NONCONSUMPTIVE WILDLIFE USE IN THE MIDWEST AND SOUTHEAST: REGIONAL FUNDING ATTITUDES AND IMPLICATIONS FOR FORESTRY

Jean C. Behrens-Tepper, Joseph T. O'Leary and W.L. Mills

Abstract.--Growing public interest in nonconsumptive use of wildlife on forest land has paralleled the growth of wildlife management programs for nongame species. The present study examines regional similarities and differences in nonconsumptive use between the Midwest and Southeast. The sample of active nonconsumptive users under consideration consists of those respondents to the 1980 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation, 18 years of age and older, who reside in either the South Atlantic or East North Central Census Geographic Regions. Results indicate a wide range of activity involvement among nonconsumptive wildlife recreationists. New sources of funding for nongame programs are favored by a majority of nonconsumptive wildlife recreationists in both regions. Implications for the future of forestry and state level nongame wildlife programs include the necessity to translate public support into stable, long-term sources of funding.

INTRODUCTION

The majority of fish and wildlife species in this country are dependent, at least in part, on forested habitats for their continued survival (USDA 1978). Projections of future forest recreation use indicate that demand for nonconsumptive activities will continue to increase (Hof and Kaiser 1983). Nonconsumptive use provides people with satisfying recreational experiences independent of the collection or consumption of an element of the environment (Vaske et al. 1982). In terms of wildlife-associated recreation, nonconsumptive use often has become synonymous with the activity of birdwatching. Increasing numbers of Americans outdoors, however, are participating in a variety of recreational wildlife activities that include observing, identifying, photographing, and feeding wild animals (Shaw and Mangun 1984; Kellert 1985). Although both game and nongame species may be the focus of these activities, increasing participation has stimulated interest in conservation programs that target nongame wildlife.

Documented public interest in nonconsumptive wildlife recreation has significant implications not only for development of management programs that incorporate nongame species but also for forest resource allocation decisions (Hay and McConnell 1979; Lyons 1982). Forestry interests play major roles in

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providing both public and private land opportunities for nonconsumptive activities that focus on forest dwelling species. "Although forest lands cover only one-third of the United States, they provide habitats that are critical to about two-thirds of all species of birds and animals, and the management of these lands at least indirectly influences a substantial proportion of the remainder (USDA 1978:10)." Those interested in wildlife must continue to look more closely at the actions that are undertaken in the forest.

Results of the comprehensive 1980 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (USDI 1982) estimate that 55% of the nation's population 16 years and older in 1980 participated in some form of nonconsumptive activity (Shaw and Mangun 1984). Further analysis of the 1980 National Survey (FHWAR) found differential nonconsumptive participation rates among the different Census geographic regions (Shaw and Mangun 1984). In the South, the South Atlantic Census Geographic Region (SA) reported a substantial participation rate with 41% of the regional population involved in wildlife activities with nonconsumptive use the primary purpose (USDI 1982). However, the East North Central (ENC) portion of the country had 60% of the population indicating participation in primary nonconsumptive use. This percentage was the largest involvement for any region in the country (USDI 1982).

The states that comprise the SA (Delaware, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, and West Virginia) and ENC (Illinois, Indiana, Michigan, Ohio, and Wisconsin) Regions have initiated programs for management of nongame and endangered species. With the exceptions of Florida and Georgia, all the states in the two regions had legislated income tax check-off programs for nongame wildlife by tax year 1985 (Schaefer 1986). The future of these and similar state programs are uncertain unless management agencies learn how to tap, via a reliable funding mechanism, the financial resources of the nonconsumptive wildlife recreationists who reside in or visit their state (Shaw and King 1980; Jackson 1982). As of this writing, the U.S. Congress has not appropriated funds to implement The Fish and Wildlife Conservation Act of 1980. An important direction for state management agencies, therefore, should be to continue to broaden the financial base of their recently initiated nongame programs. Given the estimated 13 million nonconsumptive wildlife users in the SA Region and the 21 million in the ENC (USDI 1982), additional funding opportunities do exist if appropriate strategies are developed (Mangun 1986). An understanding of the characteristics and attitudes of active nonconsumptive wildlife users is essential to further maturation of nongame resource management programs in Blue and Grey country.

