SOURCES OF NATURAL RESOURCE INFORMATION, NON-CONSUMPTIVE USE OF WILDLIFE, AND CHANGES IN SOUTH DAKOTA RESIDENTS' ATTITUDES TOWARD HUNTING BETWEEN 1973 AND 1989

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ABSTRACT

Trends in South Dakotan's attitudes toward hunting and their participation in hunting were evaluated from responses to mail questionnaire surveys conducted in 1973 and 1989. Completed questionnaires were returned by 66% of 2,841 drivers license holders, ages 16 years and older. Seventy-eight percent of the respondents had hunted at sometime during their life. During the 16-year interval between surveys, changes in responses to three stimuli statements suggest an increase in South Dakotans' positive attitudes about hunting in their state. Ninety-nine percent of respondents enjoyed seeing or watching wildlife, but only 53% of respondents were willing to pay a fee of $2 or more to view wildlife on public lands. Fifty-six percent of respondents would be willing to pay a special tax on non-hunting equipment to help fund non-consumptive wildlife programs. About 54% of respondents did not receive any conservation, hunting, or wildlife magazines nor watch wildlife-oriented programs on television.

Determination of trends in residents' attitudes toward, and their participation in, hunting and other wildlife related recreation is necessary for a wildlife management agency to be responsive to all segments of the public. Knowledge of residents’ attitudes toward hunting, and the proper use of this knowledge enhances an agency's quality of public service and aids in development and administration of programs to promote and regulate hunting recreation. In 1973, Rosonke et al. (1975a and b) conducted a survey of South Dakota residents to determine their attitudes towards hunting, hunters, and wildlife management officials. Their results provided baseline data that can be used to as-
ssess future trends in South Dakotans’ attitudes toward hunting. Such information was wanted by the South Dakota Game, Fish and Parks Department to help them make informed management decisions. Using data from Rosonke et al. (1975a and b) for comparison, we conducted this study to determine (1) if any changes had occurred in South Dakotans’ attitudes toward hunting during a 16-year period, from 1973 to 1989, (2) where citizens obtain natural resource information, and (3) kinds of non-consumptive uses of wildlife.

METHODS

A random sample of South Dakota residents was surveyed with a self-administered, mail-back questionnaire in September 1989 (Dietz, 1990). The random sample of 3,228 residents, ages 16 or older, was obtained from the South Dakota Drivers License Bureau’s 1988 population of 523,000 drivers license holders. A total of 387 people were removed from the initial sample due to incorrect addresses, death, poor health, or because they had moved from South Dakota, resulting in a deliverable sample of 2,841 residents.

To assess changes in South Dakotans’ general attitudes toward hunting, we used the same stimulus statements and response formats used by Rosonke et al. (1975a). The stimulus statements were: “Hunting helps to preserve the balance of nature,” “There should be more restrictions on hunting,” and “All hunting should be banned in South Dakota” (Rosonke et al., 1975a). Responses were grouped by disagree (Likert scale 1 to 3), undecided (Likert scale 4), and agree (Likert scale 5 to 7).

Drivers license holders were surveyed using standard mail survey procedures (Dillman, 1978), except for one modification. Dillman (1978) recommended an initial and three follow-up mailings. We substituted an introductory letter for the third follow-up mailing (Dietz, 1990). Linsky (1975) reported that the use of an introductory letter increased response rates in all 12 studies he examined. The self-administered, mail-back questionnaire asked residents about attitudes towards hunting and hunters, their use of the wildlife resource, hunter behavior witnessed, and wildlife information resources.

A 10-percent sample of computer-coded responses was verified; no further verification was necessary because of a < 1.0% coding error. Because of the high response rate and because nonresponse bias is not considered a problem in studies of attitude (Manfredo et al., 1989), we did not estimate nonresponse bias. Chi square analyses (SAS Institute Inc., 1985) were used to examine the significance of associations between the respondents’ attitudes toward wildlife and hunters. A relation was considered statistically significant if P was ≤ 0.05.

