

National Wildlife Refuge Visitor Survey 2010/2011: Individual Refuge Results for Tamarac National Wildlife Refuge

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My wife and I try to get out into nature at least twice a month. ...Our Refuge trips as well as other outdoor recreation trips are very important to us and we will continue to get out as much as we can. Even though we don't get there as much as we would like to, going to visit Tamarac always feels like heaven.—Survey comment from visitor to Tamarac National Wildlife Refuge.



Volunteer and citizen scientist Ian Drobney viewing a vernal pool at Tamarac National Wildlife Refuge. Photo by Pauline Drobney/U.S. Fish and Wildlife Service.

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Introduction

The National Wildlife Refuge System (Refuge System), established in 1903 and managed by the U.S. Fish and Wildlife Service (Service), is the leading network of protected lands and waters in the world dedicated to the conservation of fish, wildlife and their habitats. There are 556 national wildlife refuges (NWRs) and 38 wetland management districts nationwide, including possessions and territories in the Pacific and Caribbean, encompassing more than 150 million acres. The mission of the Refuge System is to “administer a national network of lands and waters for the conservation, management and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.” Part of achieving this mission is the goal “to foster understanding and instill appreciation of fish, wildlife, and plants, and their conservation, by providing the public with safe, high-quality, and compatible wildlife-dependent public use” (Clark, 2001). The Refuge System attracts more than 45 million visitors annually, including 25 million people per year to observe and photograph wildlife, over 9 million to hunt and fish, and more than 10 million to participate in educational and interpretation programs (Uniack, 1999; U.S. Fish and Wildlife Service, 2007). Understanding visitors and characterizing their experiences on national wildlife refuges are critical elements of managing these lands and meeting the goals of the Refuge System.

The Service contracted with the U.S. Geological Survey to (USGS) conduct a national survey of visitors regarding their experiences on national wildlife refuges. The survey was conducted to better understand visitor needs and experiences and to design programs and facilities that respond to those needs. The survey results will inform Service performance planning, budget, and communications goals. Results will also inform Comprehensive Conservation Plan (CCPs), Visitor Services, and Transportation Planning processes.

Organization of Results

These results are for Tamarac NWR (this refuge) and are part of USGS Data Series 643 (Sexton and others, 2011). All refuges participating in the 2010/2011 surveying effort will receive individual refuge results specific to the visitors to that refuge. Each set of results is organized by the following categories:

- **Introduction:** An overview of the Refuge System and the goals of the national surveying effort.
- **Methods:** The procedures for the national surveying effort, including selecting refuges, developing the survey instrument, contacting visitors, and guidance for interpreting the results.
- **Refuge Description:** A brief description of the refuge location, acreage, purpose, recreational activities, and visitation statistics, including a map (where available) and refuge website link.
- **Sampling at This Refuge:** The sampling periods, locations, and response rate for this refuge.
- **Selected Survey Results:** Key findings for this refuge, including:
 - Visitor and Trip Characteristics
 - Visitor Spending in the Local Communities
 - Visitors Opinions about This Refuge
 - Visitor Opinions about National Wildlife Refuge System Topics
- **Conclusion**
- **References**
- **Survey Frequencies (Appendix A):** A copy of the survey instrument with the frequency results for this refuge.
- **Visitor Comments (Appendix B):** The verbatim responses to the open-ended survey questions for this refuge.

Methods

Selecting Participating Refuges

The national visitor survey was conducted from July 2010 – November 2011 on 53 refuges across the Refuge System (table 1). Based on the Refuge System’s 2008 Refuge Annual Performance Plan (RAPP; U.S. Fish and Wildlife Service, 2011, written comm.), 192 refuges with a minimum visitation of 25,000 were considered. This criterion was the median visitation across the Refuge System and the minimum visitation necessary to ensure that the surveying would be logistically feasible onsite. Visitors were sampled on 35 randomly selected refuges and 18 other refuges that were selected by Service Regional Offices to respond to priority refuge planning processes.

Developing the Survey Instrument

USGS researchers developed the survey in consultation with the Service Headquarters Office, managers, planners, and visitor services professionals. The survey was peer-reviewed by academic and government researchers and was further pre-tested with eight Refuge System Friends Group representatives from each region to ensure readability and overall clarity. The survey and associated methodology were approved by the Office of Management and Budget (OMB control #: 1018-0145; expiration date: 6/30/2013).

Contacting Visitors

Refuge staff identified two separate 15-day sampling periods and one or more locations that best reflected the diversity of use and specific visitation patterns of each participating refuge. Sampling periods and locations were identified by refuge staff and submitted to USGS via an internal website that included a customized mapping tool. A standardized sampling schedule was created for all refuges that included eight randomly selected sampling shifts during each of the two sampling periods. Sampling shifts were three- to five-hour randomly selected time bands that were stratified across AM and PM, as well as weekend and weekdays. Any necessary customizations were made, in coordination with refuge staff, to the standardized schedule to accommodate the identified sampling locations and to address specific spatial and temporal patterns of visitation.

Twenty visitors (18 years or older) per sampling shift were systematically selected, for a total of 320 willing participants per refuge—160 per sampling period—to ensure an adequate sample of completed surveys. When necessary, shifts were moved, added, or extended to alleviate logistical limitations (for example, weather or low visitation at a particular site) in an effort to reach target numbers.

Table 1. Participating refuges in the 2010/2011 national wildlife refuge visitor survey.

Pacific Region (R1)	
Kilauea Point National Wildlife Refuge (HI)	William L. Finley National Wildlife Refuge (OR)
Deer Flat National Wildlife Refuge (ID)	McNary National Wildlife Refuge (WA)
Cape Meares National Wildlife Refuge (OR)	Turnbull National Wildlife Refuge (WA)
Malheur National Wildlife Refuge (OR)	
Southwest Region (R2)	
Bitter Lake National Wildlife Refuge (NM)	Aransas National Wildlife Refuge (TX)
Bosque del Apache National Wildlife Refuge (NM)	San Bernard/ Brazoria National Wildlife Refuge (TX)
Wichita Mountains Wildlife Refuge (OK)	
Great Lakes-Big Rivers Region (R3)	
DeSoto National Wildlife Refuge (IA)	McGregor District, Upper Mississippi River National Wildlife and Fish Refuge – (IA/WI)
Neal Smith National Wildlife Refuge (IA)	
Muscatatuck National Wildlife Refuge (IN)	Big Muddy National Fish and Wildlife Refuge (MO)
Rice Lake National Wildlife Refuge (MN)	Horicon National Wildlife Refuge (WI)
Tamarac National Wildlife Refuge (MN)	Necedah National Wildlife Refuge (WI)
Southeast Region (R4)	
Wheeler National Wildlife Refuge (AL)	Banks Lake National Wildlife Refuge (GA)
Big Lake National Wildlife Refuge (AR)	Noxubee National Wildlife Refuge (MS)
Pond Creek National Wildlife Refuge (AR)	Cabo Rojo National Wildlife Refuge (Puerto Rico)
Merritt Island National Wildlife Refuge (FL)	Pea Island National Wildlife Refuge (NC)
St. Marks National Wildlife Refuge (FL)	Cape Romain National Wildlife Refuge (SC)
Ten Thousand Islands National Wildlife Refuge (FL)	Reelfoot National Wildlife Refuge (TN)
Northeast Region (R5)	
Stewart B. McKinney National Wildlife Refuge (CT)	Moosehorn National Wildlife Refuge (ME)
Bombay Hook National Wildlife Refuge (DE)	Great Swamp National Wildlife Refuge (NJ)
Monomoy National Wildlife Refuge (MA)	Montezuma National Wildlife Refuge (NY)
Parker River National Wildlife Refuge (MA)	Wertheim National Wildlife Refuge (NY)
Patuxent Research Refuge (MD)	Occoquan Bay/ Elizabeth Hartwell Mason Neck National Wildlife Refuge (VA)
Mountain-Prairie Region (R6)	
Monte Vista National Wildlife Refuge (CO)	Sand Lake National Wildlife Refuge (SD)
Quivira National Wildlife Refuge (KS)	National Elk Refuge (WY)
Charles M. Russell National Wildlife Refuge (MT)	
Alaska Region (R7)	
Alaska Maritime National Wildlife Refuge (AK)	Kenai National Wildlife Refuge (AK)
California and Nevada Region (R8)	
Lower Klamath/Tule Lake National Wildlife Refuge (CA)	Ruby Lake National Wildlife Refuge (NV)
Sonny Bono Salton Sea National Wildlife Refuge (CA)	

Refuge staff and/or volunteers (survey recruiters) contacted visitors on-site following a protocol provided by USGS to ensure a diverse sample. Instructions included contacting visitors across the entire sampling shift (for example, every n^{th} visitor for dense visitation, as often as possible for sparse visitation), and only one person per group. Visitors were informed of the survey effort, given a token incentive (for example, a small magnet, temporary tattoo), and asked to participate. Willing participants provided their name, mailing address, and preference for language (English or Spanish) and survey mode (mail or online). Survey recruiters also were instructed to record any refusals and then proceed with the sampling protocol.

Visitors were mailed a postcard within 10 days of the initial on-site contact thanking them for agreeing to participate in the survey and inviting them to complete the survey online. Those visitors choosing not to complete the survey online were sent a paper copy a week later. Two additional contacts were made by mail during the next seven weeks following a modified Tailored Design Method (Dillman, 2007): 1) a reminder postcard one week after the first survey, and 2) a second paper survey two weeks after the reminder postcard. Each mailing included instructions for completing the survey online and a postage paid envelope for returning the paper version of the survey. Those visitors indicating a preference for Spanish were sent Spanish versions of all correspondence (including the survey). Finally, a short survey of six questions was sent to nonrespondents four weeks after the second survey mailing to determine any differences between respondents and nonrespondents at the national level. Online survey data were exported and paper survey data were entered using a standardized survey codebook and data entry procedure. All survey data were analyzed by using SPSS v.18 statistical analysis software.

Interpreting the Results

The extent to which these results accurately represent the total population of visitors to this refuge is dependent on 1) an adequate sample size of those visitors and 2) the representativeness of that sample. The adequacy of the sample size for this refuge is quantified as the margin of error. The composition of the sample is dependent on the ability of the standardized sampling protocol for this study to account for the spatial and temporal patterns of visitor use specific to each refuge. Spatially, the geographical layout and public use infrastructure varies widely across refuges. Some refuges only can be accessed through a single entrance, while others have multiple unmonitored access points across large expanses of land and water. As a result, the degree to which sampling locations effectively captured spatial patterns of visitor use will likely vary from refuge to refuge. Temporally, the two 15-day sampling periods may not have effectively captured all of the predominant visitor uses/activities on some refuges during the course of a year. Therefore, certain survey measures such as visitors' self-reported "primary activity during their visit" may reflect a seasonality bias.

Herein, the sample of visitors who responded to the survey are referred to simply as "visitors." However, when interpreting the results for Tamarac NWR, any potential spatial and temporal sampling limitations specific to this refuge need to be considered when generalizing the results to the total population of visitors. For example, a refuge that sampled during a special event (for example, birding festival) held during the spring may have contacted a higher percentage of visitors who traveled greater than 50 miles to get to the refuge than the actual number of these people who would have visited throughout the calendar year (that is, oversampling of nonlocals). In contrast, another refuge may not have enough nonlocal visitors in the sample to adequately represent the beliefs and opinions of that group type. If the sample for a specific group type (for example, nonlocals, hunters, those visitors who paid a fee) is too low ($n < 30$), a warning is included. Additionally, the term "*this* visit" is used to reference the visit on which people were contacted to participate in the survey, which may or may not have been their most recent refuge visit.

Refuge Description for Tamarac National Wildlife Refuge

Tamarac NWR is located eighteen miles northeast of Detroit Lakes in north central Minnesota. Tamarac NWR is within the transition zone of deciduous hardwood forest, coniferous forests and tallgrass prairies, contributing to the tremendous wildlife diversity. Many of the lakes and rivers on the refuge contain large beds of wild rice, while White Earth Tribal members retain wild rice harvest and trapping privileges.

Tamarac NWR was established in 1938 to provide resting, nesting and feeding habitat for waterfowl and other migratory birds as well as other resident wildlife. Tamarac NWR now covers almost 43,000 acres, 2,180 of which are designated wilderness areas. Tamarac NWR is home to waterfowl, bald eagles, loons, bear, trumpeter swans, deer, fish and songbirds. Tamarac NWR also serves as a reintroduction and reproduction site for trumpeter swans. It is also one of only two refuges in Minnesota with resident gray wolf packs.

Tamarac NWR attracts over 60,000 visitors annually (based on 2008 RAPP database; U.S. Fish and Wildlife Service, 2011, written comm.). Visitors enjoy environmental education and interpretive programs, fishing, hunting, wildlife observation, and photography. Tamarac NWR also offers hiking trails, an auto tour route, and a visitor center. Visitors can participate in cross-country skiing and bicycling, as well as wild mushroom, nut and berry gathering. Figure 1 displays a map of Tamarac NWR. For more information, please visit <http://www.fws.gov/midwest/tamarac/>.

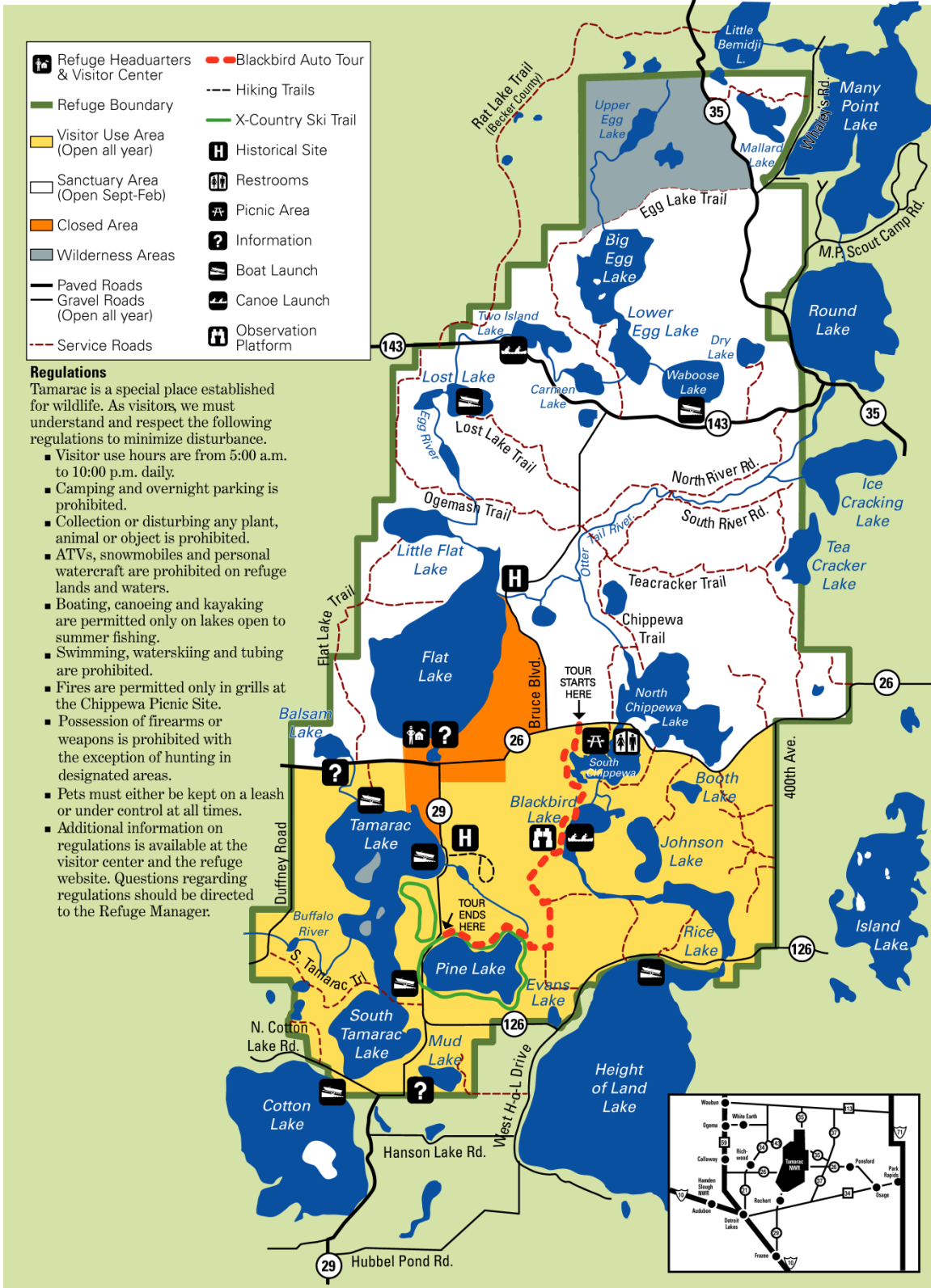


Figure 1. Map of Tamarac NWR, courtesy of U.S. Fish and Wildlife Service.

Sampling at Tamarac National Wildlife Refuge

A total of 269 visitors agreed to participate in the survey during the two sampling periods at the identified locations at Tamarac NWR (table 2). In all, 212 visitors completed the survey for a 79% response rate and $\pm 5\%$ margin of error at the 95% confidence level.¹

Table 2. Sampling and response rate summary for Tamarac NWR.