The purpose of this study is to compare active nonconsumptive wildlife recreationists who reside in the SA and ENC regions. The comparison is based on four factors: (1) a scale or index developed for quantifying level of involvement in nonconsumptive wildlife-associated activities; (2) expenses for primary nonconsumptive wildlife trips; (3) contributions to private conservation organizations; and (4) attitudes toward new funding sources for public nongame programs. Relevant data are selected from the 1980 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (USDI 1982).
METHODS

The source of data for the present study was the 1980 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (FHWAR), conducted by the U.S. Bureau of Census (USBC), for the U.S. Fish and Wildlife Service (USFWS). The 1980 FHWAR Survey was designed to provide independent estimates of hunting and fishing participation rates at the state level and nonconsumptive wildlife recreation rates at the regional level.

The nonconsumptive followup phase (File FH-4) consisted of almost 6,000 interviews completed nationwide with persons who participated in some form of nonconsumptive wildlife-oriented activity. These individuals were selected to represent the 93 million Americans, 16 years of age and older, who participated in similar activities (Shaw and Mangun 1984). A more detailed explanation of the USBC sampling methodology was published in the Appendix of the 1980 National Report (USDI 1982).

Those nonconsumptive recreationists interviewed comprised a stratified rather than a random probability sample of the nation's nonconsumptive user population. The USBC sampling scheme assigned a unique weighting factor to each individual case. The Statistical Package for the Social Sciences (SPSS-X) data analysis system (SPSS, Inc. 1986) was used to execute the weighting procedure. The precoded weighting variables were used as multipliers that inflated the original stratified sample into a population estimate.

Computation of Involvement Scale Score

Overall participation in nonconsumptive wildlife activities as identified by the 1980 FHWAR Survey was measured using a Wildlife-Associated Recreation Involvement Scale (WARIS). An involvement scale score provides a measure of the number of activities engaged in during a year, and the degree of involvement in the activities. This approach was first used in the O.R.R.R.C. studies to obtain an overall measure of recreation participation, i.e., the activity scale score (Mueller and Gurin 1962), and was refined by O'Leary and Benjamin (1981) into an outdoor recreation involvement score (ORIS), used to quantify variations in participation among ethnic groups.

Social scientists involved in survey research were cautioned by Miller (1964) to avoid construction of new measures of social variables in situations where appropriate scales or indices already existed. However, the present study's use of the 1980 FHWAR survey instrument precluded exact replication of the previously identified methodologies (Mueller and Gurin 1962; O'Leary and Benjamin 1981) due to dissimilar response categories. A modified approach, therefore, suggested by a leisure participation and enjoyment scale, as found in Miller (1964:213), was developed for computation of the WARIS score (Behrens-Tenner 1986).

WARIS included 14 items which were types of wildlife-associated activities as identified in the Nonconsumptive Questionnaire of the 1980 FHWAR Survey. A typology for categorizing these activities had been developed previously by Lyons (1980). The Lyons model stratified nonconsumptive
wildlife activities according to two factors: level of interest (primary versus secondary) and location (residential versus nonresidential) (Shaw et al. 1985). WARIS ranked each item on a sliding scale based on the Lyons model with primary nonresidential activities weighted more heavily than the rest.

A WARIS score was computed for each respondent by assigning a score for each activity engaged in according to the degree of participation, and then summing the activity scores for all 14 items. A score of zero was given for no participation in an activity. Primary nonresidential activities were scored as follows: (1) trips within state of residence, low (1-4 trips) score 2, medium (5-29 trips) score 3, and high (30-200 trips) score 4; (2) trips to other states, low (1-4 trips) score 3, medium (5-13 trips) score 4, and high (14-30 trips) score 5; (3) trips to foreign countries, a score of 5 for any such trips. Secondary nonresidential activities were scored as follows: a score of 1 for any of these occasions. Primary residential activities were scored as follows: a score of 2 for any participation in each of seven activities (i.e., closely observing wildlife, photographing wildlife, feeding wild birds, feeding other wildlife, maintaining natural areas, maintaining plantings, or visiting a local park); in addition, a score of 1 was assigned for reading wildlife periodicals and a score of 3 was assigned if the respondent kept a life bird list. Secondary residential activities were scored as follows: a score of 1 for any of these occasions. The lowest possible score was 0, while the highest possible score was 34 with the 14 items included.

