

PUBLIC ATTITUDES TOWARD FOREST MANAGEMENT IN AN ILLINOIS NATIONAL FOREST

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ABSTRACT

One of the fundamental problems of modern public lands management is the accurate and representative assessment of public opinion. The purpose of this study was to examine differences in perceptions and attitudes of National Forest management activities and plans among members of local and regional publics. A survey was administered to members of the public in counties adjacent to the Shawnee National Forest in southern Illinois, in the remaining counties in Illinois, and in counties in three other states adjacent to southern Illinois. Results indicated that there were few significant differences in perceptions and attitudes among these three groups.

INTRODUCTION

One of the fundamental problems of modern public lands management is the accurate and representative assessment of public opinion. Highly vocal local publics and special interest groups tend to garner the lion's share of attention while the perceptions and opinions of regional and national publics go unnoticed. American environmental legislation requires the collection of the responses of interested and affected members of the public in the preparation of environmental impact statements and land management plans.

Public hearings are most often used to fulfill public involvement obligations. Public hearings are onerous for members of the public who have little free time and who have to combat a fear of public speaking in order to attend and offer comments. As a result, only special interest group spokespersons and the most

highly motivated members of the public attend these hearings, and they are often motivated by strong emotions [1, 2]. Professional land managers feel besieged by such individuals and often have little sense of the sentiments of the public as a whole. This has particularly been true for managers on the Shawnee National Forest in southern Illinois, for whom the management planning process has been fraught with difficulties in interacting with local publics and special interest groups.

Although a few studies have examined differences in opinions and perceptions between members of environmental groups and members of the public [e.g., 2-4], little attention has been given to comparisons between local and regional publics. One exception is Manfredo, Fishbein, Haas, and Watson's [5] study that showed that respondents who lived in fire-affected regions reported a slightly greater level of support of and more positive attitudes toward a controlled-burn policy than a national sample. Miller, Campbell, and Yeagle [6] reported a similar result. They noted that respondents supporting prescribed burns tended to live closer to natural areas than those opposing prescribed burns. However, this difference was not statistically significant.

The purpose of this study reported here was to examine the usefulness of a survey technique to offer insight into differences and similarities between local and regional publics.

METHOD

A mail survey was administered to 1500 members of the public in areas adjacent to and some distance from the Shawnee National Forest in southern Illinois in the summer of 2001.

Setting

The Shawnee National Forest is a highly fragmented forest located in southern Illinois. It is the only National Forest in Illinois and there are many conflicts over forest uses. Over the past 20 years, forest administrators have found it difficult to develop their management plan due to resistance from strongly divided and highly vocal local residents and special interest groups.

Participants

Research participants were randomly sampled from three geographic areas. The local sample comprised 700 residents of southern Illinois counties that either included Shawnee National Forest land or were directly adjacent to counties including Shawnee National Forest Land. The regional Illinois sample comprised 400 residents of the remaining Illinois counties. The adjacent states sample comprised 400 randomly selected residents of counties in Missouri, Tennessee, and Kentucky adjacent to the border of southern Illinois.

Instrument

The questionnaire was designed in consultation with Shawnee National Forest officials and with research scientists at the USDA Forest Service North Central Research Station in Evanston, Illinois. The questionnaire comprised 12 pages with 9 sections. The sections included Likert-scaled questions on attitudes regarding forest recreation, resource use, ecosystem protection, and forest administration. Three sections examined the acceptability, importance, and management priority of 26 forest activities and uses. Recreation behavior and demographics were measured in two other sections of the questionnaire.

Procedure

A total of 1500 questionnaires were sent to research participants in June 2001. The mailing included a cover letter, a questionnaire, and a postage-paid envelope for return mail. About four weeks later, non-respondents received a postcard reminding them to complete the questionnaire and return it. A final mailing was sent to non-respondents about eight weeks after the first one. This mailing included a new cover letter emphasizing the importance of the survey, a questionnaire, and a postage-paid envelope.

RESULTS AND DISCUSSION

Response

After three mailings, 314 completed questionnaires were received, yielding a response rate of 21%. Because this is a low response rate, I compared respondent demographics with those of the population from which they were drawn. Respondent demographics were quite comparable to population norms. A telephone follow-up with 30 non-respondents indicated few systematic reasons for non-response. Most of the non-respondents indicated that they had not received the questionnaire or that they did not have time to complete it. Several reasons for the low response rate seem likely. The questionnaire was too long and included too many repetitive items. The questionnaire also included items that required a substantial amount of knowledge about detailed forest management issues, and many participants probably felt that they could not respond adequately due either to lack of interest or lack of knowledge about Shawnee National Forest issues. Although survey results should be interpreted with some caution, the sample probably reasonably reflects the views of interested and affected members of the regional public.

