



# National Wildlife Refuge Visitor Survey 2010/2011: Individual Refuge Results for Great Swamp National Wildlife Refuge

By Natalie R. Sexton, Alia M. Dietsch, Andrew W. Don Carlos, Lynne Koontz, Adam N. Solomon and Holly M. Miller

*We took our 4 and 7 year old grandsons and their parents to the Great Swamp Visitors Center. Volunteer staff were friendly, welcoming and helpful. This beautiful new facility is well designed and filled with interactive exhibits geared for young children. Our grandsons loved it and we are very impressed with the educational opportunities the center provides.—Survey comment from visitor to Great Swamp National Wildlife Refuge.*



Great Swamp National Wildlife Refuge. Photo credit: U.S. Fish and Wildlife Service.

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## Acknowledgments

This study was commissioned by the U.S. Fish and Wildlife Service Division of Visitor Services and Communications Headquarters Office, Arlington, Virginia. The study design and survey instrument were developed collaboratively with representatives from U.S. Fish and Wildlife Service and researchers from the PASA Branch, U.S. Geological Survey. For their support and input to the study, we would like to thank Kevin Kilcullen, Chief of Visitor Services; Steve Suder, National Transportation Coordinator; Regional Office Visitor Services Chiefs and Transportation Coordinators; and the staff and any volunteers at Great Swamp NWR who assisted with the implementation of this surveying effort. The success of this effort is largely a result of their dedication to the refuge and its resources as well as to the people who come to explore these unique lands. We also would like to thank the following PASA team members for their hard work throughout the surveying effort, which has included (among *many* things) the arduous tasks of stuffing more than 20,000 envelopes, managing multiple databases, and preparing numerous reports: Shannon Conk, Halle Musfeldt, Phadrea Ponds, Gale Rastall, Margaret Swann, Emily Walenza, and Katie Walters.

## 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 (USGS) to 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 Great Swamp 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.

<b>Pacific Region (R1)</b>	
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)	
<b>Southwest Region (R2)</b>	
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)	
<b>Great Lakes-Big Rivers Region (R3)</b>	
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)
<b>Southeast Region (R4)</b>	
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)
<b>Northeast Region (R5)</b>	
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)
<b>Mountain-Prairie Region (R6)</b>	
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)	
<b>Alaska Region (R7)</b>	
Alaska Maritime National Wildlife Refuge (AK)	Kenai National Wildlife Refuge (AK)
<b>California and Nevada Region (R8)</b>	
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  $n^{\text{th}}$  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 Great Swamp 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 Great Swamp National Wildlife Refuge

The Great Swamp National Wildlife Refuge lies 26 miles west of New York City's Times Square and 7 miles south of Morristown, New Jersey in Morris County. The refuge was initially established on November 3, 1960, for migration, nesting and feeding habitat for migratory birds, but it now provides much more than that. This oasis of wilderness, surrounded by urban and suburban areas, provides important habitats to fish and wildlife and a unique opportunity for the public to enjoy wildlife and wilderness within close proximity to urban centers.

Roughly 25,000 years ago, where the Wisconsin Glacier reached its furthest point south and stopped, the creation of the Great Swamp began. The melting glacier withdrew, leaving a barren landscape of sand and gravel strewn in long ridges that blocked the outlet of an ancient river basin. Water, melted from the glacier, flowed into the basin behind this natural dam to form Lake Passaic—a giant lake, 30 miles long and 10 miles wide. Eventually, the retreating glacier uncovered a second outlet at what is now Little Falls Gap, and the lake waters drained out along the Passaic River. The lake disappeared and was eventually replaced by extensive marshes and swamps which would be named Great Swamp.

Today this refuge consists of approximately 7,700 acres of swamp woodland, hardwood ridges, cattail marsh, grassland, ponds and meandering streams divided into two sectors, the Wilderness Area and the Management Area. Over the years, the refuge has become a resting and feeding area for more than 244 species of birds. The refuge also provides a home for more than 39 species of reptiles and amphibians, 29 species of fish, 33 species of mammal and approximately 600 species of plants (with 215 species of wildflowers). Additionally, 26 of these species are listed by the State of New Jersey as being threatened or endangered, including the wood turtle, blue-spotted salamander, Indiana bat and bog turtle.