Sampling period	Dates	Locations	Total contacts	Undeliverable addresses	Completed surveys	Response rate
1	9/25/2010 to 10/9/2010	Teacracker Trail Blackbird Auto Tour Route Lower Egg Lake Access Visitor Center West Rice Lake Access Tamarac Lake South/East Access Wauboose Lake Access	161	1	130	81%
2	6/25/2011 to 7/9/2011	Teacracker Trail Blackbird Auto Tour Route Lower Egg Lake Access Visitor Center West Rice Lake Access Wauboose Lake Access Tamarac Lake East Access	108	0	82	76%
Total			269	1	212	79%

Selected Survey Results

Visitor and Trip Characteristics

A solid understanding of refuge visitors and details about their trips to refuges can inform communication outreach efforts, inform visitor services and transportation planning, forecast use, and gauge demand for services and facilities.

Familiarity with the Refuge System

While we did not ask visitors to identify the mission of the National Wildlife Refuge System or the U.S. Fish and Wildlife Service, visitors to Tamarac NWR reported that before participating in the survey,

¹ The margin of error (or confidence interval) is the error associated with the results related to the sample and population size. A margin of error of $\pm 5\%$, for example, means if 55% of the sample answered a survey question in a certain way, then 50–60% of the entire population would have answered that way. The margin of error is calculated with an 80/20 response distribution, assuming that for any given dichotomous choice question, approximately 80% of respondents selected one choice and 20% selected the other (Salant and Dillman, 1994).

they were aware of the role of the U.S. Fish and Wildlife Service in managing national wildlife refuges (92%) and that the Refuge System has the mission of conserving, managing, and restoring fish, wildlife, plants and their habitat (93%). Positive responses to these questions concerning the management and mission of the Refuge System do not indicate the degree to which these visitors understand the day-to-day management practices of individual refuges, only that visitors feel they have a basic knowledge of who manages refuges and why. Compared to other public lands, many visitors feel that refuges provide a unique recreation experience (88%; see Appendix B for visitor comments on “What Makes National Wildlife Refuges Unique?”); however, reasons for why visitors find refuges unique are varied and may not directly correspond to their understanding of the mission of the Refuge System. About half of visitors to Tamarac NWR had been to at least one other National Wildlife Refuge in the past year (51%), with an average of 3 visits to other refuges during the past 12 months.

Visiting This Refuge

Some surveyed visitors (27%) had only been to Tamarac NWR once in the past 12 months, while most had been multiple times (73%). These repeat visitors went to the refuge an average of 8 times during that same 12-month period. Visitors used the refuge during only one season (45%), during multiple seasons (39%), and year-round (15%).

Most visitors first learned about the refuge from friends/relatives (62%), people in the local community (26%), or signs on the highway (25%; fig. 2). Key information sources used by visitors to find their way to this refuge include previous knowledge (62%), signs on highways (41%), or directions from friends/family (20%; fig. 3).

About half of visitors (55%) lived in the local area (within 50 miles of the refuge), whereas the other half (45%) were nonlocal visitors. For most local visitors, Tamarac NWR was the primary purpose or sole destination of their trip (82%; table 3). For most nonlocal visitors, the refuge was also the primary purpose or sole destination of their trip (51%). Local visitors reported that they traveled an average of 23 miles to get to the refuge, while nonlocal visitors traveled an average of 224 miles. Figure 4 shows the residence of visitors travelling to the refuge. About 80% of visitors travelling to Tamarac NWR were from Minnesota.

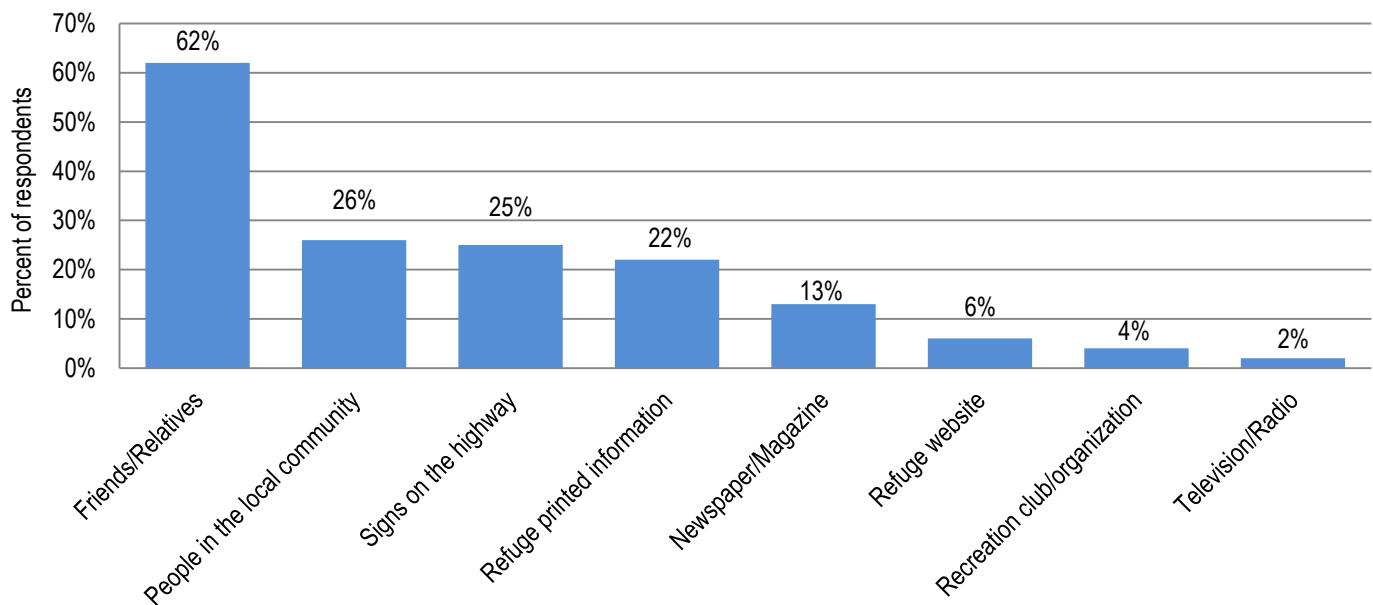


Figure 2. How visitors first learned or heard about Tamarac NWR (n = 202).

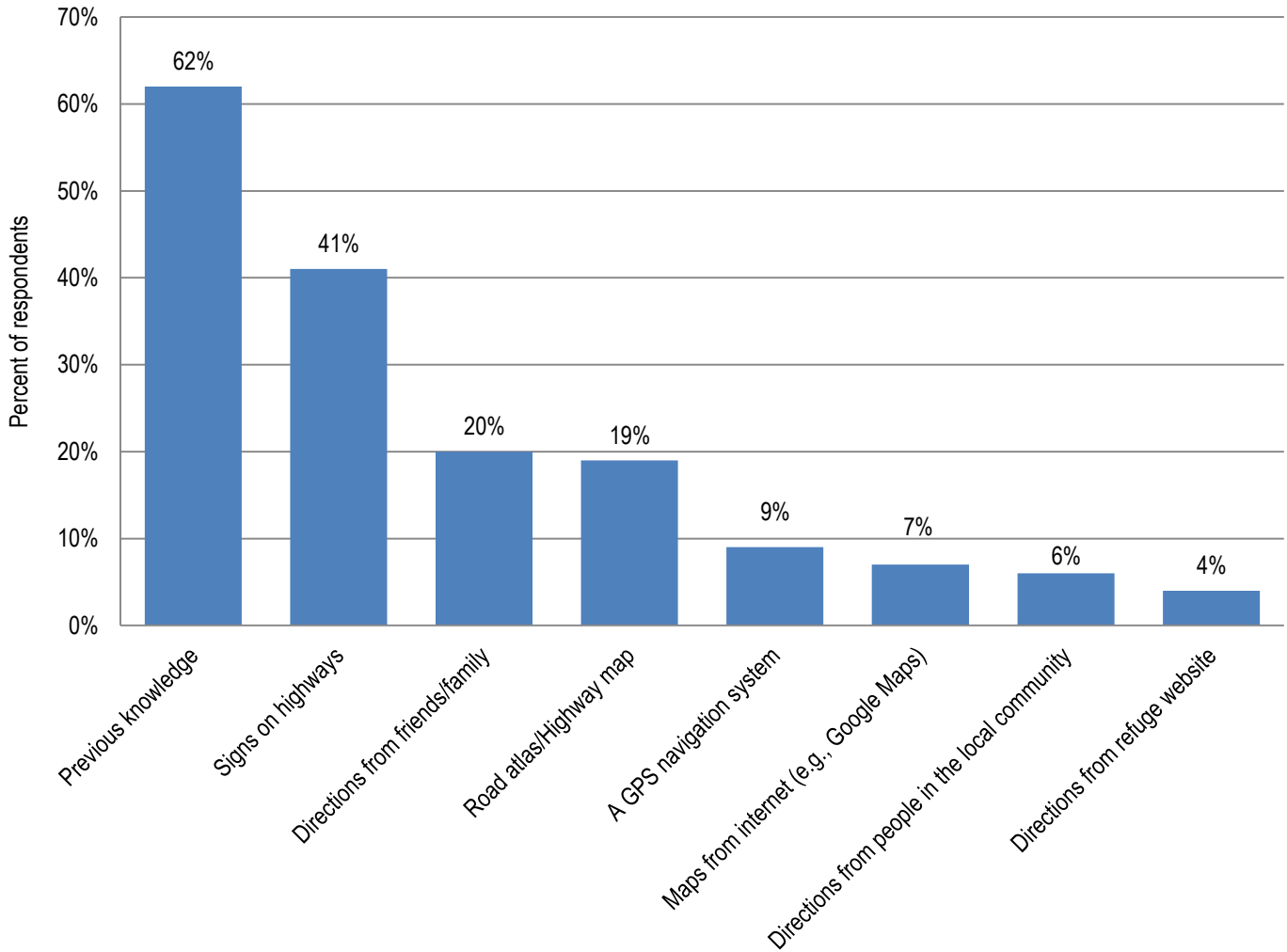


Figure 3. Resources used by visitors to find their way to Tamarac NWR during *this* visit (n = 208).

Table 3. Influence of Tamarac NWR on visitors' decision to take *this* trip.

Visitors	Visiting this refuge was...		
	the primary reason for trip	one of many equally important reasons for trip	an incidental stop
Nonlocal	51%	28%	21%
Local	82%	12%	6%
Total	68%	19%	13%

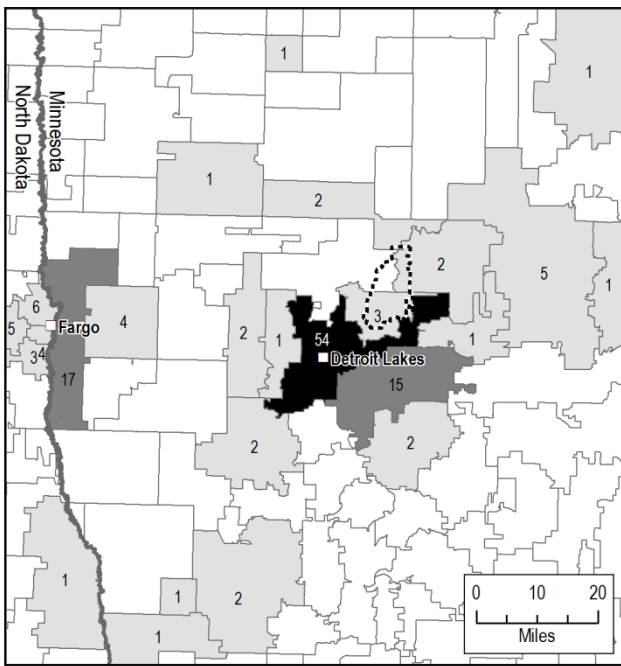
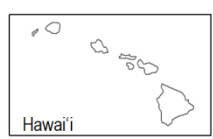
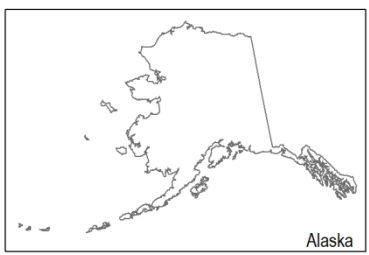
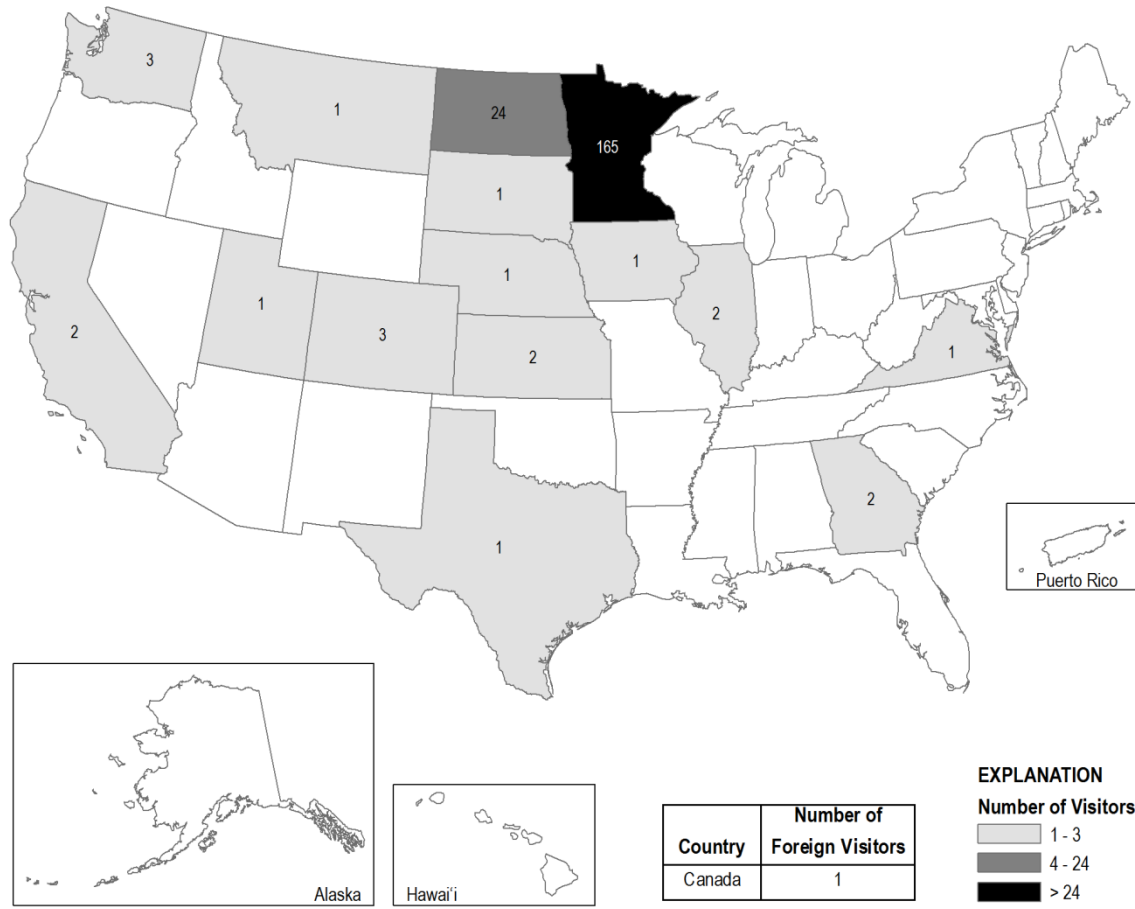


Figure 4. Number of visitors travelling to Tamarac NWR by residence. Top map shows residence by state and bottom map shows residence by zip codes near the refuge (n = 211).

Surveyed visitors reported that they spent an average of 4 hours at Tamarac NWR during one day there (a day visit is assumed to be 8 hours). However, the most frequently reported length of visit during one day was actually 3 hours (19%). The key modes of transportation used by visitors to travel around the refuge were private vehicle (78%), walking/hiking (26%), and private vehicle with trailer (22%; fig. 5). About half of visitors indicated they were part of a group on their visit to this refuge (56%), travelling primarily with family and friends (table 4).

