

PUBLIC ATTITUDES TOWARD PROGRAMS DESIGNED TO ENHANCE FOREST RELATED BENEFITS ON PRIVATE LANDS

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Abstract: Public agencies may at times provide education, technical help, tax incentives, or other forms of aid to private landowners to help them enhance their land in ways that benefit the public. Since public funds are used to pay these expenses, it is important that program goals be correlated with underlying public values and concerns. We used a conjoint ranking survey to assess public preferences and acceptable tradeoffs with respect to programs that enhance timber quality and growth, promote public recreational opportunities, improve wildlife habitats, and the costs associated with these programs. The survey included personal interviews in which participants were asked to complete a series of demographic and attitudinal questions. Results will provide insight into public views on landowner and societal rights and responsibilities regarding private lands and relative values regarding forest based benefits on private lands.

Introduction

Approximately 88% of the northeastern forest is owned by private landowners (USDA Forest Service 1988, 1995). Most of this land, almost three-quarters of the total, is held by a broad assortment of nonindustrial private landowners (NIPF's). The mere extent of these holdings makes obvious their potential importance in meeting society's needs for timber, outdoor recreation, wildlife habitats, aesthetics, biodiversity, and other benefits that forests offer. An understanding of the role that private lands may play along with a greater ability to draw on the potential benefits can reduce the intense pressure being placed on the remaining 12% of the land that is in public ownership.

Prior research has focused primarily on the perspectives of landowners regarding benefits derived from their land. In this study we examined public perspectives toward private lands, for example what does the public expect from private forests and what are they willing to give up to obtain these benefits? To provide insight into these questions we administered a conjoint ranking survey and a series of attitudinal questions to visitors at the Adirondack Visitor Interpretive Center located in Paul Smith's, New York. The survey focused on public preferences for and costs associated with enhancing benefits from improved timber management, accessibility for outdoor recreation, and wildlife habitats on private lands.

Methods

Conjoint analysis is a technique for measuring psychological judgments that is used frequently in marketing research to measure consumer preferences (Green et al. 1988). Respondents choose between alternative products or scenarios that display varying levels of selected attributes. The utility of each attribute can be inferred from the respondent's overall evaluations. These partial utilities or part worths indicate the relative importance of each attribute's contribution to overall preference or utility. They can be combined to estimate relative preferences for any combination of attribute levels. Conjoint techniques are well suited for soliciting and analyzing preferences in environmental decisions that frequently entail tradeoffs between costs and benefits that are not represented efficiently in market transactions.

A random utility model is used to explain public preferences toward using varying amounts of public funds to enhance different mixes of benefits from timber, recreation, and wildlife habitats on private lands. When presented with a set of alternatives, individuals are assumed to make choices that maximize their utility or satisfaction. The utility that the *i*th individual derives from the *j*th alternative (U_{ij}) can be represented as:

$$U_{ij} = X'_{ij}\beta + e_{ij} \quad (1)$$

where X_{ij} is a vector of variables, which may include transformations of variables, that represent values for each of the four attributes of the *j*th alternative to the *i*th individual; β is a vector of unknown parameters; and e_{ij} is a random disturbance, which may reflect unobserved attributes of the alternatives, random choice behavior, or measurement error. In the empirical study under consideration, a respondent's utility level (U_{ij}) for each alternative is not observed, but a ranking (r_j) is observed that is assumed to proxy for his or her underlying utility. McKelvey and Zavoina (1975) developed a polychotomous probit model to analyze ordinal level dependent variables.

Surveys were conducted in person at the Adirondack Visitor Interpretive Center. Each respondent was asked to rank 9 alternative scenarios depicting varying levels of public efforts to improve timber quality, recreation availability, and wildlife habitats on private land at varying cost levels. Each alternative was displayed on a sample card that contained a

different mix of the levels for the four attributes depicted in Figure 1. Only one level of each attribute was presented in a single alternative. An orthogonal sample design was used to select the particular levels to be included on each card to allow estimation over the entire range of alternatives ($3^4 = 81$) with the minimum of number of ranked alternatives. The orthogonal design also allows estimation of partial utilities for each respondent, thus outlining each respondent's preference structure.

Table 1 Sample card layout for the conjoint ranking survey

ALTERNATIVE # (1-9)	
EFFORTS TO IMPROVE:	
TIMBER	LESS/SAME/MORE
RECREATION	LESS/SAME/MORE
WILDLIFE	LESS/SAME/MORE
COST	\$0/\$250/\$500
RANK ? (1-9)	

Respondents also completed a series of attitudinal questions using a 5-point Likert scale (strongly agree/agree/neutral/disagree/strongly disagree) and a brief demographic survey.

Before completing the surveys, respondents took a guided walking tour of demonstration sites that show the effects of different silvicultural treatments on timber growth and quality, wildlife habitats, aesthetics, and recreational opportunities. These topics were discussed during the tour. Upon returning to the visitor center, respondents were provided with an explanation of the purpose and form of the conjoint survey, and were given an opportunity to ask questions or discuss any portion of the survey. The walking tour and survey took approximately 45 minutes and 20 minutes to complete, respectively.

Results and Discussion

Although the conjoint data has not been fully analyzed, some descriptive statistics and preliminary data can be reported. Three hundred and seventy-three respondents completed the surveys. This included several introductory forestry classes from nearby Paul Smith's College. Eighty percent of the respondents were male and nearly 75% were less than 30 years old. Thirty-eight percent of the respondents owned some forest land; 13% were raised in a large city and 8% currently live in a large city.

While we do not believe that this sample is representative of the public at large, primarily due to the rural location of the survey, inclusion of college students, and possible self selectivity of those choosing to participate in the tour, we believe it will provide useful information. As mentioned previously, the orthogonal sample design allows estimation of partial utilities or preference structures for each respondent. These may be segmented by demographic profile to identify and analyze differences in the preferences for various segments of the sample.

Several interesting results emerged from analyzing responses to the attitudinal questions. Most respondents (85%) strongly agreed or agreed that the availability of forest recreation is important to society, and 82% believe landowners should be permitted to restrict access to their land. However, only 48% believe landowners should be given incentives to allow public recreation on their land.

Again, most respondents (90%) also strongly agreed or agreed that rare or threatened species should be protected and 77% believe that landowners should be given incentives to enhance wildlife habitats on their lands. Nearly 60% agreed that keeping land in forest was important and would vote to give tax relief to landowners who agree not to develop their land.

Nearly half of the respondents believe landowners should be permitted to do as they please with their land, but 88% disagreed with the statement that "Society has no responsibility to provide healthy forests for future generations". About half of the respondents agreed that land should provide an economic return to cover expenses associated with ownership, though many believe too much emphasis is placed on economics in land-use decisions. Most respondents agreed that both ecology and economics should be considered along with the needs of future generations.

Nearly 90% of the respondents agreed that wood products are important to society, but only about 40% agreed with separate statements indicating that either public or private lands should be a source for wood products. Seventy-two percent agreed that landowners should be able to earn a profit from their land.

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