# Information Needs and Experience Preferences of Birders and Watchable Wildlife Participants

Prepared by

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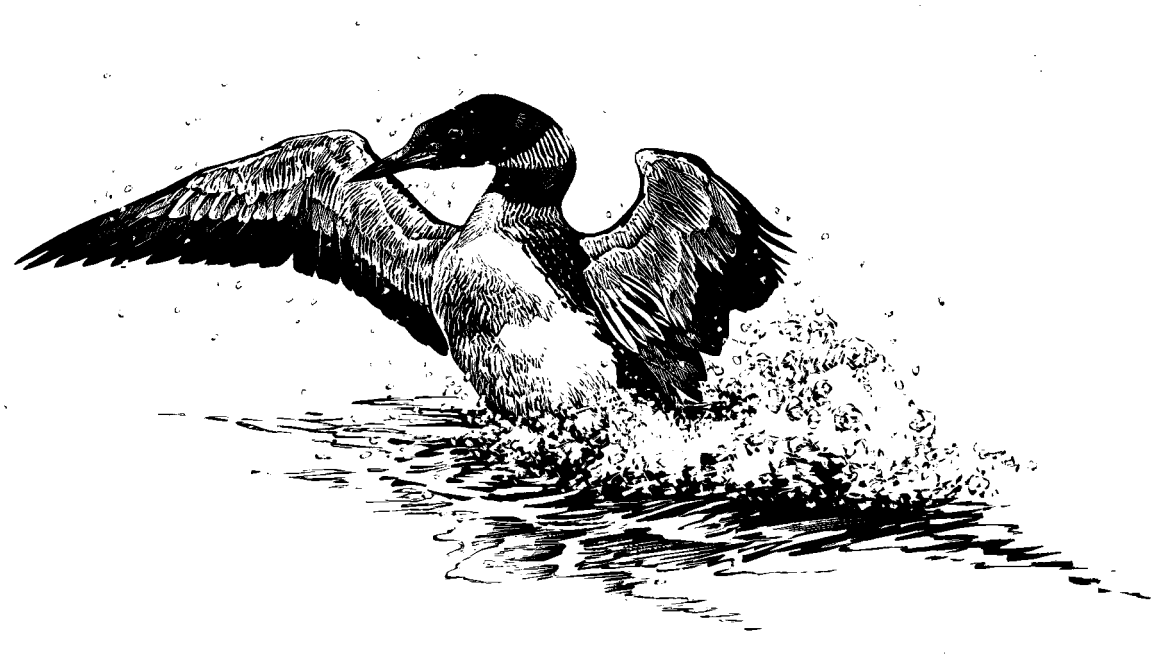
# Information Needs and Experience Preferences

# of Birders and Watchable Wildlife Participants



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## EXECUTIVE SUMMARY

Understanding and planning for the dynamic and growing natural resource based tourism market is paramount (Cordell, 1999; Manning, 2000). A wealth of information exists on those who engage in outdoor recreation in general (cf. Manning, 2000), but information on those interested in natural resource based tourism, particularly wildlife viewing, is still wanting.

Minnesota's wildlife viewing participation rate increased 53 percent from 1996-2001 and spending rose 36 percent in the same time frame to $523.5 million. Such an important and increasing constituent group deserves and demands attention. This project represents the first effort by the Nongame Wildlife Program, in partnership with the University of Minnesota, to address the human dimensions of the wildlife viewing constituency, particularly those who view birds.

## PURPOSE

This project profiled and differentiated Minnesota's wildlife viewing constituents, particularly those interested in birds. Specific objectives were to:

1) profile participants with a range of interests in birds and other wildlife,
2) identify experience preferences regarding facilities, programs, and willingness to travel for wildlife viewing,
3) compare constituent profiles, preferences and experiences,
4) identify frequently used information sources regarding wildlife viewing, and
5) create an information dissemination plan for various target audiences.

## METHODS

In cooperation with several local and national organizations, a mail survey of Minnesotan's with an interest in wildlife viewing, particularly birds, was implemented. The methods for this mail survey are presented in the following sections: sample, survey, response rate, and analysis.

### *Sample*

Minnesotans with a range of interests in wildlife viewing were the target sample. Therefore, we approached several organizations that represented a possible range of interests and specialization in birding: Minnesota Audubon (MNAUD), Minnesota Ornithologists' Union (MOU), and Minnesota members of the American Birding Association (MABA). To supplement the organizational members and to reach a more general public audience, the names of residents who inquired about the Great River Birding Trail (GRBT) through May 2002 were obtained. Thus, we sent surveys to: 989 MNAUD members, 546 MOU, and 318 MABA members and 145 GRBT Minnesota residential inquiries.

***Questionnaire***

An eight-page questionnaire was designed, approved by the UMN Institutional Review Board, and pre-tested summer 2002. Potential respondents received this eight-page questionnaire and introductory letter in the mail; the letter explained the purpose of the questionnaire and ensured anonymity and confidentiality. Questionnaire sections focused on 1) past experience with wildlife watching, 2) important attributes for enjoyable wildlife viewing experiences, 3) travel in and out of Minnesota related to wildlife viewing, 4) interests in and constraints to viewing wildlife, 4) information sources used to learn about birding and wildlife viewing, and 5) demographics.

*Response rate*

Following a modified Dillman (2000) technique that included an initial survey package, a scenic postcard reminder one week later, and a replacement questionnaire package mailed two weeks after the postcard, an overall 57.8 percent response rate was obtained. The response rate ranged from 43.7 percent (Minnesota Audubon) to 75.4 percent (American Birding Association). Twelve nonrespondents queried by telephone did not significantly differ on select demographic and wildlife viewing behavior items.

***Analysis***

Data were entered, cleaned, and checked for singularity and multi-collinearity in SPSS version 10.0. In addition, extreme outliers were Windsorized to bring highly skewed variables into usable ranges. Descriptive analysis provided means, standard deviations, and frequencies to describe the sample and provide information on variables of interest. Factor analysis with varimax rotation identified factors among the site preferences, participation constraints, wildlife values, and behavioral commitment items. Cronbach alpha's assessed scale and factor reliability as necessary. Analysis of variance assessed differences among respondents according to: numbers of organizational memberships, commitment to wildlife viewing, motivation for wildlife viewing, and wildlife related recreation participation. Least significant difference tests identified differences among groups when appropriate.

## RESULTS

***Demographics:*** Similar to other wildlife viewing research (Kellert, 1985; Boxall & McFarlane, 1995; Eubanks, et al. 1993), MN participants are mature, Anglo, and possess high educational and income status. Respondents ranged in age from eighteen to 95 years, with a mean age of 55.9 years. Survey respondents were primarily male (50.7 percent), Caucasian (97.6 percent), highly educated (37.7 percent college degree, 37.5 percent advanced degree), and reported an income greater than $75,000 (41.6 percent) that supported an average of 2.1 people. Most frequently respondents indicated either working full time, then retirement status (51.0 percent and 31.3 percent, respectively).

***Wildlife viewing experience***: Respondents indicated both a life long and recent history with wildlife watching, photography, and feeding. The average respondent indicated they had

observed wildlife for 32.2 years. More recently, the majority of respondents had spent over 300 days since June 2001 observing wildlife and intended to spend more than 300 days in the next year observing wildlife.

The great majority of respondents observed wildlife around their home (97.5 percent) with 72.5 percent visiting parks within a one mile radius of their home to observe wildlife in the last twelve months. Beyond viewing, respondents spent an average of 7.8 days photographing wildlife. A majority of respondents fed birds around their home (88.9 percent) and over one half (65.0 percent) maintained plantings around their home to benefit wildlife, spending an average of $245.88 to do so. Respondents belonged to an average of 2.7 wildlife related organizations, of the eight listed in the survey.

The majority of survey respondents were infrequently engaged in hunting and fishing in Minnesota, if at all. Although about four of ten respondents indicated they also fished in Minnesota, average participation since June 2001 was just 12.8 days. Similarly, fewer than two of ten respondents indicated hunting in Minnesota, and of those who did, average participation since June 2001 was 9.6 days. Despite rather few average days of participation, about one-fifth of each hunters and anglers participated for 20 or more days since June 2001.

***Important experience attributes:*** Among the 25 items respondents rated as important to their wildlife viewing experience, the most important were seeing wildlife, a quiet atmosphere, hearing wildlife (4.0), the ability to see wildlife clearly, and pull-offs to see wildlife safely. Also at least moderately important to respondents in wildlife viewing were accessible trails and roads, nature centers, area information, species information, and undeveloped dirt trails with no signs. Least important to respondents in wildlife viewing experiences were the availability of refreshments and self guided tours with interpretive cassettes.

***Information sources***: The information sources used by the most respondents were birding books (88.5 percent), magazines (83.2 percent), and brochures or pamphlets (78.1 percent). Of the information sources used, more than one half of respondents used six always or often: birding books, magazines, the MOU hotline, Internet, friends/family, and brochures/pamphlets.

***Wildlife viewing skills:*** The majority indicated an ability to identify over 100 birds by sight. On average, respondents reported the ability to identify 145.8 bird species by sight without field guide assistance and 47.8 by sound without field guide assistance.

***Motivations to view wildlife:*** Similar to Adams, et al. (1997) findings, respondents engaged in wildlife viewing motivated by a fascination with wildlife (38.4 percent) and to be closer to nature (37.9 percent). Birds were both the most frequent wildlife observed, fed, or photographed (95.4 percent) and the most enjoyable type of wildlife to observe, feed or photograph (88.9 percent). Among twelve species of potential viewing interest, warblers and bald eagles received the highest ratings (4.3 and 4.2, respectively where 5 is the highest).

***Wildlife value orientations for wildlife:*** Respondents rated all twelve wildlife value orientation items as important. The top five most important values were "I enjoy seeing birds and wildlife around me everyday," "I notice the birds and wildlife around me everyday," "having wildlife around my home is important to me," "I enjoy watching wildlife when I take trips outdoors," and "I enjoy learning about wildlife."

***Commitment to wildlife viewing:*** Overall commitment to wildlife viewing was low to moderate as evidenced by mean values on all nine items queried. Respondents were neutral in terms of their viewing expertise, their life organization around wildlife viewing, and if they would rather watch wildlife than do anything else.

***Constraints:*** No constraints towards viewing wildlife emerged among the fourteen queried. The time factor had the highest mean of 2.6, still well below that of any real or perceived constraint towards wildlife viewing participation.

***Travel in MN for wildlife viewing:*** When queried about day and overnight travel in Minnesota for wildlife viewing, participants indicated more day trips than overnight or those greater than 50 miles round trip (average day trips of 14.8 since June 2001). The majority (53.3 percent) of respondents took between one and 20 trips since June 2001, but 11.8 percent took 50 or more day trips.

Similarly, just more than half of the respondents indicated overnight travel to view wildlife (56.6 percent). Those traveling overnight for wildlife viewing took an average of 1.9 trips since June 2001, with 19.8 percent traveling on five or more overnights. When traveling overnight, the average length of stay was 2.7 nights and the majority traveled in groups of one or two people. Overall, respondents indicated more trips to view wildlife to the Twin Cities (11.6) than any other region. Based on residence, travel within Minnesota was most frequently in the region respondents lived, seconded by the Twin Cities.

The average expenditures for overnight wildlife viewing trips in Minnesota was $184.98. The largest expenditures resulted from lodging ($79.90), equipment rental ($68.90), and food, drink, and refreshments ($56.24). Respondents spent the least for public land use or access fees ($13.75).

***Travel outside MN for wildlife viewing:*** Respondents indicated they were willing to travel 632.2 miles, on average, to view wildlife. Almost one quarter (23.6 percent) of respondents indicated they were willing to travel a thousand miles to view wildlife. However, the majority did not take any day trips outside of Minnesota (63.0 percent) to view wildlife and fewer than half took overnight trips (45.0 percent) outside of Minnesota since June 2001.

Minnesotan's who traveled beyond state boundaries to view wildlife had taken an average of 1.2 day trips and 1.5 overnight trips since June 2001. By far, the most frequently cited out of state wildlife viewing destination was Wisconsin.

***Differences among respondents***: Respondent segmentation by five attributes occurred to identify differences in experience preferences, values, constraints, or wildlife viewing experience and travel. The attributes were: 1) number of surveyed organizational memberships (1, 2 or 3), 2) commitment level (based on median split of nine item commitment scale), 3) motivation for wildlife viewing (beauty, fascination, identify species, or be close to nature), 4) wildlife recreation participation (view, fish and view, hunt and view, and fish, hunt and view), and 5) gender (male or female).

By number of organization memberships, differences emerged in four of six experience preferences, two of three value orientations, and two of three constraint factors. Significant differences also emerged in viewing experience, abilities, and travel patterns.

By commitment to wildlife viewing, analysis revealed differences among wildlife viewers in low, medium, and high commitment levels in three of six experience preferences, all three value orientations, but only one of three constraint levels. As expected, significant differences also emerged in viewing experience, abilities, and travel patterns.

By motivation for wildlife viewing, differences emerged in all of the value orientations, one of three constraint factors, and all of the experience and ability areas. No differences in wildlife experience preferences emerged, however.

By wildlife recreation participation, differences among recreation activity groups emerged in three of six experience preferences, one of three value orientations, one of three constraints, and commitment to wildlife viewing. Differences also emerged in terms of experience, abilities, and travel behavior.

By gender, males and females significantly differed in three of six experience preferences, one of three constraint factors, all three value orientations, and most experience and travel behaviors.

## IMPLICATIONS

Demographically, the 2002 Minnesota wildlife viewing mail survey respondents are quite similar to wildlife viewers across the U.S. In sum, these viewers represent a rather equal gender division, are a diverse but maturing group, with college and beyond educations and above average income levels. Urban participants are of particular interest for two reasons: a significant majority of respondents participate in wildlife viewing around their homes and the rapid urbanization of the U.S. Understanding the special circumstances and constraints faced by these urban residents is critical to adequate opportunity provision. Significant opportunities exist to both apply and further the constraints research in urban environments for those potentially interested in wildlife viewing.

Two primary points of discussion are of interest with regards to respondent differentiation: 1) the ability of the segmentation method to discern differences among respondents and 2) the utility of the differences for experience planning and management. Inconsistent evidence exists regarding the utility of demographic variables to segment

wildlife viewers, particularly those who watch birds. In this study gender was useful to distinguish wildlife viewing participation. Although males were slightly more numerous in the highly committed category, the gender division was still within a 60-40 split across all categories, and virtually equal for those moderately committed. Thus, anything designed with gender in mind will only target half the constituent group. However, compared to participation rates in other wildlife related recreation, this division is significant to note and attend to. All five segmentation efforts employed revealed multiple differences among respondent groups. However, level of commitment to wildlife viewing consistently differentiated wildlife viewers on a variety of perspectives using a parsimonious, reliable, and valid measure. Further, commitment to wildlife viewing is easy to understand, simple to explain and apply.

The most useful differences among respondents are those related to the experience attributes and travel behaviors. Wildlife experience varied across four of the five segmentation groups. Specifically, the wildlife experience of seeing and hearing wildlife in a quiet atmosphere was most important to respondents who were members of three organizations surveyed, those most committed to wildlife viewing, those who view wildlife, fish, and hunt, and women. All six travel behaviors examined varied across all five segmentation groups. Specifically, travel experience and willingness to travel increased with number of surveyed organizational memberships and commitment to wildlife viewing. Respondents who were motivated by the aesthetics of wildlife were typically less experienced and willing to travel than those in other motivation groups. Males were typically more willing to travel and experienced than females. Thus, depending on what the planning intentions are (to attract new markets or enhance the experiences of the current clientele), the differences can be integrated accordingly.

Most important to viewing wildlife was, not surprisingly, the wildlife experience: viewing, seeing, and hearing wildlife in a quiet atmosphere. Thus, when faced with development opportunities and resources, a focus on optimal viewing conditions seems mandatory. In line with the continual challenge of providing recreation experiences while protecting the resource, respondents indicated access and undeveloped areas were the next most important experience attribute factors. To develop wildlife viewing opportunities, the wildlife tourism opportunity spectrum (Orams, 1996) could be applied. Although somewhat simplistic models, they have utility for comparing and further segmenting those who view wildlife. Further, the addition of captive observational and participatory opportunities adjacent to free observation areas may enhance wildlife viewing experiences.

When specifically queried about twelve possible species attractions, respondents were at least somewhat interested in all of them. Respondents were most interested in warblers and bald eagles. Beyond birds, small mammal viewing experiences may be worthy of development. DTED's survey of potential Minnesota wildlife viewing visitors found perceptions of Minnesota as good for both birding and small mammal viewing. Therefore, with a positive image already in place, efforts to attract and expand this viewing may be worthwhile. Other research suggests a combination of additional nature based activities and cultural/historic opportunities are likely to enhance experiences and extend wildlife viewing trips.

Similar to regional visitation in Minnesota, respondents traveling for wildlife viewing most frequently visited the Twin Cities. When assessed by regional residence, not surprisingly the Twin Cities were second behind the residential region. Although respondents indicated a willingness to travel more than 600 miles to view wildlife, few left Minnesota to do so. One explanation is that an abundance of opportunity and interest in Minnesota wildlife is sufficient to attract and retain those interested in wildlife viewing. Another explanation is that the disparity between willingness to travel and actual travel to view wildlife long distances indicate a latent demand. Data from this sample indicate Wisconsin is the primary out of state destination for Minnesotan's. Beyond regional competitors, Arizona, Texas, Florida, and California were top destinations for Minnesota to view wildlife out of state. Just as these states market their sunshine in the winter, Minnesota could market their warblers and loons in the spring and summer.

Information sources used by wildlife viewers in this sample were both similar to and different from past research efforts. The vast majority of respondents used magazines and brochures/pamphlets to find out about wildlife viewing. Respondents in this sample used the Internet at two and three times the frequency compared to U.S. overseas travelers and DTED survey respondents. However, Internet sites specific to Minnesota were used much less by respondents than the general Internet. Thus, advertising and possibly increasing the links to the Minnesota focused pages may be of interest.

The DNR Nongame Wildlife Program has taken the first of several steps to effective information campaign development: determining the target audience and the media channels they frequently use. The remaining steps include: develop an initial message, gauge reactions to partially formulate message ideas by the target audience, refine the message based on audience input, release the information, and evaluate its effectiveness.

## FUTURE RESEARCH

This project was the first attempt to understand the wildlife viewing market in Minnesota. A focus on respondent profiles and limited resources constrained the amount and type of information attained in the mail survey. Therefore, additional information would both enhance understanding of current findings as well as expand on the knowledge base for this constituency group.

To explore some issues raised in this survey and others of interest to DNR, a series of focus groups or in-depth interviews is suggested. Information gleaned from these endeavors could provide in depth information for program and message generation, as well as bridge the information until the next USFWS national survey on wildlife related recreation. Repeating the survey to this or a more representative group immediately following the next USFWS survey makes sense on multiple levels: corroboration and extension of national data, trend analysis, and program/planning information.

Beyond qualitative efforts to explore questionnaire issues in depth and a replication of the survey, future research could address benefits sought and attainment within specific

wildlife viewing destinations, importance-performance analysis, and additional constraint information. Benefits-based management (BBM) is an emerging framework designed to incorporate outdoor recreation area values into a management framework (Anderson, et. al, 2000). Understanding the benefits sought could develop a wildlife viewing tourism opportunity spectrum, modified from Orams (1996) and combined with existent tourism and recreation opportunity spectrums. Further, extending the benefits approach to include physical benefits realized would address recent trends to connect outdoor recreation with physical fitness at national (Center for Disease Control, 2002) and state levels (Minnesota Department of Health, 2002). Further, exploring participant's willingness to pay for wildlife viewing may be advantageous given the status of state budgets and lack of registration and licenses for wildlife viewing support and development.

In addition, now that a basic understanding of important wildlife viewing experiences has been identified, understanding how the DNR performs in these and other areas when providing wildlife viewing opportunities is of interest. Importance-Performance (I-P) analysis examines program attribute importance and either customer satisfaction of or agency performance on these same attributes (Martilla & James, 1977).

Finally, constraints to wildlife viewing, beyond the three factors examined, are also of interest. As discussed in the respondent profile, the significant participation around respondents' homes, coupled with an urbanizing society, place particular interest on urban residents and their constraints.

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# INTRODUCTION

Understanding and planning for the dynamic and growing natural resource based tourism market is paramount (Cordell, 1999; Manning, 2000). A wealth of information exists on those who engage in outdoor recreation in general (cf. Manning, 2000), but information on those interested in natural resource based tourism, particularly wildlife viewing, is scant.

Like other natural resource-based recreation and tourism, wildlife viewing participation presumably acts as an important contributor to individual quality of life, community economic success, and resource sustainability (Driver, Brown, & Peterson, 1991). Individuals who participate in recreation and resource based tourism report restorative, educational, and social affiliation benefits. Simultaneously, communities and regions benefit economically as visitors eat, shop, and stay in gateway communities (Howe, McMahon, & Propst, 1997). Further, the protection of natural and cultural resources benefit current and future generations. Thus, the benefits and opportunities emanating from nature-based tourism have significant impacts on individuals, communities, and natural resources.

Data from the 2000 U.S Fish and Wildlife Service Wildlife Recreation Survey further attest to the individual and community benefits possible from wildlife related recreation. More than 82 million U.S. residents (16 years and older) fished, hunted, or watched wildlife in 2001. Spending on wildlife recreation amounted to 1.1 percent of the GDP and totaled $108 billion in 2001. Of the total amount spent, $28 billion was for trips, $64 billion for equipment, and $16 billion for other items. Wildlife viewing accounted for sixty six million participants in the U.S. population, about one in three (31 percent), and a five percent increase in participant numbers since 1995. Wildlife watchers spent $38 billion on trips, equipment, and other items in 2001, a 16 percent increase from 1995.

Similarly, at the state level in Minnesota, both general nature tourism and the wildlife viewing market are substantial. Minnesota tourism research supports the size and viability of the general nature based travel market with reports that scenic touring and state/national park visits are among the most frequent activity engaged in among internal and external markets (Department of Trade & Economic Development, 2002). Specific to wildlife viewing, Minnesota ranked second in participation behind Vermont in the 2000 national survey of wildlife related recreation (USFWS, 2002). Minnesota's wildlife viewing participation rate increased 53 percent from 1996-2001 and spending rose 36 percent in the same time frame to $523.5 million. Such an important and increasing constituent group deserves and demands attention.

Although general wildlife viewing is of growing interest, bird watchers are of particular interest. Vaske, Wittman, Williams, Hardesty, and Sikorowski (2001) capsulate the importance of the bird watching market: "bird watchers comprise one clear subgroup of wildlife viewers. The strong commitment, breadth of knowledge, and financial investments of highly involved bird watchers suggest a present and potential strength as a

wildlife constituency, and wildlife agencies may benefit from strengthening their relationship with this community" (p. 35).

As natural resource based recreation and tourism activities continue to flourish, so does the challenge of providing quality experience opportunities (Cordell, 1999; Manning, 2000; Driver, Dustin, Baltic, Elsner, & Peterson, 1996). Effective recreation experience and resource management depends on information. This project represents the first effort by the Minnesota Nongame Wildlife Program, in partnership with the University of Minnesota, to address the human dimensions of the wildlife viewing constituency, particularly of those who view birds.

## PURPOSE

This project profiled and differentiated Minnesota's wildlife viewing constituents, particularly those interested in birds. Specific objectives were to:

1) profile participants with a range of interests in birds and other wildlife,
2) identify experience preferences regarding facilities, programs, and willingness to travel for wildlife viewing,
3) compare constituent profiles, preferences and experiences,
4) identify frequently used information sources regarding wildlife viewing, and

5) create an information dissemination plan for various target audiences.

## BACKGROUND

Two primary constructs formed the foundation for this project: values and commitment. Given the importance of these variables to understand and differentiate constituents, they were central to the project development. Each is briefly presented with extensive references for further detail, as desired.

Values are a central tenet among many influences on human behavior. Although typically broad and abstract, values express important life-goals or desired societal conditions (Rokeach, 1973). Systematic incorporation of public values in natural resource management, planning, and policy formulation is critical (Bengston, 2000; Hetherington, Daniel, & Brown, 1994). Enhanced value comprehension is beneficial in that it promotes ethical land use decisions, enables appropriate management goal establishment, gauges public reaction to management practices, and assists in dealing with public land management conflicts (Bengston, 1994; Williams & Patterson, 1999).

The values people hold toward wildlife have been of interest since the mid-1970s. Value studies have been used to explain differences toward specific wildlife issues (Kellert 1976; Purdy & Decker 1989), allocate resources (Bryan 1980), and segment wildlife recreationists (Bryan 1980; Decker & Connelly 1989). Recent research in wildlife values focus on wildlife value orientations that "are defined by the pattern of direction and intensity among a set of basic beliefs regarding wildlife" that influence attitudes and

behaviors (Fulton, Manfredo, & Lipscomb, 1996, p. 28). The eight key wildlife value orientations include use, recreation experience, bequest and existence, hunting-anti-hunting, fishing-anti-fishing, residential, and wildlife education. More enduring than attitudes or behaviors, wildlife value orientations are useful for both identifying and differentiating wildlife recreationists, including wildlife viewers.