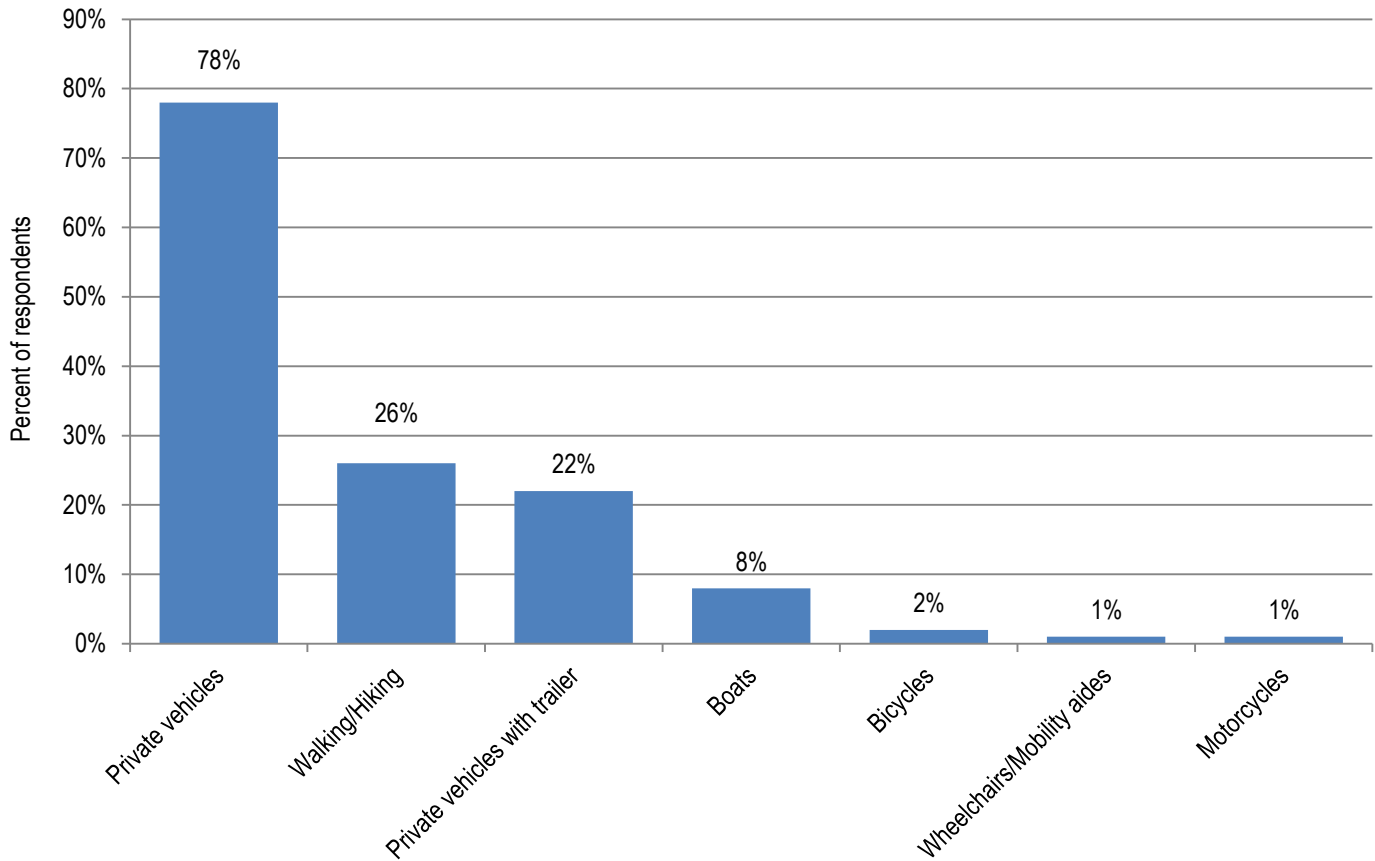


Figure 5. Modes of transportation used by visitors to Tamarac NWR during *this* visit (n = 209).

Table 4. Type and size of groups visiting Tamarac NWR (for those who indicated they were part of a group, n = 118).

Group type	Percent (of those traveling in a group)	Average group size		
		Number of adults	Number of children	Total group size
Family/Friends	91%	3	1	4
Commercial tour group	0%	0	0	0
Organized club/School group	9%	8	48	56
Other group type	0%	0	0	0

Surveyed visitors participated in a variety of refuge activities during the past 12 months (fig. 6); the top three activities reported were auto tour route/driving (62%), wildlife observation (60%), and bird watching (41%). The primary reasons for their most recent visit included fishing (21%), auto tour route/driving (12%), and wildlife observation (12%; fig. 7). The visitor center was used by 75% of visitors, mostly to view the exhibits (90%), visit the gift shop/bookstore (83%), stop to use the facilities (for example, get water, use restroom; 66%), and ask information of staff/volunteers (66%; fig. 8).

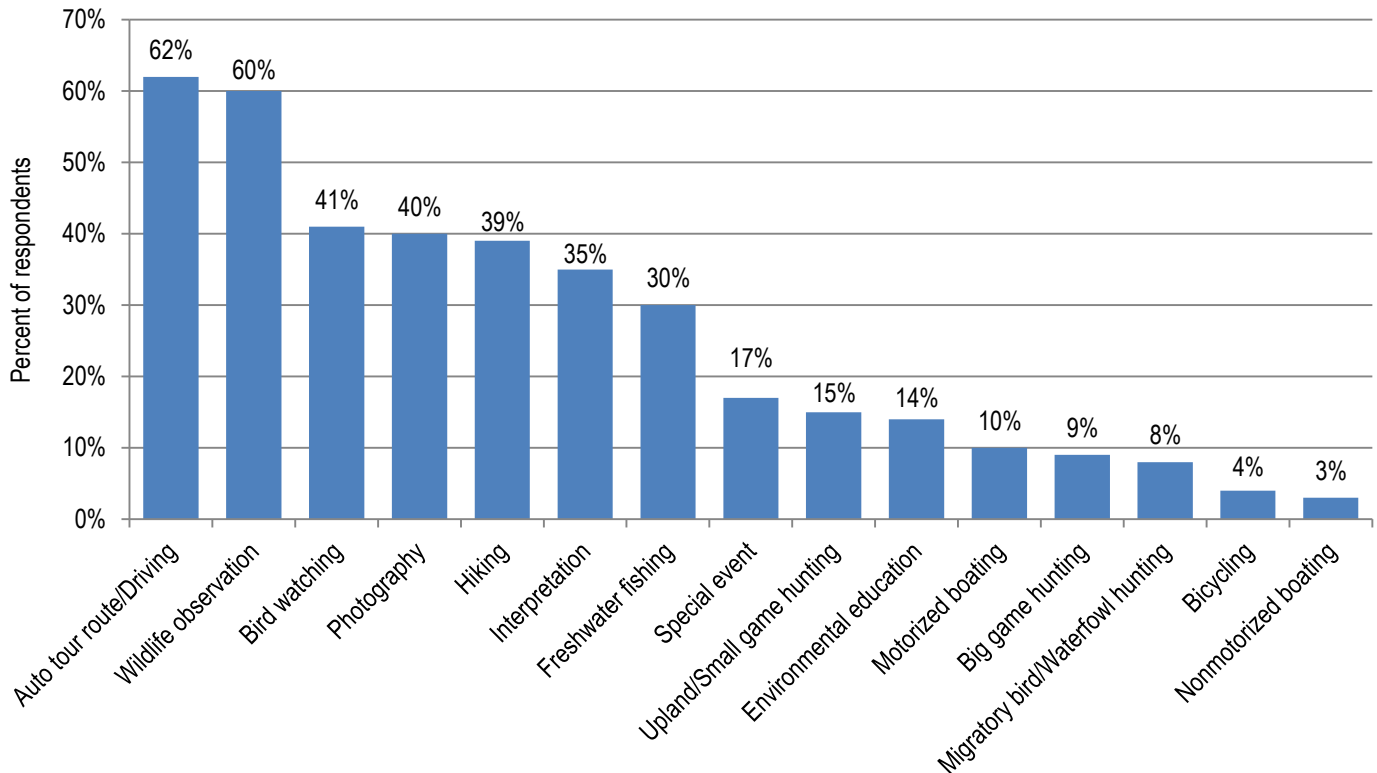


Figure 6. Activities in which visitors participated during the past 12 months at Tamarac NWR (n = 210). See Appendix B for a listing of “other” activities.

Visitor Characteristics

All (100%) surveyed visitors to Tamarac NWR indicated that they were citizens or permanent residents of the United States. Only those visitors 18 years or older were sampled. Visitors were a mix of 60% male with an average age of 58 years and 40% female with an average age of 55 years. Visitors, on average, reported they had 15 years of formal education (college or technical school). The median level of income was \$50,000–\$74,999. See Appendix A for more demographic information. In comparison, the 2006 National Survey of Fishing, Hunting and Wildlife-Associated Recreation found that participants in wildlife watching and hunting on public land were 55% male and 45% female with an average age of 46 years, an average level of education of 14 years (associate degree or two years of college), and a median income of \$50,000–\$74,999 (Harris, 2011, personal communication). Compared to the U.S. population, these 2006 survey participants are more likely to be male, older, and have higher education and income levels (U.S. Department of the Interior and U.S. Department of Commerce, 2007).

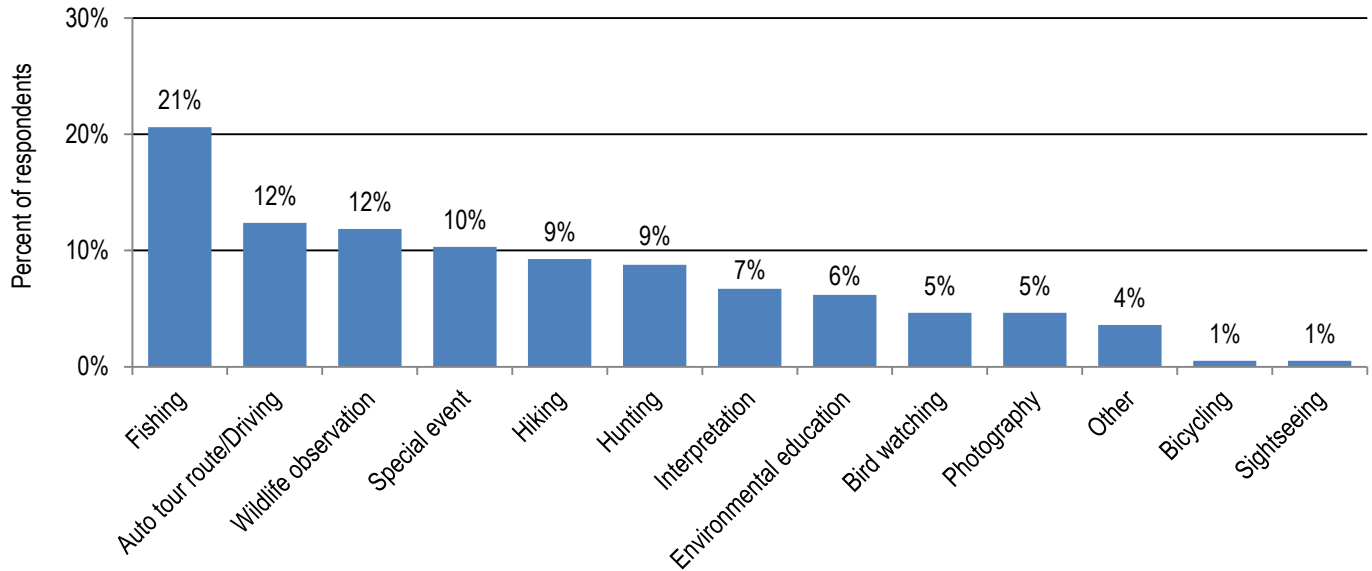


Figure 7. The primary activity in which visitors participated during *this* visit to Tamarac NWR (n = 194). See Appendix B for a listing of “other” activities.

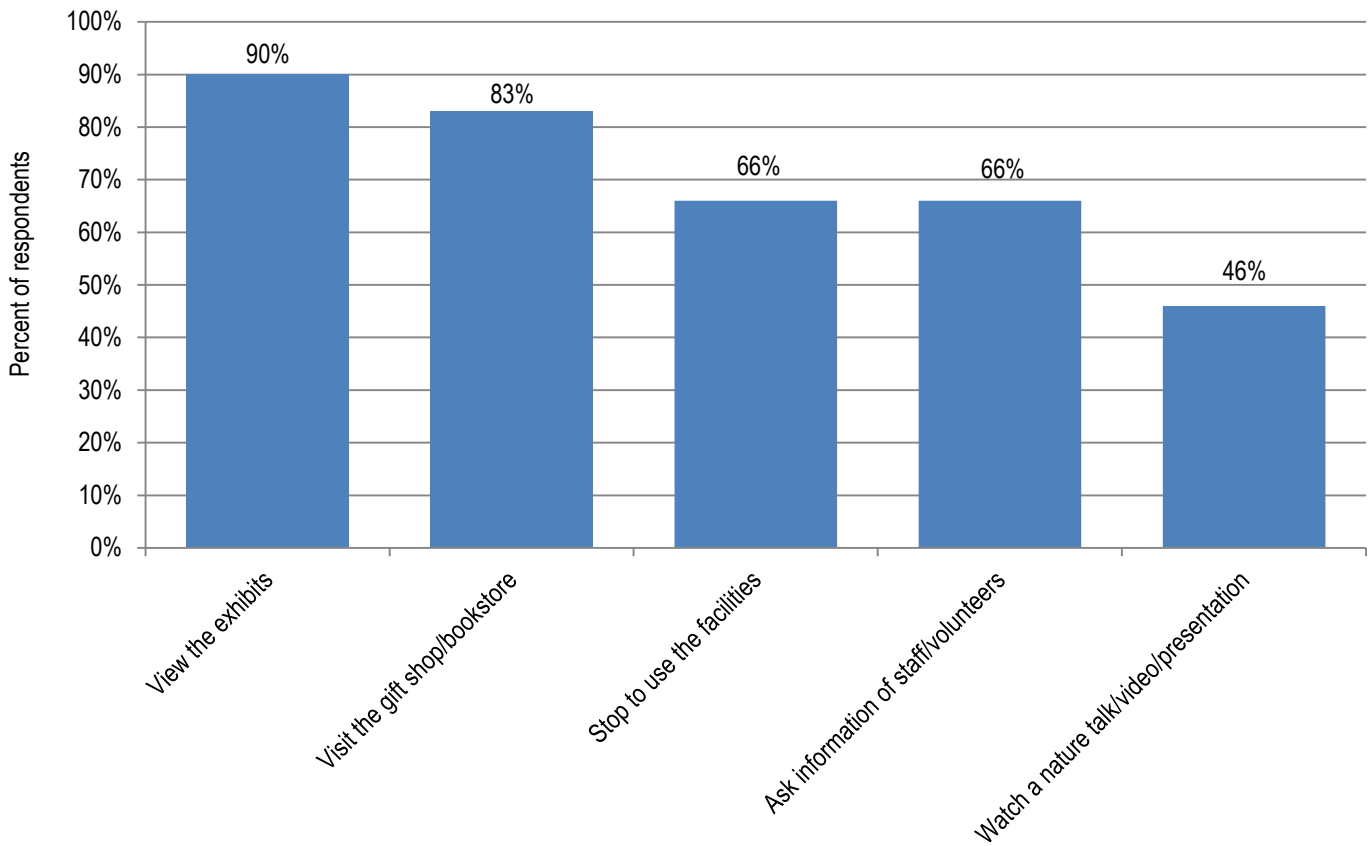


Figure 8. Use of the visitor center at Tamarac NWR (for those visitors who indicated they used the visitor center, n = 157).

Visitor Spending in Local Communities

Tourists usually buy a wide range of goods and services while visiting an area. Major expenditure categories include lodging, food, supplies, and gasoline. Spending associated with refuge visitation can generate considerable economic benefits for the local communities near a refuge. For example, more than 34.8 million visits were made to national wildlife refuges in fiscal year 2006; these visits generated \$1.7 billion in sales, almost 27,000 jobs, and \$542.8 million in employment income in regional economies (Carver and Caudill, 2007). Information on the amount and types of visitor expenditures can illustrate the economic importance of refuge visitor activities to local communities. Visitor expenditure information also can be used to analyze the economic impact of proposed refuge management alternatives.

A region (and its economy) is typically defined as all counties within 50 miles of a travel destination (Stynes, 2008). Visitors that live within the local 50-mile area of a refuge typically have different spending patterns than those that travel from longer distances. During the two sampling periods, 55% of visitors to Tamarac NWR indicated that they live within the local area. Nonlocal visitors (45%) stayed in the local area, on average, for 3 days. Table 5 shows summary statistics for local and nonlocal visitor expenditures in the local communities and at the refuge, with expenditures reported on a per person per day basis. During the two sampling periods, nonlocal visitors spent an average of \$55 per person per day and local visitors spent an average of \$43 per person per day in the local area. Several factors should be considered when estimating the economic importance of refuge visitor spending in the local communities. These include the amount of time spent at the refuge, influence of refuge on decision to take this trip, and the representativeness of primary activities of the sample of surveyed visitors compared to the general population. Controlling for these factors is beyond the scope of the summary statistics presented in this report. Detailed refuge-level visitor spending profiles which do consider these factors will be developed during the next phase of analysis.

Table 5. Total visitor expenditures in local communities and at Tamarac NWR expressed in dollars per person per day.

Visitors	n ¹	Median	Mean	Standard deviation	Minimum	Maximum
Nonlocal	83	\$30	\$55	\$60	\$0	\$325
Local	90	\$17	\$43	\$63	\$0	\$345

¹n = number of visitors who answered both locality *and* expenditure questions.

Note: For each respondent, reported expenditures were divided by the number of persons in their group that shared expenses in order to determine the spending per person per trip. This was then divided by the number of days spent in the local area to determine the spending per person per day for each respondent. For respondents who reported spending less than one full day, trip length was set equal to one day. These visitor spending estimates are appropriate for the sampling periods selected by refuge staff (see table 2 for sampling period dates and figure 7 for the primary visitor activities). They may not be representative of the total population of visitors to this refuge.