Recreation Behavior

Respondents were asked to indicate how often they engaged in 20 recreational activities. They used a 3-point scale in which 1 = never, 2 = occasionally, and 3 = frequently. Responses were factor analyzed with varimax rotation to determine if an underlying structure could capture and reduce the data set. This analysis resulted in four easily interpretable factors with eigenvalues > 1.0 (VAF = 56.43%). The Active Consumptive factor included recreational activities oriented toward consuming resources such as fishing and hunting. The Active Nonconsumptive factor included activities such as hiking and backpacking, and the Passive Nonconsumptive factor included activities such as wildlife observation and sightseeing. A fourth factor included items related to driving for pleasure. I calculated means for each factor in each geographic region by adding scores for each variable loading on the factor and dividing by the number of variables. These means are presented in Table 1.

I used one-way analysis of variance to determine if differences in these factors existed across the three geographic regions. The Active Consumptive factor was significantly different with local and regional Illinois residents participating in these activities more than residents of adjacent states. Driving for pleasure was reported slightly more among Illinois respondents than those in adjacent states. There were no statistically significant differences in active and passive non-consumptive recreation behavior frequency across the three geographic areas.

Despite the statistically significant differences, the usefulness of the variation in self-reported recreation behaviors among geographic regions is limited because the scaled differences are so small as to be conceptually meaningless. For example, although active consumptive behavior was reported as more frequent in Illinois than in adjacent states, the difference is quite small and all of the values are within a similar conceptual range of occasional frequency. These results offer little in the way of recommendation for management policy, and indicate that proximity to the Forest has little impact on recreation behavior type.

Table 1. Self-Reported Recreation Behavior Frequency by Geographic Area

Variable	Local	Regional Illinois	Adjacent states
<i>Active consumptive</i>	1.68	1.74	1.51
Active nonconsumptive	1.32	1.38	1.39
Passive nonconsumptive	1.97	2.04	1.99
<i>Driving for pleasure</i>	2.18	2.15	1.96

Note: *Italics* indicate statistically significant differences among the regions, $p < .05$.

Scale: 1 = never, 2 = occasionally, 3 = frequently.

However, an examination of relative frequencies of these self-reported behaviors is more helpful. Driving for pleasure and passive nonconsumptive behaviors are reported as more frequent than either of the active types of behaviors. Dwyer [7] found similar results in a survey of residents of three urban areas. These results indicate that passive and non-consumptive, non-commodity uses of the forest are most popular and that management for these activities should be emphasized.

Recreation Attitudes

Respondents indicated the extent to which they agreed with 14 statements regarding recreation management and policy on a 5-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree. Responses were factor analyzed with varimax rotation to determine if an underlying structure could capture and reduce the data set. This analysis resulted in four easily interpretable factors with eigenvalues > 1.0 (total VAF = 51.90%). Means were calculated for each factor in each geographic region by adding scores for each variable loading on the factor and dividing by the number of variables. These means are presented in Table 2.

One-way analysis of variance with geographic region as the independent variable was used to determine if differences in these factors existed across the three geographic regions. The results of these analyses indicated that local residents were somewhat less likely to favor management for preservation and less likely to endorse fees for services on the forest than respondents from the regional samples. These differences are quite small, however, and the means all reflect similar sentiments. All three groups express moderate support for service fees, preservation, and less developed recreation over uses associated with motorized vehicles and horses.

Table 2. Recreation Attitudes by Geographic Area

Variable	Local	Regional Illinois	Adjacent states
Favor motorized vehicles, horses	2.77	2.80	2.73
<i>Favor preservation</i>	<i>3.10</i>	<i>3.20</i>	<i>3.27</i>
<i>Favor fees for services</i>	<i>3.40</i>	<i>3.48</i>	<i>3.68</i>
Prefer less developed recreation	3.31	3.13	3.18

Note: Items with negative loads on factors were reverse coded for presentation clarity. *Italics* indicate statistically significant differences among the regions, $p < .05$.

Scale: 1 = strongly disagree, 2 = disagree, 3 = don't know, 4 = agree, 5 = strongly agree.

Resource Use Attitudes

Respondents indicated the extent to which they agreed with 15 statements regarding forest resource uses on a 5-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree. I factor analyzed responses with varimax rotation to determine if an underlying structure could capture and reduce the data. This analysis resulted in five easily interpretable factors with eigenvalues > 1.0 (total VAF = 62.49%). Means were calculated for each factor in each geographic region by adding scores for each variable loading on the factor and dividing by the number of variables. These means are presented in Table 3.