Beyond the value orientations of wildlife viewers, their commitment to wildlife viewing and its overlap among other activities was of interest. The assumption that visitors vary dramatically by activity superficially separates visitors and neglects those who engage in multiple activities (Watson, Asp, Walsh, & Kulla, 1997). Further, activity segmentation diminishes the relative importance of each activity and its contribution to their identity. Therefore, understanding participation in multiple activities or by strength of activity identity is necessary (Watson et al., 1997; Watson, Zaglauer & Stewart, 1995). Participation in multiple wildlife recreation activities was assessed to understand if and how these market segments might differ.

In addition to activity, a simplistic measure, we sought to understand the specialization and commitment to wildlife viewing among the constituent group. Varying degrees of specialization exist within recreation activities (Bryan, 1977; Ditton, Loomis, & Choi, 1992; Virden & Schreyer, 1988). Specialization specifically refers to "a continuum of behavior from the general to the particular, reflected by equipment and skills used in the sport and activity setting preferences" (Bryan, 1977, p. 175). Researchers have built on Bryan's (1977) underlying concept of recreation specialization and most have agreed on its multidimensional nature (Graefe, Donnelly, & Vaske, 1985; Kuentzel & Heberlein, 1992; Kuentzel & McDonald, 1992; Virden & Schreyer, 1988; Wellman, Roggenbuck, & Smith, 1982). However, consensus regarding the number and nature of specialization dimensions remains absent. Therefore, we included measures of skills, activity preferences, commitment, and experience to understand how specialized and committed Minnesota wildlife viewers were to their activity.

In a first effort to understand the wildlife viewing constituent group in Minnesota, a research project was crafted to understand the basics of visitor values and commitment to wildlife viewing, in addition to the typical visitor profile information.

## METHODS

In cooperation with several local and national organizations, a mail survey of Minnesotan's with an interest in wildlife viewing, particularly birds, was implemented. The methods for this mail survey are presented in the following sections: sample, survey, response rate, and analysis.

### *Sample*

Minnesotans with a range of interests in wildlife viewing were the target sample. In contrast to hunters or anglers who are required to buy licenses and therefore easily identifiable, those who view wildlife are both dispersed and unregulated. Therefore, we

approached several organizations that represented a possible range of interests and specialization in birding: Minnesota Audubon (MNAUD), Minnesota Ornithologists' Union (MOU), and Minnesota members of the American Birding Association (MABA). To supplement the organization members and to reach a more general public audience, the names of residents who inquired about the Great River Birding Trail (GRBT) through May 2002 were obtained. Thus, we sent surveys to: 989 MNAUD members randomly selected, 546 MOU members systematically selected, and 318 MABA members (a census) and 145 GRBT Minnesota residential inquiries (a census).

### *Questionnaire*

Based on a review of the wildlife viewing literature, an eight-page mail questionnaire was drafted by UMN faculty and then reviewed by Department of Natural Resources, Minnesota Office of Tourism, and MNAUD staff. The revised questionnaire received IRB approval in May 2002 (Appendix A). A pretest among ten people interested in birding randomly selected from a local bird tour indicated only minor wording challenges and the necessity of an additional employment category (retired).

Potential respondents received an eight-page questionnaire and introductory letter in the mail; the letter explained the purpose of the questionnaire and ensured anonymity and confidentiality. Questionnaire sections focused on 1) past experience with wildlife watching, 2) important attributes for enjoyable wildlife viewing experiences, 3) travel in and out of Minnesota related to wildlife viewing, 4) interests in and constraints to viewing wildlife, 5) information sources used to learn about birding and wildlife viewing, and 6) demographics.

#### Past experience with wildlife watching

Following the USFWS National Survey on Wildlife Recreation Participation (1996), the questionnaire began with several open ended questions focused on past wildlife viewing experience: number of years watching birds and other wildlife, photography and observation activity since June 2001 (including close to home and at parks within one mile of home), feeding and home planting maintenance. In addition, the number of trips taken greater than 50 miles since June 2001 for wildlife viewing was requested. Potential respondents reported the number of birds they could identify by both sight and sound without a field guide. The frequency and enjoyable nature of specific categories of wildlife were posed (birds, large mammals, small mammals, other) as was the primary reason to watch wildlife.

#### Important attributes for enjoyable wildlife viewing experiences

Next, in an effort to understand important attributes of the wildlife watching experience, a list of 26 experience items were presented, following Vaske, et al. (2001). Respondents indicated how important each experience attribute was on a five-point scale where one equaled very unimportant and five equaled very important. Item examples included:

seeing wildlife, area information (brochures, guides), paved hiking trails with no signs, and pretrip information available on line.

**Travel in and out of Minnesota related to wildlife viewing**

Travel for wildlife viewing both in and out of Minnesota was of interest and comprised the next section. Open-ended questions focused on the number of day and overnight trips for Minnesota wildlife related travel, the trip duration, and group size. The number of trips since June 2001 to each of the four MOT regions was also of interest. A small map was on the survey to ease respondent burden. Further, respondents indicated the number of visits to three birding trails (Great River, Pine to Prairie, Minnesota River) since June 2001. Similar to the open ended questions for Minnesota travel, respondents were asked about the number of day and overnight trips outside of Minnesota related to wildlife watching, as well as the typical states or countries visited.

Expenditures for an "average overnight trip" to observe, photograph, or feed wildlife in Minnesotan were sought in several categories: food, lodging, transportation, equipment rental, and access fees. To assess any cross over with other wildlife related recreation, participation in hunting or fishing in Minnesota was also queried. Participants also specified the number of days participating since June 2001 and the main species sought.

**Interests in and constraints to viewing wildlife**

Interests in and constraints to wildlife viewing consisted of a commitment scale, intentions for wildlife viewing in the next year, and possible wildlife viewing constraints. Beyond participation frequency and identification abilities, commitment as central to life was examined. A parsimonious and reliable nine-item commitment scale was adopted from Kim, Scott, and Crompton (1997). Respondents indicated their agreement, on a scale from strongly disagree to strongly agree, with nine items such as "I consider myself to be somewhat expert at watching birds and other wildlife," "I would rather watch wildlife than do most anything else," and "If I can't go to watch birds and other wildlife, I am not sure what I would do."

To understand future commitment to wildlife watching, respondents answered open-ended questions about the number of days they intended to observe, photograph, or feed wildlife in the next 12 months. In addition, respondents indicated the likelihood, very unlikely to very likely, of visiting three birding trails (Great River, Pine to Prairie, Minnesota River) and one event (Tundra Swan Watch) in the next twelve months.

Finally, to ascertain any constraints respondents might perceive to wildlife watching, they indicated their agreement, strongly disagree to strongly agree, to fourteen possible constraint items based on Pennington-Gray and Kerstetter (2002). Examples include: "I am not able to plan a trip," " need accessible facilities," "I don't have anyone to go with," and "I don't have time."

**Information sources used to learn about wildlife viewing**

Just as constraints to wildlife viewing were of interest, so were the information sources for and values associated with wildlife viewing. Therefore, modified from Slater and Coughlon (1995), 15 possible information sources were listed and respondents indicated whether or not they used it (simple yes or no) and if so, how often (always, often, sometimes). Examples included: television, newspaper, Internet in general, birding books, friends/family, and MN Office of Tourism website.

Similarly, following Fulton, et al. (1996), three value orientations were examined: recreational wildlife experience, residential wildlife experience, and educational wildlife experience. The twelve items that compose the values were listed and respondents indicated their agreement, from strongly disagree to strongly agree, with each. Examples include: "I notice the birds and wildlife around me everyday," "I enjoy seeing wildlife when I take a trip outdoors", and "I enjoy learning about wildlife."

**Demographics**

Finally, for descriptive and comparative purposes, basic demographic information questions were included. These eight questions included gender (male or female), age via year of birth, education level (eighth grade through advanced degree), ethnicity (Hispanic/Latino or not) and race, employment status (full time, part time, retired, or other), annual household income ($5,000 or less through $175, 000 or more), and number of organizations belonged to (eight listed with an "other" category provided).

***Response rate***

Following a modified Dillman (2000) technique that included an initial survey package (Appendix B), a scenic postcard reminder (Appendix C ) one week later, and a replacement questionnaire package mailed two weeks after the postcard (Appendix D), an overall 57.8 percent response rate was obtained (Table 1). The response rate ranged from 43.7 percent (Minnesota Audubon Association) to 75.4 percent (Minnesota members of the American Birding Association; Table 2). Twelve non-respondents queried by telephone did not significantly differ on select demographic and wildlife viewing behavior items.

Table 1. Response rate among Minnesota wildlife viewing mail survey respondents, 2002.

| | n | Percent |
|---|---|---|
| Initial mailing | 1997 | |
| Undeliverable | 26 | |
| Unusable | 45 | |
| | 1926 | |
| Returned | 1113 | |
| Response rate | | 57.8 |

Table 2. Response rate by sample origin among Minnesota wildlife viewing mail survey respondents, 2002.

| | MNAUD* | | MOU* | | MABA* | | GRBT* | |
|---|---|---|---|---|---|---|---|---|
| | n | Percent | n | Percent | n | Percent | n | Percent |
| Initial mailing | 989 | | 546 | | 318 | | 145 | |
| Undeliverable | 12 | | 2 | | 5 | | 2 | |
| Unusable | 23 | | 13 | | 4 | | 3 | |
| | 954 | | 531 | | 309 | | 140 | |
| Returned | 417 | | 383 | | 233 | | 80 | |
| Response rate (%) | | 43.7 | | 72.1 | | 75.4 | | 57.1 |

*MNAUD=Minnesota Audubon, MOU=Minnesota Ornithologists' Union, MABA=Minnesota members of the American Birding Association, GRBT=Great River Birding Trail

### *Analysis*

Data were entered, cleaned, and checked for singularity and multi-collinearity in SPSS version 10.0. In addition, extreme outliers were windsorized to bring highly skewed variables into usable ranges. Descriptive analysis provided means, standard deviations, and frequencies to describe the sample and provide information on variables of interest. Factor analysis with varimax rotation identified factors among the site preferences, participation constraints, wildlife values, and behavioral commitment items. Cronbach alpha's assessed scale and factor reliability as necessary. Analysis of variance assessed differences among respondents according to: numbers of organization memberships, commitment to wildlife viewing, motivation for wildlife viewing, and wildlife related recreation participation. Least significant difference tests identified differences among groups when appropriate.

## RESULTS

### *Respondents*

Similar to other wildlife viewing research (Kellert, 1985; Boxall & McFarlane, 1995; Eubanks, Kirlinger, & Payne, 1993), MN participants are mature, Anglo and possess high educational and income status. Respondents ranged in age from 18 to 95 years, with a mean age of 55.9 years (Table 3). Survey respondents were primarily male (50.7 percent), Caucasian (97.6 percent), highly educated (37.7 percent college degree, 37.5 percent advanced degree), and reported an income greater than $75,000 (41.6 percent) that supported an average of 2.1 people. Most frequently respondents indicated either working full time or retired (51.0 percent and 31.3 percent, respectively).

Table 3. Demographic characteristics among Minnesota wildlife viewing mail survey respondents, 2002.

| Demographic characteristic | Frequency | Percent |
|---|---|---|
| Age in years (n =1095; Mean =55.9) | | |
| 18 – 30 | 31 | 2.8 |
| 31 – 40 | 102 | 9.3 |
| 41 – 50 | 244 | 22.3 |
| 51 – 60 | 333 | 30.4 |
| 61 – 70 | 230 | 21.0 |
| >71 | 155 | 14.2 |
| Total | 1095 | 100.0 |
| Education level (n =1102) | | |
| Eighth grade | 6 | 0.5 |
| High school/GED | 66 | 6.0 |
| Tech school | 34 | 3.1 |
| Some college | 168 | 15.2 |
| College degree | 415 | 37.7 |
| Advanced degree | 413 | 37.5 |
| Total | 1096 | 100.0 |
| Ethnicity (n =1091) | | |
| White | 1065 | 97.6 |
| Other | 13 | 1.2 |
| American Indian or Alaska Native | 9 | 0.8 |
| Asian | 2 | 0.2 |
| Native Hawaiian or other Pacific Islander | 1 | 0.1 |
| African American | 1 | 0.1 |
| Total | 1091 | 100.0 |
| Employment status (n=1102) | | |
| Full time | 562 | 51.0 |
| Retired | 345 | 31.3 |
| Part time | 139 | 12.6 |
| Other | 56 | 5.1 |
| Total | 1102 | 100.0 |
| Income (n =981) | | |
| Less than $5,000 | 5 | 0.5 |
| $5,000-9,999 | 7 | 0.7 |
| $10,000-14,999 | 13 | 1.3 |
| $15,000-24,999 | 64 | 6.5 |
| $25,000-34,999 | 105 | 10.7 |
| $35,000-49,999 | 146 | 14.9 |
| $50,000-74,999 | 233 | 23.8 |
| $75,000-99,999 | 157 | 16.0 |
| $100,000-124,999 | 122 | 12.4 |
| $125,000 or more | 129 | 13.2 |
| Total | 981 | 100.0 |

***Experience with, reasons for, and abilities in wildlife viewing***

Respondents indicated both a life long and recent history with wildlife viewing and related behaviors such as photography and feeding. The average respondent indicated they had observed wildlife for 32.2 years. More recently, the majority of respondents had spent over 300 days since June 2001 observing wildlife and intended to do so more than 300 days in the next year (Table 4).

A great majority of respondents observed wildlife around their home (97.5 percent) with 72.5 percent visiting parks within a one-mile radius of their home to observe wildlife in the last 12 months (Figure 1). Beyond viewing, respondents spent an average of 7.8 days photographing wildlife. A majority of respondents fed birds around their home (89.9 percent) and more than half (65.0 percent) maintained plantings around their home to benefit wildlife, spending an average of $245.88 to do so. Respondents also belonged to an average of 2.7 wildlife related organizations, of the eight listed in the survey.

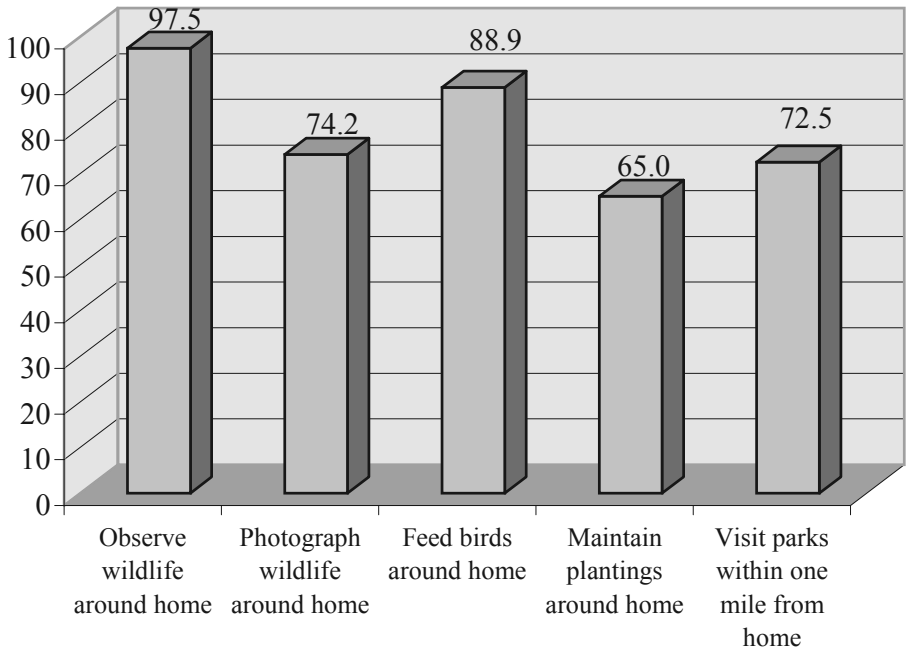


Figure 1. Percent of respondents who participate in various wildlife viewing activities around their home, among Minnesota wildlife viewing survey respondents, 2002.

Table 4. General wildlife observation, photographing, and feeding behavior among Minnesota wildlife viewing mail survey respondents, 2002.

| | Frequency | Percent | | Frequency | Percent |
|---|---|---|---|---|---|
| Observed wildlife around their home | | | Maintain plantings around home to benefit wildlife | | |
| Yes | 1076 | 97.5 | Yes | 712 | 65.0 |
| Number of years spent observing wildlife (mean=32.2, S.D.=17.8) | | | Cost of plantings around home (mean=$245.88, S.D.=283.03) | | |
| 0-9 | 103 | 9.5 | $1.00-149.99 | 265 | 49.7 |
| 10-19 | 148 | 13.6 | $150.00-299.99 | 132 | 24.8 |
| 20-29 | 195 | 18.0 | $300.00-449.99 | 45 | 8.4 |
| 30-39 | 232 | 21.4 | $450.00-599.99 | 29 | 5.5 |
| 40-49 | 181 | 16.7 | $600.00-749.99 | 8 | 1.5 |
| 50-59 | 131 | 12.0 | $750.00 or more | 54 | 10.1 |
| 60 or more | 95 | 8.8 | Total | 533 | 100.0 |
| Total | 1085 | 100.0 | | | |
| Days spent observing wildlife in the past twelve months (mean=234.4, S.D.=132.4) | | | Days spent photographing wildlife (mean=7.8, S.D.=12.7) | | |
| 0-49 | 149 | 15.2 | 0-9 | 579 | 70.1 |
| 50-99 | 69 | 7.1 | 10-19 | 111 | 13.4 |
| 100-149 | 63 | 6.4 | 20-29 | 62 | 7.5 |
| 150-199 | 37 | 3.8 | 30 or more | 74 | 9.0 |
| 200-249 | 79 | 8.1 | Total | 826 | 100.0 |
| 250-299 | 49 | 5.0 | Feed birds around home | | |
| 300-349 | 197 | 20.1 | Yes | 982 | 88.9 |
| 350 or more | 335 | 34.3 | Months spent feeding birds around home (mean=10.5, S.D.=2.6) | | |
| Total | 978 | 100.0 | 1-3 | 17 | 1.8 |
| Visited parks within one mile radius of home in the last 12 months to view wildlife | | | 4-6 | 121 | 12.4 |
| Yes | 790 | 72.5 | 7-9 | 108 | 11.2 |
| | | | 10-12 | 724 | 74.6 |
| | | | Total | 970 | 100.0 |

Similar to Adams, Leifester, and Herron's findings (1997), respondents engaged in wildlife viewing motivated by a fascination with wildlife (38.4 percent) and to be closer to nature (37.9 percent; Figure 2). Birds were both the most frequent wildlife observed, fed, or photographed (95.4 percent) and the most enjoyable type of wildlife to observe, feed or photograph (89.9 percent; Table 5). Among 12 species of potential viewing interest, warblers and bald eagles received the highest ratings (4.3 and 4.2, respectively where 5 is the highest). Respondents indicated higher interest in four other wildlife attractions: hawk migrations, loons, northern wintering owls, and peregrine falcons. Respondents indicated a moderate interest in trumpeter swans, tundra swans, moose, and timber wolves. Respondents were least sure of their interest in greater prairie chickens and sharp tailed grouse as attractions (both 3.6; Table 6).

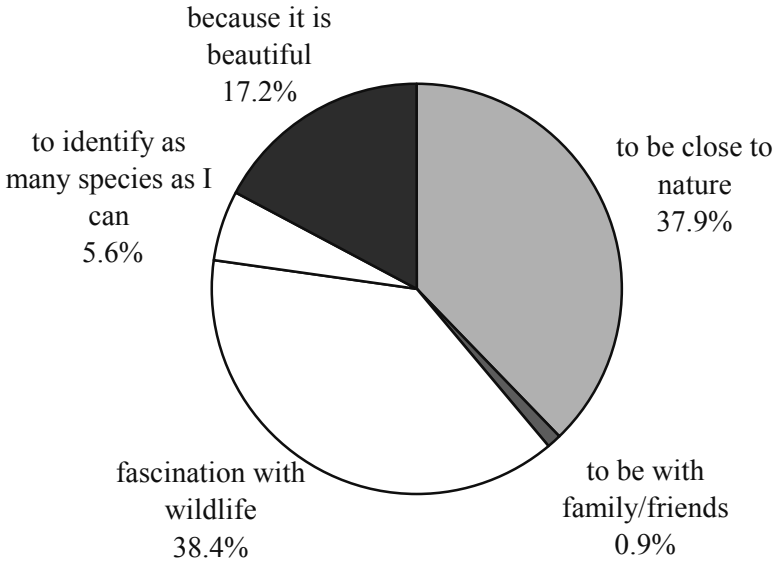


Figure 2. Reasons for wildlife viewing participation among Minnesota wildlife viewing mail survey respondents, 2002 (n=1093).

Table 5. Type of wildlife most viewed or enjoyed among Minnesota wildlife viewing mail survey respondents, 2002.

| | Frequency | Percent* |
|---|---|---|
| Type of wildlife most frequently watched, fed, or photographed | | |
| Birds | 1039 | 95.4 |
| Large mammals | 20 | 1.8 |
| Small mammals | 21 | 1.9 |
| Other | 9 | 0.8 |
| Total | 1089 | 100.0 |
| Type of wildlife most enjoyable to watch, feed, or photograph | | |
| Birds | 962 | 89.9 |
| Large mammals | 64 | 5.9 |
| Small mammals | 36 | 3.3 |
| Other | 20 | 1.8 |
| Total | 1082 | 99.9 |

* Percent may not total 100 due to rounding.

Table 6. Species of interest among Minnesota wildlife viewing mail survey respondents, 2002.

| | Mean[1] | S.D. |
|---|---|---|
| Warblers (n=1077) | 4.3 | 1.0 |
| Bald eagles (n=1087) | 4.2 | 1.1 |
| Hawk migrations (n=1074) | 4.1 | 1.1 |
| Loon (n=1085) | 4.1 | 1.1 |
| Northern wintering owls (n=1067) | 4.1 | 1.1 |
| Peregrine falcons (n=1070) | 4.1 | 1.1 |
| Trumpeter swans (n=1073) | 3.9 | 1.1 |
| Tundra swans (n=1066) | 3.9 | 1.1 |
| Moose (n=1071) | 3.8 | 1.2 |
| Timber wolves (n=1069) | 3.8 | 1.3 |
| Greater prairie chickens (n=1065) | 3.6 | 1.2 |
| Sharp tailed grouse (n=1061) | 3.6 | 1.2 |

[1] Rated on a scale from 1 to 5, where 1=very uninterested, 3=unsure, and 5=very interested.

On average, respondents reported the ability to identify 145.8 bird species by sight without field guide assistance and 47.8 by sound without field guide assistance. The majority indicated an ability to identify over 100 birds by sight (Table 7).

Table 7. Self assessed wildlife identification ability among Minnesota wildlife viewing mail survey respondents, 2002.

| | Frequency | Percent |
|---|---|---|
| Number of birds identified without a field guide (mean=145.8, S.D.=131.9) | | |
| 0-9 | 25 | 2.4 |
| 10-19 | 69 | 6.8 |
| 20-29 | 117 | 11.4 |
| 30-39 | 62 | 6.0 |
| 40-49 | 47 | 4.6 |
| 50-74 | 118 | 11.5 |
| 75-99 | 43 | 4.2 |
| 100-199 | 193 | 18.9 |
| 200-299 | 129 | 12.5 |
| 300-399 | 97 | 9.5 |
| 400 or more | 125 | 12.2 |
| Total | 1025 | 100.0 |
| Number of birds identified by sound (mean=47.8, S.D.=49.1) | | |
| 0-9 | 187 | 18.4 |
| 10-19 | 211 | 20.7 |
| 20-29 | 122 | 12.0 |
| 30-39 | 78 | 7.7 |
| 40-49 | 34 | 3.3 |
| 50-74 | 118 | 11.6 |
| 75-99 | 43 | 4.3 |
| 100-149 | 91 | 8.9 |
| 150 or more | 133 | 13.1 |
| Total | 1017 | 100.0 |

***Participation in other wildlife related recreation: hunting and fishing***

The majority of survey respondents were infrequently engaged in hunting and fishing in Minnesota, if at all. Although about four of ten respondents indicated they also fished in Minnesota, average participation since June 2001 was just 12.8 days (Table 8). Similarly, fewer than two of ten respondents indicated hunting in Minnesota and of those who did, average participation since June 2001 was 9.6 days. Despite rather few average days of participation, about one-fifth of each hunters and anglers participated for 20 or more days since June 2001. These participation patterns are comparable to data reported for Minnesota by the USFWS (2001) and Colorado's (Manfredo & Larson, 1993) wildlife viewers engagement in other wildlife related recreation

Table 8. Hunting and fishing participation among Minnesota wildlife viewing mail survey respondents, 2002.

| | Frequency | Percent |
|---|---|---|
| Do you hunt in MN | | |
| Yes | 184 | 16.8 |
| How many days since June 2001 (mean=9.6, S.D.=8.2) | | |
| 0-4 | 60 | 34.9 |
| 5-9 | 44 | 25.6 |
| 10-14 | 14 | 8.1 |
| 15-19 | 18 | 10.5 |
| 20 or more | 36 | 20.9 |
| Total | 172 | 100.0 |
| Do you fish in MN | | |
| Yes | 463 | 42.6 |
| How many days since June 2001 (mean=12.8, S.D.=20.0) | | |
| 0-4 | 157 | 36.8 |
| 5-9 | 86 | 20.1 |
| 10-14 | 73 | 17.0 |
| 15-19 | 20 | 4.7 |
| 20 or more | 91 | 21.3 |
| Total | 427 | 100.0 |

***Important attributes for wildlife viewing experience***

Among the 25 items respondents rated as important to their wildlife viewing experience, the most important were seeing wildlife (4.4), a quiet atmosphere (4.1), hearing wildlife (4.0), the ability to see wildlife clearly (3.8), and pull-offs to see wildlife safely (3.7; Table 9). Also at least moderately important to respondents in wildlife viewing were accessible trails and roads, nature centers, area information, species information, and undeveloped dirt trails with no signs. Least important to respondent's wildlife viewing experiences were the availability of refreshments (1.8) and self-guided tours with interpretive cassettes (2.1).