Visitor Opinions about This Refuge

National wildlife refuges provide visitors with a variety of services, facilities, and wildlife-dependent recreational opportunities. Understanding visitors' perceptions of their refuge experience is a key component of the Refuge System mission as it pertains to providing high-quality wildlife-dependent recreational opportunities. Having a baseline understanding of visitor experience can inform management decisions to better balance visitors' expectations with the Refuge System mission. Recent studies in outdoor recreation have included an emphasis on declining participation in traditional activities such as hunting and an increasing need to connect the next generation to nature and wildlife. These factors highlight the importance of current refuge visitors as a key constituency in wildlife conservation. A better understanding is increasingly needed to better manage the visitor experience and to address the challenges of the future.

Surveyed visitors' overall satisfaction with the services, facilities, and recreational opportunities provided at Tamarac NWR were as follows (fig. 9):

- 94% were satisfied with the recreational activities and opportunities,
- 95% were satisfied with the information and education about the refuge and its resources,
- 94% were satisfied with the services provided by employees or volunteers, and
- 93% were satisfied with the refuge's job of conserving fish, wildlife and their habitats.

Although 11% of visitors (n = 22) indicated they paid a fee to enter Tamarac NWR, the refuge does not have an entrance fee. It is not known why some visitors thought they paid a fee.

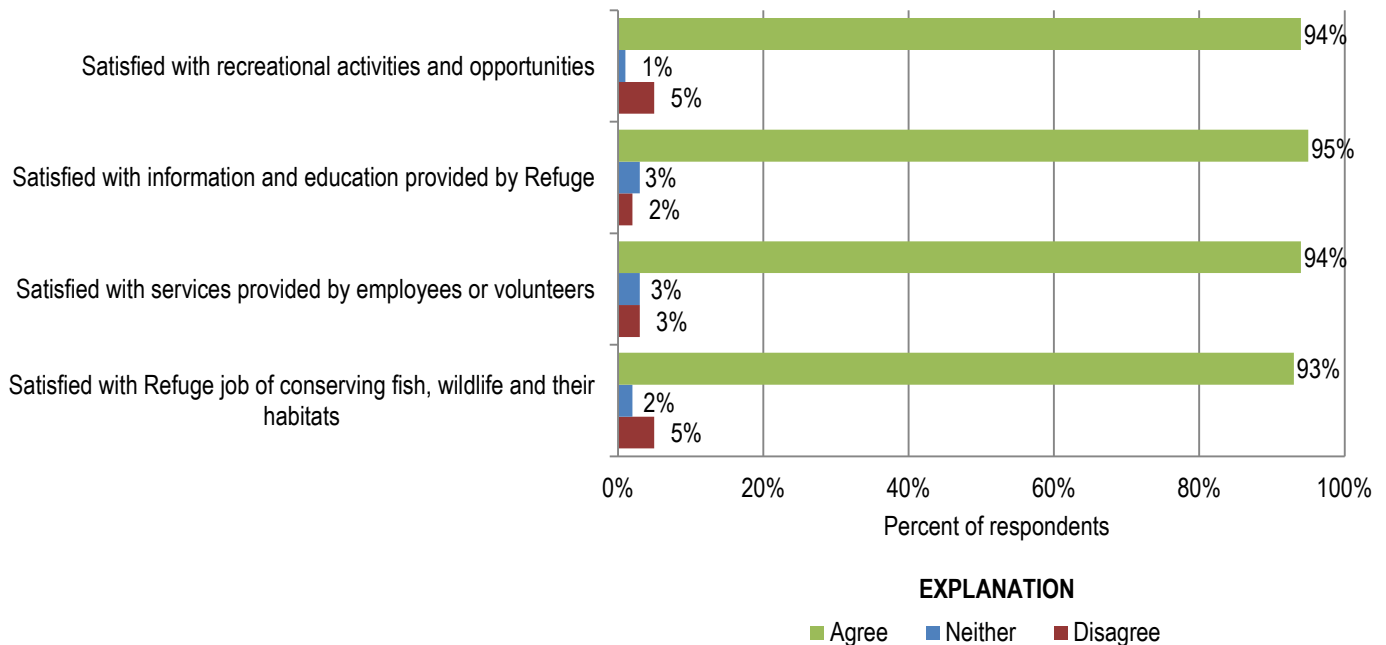


Figure 9. Overall satisfaction with Tamarac NWR during *this* visit (n ≥ 198).

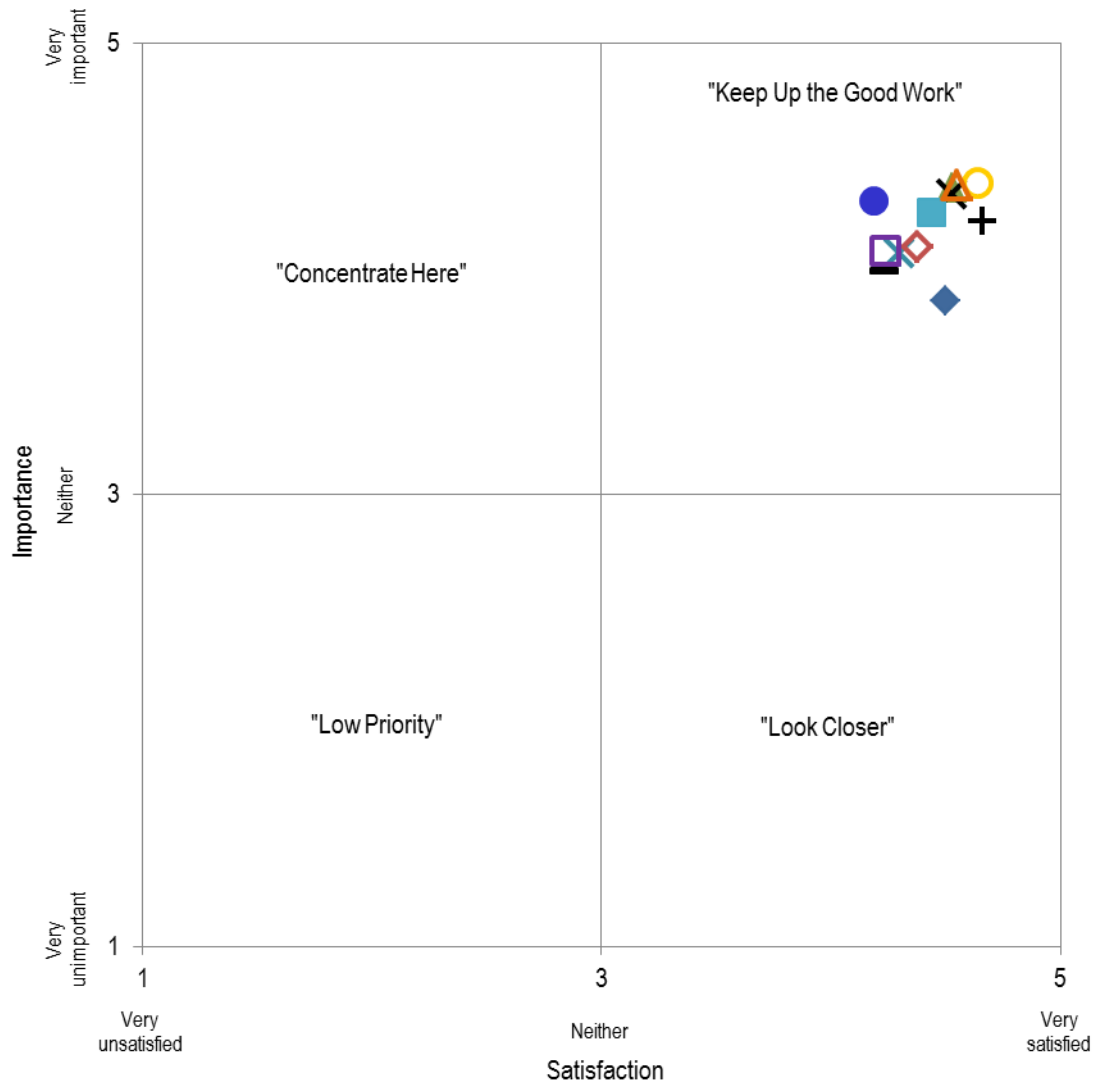
Importance/Satisfaction Ratings

Comparing the importance and satisfaction ratings for visitor services provided by refuges can help to identify how well the services are meeting visitor expectations. The importance-performance framework presented in this section is a tool that includes the importance of an attribute to visitors in relation to their satisfaction with that attribute. Drawn from marketing research, this tool has been applied to outdoor recreation and visitation settings (Martilla and James, 1977; Tarrant and Smith, 2002). Results for the attributes of interest are segmented into one of four quadrants (modified for this national study):

- Keep Up the Good Work = high importance/high satisfaction;
- Concentrate Here = high importance/low satisfaction;
- Low Priority = low importance/low satisfaction; and
- Look Closer = low importance/high satisfaction.

Graphically plotting visitors' importance and satisfaction ratings for different services, facilities, and recreational opportunities provides a simple and intuitive visualization of these survey measures. However, this tool is not without its drawbacks. One is the potential for variation among visitors regarding their expectations and levels of importance (Vaske et al., 1996; Bruyere et al., 2002; Wade and Eagles, 2003), and certain services or recreational opportunities may be more or less important for different segments of the visitor population. For example, hunters may place more importance on hunting opportunities and amenities such as blinds, while school group leaders may place more importance on educational/informational displays than would other visitors. This potential for highly varied importance ratings needs to be considered when viewing the average results of this analysis of visitors to Tamarac NWR. This consideration is especially important when reviewing the attributes that fall into the "Look Closer" quadrant. In some cases, these attributes may represent specialized recreational activities in which a small subset of visitors participate (for example, hunting, kayaking) or facilities and services that only some visitors experience (for example, exhibits about the refuge). For these visitors, the average importance of (and potentially the satisfaction with) the attribute may be much higher than it would be for the overall population of visitors.

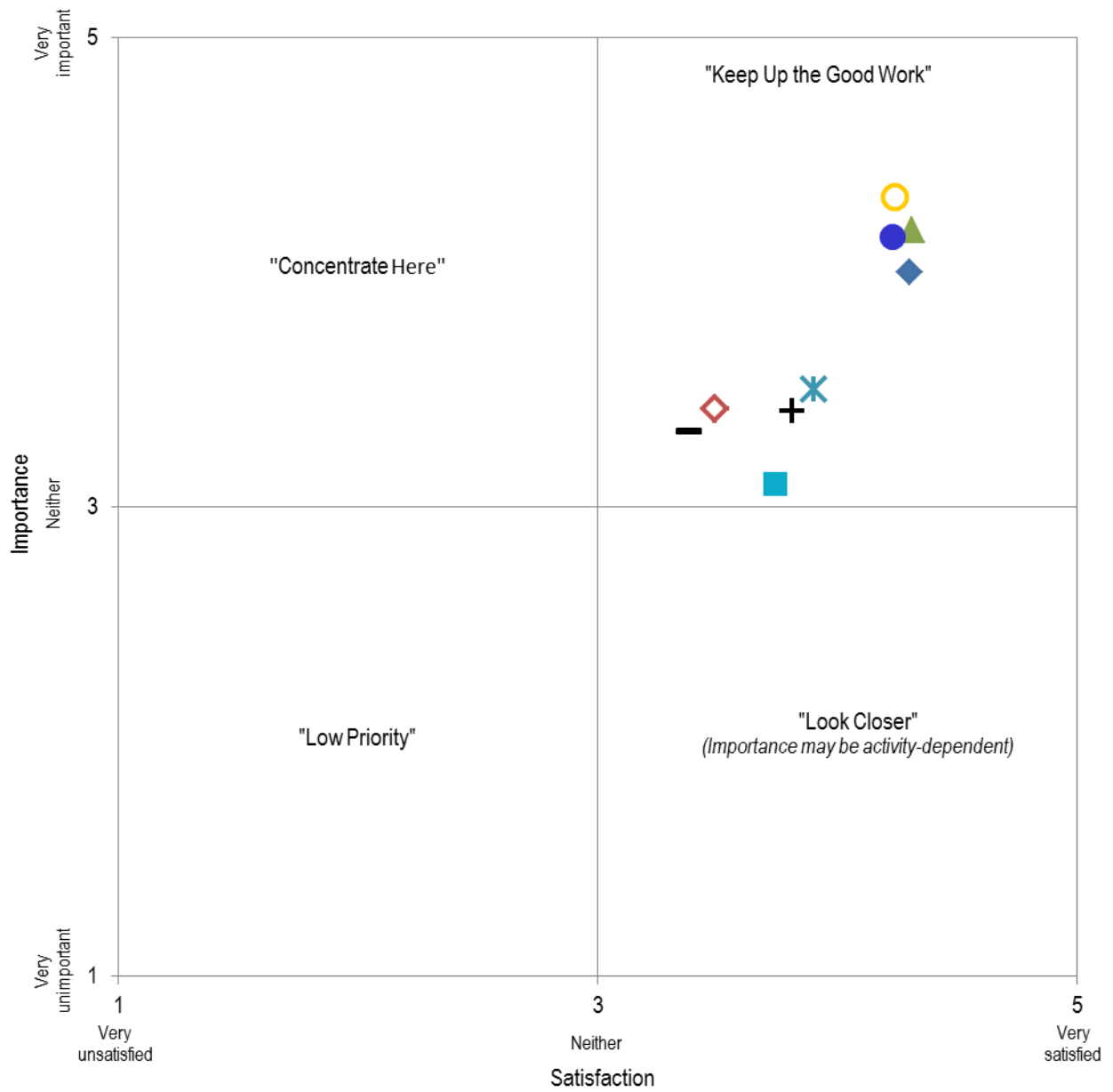
Figures 10-12 depict surveyed visitors' importance-satisfaction results for refuge services and facilities, recreational opportunities, and transportation-related features at Tamarac NWR, respectively. All refuge services and facilities fell in the "Keep Up the Good Work" quadrant (fig. 10). All refuge recreational opportunities fell in the "Keep Up the Good Work" quadrant (fig. 11). All transportation-related features fell in the "Keep Up the Good Work" quadrant (fig. 12).



EXPLANATION

- ◆ Availability of employees/volunteers
- ▲ Knowledgeable employees/volunteers
- ✕ Informational kiosks/displays about this Refuge
- ◇ Exhibits about this Refuge
- Visitor Center
- △ Well-maintained restrooms
- + Courteous/welcoming employees/volunteers
- ✖ Printed information about this Refuge
- Signs with rules/regulations
- Environmental education programs/activities
- Convenient hours/days of operation
- Wildlife observation structures

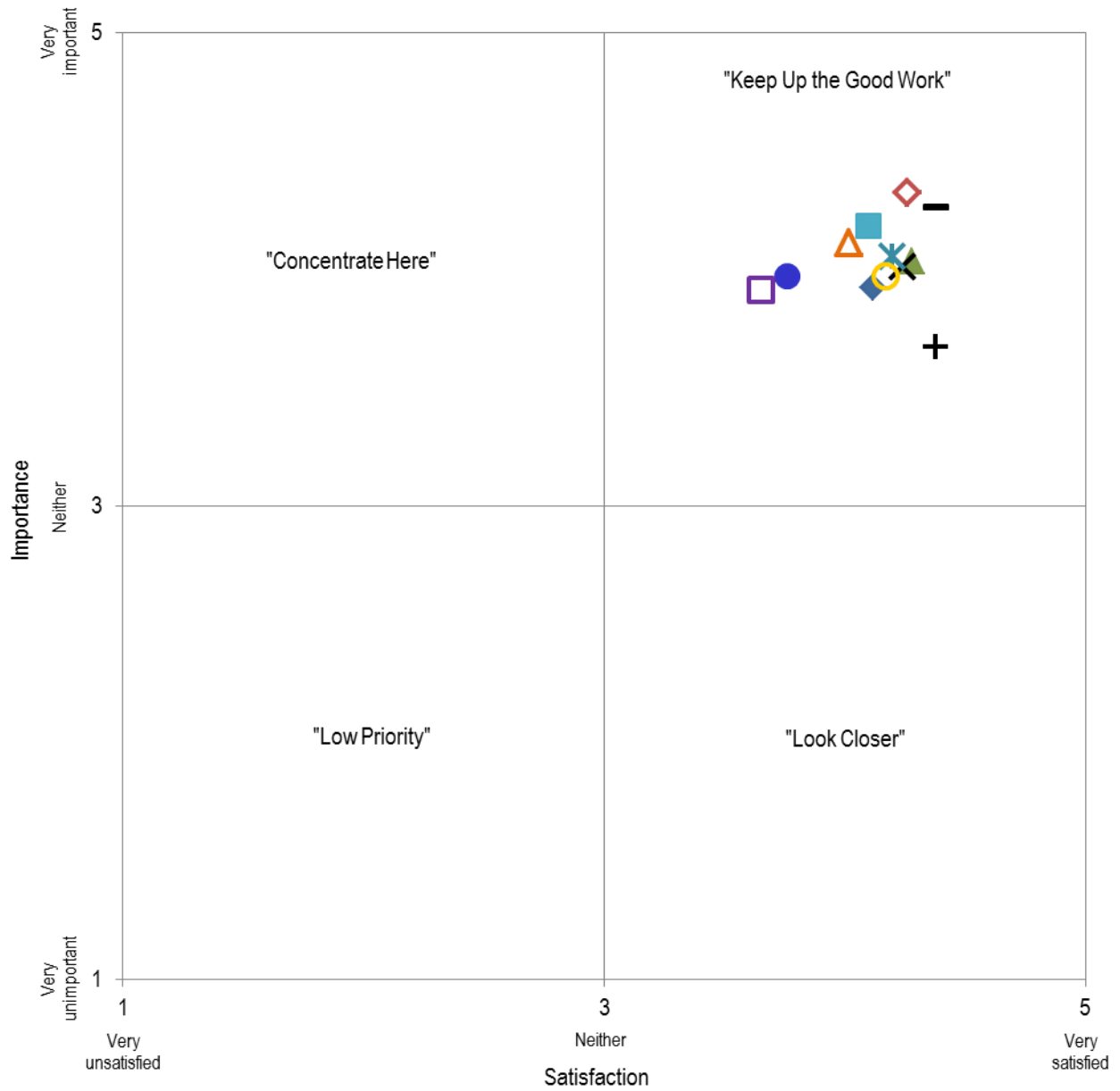
Figure 10. Importance-satisfaction ratings of services and facilities provided at Tamarac NWR.