With 152,000 visitors annually (based on 2008 RAPP database; U.S. Fish and Wildlife Service, 2011, written comm.), this refuge has many activities to offer including educational programs, wildlife observation, photography, nature trails, use of the Visitor Center, fishing, auto tour routes, hunting, bird watching, environmental education and interpretation. This urban oasis provides visitors with a chance to escape the hustle and bustle of nearby New York City and enjoy the serene beauty and programs Great Swamp National Wildlife Refuge has to offer. Figure 1 displays a map of Great Swamp NWR. For more information, go to <http://www.fws.gov/northeast/greatswamp/index.html>.

# Great Swamp

## National Wildlife Refuge

Morris County, New Jersey

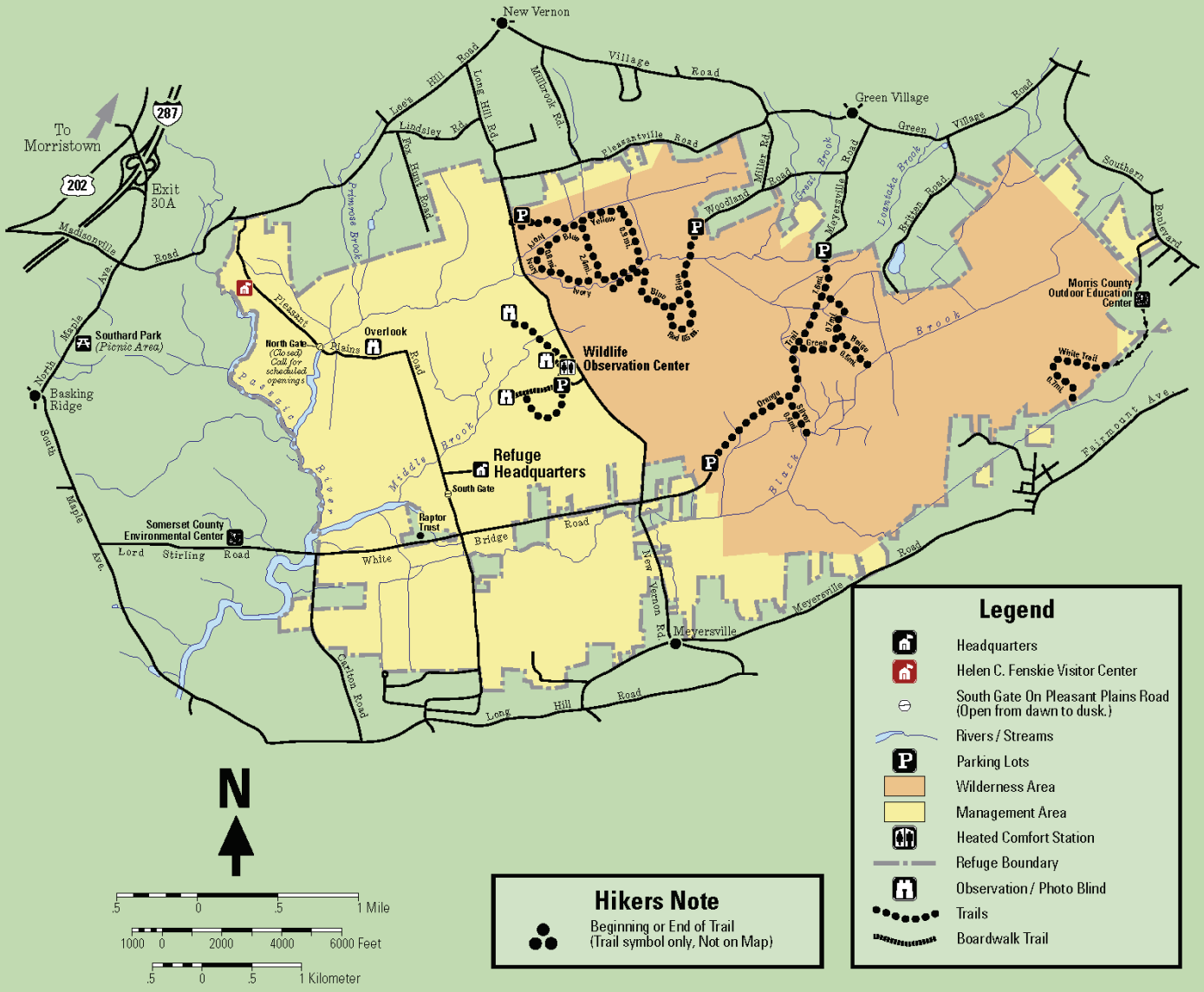
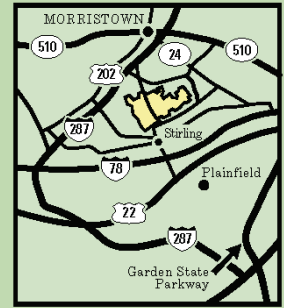


Figure 1. Map of Great Swamp NWR, courtesy of U.S. Fish and Wildlife Service.