RESULTS

Completed questionnaires were returned by 65.6% (n=1,865) of 2,841 drivers license holders, whose ages were ≥ 16 years. Nearly 73% of the respondents (n=1,849) resided east of the Missouri River. According to the 1990 census, 67% of all South Dakotans lived east of the Missouri River, indicating that our sample was representative of the population. The distribution of South
Dakota residence respondents (n=1,748) was 25.1% from Sioux Falls or Rapid City, 29.1% from cities with populations of 3,000 to 30,000, 24.0% from cities with populations of 2,999 or fewer, and 21.6% from farms or ranches. Respondents (n=1,779) were 42.4% female and 57.6% male. Forty percent of the respondents (n=1,728) had resided on a farm or ranch when they were between the ages of seven and 16, whereas only 5.7% had resided in cities of 100,000 or more at the same age. Caucasians comprised 95.9% (n=1,793), and 78.4% (n=1,784) were natives of South Dakota. Almost 28% (n=1,796) of the respondents were 18 to 34 years old, 35.7% were 35 to 54 years old, and 14.6% were 55 to 64 years old.

Seventy-eight percent (n=1,852) of the respondents had hunted sometime during their life. Forty percent (n=1,849) of the respondents who had hunted during their lifetime currently hunt and had hunted every year from 1987 to 1989. Approximately 95% (n=1,405) of respondents had friends who hunt and 75.8% had immediate family members who hunt (n=1,855). About 54% (n=749) of the female respondents and 95.8% (n=1,018) of the male respondents had hunted during their lifetime.

**South Dakotans’ Attitudes Toward Hunting**

In 1973 and in 1989, most respondents agreed with the statement “Hunting helps to preserve the balance of nature in South Dakota” (Table 1). Examination of the polar positions, i.e., those agreeing versus disagreeing with the stimulus statement, suggested an increase in a positive resident perspective on hunting and a decrease in negative resident perspectives on this stimulus. A positive perspective means respondent attitudes were pro hunting even though they might not hunt. A significant increase in positive evaluations and a decrease in negative evaluations occurred between the 1973 and 1989 time periods was statistically significant (X²=3.79, d.f.=1, P<0.05). Significant differences in the extent of agreement or disagreement with the above statement existed by gender (X²=29.6, d.f.=6, P<0.05), age (X²=30.8, d.f.=18, P<0.05), where the respondent resided between the ages of 7 and 16 (X²=51.8, d.f.=18, P<0.05), and lifetime hunting participation (X²=69.9, d.f.=6, P<0.01).

In 1973 (Table 1), a greater percentage of citizens agreed (49.2%) than disagreed (38.4%) with the statement “There should be more restriction on hunting in South Dakota.” By 1989, the proportion of agreements (32.9%) and disagreements (49.3%) with the same attitude stimulus statement were virtually reversed with the proportion of “undecided” respondents also increasing; 12.4% and 17.8%, respectively (Table 1). An analysis of the polar attitude positions indicates there was a significant difference (X²=34.47, d.f.=1, P<0.001) in the opposition to increased restrictions on hunting and the reductions of support for more restrictions. Significant differences in response to the above statement were associated with gender (Table 2), age (X²=44.6, d.f.=18, P<0.05), where the respondent resided between the ages of 7 and 16 (X²=39.1, d.f.=18, P<0.05), and lifetime hunting participation (Table 3).

In 1973, most respondents (93.2%) disagreed that “All hunting should be banned in South Dakota,” and only a minority agreed (3.6%) (Table 1). Com-
Table 1. Frequency and percent responses of South Dakota's residents to three attitude stimulus statements, 1973a and 1989.

<table>
<thead>
<tr>
<th>Stimulus Statement</th>
<th>Number of Responses</th>
<th>Responseb</th>
<th>Disagree</th>
<th>Undecided</th>
<th>Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Hunting helps to preserve the balance of nature in South Dakota”</td>
<td>474 1,850</td>
<td>(14.8%) (11.5%) (5.5%) (5.8%) (79.7%) (82.7%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“There should be more restrictions on hunting in South Dakota”</td>
<td>474 1,848</td>
<td>(38.4%) (49.3%) (12.4%) (17.8%) (49.2%) (32.9%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“All hunting should be banned in South Dakota”</td>
<td>474 1,852</td>
<td>(93.2%) (93.9%) (3.2%) (2.4%) (3.6%) (3.7%)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Data for 1973 were obtained from Rosonke et al. (1975a).
b Response is grouped by categories: disagree (Likert 1 and 2), undecided (Likert 3, 4, and 5) and agree (Likert 6 and 7).