EXPLANATION

- ◆ Bird watching opportunities
- Wildlife viewing opportunities
- ▲ Photography opportunities
- Hunting opportunities
- ✱ Fishing opportunities
- Hiking opportunities
- ◇ Kayak/Canoe opportunities
- Bicycling opportunities
- ✚ Volunteer opportunities

Figure 11. Importance-satisfaction ratings of recreational opportunities provided at Tamarac NWR.



EXPLANATION

- ◆ Condition of roads
- ⊕ Condition of parking areas
- ▲ Condition of bridges
- ✕ Condition of trails/boardwalks
- ⊗ Number of parking places
- Number of pullovers
- ◇ Safety of driving conditions
- Safety of Refuge entrances
- Directional signs on highways
- Directional signs on Refuge
- △ Directional signs on trails
- Disabled access

Figure 12. Importance-satisfaction ratings of transportation-related features at Tamarac NWR.

Visitor Opinions about National Wildlife Refuge System Topics

One goal of this national visitor survey was to identify visitor trends across the Refuge System to more effectively manage refuges and provide visitor services. Two important issues to the Refuge System are transportation on refuges and communicating with visitors about climate change. The results to these questions will be most meaningful when they are evaluated in aggregate (data from all participating refuges together). However, basic results for Tamarac NWR are reported here.

Alternative Transportation and the National Wildlife Refuge System

Visitors use a variety of transportation means to access and enjoy national wildlife refuges. While many visitors arrive at the refuge in a private vehicle, alternatives such as buses, trams, watercraft, and bicycles are increasingly becoming a part of the visitor experience. Previous research has identified a growing need for transportation alternatives within the Refuge System (Krechmer et al., 2001); however, less is known about how visitors perceive and use these new transportation options. An understanding of visitors' likelihood of using certain alternative transportation options can help in future planning efforts. Visitors were asked their likelihood of using alternative transportation options at national wildlife refuges in the future.

Of the six Refuge System-wide alternative transportation options listed on the survey, the majority of Tamarac NWR visitors who were surveyed were likely to use the following options at national wildlife refuges in the future (fig. 13):

- an offsite parking lot that provides trail access;
- a boat that goes to different points on Refuge waterways; and
- a buss/tram that runs during a special event.

The majority of visitors were *not* likely to use:

- a bus/tram that takes passengers to different points;
- a bike share program; or
- a bus/tram that provides a guided tour on national wildlife refuges in the future (fig. 13).

When asked about using alternative transportation at Tamarac NWR specifically, 44% of visitors indicated they were unsure whether it would enhance their experience; however, some visitors thought alternative transportation would enhance their experience (22%) and others thought it would not (34%).

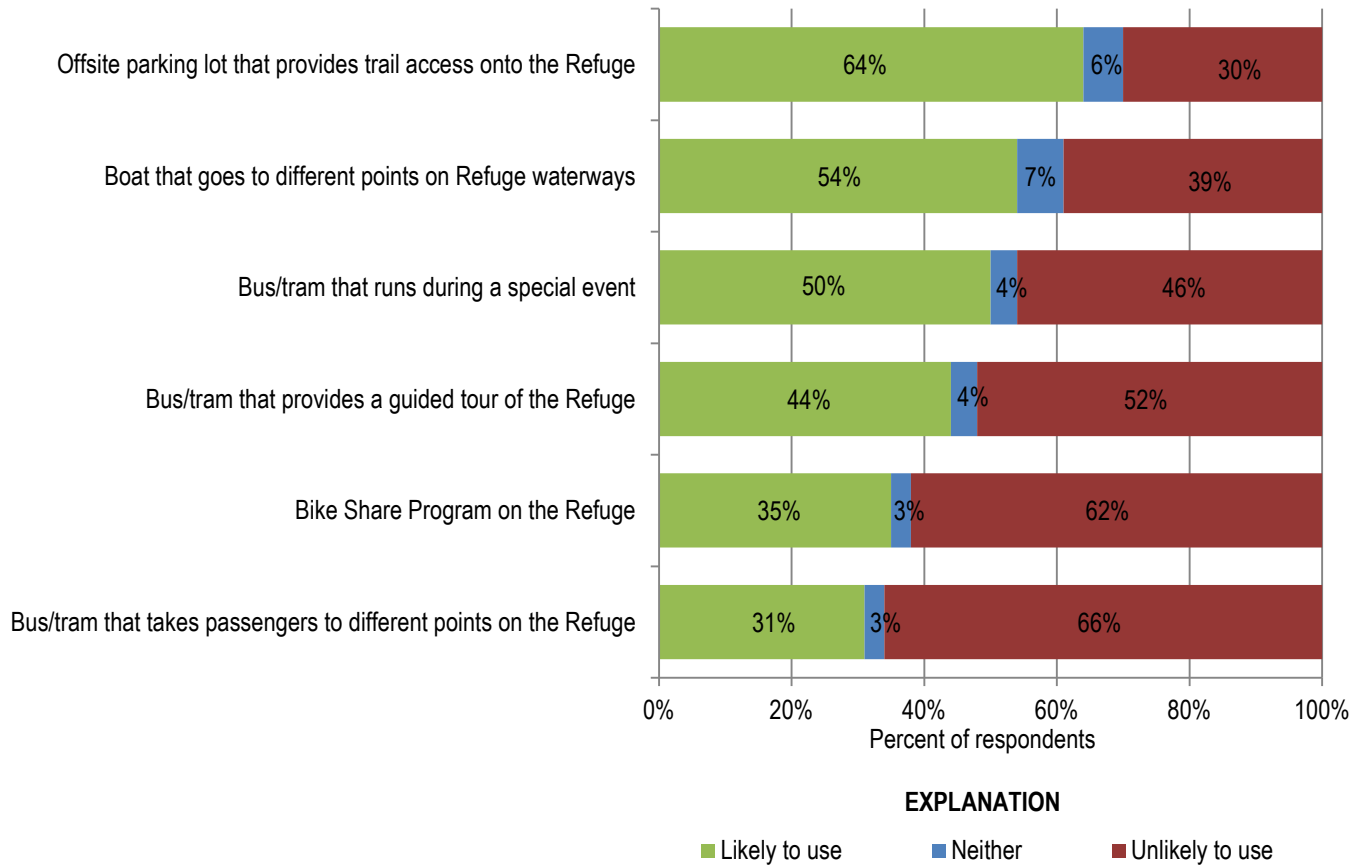


Figure 13. Visitors’ likelihood of using alternative transportation options at national wildlife refuges in the future (n ≥ 201).

Climate Change and the National Wildlife Refuge System

Climate change represents a growing concern for the management of national wildlife refuges. The Service’s climate change strategy, titled “Rising to the Urgent Challenge,” establishes a basic framework for the agency to work within a larger conservation community to help ensure wildlife, plant, and habitat sustainability (U.S. Fish and Wildlife Service, 2010). To support the guiding principles of the strategy, refuges will be exploring options for more effective engagement with visitors on this topic. The national visitor survey collected information about visitors’ level of personal involvement in climate change related to fish, wildlife and their habitats and visitors’ beliefs regarding this topic. Items draw from the “Six Americas” framework for understanding public sentiment toward climate change (Leiserowitz, Maibach, and Roser-Renouf, 2008) and from literature on climate change message frames (for example, Nisbet, 2009). Such information provides a baseline for understanding visitor perceptions of climate change in the context of fish and wildlife conservation that can further inform related communication and outreach strategies.

Factors that influence how individuals think about climate change include their basic beliefs, levels of involvement, policy preferences, and behaviors related to this topic. Results presented below provide baseline information on visitors’ levels of involvement with the topic of climate change related to fish,

wildlife and their habitats. The majority of surveyed visitors to Tamarac NWR agreed with the following statements (fig. 14):

- “I am personally concerned about the effects of climate change on fish, wildlife and habitats;” and
- “I stay well-informed about the effects of climate change.”

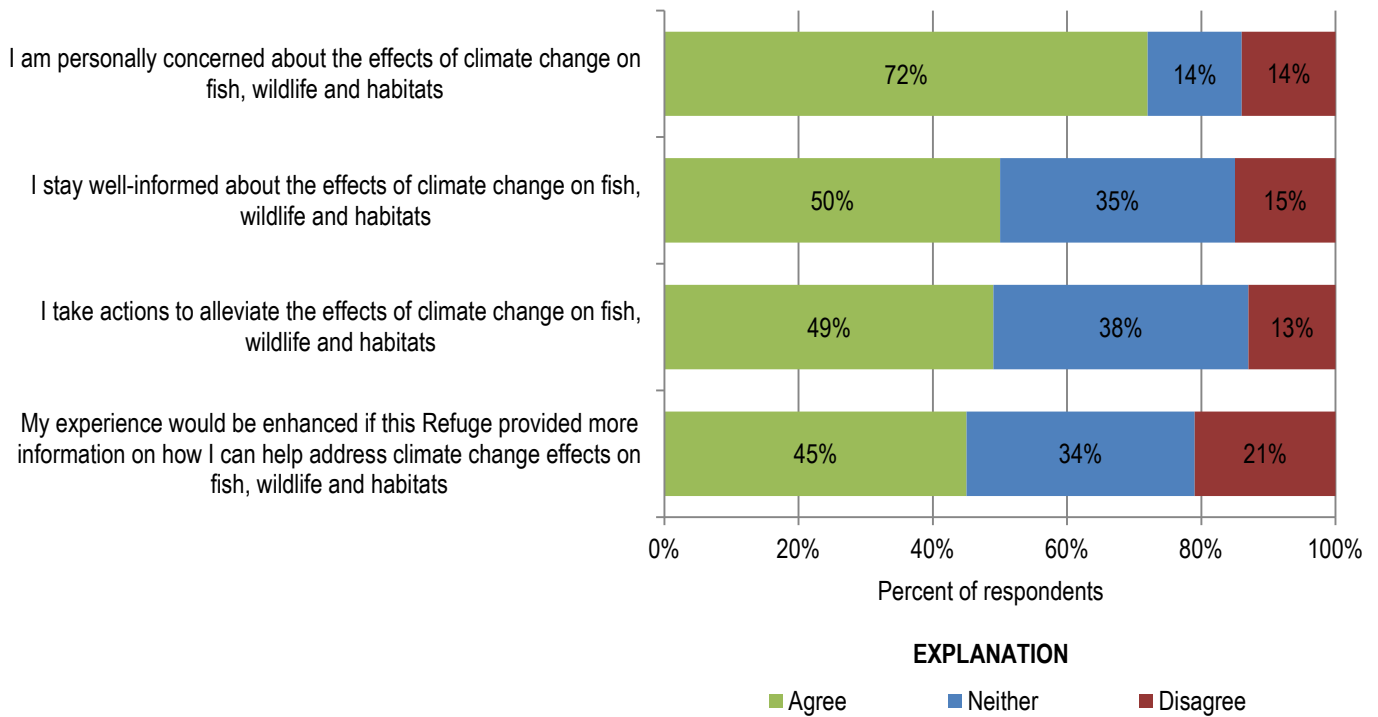


Figure 14. Visitors’ personal involvement with climate change related to fish, wildlife and their habitats (n ≥ 205).

These results are most useful when coupled with responses to belief statements about the effects of climate change on fish, wildlife and their habitats, because such beliefs may be used to develop message frames (or ways to communicate) about climate change with a broad coalition of visitors. Framing science-based findings will not alter the overall message, but rather place the issue in a context in which different audience groupings can relate. The need to mitigate impacts of climate change on Refuges could be framed as a quality-of-life issue (for example, preserving the ability to enjoy fish, wildlife, plants, and their habitat) or an economic issue (for example, maintaining tourist revenues, supporting economic growth through new jobs/technology).

For Tamarac NWR, the majority of visitors believed the following regarding climate change related to fish, wildlife and their habitats (fig. 15):

- “Future generations will benefit if we address climate change effects;”
- “We can improve our quality of life if we address the effects of climate change;”
- “It is important to consider the economic costs and benefits to local communities when addressing climate change effects;” and
- “There is too much scientific uncertainty to adequately understand climate change effects.”

The majority of visitors did *not* believe:

- “There has been too much emphasis on the catastrophic effects of climate change.”

Such information suggests that certain beliefs resonate with a greater number of visitors than other beliefs do. This information is important to note because some visitors (45%) indicated that their experience would be enhanced if Tamarac NWR provided information about how they could help address the effects of climate change on fish, wildlife, and their habitats (fig. 14), and framing the information in a way that resonates most with visitors may result in a more engaged public who support strategies aimed at alleviating climate change pressures. Data will be analyzed further at the aggregate, or national level, to inform the development of a comprehensive communication strategy about climate change.

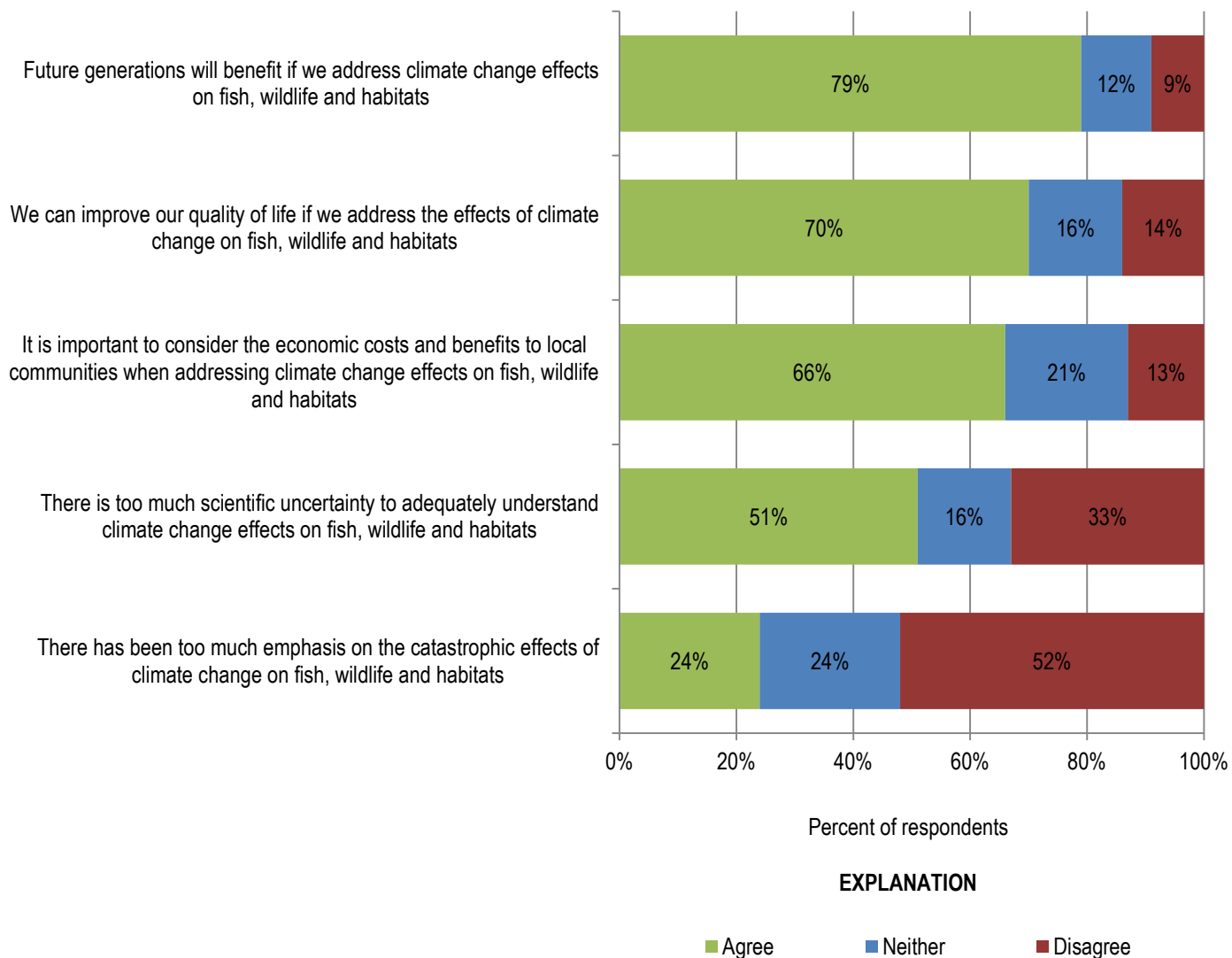


Figure 15. Visitors’ beliefs about the effects of climate change on fish, wildlife and their habitats (n ≥ 201).