The means in Table 3 indicate that the participants were neutral on all of the factors except managing for forest health, which they supported. I used one-way analysis of variance with geographic region as the independent variable to determine if differences in these factors existed across the three geographic regions. The results of these analyses indicated that Illinois residents' attitudes toward timber harvest were slightly more favorable, and that local participants were slightly more in favor of resource extraction than the other two groups. However, these differences are conceptually negligible even though they are statistically significant.

Ecosystem Protection Attitudes

Respondents indicated the extent to which they agreed with 18 statements regarding ecosystem protection on a 5-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree. Responses were factor analyzed with varimax rotation to determine if an underlying structure could capture and reduce the data. This analysis resulted in three easily interpretable factors (and two that were not readily interpreted) with eigenvalues > 1.0 (total VAF = 54.40%).

Table 3. Resource Use Attitudes by Geographic Area

Variable	Local	Regional Illinois	Adjacent states
<i>Extraction versus protection</i>	2.86	2.83	2.84
<i>Harvest</i>	3.02	3.04	2.94
Manage for forest health	3.88	3.83	3.78
Protect native species	3.17	3.24	3.11
Timber issues	2.57	2.72	2.53

Note: Items with negative loads on factors were reverse coded for presentation clarity. *Italics* indicate statistically significant differences among the regions, $p < .05$.

Scale: 1 = strongly disagree, 2 = disagree, 3 = don't know, 4 = agree, 5 = strongly agree.

I calculated means for each factor in each geographic region by adding scores for each variable loading on the factor and dividing by the number of variables. These means are presented in Table 4.

Overall, the mean attitudes toward ecosystem protection in Table 4 show that respondents favored protection more than resource-use activities. Concern for environmental quality was neutral with a large proportion of respondents indicating that they did not know the answers to the questions loading on this factor. I conducted a one-way analysis of variance with geographic region as the independent variable to determine if differences in these factors existed across the three geographic regions. Respondents from adjacent states were significantly more likely to favor protection than Illinois residents were, though even so the means are quite close. The regional Illinois sample favored resource use slightly more than the local respondents or those in adjacent states. As has been the case with the other analyses reported so far, these means are conceptually very close even though their differences are statistically significant. The relative differences among the factors seem more important and interesting than the differences by region.

Forest Management and Administration Attitudes

Respondents indicated the extent to which they agreed with 14 statements regarding forest management and administration on a 5-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree. Responses were factor analyzed with varimax rotation to determine if an underlying structure could capture and reduce the data. This analysis resulted in three easily interpretable factors with eigenvalues > 1.0 (total VAF = 47.55%). I calculated means for each factor in each geographic region by adding scores for each variable loading on the factor and dividing by the number of variables. These means are presented in Table 5.

Overall the survey respondents trusted Shawnee National Forest managers and yet they also expressed a desire for more public involvement. Differences among

Table 4. Ecosystem Protection Attitudes by Geographic Area

Variable	Local	Regional Illinois	Adjacent states
<i>Favor protection</i>	3.45	3.56	3.75
<i>Favor resource use</i>	2.81	2.91	2.71
Concern for environmental quality	2.78	3.03	2.97

Note: Items with negative loads on factors were reverse coded for presentation clarity. *Italics* indicate statistically significant differences among the regions, $p < .05$.

Scale: 1 = strongly disagree, 2 = disagree, 3 = don't know, 4 = agree, 5 = strongly agree.

Table 5. Attitudes toward Forest Administration by Geographic Area

Variable	Local	Regional Illinois	Adjacent states
Trust, faith in forest managers	3.45	3.28	3.35
Want more public involvement	3.45	3.28	3.35
<i>Consolidate land</i>	<i>2.81</i>	<i>3.12</i>	<i>3.17</i>

Note: Items with negative loads on factors were reverse coded for presentation clarity. *Italics* indicate statistically significant differences among the regions, $p < .05$.

Scale: 1 = strongly disagree, 2 = disagree, 3 = don't know, 4 = agree, 5 = strongly agree.

the three geographic regions on these variables were not statistically significant, indicating that local respondents did not feel any differently about forest managers or the need for additional public involvement than regional respondents. Although managers may not welcome the idea that more public involvement was perceived to be necessary, they would surely be pleased to know that most members of the sample felt they were doing a good job. Not surprisingly, local respondents were significantly less enthusiastic about land consolidation, which would be accomplished either through land purchases or trades, than were regional respondents.