In an effort to reduce and refine the experience attributes, they were factor analyzed. Six factors emerged: information, wildlife experience, accessible areas, area attributes, paved trails, and undeveloped trails. Similar to the item rankings, the most important factors were the wildlife experience, access, and undeveloped trails (Table 10). Combined, these factor groupings explained 64.2 percent of the variance. The experience preference factors had generally acceptable reliability coefficients ranging from 0.54 (undeveloped trails) to 0.90 (information). Moreover, most of the factor loadings were greater than 0.65, indicating a relatively high correlation between the factors and their items.

Table 9. The importance of experience attributes among Minnesota wildlife viewing mail survey respondents, 2002.

| | Mean[1] | S.D. |
|---|---|---|
| Seeing wildlife (n=1095) | 4.4 | 1.0 |
| Quiet atmosphere (n=1083) | 4.1 | 1.0 |
| Hearing wildlife (n=1086) | 4.0 | 1.1 |
| Ability to see wildlife clearly (n=1086) | 3.8 | 1.1 |
| Pull offs where I can safely watch wildlife (n=1081) | 3.7 | 1.1 |
| Accessible trails (n=1077) | 3.5 | 1.2 |
| Accessible roads (n=1070) | 3.3 | 1.2 |
| Nature centers (n=1067) | 3.3 | 1.1 |
| Area information (brochures, guides) (n=1080) | 3.1 | 1.1 |
| Pre-trip information available online (n=1077) | 3.0 | 1.3 |
| Species information (brochures, displays) (n=1082) | 3.0 | 1.1 |
| Undeveloped dirt trails, with no signs (n=1066) | 3.0 | 1.2 |
| Observational/photography blinds (n=1079) | 2.9 | 1.2 |
| Undeveloped dirt trails, with wildlife oriented signs (n=1071) | 2.9 | 1.1 |
| Knowledgeable staff to answer my questions (n=1079) | 2.7 | 1.2 |
| Scenic tours (n=1072) | 2.5 | 1.1 |
| Signs describing wildlife | 2.5 | 1.1 |
| Formal programs about the area wildlife (n=1077) | 2.4 | 1.1 |
| Paved hiking trails, with wildlife oriented signs (n=1077) | 2.4 | 1.1 |
| Activities for the entire family (n=1074) | 2.3 | 1.2 |
| Paved hiking trails, with no signs (n=1073) | 2.3 | 1.1 |
| Films or slideshows about wildlife (n=1080) | 2.2 | 1.1 |
| Guided tours (n=1076) | 2.2 | 1.1 |
| Self guided tours with interpretive cassettes (n=1079) | 2.1 | 1.1 |
| Refreshments available (n=1076) | 1.8 | 1.0 |

[1]Rated on a scale from 1 to 5, where 1=very unimportant and 5=very important.

Table 10. Factor loadings for experience attribute items among Minnesota wildlife viewing mail survey respondents, 2002.

| | Factors | | | | | |
|---|---|---|---|---|---|---|
| Items | Information | Wildlife experience | Accessible areas | Area attributes | Paved trails | Undeveloped trails |
| Films or slideshows about wildlife | .81 | | | | | |
| Self guided tours with interpretive cassettes | .75 | | | | | |
| Knowledgeable staff to answer questions | .73 | | | | | |
| Formal programs about area wildlife | .71 | | | | | |
| Guided tours | .70 | | | | | |
| Scenic tours | .70 | | | | | |
| Signs describing wildlife | .66 | | | | | |
| Nature centers | .59 | | | | | |
| Species information | .59 | | | | | |
| Activities for the entire family | .45 | | | | | |
| Area information | .45 | | | | | |
| Seeing wildlife | | .89 | | | | |
| Hearing wildlife | | .79 | | | | |
| Ability to see wildlife clearly | | .76 | | | | |
| Quiet atmosphere | | .46 | | | | |
| Accessible trails | | | .80 | | | |
| Accessible roads | | | .80 | | | |
| Pre trip information available online | | | | .77 | | |
| Observational/photography blinds | | | | .62 | | |
| Refreshments available | | | | .52 | | |
| Pull offs where I can safely watch wildlife | | | | .51 | | |
| Paved hiking trails, with no signage | | | | | .82 | |
| Paved hiking trails, with wildlife signage | | | | | .77 | |
| Undeveloped dirt trails, with no signage | | | | | | .82 |
| Undeveloped dirt trails, with wildlife signage | | | | | | .63 |
| Scale mean | 2.5 | 4.1 | 3.4 | 2.8 | 2.3 | 3.0 |
| Alpha ($\alpha$) | .90 | .78 | .86 | .65 | .82 | .54 |
| Variance explained (%) | 64.22 | | | | | |

### *Information sources used for wildlife viewing*

The information sources used by the most respondents were birding books (88.5 percent), magazines (83.2 percent), and brochures or pamphlets (78.1 percent; Table 11; Figure 3). Of the information sources used, more than half of the respondents used six always or often: birding books, magazines, the MOU hotline, Internet, friends/family, and brochures/pamphlets. Interestingly, although more than half of the respondents used the Internet in general for wildlife information, fewer used either the DNR website (36.7 percent) or the MOT website (20.6 percent). Less than one-quarter of the respondents used the Travelers Guide to Watchable Wildlife in Minnesota, outdoor/sporting goods stores, or the MOT website for wildlife viewing information.

Table 11. Information sources used for wildlife viewing among Minnesota wildlife viewing mail survey respondents, 2002.

| | Percent who use | How often used (%) | | | Total percent* |
|---|---|---|---|---|---|
| | | Always | Often | Sometimes | |
| Birding books (n=1041) | 88.5 | 36.4 | 39.0 | 24.5 | 99.9 |
| Magazines (n=1039) | 83.2 | 14.7 | 41.7 | 43.6 | 100.0 |
| Brochures/pamphlets (n=1025) | 78.1 | 10.7 | 40.3 | 49.3 | 100.3 |
| Newspaper (n=1038) | 73.1 | 7.5 | 27.6 | 65.0 | 100.1 |
| Friends/family (n=1028) | 72.6 | 13.9 | 41.3 | 44.8 | 100.0 |
| Internet in general (n=1031) | 64.4 | 19.4 | 39.9 | 40.7 | 100.0 |
| Television (n=1046) | 53.9 | 5.5 | 29.5 | 65.0 | 100.0 |
| General travel books (n=1012) | 53.4 | 8.5 | 34.1 | 57.5 | 100.1 |
| MN MOU Birding Hotline (n=1017) | 52.0 | 36.3 | 31.1 | 32.5 | 99.9 |
| Radio (n=1028) | 39.4 | 6.4 | 27.1 | 66.4 | 99.9 |
| Wild bird stores (n=1025) | 37.0 | 7.1 | 30.0 | 63.0 | 100.1 |
| MN DNR website (n=1022) | 36.7 | 7.1 | 29.0 | 63.9 | 100.0 |
| Traveler's guide to Watchable Wildlife in MN (n=1013) | 21.6 | 8.0 | 33.6 | 58.4 | 100.0 |
| Outdoor/sporting goods stores (n=1016) | 21.5 | 5.0 | 23.7 | 71.4 | 100.1 |
| MN Office of Tourism website (n=1021) | 20.6 | 4.6 | 26.5 | 68.9 | 100.0 |

*Total percent may not equal 100 due to rounding.

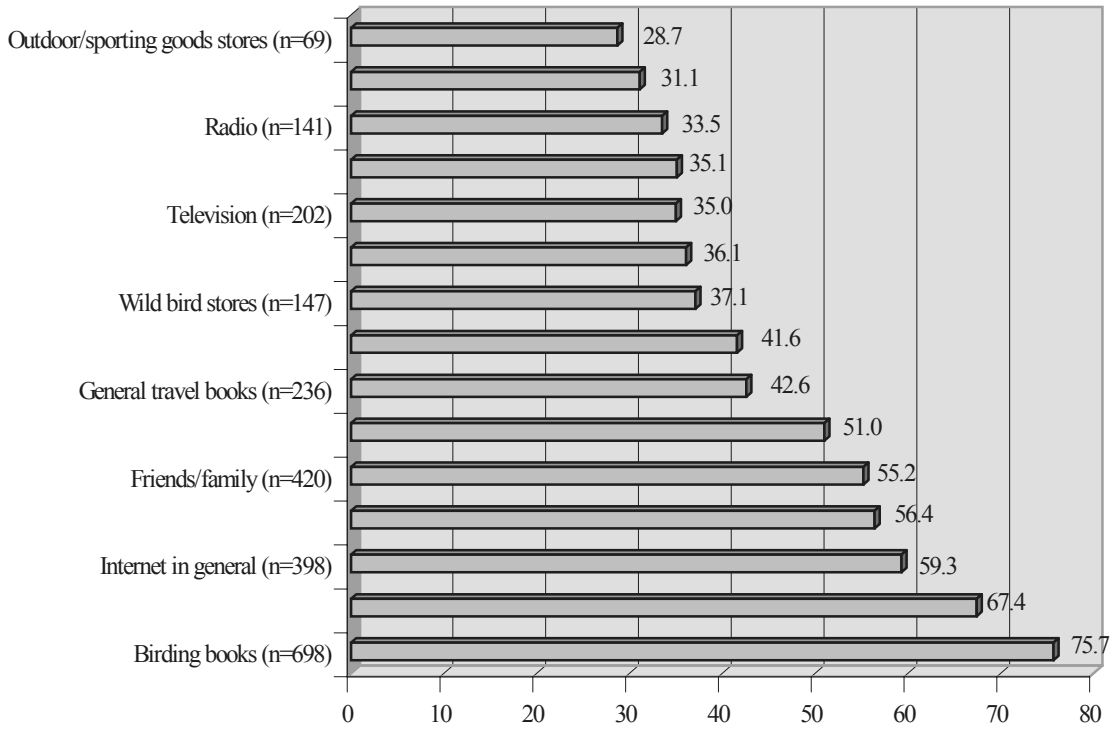


Figure 3. Percent of wildlife viewing mail survey respondents who often or always use information sources, if utilized, among Minnesota wildlife viewing survey respondents, 2002.

***Wildlife value orientation***

Respondents rated all 12 wildlife value orientation items as important. The top five most important values were "I enjoy seeing birds and wildlife around me everyday" (4.9), "I notice the birds and wildlife around me everyday" (4.9), "having wildlife around my home is important to me" (4.8), "I enjoy watching wildlife when I take trips outdoors" (4.8), and "I enjoy learning about wildlife" (4.7).

In an effort to reduce and refine the value statements, they were factor analyzed. Three factors emerged: residential, recreation, and education. Similar to the item rankings, all three factors were important to respondents, although the residential value had the highest mean. Combined these factors explained 68.3 percent of the variance (Table 13). The

value orientation items had reliability coefficients that ranged from 0.76 (recreation) to 0.84 (education). Moreover, most of the factor loadings were greater than .65, indicating a relative high correlation between the factors and their items.

Table 12. Wildlife value orientation among Minnesota wildlife viewing mail survey respondents, 2002.

| | Mean[1] | S. D. |
|---|---|---|
| I enjoy seeing birds around my home (n=1107) | 4.9 | 0.4 |
| I notice the birds and wildlife around me everyday (n=1104) | 4.9 | 0.4 |
| Having wildlife around my home is important to me (n=1101) | 4.8 | 0.7 |
| I enjoy watching wildlife when I take a trip outdoors (n=1104) | 4.8 | 0.4 |
| I enjoy learning about wildlife (n=1102) | 4.7 | 0.5 |
| I'm interested in making the area around my home attractive to birds and wildlife (n=1099) | 4.6 | 0.7 |
| It is important that all Minnesota residents have a chance to learn about wildlife in the state (n=1105) | 4.6 | 0.7 |
| It is important that we learn as much as we can about wildlife (n=1104) | 4.6 | 0.7 |
| One of the reasons I take trips to the outdoors, like camping, hiking or sightseeing, is for the chance to see wildlife (n=1096) | 4.6 | 0.7 |
| Some of my most memorable outdoor experiences occurred when I saw wildlife I didn't expect to see (n=1099) | 4.6 | 0.6 |
| An important part of my community is the wildlife I see there (n=1103) | 4.5 | 0.8 |
| Some of my most memorable outdoor experiences occurred when I saw wildlife do something I didn't expect (n=1095) | 4.4 | 0.8 |

[1] Rated on a scale from 1 to 5, where 1=strongly disagree, 3=neutral and 5=strongly agree.

Table 13. Factor loadings of wildlife value orientation items among Minnesota wildlife viewing mail survey respondents, 2002.

| | Value factors | | |
|---|---|---|---|
| | Residential | Recreation | Education |
| Having wildlife around my home is important to me | .83 | | |
| I enjoy seeing birds around my home | .83 | | |
| I notice the birds and wildlife around me everyday | .79 | | |
| I'm interested in making the area around my home attractive to birds and wildlife | .71 | | |
| An important part of my community is the wildlife I see there | .61 | | |
| Some of my most memorable outdoor experiences occurred when I saw wildlife I didn't expect to see | | .83 | |
| Some of my most memorable outdoor experiences occurred when I saw wildlife do something I didn't expect | | .80 | |
| One of the reasons I take trips to the outdoors, like camping, hiking or sightseeing, is for the chance to see wildlife | | .67 | |
| I enjoy watching wildlife when I take a trip outdoors | | .46 | |
| It is important that we learn as much as we can about wildlife | | | .82 |
| It is important that all Minnesota residents have a chance to learn about wildlife in the state | | | .82 |
| I enjoy learning about wildlife | | | .78 |
| Scale mean | 4.75 | 4.60 | 4.60 |
| Alpha ($\alpha$) | .83 | .76 | .84 |
| Variance explained (%) | 68.28 | | |

***Commitment to viewing wildlife***

Overall commitment to wildlife viewing was low to moderate as evidenced by mean values on all nine items queried (Table 14). Respondents were neutral in terms of their viewing expertise, their life organization around wildlife viewing, and if they would rather watch wildlife than do anything else.

In an effort to reduce and refine the commitment items, they were factor analyzed (Table 15). A single factor emerged, like past research (Kim et al., 1997), that explained 49.7 percent of the variance and had an acceptable reliability coefficient of 0.87. Most of the factor loadings were over .65, indicating a strong correlation between the factor and its

items. The overall scale mean was 2.6, indicating low to moderate commitment levels toward viewing wildlife and birds.

Table 14. Commitment to wildlife viewing among Minnesota wildlife viewing mail survey respondents, 2002.

| | Mean[1] | S.D. |
|---|---|---|
| I consider myself to be somewhat expert at watching birds and other wildlife (n=1090) | 3.3 | 1.1 |
| I find a lot of my life is organized around watching birds and other wildlife (n=1093) | 3.1 | 1.2 |
| I would rather watch wildlife than do most anything else (n=1093) | 3.1 | 1.2 |
| If I can't go to watch birds and other wildlife, I am not sure what I would do (n=1090) | 2.6 | 1.3 |
| Most of my friends are in some way connected with watching birds and other wildlife (n=1090) | 2.5 | 1.1 |
| Other leisure activities don't interest me as much (n=1093) | 2.5 | 1.2 |
| Others would probably say that I spend too much time watching birds and other wildlife (n=1088) | 2.4 | 1.2 |
| Because of birding and watching wildlife, I don't have time to spend on other leisure activities (n=1090) | 2.2 | 1.0 |
| If I stopped watching birds or other wildlife, I would probably lose touch with a lot of my friends (n=1091) | 2.2 | 1.2 |

[1] Rated on a scale from 1 to 5, where 1=strongly disagree and 5=strongly agree.

Table 15. Factor loadings for commitment items among Minnesota wildlife viewing mail survey respondents, 2002.

| | Factor loading |
|---|---|
| I find a lot of my life is organized around watching birds and other wildlife (n=1093) | .83 |
| I would rather watch wildlife than do most anything else (n=1093) | .78 |
| Because of birding and watching wildlife, I don't have time to spend on other leisure activities (n=1090) | .72 |
| Other leisure activities don't interest me as much (n=1093) | .71 |
| Others would probably say that I spend too much time watching birds and other wildlife (n=1088) | .71 |
| If I can't go to watch birds and other wildlife, I am not sure what I would do (n=1090) | .70 |
| I consider myself to be somewhat expert at watching birds and other wildlife (n=1090) | .67 |
| If I stopped watching birds or other wildlife, I would probably lose touch with a lot of my friends (n=1091) | .60 |
| Most of my friends are in some way connected with watching birds and other wildlife (n=1090) | .58 |
| Scale mean | 2.6 |
| Alpha ($\alpha$) | .87 |
| Variance explained (%) | 49.67 |

Respondent's commitment categories emerged by dividing them into three categories based on a median split: low, medium, or high. Respondents scoring one standard deviation above the median (2.6) were categorized as high commitment and those one standard deviation below the median were categorized as low commitment. The remaining respondents were considered moderately committed (Figure 4).

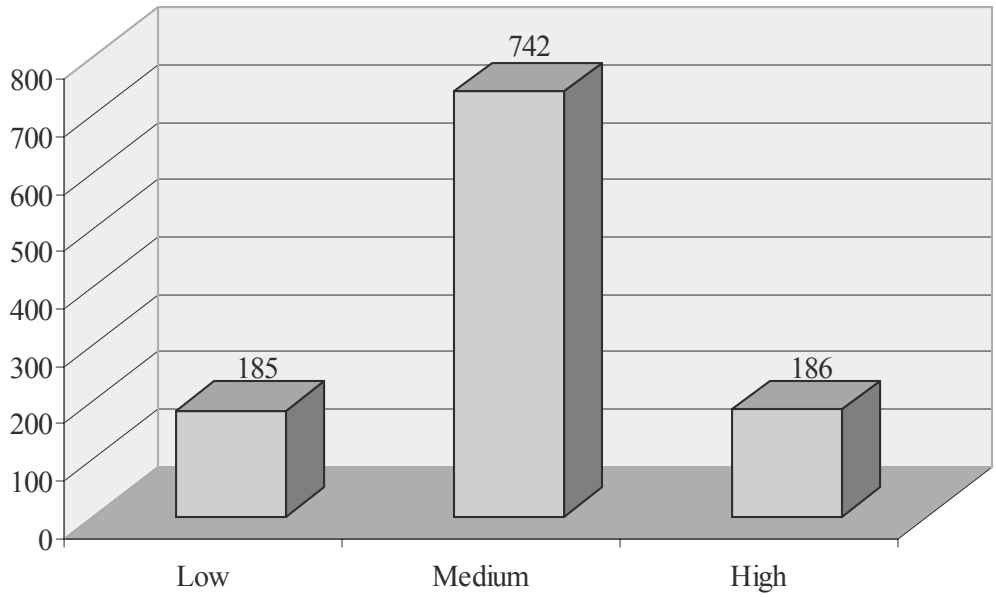


Figure 4. Commitment category frequencies, as determined with a median split on commitment scale, among Minnesota wildlife viewing survey respondents, 2002.

***Constraints to viewing wildlife***

No constraints towards viewing wildlife emerged among the fourteen queried (Table 16). The closest potential constraint was the abundance of local wildlife in that respondents indicated "there's enough wildlife to view near my home" (3.1). Respondents most strongly disagreed that facility access, travel planning ability, and televised wildlife programs constrained their wildlife viewing participation (1.7 for all three items).

In an effort to reduce and refine the constraints items, they were factor analyzed. Similar to past research (Pennington-Gray & Kerstetter, 2002), three factors emerged: inter/intra personal, time, and structural (Table 17). Combined these three factor groupings explained 60.4 percent of the variance. The factor groupings had acceptable reliability coefficients ranging from 0.74 (both inter-/intrapersonal and time) to 0.82 (structural). Moreover, most of the factor loadings were greater than .65, indicating a relatively high correlation between their factors and their items. The time factor had the highest mean of 2.6, still well below that of any real or perceived constraint towards wildlife viewing participation.

Table 16. Constraints to wildlife viewing among Minnesota wildlife viewing survey respondents, 2002.

| | Mean[1] | S.D. |
|---|---|---|
| There's enough wildlife to view near my home (n=1067) | 3.1 | 1.3 |
| I don't have time (n=1077) | 2.6 | 1.3 |
| I have many family obligations (n=1076) | 2.5 | 1.3 |
| I don't have enough money (n=1074) | 2.1 | 1.1 |
| My travel companions don't have time (n=1069) | 2.1 | 1.1 |
| I don't have anyone to go with (n=1075) | 2.0 | 1.1 |
| Destinations are difficult to reach (n=1071) | 1.9 | 1.0 |
| Places to view wildlife are too far away (n=1068) | 1.9 | 1.0 |
| I don't know where to go (n=1075) | 1.9 | 1.0 |
| I am not aware of wildlife viewing travel opportunities (n=1075) | 1.8 | 1.0 |
| It requires a lot of skill (n=1075) | 1.8 | 0.9 |
| I need accessible facilities (n=1073) | 1.7 | 1.0 |
| I am not able to plan a trip (n=1072) | 1.7 | 0.9 |
| I can watch wildlife programs on TV instead (n=1076) | 1.7 | 1.0 |

[1] Rated on a scale from 1 to 5, where 1=strongly disagree, 3=neutral, and 5=strongly agree.

Table 17. Factor loadings for wildlife viewing constraint items among Minnesota wildlife viewing mail survey respondents, 2002.

| | Constraint factor | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Structural | | | Inter-Intrapersonal | | | Time | | |
| | Mean[1] | S.D. | Factor loading | Mean[1] | S.D. | Factor loading | Mean[1] | S.D. | Factor loading |
| Destinations are difficult to reach (n=1071) | 1.9 | 1.0 | .75 | | | | | | |
| I don't know where to go (n=1075) | 1.9 | 1.0 | .71 | | | | | | |
| Places to view wildlife are too far away (n=1068) | 1.9 | 1.0 | .69 | | | | | | |
| I am not aware of wildlife viewing travel opportunities (n=1075) | 1.8 | 1.0 | .65 | | | | | | |
| I need accessible facilities (n=1073) | 1.7 | 1.0 | .62 | | | | | | |
| I am not able to plan a trip (n=1072) | 1.7 | 0.9 | .75 | | | | | | |
| I don't have enough money (n=1074) | | | | 2.1 | 1.1 | .65 | | | |
| My travel companions don't have time (n=1069) | | | | 2.1 | 1.1 | .40 | | | |
| I don't have anyone to go with (n=1075) | | | | 2.0 | 1.1 | .81 | | | |
| It requires a lot of skill (n=1075) | | | | 1.8 | 0.9 | .76 | | | |
| I don't have time (n=1077) | | | | | | | 2.6 | 1.3 | .86 |
| I have many family obligations (n=1076) | | | | | | | 2.5 | 1.3 | .82 |
| Scale mean | 1.83 | | | 2.00 | | | 2.60 | | |
| Alpha ($\alpha$) | .82 | | | .74 | | | .74 | | |
| Variance explained (%) | 60.42 | | | | | | | | |

[1] Rated on a scale from 1 to 5, where 1=strongly disagree, 3=neutral and 5=strongly agree

*Wildlife viewing related travel characteristics*

**Travel within Minnesota**

When queried about day and overnight travel in Minnesota for wildlife viewing, participants indicated more day trips than overnight or those greater than 50 miles round trip (average day trips of 14.8 since June 2001; Table 18 and Figure 5). The majority (53.3 percent) of respondents took between one and 20 trips since June 2001, but 11.8 percent took 50 or more day trips.

Similarly, just more than half of the respondents indicated overnight travel to view wildlife (56.6 percent). Those traveling overnight for wildlife viewing took an average of 1.9 trips since June 2001, with 19.8 percent traveling on five or more overnights. When traveling overnight, the average length of stay was 2.7 nights and the majority traveled in groups of one or two people.