## Sampling at Great Swamp National Wildlife Refuge

A total of 336 visitors agreed to participate in the survey during the two sampling periods at the identified locations at Great Swamp NWR (table 2). In all, 219 visitors completed the survey for a 67% response rate and  $\pm 5\%$  margin of error at the 95% confidence level.<sup>1</sup>

**Table 2.** Sampling and response rate summary for Great Swamp NWR.

Sampling period	Dates	Locations	Total contacts	Undeliverable addresses	Completed surveys	Response rate
1	10/23/10 to 11/06/10	Refuge Headquarters	179	6	118	68%
		Wildlife Observation Center				
		Helen C. Fenske Visitor Center				
		Refuge-wide patrol of public use areas				
		Deer check station and hunter parking lots				
2	04/23/11 to 05/07/11	Refuge Headquarters	157	3	101	66%
		Wildlife Observation Center				
		Helen C. Fenske Visitor Center				
		Refuge-wide patrol of public use areas				
<b>Total</b>			<b>336</b>	<b>9</b>	<b>219</b>	<b>67%</b>

## 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 Great Swamp NWR reported that before participating in the survey, they were aware of the role of the U.S. Fish and Wildlife Service in managing national wildlife refuges (88%) and that the Refuge System has the mission of conserving, managing, and restoring fish,

<sup>1</sup> 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).

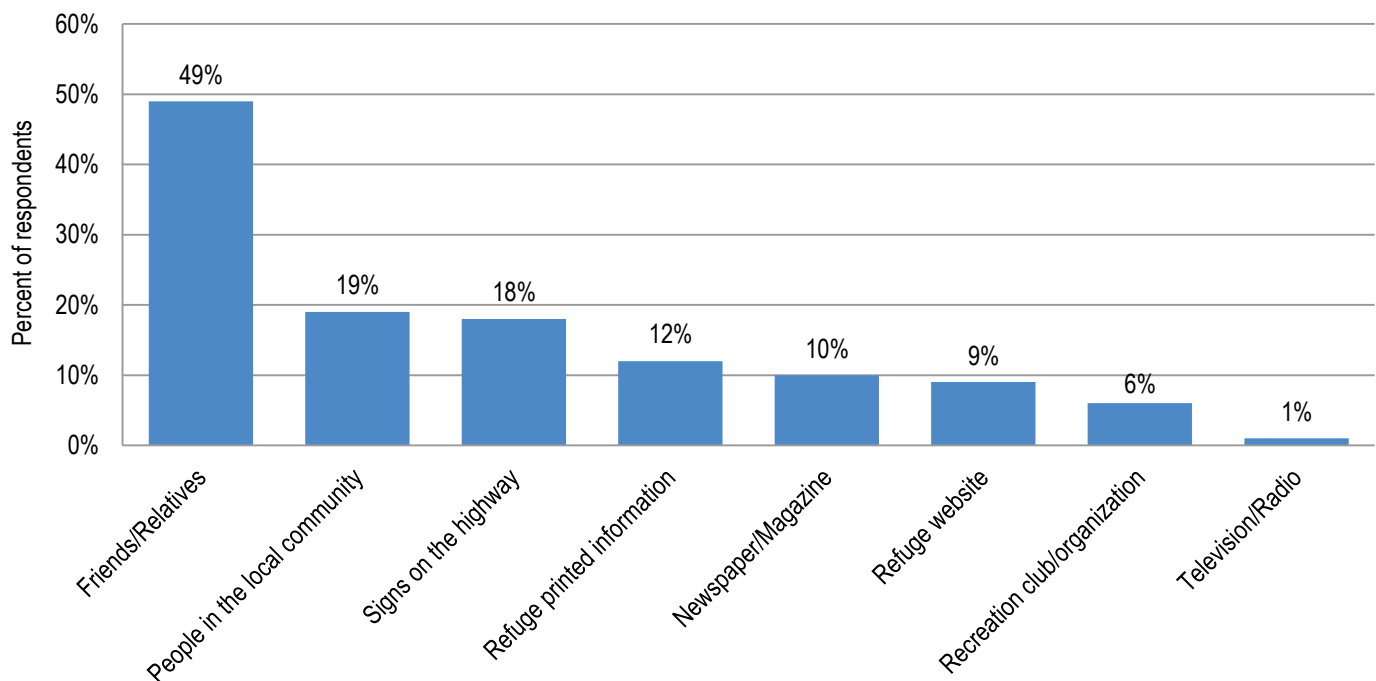
wildlife, plants and their habitat (92%). Positive responses to these questions concerning the management and mission of the Refuge System do not indicate the degree to which these visitors understand the day-to-day management practices of individual refuges, only that visitors feel they have a basic knowledge of who manages refuges and why. Compared to other public lands, many visitors feel that refuges provide a unique recreation experience (85%; 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. More than half of visitors to Great Swamp NWR had been to at least one other National Wildlife Refuge in the past year (63%), with an average of 7 visits to other refuges during the past 12 months.