Acceptability, Importance, and Priority of Forest Uses

Respondents rated a set of 26 forest uses and activities on each of three 5-point scales: level of acceptability, level of importance in the local economy, and level of management priority. The mean values for these items are presented in Table 6. The highest values within each measurement category are marked with pluses and the lowest values are marked with minuses.

In general, activities that are rated as acceptable and important are rated as low management priorities. Also, the activities and uses that are rated as more acceptable and important tend to be those with low impacts such as wildlife observation and sight-seeing. Activities and uses rated as least acceptable and important tend to be those associated with commodity extraction. These findings are in accord with a recent broadly-based survey of public opinion in several large cities [7]. One-way analyses of variance with a Bonferroni alpha correction revealed few differences among the three geographic regions.

These results indicate that a heavy emphasis on extractive activities, except in terms of managing them properly, is unacceptable to members of the public who see non-extractive activities as more appropriate and important. These opinions may be at odds with U.S. Forest Service and administration priorities and with the wishes of certain local and special interest groups. However, these data show that the broader public sees things somewhat differently than these groups.

Table 6. Resource Activities: Acceptability, Importance, and Management Priority

Variable	Acceptability	Importance	Priority
Commercial harvest	3.84	2.81-	3.47+
Harvest for health	2.95	3.82	1.93-
ATVs and ORVs	2.33-	2.45-	2.63
Mineral extract	2.04-	2.55-	3.73+
Oil and gas	2.09-	2.60-	3.68+
Hunting	3.81	3.72	2.27
Fishing	4.26	3.94	2.05
Hiking	4.59	4.01+	1.85-
Backpacking	4.58	3.98+	1.88-
Tent camp in development	4.60+	3.98+	2.00
RV or car camp	4.09	3.77	2.26
Horseback riding	3.93	3.68	2.45
Sight-seeing	4.66+	4.10+	1.71-
Non-commercial extract	3.36	3.15	3.02
Open land management	3.60	3.40	2.51
Mountain biking	3.49	3.15	2.90
Rock climbing	3.75	3.63	2.69
Outfitter/guide	3.75	3.51	2.77
Nature study	4.61+	3.98+	1.84
Wildlife observe	4.67+	4.04+	1.73-
Bird watching	4.67+	3.93	1.88
Large group recreation	3.67	3.43	2.72
Research	4.40	3.93	1.76-
Target shooting	2.66-	2.64-	3.47+
Rock collecting	3.28	3.07	3.12
ATV use by disabled	3.50	3.34	2.65

Note: A plus sign (+) in this table indicates that the item was among the most highly endorsed. A minus sign (-) indicates low endorsement.

Scale: 5-point scale from 1 = very unacceptable, very low importance, and very low priority to 5 = very acceptable, very high importance, and very high priority.

CONCLUSIONS

Although the results of this study must be interpreted with caution due to a low response rate, demographic comparisons and post-survey interviews with non-respondents revealed that the sample could be quite representative of interested and affected members of the public. In addition, the findings are quite similar to another survey in which a higher response rate was obtained [7]. Also, it is reasonable to surmise that the respondents composed the interested and affected public since they took the time to complete and return the questionnaire.

Overall the results presented here paint a picture of few differences among residents of three regions of increasing distance from the Shawnee National Forest. There were few differences in attitudes or behavior among the local, regional Illinois, and adjacent states samples. Even differences that were statistically significant were so small as to be conceptually meaningless.

These results draw attention to the divide between public land managers and interested and affected members of the general public. Managers are beset by highly vocal local publics and representatives of special interest groups, whose opinions and attitudes do not necessarily reflect those of the general public. Moreover, public input is most often assessed through public hearings, which have the singular disadvantage of not representing the broader public's opinions. As a result, forest managers may not have the information that they need to make decisions that are acceptable to the broader public.

Twight and Lyden [8] showed that forest managers were more aligned with industry groups. They concluded that this was a result of the socialization of forest managers in an agency that has regularly encountered pressure from various industry groups. Moreover, several studies have shown that managers are heavily influenced by their own training, attitudes, and opinions. More than 30 years ago Clark, Hendee, and Campbell [9] concluded that managers' perceptions of user preferences were more characteristic of the managers' own values and predispositions than realistic perceptions of the public's actual opinions and reactions.

Other studies have shown that forest manager's opinions and values are not aligned with those of the public, and also that managers are not able to accurately forecast public attitudes and opinions [2, 3, 10].

In order to be more responsive to the public, land managers need to find better ways to get feedback from broader and more representative publics. Traditional methods of gathering public involvement such as the public hearing or advisory group are disadvantageous because they limit the public to the most vocal and highly motivated individuals. Although surveys can be cumbersome they offer the best prospects for understanding the views of interested and affected members of the general public.

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