The average expenditure for overnight wildlife viewing trips in Minnesota was $184.98. The largest expenditures resulted from lodging ($79.90), equipment rental ($68.90), and food, drink and refreshments ($56.24; Table 19). Respondents spent the least for public land use or access fees ($13.75). Distinct lodging segments emerged in terms of expense, where one-fifth spent less than $50, two-fifths spent between $50 and $99, another one-fifth spent $100-149, and fewer than one-fifth spent $150 or more on lodging (Table 20).

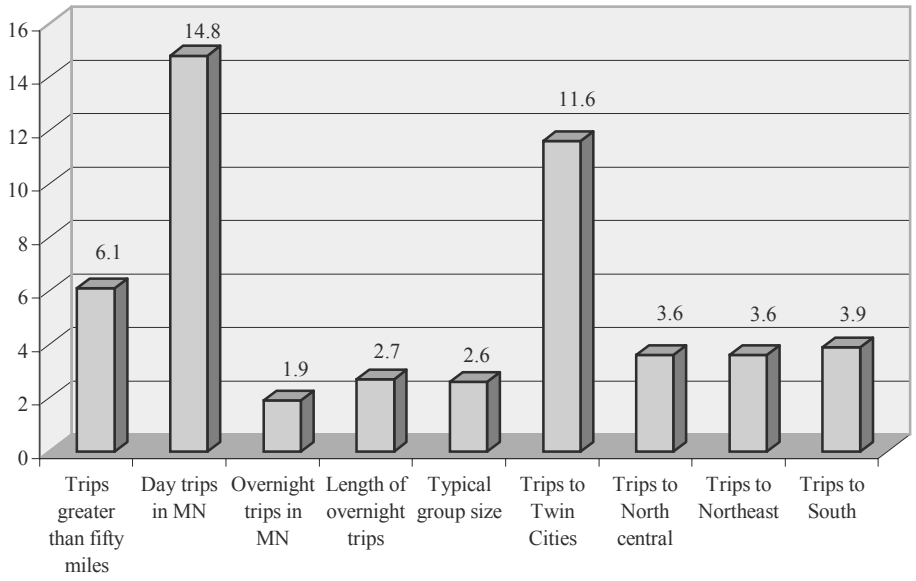


Figure 5. Averages of various travel characteristics among Minnesota wildlife viewing mail survey respondents, 2002.

Table 18. In-state travel characteristics for wildlife viewing among Minnesota wildlife viewing mail survey respondents, 2002.

| | Frequency | Percent |
|---|---|---|
| Number of trips greater than fifty miles round trip since June 2001 (mean=6.1, S.D.=6.7) | | |
| 0 | 231 | 21.9 |
| 1-4 | 370 | 35.2 |
| 5-9 | 164 | 15.5 |
| 10-14 | 110 | 10.5 |
| 15-19 | 36 | 3.4 |
| 20 or more | 142 | 13.5 |
| Total | 1053 | 100.0 |
| Number of day trips in Minnesota since June 2001 (mean=14.8, S.D.=16.3) | | |
| 0 | 157 | 14.7 |
| 1-9 | 392 | 36.6 |
| 10-19 | 179 | 16.7 |
| 20-29 | 119 | 11.2 |
| 30-39 | 70 | 6.5 |
| 40-49 | 27 | 2.5 |
| 50 or more | 126 | 11.8 |
| Total | 1070 | 100.0 |
| Number of overnight trips in Minnesota since June 2001 (mean=1.9, S.D.=2.2) | Frequency | Percent |
| 0 | 458 | 43.4 |
| 1-2 | 262 | 24.8 |
| 3-4 | 126 | 12.0 |
| 5 or more | 209 | 19.8 |
| Total | 1055 | 100.0 |
| Typical length of overnight trips, in days (mean=2.7, S.D.=2.6) | Frequency | Percent |
| 1-2 | 358 | 55.0 |
| 3-4 | 215 | 33.0 |
| 5 or more | 78 | 12.0 |
| Total | 651 | 100.0 |
| Typical group size (mean=2.6, S.D.=1.2) | Frequency | Percent |
| 1-2 | 434 | 68.1 |
| 3-4 | 129 | 20.3 |
| 5 or more | 74 | 11.6 |
| Total | 637 | 100.0 |

Table 19. Trip expenses for overnight wildlife viewing trips among Minnesota wildlife viewing mail survey respondents, 2002.

| | Mean (in U.S. $) | S.D. (in U.S. $) |
|---|---|---|
| Lodging (n=501) | 79.90 | 41.28 |
| Equipment rental such as boats, camping equipment (n=41) | 68.90 | 63.16 |
| Food, drink, and refreshments (n=565) | 56.24 | 29.30 |
| Round trip costs for transportation by private vehicle (n=518) | 48.64 | 26.56 |
| Guide fees, pack trip or package fees (n=90) | 35.98 | 22.70 |
| Public land use or access fees (n=268) | 13.75 | 7.26 |

Table 20. Typical trip expenses for overnight wildlife viewing trips among Minnesota wildlife viewing mail survey respondents, 2002.

| | Frequency | Percent | | Frequency | Percent |
|---|---|---|---|---|---|
| Lodging (mean=$79.90, S.D.=41.28) | | | Food, drink, and refreshments (mean= $56.24, S.D.= 29.30) | | |
| $1.00-49.99 | 100 | 20.0 | $1.00-24.99 | 69 | 12.2 |
| $50.00-99.99 | 210 | 41.9 | $25.00-49.99 | 155 | 27.4 |
| $100.00-149.99 | 113 | 22.5 | $50.00-74.99 | 171 | 30.3 |
| $150.00 or more | 78 | 15.6 | $75.00-99.99 | 33 | 5.9 |
| Total | 501 | 100.0 | $100.00 or more | 137 | 24.2 |
| | | | Total | 565 | 100.0 |
| Equipment rental such as boats, camping equipment (mean=$68.90, S.D.=63.16) | | | Guide fees, pack trip or package fees (mean=$35.98, S.D.=22.70) | | |
| $10.00-49.99 | 22 | 53.7 | $1.00-24.99 | 31 | 34.4 |
| $50.00-99.99 | 8 | 19.5 | $25.00-49.99 | 35 | 38.9 |
| $100-149.99 | 4 | 9.7 | $50.00 or more | 24 | 26.7 |
| $150.00 or more | 7 | 17.1 | Total | 90 | 100.0 |
| Total | 41 | 100.0 | | | |
| Round trip costs for transportation by private vehicle (mean=$48.64, S.D.=26.56) | | | Public land use or access fees (mean=$13.75, S.D.=7.26) | | |
| $1.00-24.99 | 74 | 14.3 | $1.00-9.99 | 68 | 25.4 |
| $25.00-49.99 | 204 | 39.4 | $10.00-19.99 | 95 | 35.4 |
| $50.00-74.99 | 134 | 25.8 | $20.00 or more | 105 | 39.2 |
| $75.00-99.99 | 31 | 6.0 | Total | 268 | 100.0 |
| $100.00 or more | 75 | 14.5 | | | |
| Total | 518 | 100.0 | | | |

Overall, respondents indicated more trips to view wildlife to the Twin Cities (11.6) than any other region. Based on residence, travel within Minnesota was most frequently in the region respondents lived, seconded by the Twin Cities (Table 21; Figure 6).

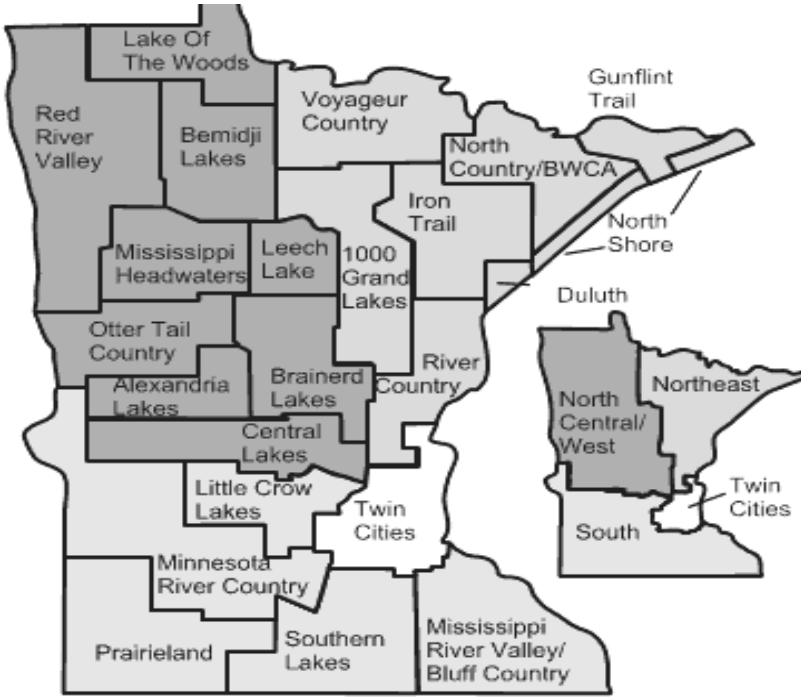


Figure 6. Travel regions in Minnesota, based on Minnesota Office of Tourism.

Fewer than one-fifth of respondents had visited the Great River Birding Trail, Pine to Prairie Birding Trail or Minnesota River Birding Trail (16.7, 13.4, and 19.4 percent, respectively). However, between one-fifth and one-third of respondents indicated intentions to visit them, as well as the Tundra Swan Watch, in the next twelve months. Respondents had stronger intentions to watch wildlife in general in the next twelve months. On average, survey respondents intended to spend 232.3 days observing wildlife, with more than half (56.2 percent) indicating more than 300 days (Table 22).

Table 21. In-state regional wildlife viewing travel, by respondent residence, among Minnesota wildlife viewing mail survey respondents, 2002.

| | Residential region | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Twin Cities residence (n=678) | | Southern residence (n=148) | | North central residence (n=109) | | Northeastern residence (n=88) | |
| | Mean | S.D. | Mean | S.D. | Mean | S.D. | Mean | S.D. |
| Number of trips to Twin Cities | 13.3 | 11.9 | 5.3 | 7.6 | 4.2 | 5.1 | 5.1 | 7.6 |
| | Frequency | Percent | Frequency | Percent | Frequency | Percent | Frequency | Percent |
| 1 to 4 | 146 | 30.4 | 38 | 73.1 | 18 | 72.0 | 20 | 74.1 |
| 5 or more | 334 | 69.6 | 14 | 26.9 | 7 | 28.0 | 7 | 25.9 |
| Total | 480 | 100.0 | 52 | 100.0 | 25 | 100.0 | 27 | 100.0 |
| Number of trips to southern region | Mean | S.D. | Mean | S.D. | Mean | S.D. | Mean | S.D. |
| | 3.4 | 2.9 | 6.4 | 3.6 | 2.7 | 2.6 | 2.1 | 2.0 |
| | Frequency | Percent | Frequency | Percent | Frequency | Percent | Frequency | Percent |
| 1 to 4 | 294 | 74.6 | 45 | 39.8 | 27 | 81.8 | 21 | 91.3 |
| 5 or more | 100 | 25.4 | 68 | 60.2 | 6 | 18.2 | 2 | 8.7 |
| Total | 394 | 100.0 | 113 | 100 | 33 | 100.0 | 23 | 100.0 |
| Number of trips to north central region | Mean | S.D. | Mean | S.D. | Mean | S.D. | Mean | S.D. |
| | 3.1 | 2.8 | 2.8 | 2.4 | 5.7 | 3.8 | 2.8 | 2.6 |
| | Frequency | Percent | Frequency | Percent | Frequency | Percent | Frequency | Percent |
| 1 to 4 | 235 | 77.3 | 51 | 82.3 | 31 | 44.9 | 28 | 80.0 |
| 5 or more | 69 | 22.7 | 11 | 17.7 | 38 | 55.1 | 7 | 20.0 |
| Total | 304 | 100.0 | 62 | 100.0 | 69 | 100.0 | 27 | 100.0 |
| Number of trips to northeastern region | Mean | S.D. | Mean | S.D. | Mean | S.D. | Mean | S.D. |
| | 3.4 | 2.7 | 3.0 | 3.0 | 3.6 | 3.0 | 5.9 | 3.7 |
| | Frequency | Percent | Frequency | Percent | Frequency | Percent | Frequency | Percent |
| 1 to 4 | 324 | 74.7 | 46 | 78.0 | 38 | 74.5 | 29 | 43.3 |
| 5 or more | 110 | 25.3 | 13 | 22.0 | 13 | 25.5 | 38 | 56.7 |
| Total | 434 | 100.0 | 59 | 100.0 | 51 | 100.0 | 67 | 100.0 |

Table 22. General and specific intentions for wildlife viewing behavior among Minnesota wildlife viewing mail survey respondents, 2002.

| Number of days expected to spend in the next twelve months observing wildlife (mean=232.3, S.D.=144.7) | Frequency | Percent | Likelihood of visiting in the next twelve months | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Great River Birding Trail | | Pine to Prairie Birding Trail | | Minnesota River Birding Trail | | Tundra Swan Watch | |
| 0-49 days | 208 | 21.1 | | Freq | Percent | Freq | Percent | Freq | Percent | Freq | Percent |
| 50-99 days | 70 | 7.1 | Very unlikely | 303 | 29.5 | 336 | 32.9 | 286 | 27.6 | 365 | 35.1 |
| 100-149 days | 39 | 4.0 | Unlikely | 84 | 8.2 | 96 | 9.4 | 82 | 7.9 | 110 | 10.6 |
| 150-199 days | 32 | 3.2 | Unsure | 336 | 32.7 | 374 | 36.6 | 328 | 31.7 | 300 | 28.8 |
| 200-249 days | 50 | 5.1 | Likely | 142 | 13.8 | 97 | 9.5 | 156 | 15.1 | 111 | 10.7 |
| 250-299 days | 32 | 3.3 | Very likely | 162 | 15.8 | 119 | 11.6 | 184 | 17.8 | 154 | 14.8 |
| 300 days or more | 599 | 56.2 | Total | 1027 | 100.0 | 1022 | 100.0 | 1036 | 100.0 | 1040 | 100.0 |
| Total | 1030 | 100.0 | | | | | | | | | |

**Travel outside Minnesota**

Some disparity emerged in respondents willingness to travel and actual travel for wildlife watching. Respondents indicated they were willing to travel 632.2 miles, on average, to view wildlife. Almost one quarter (23.6 percent) of respondents indicated they were willing to travel a thousand miles to view wildlife (Table 23). However, the majority did not take any day trips outside of Minnesota (63.0 percent) to view wildlife and fewer than half took overnight trips (45.0 percent) outside of Minnesota since June 2001.

Minnesotan's who traveled beyond state boundaries to view wildlife had taken an average of 1.2 day trips and 1.5 overnight trips since June 2001. By far, the most frequently cited out of state wildlife viewing destination was Wisconsin. Other locations indicated for wildlife viewing included Arizona, Florida, Texas, California, North Dakota, and Canada, with five or more percent of respondents' destination.

Table 23. Out-of-state travel characteristics for wildlife viewing among Minnesota wildlife viewing mail survey respondents, 2002.

| | Frequency | Percent |
|---|---|---|
| Number of miles willing to travel to view wildlife (mean=632.2, S.D.=947.5) | | |
| 0-49 | 121 | 14.9 |
| 50-99 | 87 | 10.7 |
| 100-249 | 259 | 31.8 |
| 250-499 | 109 | 13.4 |
| 500-999 | 45 | 5.6 |
| 1000-1999 | 71 | 8.7 |
| 2000 or more | 121 | 14.9 |
| Total | 813 | 100.0 |
| Number of day trips outside MN (mean=1.2, S.D=2.0) | | |
| 0 | 631 | 63.0 |
| 1-2 | 197 | 19.7 |
| 3-4 | 54 | 5.4 |
| 5 or more | 119 | 11.9 |
| Total | 1001 | 100.0 |
| Number of overnight trips outside of MN (mean=1.5, S.D.=1.8) | | |
| 0 | 463 | 45.0 |
| 1-2 | 335 | 32.6 |
| 3-4 | 136 | 13.2 |
| 5 or more | 95 | 9.2 |
| Total | 1029 | 100.0 |
| Most frequently indicated travel destinations | | |
| Wisconsin | 207 | 15.3 |
| Arizona | 103 | 7.6 |
| Florida | 100 | 7.4 |
| Texas | 91 | 6.7 |
| California | 85 | 6.3 |
| North Dakota | 66 | 4.9 |
| Canada | 55 | 4.1 |
| Other | 644 | 47.7 |
| Total | 1351* | 100.0 |

* Total equals more than number surveyed due to multiple locations specified combined.

### *Differences among respondents*

Respondent segmentation by five attributes occurred to identify differences in experience preferences, values, constraints, or wildlife viewing experience and travel. The attributes were: 1) number of surveyed organization memberships (1, 2 or 3), 2) commitment level (based on median split of nine item commitment scale), 3) motivation for wildlife viewing (beauty, fascination, identify species, or be close to nature), 4) wildlife recreation participation (view, fish and view, hunt and view, and fish, hunt and view), and 5) gender (male or female).

**Differences by number of surveyed organization memberships**

Intuitively, respondents who belong to more organizations are likely to be more committed to wildlife viewing with stronger preferences for wildlife experience and unique information needs. To test this idea, respondents were segmented by the number of surveyed organization memberships they held: Minnesota Audubon, Minnesota members of the American Birding Association, and Minnesota Ornithologist's Union. The majority of respondents belonged to just one organization. In sum, differences emerged in four of six experience preferences, two of three value orientations, and two of three constraint factors. Significant differences also emerged in viewing experience, abilities, and travel patterns.

In terms of experience preferences, respondents who belonged to three organizations rated the wildlife experience, access, and area attributes as significantly more important than one or both other groups (Table 24). In contrast, respondents who belonged to one of the organizations surveyed rated information as more important than either group and area attributes as less important than other groups.

Table 24. Comparison of experience preference factors by number of surveyed organization memberships, among Minnesota wildlife viewing mail survey respondents, 2002.

| | Number of surveyed organization memberships | | | F-value | Difference summary |
|---|---|---|---|---|---|
| Factor[1] | 1 (n=567) | 2 (n=292) | 3 (n=171) | | |
| Wildlife experience | 4.01[a] | 4.11[b] | 4.28[a,b] | 7.33*** | 3>1&2 |
| Accessible areas | 3.31[a] | 3.39 | 3.56[a] | 3.61** | 3>1 |
| Undeveloped trails | 2.95 | 2.96 | 3.02 | 0.32 | |
| Area attributes | 2.76[a,b] | 2.89[a,c] | 3.04[b,c] | 8.16*** | 1<2&3; 2<3 |
| Information | 2.61[a,b] | 2.44[a] | 2.44[b] | 5.35** | 1>2 &3 |
| Paved trails | 2.36 | 2.32 | 2.25 | 0.67 | |

[1]Items measured on a scale from 1 to 5, where 1=very unimportant and 5=very important.
*** indicates significance where p< .001.
** indicates significance where p< .01.
Means with same superscripts are significantly different.

With respect to wildlife values, all groups rated the residential, education and recreation values as important. However, those who belonged to only one organization rated the education and recreation values significantly lower than the other groups (Table 25).

In a similar vein, although respondents indicated no constraints to wildlife viewing participation, those who belonged to only one group indicated significantly higher levels of constraints than other groups (Table 26).

Table 25. Comparison of value orientation factors by number of surveyed organization memberships among Minnesota wildlife viewing mail survey respondents, 2002.

| Factor[1] | Number of organization memberships | | | F-value | Difference summary |
|---|---|---|---|---|---|
| | 1 (n=567) | 2 (n=292) | 3 (n=171) | | |
| Residential | 4.73 | 4.76 | 4.81 | 1.94 | |
| Education | 4.56 [a,b] | 4.64 [a] | 4.74 [b] | 7.83*** | 1<2 & 3 |
| Recreation | 4.55 [a,b] | 4.68[a] | 4.70[b] | 9.65*** | 1<2 & 3 |

[1] Items measured on a scale from 1 to 5, where 1=strongly disagree, 3=neutral and 5=strongly agree.
*** indicates significance where p< .001.
Means with same superscripts are significantly different.

Table 26. Constraints to wildlife viewing factors by number of surveyed organization memberships among Minnesota wildlife viewing mail survey respondents, 2002.

| Factor[1] | Number of surveyed organization memberships | | | F-value | Difference summary |
|---|---|---|---|---|---|
| | 1 (n=567) | 2 (n=292) | 3 (n=171) | | |
| Time | 2.58 | 2.59 | 2.58 | 0.01 | |
| Inter/intra personal | 2.06[a,b] | 1.93[a] | 1.89[b] | 4.29** | 1>2 & 3 |
| Structural | 1.96[a,b] | 1.67[a] | 1.62 [b] | 24.49*** | 1>2 & 3 |

[1]Items measured on a scale from 1 to 5, where 1=strongly disagree, 3=neutral and 5=strongly agree.
*** indicates significance where p< .001.
** indicates significance where p< .01.
Means with same superscripts are significantly different.

Differences emerged in viewing experiences, ability, and travel by number of surveyed organization memberships. However, the differences were not entirely consistent with number of organizations corresponding to progressively more viewing experience, ability, and travel (Table 27). In fact, no significant differences emerged in number of years viewing or photographing wildlife. Specific unexpected differences included: those in just one organization indicated they watched wildlife significantly more days than those who belonged to three and had taken more trips greater than 50 miles round trip than those in one or three organizations. The remaining differences were as expected with those in more organizations able to identify more birds by sound, willing to travel further to view wildlife, and traveled more frequently both in and out of Minnesota since June 2001.

Table 27. Comparison of wildlife viewing experiences, expertise, and travel by number of surveyed organization memberships among Minnesota wildlife viewing mail survey respondents, 2002.

| | Number of surveyed organization memberships | | | F-value | Difference summary |
|---|---|---|---|---|---|
| | 1 (n=567) | 2 (n=292) | 3 (n=171) | | |
| Experience | | | | | |
| Days spent watching wildlife | 135.0[a] | 129.1 | 116.0[a] | 5.5** | 1>3 |
| Years spent watching wildlife | 32.46 | 32.14 | 33.81 | 0.5 | |
| Days spent photographing wildlife | 7.54 | 7.44 | 9.20 | 0.1 | |
| Identification abilities | | | | | |
| Number of bird species identified without a field guide | 88.71[a,b] | 204.2[a,c] | 276.0[b,c] | 217.6*** | 1<2<3 |
| Number of bird species identified by sound | 36.9[a,b] | 49.8[a,c] | 50.0[b,c] | 153.6*** | 1<2<3 |
| Travel behavior | | | | | |
| Number of miles willing to travel to view wildlife | 742.4[a,b] | 1051.0[a,c] | 1200.5[b,c] | 38.1*** | 1<2<3 |
| Wildlife viewing trips greater than fifty miles | 5.4[a,b] | 7.1[a,c] | 6.7[b,c] | 107.9*** | 1<2,3<br>2>1,2<br>3>1,<2 |
| Number of day trips in Minnesota since June 2001 | 14.7[a,b] | 16.7[a] | 18.2[b] | 39.8*** | 1<2&3 |
| Number of overnight trips in Minnesota since June 2001 | 2.0[a,b] | 2.2[a,c] | 2.3[b,c] | 50.6*** | 1<2<3 |
| Number of day trips outside Minnesota since June 2001 | 1.7[a,b] | 2.1[a,c] | 2.3[b,c] | 16.9*** | 1<2<3 |
| Number of overnight trips outside of Minnesota since June 2001 | 1.6[a,b] | 1.8[a,c] | 2.0[b,c] | 55.0*** | 1<2<3 |

*** indicates significance where p< .001.
** indicates significance where p<.01.
Means with same superscripts are significantly different.

**Differences by wildlife viewing commitment levels**

Based on past research (Kim et al., 1997; Hvenegaard, 2002), differences among survey respondents by commitment level were hypothesized. Stronger commitment to wildlife viewing was expected to result in different wildlife experience preferences and values, minimal constraints to wildlife viewing participation, and more wildlife viewing experience. In sum, analysis revealed differences among wildlife viewers in low, medium, and high commitment levels in three of six experience preferences, all three value orientations, but only one of three constraint levels. As expected, significant differences emerged in viewing experience, abilities, and travel patterns.

With respect to experience preferences, those with the strongest commitment indicated the wildlife experience and area attributes as significantly more important than the other groups (Table 28). Those in the lowest commitment level rated undeveloped trails and area attributes as significantly less important than the other groups.

Commitment level significantly differentiated wildlife values among respondents. Following the progression of commitment, lower commitment levels placed lesser value on all orientations than the moderate group, who placed lesser value on all orientations than the high group (Table 29).