Data Analysis

Range and distribution of WARIS scores were computed with the SPSS-X Subprogram, Frequencies. This continuous variable was subsequently recoded into three mutually exclusive categories (i.e., low, medium, high). Relative frequencies presented in the following one-way frequency distribution tables of WARIS, funding preference, and resource setting variables were based on percentages of the inflated population estimate.

The procedure used to test for significant differences between regional means in WARIS scores, nonconsumptive wildlife trip expenditures, and contributions to conservation organizations was Student's t as generated by the SPSS-X Subprogram, T-TEST. The decision criterion was the p=0.05 level of significance. All computations were performed on the Purdue University IBM 3083 Computer using the SPSS-X data analysis system (SPSS, Inc. 1986).

RESULTS

The actual numbers of FH-4 interviews of SA and ENC Regional resident nonconsumptive users, who were 18 years of age or older in 1980, are 939 and 1,253, respectively. The inflation of these stratified samples by the USBC precoded weighting factors yields population estimates of almost 13 and 21 million active nonconsumptive users residing in the respective Regions. Across all questions that were examined, statistically significant differences have been found only when comparing regional responses on trip expenditures (Student's t, p=0.05). Therefore, the data has been presented in the more general context.
Wildlife-Associated Recreation Involvement Scale

The distribution of nonconsumptive activity involvement exhibited by SA and ENC Regional residents has been obtained by a frequency analysis of WARIS scores. The SA median WARIS score is 6.8; the mean is 7.4, with a standard deviation of 4.4. The ENC median WARIS score is 6.9; the mean is 7.5, with a standard deviation of 4.1. Scores range from values of 1 to 28 for both Regions (highest WARIS score possible = 34). In order to develop a conceptual framework or typology of different nonconsumptive user types, the distribution of WARIS scores has been collapsed into three ordinal categories (i.e., low, medium, and high). The resulting distribution of active nonconsumptive users according to these three levels of activity involvement shows 79% (SA) and 78% (ENC) of respondents falling into the low and medium categories (Table 1).

Table 1. Distribution of Wildlife-Associated Recreation Involvement Scale (WARIS) for 1980 South Atlantic (SA) and East North Central (ENC) Nonconsumptive Users (Age 18 and older).

<table>
<thead>
<tr>
<th>WARIS Scores</th>
<th>SA Relative Frequency (%)</th>
<th>ENC Relative Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-5 (Low)</td>
<td>37.5</td>
<td>36.1</td>
</tr>
<tr>
<td>6-10 (Med.)</td>
<td>41.8</td>
<td>41.4</td>
</tr>
<tr>
<td>11-28 (High)</td>
<td>20.7</td>
<td>22.5</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Primary Nonconsumptive Wildlife Trips

A primary nonconsumptive wildlife trip is an outing, of at least one mile, taken for the primary purpose of observing, photographing or feeding wildlife (USDI 1982). Almost 30% of ENC and SA respondents have taken this kind of wildlife trip. The distribution of resource settings preferred by this subsample is presented (Table 2). Residents of both Regions exhibit a marked preference for pursuing primary nonconsumptive activities on public lands. However, Student's t reveals a significant regional difference (p=0.05) in total trip expenditures for 1980. ENC nonconsumptive users spent significantly more (mean = $667) than their SA counterparts (mean = $238) for food, lodging, transportation, and access fees.
Table 2. Distribution of Preferred Resource Settings for Primary Nonconsumptive Trips of 1980 South Atlantic (SA) and East North Central (ENC) Nonconsumptive Users (Age 18 and older).