Conclusion

These individual refuge results provide a summary of trip characteristics and experiences of a sample of visitors to Tamarac NWR during 2010–2011. These data can be used to inform decision-making efforts related to the refuge, such as Comprehensive Conservation Plan implementation, visitor services management, and transportation planning and management. For example, when modifying (either minimizing or enhancing) visitor facilities, services, or recreational opportunities, a solid understanding of visitors' trip and activity characteristics, their satisfaction with existing offerings, and opinions regarding refuge fees is helpful. This information can help to gauge demand for refuge opportunities and inform both implementation and communication strategies. Similarly, an awareness of visitors' satisfaction ratings with refuge offerings can help determine if any potential areas of concern need to be investigated further. As another example of the utility of these results, community relations may be improved or bolstered through an understanding of the value of the refuge to visitors, whether that value is attributed to an appreciation of the refuge's uniqueness, enjoyment of its recreational opportunities, or spending contributions of nonlocal visitors to the local economy. Such data about visitors and their experiences, in conjunction with an understanding of biophysical data on the refuge, can ensure that management decisions are consistent with the Refuge System mission while fostering a continued public interest in these special places. Individual refuge results are available for downloading at <http://pubs.usgs.gov/ds/643/> as part of USGS Data Series 643 (Sexton and others, 2011). For additional information about this project, contact the USGS researchers at national_visitor_survey@usgs.gov or 970.226.9205.

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National Wildlife Refuge Visitor Survey



PLEASE READ THIS FIRST:

Thank you for visiting a National Wildlife Refuge and for agreeing to participate in this study! We hope that you had an enjoyable experience. The U.S. Fish and Wildlife Service and the U.S. Geological Survey would like to learn more about National Wildlife Refuge visitors in order to improve the management of the area and enhance visitor opportunities.

If you have recently visited more than one National Wildlife Refuge or made more than one visit to the same Refuge, please respond regarding only the Refuge and the visit when you were asked to participate in this survey. Any question that uses the phrase “this Refuge” refers to the Refuge and visit when you were contacted.

SECTION 1. Your visit to this Refuge

1. Including your most recent visit, which activities have you participated in during the past 12 months at this Refuge?
(Please mark **all that apply.**)

- | | | |
|--|---|---|
| <input type="checkbox"/> 9% Big game hunting | <input type="checkbox"/> 39% Hiking | <input type="checkbox"/> 14% Environmental education (for example, classrooms or labs, tours) |
| <input type="checkbox"/> 15% Upland/Small-game hunting | <input type="checkbox"/> 4% Bicycling | |
| <input type="checkbox"/> 8% Migratory bird/Waterfowl hunting | <input type="checkbox"/> 62% Auto tour route/Driving | <input type="checkbox"/> 17% Special event (<i>please specify</i>)
<u>See Appendix B</u> |
| <input type="checkbox"/> 60% Wildlife observation | <input type="checkbox"/> 10% Motorized boating | |
| <input type="checkbox"/> 41% Bird watching | <input type="checkbox"/> 3% Nonmotorized boating (including canoes/kayaks) | <input type="checkbox"/> 7% Other (<i>please specify</i>)
<u>See Appendix B</u> |
| <input type="checkbox"/> 30% Freshwater fishing | | |
| <input type="checkbox"/> 0% Saltwater fishing | <input type="checkbox"/> 35% Interpretation (for example, exhibits, kiosks, videos) | <input type="checkbox"/> 0% Other (<i>please specify</i>)
<u>See Appendix B</u> |
| <input type="checkbox"/> 40% Photography | | |

2. Which of the activities above was the ***primary*** purpose of your visit to this Refuge?
(Please write **only one activity** on the line.) See report for categorized results; see Appendix B for miscellaneous responses

3. Did you go to a Visitor Center at this Refuge?

- 25% No
- 75% Yes → If yes, what did you do there? (Please mark **all that apply.**)
- | | |
|--|---|
| <input type="checkbox"/> 83% Visit the gift shop or bookstore | <input type="checkbox"/> 46% Watch a nature talk/video/presentation |
| <input type="checkbox"/> 90% View the exhibits | <input type="checkbox"/> 66% Stopped to use the facilities (for example, get water, use restroom) |
| <input type="checkbox"/> 66% Ask information of staff/volunteers | <input type="checkbox"/> 11% Other (<i>please specify</i>) <u>See Appendix B</u> |

4. Which of the following best describes your visit to this Refuge? (*Please mark **only one.***)

Nonlocal	Local	Total	
51%	82%	68%	It was the primary purpose or sole destination of my trip.
28%	12%	19%	It was one of many equally important reasons or destinations for my trip.
21%	6%	13%	It was just an incidental or spur-of-the-moment stop on a trip taken for other purposes or to other destinations.

5. Approximately how many **miles** did you travel to get to this Refuge?

Nonlocal 224 number of miles

Local 23 number of miles

6. How much time did you spend at this Refuge on your visit?

See Report for Results

7. Were you part of a group on your visit to this Refuge?

44% No (*skip to question #9*)

56% Yes → What **type of group** were you with on your visit? (*Please mark **only one.***)

91% Family and/or friends

9% Organized club or school group

0% Commercial tour group

0% Other (*please specify*) See Appendix B

8. How many people were in your group, including yourself? (*Please answer each category.*)

3 number 18 years and over

4 number 17 years and under

9. How did you **first learn or hear about** this Refuge? (*Please mark **all that apply.***)

62% Friends or relatives

6% Refuge website

25% Signs on highway

1% Other website (*please specify*) See Appendix B

4% Recreation club or organization

2% Television or radio

26% People in the local community

13% Newspaper or magazine

22% Refuge printed information (brochure, map)

5% Other (*please specify*) See Appendix B

10. During which seasons have you visited this Refuge in the last 12 months? (*Please mark **all that apply.***)

39% Spring
(March-May)

73% Summer
(June-August)

73% Fall
(September-November)

21% Winter
(December-February)

11. How many times have you visited...

...this Refuge (including this visit) in the last 12 months? 6 number of visits

...other National Wildlife Refuges in the last 12 months? 2 number of visits

SECTION 2. Transportation and access at this Refuge

1. What **forms of transportation** did you use on your visit to this Refuge? (*Please mark **all that apply.***)

- | | | | | | |
|------------------------------|---|-----------------------------|----------------------------------|------------------------------|---------------------------------------|
| <input type="checkbox"/> 78% | Private vehicle without a trailer | <input type="checkbox"/> 0% | Refuge shuttle bus or tram | <input type="checkbox"/> 2% | Bicycle |
| <input type="checkbox"/> 22% | Private vehicle with a trailer
(for boat, camper or other) | <input type="checkbox"/> 1% | Motorcycle | <input type="checkbox"/> 26% | Walk/Hike |
| <input type="checkbox"/> 0% | Commercial tour bus | <input type="checkbox"/> 0% | ATV or off-road vehicle | <input type="checkbox"/> 3% | Other (<i>please specify below</i>) |
| <input type="checkbox"/> 0% | Recreational vehicle (RV) | <input type="checkbox"/> 8% | Boat | <u>See Appendix B</u> | |
| | | <input type="checkbox"/> 1% | Wheelchair or other mobility aid | | |

2. Which of the following did you use to find your way to this Refuge? (*Please mark **all that apply.***)

- | | | | |
|------------------------------|--|------------------------------|---|
| <input type="checkbox"/> 41% | Signs on highways | <input type="checkbox"/> 4% | Directions from Refuge website |
| <input type="checkbox"/> 9% | A GPS navigation system | <input type="checkbox"/> 6% | Directions from people in community near this Refuge |
| <input type="checkbox"/> 19% | A road atlas or highway map | <input type="checkbox"/> 20% | Directions from friends or family |
| <input type="checkbox"/> 7% | Maps from the Internet (for example,
MapQuest or Google Maps) | <input type="checkbox"/> 62% | Previous knowledge/I have been to this Refuge before |
| | | <input type="checkbox"/> 2% | Other (<i>please specify</i>) <u>See Appendix B</u> |

3. Below are different alternative transportation options that could be offered at some National Wildlife Refuges in the future. Considering the different Refuges you may have visited, please tell us **how likely you would be to use each transportation option.** (*Please circle one number for each statement.*)

How likely would you be to use...	Very Unlikely	Somewhat Unlikely	Neither	Somewhat Likely	Very Likely
...a bus or tram that takes passengers to different points on the Refuge (such as the Visitor Center)?	<input type="checkbox"/> 52%	<input type="checkbox"/> 14%	<input type="checkbox"/> 2%	<input type="checkbox"/> 24%	<input type="checkbox"/> 7%
...a bike that was offered through a Bike Share Program for use while on the Refuge?	<input type="checkbox"/> 47%	<input type="checkbox"/> 16%	<input type="checkbox"/> 2%	<input type="checkbox"/> 24%	<input type="checkbox"/> 11%
...a bus or tram that provides a guided tour of the Refuge with information about the Refuge and its resources?	<input type="checkbox"/> 38%	<input type="checkbox"/> 14%	<input type="checkbox"/> 4%	<input type="checkbox"/> 25%	<input type="checkbox"/> 18%
...a boat that goes to different points on Refuge waterways?	<input type="checkbox"/> 28%	<input type="checkbox"/> 10%	<input type="checkbox"/> 7%	<input type="checkbox"/> 36%	<input type="checkbox"/> 18%
...a bus or tram that runs during a special event (such as an evening tour of wildlife or weekend festival)?	<input type="checkbox"/> 34%	<input type="checkbox"/> 12%	<input type="checkbox"/> 5%	<input type="checkbox"/> 33%	<input type="checkbox"/> 17%
...an offsite parking lot that provides trail access for walking/hiking onto the Refuge?	<input type="checkbox"/> 19%	<input type="checkbox"/> 11%	<input type="checkbox"/> 6%	<input type="checkbox"/> 36%	<input type="checkbox"/> 28%
...some other alternative transportation option? (<i>please specify</i>) <u>See Appendix B</u>	<input type="checkbox"/> 0%	<input type="checkbox"/> 0%	<input type="checkbox"/> 36%	<input type="checkbox"/> 36%	<input type="checkbox"/> 27%

4. If alternative transportation were offered at *this* Refuge, would it enhance your experience?

- 22% Yes 34% No 44% Not Sure

5. For each of the following transportation-related features, first, **rate how important** each feature is to you when visiting this Refuge; then **rate how satisfied** you are with the way this Refuge is managing each feature. *If this Refuge does not offer a specific transportation-related feature, please rate how important it is to you and then circle NA "Not Applicable" under the Satisfaction column.*

Importance						Satisfaction					
Circle one for each item.						Circle one for each item.					
Very Unimportant	Somewhat Unimportant	Neither	Somewhat Important	Very Important		Very Unsatisfied	Somewhat Unsatisfied	Neither	Somewhat Satisfied	Very Satisfied	Not Applicable
2%	8%	10%	52%	27%	Surface conditions of roads	5%	10%	3%	32%	50%	NA
2%	15%	14%	53%	17%	Surface conditions of parking areas	4%	3%	10%	21%	63%	NA
3%	4%	18%	38%	38%	Condition of bridges	2%	2%	17%	24%	55%	NA
6%	5%	8%	44%	37%	Condition of trails and boardwalks	2%	3%	13%	33%	49%	NA
2%	7%	8%	52%	31%	Number of places for parking	3%	8%	7%	31%	51%	NA
3%	8%	10%	46%	32%	Number of places to pull over along Refuge roads	5%	14%	12%	39%	30%	NA
2%	2%	11%	32%	54%	Safety of driving conditions on Refuge roads	2%	5%	9%	31%	52%	NA
1%	5%	8%	40%	46%	Safety of Refuge road entrances/exits	3%	3%	8%	27%	60%	NA
6%	9%	9%	36%	41%	Signs on highways directing you to the Refuge	3%	8%	11%	26%	52%	NA
6%	3%	6%	37%	48%	Signs directing you around the Refuge roads	4%	7%	8%	37%	44%	NA
7%	5%	8%	31%	49%	Signs directing you on trails	2%	8%	15%	35%	39%	NA
7%	7%	17%	27%	42%	Access for people with physical disabilities or who have difficulty walking	4%	11%	26%	35%	24%	NA

6. If you have any comments about transportation-related items at this Refuge, please write them on the lines below.

See Appendix B

SECTION 3. Your expenses related to your Refuge visit

1. Do you live in the local area (within approximately 50 miles of this Refuge)?

55% Yes

45% No → How much time did you spend **in local communities** on this trip?

 2 number of hours OR 5 number of days

2. Please record the amount that **you and other members of your group** with whom you shared expenses (for example, other family members, traveling companions) spent in the local 50-mile area during **your most recent visit** to this Refuge. *(Please enter the amount spent to the nearest dollar in each category below. Enter 0 (zero) if you did not spend any money in a particular category.)*

Categories	<u>Amount Spent in Local Communities & at this Refuge</u> <i>(within 50 miles of this Refuge)</i>
Motel, bed & breakfast, cabin, etc.	
Camping	
Restaurants & bars	
Groceries	
Gasoline and oil	
Local transportation (bus, shuttle, rental car, etc.)	
Refuge entrance fee	
Recreation guide fees (hunting, fishing, wildlife viewing, etc.)	
Equipment rental (canoe, bicycle, kayak, etc.)	
Sporting good purchases	
Souvenirs/clothing and other retail	
Other <i>(please specify)</i> _____	

See Report for Results

3. Including yourself, how many people in your group shared these trip expenses?

 3 number of people sharing expenses

4. As you know, some of the costs of travel such as gasoline, hotels, and airline tickets often increase. If your total trip costs were to increase, what is the maximum extra amount you would pay and still visit this Refuge? *(Please circle the highest dollar amount.)*

\$0	\$10	\$20	\$35	\$50	\$75	\$100	\$125	\$150	\$200	\$250
8%	14%	23%	10%	19%	5%	12%	1%	1%	1%	8%

5. If you or a member of your group paid a fee or used a pass to enter this Refuge, how appropriate was the fee? *(Please mark **only one**.)*

0%	Far too low	0%	Too low	95%	About right	5%	Too high	0%	Far too high	89%	Did not pay a fee <i>(skip to Section 4)</i>
----	-------------	----	---------	-----	-------------	----	----------	----	--------------	-----	---

6. Please indicate whether you disagree or agree with the following statement. *(Please mark **only one**.)*

The value of the recreation opportunities and services I experienced at this Refuge was at least equal to the fee I paid.

0%	Strongly disagree	0%	Disagree	14%	Neither agree or disagree	36%	Agree	50%	Strongly agree
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SECTION 4. Your experience at this Refuge

1. Considering your visit to this Refuge, please indicate the extent to which you disagree or agree with each statement. *(Please circle one number for each statement.)*

	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree	Not Applicable
Overall, I am satisfied with the recreational activities and opportunities provided by this Refuge.	3%	2%	1%	46%	48%	NA
Overall, I am satisfied with the information and education provided by this Refuge about its resources.	2%	0%	3%	36%	58%	NA
Overall, I am satisfied with the services provided by employees or volunteers at this Refuge.	2%	1%	3%	30%	64%	NA
This Refuge does a good job of conserving fish, wildlife and their habitats.	3%	2%	2%	28%	66%	NA

2. For each of the following services, facilities, and activities, first, **rate how important** each item is to you when visiting this Refuge; then, **rate how satisfied** you are with the way this Refuge is managing each item.
If this Refuge does not offer a specific service, facility, or activity, please rate how important it is to you and then circle NA “Not Applicable” under the Satisfaction column.