Table 28. Comparison of experience preference factors by median split of commitment among Minnesota wildlife viewing mail survey respondents, 2002.

| Factor[1] | Median split of commitment | | | F-value | Difference summary |
|---|---|---|---|---|---|
| | Low (n=185) | Medium (n=742) | High (n=186) | | |
| Wildlife experience | 4.00[a] | 4.06[b] | 4.22[a,b] | 3.54* | High>Low & Medium |
| Accessible areas | 3.25 | 3.39 | 3.44 | 1.57 | |
| Undeveloped trails | 2.79[a,b] | 2.97[a] | 3.12[b] | 5.51** | Low<Medium & High |
| Area attributes | 2.62[a,b] | 2.84[a,c] | 3.03[b,c] | 11.55*** | Low<Medium<High |
| Information | 2.60 | 2.55 | 2.41 | 2.54 | |
| Paved trails | 2.40 | 2.32 | 2.29 | 0.60 | |

[1]Items measured on a scale from 1 to 5, where 1=very unimportant and 5=very important.
*** indicates significance where p< .001.
** indicates significance where p< .01.
* indicates significance where p< .05.
Means with same superscripts are significantly different.

Table 29. Wildlife value orientation factors by median split of commitment among Minnesota wildlife viewing mail survey respondents, 2002.

| Factor[1] | Median split of commitment | | | F-value | Difference summary |
|---|---|---|---|---|---|
| | Low (n=185) | Medium (n=742) | High (n=186) | | |
| Residential | 4.63[a,b] | 4.75[a,c] | 4.85[b,c] | 12.41*** | Low<Medium<High |
| Education | 4.41[a,b] | 4.61[a,c] | 4.77[b,c] | 19.45*** | Low<Medium<High |
| Recreation | 4.37[a.b] | 4.61[a,c] | 4.79[b,c] | 33.02*** | Low<Medium<High |

[1]Items measured on a scale from 1 to 5, where 1=very unimportant and 5=very important.
*** indicates significance where p< .001.
Means with same superscripts are significantly different.

With regards to wildlife participation constraints, differences among commitment levels emerged with only one factor: structural constraints. As expected, those in the high commitment level evaluated this factor significantly lower than those with low or medium commitment levels (Table 30). One possible explanation for the few differences may be the low variance across the constraint factors: as all groups disagreed there were constraints, there was less variance to partition among the groups.

Table 30. Comparison of wildlife viewing constraint factors by median split of commitment among Minnesota wildlife viewing mail survey respondents, 2002.

| | Median split of commitment | | | F-value | Difference summary |
|---|---|---|---|---|---|
| Factor[1] | Low (n=185) | Medium (n=742) | High (n=186) | | |
| Time | 2.61 | 2.60 | 2.55 | 0.18 | |
| Inter/intra personal | 1.92 | 2.02 | 1.97 | 1.28 | |
| Structural | 1.86[a] | 1.85[b] | 1.68[a,b] | 4.28** | High<low & medium |

[1]Items measured on a scale from 1 to 5, where 1=strongly disagree, 3=neutral and 5=strongly agree.
** indicates significance where p< .01.
Means with same superscripts are significantly different.

As expected, consistent differences emerged in terms of experience, ability, and travel among commitment levels. Specifically, as commitment level increased, so did the number of years and days spent watching and photographing wildlife, self-identified ability to identify birds by sight and sound, number of trips to view wildlife, and willingness to travel to view wildlife (Table 31).

Table 31. Comparison of wildlife viewing experiences, expertise, and travel by median split of commitment among Minnesota wildlife viewing mail survey respondents, 2002.

| Experience item | Median split of commitment | | | F-value | Difference summary |
|---|---|---|---|---|---|
| | Low (n=185) | Medium (n=742) | High (n=186) | | |
| Years spent watching wildlife | 26.5[a,b] | 32.5[a,c] | 36.9[b,c] | 15.7*** | 1<2<3 |
| Days spent watching wildlife | 184.4[a,b] | 238.5[a,c] | 264.3[b,c] | 16.0*** | 1<2<3 |
| Days spent photographing wildlife | 4.6[a,b] | 7.1[a,c] | 13.7[b,c] | 20.7*** | 1<2<3 |
| Number of bird species identified without a field guide | 53.6[a,b] | 145.2[a,c] | 243.7[b,c] | 101.6*** | 1<2<3 |
| Number of bird species identified by sound | 16.1[a,b] | 47.1[a,c] | 84.6[b,c] | 95.5*** | 1<2<3 |
| Number of miles willing to travel to view wildlife | 298.5[a,b] | 600.7[a,c] | 1115.33[b,c] | 27.1*** | 1<2<3 |
| Wildlife viewing trips greater than fifty miles | 1.8[a,b] | 6.1[a,c] | 10.7[b,c] | 86.9*** | 1<2<3 |
| Number of day trips in Minnesota since June 2001 | 5.1[a,b] | 11.8[a,c] | 24.3[b,c] | 66.6*** | 1<2<3 |
| Number of overnight trips in Minnesota since June 2001 | 0.8[a,b] | 2.0[a,c] | 2.8[b,c] | 40.6*** | 1<2<3 |
| Number of day trips outside Minnesota since June 2001 | 0.4[a,b] | 1.2[a,c] | 1.7[b,c] | 17.9*** | 1<2<3 |
| Number of overnight trips outside of Minnesota since June 2001 | 0.6[a,b] | 1.5[a,c] | 2.1[b,c] | 35.6*** | 1<2<3 |

*** indicates significance where p< .001.
Means with same superscripts are significantly different.

**Differences by motivations for wildlife viewing**

Motivation and preference segmentation has been employed in parks, recreation, and tourism research to better understand markets, products, settings, and recreation experience preferences (e.g., Andereck & Caldwell, 1994; Backman, 1994; Floyd & Gramann, 1997; Gitelson & Kerstetter, 1990; Loker & Perdue, 1992). Following past research that assessed motivations for wildlife viewing (Adams et al., 1997; McFarlane, 1994), respondents chose one of five basic motivations for wildlife viewing: to be close to nature, to be with family/friends, fascination with wildlife, to identify as many species as I can, and because it is beautiful. Differences in terms of experience preferences, values, constraints, and experiences were expected. To test this idea, the respondents who chose each motivational category were compared. Due to few respondents identifying a social affiliation motivation, this category was dropped and the remaining four compared. In sum, differences among respondents in the four motivation areas emerged in all of the value orientations, one of three constraint factors, and all of the experience and ability areas. No differences in wildlife experience preferences emerged, however.

All three value orientations differed by respondents wildlife viewing motivation. Consistent differences emerged where those motivated by identification valued the residential aspect less than all other groups. Respondents motivated by identification also valued wildlife education and recreation value orientations less than those desiring to be close to nature and fascinated with wildlife (Table 32). Similarly, those interested in wildlife for its beauty valued wildlife's educational and recreational value less than those desiring to be close to nature and fascinated with wildlife.

Table 32. Comparison of wildlife value orientation factors by motivation for wildlife viewing among Minnesota wildlife viewing mail survey respondents, 2002.

| Value factor[1] | Motivation | | | | F-value | Difference summary |
|---|---|---|---|---|---|---|
| | Be close to nature (n=414) | Fascination with wildlife (n=420) | Identify species (n=61) | Because it is beautiful (n=188) | | |
| Residential | 4.8[a] | 4.8[b,c] | 4.5[a,b,d] | 4.7[c,d] | 8.7*** | Identify < all other; beautiful < fascination |
| Education | 4.7[a,b] | 4.6[c,d] | 4.4[a,c] | 4.4[b,d] | 11.7*** | Identify < close, fascination; Beautiful < close, fascination |
| Recreation | 4.6[a] | 4.7[b,c] | 4.5[b] | 4.5[a,c] | 6.1*** | Identify < close, fascination; Beautiful < close, fascination |

[1]Items measured on a 5-point scale from 1=very unimportant, 3=moderately important and 5=very important.
***indicates significance where p< .05.
Means with same superscripts are significantly different.

The only constraint factor that differed by motivation was structural. Those motivated to view wildlife because of its beauty agreed that time was a potential constraint (Table 33). However, due to the general disagreement constraints existed, the meaningfulness of this difference is questionable.

Consistent differences by respondent motivation emerged in experience and travel patterns (Table 34). Those focused on species identification were most strongly committed to wildlife viewing, significantly higher than all other groups. Similarly, those interested in wildlife for its beauty were least committed, significantly lower than all others. Examining motivation within each commitment level (low to high) revealed differences particularly in identification and its beauty (Figure 3).

Table 33. Comparison of wildlife viewing constraint factors by motivation among Minnesota wildlife viewing mail survey respondents, 2002.

| Constraint factor[1] | Motivation | | | | F-value | Difference summary |
|---|---|---|---|---|---|---|
| | Be close to nature (n=414) | Fascination with wildlife (n=420) | Identify species (n=61) | Because it is beautiful (n=188) | | |
| Time | 2.6 | 2.6 | 2.6 | 2.6 | 0.7 | |
| Inter/intra personal | 2.0 | 1.9 | 2.1 | 2.1 | 2.3 | |
| Structural | 1.8 | 1.8[a] | 1.7[b] | 2.0[a,b] | 3.1*** | Beautiful > identify and fascination |

[1]Items measured on a scale from 1 to 5, where 1=strongly disagree, 3=neutral and 5=strongly agree.

***indicates significance where p< .001

Means with same superscripts are significantly different.

Table 34. Comparison of wildlife viewing experiences, expertise, and travel characteristics by motivation among wildlife viewing mail survey respondents, 2002.

| Experience item | Motivation | | | | F-value | Difference summary |
|---|---|---|---|---|---|---|
| | To be close to nature | Fascination with wildlife | To identify as many species as I can | Because it is beautiful | | |
| Years spent watching wildlife | 32.3[a] | 33.6[b] | 32.2 | 28.9[a,b] | 3.09** | Because it is beautiful< to be close to nature & fascination with wildlife |
| Days spent photographing wildlife | 6.7[a] | 9.5[a,b] | 4.5[b] | 7.2 | 3.86** | Fascination with wildlife> to identify species & to be close to nature |
| Number of bird species identified without a field guide | 138.2[a] | 157.4[a] | 262.6[a] | 93.1[a] | 28.30*** | All different from one another |
| Number of bird species identified by sound | 46.9[a,c] | 51.7[b,d] | 79.9[a,b,e] | 29.6[c,d,e] | 17.76*** | To identify as many species> all others; Because it is beautiful< all others |
| Number of miles willing to travel to view wildlife | 705.8[a] | 601.5[b] | 863.8[c] | 408.2[a,b,c] | 4.20** | Because it is beautiful< all others |
| Wildlife viewing trips greater than fifty miles | 6.3[a,c] | 6.1[b,d] | 9.7[a,b,e] | 4.2[c,d,e] | 10.72*** | To identify as many species> all others; Because it is beautiful< all others |
| Number of day trips in Minnesota since June 2001 | 15.5[a] | 15.1[b] | 19.3[c] | 10.4[a,b,c] | 6.28** | Because it is beautiful< all others |
| Number of overnight trips in Minnesota since June 2001 | 2.1[a] | 1.9 [b] | 2.2[c] | 1.4[a,b,c] | 4.48*** | Because it is beautiful< all others |
| Number of day trips outside Minnesota since June 2001 | 1.3[a] | 1.2[b] | 1.7[c] | 0.8[a,b,c] | 3.89** | Because it is beautiful< all others |
| Number of overnight trips outside of Minnesota since June 2001 | 1.7[a,b] | 1.4[a,c] | 1.7[d] | 1.0[b,c,d] | 6.07*** | Because it is beautiful< all others; fascination with wildlife< to be close to nature |

**indicates significance where p<.01 , *** indicates significance where p< .001. Means with same superscripts are significantly different.

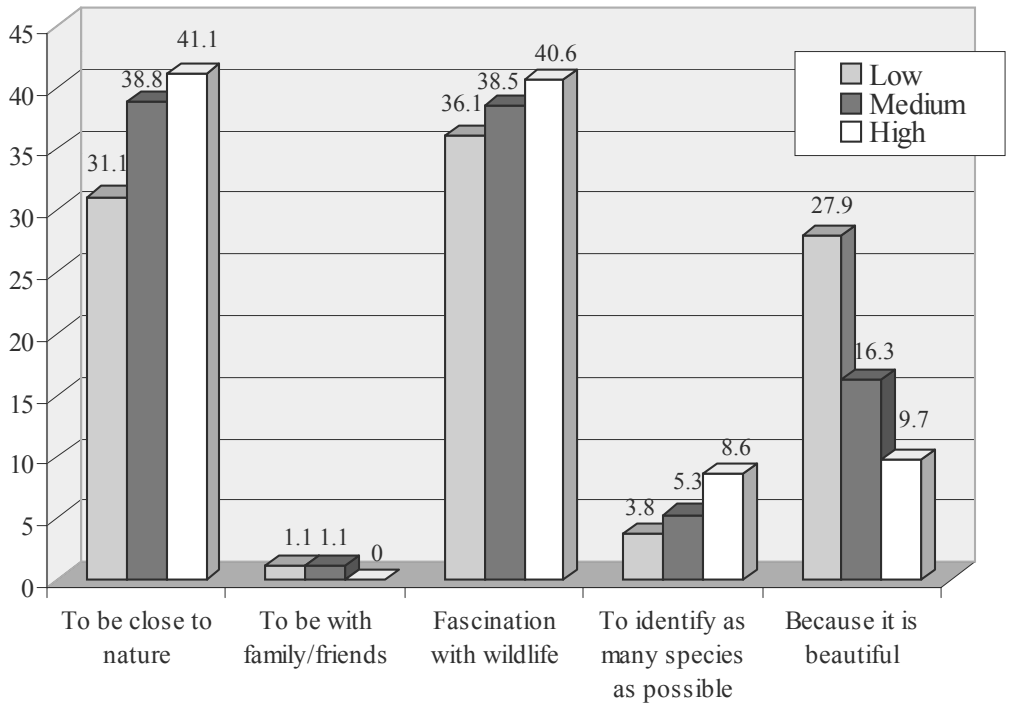


Figure 7. Distribution across motivation categories by commitment level among Minnesota wildlife viewing survey respondents, 2002.

**Differences by wildlife recreation participation**

Based on past research (Adams et al., 1997; Decker et al., 1987; Kellert, 1980), differences by wildlife recreation participation were expected in wildlife experience preferences, values, constraints, and experiences. Respondents were segmented by activity participation resulting in four groups: only watch wildlife, fish and watch wildlife, hunt and watch wildlife, or fish, hunt and watch wildlife. The majority only watched wildlife, but fishing and multiple activities also had substantial group sizes. In sum, differences among recreation activity groups emerged in three of six experience preferences, one of three value orientations, one of three constraints, and commitment to wildlife viewing. Differences also emerged in terms of experience, abilities, and travel behavior.

With respect to the wildlife experience attributes, those who both fish and hunt in addition to watch wildlife rated both the wildlife experience and the accessible areas factors significantly lower than those who watch wildlife only and those that fish (Table 35). In addition, those that fish rated the information factor significantly more important than those that watch wildlife only and those fish and hunt.

Table 35. Comparison of experience preference factors by wildlife recreation participation among Minnesota wildlife viewing mail survey respondents, 2002.

| Factor[1] | Watch wildlife only (n=629) | Fish (n=300) | Hunt (n=21) | Fish and hunt (n=163) | F-value | Difference Summary |
|---|---|---|---|---|---|---|
| Wildlife experience | 4.14[a] | 4.09[b] | 4.07 | 3.78[a,b] | 8.62*** | Fish and hunt< Watch wildlife & Fish |
| Accessible areas | 3.48[a] | 3.41[b] | 3.17 | 2.95[a,b] | 10.62*** | Fish and hunt< Watch wildlife & Fish |
| Undeveloped trails | 2.94 | 3.02 | 3.08 | 2.96 | 0.54 | |
| Area attributes | 2.82 | 2.91 | 2.66 | 2.73 | 2.13 | |
| Information | 2.48[a] | 2.73[a,b] | 2.36 | 2.41[b] | 8.47*** | Fish> Watch wildlife & Fish and hunt |
| Paved trails | 2.32 | 2.44 | 2.09 | 2.21 | 2.06 | |

[1]Items measured on a scale from 1 to 5, where 1=very unimportant and 5=very important.
*** indicates significance where p< .001.
Means with same superscripts are significantly different.

As expected, differences emerged among the wildlife value orientation factors: those involved in the most activities attributed higher value to the residential aspect than those who engaged in a single activity. Specifically, those who fish and hunt rated the wildlife value orientation resource factor significantly higher than those that watch wildlife only (Table 36). Along the same lines, those that fish and hunt were significantly more committed to wildlife viewing than those who participate in fewer activities (Table 37). Hunters had the highest commitment level to wildlife viewing, followed by those who hunt and fish, and then those who only view wildlife.

Table 36. Comparison of wildlife value orientation factors by wildlife recreation participation among Minnesota wildlife viewing mail survey respondents, 2002.

| | Type of participation | | | | F-value | Difference summary |
|---|---|---|---|---|---|---|
| Value factor[1] | Watch wildlife only (n=629) | Fish (n=300) | Hunt (n=21) | Fish and hunt (n=163) | | |
| Residential | 4.72[a] | 4.76 | 4.75 | 4.83[a] | 2.92* | Fish and hunt>watch wildlife |
| Education | 4.61 | 4.56 | 4.71 | 4.61 | 1.04 | |
| Recreation | 4.59 | 4.57 | 4.56 | 4.69 | 2.10 | |

[1]Items measured on a 5-point scale from 1=very unimportant, 3=moderately important and 5=very important.
*indicates significance where p< .05.
Means with same superscripts are significantly different.

Table 37. Commitment to wildlife viewing by wildlife recreation participation among Minnesota wildlife viewing mail survey respondents, 2002.

| Factor[1] | Type of participation | | | | F-value | Difference summary |
|---|---|---|---|---|---|---|
| | Watch wildlife only (n=629) | Fish (n=300) | Hunt (n=21) | Fish and hunt (n=163) | | |
| Commitment | 2.66[a] | 2.52[a,b] | 2.75 | 2.73[b] | 2.96* | Fishing< watch wildlife & fish and hunt |

[1]Items measured on a scale from 1 to 5, where 1=strongly disagree and 5=strongly agree.
*Indicates significance where p< .05.
Means with same superscripts are significantly different.

Interestingly, constraints to wildlife viewing participation were significantly different at the omnibus level for both inter-/intrapersonal and structural constraints. However, follow-up tests indicated only a significant difference between anglers and those who both hunt and fish: anglers agreed more that structural constraints interfered with their ability to view wildlife (Table 38). Again, as constraints to wildlife viewing participation were not strongly agreed with, the meaningfulness of these differences is of question.

Table 38. Comparison of wildlife viewing constraint factors by wildlife recreation participation among Minnesota wildlife viewing mail survey respondents, 2002.

| Constraint factor[1] | Type of participation | | | | F-value | Difference summary |
|---|---|---|---|---|---|---|
| | Watch wildlife only (n=629) | Fish (n=300) | Hunt (n=21) | Fish and hunt (n=163) | | |
| Time | 2.5 | 2.7 | 2.6 | 2.5 | 1.8 | |
| Inter/intra personal | 1.9 | 2.1 | 2.3 | 1.9 | 2.8* | None |
| Structural | 1.8 | 1.9[a] | 1.8 | 1.7[a] | 3.4** | Fish > fish & hunt |

[1]Items measured on a scale from 1 to 5, where 1=strongly disagree, 3=neutral and 5=strongly agree.
*indicates significance where p< .05,
** indicates significance where p< .01
Means with same superscripts are significantly different.

In terms of wildlife experience and ability, anglers and those who only view wildlife differed most consistently (Table 39). Not surprisingly, anglers indicated they could identify fewer birds than those who watch wildlife. In addition, anglers had taken fewer trips overnight and fewer trips greater than 50 miles to view wildlife than those who only view wildlife.

Table 39. Comparison of wildlife viewing experiences, expertise, and travel by type of wildlife recreation participation among Minnesota wildlife viewing mail survey respondents, 2002.

| Experience item | Type of participation | | | | F-value | Difference summary |
|---|---|---|---|---|---|---|
| | Watch wildlife only (n=629) | Fish (n=300) | Hunt (n=21) | Fish and hunt (n=163) | | |
| Years spent watching wildlife | 30.2[a] | 33.0 | 39.6 | 37.4[a] | 8.66*** | Hunt and fish>watch wildlife only |
| Days spent watching wildlife | 233.2 | 229.7 | 254.5 | 244.5 | 0.57 | |
| Days spent photographing wildlife | 6.9 | 8.6 | 6.1 | 9.5 | 1.96 | |
| Number of bird species identified without a field guide | 155.9[a] | 116.7[a,b] | 166.5 | 158.7[b] | 6.39*** | Fish<watch wildlife only & fish and hunt |
| Number of bird species identified by sound | 49.3[a] | 39.8[a,b] | 54.6 | 56.2[b] | 4.19** | Fish<watch wildlife only & fish and hunt |
| Number of miles willing to travel to view wildlife | 688.1 | 516.4 | 1018.8 | 586.1 | 2.63* | |
| Wildlife viewing trips greater than fifty miles | 6.8[a] | 4.9[a] | 6.9 | 5.7 | 5.33** | Watch wildlife only>fish |
| Number of day trips in Minnesota since June 2001 | 15.1 | 13.1 | 18.0 | 16.0 | 1.65 | |
| Number of overnight trips in Minnesota since June 2001 | 1.8 | 1.9 | 2.6 | 2.2 | 2.01 | |
| Number of day trips outside Minnesota since June 2001 | 1.3 | 1.0 | 0.8 | 0.9 | 2.42 | |
| Number of overnight trips outside of Minnesota since June 2001 | 1.6[a] | 1.1[a] | 1.7 | 1.4 | 4.72** | Watch wildlife only>fish |

*** indicates significance where p< .001, **indicates significance where p<.01, *indicates significance where p<.05.
Means with same superscripts are significantly different.

**Differences by gender**

In light of recent research indicating gender differences in wildlife viewing commitment (Cordell, Herbert, & Pandolfi, 1999; Boxall & McFarlane, 1995), the data were explored to see if and how Minnesota wildlife viewers differed by gender. In sum, males and females significantly differed in three of six experience preferences, one of three constraint factors, all three value orientations, and most experience and travel behaviors. Similar to Cordell, et al. (1999), the most committed respondents in this sample were more likely to be male (57.4 percent of the high committed category) and the least committed female (43.2 percent). Supporting the differences in commitment, males indicated significantly more commitment to wildlife viewing than females ($t= 3.5$, $p<.001$).

Aligning with the relationship between commitment and gender, males had been viewing wildlife significantly more years, could identify more birds by both sight and sound than females, and had traveled and were willing to travel further than females. Further, males disagreed significantly more that structural constraints interfered with their viewing participation (Table 40 & 41). However, females indicated greater importance with experience factors of information, the wildlife experience, and access (Table 42). Similarly, females more strongly agreed with wildlife's residential, recreational, and educational values than males (Table 43).

Table 40. Comparison of wildlife viewing experiences, expertise, and travel by gender among Minnesota wildlife viewing mail survey respondents, 2002.

| Experience item | Male | Female | t-value |
|---|---|---|---|
| Years spent watching wildlife | 35.51 | 28.74 | 6.38*** |
| Days spent watching wildlife | 229.65 | 240.29 | -1.25 |
| Days spent photographing wildlife | 7.50 | 8.10 | -0.69 |
| Number of bird species identified without a field guide | 181.55 | 106.68 | 9.45*** |
| Number of bird species identified by sound | 58.31 | 36.48 | 7.25*** |
| Number of miles willing to travel to view wildlife | 741.33 | 495.10 | 3.72*** |
| Wildlife viewing trips greater than fifty miles | 7.32 | 4.82 | 6.16*** |
| Number of day trips in Minnesota since June 2001 | 17.07 | 12.24 | 4.85*** |
| Number of overnight trips in Minnesota since June 2001 | 2.12 | 1.69 | 3.12** |
| Number of day trips outside Minnesota since June 2001 | 1.36 | 0.95 | 3.35** |
| Number of overnight trips outside of Minnesota since June 2001 | 1.60 | 1.28 | 2.87** |

**indicates significance where $p<.01$.
*** indicates significance where $p< .001$.

Table 41. Comparison of wildlife viewing constraint factors by gender among Minnesota wildlife viewing mail survey respondents, 2002.

| Factor[1] | Male | Female | t-value |
|---|---|---|---|
| Time | 2.54 | 2.65 | -1.44 |
| Inter/intrapersonal | 1.95 | 2.04 | -1.93 |
| Structural | 1.74 | 1.92 | -4.07*** |

[1]Items measured on a scale from 1 to 5, where 1=strongly disagree, 3=neutral and 5=strongly agree.
** indicates significance where p< .01.

Table 42. Comparison of experience preference factors by gender among Minnesota wildlife viewing mail survey respondents, 2002.

| Factor[1] | Male | Female | t-value |
|---|---|---|---|
| Wildlife experience | 4.02 | 4.13 | -2.04* |
| Accessible areas | 3.23 | 3.53 | -4.43*** |
| Undeveloped trails | 3.01 | 2.91 | 1.79 |
| Area attributes | 2.78 | 2.87 | -1.79 |
| Information | 2.43 | 2.65 | -4.38*** |
| Paved trails | 2.28 | 2.38 | -1.80 |

[1]Items measured on a scale from 1 to 5, where 1=very unimportant and 5=very important.
*** indicates significance where p< .001
* indicates significance where p< .05.