<table>
<thead>
<tr>
<th>Resource Setting</th>
<th>SA Relative Frequency (%)</th>
<th>ENC Relative Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private Lands</td>
<td>27.6</td>
<td>23.7</td>
</tr>
<tr>
<td>Public Lands</td>
<td>62.1</td>
<td>73.4</td>
</tr>
<tr>
<td>Non-respondents</td>
<td>10.3</td>
<td>3.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100.0</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

Conservation Organization Support

No significant differences have been found between the two Regions in regards to payment of dues or additional contributions to local or national conservation or wildlife-related organizations. Perhaps of greater interest is the low percentages of nonconsumptive users overall who voluntarily contribute to these organizations. In the Southeast 13.2% pay any national dues; 1.8% pay any local dues; and 4.3% make any additional contributions. In the Midwest, 11.5% pay any national dues; 2.3% pay any local dues; and 4.4% make additional contributions.

Attitudes Toward Nongame Funding Options

The first of a sequence of funding option questions from the FHWAR Survey asks if the respondent favors new sources of funding for public sector nongame wildlife programs. Table 3 outlines the distribution of responses to this general question. Over two-thirds of each regional sample does favor identifying new sources of nongame funding. The distribution of what specific means of raising new funds were deemed most acceptable is similar for both the SA and ENC Region (Table 4).

DISCUSSION

Projected increases in demand for nonconsumptive forest recreation renders resource management by intuition obsolete. Managers must consider supply-demand interactions in order to avoid conflict over forest resource allocation (Hof and Kaiser 1983).
Table 3. Distribution of Attitudes Toward New Funding Sources for Nongame Programs of 1980 South Atlantic (SA) and East North Central (ENC) Nonconsumptive Users (Age 18 and older).

<table>
<thead>
<tr>
<th>Favor New Funding</th>
<th>SA Relative Frequency (%)</th>
<th>ENC Relative Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>71.7</td>
<td>67.3</td>
</tr>
<tr>
<td>Don't Know</td>
<td>13.1</td>
<td>15.8</td>
</tr>
<tr>
<td>No</td>
<td>15.2</td>
<td>16.9</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Nonconsumptive wildlife recreationists comprise a highly visible user group of forest recreation resources. As significant rates of nonconsumptive participation have already been found (USDI 1982; Shaw and Mangun 1984) in the Midwest and Southeast (i.e., the ENC and SA Regions), research aimed at increasing knowledge about regional nonconsumptive users and their attitudes toward nongame wildlife resource issues is important. Identifying the heterogeneity of interest and commitment to nonconsumptive use of the wildlife resource becomes a basis for locating program support, anticipating conflict, and creating consumer-oriented development opportunities in both the private and public sector.

This paper has attempted to provide a better understanding of the diverse behaviors that exist among the category of wildlife recreationists termed "nonconsumptive users." Recognition of this diversity is a first step in dispelling the erroneous yet widespread notion that nonconsumptive use is a personality type rather than an activity (Lyons 1982). The range of computed WARIS scores (i.e., low to high) provides the foundation for a typology of nonconsumptive users whose resource orientations likewise range from marginal to avid. An activity scale such as the Wildlife-Associated Recreation Involvement Scale (WARIS) may be used by managers to construct a useful ranking of their clientele according to degree of participation.

New sources of funding for nongame conservation programs are favored by over two-thirds of each regional sample. Previous research (Behrens-Tepper 1986; Behrens-Tepper and O'Leary 1987) indicates that level of activity involvement (WARIS score) is significantly related to attitudes toward new funding sources, in general, for residents of both the SA and ENC Regions. Significant relationships have also been found between WARIS and the specific nongame-funding options of general tax monies, purchase of conservation stamps, and income tax refund check-offs. More avid nonconsumptive wildlife enthusiasts are more apt to be favorably inclined toward new funding options for nongame programs.
<table>
<thead>
<tr>
<th>Preferred Funding Source</th>
<th>SA Relative Frequency (%)</th>
<th>ENC Relative Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Tax Money</td>
<td>14.6</td>
<td>14.6</td>
</tr>
<tr>
<td>Special Sales Tax</td>
<td>12.5</td>
<td>8.2</td>
</tr>
<tr>
<td>Purchase Conservation Stamps</td>
<td>26.9</td>
<td>24.3</td>
</tr>
<tr>
<td>Income Tax Check-Off</td>
<td>10.2</td>
<td>14.7</td>
</tr>
<tr>
<td>Other</td>
<td>3.6</td>
<td>2.2</td>
</tr>
<tr>
<td>Non-respondents</td>
<td>32.2</td>
<td>36.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100.0</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