Importance					Refuge Services, Facilities, and Activities	Satisfaction					
Circle one for each item.						Circle one for each item.					
Very Unimportant	Somewhat Unimportant	Neither	Somewhat Important	Very Important		Very Unsatisfied	Somewhat Unsatisfied	Neither	Somewhat Satisfied	Very Satisfied	Not Applicable
6%	9%	10%	43%	32%	Availability of employees or volunteers	2%	1%	10%	20%	67%	NA
2%	6%	8%	38%	46%	Courteous and welcoming employees or volunteers	1%	0%	8%	15%	77%	NA
2%	5%	6%	32%	56%	Knowledgeable employees or volunteers	1%	3%	7%	20%	69%	NA
2%	4%	6%	38%	51%	Printed information about this Refuge and its resources (for example, maps and brochures)	1%	4%	7%	19%	69%	NA
3%	4%	13%	44%	36%	Informational kiosks/displays about this Refuge and its resources	1%	5%	11%	31%	53%	NA
0%	4%	9%	40%	47%	Signs with rules/regulations for this Refuge	2%	7%	13%	29%	50%	NA
3%	4%	12%	43%	38%	Exhibits about this Refuge and its resources	1%	2%	13%	27%	57%	NA
2%	5%	19%	39%	35%	Environmental education programs or activities	1%	2%	21%	25%	51%	NA
2%	2%	9%	33%	55%	Visitor Center	1%	0%	9%	17%	74%	NA
2%	2%	12%	36%	47%	Convenient hours and days of operation	1%	3%	11%	23%	63%	NA
3%	3%	8%	29%	58%	Well-maintained restrooms	2%	3%	7%	14%	74%	NA
1%	5%	16%	42%	37%	Wildlife observation structures (decks, blinds)	1%	4%	19%	24%	53%	NA
4%	5%	17%	37%	38%	Bird-watching opportunities	0%	1%	19%	29%	51%	NA
3%	1%	7%	41%	48%	Opportunities to observe wildlife other than birds	1%	4%	12%	38%	46%	NA
3%	3%	15%	33%	47%	Opportunities to photograph wildlife and scenery	1%	2%	14%	29%	53%	NA
28%	6%	22%	18%	26%	Hunting opportunities	2%	7%	36%	23%	31%	NA
20%	7%	14%	23%	37%	Fishing opportunities	2%	8%	25%	28%	37%	NA
5%	4%	12%	32%	48%	Trail hiking opportunities	1%	6%	12%	29%	51%	NA
12%	6%	32%	30%	20%	Water trail opportunities for canoeing or kayaking	2%	7%	48%	24%	18%	NA
14%	6%	29%	35%	16%	Bicycling opportunities	3%	13%	43%	25%	16%	NA
11%	4%	38%	28%	19%	Volunteer opportunities	1%	1%	44%	20%	33%	NA

3. If you have any comments about the services, facilities, and activities at this Refuge, please write them on the lines below.

See Appendix B

SECTION 5. Your opinions regarding National Wildlife Refuges and the resources they conserve

1. Before you were contacted to participate in this survey, were you aware that National Wildlife Refuges...

...are managed by the U. S. Fish and Wildlife Service?

92% Yes

8% No

...have the primary mission of conserving, managing, and restoring fish, wildlife, plants and their habitat?

93% Yes

7% No

2. Compared to other public lands you have visited, do you think Refuges provide a unique recreation experience?

88% Yes

12% No

3. If you answered "Yes" to Question 2, please briefly describe what makes Refuges unique. _____

See Appendix B

4. There has been a lot of talk about climate change recently. We would like to know what you think about climate change as it relates to fish, wildlife and their habitats. To what extent do you disagree or agree with each statement below? (Please circle one number for each statement.)

Statements about climate change	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
I am personally concerned about the effects of climate change on fish, wildlife and their habitats.	7%	7%	15%	42%	30%
We can improve our quality of life if we address the effects of climate change on fish, wildlife and their habitats.	7%	7%	16%	42%	28%
There is too much scientific uncertainty to adequately understand how climate change will impact fish, wildlife and their habitats.	10%	23%	16%	42%	9%
I stay well-informed about the effects of climate change on fish, wildlife and their habitats.	2%	13%	35%	40%	11%
It is important to consider the economic costs and benefits to local communities when addressing the effects of climate change on fish, wildlife and their habitats.	6%	7%	21%	52%	14%
I take actions to alleviate the effects of climate change on fish, wildlife and their habitats.	7%	6%	38%	40%	9%
There has been too much emphasis on the catastrophic effects of climate change on fish, wildlife and their habitats.	21%	30%	24%	16%	8%
Future generations will benefit if we address the effects of climate change on fish, wildlife and their habitats.	6%	3%	12%	47%	32%
My experience at this Refuge would be enhanced if this Refuge provided more information about how I can help address the effects of climate change on fish, wildlife and their habitats.	9%	11%	35%	36%	9%

SECTION 6. A Little about You

**** Please tell us a little bit about yourself. Your answers to these questions will help further characterize visitors to National Wildlife Refuges. Answers are not linked to any individual taking this survey. ****

1. Are you a citizen or permanent resident of the United States?

100% Yes 0% No → If not, what is your home country? See Figure 4 in Report

2. Are you? 60% Male 40% Female

3. In what year were you born? 1954 (YYYY)

4. What is your highest year of formal schooling? (Please circle one number.)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20+
(elementary)					(junior high or middle school)			(high school)				(college or technical school)				(graduate or professional school)			
					0%			16%				57%				27%			

5. What ethnicity do you consider yourself? 1% Hispanic or Latino 99% Not Hispanic or Latino

6. From what racial origin(s) do you consider yourself? (Please mark ***all that apply.***)

- 2% American Indian or Alaska Native 0% Black or African American 98% White
 0% Asian 0% Native Hawaiian or Pacific Islander

7. How many members of your household contribute to paying the household expenses? 2 persons

8. Including these members, what was your approximate household income from all sources (before taxes) last year?

- | | | |
|---|--|--|
| <input type="checkbox"/> 2% Less than \$10,000 | <input type="checkbox"/> 16% \$35,000 - \$49,999 | <input type="checkbox"/> 12% \$100,000 - \$149,999 |
| <input type="checkbox"/> 8% \$10,000 - \$24,999 | <input type="checkbox"/> 25% \$50,000 - \$74,999 | <input type="checkbox"/> 7% \$150,000 - \$199,999 |
| <input type="checkbox"/> 6% \$25,000 - \$34,999 | <input type="checkbox"/> 22% \$75,000 - \$99,999 | <input type="checkbox"/> 2% \$200,000 or more |

9. How many outdoor recreation trips did you take in the last 12 months (for activities such as hunting, fishing, wildlife viewing, etc.)?

13 number of trips

Thank you for completing the survey.

There is space on the next page for any additional comments you may have regarding your visit to this Refuge.

See Appendix B for Comments

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Appendix B: Visitor Comments to Open-Ended Survey Questions for Tamarac National Wildlife Refuge

Survey Section 1

Question 1: "Including your most recent visit, which activities have you participated in during the past 12 months at this Refuge?"

Special Event	Frequency
Deer registration	1
Dream Catcher Workshop	1
Fall Event 2010	1
Fall Festival	9
Fall Foliage Tour	2
Fall Food Festival	1
Fall Leaf Viewing	1
Family Day activity	1
Family Fun Day	1
Father's Day Gift	1
Movies	5
Mushroom Walk	1
October Fall Event	1
Open House Celebration	5
Preschool Field Trip	1
Programs, movies	1
Public meeting	1
Total	34

Other Activity	Frequency
Activity with kindergarteners	1
Bird Knowledge Test, stargazing	1
Cross-country skiing	1
Fall leaves	1
Family homestead and other related spots; flower picking	1
Mushrooming	1
Picnic	1
Reading	1
See the color of the trees	1
Snowshoeing	1
Snowshoeing, cross-country skiing	1
Thursday morning tour with 3 grandchildren	1
To connect with the creator	1
Visit to purchase wild rice	1
Visitor Center	1
Total	15

Question 2: "Which of the activities above was the primary purpose of your visit to this Refuge?"

Primary activities are categorized in the main report; the table below lists the "other" miscellaneous primary activities listed by survey respondents.

Other Miscellaneous Primary Activities	Frequency
Enjoying the wilderness	1
Family Homestead	1
Family recreation	1

Father's Day Gift	1
pink ladyslippers	1
To connect with the Creator	1
To introduce my wife to the refuge	1
Tour	1

Question 3: "Did you go to a Visitor Center at this Refuge?"; If Yes, "What did you do there?"

Other Visitor Center Activity	Frequency
Bird watching	2
Black bird auto tour	1
Bought concessions	1
Fall Event	1
Fall Festival, Photo Contest	1
Get a refuge map	1
Hiking	2
Open House	1
Placed our votes for Photo Contest	1
Show the picture of the scarlet tanager we took	1
Sunday Movies	1
View the swans	1
Walk on the paths	1
Walked around outside area by center	1
Watch and take pictures of the trumpeter swans	1
Went outside to watch birds and take pictures of flowers	1

Total	18
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Question 9: "How did you first learn or hear about this Refuge?"

Other Website	Frequency
Detroit Lakes Chamber of Commerce	1
Travel MN	1
Total	2

Other Ways Heard about This Refuge	Frequency
AAA Tour Book	1
Audubon Guide to the NWRs (Northern Midwest Edition)	1
From the officers of the Tamarac wanting to work with our students at our school.	1
Minnesota Explorer	1
Minnesota state map	3
Minnesota tourist information	1
Road Atlas	1
Staff at Antique Mall, Detroit Lakes	1
Total	10

Survey Section 2

Question 1: "What forms of transportation did you use on your visit to this Refuge?"

Other Forms of Transportation	Frequency
School bus	6
Skis	1
Total	7

Question 2: "Which of the following did you use to find your way to this Refuge?"

Other Ways Found This Refuge	Frequency
Audubon Guide	1
Brochure description	1
Minnesota state map	1
Printed refuge maps	1
Total	4

Question 5: "Below are different alternative transportation options that could be offered at some National Wildlife Refuges in the future...please tell us how likely you would be to use each transportation option."

Other Transportation Option Likely to Use	Frequency
Anything environmentally safe, except buses or trains.	1
ATV and boat rental	1
Auto tour on all trails	1
Canoe	1
Car	2
Electric boat rentals	1

Golf cart	1
Helicopter	1
Horseback	1
Motorcycle	1
Snowmobile or ATV	1
Total	12

Question 6: "If you have any comments about transportation-related items at this Refuge, please write them on the lines below."

Comments on Transportation-related Items at This Refuge (n = 35)

Don't commercialize the refuge too much; however, more hiking would be great.

Earlier this summer, my sister who is sometimes in a wheelchair would not have been able to get back to the marker or site. In the past, the refuge had ignored our request to mark the site and to please cut the trees blocking the road as well as make a path to the graves. This year, the new manager not only cleaned it up at our request, but also made it possible for two people in wheelchairs.

Highways 26 and 29 on the refuge are gravel. Having these roads paved would increase driving speeds and would be a hazard, but in the summer these roads are extremely dusty. There is also a place going south on Highway 29 when you first reach Tamarac Lake and the road curves left - this location is quite dangerous and the "cliff" on the outside of the curve to the lake should have a guardrail or at least be better marked with reflectors.

I got lost twice trying to find the refuge. The map online is inadequate, and there are not enough details.

I think some of the narrow roads into some of the lakes available for fishing could have a few places along the way widened enough for one car to pull into as another passes.

I wish more trails were open, but I understand why they aren't.

It is dusty.

It would be nice to have more roads open, season permitting.

It's great.

Mainly gravel roads - probably keep them more with the rustic and natural setting.

More and better markers on the auto tour route and the trails would have been nice. We got lost on the auto tour.

More trails open to cars would be nice.

Need to open up more roads rather than having them closed to autos. There are some beautiful roads that would draw more people to use the refuge.

Our destination is usually the Visitor Center, but we do take the Blackbird Trail, especially when we have visitors. We haven't done any hiking at Tamarac.

Please do not open gates or otherwise increase motor vehicle access in refuge. I know there is some clamor for this, but if they want to view the interior then they should put on their boots.

Signs on the trail stating the length of the trail would be nice. We did not know if we were still on the trail.

Some trails were slippery. Mulch may help with the grip.

Sometimes the road signs are confusing, and many times the roads are blocked.

Speed. People drive way too fast. This causes a poor experience and safety issues, especially around corners on CR #26 and the intersection of CR 26/29.

Tamarac isn't very wheelchair friendly. I had a hard time on trails while in a motorized wheelchair.

The auto tour is great - why not more? Unlock the gates; you have miles of roads already there, but why are they locked? A canoe tour would be great. A night tour for wolf howling would be awesome.

The path to Lake Waboose is narrow and winding. The signs for the turn off to the lake aren't easy to see.

The road is very dusty and often has a washboard effect.

There are no handicap accessible trails or boardwalks.

There are some places where the gate happens to be next to a very steep trail making it hard for people like myself. Maybe moving gates past the hills, like Egg Lake Trail, would be good.

There are times when we go on the Blackbird Drive and some visitors drive very fast along there. If we want to pull over to take a close look at something, it can be very unsafe. We really like the viewing platform that was put in a few years back. We always stop there when we visit.

This trip to the refuge, I didn't have anyone with me that had a physical disability, but in the past I have. It was hard to find a picnic area that we could access and get around in with a wheelchair. I wouldn't want to see everything paved, as that would take away from the natural setting that people seek when they go to a refuge. Maybe just a little more compacted gravel.

Trails should be open to the public, not grated and leaked!

Very helpful.

We did not hike.

We have a child with disabilities and there is no way to help her into or out of the boat at the shore when we're done fishing.

We were there during road repairs and one road left us feeling that we probably shouldn't take it. It was very muddy. We later heard that staff warns visitors about it.

You need a dock at the landing for launching boats.

You need more rest areas.

You need more signs for people traveling in vehicles.

Survey Section 4

Question 6: "If you have any comments about services, facilities, and activities at this Refuge, please write them on the lines below."

Comments on Services, Facilities, and Activities at This Refuge (n = 65)

Although I've only been to Tamarac once, I was very impressed. The recreational opportunities for my family and friends are many. I'm in the process of applying to do some volunteering.

Better managing for ducking and wild rice crops.

Blackbird Trail should be kept open year round.

Every season has its own marvelous opportunities to experience scenery and wildlife.

Everyone was very helpful.

From the very first time we visited, we were impressed with the Visitor Center; people there are VERY kind and friendly. The auto tour and trail are beautiful.

Great volunteers for our educational trip for kindergarteners. Everything was age appropriate.

I am always pleasantly surprised at how much we learn and how much the kids enjoy Tamarac.

I have found some of the current staff to be lacking in people skills.

I hunt and fish in the refuge a lot, hike some, and take pictures. I feel we're very fortunate to have a great place close to home.

I love this place! Keep it wild!

I really enjoyed the Fall Festival Open House. It was also enjoyed by my seven year old granddaughter.

I spent a majority of the time photographing lady slippers. Great experience!

I thought the employees and volunteers did an excellent job presenting information to the kindergarteners.

I was somewhat concerned about the trash beside the road. There shouldn't be any.

I wish there were kayak and bike rentals and more bike paths available.

I would like more trails open for cars.

I would like the refuge to provide GPS coordinates in order to assist in staying out of areas that are off limits when I leave the trail. This would be valuable in other scenarios as well.

I would like to be allowed to snowmobile on Tamarac Lake in the winter.

I would like to have had a better understanding of what I was observing as I drove through. What kind of trees and birds were we seeing? I couldn't figure out which plants were wild rice. I wanted to know the best likelihood of seeing wildlife. Maybe offer a brochure for purchase and include this info along with Native American history, geological history, critters to watch for, etc.

I would like to see observation towers at one of the waters.

It is a nice refuge. I have been going there for 30 years.

It is a very clean, beautiful facility.

It seems like a lot is blocked off a lot of the time.

It was very wonderful!

It's a very nice lake for fishing, but the road to Lake Waboose needs to be wider and the signs for the turnoff need to be bigger.

More car trail access for bird and wildlife viewing would be nice, season permitting.

More hiking trails would benefit the refuge and visitors.

More information on and about trails and where to watch birds and animals would be nice, and more restrooms or porta potties.

Need to coordinate with the Minnesota DNR on their walleye stocking program, especially in Pine Lake. At one time, this was a great fishing lake.

No bathrooms, if the Visitor Center isn't open.

Put in access on Blackbird Lake.

Thank you for helping to keep my family's sites still available for family history and many others who visit.

The new information and Visitor Center was very nice! First class!

The staff at the Visitor Center was very helpful. The center is wonderful.

The trails should be open year round to those who pay license fees to hunt that area and should be able to have access to all the trails instead of just a few. Tours should not be allowed in the hunting areas, so the hunters are allowed to have an equal chance to harvest what they pay their fees for instead of trying to hunt and have people (tourists) walking or driving by and scaring all the animals away. This is why they should keep all the gates open and let people have access to the entire refuge, except the sanctuary parts, just not a third of it. The DNR and employees also should not have loggers and others in the refuge and especially in the sanctuary areas!

The video about the refuge needs to be updated. It has been there a very long time and has older or outdated pictures.

The Visitor Center is a beautiful building and is set in good location. It would be nice if it would be open more often.

The Visitor Center and related exhibit were great. There was very friendly staff at the center.

The Visitor Center volunteers were very knowledgeable and helpful.

There are friendly and helpful staff and volunteers!

There are way too many restrictions! DNR is clueless about slot limits for fishing.

There was no bathroom or porta potty available.

They need more food plots, and more trails should be open for driving.

This is a wonderful jewel of a place!

This refuge has great hiking opportunities, but the only hiking trail that there is information about is the Old Indian Trail.

This was our second visit. The first time it was just my wife and I. This time we took my brother-in-law and his wife. They also enjoyed the refuge.

Too much garbage on roadsides/ditches. More informational kiosks stocked with information (not empty) are needed. More signage for areas closed to hunting, especially deer, near the Visitor Center and surrounding areas. More enforcement during MN firearms deer season and litter enforcement during hunting season. Very nice Visitor Center and great variety of terrain and opportunities. Improve fishing and waterfowl hunting. Please do not implement a user fee.

Very good.