Table 43. Comparison of wildlife value orientation factors by gender among Minnesota wildlife viewing mail survey respondents, 2002.

| Factor[1] | Male | Female | t-value |
|---|---|---|---|
| Residential | 4.71 | 4.78 | -3.17** |
| Education | 4.55 | 4.65 | -3.20** |
| Recreation | 4.57 | 4.63 | -2.10* |

[1]Items measured on a scale from 1 to 5, where 1=very unimportant and 5=very important.
** indicates significance where p< .01.
* indicates significance where p<.05.

## DISCUSSION AND IMPLICATIONS

This project contributes to the knowledge base on Minnesota wildlife viewers: an important and growing constituent group for the Department of Natural Resources, Nongame Wildlife Program and beyond. As planned, a sample with diverse wildlife viewing interests emerged from a mail survey to select Minnesota residents who belonged to one of three bird focused organizations (Minnesota Audubon, Minnesota members of the American Birding Association, and Minnesota Ornithologist's Union) as well as residents who inquired about the Great River Birding Trail since June 2001. The subsequent discussion of the results follows the project objectives:

1) to profile participants with a range of interests in birds and other wildlife,
2) to experience preferences regarding facilities, programs, and willingness to travel for wildlife viewing,
3) to compare constituent profiles, preferences and experiences,
4) to identify frequently used information sources regarding wildlife viewing, and
5) to create an information dissemination plan for various target audiences.

### *Respondent profiles*

Demographically, the 2002 Minnesota wildlife viewing mail survey respondents are quite similar to wildlife viewers across the U.S. In sum, these viewers represent a rather equal gender division, are a diverse but maturing group, with college and beyond educations and above average income levels.

Inconsistent evidence exists regarding the utility of demographic variables to segment wildlife viewers, particularly those who watch birds. Cordell, et al. (1999) analyses indicated the majority of growth in birding was by white females, 25-59 years old, with high school and college educations earning more than $50,000. Those participating in bird watching emerged as two distinct markets in the national survey on recreation and the environment: outdoor avids and nature lovers. "The avids represent middle-aged, white males with college education and relatively high income…while the nature lovers are well-off, highly-educated, older women who live in small households with no kids" (Cordell et al., 1999, p. 171). With a Canadian sample, Boxall and McFarlane (1995) found women were more likely to be involved in residential wildlife recreation activities and that age positively correlated with participation.

Similar to Cordell, et al. (1999) and Boxall and McFarlane (1995), in this study gender was useful to distinguish wildlife viewing participation. Males were significantly more committed to wildlife viewing, had more experience and expertise in wildlife viewing, had more travel experience and willingness to travel than did females. Although females indicated more structural constraints, the very low indication of overall constraints question the meaning of this difference. Similarly, although females had stronger wildlife value orientations, both gender groups indicated very strong value orientations and thus, the real usefulness of this difference remains in question. Although males were slightly more numerous in the highly committed category, the gender division was still

within a 60-40 split across all categories, and virtually equal for those moderately committed. Thus, anything designed with gender in mind will only target half the constituent group. However, compared to participation rates in other wildlife related recreation, this division is significant to note and attend to.

Income was of marginal utility to differentiate Minnesota's wildlife viewing market, at least among this respondent group. In this sample, results were similar to VISIT Florida's nature based research (1999) in that income did not significantly relate to several wildlife viewing participation variables (weak negative correlations to number of years viewing wildlife and number of days viewing; r = -.07 for both). However, income did significantly and positively relate to number of miles willing to travel and number of overnight trips in Minnesota to view wildlife (r = .17 for both). Similarly, Luzar, Diagne, Gan, and Henning (1995) and Boxall and McFarlane (1995) found that income positively related to participation in wildlife viewing. However, the very weak relationships between income and other participation variables question its utility as a strong segmentation variable.

Similarly, age did not significantly differentiate Minnesota's wildlife viewing market in this sample, although it did moderately relate to years viewing wildlife. Specifically, age did not differ among commitment categories (low, medium, high). Although age did significantly relate to year viewing wildlife ($r = .54$, $p < .001$), it only weakly correlated to days viewing wildlife since June 2001 ($r = .10$, $p < .001$). Thus, age is only moderately interesting when attempting to describe and differentiate wildlife viewers.

Given the uncertainties surrounding demographic variables for segmentation, analysts have turned to commitment to wildlife viewing (Kim et al., 1997; McFarlane, 1994). Similar to ecotourists in general and avitourists specifically (Cordell et al., 1999; Eubanks et al., 1993; VISIT Florida, 1999), the majority of Minnesota wildlife viewers are relatively moderate in their commitment and casual in their wildlife viewing. Although respondents indicated many days engaged in wildlife viewing, their self identified expertise and commitment levels were generally modest. Differences by commitment level did emerge in eighteen of 23 variables examined as discussed in the sections to follow.

### *Experience preferences and travel for wildlife*

#### Preferences

Similar to past research (Adams et al., 1997), respondents were primarily motivated to watch wildlife to be close to nature and a fascination with wildlife. These findings resonate with more general nature based tourism research (VISIT FLORIDA, 1999; Stueve, Cook, & Drew, 2001) that indicate a general enjoyment of nature as a specific outdoor activity and motivation for travel.

Most important to viewing wildlife was, not surprisingly, the wildlife experience: viewing, seeing, and hearing wildlife in a quiet atmosphere. Thus, when faced with

development opportunities and resources, a focus on optimal viewing conditions seems mandatory. In line with the continual challenge of providing recreation experiences while protecting the resource, respondents indicated access and undeveloped areas were the next most important experience attribute factors. Unfortunately, access was not defined in the survey, so whether this means trails and roads that are easy to get to or those that actually follow universal design principles is uncertain. The challenge lies in developing accessible but undeveloped dirt trails.

Two information items were important to respondents wildlife experiences: nature centers and area information in brochures. Although the information factor was least important, it could be that nature centers are all encompassing and have the possibility to provide many of the information pieces individually assessed. Again, as nature center was left undefined, exactly how respondents define nature center is unknown. Given the variety of entities deemed as nature centers in various Minnesota agencies and areas, a clear definition appears to elude even professionals. However, when planning centers and their experience opportunities, attention to the detailed preferences of wildlife viewers is advisable.

When specifically queried about twelve possible species attractions, respondents were at least somewhat interested in all of them. As expected from this bird-focused sample, birds were usually of more interest than the two mammals listed. Like Colorado wildlife viewers (Manfredo & Larson, 1993), bald eagles were among the top interests for survey respondents (second in MN, first in CO). However, respondents were most interested in warblers. As the survey was sent immediately following optimal warbler viewing, this may have primed respondents. Still, Minnesota has an abundance of warblers and they are of interest to wildlife viewers. Beyond birds, small mammal viewing experiences may be worthy of development. DTED's survey of potential Minnesota wildlife viewing visitors found perceptions of Minnesota as good for both birding and small mammal viewing. Therefore, with a positive image already in place, efforts to attract and expand this viewing may be worthwhile. These bird focused respondents indicated uncertain interest in two mammals, moose and timber wolves. A post-hoc analysis revealed that as commitment to wildlife viewing increased, so did interest in moose and wolves ($F= 7.1$, $p < .001$, and $F = 3.3$, $p < .05$, respectively). Possible reasons for the interest difference are many and worthy of further study.

No real constraints to wildlife viewing participation emerged among respondents. However, similar to Coloradoan and Texan birders (Manfredo & Larson, 1993; Adams et al, 1997) time approached characterization as a constraint (30 percent agreed or strongly agreed it influenced their wildlife viewing participation). Similarly, the availability of wildlife close to home and family obligations were also identified as possible constraints by 25 percent or more of respondents. Unlike Pennington-Gray and Kerstetter (2002), age was not significantly related to constraint perceptions.

**Travel experiences**

Similar to regional visitation in Minnesota, respondents traveling for wildlife viewing most frequently visited the Twin Cities. When assessed by regional residence, not surprisingly the Twin Cities were second behind the residential region. Length of overnight stays just slightly higher (2.7 nights as compared to 2.5) for Minnesota travelers. Detailed analyses of lodging and dining preferences may be of interest for the hospitality industry. Further, exploring participants willingness to pay for wildlife viewing experiences has merit given the stark state budget situation and lack of standardized economic support such as licenses for wildlife viewing development and support.

Although respondents indicated a willingness to travel over 600 miles to view wildlife, few left Minnesota to do so. Most frequently respondents took day trips to view wildlife. One explanation is that an abundance of opportunity and interest in Minnesota wildlife is sufficient to attract and retain those interested in wildlife viewing. However, "the committed wildlife tourist must continually seek new areas to reinforce the pleasant experience and continually generate satisfaction" (Shackley, 1996, p. 57). Thus, the advent of additional and further travel may be inevitable.

Another explanation is that the disparity between willingness to travel and actual travel to view wildlife long distances may indicate a latent demand. These results appear congruent with the USFWS study (2002) that reports only eight percent of Minnesotan's travel to other states or countries for wildlife viewing. Considering Minnesota's regional position in wildlife viewing participation may be informative. Data from the USFWS 2000 survey indicate that Wisconsin closely follows Minnesota in percent of population participating in wildlife related recreation (Table 44). Data from this sample indicate Wisconsin is the primary out of state destination for Minnesotan's. Beyond regional competitors, Arizona, Florida, Texas, and California were top destinations for Minnesota to view wildlife out of state. Just as these states market their sunshine in the winter, Minnesota DNR could market their warblers and loons in the summer.

Table 44 . Comparisons in wildlife viewing recreation activities and expenditures (in thousands) among Minnesota's neighboring states. Source: USFWS 2001 National Survey of Fishing, Hunting, and Wildlife-associated recreation.

| | Total participating | | | Residents | | Non-residents | | Expenditures ($) | |
|---|---|---|---|---|---|---|---|---|---|
| State | Total number | Percent participating | Rank | Total number | Percent participating* | Total number | Percent participating* | Total | Food & Lodging |
| Illinois | 2,621 | 100 | 1 | 2,379 | 91 | 638 | 24 | 596, 241 | 50,906 |
| Iowa | 1,028 | 100 | 4 | 939 | 91 | 310 | 30 | 188,391 | 11,104 |
| **Minnesota** | **2,155** | **100** | **3** | **1,932** | **90** | **634** | **29** | **531, 057** | **66,717** |
| North Dakota | 190 | 100 | 6 | 125 | 66 | 93 | 49 | 27,100 | 6,145 |
| South Dakota | 358 | 100 | 5 | 241 | 67 | 181 | 51 | 91,958 | 28,227 |
| Wisconsin | 2,442 | 100 | 2 | 2,076 | 85 | 1,000 | 41 | 1,311,619 | 151,554 |
| Average | 1,466 | 100 | - | 1,282 | 82 | 476 | 37 | 457,728 | 52,442 |

*Detail participation does not total 100% because of multiple responses

A combination of additional nature based activities and cultural/historic opportunities are likely to enhance experiences and extend wildlife viewing trips. Surveys in the late 1980s indicated highly motivated nature tourists were more likely to enjoy visiting cultural sites. However, studies from the 1990s suggest a variety of nature based activities are of interest to nature tourist. In a national study, birders indicated they are active in a variety of outdoor recreation pursuits (Cordell et al., 1999) from walking, to visiting nature and historic centers, to aquatic nature study. Five of the most favored activities of birders included: wildlife viewing, fish viewing, cross-country skiing, orienteering, and nature study. Similarly in Colorado, wildlife viewing participants indicated preferences to combine camping, auto sightseeing, and picnicking with wildlife viewing (Manfredo & Larson, 1993), although subtle differences emerged among their segmentation groups. Beyond activity, Meric and Hunt (1998) found seven key attributes associated with an ideal nature-oriented vacation: uncrowded, experiencing nature, inexpensive, historic, educational, friendly, and hospitable. Thus, attending to the multiple outdoor experiences desired by wildlife viewers, in uncrowded and hospitable surroundings, seems in order.

One market of particular interest are urban residents. Two factors heighten the importance of urban residents: significant majority of respondents who participated in wildlife viewing around their homes and urbanization of the U.S. More than half the population now lives in cities and by 2025 this number could increase to 80 percent (Bidwell & Barro, 1997). Separated from significant natural resources both spatially and cognitively, urban dwellers perceptions of, and preferences for, wildlife tourism experiences are important to regional recreation and tourism planning. Understanding the special circumstances and constraints faced by these urban residents is critical to adequate opportunity provision. Examples include fear and general violence in outdoor recreation areas (Manning, Bacon, Graefe, Kyle, Lee, & Burns, 2001; Tynon & Chavez, 2000), perceived discrimination (Blahna & Black, 1992; Chavez, 1993; Gobster & Delgado, 1992; Wallace & Witter, 1992), and racial conflict (Arnold & Shinew, 1998). Significant opportunities exist to both apply and further the constraints research in urban environments for those potentially interested in wildlife viewing. Although this sample had urban representation, the constraint questions did not address those specific constraints potentially critical to this residential segment.

At least two specific wildlife viewing recreation frameworks exist that serve as simple foundations for planning a spectrum of viewing. Shackley (1996) modeled wildlife-watching experiences into a continuum from observation to participation and captive to free (Figure 8). Simultaneously, Orams (1996) presented a spectrum of tourist-wildlife interaction opportunities (SoT-WIO). Both characterize animal captivity from captive to free/wild. Shackley presents degrees of human influence while Shackley (1996) focuses on the nature of the tourist activity from observation to participation. Norman, McClinton, and Martin (1998) found significant differences among National Estuarine Research Reserve visitors in the four quadrants by attitudes toward wildlife, the importance of viewing wildlife, and environmental education interests. However, no significant demographic differences emerged among the groups. Although a somewhat simplistic model, it has utility for comparing and further segmenting those who view

wildlife. Further, the addition of captive observational and participatory opportunities adjacent to free observation areas may enhance wildlife viewing experiences.

| | Nature of animal captivity | |
|---|---|---|
| Nature of tourist activity | Captive | Free |
| Observation | Zoo<br>Aquarium | Safari<br>Game drives<br>Diving<br>Whale watching |
| Participation | Feed zoo animal<br>Interactive exhibits | Gorilla watching<br>Swim with dolphins<br>Hunting |

Figure 8. Characterization of wildlife tourist activity from Shackley (1996).

***Respondent comparisons***

In an effort to differentiate wildlife viewing survey respondents, they were segmented in five different ways: number of surveyed organization memberships, level of commitment, motivation for wildlife viewing, wildlife recreation, and gender. Depending on the segmentation purpose, each method may be of interest. Summary differences are discussed here (Table 45) with specific information in the appropriate results discussion. Two primary points of discussion are of interest with regards to respondent differentiation: 1) the ability of the segmentation method to discern differences among respondents, and 2) the utility of the differences for experience planning and management.

Table 45. Difference summary among respondents to the Minnesota wildlife viewing survey, 2002 by five segmentation variables.

| | Experience attributes | Wildlife value orientations | Constraints to wildlife viewing | Experience in wildlife viewing | Identification ability | Travel behaviors |
|---|---|---|---|---|---|---|
| Number of surveyed organizational memberships | Wildlife experience<br>Access<br>Area information | Education<br>Recreation | Inter-intra personal<br>Structural | Days | # by sight<br># by sound | # miles willing to travel<br># trips > 50 miles<br># days in MN<br># overnights in MN<br># day outsides MN<br># overnights outside MN |
| Level of commitment | Wildlife experience<br>Undeveloped<br>Area information | Education<br>Recreation<br>Residential | Structural | Days<br>Years<br>Photography | # by sight<br># by sound | # miles willing to travel<br># trips > 50 miles<br># days in MN<br># overnights in MN<br># days outside MN<br># overnights outside MN |
| Motivation | | Education<br>Recreation<br>Residential | Structural | Years<br>Photography | # by sight<br># by sound | # miles willing to travel<br># trips > 50 miles<br># day in MN<br># overnights in MN<br># days outside MN<br># overnights outside MN |
| Wildlife related recreation | Wildlife experience<br>Access<br>Area Information | Residential | Structural | Years | # by sight<br># by sound | # trips > 50 miles<br># overnight outside MN |
| Gender | Wildlife experience<br>Access<br>Area Information | Education<br>Recreation<br>Residential | Structural | Years | # by sight<br># by sound | # miles willing to travel<br># trips > 50 miles<br># days in MN<br># overnights in MN<br># day outsides MN<br># overnights outside MN |

Each of the five segmentation methods chosen revealed comparable differences among respondents. Although each method has its merits, the question remains: which segmentation effort produced consistent and meaningful differences? Level of commitment to wildlife viewing appears to consistently differentiate wildlife viewers on a variety of perspectives using a parsimonious, reliable, and valid measure. This nine-item, unidimensional scale represents how central wildlife viewing is to the respondent and is grounded in social-psychological theory (Kim et al., 1997). Differences by commitment level were significant and aligned with expectation and intuition. Therefore, beyond a good measurement tool, commitment to wildlife viewing is easy to understand, simple to explain and apply.

Beyond how differences were ascertained, the utility of these differences for wildlife viewing planning and management is critical. Perhaps the least interesting and useful differences are those that relate to constraints and wildlife values. Perceived constraints were generally nonexistent among the sample. Thus, any differences are significant but of limited meaning and utility with regards to planning. A similar issue exists with wildlife value orientations in that they were all quite highly valued among the sample. Subsequently, any differences, although significant, are not particularly enlightening.

Of greater interest are those differences that apply to the experience attributes and travel behaviors. Wildlife experience varied across four of the five segmentation groups. Specifically, the wildlife experience of seeing and hearing wildlife in a quiet atmosphere was most important to respondents who were members of three organizations surveyed, those most committed to wildlife viewing, those who view wildlife, fish, and hunt, and women. All six travel behaviors examined varied across all five segmentation groups. Specifically, travel experience and willingness to travel increased with number of surveyed organization memberships and commitment to wildlife viewing. Respondents who were motivated by the aesthetics of wildlife were typically less experienced and willing to travel than those in other motivation groups. Males were typically more willing to travel and experienced than females. Thus, depending on what the planning intentions are (to attract new markets or enhance the experiences of the current clientele), the differences can be integrated accordingly.

***Information use and campaign***

Information sources used by wildlife viewers in this sample were both similar and different to past research efforts. The vast majority of respondents used magazines and brochures/pamphlets were information sources, similar to the MN DTED survey of Audubon subscribers and MOT inquirers related to wildlife. Thus, the recommendation by DTED (2001) to consider magazines and brochures to inform and educate about MN birding remains valid. However, research among potential visitors to North Carolina found magazines as unimportant as information sources, with travel books/guides, word of mouth, tourist bureaus, and 1-800 information lines more important.

Minnesota wildlife viewers appear to be online and reflect the skyrocketing use of the Internet to plan and book travel, which experienced a 395 percent increase 1998-2001

(TIA, 2001). Respondents in this sample used the Internet at two and three times the frequency compared to US overseas travelers (64 percent compared to 36) and DTED survey respondents (20.3 percent, 2001). However, Internet sites specific to Minnesota hosted by the DNR and MOT were used much less by respondents than the general Internet (36.7 and 20.6 percent, respectively). Therefore, although these sites are available, they remain under utilized by a targeted audience. Minnesota tourism professionals recognize the Internet as both a current and future important issue for the tourism industry, including wildlife tourism (Schneider, 2001).

Whatever the communication medium, the specifics of information campaign compositions depend on their foci: education, marketing, or simple dissemination. Regardless, the DNR has taken the first of several steps to effective campaign development: determining the target audience and the media channels they frequently use. The remaining steps include: develop an initial message, gauge reactions to partially formulate message ideas by the target audience, refine the message based on audience input, release the information, and evaluate its effectiveness (Bator, 1997).

As literature and natural resource communication practice demonstrate, the language used in consumer interaction and directives is critical. If language is irrelevant or incomprehensible, the probability of effective communication and subsequent program and agency success is low. Unfortunately, differences between manager and visitor language is probable (Manning, 2000). Therefore, exploring language use differences among various constituents is of great interest and relevance for effective natural resource management.

## FUTURE RESEARCH

This project was the first attempt to understand the wildlife viewing market in Minnesota. A focus on respondent profiles and limited resources constrained the amount and type of information attained in the mail survey. Therefore, additional information would both enhance understanding of current findings as well as expand on the knowledge base for this constituency group.

Prior to suggesting future research ideas, however, the limitations of this data must be acknowledged. The primary limitations focus on the quantitative method and sample. Surveys are extremely useful to obtain information from a large number of people in a relatively short amount of time. However, due to their quantitative nature and space constraints, surveys limit the breadth and depth of information attained. Further, rather than examining actual behavior, the survey relies on recall of past participation and estimates of future participation. The sample of organization members and inquirers about a birding trail was not random and therefore is not representative of the potential wildlife viewing market. However, because the DNR was interested in wildlife viewers, particularly those who watch birds, cooperating with the MNAUD, MOU, and MABA seemed appropriate.

To explore some issues raised in this survey and others of interest to DNR, a series of focus groups or in-depth interviews is suggested. Information gleaned from these endeavors could provide in depth information for program and message generation, as well as bridge the information until the next USFWS national survey on wildlife related recreation. Repeating the survey to this or a more representative group immediately following the next USFWS survey makes sense on multiple levels: corroboration and extension of national data, trend analysis, and program/planning information.

Beyond qualitative efforts to explore questionnaire issues in depth and a replication of the survey, future research could address benefits sought and attainment within specific wildlife viewing destinations, importance-performance analysis, and additional constraint information.

Several broad motivations for viewing wildlife were identified in this project. More specific information on benefits sought, and attainment, within wildlife viewing destinations is desirable. One approach may be using a benefits based approach to understanding wildlife viewing experiences (Anderson, Nickerson, Stein, & Lee, 2000; Brown, 1984). Benefits-based management (BBM) is an emerging framework designed to incorporate outdoor recreation area values into a management framework (Anderson, et. al, 2000). Understanding the benefits sought could develop a wildlife viewing tourism opportunity spectrum, modified from Orams (1996) and combined with existent tourism and recreation opportunity spectrums. Such opportunity spectrums could enable planners and managers to think regionally, even statewide, about the experiences afforded and desired for wildlife viewing. With effective marketing and information dissemination, the opportunity spectrum could allow visitors to self-select areas that match their desired environment, physical, and social settings and thus, have more satisfactory experiences. Further, extending the benefits approach to include physical benefits realized would address recent trends to connect outdoor recreation with physical fitness at national (Center for Disease Control, 2002) and state levels (Minnesota Department of Health, 2002).

In addition, understanding how the DNR performs in providing wildlife viewing opportunities is of interest. Importance-Performance (I-P) analysis examines program attribute importance and either customer satisfaction of or agency performance on these same attributes (Martilla & James, 1977). I-P analysis appeals to resource managers because of its ease of application, utility, and potential for immediate feedback. I-P analysis is a multi-step process. Typically three steps are followed that consist of 1) identifying a list of program attributes that may impact leisure experiences and which management can control, 2) rating the attributes on importance to the experience and how well the agency performed on them, and 3) interpreting the ratings in a two-dimensional grid that also provides a visual data representation (Figure 9). The vertical axis represents the importance scale and the horizontal axis represents the performance scale. Thus, the upper left quadrant represents attributes considered important by respondents, but which rate low in performance. The upper right quadrant represents attributes considered important by respondents, and that the agency is performing well. The lower left quadrant indicates attributes that are low in both importance and performance and the

lower right quadrant represents attributes not considered important, but which respondents rate high in performance. Accordingly, the evaluating organization should provide immediate attention to items in the upper left quadrant, maintain services to those in the upper right, and consider reducing resources to those in the lower right. I-P analysis is useful to evaluate leisure service effectiveness among homogenous visitors but could also been used in concert with a benefits based approach to segment visitors according to the benefits they seek prior to I-P analysis. Such evaluation could provide a baseline of performance from which to track in subsequent research efforts.