However, when the sample was queried whether they paid any dues or made any contributions to conservation organizations the number replying in the affirmative was low for both Regions. Very few paid national dues, local dues, or made any additional contributions to private organizations. Extrapolating this information to the public sector, it would appear that state agencies should exercise extreme caution before investing in the stamp and poster business. The fact that so many respondents in both Regions favored voluntary purchase of conservation stamps may be merely an indication of the vast amount of public relations efforts still required to inform the nonconsumptive user population as to what constitutes stable, long-term sources of nongame funding.

These findings are more complex to interpret with the change in federal tax law. The tax impacts of charitable donations have been significantly altered. Examination of those persons traditionally providing charitable donations (Edmondson 1986) shows that they are often the same as those supporting nongame programs. Similarly, younger people are showing more evidence of contributing to specific rather than general programs. This adds a new dimension about depending on voluntary and philanthropic funding and how requests are made to the public for contributions. A major limitation of the nonconsumptive section of the 1980 FHWA R Survey is the fact that the data set does not contain the kinds of questions on motivations, preferences, and recreation activity social group that would allow construction of a more sensitive nonconsumptive activity scale. The issue of “centrality to
lifestyle" (i.e., to center much of one's life and identify around one's sports or hobbies) may be important in understanding the behaviors and attitudes of this constituency particularly as it relates to specific contribution interests.

For the variables that were examined in this paper, there were more similarities than differences between the SA and ENC Regions. Additional analysis provides evidence for the statement that nonconsumptive wildlife use is an activity pursued by a diverse group of recreationists (e.g., more than 40% of SA and ENC Region 1980 FHWA nonconsumptive respondents also identified themselves as hunters or anglers). This large number of persons traditionally defined as the consumptive participant shows the broad overlap in interest shared by different wildlife user constituencies. In addition, the data point toward the need to understand more about the "life cycle" of those nonconsumptive users who hunt and fish and how they maintain their interest in nonconsumptive activities. Hunting is an activity in which participants show a relatively high involvement at a young age that diminishes with time. Later life participation for both hunting and fishing appears related to early life introduction and learning experiences (Behrens-Tepper 1985; Behrens-Tepper and O'Leary 1985). Some states in the two Regions are beginning to exhibit changes in sales of hunting and fishing licenses, perhaps related to both demographic and access associated changes (O'Leary and Behrens-Tepper 1987). If people no longer hunt or fish will their nonconsumptive wildlife interest remain? If license and equipment sales decline, how will revenues be generated to maintain ecosystem management programs in the future? While not attempting to provide a solution, results of this study indicate the complexity of the nongame and resource funding dilemma. The lack of nonconsumptive user homogeneity has hampered the efforts of state agencies to develop proper "user-pay" revenues (Mangun 1986). However, the expenditures for primary nonconsumptive trips made by 30% of each regional sample may indicate that an untapped willingness-to-pay for this activity does exist.

The dichotomies of game/nongame, consumptive/nonconsumptive remain useful biopolitical distinctions only insofar as they provide management agencies with a focal point for a resource and clientele that demand immediate attention. Whether or not wildlife-watching laypersons are aware that they are participating in nonconsumptive use of the nongame resource, the fact remains that they are doing so in large numbers. Continued growth of state nongame management programs depends on the ability to translate these raw numbers into a broadened financial base.
LITERATURE CITED