Table 2. Percent responses by gender of South Dakota’s residents to the statement: “There should be more restrictions on hunting in South Dakota,” 1973b and 1989.

<table>
<thead>
<tr>
<th>1973b</th>
<th>1989c</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male (n=310)</td>
</tr>
<tr>
<td>Strongly agree</td>
<td>4.8</td>
</tr>
<tr>
<td>Agree</td>
<td>24.2</td>
</tr>
<tr>
<td>Somewhat agree</td>
<td>17.2</td>
</tr>
<tr>
<td>Undecided</td>
<td>9.7</td>
</tr>
<tr>
<td>Somewhat disagree</td>
<td>11.0</td>
</tr>
<tr>
<td>Disagree</td>
<td>27.4</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>5.2</td>
</tr>
</tbody>
</table>

a Data for 1973 were obtained from Rosonke et al. (1975b).
b $X^2 = 16.2732$  d.f. = 6  $P = 0.0124$
c $X^2 = 43.240$  d.f. = 6  $P = 0.0001$
parable figures were obtained in 1989, when 93.9% of respondents (n=1,852) disagreed and 3.7% agreed that “All hunting should be banned in South Dakota” (Table 1). The changes in the percentages between 1973 and 1989 were not statistically significant (X²=0.004, d.f.=1, P>0.05). Significant differences by gender were found in response to the above statement referring that all hunting should be banned in South Dakota (Table 4) and lifetime hunting participation (X²=130.7, d.f.=6, P<0.05) (Table 5).

Non-consumptive Use of Wildlife in South Dakota

Ninety-nine percent of all respondents (n=1,861) enjoyed seeing and watching wildlife. About 70% of respondents (n=1,847) fed songbirds occasionally to frequently whereas about 30% never fed birds. Forty-three percent of respondents or their families took drives in the country at least once a month to observe wildlife (n=1,825). Nearly 32% took drives to observe wildlife two to 10 times a year and 14.7% took such drives only once or less a year. During 1988 to 1989, 37.4% of respondents (n=1,798) indicated they had attempted to photograph, paint, or draw wildlife.

Close to half (47%) of the respondents (n=1,803) were unwilling to pay an annual fee for observing wildlife on public lands. Of the 53% willing to pay a fee, 13.8%, 18.9%, 12.5%, 2.2%, 3.2%, and 2.4% were willing to pay annually $2, $5, $10, $15, $20, and $25 or greater, respectively to observe wildlife. Nearly 44% (n=1,814) of respondents did not favor adding a special tax to the sale of non-hunting equipment (e.g., bird feeders, binoculars, cameras, or film) to provide funds for a nongame wildlife program in South Dakota. Of the 56% of citizens willing to pay a fee, 25.2%, 23.3%, 6.0%, 0.8%, and 0.6% (n=1,814) would favor a special sales tax of 0.5%, 1-2%, 3-5%, 6-10%, and 11% or greater, respectively on non-hunting equipment. Almost 16% of respondents (n=1,852)
Table 4. Percent responses by gender of South Dakota’s residents to the statement: “All hunting should be banned in South Dakota,” 1973a and 1989.