### Visiting This Refuge

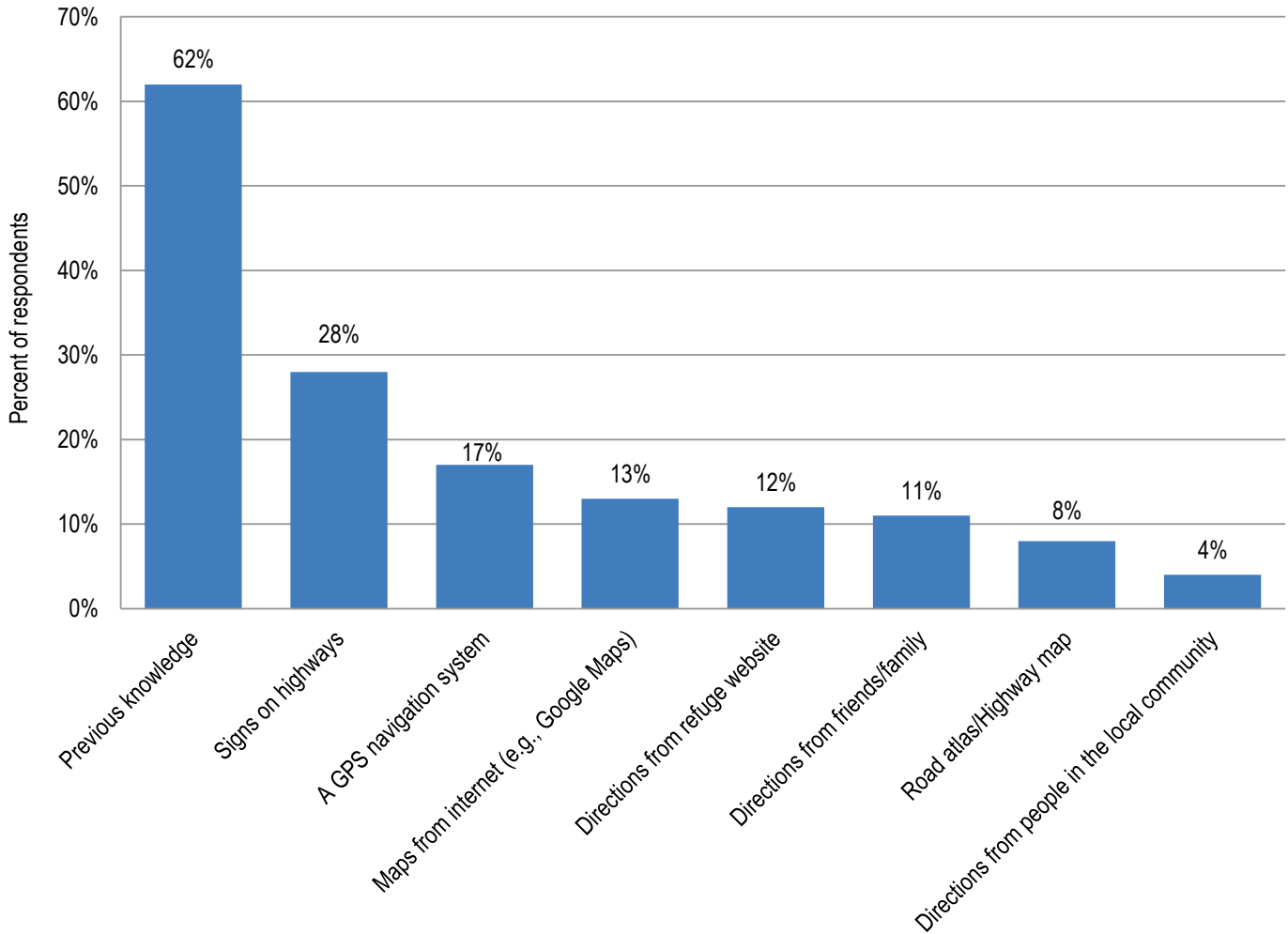
Some surveyed visitors (21%) had only been to Great Swamp NWR once in the past 12 months, while most had been multiple times (79%). These repeat visitors went to the refuge an average of 18 times during that same 12-month period. Visitors used the refuge during only one season (37%), during multiple seasons (27%), and year-round (36%).