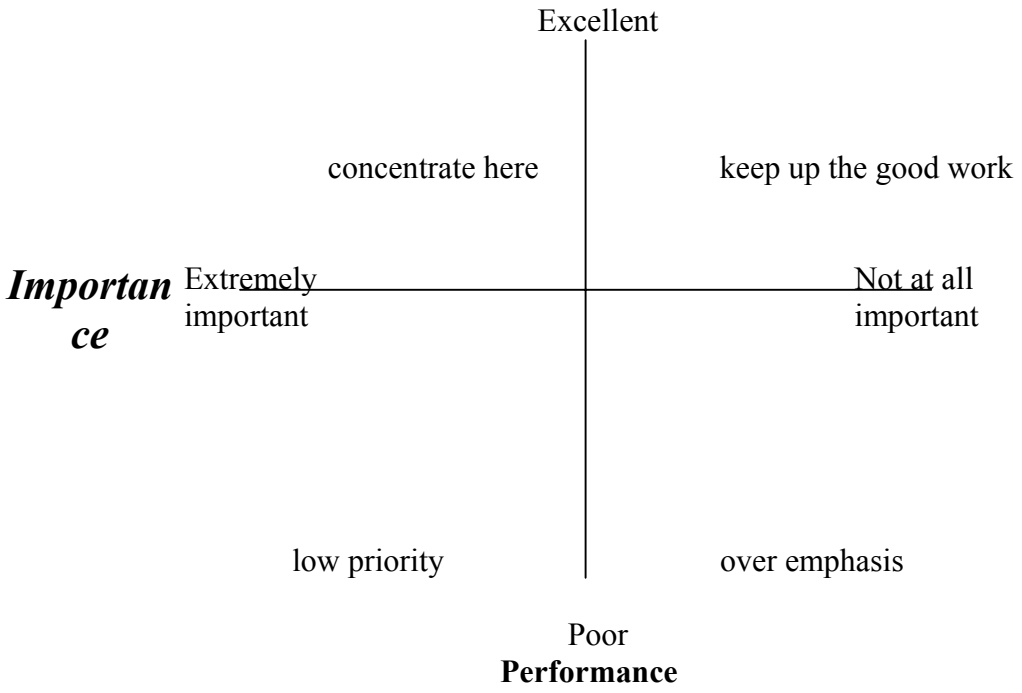


Figure 9. Importance-performance grid adapted from Martilla & James, 1977

Finally, constraints to wildlife viewing, beyond the three factors examined, are also of interest. As discussed in the respondent profile, the significant participation around respondents' homes, coupled with an urbanizing society, place particular interest on urban residents and their constraints. Knowledge of these constraints, and any strategies residents employ to cope with them, allows the opportunity to work toward mitigating factors that create and maintain then and more meaningful participation. For instance, educational and marketing efforts to participants that provide accurate information about perceived constraints could remove some structural and interpersonal constraints. Similarly, management personnel education regarding constraints can engage them in developing appealing and attractive programs and opportunities that similarly lessen constraint perception.

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# APPENDIX

# *APPENDIX A*

# *IRB Approval*

UNIVERSITY OF MINNESOTA

*Twin Cities Campus*

***Research Subjects' Protection Programs***
*Institutional Review Board: Human Subjects Committee (IRB)*
*Institutional Animal Care and Use Committee (IACUC)*

*Mayo Mail Code 820*
*D-528 Mayo Memorial Building*
*420 Delaware Street S.E.*
*Minneapolis, MN 55455*

*612-626-5654*
*Fax: 612-626-6061*
*irb@umn.edu*
*iacuc@umn.edu*
*http://www.research.umn.edu/subjects.htm*

May 22, 2002

Ingrid E. Schneider
FOREST RESOURCES
115 Green Hall
1530 Cleveland Ave N
Saint Paul MN 55108

Re: "Information Needs and Experience Preference of Watchable Wildlife Participants"
Human Subjects Code Number: **0205E24401**

Dear Dr. Schneider:

The IRB: Human Subjects Committee determined that the referenced study is exempt from review under federal guidelines 45 CFR Part 46.101(b) category #2 SURVEYS/INTERVIEWS; STANDARDIZED EDUCATIONAL TESTS; OBSERVATION OF PUBLIC BEHAVIOR.

The code number above is assigned to your research. That number and the title of your study must be used in all communication with the IRB office.

Upon receipt of this letter, you may begin your research. If you have questions, please call the IRB office at (612) 626-5654.

The IRB wishes you success with this research.

Sincerely,

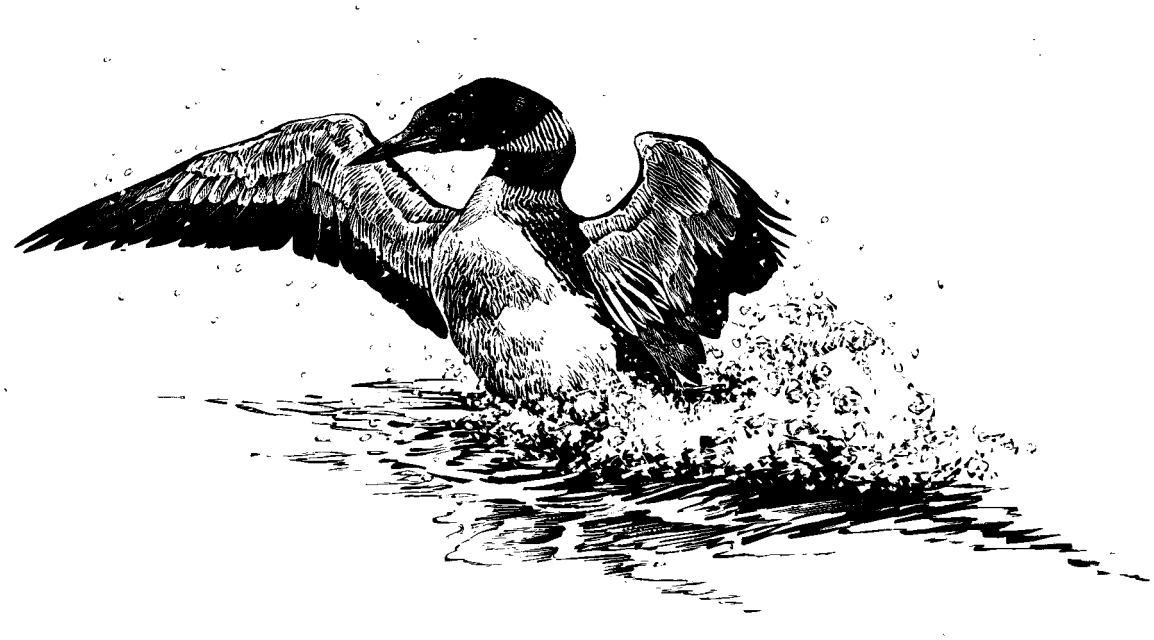
Cynthia McGill
Executive Assistant

CLM/av

# *APPENDIX B*

**Mail survey**

## *Minnesota Birding and Wildlife Watching Survey 2002*



Dear ORGANIZATION ORIGIN SAMPLE member,

In cooperation with the Nongame Wildlife Program of the Minnesota Department of Natural Resources, the University of Minnesota is interested in your interests and preferences related to birding and other wildlife viewing activities. You have been selected as part of a small number of Audubon members to share your views. Effective planning and management of these opportunities depends on your input. The enclosed survey should take just 15 minutes to complete and will enhance the management of, and your experiences at, various birding and wildlife areas across Minnesota.

The information you provide on the survey is critical to understanding how organizations involved in wildlife watching management can better serve your needs and be managed. Please return the survey in the enclosed, self-addressed, postage-paid envelope within two weeks of receipt. By doing so, you will be eligible to win a copy of "The Traveler's Guide to Wildlife Viewing in MN" through a drawing.

All the information you provide is completely voluntary, confidential, and anonymous. Once our mailing procedures are complete, your name will be removed. If you have any questions or concerns about the survey, please feel free to phone me at 612.624.2250 or email me at ingridss@umn.edu.

Sincerely,
Ingrid E. Schneider, Ph.D.
Project leader

## *Your wildlife viewing experiences*

First, a few questions about your general experiences watching wildlife.

1. How many years have you been watching birds and other wildlife? ____YEARS

2. In the past year, since June 2001, have you closely observed wildlife or tried to identify wildlife around your home?

____ YES ____NO

If yes,

Approximately how many days did you observe wildlife? _____ DAYS

Approximately how many days did you photograph wildlife?_____ DAYS

3. In the past year, since June 2001 have you visited any parks or natural areas within a one mile radius of your home to observe, photograph, or feed wildlife? ____ YES ____NO

4. In the past year, since June 2001, have you fed birds around your home? ____ YES ____NO

If yes, how many months did you feed birds *at least once a week*? ____ MONTHS

If yes, how many bird feeders do you maintain? _____ FEEDERS

5. Since June 2001, have you maintained in the area around your home any plantings, such as food or cover plants, for the primary purpose of benefiting fish or wildlife?

____ YES ____NO

If yes, what were your approximate costs for these plantings? $ _____

6. How many wildlife watching trips greater than 50 miles round trip have you been on since June 2001? _____ TRIPS GREATER THAN 50 MILES

7. How far would you be willing to travel to view a bird or other wildlife? _____ MILES

8. About how many birds can you identify without a field guide? _____

9. About how many birds can you identify by sound without a field guide? _____

10. What wildlife do you most frequently watch, feed, or photograph (circle one)?

BIRDS LARGE MAMMALS SMALL MAMMALS OTHER(_____)

11. What wildlife do you most enjoy watching, feeding, or photographing (circle one)?

BIRDS LARGE MAMMALS SMALL MAMMALS OTHER(_____)

12. What is the primary reason you enjoy watching wildlife (√ one)?

___TO BE CLOSE TO NATURE
___TO BE WITH FAMILY/FRIENDS
___FASCINATION WITH WILDLIFE
___TO IDENTIFY AS MANY SPECIES AS I CAN
___BECAUSE IT IS BEAUTIFUL

13. When watching wildlife, how important are each of the following to an enjoyable experience (circle one number)?

| | VERY UNIMPORTANT | | MODERATELY IMPORTANT | | VERY IMPORTANT |
|---|---|---|---|---|---|
| Seeing wildlife | 1 | 2 | 3 | 4 | 5 |
| Hearing wildlife | 1 | 2 | 3 | 4 | 5 |
| Ability to see wildlife clearly | 1 | 2 | 3 | 4 | 5 |
| Quiet atmosphere | 1 | 2 | 3 | 4 | 5 |
| Accessible trails | 1 | 2 | 3 | 4 | 5 |
| Accessible roads | 1 | 2 | 3 | 4 | 5 |
| Area information (brochures, guides) | 1 | 2 | 3 | 4 | 5 |
| Species information (brochures, displays) | 1 | 2 | 3 | 4 | 5 |
| Guided tours | 1 | 2 | 3 | 4 | 5 |
| Knowledgeable staff to answer my questions | 1 | 2 | 3 | 4 | 5 |
| Self guided tours with interpretive cassettes | 1 | 2 | 3 | 4 | 5 |
| Films or slideshows about wildlife | 1 | 2 | 3 | 4 | 5 |
| Scenic tours | 1 | 2 | 3 | 4 | 5 |
| Nature centers | 1 | 2 | 3 | 4 | 5 |
| Undeveloped dirt trails, with no signs | 1 | 2 | 3 | 4 | 5 |
| Undeveloped dirt trails, with wildlife oriented signs | 1 | 2 | 3 | 4 | 5 |
| Paved hiking trails, with wildlife oriented signs | 1 | 2 | 3 | 4 | 5 |
| Paved hiking trails, with no signs | 1 | 2 | 3 | 4 | 5 |
| Signs describing wildlife | 1 | 2 | 3 | 4 | 5 |
| Pull offs where I can safely watch wildlife | 1 | 2 | 3 | 4 | 5 |
| Observational/photography blinds | 1 | 2 | 3 | 4 | 5 |
| Activities for the entire family | 1 | 2 | 3 | 4 | 5 |
| Formal programs about the area wildlife | 1 | 2 | 3 | 4 | 5 |
| Pre-trip information available online | 1 | 2 | 3 | 4 | 5 |
| Refreshments available | 1 | 2 | 3 | 4 | 5 |
| Other (_____) | 1 | 2 | 3 | 4 | 5 |

**Now, a few questions about your Minnesota experiences watching wildlife.**

14. How many *day* trips have you taken in Minnesota to watch wildlife since June 2001?
____TRIPS LESS THAN ONE DAY

15. How many *overnight* trips have you taken in MN to watch wildlife since June 2001?
____OVERNIGHT TRIPS (If 0, go to question 19)

16. How many days do you typically spend on these Minnesota trips? ____DAYS

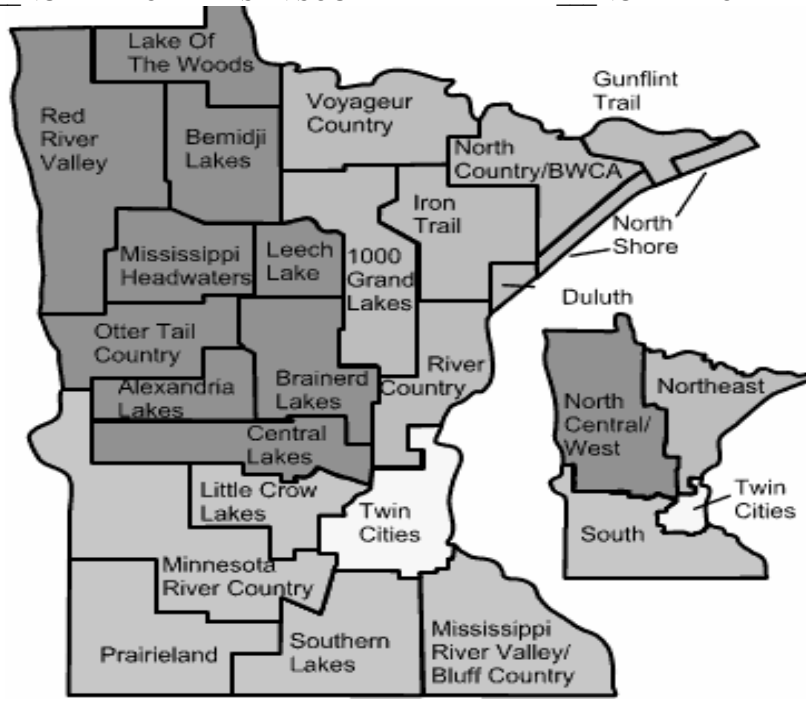
17. How many people are in your group on a typical overnight trip? ____PEOPLE

18. On an average overnight trip you take to observe, photograph, or feed wildlife in Minnesota, about how much do you spend on each of the following?

$_____FOOD, DRINK, AND REFRESHMENTS
_____LODGING
_____PUBLIC TRANSPORTATION
_____ROUND TRIP COSTS FOR TRANSPORTATION BY PRIVATE VEHICLE
_____GUIDE FEES, PACK TRIP OR PACKAGE FEEDS
_____PUBLIC LAND USE OR ACCESS FEES
_____PRIVATE LAND USE OR ACCESS FEES
_____EQUIPMENT RENTAL SUCH AS BOATS, CAMPING EQUIPMENT

19. Please indicate the number of trips you have made to each of the following regions since June 2001 to watch wildlife, using the map below as a guide.

___NUMBER OF TRIPS IN TWIN CITIES
___NUMBER OF TRIPS IN SOUTH
___NUMBER OF TRIPS IN NORTHEAST
___NUMBER OF TRIPS IN NORTHCENTRAL



20. Please check all of the birding trails you have visited in Minnesota (√ all you have visited).

___GREAT RIVER BIRDING TRAIL (WHERE? )
___PINE TO PRAIRIE BIRDING TRIAL (WHERE? )
___MINNESOTA RIVER BIRDING TRAIL (WHERE? )

21. Do you hunt in Minnesota ? ____ YES ____NO (IF NO, GO TO QUESTION 22)
If yes, how many days since June 2001? ____ DAYS
If yes, what are the main species you hunt? _____

22. Do you fish in Minnesota? ____ YES ____NO (IF NO, GO TO QUESTION 23)
If yes, how many days since June 2001? ____ DAYS
If yes, what are the main species you fish for? _____

**Now a few questions about your wildlife watching experiences outside of Minnesota.**

23. How many day trips have you taken outside Minnesota to watch wildlife since June 2001?
____NUMBER OF TRIPS LESS THAN ONE DAY

24. How many overnight trips have you taken outside Minnesota to watch wildlife since June 2001?
____NUMBER OF TRIPS OVERNIGHT TRIPS (IF 0, GO TO QUESTION 26)

25. What states or countries do you typically visit for watching wildlife and for how long?

| STATE/COUNTRY | TRIP LENGTH | STATE/COUNTRY | TRIP LENGTH |
|---|---|---|---|
| _____ | _____NIGHTS | _____ | _____NIGHTS |
| _____ | _____NIGHTS | _____ | _____NIGHTS |

***Your interests in birding and wildlife watching***

26. Please indicate to what extent you agree or disagree with each of the following statements (circle one):

| | STRONGLY DISAGREE | DISAGREE | NEUTRAL | AGREE | STRONGLY AGREE |
|---|---|---|---|---|---|
| If I stopped watching birds and other wildlife, I would probably lose touch with a lot of my friends | 1 | 2 | 3 | 4 | 5 |
| If I can't go to watch birds and other wildlife, I am not sure what I would do | 1 | 2 | 3 | 4 | 5 |
| Because of birding and watching wildlife, I don't have time to spend on other leisure activities | 1 | 2 | 3 | 4 | 5 |
| Most of my friends are in some way connected with watching birds and other wildlife | 1 | 2 | 3 | 4 | 5 |
| I consider myself to be somewhat expert at watching birds and other wildlife | 1 | 2 | 3 | 4 | 5 |
| I find a lot of my life is organized around watching birds and other wildlife | 1 | 2 | 3 | 4 | 5 |
| Others would probably say that I spend too much time watching birds and other wildlife | 1 | 2 | 3 | 4 | 5 |
| I would rather watch wildlife than do most anything else | 1 | 2 | 3 | 4 | 5 |
| Other leisure activities don't interest me as much | 1 | 2 | 3 | 4 | 5 |

27. How many days do you think you will observe, photograph, or feed wildlife in the next 12 months? ____ DAYS IN THE NEXT YEAR

28. How likely do you think it is you will visit the following birding trails in the next 12 months?

| | VERY UNLIKELY | | UNSURE | | VERY LIKELY |
|---|---|---|---|---|---|
| Pine-to-Prairie Birding Trail | 1 | 2 | 3 | 4 | 5 |
| Minnesota River Birding Trail | 1 | 2 | 3 | 4 | 5 |
| The Great River Birding Trail | 1 | 2 | 3 | 4 | 5 |
| Tundra Swan Watch | 1 | 2 | 3 | 4 | 5 |

29. Please indicate how interested you are in each of the following as a wildlife viewing attraction.

| | VERY UNINTERESTED | | UNSURE | | VERY INTERESTED |
|---|---|---|---|---|---|
| Bald eagles | 1 | 2 | 3 | 4 | 5 |
| Loon | 1 | 2 | 3 | 4 | 5 |
| Peregrine falcons | 1 | 2 | 3 | 4 | 5 |
| Hawk migrations | 1 | 2 | 3 | 4 | 5 |
| Northern wintering owls | 1 | 2 | 3 | 4 | 5 |
| Sharp tailed grouse | 1 | 2 | 3 | 4 | 5 |
| Greater prairie chickens | 1 | 2 | 3 | 4 | 5 |
| Tundra swans | 1 | 2 | 3 | 4 | 5 |
| Trumpeter swans | 1 | 2 | 3 | 4 | 5 |
| Warblers | 1 | 2 | 3 | 4 | 5 |
| Moose | 1 | 2 | 3 | 4 | 5 |
| Timberwolves | 1 | 2 | 3 | 4 | 5 |

30. Please indicate to what extent you agree or disagree that each of the following prevent you from engaging in wildlife watching (circle one):

| | **STRONGLY DISAGREE** | **DISAGREE** | **NEUTRAL** | **AGREE** | **STRONGLY AGREE** |
|---|---|---|---|---|---|
| I don't know where to go | 1 | 2 | 3 | 4 | 5 |
| I am not able to plan a trip | 1 | 2 | 3 | 4 | 5 |
| Destinations are difficult to reach | 1 | 2 | 3 | 4 | 5 |
| I need accessible facilities | 1 | 2 | 3 | 4 | 5 |
| Places to view wildlife are too far away | 1 | 2 | 3 | 4 | 5 |
| There's enough wildlife to view near my home | 1 | 2 | 3 | 4 | 5 |
| I can watch wildlife programs on TV instead | 1 | 2 | 3 | 4 | 5 |
| I am not aware of wildlife viewing travel opportunities | 1 | 2 | 3 | 4 | 5 |
| It requires a lot of skill | 1 | 2 | 3 | 4 | 5 |
| I don't have any one to go with | 1 | 2 | 3 | 4 | 5 |
| My travel companions don't have time | 1 | 2 | 3 | 4 | 5 |
| I don't have enough money | 1 | 2 | 3 | 4 | 5 |
| I don't have time | 1 | 2 | 3 | 4 | 5 |
| I have many family obligations | 1 | 2 | 3 | 4 | 5 |

31. This question has two parts. First, indicate which of the following sources you use for information on wildlife watching. Then, if you use it, indicate how often by circling one number.

| | DO YOU USE IT? | | IF YOU USE IT, HOW OFTEN? | | |
|---|---|---|---|---|---|
| | YES | NO | ALWAYS | OFTEN | SOMETIMES |
| Television | | | 1 | 2 | 3 |
| Newspaper | | | 1 | 2 | 3 |
| Radio | | | 1 | 2 | 3 |
| Internet in general | | | 1 | 2 | 3 |
| MN DNR website | | | 1 | 2 | 3 |
| MN Office of Tourism website | | | 1 | 2 | 3 |
| MN MOU Birding hotline | | | 1 | 2 | 3 |
| Traveler's guide to Watchable Wildlife in MN | | | 1 | 2 | 3 |
| General travel books | | | 1 | 2 | 3 |
| Birding books | | | 1 | 2 | 3 |
| Magazines | | | 1 | 2 | 3 |
| Brochures/pamphlets | | | 1 | 2 | 3 |
| Friends/family | | | 1 | 2 | 3 |
| Wild bird stores | | | 1 | 2 | 3 |
| Outdoor/sporting goods stores | | | 1 | 2 | 3 |

32. Please indicate to what extent you agree or disagree with each of the following statements (circle one):

| | STRONGLY DISAGREE | DISAGREE | NEUTRAL | AGREE | STRONGLY AGREE |
|---|---|---|---|---|---|
| I enjoy seeing birds around my home. | 1 | 2 | 3 | 4 | 5 |
| I notice the birds and wildlife around me everyday. | 1 | 2 | 3 | 4 | 5 |
| Having wildlife around my home is important to me. | 1 | 2 | 3 | 4 | 5 |
| I'm interested in making the area around my home attractive to birds and wildlife. | 1 | 2 | 3 | 4 | 5 |
| An important part of my community is the wildlife I see there. | 1 | 2 | 3 | 4 | 5 |
| I enjoy watching wildlife when I take a trip outdoors. | 1 | 2 | 3 | 4 | 5 |
| Some of my most memorable outdoor experiences occurred when I saw wildlife I didn't expect to see. | 1 | 2 | 3 | 4 | 5 |
| Some of my most memorable outdoor experiences occurred when I saw wildlife do something I didn't expect. | 1 | 2 | 3 | 4 | 5 |
| One of the reasons I take trips to the outdoors, like camping, hiking or sightseeing, is for the chance to see wildlife. | 1 | 2 | 3 | 4 | 5 |
| It is important that we learn as much as we can about wildlife. | 1 | 2 | 3 | 4 | 5 |
| I enjoy learning about wildlife. | 1 | 2 | 3 | 4 | 5 |
| It is important that all Minnesota residents have a chance to learn about wildlife in the state. | 1 | 2 | 3 | 4 | 5 |

## *A few questions about you*

33.Are you? ___ MALE OR ___FEMALE

34. What year were you born? 19___

35.Which, if any, of the following organizations do you belong to ( √ all that apply)?

___Audubon
___American Birding Association
___Ducks Unlimited
___Izaac Walton League
___Minnesota Ornithologists' Union
___National Wildlife Foundation
___Sierra Club
___The Nature Conservancy
___Other (please list: _____)

36. What is the highest level of education you have completed (circle one)?

| EIGHTH GRADE | HIGH SCHOOL/ GED | TECH SCHOOL | SOME COLLEGE | COLLEGE DEGREE | ADVANCED DEGREE |
|---|---|---|---|---|---|

37. In what ethnicity and race would you place yourself?

Ethnicity**:**

_____HISPANIC OR LATINO
_____ NOT HISPANIC OR LATINO

Race (check all that apply):

____ AMERICAN INDIAN OR ALASKA NATIVE
_____ ASIAN
_____ BLACK OR AFRICAN AMERICAN
_____ NATIVE HAWAIIAN OR OTHER PACIFIC ISLANDER
_____ WHITE
_____ OTHER (EXPLAIN: )

38. What is your employment status? (check one):

___EMPLOYED FULL TIME ___EMPLOYED PART TIME ___RETIRED ___OTHER

39. What is your annual household income (before taxes)?

____ LESS THAN $5,000 _____ $5,000-9,999 _____ $10,000-14,999
_____ $15,000-24,999 _____ $25,000-34,999 _____ $35,000-49,999
_____ $50,000-74,999 _____ $75,000-99,999 _____ $100,000 – 124,999
_____ $125,000-149,999 _____$150,000-$174,999 _____$175,000 OR MORE

40. How many people are supported by this income? _____PERSON/S

***THANK YOU FOR YOUR PARTICIPATION!***

If you want more information about this study, contact Dr. Ingrid Schneider, 115 Green Hall, 1530 Cleveland Avenue North, St. Paul, MN 55108-1027; 612-624-2250; ingridss@umn.edu

# *APPENDIX C*

## Post card reminder

Dear Minnesota Wildlife Viewer:

We recently contacted you concerning your wildlife viewing experiences. If you have already completed a questionnaire, accept our sincere thanks. If you've not already done so, please complete the survey and return it by mail. For a replacement survey, call 612.624.2250 or email salk0006@umn.edu.

