

# **Eliciting and Mapping Forest Values: A Case Study of the Canadian Boreal Forests of North-western Ontario**

**Norman McIntyre and Perrine Lesueur,**

**Lakehead University Centre for Tourism and Community Development  
Research**

## **Introduction**

Values have been the subject of theoretical consideration in many disciplines and areas of study including “education, political science, economics, anthropology, and theology, as well as psychology and sociology” (Rokeach, 1973). It has been argued that the importance of values in natural resource planning is that many natural resource conflicts are more about values than they are about facts (Yankelovich, 1991). This suggests that natural resource planning is mainly “an intrinsically political process involving community deliberation and struggle” (Lachapelle *et al.*, 2003: p.475) over different value positions about specific places.

Place-based, value-centred approaches to natural resource planning have gained in popularity in recent years (McIntyre, Moore & Yuan, in press; Brown, 2005; Galliano & Loeffler, 1999; Mitchell, *et al.*, 1993; Williams & Patterson, 1996; Williams & Stewart, 1998). In part, this has resulted from the increased adoption of community-based collaborative partnerships in forest management (Oglethorpe, 2002) which has emphasised the contextual nature of the planning of natural resource use. This latter realisation has instigated a move away from traditional ‘one-suit-fit-all’ planning models (e.g., ROS). Place-based planning is necessarily context focused and collaborative in that it recognizes that people develop strong bonds with the places they use for recreation and that they have a need to be involved in influencing the future direction of change in such places.

Although the theoretical importance of place values in natural resource planning has been recognised for some time, it is only recently that researchers have begun to struggle with ways of incorporating them into resource planning (e.g., Satterfield, 2001; Brown & Reed, 2000; McFarlane & Boxall, 1999). A number of issues have faced social scientists in this endeavour: a) How are place values conceptualised? b) How are place values to be elicited from users of natural resource areas? c) How are place values to be represented spatially? d) How are place values incorporated into natural resource planning? Building on earlier work in the boreal forests of north-western Ontario (McIntyre, et al, 2004), this chapter set out to address these questions through the use of a case study centred in the boreal forests of north-western Ontario, Canada.

#### **a) How are place values conceptualised?**

The work of Brown (1984) on values has provided a basis for a common understanding of the concept in natural resource management (More, Averill, & Stevens, 1996). He focused on a preference-related view of values which is useful in natural resource contexts in that much of the contestation surrounding recreational use centres on one value (e.g., economic) being ‘better’ or more preferred than another (e.g., aesthetic). Brown distinguished two major types of values: held and assigned (p. 232). The former he defined as ‘an enduring concept of the preferable which influences choice and action’ (p.232) and the latter as ‘the expressed relative importance or worth of an object to an individual or group in a given context’ (Brown, 1984: 233).

The concept of ‘held’ forest values has been applied to study forests and forest ecosystems in the USA and elsewhere (e.g., Brown & Reed, 2000; Manning, Valliere, & Minter, 1999; Commonwealth of Australia, 1998; Xu & Bengston, 1997). While such values may be appropriately applied to a particular forest (Manning *et al.*, 1999: Green Mountains National Forest, Vermont) or forest system (Bengston & Xu, 1995: US National Forests), they would

seem less suitable to examining values at the site or locality level. Assigned values, however, which encompass judgments on the relative valuation of objects, would seem particularly appropriate to mapping forest values, as this process involves making choices among particular sites or localities within a forest and attaching values to them (McIntyre, et al, 2004).

### **b) How are place values to be elicited from users of natural resource areas?**

Kuentzel (2000) has argued that philosophical and theoretical differences about how people form values are at the root of the problem of incorporating values into the public participation process. In this regard, Kuentzel *et al.* (1997) have posited three dominant perspectives: social utility (Driver *et al.*, 1987; Bengston, 1994); social cohesiveness (Parsons, 1951); and social discourse or constructivist (Giddens, 1984).

We adopt a social constructivist perspective to value formation, recognizing that place values are ‘constructed through the interaction of individuals and structures in a socio-institutional context in places – they have a ‘geography’ (Davies, 2003: 82). This conceptualisation suggests the need to employ interpretive methods to elicit context specific values. This contrasts with other recent research (e.g., Brown & Reed, 2000), which have used generic sets of values at the ‘held’ level to assess site evaluations.

A combination of focus groups and place mapping was used initially to derive a values scale for the boreal forest area of northern Canada. This values scale was included in a recreational survey of residents of Thunder Bay in north-western Ontario and visitors from the USA and other parts of Canada. The end result of this study was an abbreviated, contextualised ‘place values’ scale for the boreal forest.

### **c) How are place values to be represented spatially?**

At a practical level, a major impediment to the integration of values data into planning processes has been the reluctance of social scientists to collect and represent these data spatially. Spatial representation of user values is especially crucial in giving voice to place-based meanings in light of the explosion in spatial representation of natural resource and econometric data through GIS computer-based technology. The growing emphasis on place-based, value-centered meanings urges social scientists involved in natural resource planning to think in spatial terms and in so doing, to facilitate the integration of personal place values data into the resource-based decision models used by forest planners (McIntyre, Moore & Yuan, in press).

Research involving the collection of spatial data through surveys has been restricted due to limitations of map size and hence scale. More recently, developments in GIS technology enabling its use on the World Wide Web (WWW) have made it possible for lay professionals and the general public to input spatial data in a planning context (Kingston, *et al.*, 2000; Ghose, 2001). This, so called, Public Participation GIS (PPGIS) has experienced rapid growth in the last 10 years. However, the potential of integrating GIS and the WWW is a relatively more recent innovation (Kingston, 2007).

The study reported in this chapter used a web-based GIS survey and a conventional paper-map survey to elicit and map the place values of residents who used the boreal forests along the north shore of Lake Superior in Canada. Using both a conventional and web-based survey allowed comparison between the two methods in terms of response rates and the quality of the data collected.

Arc GIS mapping and calculation of the density distribution of recreation places marked on the map of the study area by respondents enabled the recognition of High Use Areas (HUAs).

These HUA's were discriminated on the basis of geographic characteristics, values, types of activities and season and frequency of use.

**d) How are place values incorporated into natural resource planning?**

The characteristics and spatial distribution of the HUA's indicate that residents' recreational range is largely defined by highways, forest roads and entrance points, which emphasises the importance of accessibility and highlights the centrality of forest production activity in providing roads and access points for recreation (Hunt et al., 2000). Four distinct place value clusters were recognised using the 399 nominated places. On this basis, the HUAs were classified into four groups differing in their spatial distribution, values attached to them, most common types of activities and seasonal patterns of use.

Although multiple use is a clear mandate of the Ontario Crown Forest Sustainability Act 1994 which stated that Crown Forests are to be managed "to meet social, economic and environmental needs of present and future generations", incorporating values other than harvesting, including recreation, proactively in forest planning has been difficult. The recognition and characterisation of these HUAs and the place values attached to them is a first step in acknowledging the importance of place meanings for local citizens. They are also essential prerequisites to incorporating place concepts into forest planning at an early stage in the process as, for example, special management zones similar to the increasing recognition afforded to heritage, conservation and wildlife areas in forest planning.