Most visitors first learned about the refuge from friends/relatives (49%), people in the local community (19%), or signs on the highway (18%; fig. 2). Key information sources used by visitors to find their way to this refuge include previous knowledge (62%), signs on highways (28%), or a GPS navigation system (17%; fig. 3).

Most visitors (82%) lived in the local area (within 50 miles of the refuge), whereas 18% were nonlocal visitors. For most local visitors, Great Swamp NWR was the primary purpose or sole destination of their trip (85%; table 3). For most nonlocal visitors, the refuge was also the primary purpose or sole destination of their trip (74%). Local visitors reported that they traveled an average of 16 miles to get to the refuge, while nonlocal visitors traveled an average of 132 miles. Figure 4 shows the residence of visitors travelling to the refuge. About 89% of visitors travelling to Great Swamp NWR were from New Jersey.



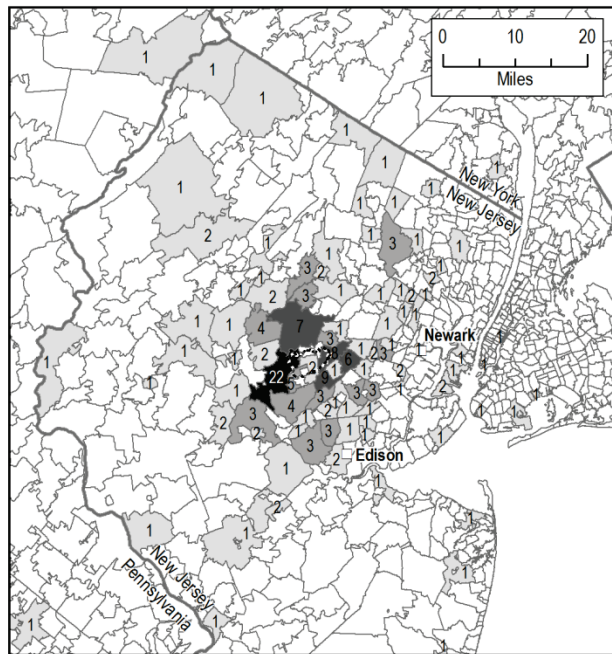
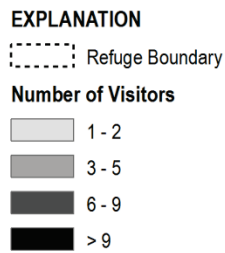
**Figure 2.** How visitors first learned or heard about Great Swamp NWR (n = 206).