<table>
<thead>
<tr>
<th></th>
<th>Male (n=310)</th>
<th>Female (n=164)</th>
<th>Male (n=1,019)</th>
<th>Female (n=748)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly agree</td>
<td>0.6</td>
<td>1.2</td>
<td>1.7</td>
<td>2.1</td>
</tr>
<tr>
<td>Agree</td>
<td>1.0</td>
<td>0.6</td>
<td>0.6</td>
<td>0.7</td>
</tr>
<tr>
<td>Somewhat agree</td>
<td>1.3</td>
<td>3.0</td>
<td>0.9</td>
<td>1.6</td>
</tr>
<tr>
<td>Undecided</td>
<td>1.6</td>
<td>6.1</td>
<td>2.1</td>
<td>2.8</td>
</tr>
<tr>
<td>Somewhat disagree</td>
<td>3.2</td>
<td>7.9</td>
<td>2.4</td>
<td>5.9</td>
</tr>
<tr>
<td>Disagree</td>
<td>52.3</td>
<td>55.5</td>
<td>19.1</td>
<td>33.7</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>40.0</td>
<td>25.6</td>
<td>73.2</td>
<td>53.2</td>
</tr>
</tbody>
</table>

* Data for 1973 were obtained from Rosonke et al. (1975b).

\(X^2 = 20.5822\) \text{ d.f. } 6 \quad \text{P} = 0.0022

\(X^2 = 79.211\) \text{ d.f. } 6 \quad \text{P} = 0.0001

Table 5. Percent responses by lifetime hunting participation of South Dakota’s residents to the statement: “All hunting should be banned in South Dakota,” 1989. (n=1,839).

<table>
<thead>
<tr>
<th>Response</th>
<th>Hunted during Lifetime (n=1,435)</th>
<th>Never Hunted (n=404)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Agree</td>
<td>1.6</td>
<td>2.7</td>
</tr>
<tr>
<td>Agree</td>
<td>0.5</td>
<td>0.7</td>
</tr>
<tr>
<td>Somewhat Agree</td>
<td>0.9</td>
<td>2.5</td>
</tr>
<tr>
<td>Undecided</td>
<td>1.7</td>
<td>5.2</td>
</tr>
<tr>
<td>Somewhat Disagree</td>
<td>2.9</td>
<td>8.7</td>
</tr>
<tr>
<td>Disagree</td>
<td>21.0</td>
<td>38.4</td>
</tr>
<tr>
<td>Strongly Disagree</td>
<td>71.4</td>
<td>41.8</td>
</tr>
</tbody>
</table>

\(X^2 = 130.684\) \text{ d.f. } 6 \quad \text{P} = 0.0001
would be willing to donate money to help the South Dakota Department of Game, Fish and Parks purchase areas that would be used for wildlife observation and interpretation, whereas 47.1% were uncertain about such a donation.

Sources of Public Information about Wildlife in South Dakota

Approximately half (54%) of the respondents (n=1,814) did not receive any conservation, hunting, or wildlife magazines, whereas 35.4% received one or two such magazines. Among those respondents receiving conservation magazines (n=780), 50.1% read the South Dakota Department of Game, Fish and Parks' South Dakota Conservation Digest, 71.2% read popular hunting magazines (e.g., Outdoor Life or Field and Stream), 33.8% read magazines associated with hunting or game conservation organizations (e.g., American Hunter or Pheasants Forever), and 38.3% read technical wildlife or conservation organization publications (e.g., Ducks Unlimited, Audubon). Outdoor magazines identified most important to respondents receiving these types of magazines (n=770) were: Outdoor Life (18.6%), National Geographic (18.4%), Field and Stream (14.0%), South Dakota Conservation Digest (7.3%), and Dakota Game and Fish (5.7%).

Nearly 46% of respondents (n=1,728) watched televised conservation or wildlife programs fairly often or frequently. Only 4.7% of respondents (n=1,833) never watched conservation or wildlife programs on television; 49.2% occasionally watched these programs. The most watched programs were: Wild Kingdom (30.5%), National Geographic Specials (25.8%), Nature (12.1%), NOVA specials on animals (11.3%), and South Dakota Outdoor Guide (10.0%).

If respondents (n=1,823) needed some facts about wildlife, they obtained information first from: the South Dakota Department of Game, Fish and Parks (SDGFP) (32.3%), magazines or books (27.9%), South Dakota conservation officers (11.8%), or United States Fish and Wildlife Service (USFWS) personnel (7.9%). If they (n=1,786) could not get the wildlife information at their first choice they would next go to: SDGFP (30.4%), USFWS (19.0%), magazines or books (13.4%), or a South Dakota conservation officer (13.3%).