Your response will improve your next wildlife viewing experience: please reply today.

Sincerely,

Ingrid Schneider, Ph.D.

# *APPENDIX D*

**Follow-up letter for survey**

Dear ORGANIZATION SAMPLE ORIGIN member,

We recently contacted you about an opportunity to share your opinions related to wildlife viewing in Minnesota. If you have already completed this survey, please accept our sincere thanks!

Each response is essential to the success of the study, as you are one of a small group chosen to represent Audubon members. The survey should take just 15 minutes to complete and will provide important input for Department of Natural Resource Non-Game Wildlife Program managers. Remember, by completing the survey you will be entered in a drawing to win a copy of "The Traveler's Guide to Wildlife Viewing in MN."

Your participation is completely voluntary and the information you provide is both confidential and anonymous. Once our mailing procedures are complete, your name will be destroyed. If you have any questions or concerns about the survey, please feel free to phone me at 612.624.2250 or email me at ingridss@umn.edu.

Thank you in advance for your cooperation. We look forward to receiving your survey within one week.

Sincerely,

Ingrid E. Schneider, Ph.D.
Project leader

# APPENDIX E

## Survey results highlights

## *Your wildlife viewing experiences*

First, a few questions about your general experiences watching wildlife.

1. How many years have you been watching birds and other wildlife? *mean = 32.2* YEARS
*SD = 17.8, n = 1085*

2. In the past year, since June 2001, have you closely observed wildlife or tried to identify wildlife around your home?

97.5% YES 2.5%NO *n = 1104*

If yes,

Approximately how many days did you observe wildlife? *mean = 234.4* DAYS *SD = 132.4, n = 978*

Approximately how many days did you photograph wildlife? *mean = 7.8* DAYS *SD = 12.7, n = 826*

3. In the past year, since June 2001 have you visited any parks or natural areas within a one mile radius of your home to observe, photograph, or feed wildlife?
72.5%YES 27.5% NO *n =1089*

4. In the past year, since June 2001, have you fed birds around your home?
88.9% YES 11.1% NO *n =1104*

If yes, how many months did you feed birds *at least once a week*? *mean = 10.5* MONTHS

*SD = 2.8, n = 970*

If yes, how many bird feeders do you maintain? *mean =4.5* FEEDERS

*SD = 2.7, n = 970*

5. Since June 2001, have you maintained in the area around your home any plantings, such as food or cover plants, for the primary purpose of benefiting fish or wildlife?
65.0% YES 35.0% NO *n = 1095*

If yes, what were your approximate costs for these plantings? $ *mean = $245.88*
*SD = 283.03, n = 533*

6. How many wildlife watching trips greater than 50 miles round trip have you been on since June 2001? *mean = 6.1* TRIPS GREATER THAN 50 MILES
*SD = 6.7, n = 1053*

7. How far would you be willing to travel to view a bird or other wildlife? *mean = 632.2* MILES *SD = 947.5, n = 813*

8. About how many birds can you identify without a field guide? *mean = 145.8*
*SD = 131.9, n = 1025*

9. About how many birds can you identify by sound without a field guide? *mean = 47.8*
*SD = 49.1, n = 1017*

10. What wildlife do you most frequently watch, feed, or photograph (circle one)? *n = 1089*

| BIRDS | LARGE MAMMALS | SMALL MAMMALS | OTHER |
|---|---|---|---|
| (_____) | | | |
| *95.4%* | *1.8%* | *1.9%* | *0.8%* |

11. What wildlife do you most enjoy watching, feeding, or photographing (circle one)? *n = 1082*

| BIRDS | LARGE MAMMALS | SMALL MAMMALS | OTHER |
|---|---|---|---|
| (_____) | | | |
| *88.9%* | *5.9%* | *3.3%* | *1.8%* |

12. What is the primary reason you enjoy watching wildlife (√ one)? *n = 1093*

___TO BE CLOSE TO NATURE *37.9%*
___TO BE WITH FAMILY/FRIENDS *0.9%*
___FASCINATION WITH WILDLIFE *38.4%*
___TO IDENTIFY AS MANY SPECIES AS I CAN *5.6%*
___BECAUSE IT IS BEAUTIFUL *17.2%*

13. When watching wildlife, how important are each of the following to an enjoyable experience (circle one number)?

| | VERY UNIMPORTANT | | MODERATELY IMPORTANT | | VERY IMPORTANT |
|---|---|---|---|---|---|
| Seeing wildlife | | | mean=4.4, SD=1.0, n=1095 | | |
| Hearing wildlife | | | mean =4.0, SD=1.1, n=1086 | | |
| Ability to see wildlife clearly | | | mean =3.8, SD=1.1, n=1086 | | |
| Quiet atmosphere | | | mean =4.1, SD=1.0, n=1083 | | |
| Accessible trails | | | mean =3.5, SD=1.2, n=1077 | | |
| Accessible roads | | | mean =3.3, SD=1.2, n=1070 | | |
| Area information (brochures, guides) | | | mean =3.1, SD=1.1, n=1080 | | |
| Species information (brochures, displays) | | | mean =3.0, SD=1.1, n=1082 | | |
| Guided tours | | | mean =2.2, SD=1.1, n=1076 | | |
| Knowledgeable staff to answer my questions | | | mean =2.7, SD=1.2, n=1079 | | |
| Self guided tours with interpretive cassettes | | | mean =2.1, SD=1.1, n=1079 | | |
| Films or slideshows about wildlife | | | mean =2.2, SD=1.1, n=1080 | | |
| Scenic tours | | | mean =2.5, SD=1.1, n=1072 | | |
| Nature centers | | | mean =3.3, SD=1.1, n=1067 | | |
| Undeveloped dirt trails, with no signs | | | mean =3.0, SD=1.2, n=1066 | | |
| Undeveloped dirt trails, with wildlife oriented signs | | | mean =2.9, SD=1.1, n=1071 | | |

| | | | | | |
|---|---|---|---|---|---|
| Paved hiking trails, with wildlife oriented signs | | | mean =2.4, SD=1.1, n=1077 | | |
| Paved hiking trails, with no signs | | | mean =2.3, SD=1.1, n=1073 | | |
| Signs describing wildlife | | | mean =2.5, SD=1.1, n=1073 | | |
| Pull offs where I can safely watch wildlife | | | mean =3.7, SD=1.1, n=1081 | | |
| Observational/photography blinds | | | mean =2.9, SD=1.2, n=1079 | | |
| Activities for the entire family | | | mean =2.3, SD=1.2, n=1074 | | |
| Formal programs about the area wildlife | | | mean =2.4, SD=1.1, n=1077 | | |
| Pre-trip information available online | | | mean =3.0, SD=1.3, n=1077 | | |
| Refreshments available | | | mean =1.8, SD=1.0, n=1076 | | |
| Other (_____) | | | mean =3.9, SD=1.5, n=145 | | |

**Now, a few questions about your Minnesota experiences watching wildlife.**

14. How many *day* trips have you taken in Minnesota to watch wildlife since June 2001?
*mean=6.1*TRIPS LESS THAN ONE DAY
*SD=6.7, n=1053*
15. How many *overnight* trips have you taken in MN to watch wildlife since June 2001?
*mean =1.9* OVERNIGHT TRIPS (If 0, go to question 19)
*SD=2.2, n=1055*

16. How many days do you typically spend on these Minnesota trips? *mean =2.7* DAYS
*SD=2.6, n =651*

17. How many people are in your group on a typical overnight trip? *mean =2.6* PEOPLE
*SD=1.2, n=637*

18. On an average overnight trip you take to observe, photograph, or feed wildlife in Minnesota, about how much do you spend on each of the following?

*mean =$56.24* FOOD, DRINK, AND REFRESHMENTS, *SD=29.30, n =565*
*mean =$79.90* LODGING, *SD=41.28, n =501*
*mean =$67.86* PUBLIC TRANSPORTATION, *SD=64.15, n =7*
*AVG=48.64* ROUND TRIP COSTS FOR TRANSPORTATION BY PRIVATE VEHICLE, *SD=26.56, n =518*
*mean =$35.98* GUIDE FEES, PACK TRIP OR PACKAGE FEEDS, *SD=22.70, n =90*
*mean =$13.75* PUBLIC LAND USE OR ACCESS FEES, *SD=7.26, n =268*
*mean =25.40* PRIVATE LAND USE OR ACCESS FEES, *SD=15.77, n =20*
*mean =$68.90* EQUIPMENT RENTAL SUCH AS BOATS, CAMPING EQUIPMENT, *SD=63.16, n =41*

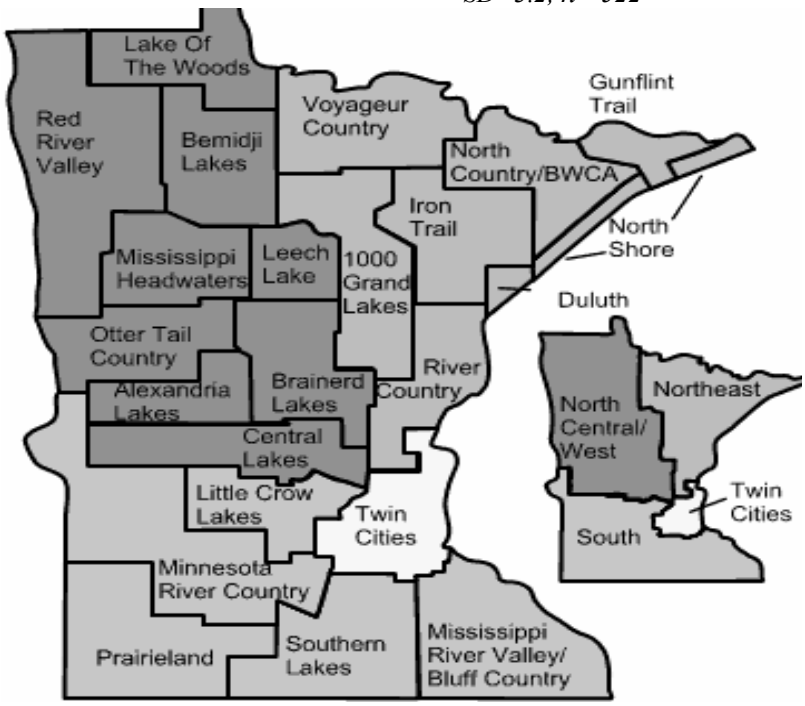
19. Please indicate the number of trips you have made to each of the following regions since June 2001 to watch wildlife, using the map below as a guide.

*mean =11.6* NUMBER OF TRIPS IN TWIN CITIES
*SD=11.6, n =617*

*mean =3.9* NUMBER OF TRIPS IN SOUTH
*SD=3.2, n =596*

*mean =3.6* NUMBER OF TRIPS IN NORTHEAST
*SD=3.0, n =666*

*mean =3.6* NUMBER OF TRIPS IN NORTHCENTRAL
*SD=3.2, n =522*




20. Please check all of the birding trails you have visited in Minnesota (√ all you have visited).

16.7% GREAT RIVER BIRDING TRAIL (WHERE? ) *n =186*
13.4% PINE TO PRAIRIE BIRDING TRIAL (WHERE? ) *n =149*
19.4% MINNESOTA RIVER BIRDING TRAIL (WHERE? ) *n =216*

21. Do you hunt in Minnesota? 16.8% YES 83.2% NO (IF NO, GO TO QUESTION 22)
*N =1113*

If yes, how many days since June 2001? *mean =9.6* DAYS
*SD=8.2, n =172*
If yes, what are the main species you hunt? _____

22. Do you fish in Minnesota? 42.6% YES 57.4% NO (IF NO, GO TO QUESTION 23)
*N=1113*

If yes, how many days since June 2001? *mean =12.8* DAYS
*SD=20.0, n =427*
If yes, what are the main species you fish for? _____

**Now a few questions about your wildlife watching experiences outside of Minnesota.**

23. How many day trips have you taken outside Minnesota to watch wildlife since June 2001?

*mean =1.2* NUMBER OF TRIPS LESS THAN ONE DAY
*SD=2.0, n =1001*

24. How many overnight trips have you taken outside Minnesota to watch wildlife since June 2001?

*mean =1.5* NUMBER OF TRIPS OVERNIGHT TRIPS (IF 0, GO TO QUESTION 26)
*SD=1.8, n =1029*

25. What states or countries do you typically visit for watching wildlife and for how long?

| STATE/COUNTRY | TRIP LENGTH | STATE/COUNTRY | TRIP LENGTH |
|---|---|---|---|
| _____ | _____NIGHTS | _____ | _____NIGHTS |
| _____ | _____NIGHTS | _____ | _____NIGHTS |

*MOST FREQUENT: WI (n =207, 15.3%), AZ (n =103, 7.6%), FL (n =100, 7.4%), TX (n =91, 6.7%), CA (n =85, 6.3%), ND (n =66, 4.9%), CANADA (n =55, 4.1%)*
*TOTAL n =1351*

Your interests in birding and wildlife watching

26. Please indicate to what extent you agree or disagree with each of the following statements (circle one):

| | STRONGLY DISAGREE | DISAGREE | NEUTRAL | AGREE | STRONGLY AGREE |
|---|---|---|---|---|---|
| If I stopped watching birds and other wildlife, I would probably lose touch with a lot of my friends | | | *mean =2.2, SD=1.2, n=1091* | | |
| If I can't go to watch birds and other wildlife, I am not sure what I would do | | | *mean =2.6, SD=1.3, n=1090* | | |
| Because of birding and watching wildlife, I don't have time to spend on other leisure activities | | | *mean =2.2, SD=1.0, n=1090* | | |
| Most of my friends are in some way connected with watching birds and other wildlife | | | *mean =2.5, SD=1.1, n=1090* | | |
| I consider myself to be somewhat expert at watching birds and other wildlife | | | *mean =3.3, SD=1.1, n=1090* | | |
| I find a lot of my life is organized around watching birds and other wildlife | | | *mean =3.1, SD=1.2, n=1093* | | |
| Others would probably say that I spend too much time watching birds and other wildlife | | | *mean =2.4, SD=1.2, n=1088* | | |
| I would rather watch wildlife than do most anything else | | | *mean =3.1, SD=1.2, n=1093)* | | |
| Other leisure activities don't interest me as much | | | *mean =2.5, SD=1.2, n=1093* | | |

27. How many days do you think you will observe, photograph, or feed wildlife in the next 12 months? *mean =232* DAYS IN THE NEXT YEAR
*SD=144, n=985*

28. How likely do you think it is you will visit the following birding trails in the next 12 months?

| | VERY UNLIKELY | UNLIKELY | UNSURE | LIKELY | VERY LIKELY |
|---|---|---|---|---|---|
| Pine-to-Prairie Birding Trail *n=1022* | *32.9%* | *9.4%* | *36.6%* | *9.5%* | *11.6%* |
| Minnesota River Birding Trail *n=1036* | *27.6%* | *7.9%* | *31.7%* | *15.1%* | *17.8%* |
| The Great River Birding Trail *n=1027* | *29.5%* | *8.2%* | *32.7%* | *13.8%* | *15.8%* |
| Tundra Swan Watch *n=1040* | *35.1%* | *10.6%* | *28.8%* | *10.7%* | *14.8%* |

29. Please indicate how interested you are in each of the following as a wildlife viewing attraction.

| | VERY UN-INTERESTED | | UNSURE | | VERY INTERESTED |
|---|---|---|---|---|---|
| Bald eagles | | | *mean =4.2, SD=1.1, n=1087* | | |
| Loon | | | *mean =4.1, SD=1.1, n=1085* | | |
| Peregrine falcons | | | *mean =4.1, SD=1.1, n=1070* | | |
| Hawk migrations | | | *mean =4.1, SD=1.1, n=1074* | | |
| Northern wintering owls | | | *mean =4.1, SD=1.1, n=1067* | | |
| Sharp tailed grouse | | | *mean =3.6, SD=1.2, n=1061* | | |
| Greater prairie chickens | | | *mean =3.6, SD=1.2, n=1065* | | |
| Tundra swans | | | *mean =3.9, SD=1.1, n=1066* | | |
| Trumpeter swans | | | *mean =3.9, SD=1.1, n=1073* | | |
| Warblers | | | *mean =4.3, SD=1.0, n=1077* | | |
| Moose | | | *mean =3.8, SD=1.2, n=1071* | | |
| Timberwolves | | | *mean =3.8, SD=1.3, n=1069* | | |

30. Please indicate to what extent you agree or disagree that each of the following prevent you from engaging in wildlife watching (circle one):

| | **STRONGLY DISAGREE** | **DISAGREE** | **NEUTRAL** | **AGREE** | **STRONGLY AGREE** |
|---|---|---|---|---|---|
| I don't know where to go | | | *mean =1.9, SD=1.0, n=1075* | | |
| I am not able to plan a trip | | | *mean =1.7, SD=0.9, n=1072* | | |
| Destinations are difficult to reach | | | *mean =1.9, SD=1.0, n=1071* | | |
| I need accessible facilities | | | *mean =1.7, SD=1.0, n=1073* | | |
| Places to view wildlife are too far away | | | *mean =1.9, SD=1.0, n=1068* | | |
| There's enough wildlife to view near my home | | | *mean =3.1, SD=1.3, n=1067* | | |
| I can watch wildlife programs on TV instead | | | *mean =1.7, SD=1.0, n=1076* | | |
| I am not aware of wildlife viewing travel opportunities | | | *mean =1.8, SD=1.0, n=1075* | | |
| It requires a lot of skill | | | *mean =1.8, SD=0.9, n=1075* | | |

| | | | | | |
|---|---|---|---|---|---|
| I don't have any one to go with | | | *mean =2.0, SD=1.1, n=1075* | | |
| My travel companions don't have time | | | *mean =2.1, SD=1.1, n=1069* | | |
| I don't have enough money | | | *mean =2.1, SD=1.1, n=1074* | | |
| I don't have time | | | *mean =2.6, SD=1.3, n=1077* | | |
| I have many family obligations | | | *mean =2.5, SD=1.3, n=1076* | | |

31. This question has two parts. First, indicate which of the following sources you use for information on wildlife watching. Then, if you use it, indicate how often by circling one number.

| | DO YOU USE IT? | | IF YOU USE IT, HOW OFTEN? | | |
|---|---|---|---|---|---|
| | YES | NO | ALWAYS | OFTEN | SOMETIMES |
| Television *n=1046* | 53.9% | 46.1% | 5.5% | 29.5% | 65.0% |
| Newspaper *n=1038* | 73.1% | 26.9% | 7.5% | 27.6% | 65.0% |
| Radio *n=1028* | 39.4% | 60.6% | 6.4% | 27.1% | 66.4% |
| Internet in general *n=1031* | 64.4% | 35.6% | 19.4% | 39.9% | 40.7% |
| MN DNR website *n=1022* | 36.7% | 63.3% | 7.1% | 29.0% | 63.9% |
| MN Office of Tourism website *n=1021* | 20.6% | 79.4% | 4.6% | 26.5% | 68.9% |
| MN MOU Birding hotline *n=1017* | 52.0% | 48.0% | 36.3% | 31.1% | 32.5% |
| Traveler's guide to Watchable Wildlife in MN *n=1013* | 21.6% | 78.4% | 8.0% | 33.6% | 58.4% |
| General travel books *n=1012* | 53.4% | 46.6% | 8.5% | 34.1% | 57.5% |
| Birding books *n=1041* | 88.5% | 11.5% | 36.4% | 39.0% | 24.5% |
| Magazines *n=1039* | 83.2% | 16.8% | 14.7% | 41.7% | 43.6% |
| Brochures/pamphlets *n=1025* | 78.1% | 21.9% | 10.7% | 40.3% | 49.3% |
| Friends/family *n=1028* | 72.6% | 27.4% | 13.9% | 41.3% | 44.8% |
| Wild bird stores *n=1025* | 37.0% | 63.0% | 7.1% | 30.0% | 63.0% |
| Outdoor/sporting goods stores *n=1016* | 21.5% | 78.5% | 5.0% | 23.7% | 71.4% |

**32. Please indicate to what extent you agree or disagree with each of the following statements (circle one):**

| | STRONGLY DISAGREE | DISAGREE | NEUTRAL | AGREE | STRONGLY AGREE |
|---|---|---|---|---|---|
| **I enjoy seeing birds around my home.** | | | ***mean =4.9, SD=0.4, n=1107*** | | |
| **I notice the birds and wildlife around me everyday.** | | | ***Mean =4.9, SD=0.4, n=1104*** | | |
| **Having wildlife around my home is important to me.** | | | ***mean =4.8, SD=0.7, n=1101*** | | |
| **I'm interested in making the area around my home attractive to birds and wildlife.** | | | ***mean =4.6, SD=0.7, n=1099*** | | |
| **An important part of my community is the wildlife I see there.** | | | ***mean =4.5, SD=0.8, n=1103*** | | |
| **I enjoy watching wildlife when I take a trip outdoors.** | | | ***mean =4.8, SD=0.4, n=1104*** | | |
| **Some of my most memorable outdoor experiences occurred when I saw wildlife I didn't expect to see.** | | | ***mean =4.6, SD=0.6, n=1099*** | | |
| **Some of my most memorable outdoor experiences occurred when I saw wildlife do something I didn't expect.** | | | ***mean =4.4, SD=0.8, n=1095*** | | |
| **One of the reasons I take trips to the outdoors, like camping, hiking or sightseeing, is for the chance to see wildlife.** | | | ***mean =4.6, SD=0.7, n=1096*** | | |
| **It is important that we learn as much as we can about wildlife.** | | | ***mean =4.6, SD=0.7, n=1104*** | | |
| **I enjoy learning about wildlife.** | | | ***mean =4.7, SD=0.5, n=1102*** | | |
| **It is important that all Minnesota residents have a chance to learn about wildlife in the state.** | | | ***mean =4.6, SD=0.7, n=1105*** | | |

***A few questions about you***

33.Are you? 50.7%male or 49.3%female n =1109

34. What year were you born? 19___ *MEAN AGE=55.9*
*n =1095*

35.Which, if any, of the following organizations do you belong to ( √ all that apply)?

69.4%Audubon *n=772*
27.4%American Birding Association *n=305*
7.2%Ducks Unlimited *n=80*
2.9%Izaak Walton League *n=32*
52.7%Minnesota Ornithologists' Union *n=587*
19.2%National Wildlife Foundation *n=214*
21.3%Sierra Club *n=237*
52.5%The Nature Conservancy *n=584*
19.9%Other (please list: _____) *n=221*

36. What is the highest level of education you have completed (circle one)? *n=1102*

| EIGHTH GRADE | HIGH SCHOOL/ GED | TECH SCHOOL | SOME COLLEGE | COLLEGE DEGREE | ADVANCED DEGREE |
|---|---|---|---|---|---|
| *0.5%* | *6.0%* | *3.1%* | *15.1%* | *37.7%* | *37.1%* |

37. In what ethnicity and race would you place yourself? *n=914*

Ethnicity**:**

.7% HISPANIC OR LATINO

99.3%NOT HISPANIC OR LATINO

Race (check all that apply): *n=1091*

0.8% AMERICAN INDIAN OR ALASKA NATIVE

0.2% ASIAN

0.1% BLACK OR AFRICAN AMERICAN

0.1% NATIVE HAWAIIAN OR OTHER PACIFIC ISLANDER

95.7% WHITE *N=1065*

1.2% OTHER (EXPLAIN: )

**38. What is your employment status? (check one): *n=1102***

**50.5% EMPLOYED FULL TIME** **12.6% EMPLOYED PART TIME** **31.0% RETIRED** **5.0% OTHER**

**39. What is your annual household income (before taxes)?**

| | | |
|---|---|---|
| 0.5% LESS THAN $5,000 | 0.7% $5,000-9,999 | 1.3% $10,000-14,999 |
| 6.5% $15,000-24,999 | 10.7% $25,000-34,999 | 14.9% $35,000-49,999 |
| 23.8% $50,000-74,999 | 16.0% $75,000-99,999 | 12.4% $100,000 – 124,999 |
| 3.3% $125,000-149,999 | 3.1% $150,000-$174,999 | 6.8% $175,000 OR MORE |

40. How many people are supported by this income? *mean =2.1* PERSON/S

*SD=1.0, n =1022*

***THANK YOU FOR YOUR PARTICIPATION!***

If you want more information about this study, contact Dr. Ingrid Schneider, 115 Green Hall, 1530 Cleveland Avenue North, St. Paul, MN 55108-1027; 612-624-2250; ingridss@umn.edu