public. Associated social assessment has focussed on identifying the social impacts of forest harvesting on social well-being, community attachments, employment and related opportunities (Coakes 1998). No major Australian study has examined the relative acceptability of multiple-harvesting options. Generalisation of findings from research undertaken in a Northern Hemisphere context may be constrained by differences in landscape, vegetation, forest management practices and socio-cultural characteristics of the relevant populations. Comparative studies are therefore required in an Australian context.

The time dimension

The benefits of long-term research apply to the social sciences as much as to the biophysical sciences. Social assessment of forestry practice changes over time as the forest itself changes and regenerates following harvesting. Social assessment of forestry practices also changes in relation to shifts in the values and beliefs of those who assess forests. Social response to forest management is dynamic; longitudinal studies are therefore critical to gaining a realistic understanding of community response to forestry practices.

As highlighted by Ribe (1989), the visual, ecological and other outcomes of harvesting

systems change over relatively short periods of time. Harvesting options most acceptable immediately after harvest may or may not be associated with unacceptable outcomes three, ten or 25 years after harvest. While it is acknowledged that acceptability of harvesting options will alter over time, there have been very few systematic investigations regarding these effects. Hull and Buyhoff (1986) developed photographic simulations of North American forests and examined long-term scenic beauty following harvest. The results reveal some interesting patterns for a small number of management options (unthinned natural, unthinned planted, lightly thinned planted and heavily thinned planted). For example, naturally regenerated stands were preferred for the first 25–30 years following harvest, while planted stands were more attractive during subsequent years. A similar study was conducted in New Zealand to examine preferences for softwood plantations at harvest, maturity and during regrowth (Thorn *et al.* 1997). Researchers examined a number of planting arrays. The results indicate different patterns of preference for contour and vertical plantings across a 20-year time period. Findings of temporal differences in social assessments of management systems underscore the need for examination of similar effects in Southern Hemisphere hardwood native forests, and for assessments of a wider range of harvesting options.

Social assessment of forest management also changes over time as community understandings and attitudes towards forestry evolve through dialogue. Researchers have used a variety of methods to track changes in valued outcomes of forest management (see Bengston 1994 and Schindler 1999, for example). Xu and Bengston (1997) utilised computerised content analysis of relevant newspaper articles, conference papers and journal articles. They showed that the forest values expressed by forest professionals, mainstream environmentalists and the general public shifted significantly over a ten-year study period. Social assessment of forestry practice will potentially change as new understandings of the ecological impacts of alternative silvicultural systems are developed through long-term research and communicated to forestry professionals, the general public and specific interest groups. Over the longer term, we are also likely to observe changes related to broadscale change in social values relating to environmental management.

Broader social contexts

While a new understanding of the ecological impacts of forest management systems is likely to result in some changes in professional and lay assessment of these practices (see for example Kearney 2001), the relationship between new knowledge and social response is neither direct nor simple. The complexity of the relationship between information about ecological management of forests and social assessment of forestry is well illustrated in a study by Brunson and Reiter (1996). They asked office workers and students to assess the acceptability of a range of forest harvesting systems (including stands harvested in traditional ways and 'ecosystem management timber harvests') shown in photographs. Half of the respondents heard a five minute message on ecosystem management prior to making these judgements. The remaining participants heard no message. The information provided in this study influenced the office workers and business students in different ways. Office workers who heard the message about ecosystem management rated the 'ecosystem managed stands' as *more* acceptable than did the control group (no information). However, students who heard the information rated the ecosystem managed stands as *less* acceptable than did the control group. The two groups differed in their environmental orientations, gender, frequency of visits to forest environments, and in age. The office workers tended to be more environmentally aware, and were more likely to be female. Brunson and Reiter suggest these may have resulted in a more

favourable response to the ecosystem management message. The business students were generally younger and included more people who visited forests frequently for recreation. The potential for any mechanical harvesting (whether associated with ecosystem management or not) to interfere with recreational activity may account for the less positive response of this group. It is difficult to know exactly why these groups responded differently. Brunson and Reiter argue that the important issue for managers is that the effect *can* occur, and that information must be carefully presented to prevent unintentional outcomes.

Brunson and Reiter's work suggests that information will be interpreted differently by different social groups. In part, this variability reflects the different values of social groups. Values and worldviews can act as 'social amplifiers': strong value orientations may lead an individual to selectively seek and attend to information about the consequences of an action for the objects they value (Stern and Dietz 1994). Values and worldview can also act as 'filters' for information so that individuals more readily accept information that is congruent with their values and worldview. In assessing forest management, one's place in the broader social structure (including rural or urban residency, gender, class, economic dependence on timber production and recreational activities undertaken in forests) will have an important influence on the aspects of forests that are most valued. For example, an urban person who rarely visits a forest may pay little attention to information about risks of forest management practices because this outcome is seen to have little impact on the things they most value about forests. For people who work in forests, or whose friends and family work in forestry, riskiness of harvesting practice may be a prime consideration since high-risk practices pose an immediate threat. New information about relative safety of forest harvesting systems is therefore likely to be closely attended to and to have a significant

influence on attitudes towards these management practices. Similar group differences in response to information can be envisaged with regard to impacts on biodiversity, water quality, timber yield and so forth. While researchers acknowledge that new information will influence social response to forest management (Ribe 1999), we have very little understanding of how information can be best utilised in public and professional contexts to ensure ongoing progress towards sustainable forest management practices.

Pressing research questions

It is over a decade since Ribe (1989) identified the need for better understanding of how assessment of forest management changes over time. Despite this, no recent research endeavours have examined the visual impacts of alternative silvicultural systems over time. There is some evidence that aggregate retention of regeneration trees is preferable to dispersed retention of trees immediately after harvest (Ribe 1999). The question arises as to the visual preference for landscape outcomes of these different methods at different periods in the post-harvest re-establishment phases.

Questions of the relationship between time since harvesting and social assessment can be addressed in a number of ways. Firstly, broadly similar logging coupes of a range of ages could be identified, captured in naturalistic photographs and presented for comparison. Secondly, data-driven methods have been developed for aiding visualisation of plantation forests based on time since planting (Thorn *et al.* 1997). Similar methods may be available or readily developed for simulating logging areas, depicting outcomes immediately after, three, ten and 25 years since harvesting. Social assessments may then be based on these representations. Thirdly, the Warra LTER Site offers an ideal opportunity to establish a longitudinal study of forest assessment. Response to a range of forest management

alternatives can be examined on-site or through photographs, based on the actual outcomes in the Warra trials.

There are many other possibilities for research which arise from the issues discussed in this article. Of fundamental interest is the development of theoretical bases for understanding and predicting social response to forest management systems. There is also a need to better identify the criteria that individuals and social groups utilise to assess silvicultural systems and to explore the relationship between these criteria, judgements of social acceptability, social values and information. The Warra LTER Site provides a unique opportunity to develop a better understanding of community response to forestry practice, and to integrate this knowledge with the development of sustainable forest management systems.

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