**Figure 3.** Resources used by visitors to find their way to Great Swamp NWR during *this* visit (n = 217).

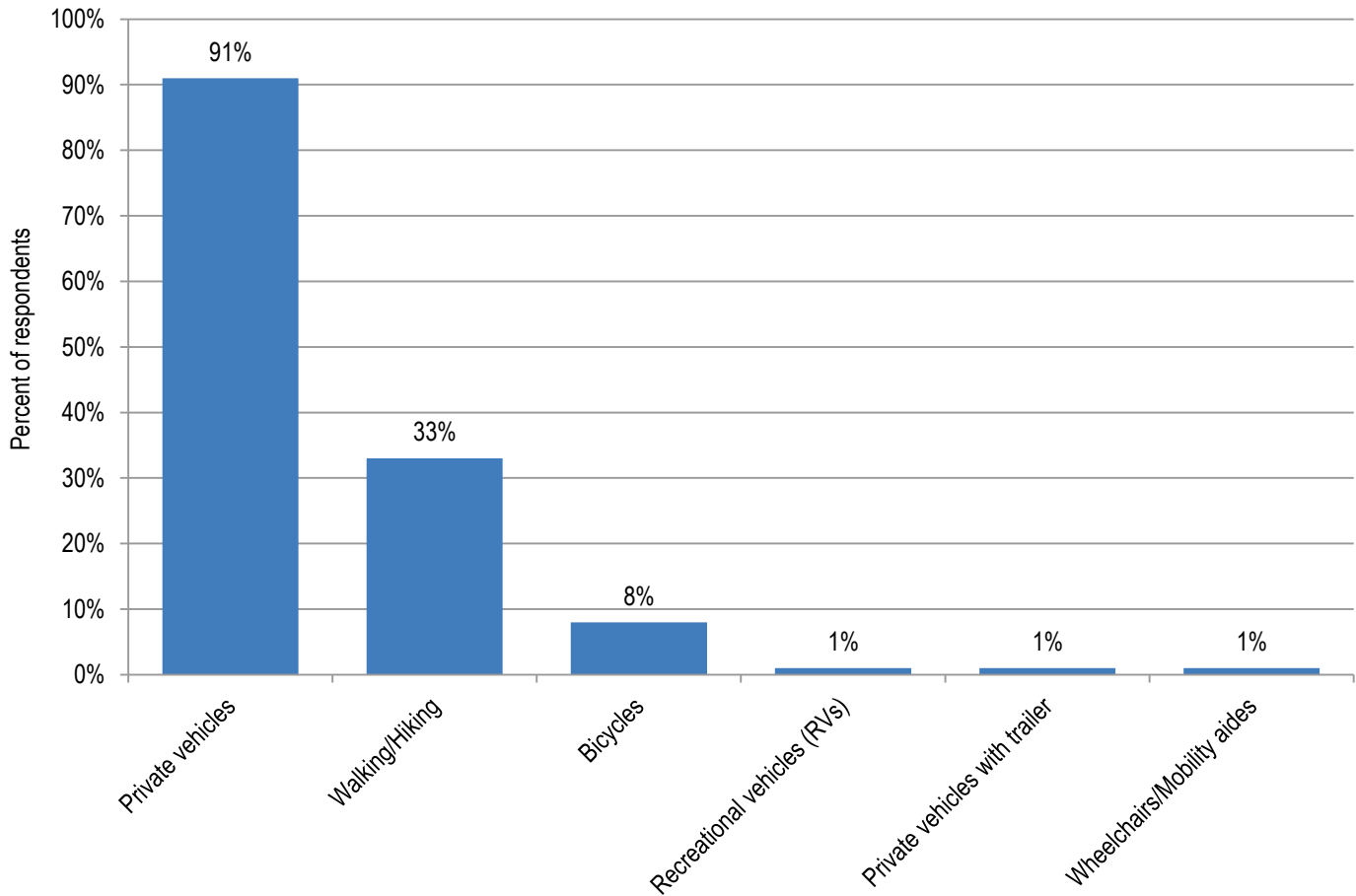
**Table 3.** Influence of Great Swamp NWR on visitors' decision to take *this* trip.

Visitors	Visiting this refuge was...		
	the primary reason for trip	one of many equally important reasons for trip	an incidental stop
Nonlocal	74%	13%	13%
Local	85%	10%	5%
Total	83%	11%	6%



**Figure 4.** Number of visitors travelling to Great Swamp NWR by residence. Top map shows residence by state and bottom map shows residence by zip codes near the refuge (n = 219).

Surveyed visitors reported that they spent an average of 4 hours at Great Swamp 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 8 hours (29%). The key modes of transportation used by visitors to travel around the refuge were private vehicle (91%) and walking/hiking (33%; fig. 5). More than half of visitors indicated they were part of a group on their visit to this refuge (55%), travelling primarily with family and friends (table 4).