Very nice facilities. Knowledgeable staff; she helped up with some map information. Photographs are beautiful.

Very nice! We love it!

We believe, by definition, a refuge should afford protection for the resident and migratory creatures. No hunting or fishing with barbed hooks should be allowed.

We live too far away to volunteer at this facility.

We love the movies and have learned much about wildlife, wild rice harvesting, bees, etc. We have attended many Fall Festivals. We always take our visitors there.

We were only there a short time. Should I have an opportunity to return for a longer period of time, and perhaps at a different time of year, I would like to be able to observe/photograph some wildlife.

We would like to have restrooms or portable restrooms and garbage containers.

We would like to see bike trails in the park.

We're very much looking forward to the North Country National Scenic Trail coming through the refuge.

Why are there not more picnic areas? You closed the Pine Lake area; why?

Workers were very informative, courteous, and helpful.

You forgot to mention the most important reason for going to Tamarac and that is to find peace and serenity. We always do, even if we get lost!

You need a dock at the landing.

You need benches overlooking lakes such as Tamarac, and other sites should be addressed.

You need restroom accesses by the lake.

You need restrooms.

Total

Survey Section 5

Question 3: "If you answered "Yes" to Question 2, please briefly describe what makes Refuges unique."

Comments on What Makes Refuges Unique? (n = 143)

A variety of things to do and see. People share knowledge about wildlife in the area. Preservation.

An area set aside to view wildlife and animals without any development from private owners.

Because of the primary mission of conserving, managing, and restoring fish, wildlife, plants, and their habitat.

Bird watching opportunities.

Children have an opportunity to experience wildlife first hand.

Clearly demonstrates the beauty of the area when untouched.

Convenient location, diverse wildlife and habitat, unique opportunities for outdoor hunting, hiking and wildlife viewing.

Diverse, managed habitat, and good trails allowing access for hunting and hiking. Excellent diversity of mammals and birds.

Each refuge is chosen for its unique opportunities of viewing wildlife in their native habitats.

Educational opportunities that exist in NWRs.

Emphasis on wildlife.

Everything is left mostly as it is in natural forest areas.

Fishing and wildlife.

For the fishing.

I believe that the refuges I have visited in the US have tried hard to keep the beauty there as well as the peace and unique experience alive. Thank you.

I enjoy the bird watching sits with the telescopes. Sits should be covered when it rains. The roads and trails that are open are kept up and are distinct. Gates should be open more though!

I enjoyed that everything is left as natural as possible.

I feel there is a greater emphasis on providing diverse outdoor recreational opportunities than other agencies (e.g., Bureau of Land Management).

I have found that refuges are very tranquil. You can feel as though you are in the wilderness all by yourself. Much of the experience feels untouched by mankind.

I like hunting and fishing there because there are no ATVs, speed boats, or jet skis around. It makes for a more enjoyable day.

I like the diversity of the woods, remote roads, and small lakes. I enjoy wildlife watching. It is an outlet of uncrowded spaces.

I like the fact that the refuge is not a busy place to visit.

I really enjoy the Native American local tribe demonstrations.

I showed my grandson wildlife and fishing experiences native to northern Minnesota.

I think fish and wildlife are better managed, and there is better law enforcement.

I think that their mission puts the FWS in a great position to make the public more aware of opportunities to save the environment/educate the public on how they perform their mission.

I think the people from the wardens to the volunteers that work on and help at the refuge make going there a real privilege. Thank you.

Isolation.

It had the natural habitat all around.

It has a pristine beauty with little civilization; that's what I like.

It has been great experience for our students to experience the outdoors and other activities that most kids won't do. The experiences that they get at an early age will be with them into their future.

It has such great potential to be a nature lover's/ hiker's, auto tourist's, fisherman's, and photographer's paradise. Has a great base to do this.

It is a beautiful area.

It is a different part of the country.

It is a personal learning experience.

It is a protected habitat.

It is efficient.

It is not commercialized. Things run at a slower pace, and I can get back to nature and take great pictures. Thank you!

It is raw nature, untouched and you can view wildlife in their habitat.

It is relaxing, peaceful, and you can see things in the refuge that you don't see anywhere else.

It is so beautiful and clean.

It is unique because of the many different recreational uses and four season access. I was so surprised that hunting is allowed on a refuge.

It is very peaceful on the lake with no cabins. There is a lot of wildlife to enjoy.

It maintains miles of green spaces for all to use. I love this refuge!

It makes connecting with nature and the local habitat convenient and affordable. Being able to drive to the refuge is a much more reasonable and affordable option versus visiting a National Park the same distance away.

It's a chunk of land without a human population!

It's a great opportunity to teach kids about nature and wildlife and why it is important to respect it.

It's a mixture of hardwood and softwood forests at the edge of the grasslands.

It's a place where you can observe wildlife and birds and take pictures. You never know what you are going to see with all the trees. They are all so beautiful.

It's a place you specifically go to view wildlife and nature as it should be.

It's a safe haven for animals and birds and a place for us to get away and enjoy nature.

Its natural state.

Knowing that flora and fauna are protected makes them different from National Forests or other types of parks.

Lakes, woods, trails, and wildlife observation.

Love the natural setting.

Marshes, wetlands, and birds.

Minimally developed.

My father was the first refuge manager for Tamarac, and I have worked there at times. Duck hunting is still good on the refuge and I come up often.

National Wildlife Refuges are less commercial and busy than National or State Parks and often provide a better opportunity to enjoy solitude and observe wildlife.

Natural habitat that is maintained and protected. Nice to have and enjoy, since so much of the environment is being developed.

No motor coaches and limited commercialism. It gives us peace and serenity - we come to get rejuvenated. Thank you so much!

Overall, it is well maintained and a wonderful area for all to enjoy a variety of activities.

Peace and quiet and not over used.

Peace and serenity at the refuge is awesome during all four seasons.

Public land dedicated to wildlife. No ATVs.

Quieter park and less developed, which is nice.

Refuges are quiet. I like the fact that we heard no motors and saw only a few (directional) signs.

Refuges are very much unique. They provide great education for our children, our youth, and ourselves. There are so many different opportunities to watch and observe different types of animals in their natural habitat and environment.

Refuges not only provide well in their primary mission, but also provide humans an opportunity to get away from modern civilization. I find this to be very comforting.

Terrain and habitat is geared toward preservation of wildlife and not just for recreation of people.

The ability to see wildlife in their natural habitat setting makes it unique. You can learn what animals need to have a healthy life in order to reproduce. It keeps a balanced nature.

The amount of land available in its nature habitat.

The animals that are there and the land forms that are required by the diverse animal population.

The area is maintained as close to its original condition as possible, but it allows us to enjoy it.

The auto tour route has been a favorite of our family for many years. We had taken our kids, and now we have taken our granddaughter. We have taken the tour, just the two of us, for a relaxing drive.

The cleanliness makes it unique.

The contact with wildlife.

The educational opportunities.

The fall leaves and the diverse scenery and landscape make it unique.

The focus is generally on wildlife resources, and refuges provide opportunities for the public to see those resources, perhaps more so than an area simply set aside as a park or open space.

The lack of commercialism. The lack of paved roads to certain lakes. The perfection of lands, left alone.

The landings are good and the fishing is great.

The location and all the wildlife there make the refuge unique.

The maintaining of plains and wildlife of the area; it is a peaceful experience.

The myriad of activities available, including hunting, in a natural setting. Emphasis on natural.

The National Wildlife Refuge is an area managed primarily for wildlife and not for people's needs. Because of that, the area's aesthetics are much better. It also is a place where motorized recreation (ATVs/snowmobiles) is not allowed, so peace and quiet can still be found there year round.

The natural environment and it is quiet and essentially left alone.

The number of experiences you can have depend on age, condition of your health for walking, biking, etc.

The peace and quiet.

The preservation of natural habitat for wildlife makes it unique.

The priority on wildlife. I've found that the probability of good wildlife observation and photography is much greater on refuges.

The shoreline that remains untouched by docks is quiet and peaceful.

The undisturbed habitats such as beaver homes, wolf packs, etc. make it unique.

The wildlife and unique trees make this refuge vital to the understanding of the area. It is an important site for our guests - both family members and others when visiting. One day, I had four of my grandchildren on the Thursday tour. It was a wonderful experience for the kids, as the guide was so knowledgeable about the refuge and about children. As we were leaving, a little red fox with its pointy black ears came trotting up the road with a rodent in its mouth. That day we had seen trumpeter swans with 3 signets, and an osprey nest with babies perched on edge, among other special things. The ranger had taken the children aside and let them see an egg retrieved from an unsuccessful nesting of the swans. Our refuge is so special.

The wildlife has a chance to be in their natural habitat and are safe from being hunted.

The wildlife have a place of serenity and their habitat is preserved.

The wildlife.

There are large pan fish that are very fun to catch and release in the lake.

There are a variety of things to see.

There are bathrooms, paved trails, and critter information.

There are beautiful fall tree colors and awesome birds like geese, swans, and ducks.

There are elk.

There are no cabins on the lakes, roads, or trails.

There are no cabins, no speed boats, and it is very peaceful while fishing even on the Fourth of July. That's why we went there.

There are very friendly staff and volunteers and unique hiking trails. My mom and I have been coming here and hiking on the trails since I was five or six. I am now 28 and it's still a wonderful and exciting experience. I now bring my kids along with my mom. Thanks for all that you do to help mother earth and her creatures!

There is a wide range of learning experiences.

There is good fishing.

There is great scenery for great pictures; it takes one back in time. I am a hobby artist, and I paint wildlife and get my ideas from the refuge. It is the main reason I go to the refuge. I get inspiration from the experience.

There is more room, and it is quieter.

They allow you to feel close to nature and want to be a part of conserving our resources.

They are inexpensive, accessible, and have beautiful landscapes of waterways.

They are maintained very well in current times.

They are more user friendly.

They are not crowded and have great scenery.

They are not developed tourist traps like parks tend to be.

They are preserving lands for animals and birds.

They are set aside areas where you can have easy access and see natural settings for wildlife.

They are usually unique to the area and have different homes for local animals.

They concentrate on educating all about the refuge. All can have a better appreciation of nature.

They differ from parks. There are opportunities to see conservation in practice, there are less people, and they have good interpretation for educating children.

They have people there to guide you through the refuge so that your experience is worthwhile.

They offer opportunities to explore wildlife.

They provide a place to photograph wildlife and plants with no crowds.

They provide an excellent place for bird and wildlife observation and photography. No crowds.

This is a quiet place, a splendid and rare opportunity close to our home.

This is close to an area where I live, so I appreciate the good info from the park ranger, but there was not such good advice from the volunteers.

This refuge borders three different areas of land: the plains, hardwood forests and conifer forests.

This refuge is like family to me. My great grandfather's homestead was 160 acres in Tamarac Point in the late 1800s, so I feel it's like home.

This refuge is such a beautiful and pristine piece of land. I feel that it was a wonderful investment for the US Government to preserve this area for our children and grandchildren.

Undeveloped terrain, wildlife.

Unique. I saw a pair of Trumpeter Swans and their ducklings swimming.

Variety. Huntible populations of deer, grouse and waterfowl. Fishing also on a limited scale. Interpretive center with a variety of staff.

Very beautiful!

Very rustic and natural, and refuges have the original undisturbed habitat area.

Very special places that need more attention.

Volunteers and signage.

We love the driving tour and Visitor Center, as well as the employees!

We love the large variety of wildlife, birds, flowers, trees, etc.

With the services that the staff and volunteers provide, you get the opportunity to learn about and enjoy the natural world around you. It's a comfort knowing that there are people you can go to if you have questions or concerns.

Yes, but you may need a lottery system at some point in time; there are too many people sometimes!

Additional Comments (n = 41)

As an elderly handicapped man, I enjoy the Visitor Center and having lunch sitting by the huge white pine on Pine Lake.

Every time we visit there, I see something new. We walked back to the Job Core site. I would like to have had more information on that. It was very interesting.

Great park ranger information. We got some not great advice from a volunteer. More literature and more signs on trails are needed. Restrooms on the trail or trailhead are needed.

Great refuge!

I feel that more trails should be open to drive down to observe wildlife and for photography purposes. They only have one auto trail and I feel there should be more trails accessible by vehicles in Tamarac.

I first visited Tamarack as a Boy Scout almost 50 years ago and a few times growing up about 60 miles west of the refuge. We returned 15 years ago and on this, our first trip back to the area since then, visited again. The golden Tamarack trees were especially wonderful.

I grew up near Tamarac, but never appreciated it for what it does to protect wildlife resources and the various resources there. I'm glad it is there, doing what it does!

I hate to have hunters in the refuge. Isn't the whole idea to preserve wildlife?

I have enjoyed this refuge since 1970 and have been impressed with its overall management during that entire period.

I hope funding does not get spent following a climate change route. That has been proven a hoax. Having said that, protecting the environment through meaningful actions of conservation makes sense. Good forestry management, wildlife management and positive education for kids will keep fostering interest.

I like the Visitor Center and like to bring the grandkids there.

I love it and think you do an excellent job! Don't make it too accessible to big campers and commercial entities.

I really enjoyed the area except for the bugs and ticks. We started a hike, but stopped soon afterward because of bugs. When we got back in the van, we found several ticks. After that, we viewed the place mostly from the vehicle or didn't venture off the road if we got out. The auto tour was a good opportunity for that.

I would like to see a restroom provided at Lake Waboose, a wider road to the lake, and a bigger parking area.

Impressive Visitor Center. Needs more signs as to how to get to the refuge when arriving from the north.

Improved waterfowl habitat to increase hunting opportunities. Increased law enforcement presence during hunting seasons. Overall a great piece of Minnesota!

It was a wonderful experience to view wildlife and critical habitat for my young sons and myself. Keep up the good work! I sincerely hope that in light of the increased use of our natural resources (refuges, state and national parks) that facilities for these critical resources and services are not cut any further and that funding can increase to maintain these opportunities for all to enjoy.

It would be nice if more of the areas were available, such as the Egg Lake Trail. We used to canoe on some of these remote lakes and trails such as the River Road. Now they're closed most of the year. We spend most of the summer at our cabin on Big Elbow Lake, so we use some of the trails and remote lakes quite a lot, and we really enjoy them.

It's difficult to improve on perfection, as this is a very well-run refuge. The only minor things needed are better roads and maybe more accurate trail maps and better defined areas that are closed to hunting. Thank you for this beautiful place. We are so grateful for it.

My wife and I try to get out into nature at least twice a month. Sadly, we have not been able to do this in the last year due to my unemployment and thus our trying to live off one income. Our Refuge trips as well as other outdoor recreation trips are very important to us and we will continue to get out as much as we can. Even though we don't get there as much as we would like to, going to visit Tamarac always feels like heaven.

Put fish in Pine Lake; it froze out in 1996-1997. The height of Land Rock was restocked, why not Pine? Put in more cross country ski trails and groom the trails. Have snow-shoeing more. Unlock the gates in the summer if you want people to use the refuge. Why lock most of it up?

Thank you for a job well done! We need more areas like this, and I wish young people would appreciate these areas more.

Thank you very much.

Thanks to the Tamarac staff and Tamarac Friends group for all their work.

The refuge is 10 miles from our lake cabin. Our family has considered it a treasure for three generations. I frequently bring guests to the cabin on tours of the refuge; all are impressed. Although I personally lament traffic on the refuge (call me selfish!), those who visit then have a higher regard for the USFWS. Keep up the good work!

The refuge is a very nice place to spend a day. It does need more areas to sit and watch the sunset or nature, and outhouses would be nice.

Thank you.

The refuge is enjoyable, well managed, and peaceful. Low impact camping would be desirable for us.

The third grade class from our school goes to Tamarac three times a year to study the environment in each season. It is a very nice facility with great people who work and volunteer there. We always have a great time!

The Visitor Center was well kept overall. It was nice to see the displays on the wildlife, even if there were no wildlife visible the day we were there.

They should keep tourists out of hunting areas and they should open the gates that are closed year round until hunting and ricing, so that the tourists flock to those areas instead of just the hunting people. They should also keep the tours during the week instead of just the weekend when most hunters are out there.

This survey was filled out on behalf of (survey taker) by his daughter. [My father] is retired and spends the end of June to mid-September at a lake home on Round Lake. This year was one of the first that [my father] and his grandson (my son) ventured over to Tamarac Lake as fishing on Round was not the greatest. We visit the wildlife refuge most every year. [My father's] primary residence is in Sandwich, Illinois. (signature), daughter of (survey taker)

We enjoy our trips to the refuge, no matter which one we visit.

We enjoyed our trip to the refuge.

We found it very enjoyable and educational.

We love it and are concerned over recent budget cutting and how it may affect the refuge.

We love it. (survey filled out by the grandson)

We love Tamarac. We have been coming to the refuge for 23 years and hope to come another 23!

We thoroughly enjoyed the Fall Festival; it gave us the chance to learn a lot more about the refuge, its history and its wildlife.

We were coming back from a trip to Nevis, MN from a family outing and we had not been to Tamarac for a while and decided not to go straight home. We missed the refuge.

We would camp if it was available.

Why is there no overnight camping like on the North Country Trail? This will be a real concern for hikers. Why is fishing not allowed on the Ottertail River in the refuge?