DISCUSSION AND RECOMMENDATIONS

Our findings revealed that resident responses to three statements reflecting attitudes about hunting were more positive in 1989 than in 1973. In 1989, only 6.1% of the citizen respondents were in favor of, or undecided about, a complete ban of hunting in South Dakota. By comparison, 11% of the surveyed citizens in Iowa were opposed to hunting (Dahlgren et al., 1977). South Dakota respondents who were in favor of or undecided about a ban on hunting were primarily females or those who had never participated in hunting. Other studies also consistently support the generalization that a higher proportion of individuals with anti-hunting attitudes were female or those who had never participated in hunting (Dahlgren et al., 1977; Kellert, 1978; 1976; Applegate, 1979; 1975; 1973; Kellert and Berry, 1987). The gender influence on attitudes
among South Dakotans was stronger in 1973 (Rosonke et al., 1975b) than in 1989 (Table 2). In fact, in 1989, twice as many women strongly disagreed with a ban on hunting compared with women in 1973 (Table 4). This increased commitment may be due to an increasing number of women receiving higher educations or working outside the home (Hoffman, 1977). Hoffman (1977) suggests that adult gender roles are converging and, therefore, attitudinal differences between sexes in future generations would decline.

Attitudes toward hunting are also influenced by a person’s previous connection to rural and urban culture and their age. Shaw (1977) surveyed members of anti-hunter organizations and found that members came from predominately urban backgrounds. Slightly less than half of the landowners in New York who were reared in metropolitan areas were opposed to or had reservations about hunting (Brown, 1974). Shaw and Gilbert (1974) found that anti-hunting sentiment of college students was strongest among those from large population centers. Other studies (Kellert 1976, 1978) revealed that urban background had similar influences as the above studies. Our results showed that urban childhood residence affected responses to two of three attitude stimulus statements. Apparently, the influence of where a child is reared has similar effects on their attitudes in a less populous state (e.g., South Dakota) as would have been expected in a more populous state (e.g., New York).

Peterle and Scott (1977) predicted that anti-hunting sentiments probably would become stronger as the percentage of hunters continues to decline in an urbanized society. In New Jersey, Applegate (1979) found that individuals who opposed deer hunting were mostly under 30 years of age.

Age did not influence the general attitude of our sample respondents towards hunting. However, age was a factor in responses about hunting regulations and concepts, although the importance of age was not consistent. The majority of South Dakota respondents did not support more restrictions on hunting. These results indicate that in general current hunting regulations are perceived to be restrictive enough. Most South Dakotans support hunting as recreation and for management of game populations. Apparently, the current generation of South Dakotans has not been strongly influenced by the anti-hunting movement.

In South Dakota, an individual’s decision to hunt does not seem to reflect national or regional social pressures because nearly 80% of the surveyed citizens had hunted during their lifetime and 86% were non-consumptive users of wildlife. Most South Dakotans enjoy wildlife regularly by either feeding birds or by viewing, photographing, or drawing wildlife. Residents also show their interest in wildlife by purchasing conservation, hunting, or wildlife magazines and by viewing wildlife on television programs. Given this high interest in wildlife among South Dakota residents, wildlife managers might want to consider these nonconsumptive uses of wildlife when developing and implementing management plans, so that all citizens can enjoy the bountiful wildlife resource of the state.

Dietz (1990) indicated that young people in South Dakota are exhibiting a rural-urban difference in attitudes toward hunting, with urban youth having less favorable attitudes toward hunting. Most South Dakota adults come from
a rural background, even though a larger percentage of the state’s population now resides in urban areas. The recent population trend toward greater urbanization is projected to continue until the year 2000. In light of this trend, we recommend conducting another survey of South Dakotans’ attitudes toward hunting in the late 1990’s. Its objective would be to determine if the current higher urban residence of today’s youth will be an influence on their future attitudes.

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LITERATURE CITED