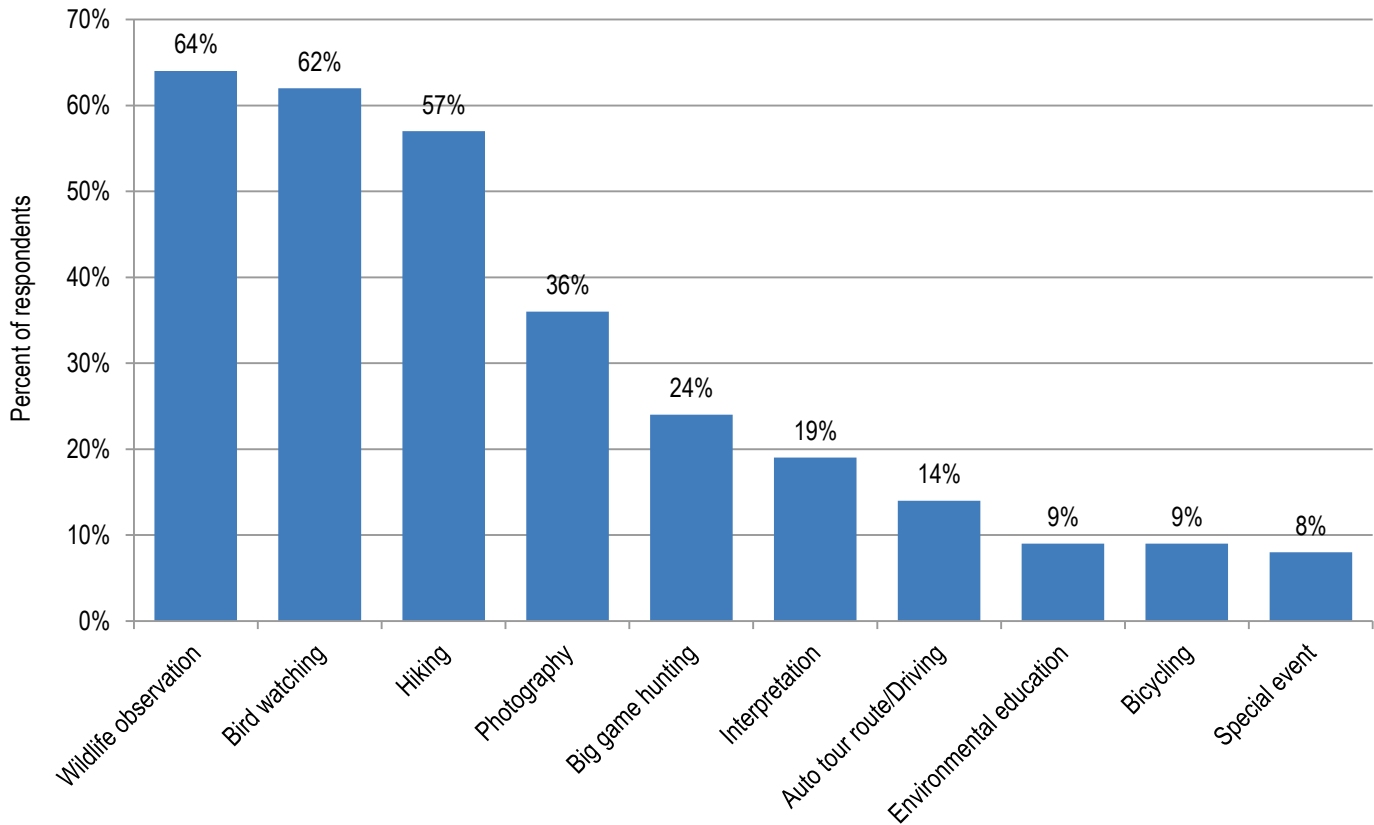


**Figure 5.** Modes of transportation used by visitors to Great Swamp NWR during *this* visit (n = 219).

**Table 4.** Type and size of groups visiting Great Swamp NWR (for those who indicated they were part of a group, n = 119).

Group type	Percent (of those traveling in a group)	Average group size		
		Number of adults	Number of children	Total group size
Family/Friends	87%	3	1	4
Commercial tour group	1%	8	0	8
Organized club/School group	5%	11	0	11
Other group type	8%	11	2	13

Surveyed visitors participated in a variety of refuge activities during the past 12 months (fig. 6); the top three activities reported were wildlife observation (64%), bird watching (62%), and hiking (57%). The primary reasons for their most recent visit included bird watching (26%), hunting (24%), and hiking (19%; fig. 7). The visitor center was used by 60% of visitors, mostly to ask information of staff/volunteers (65%), view the exhibits (64%), and stop to use the facilities (61%; fig. 8).

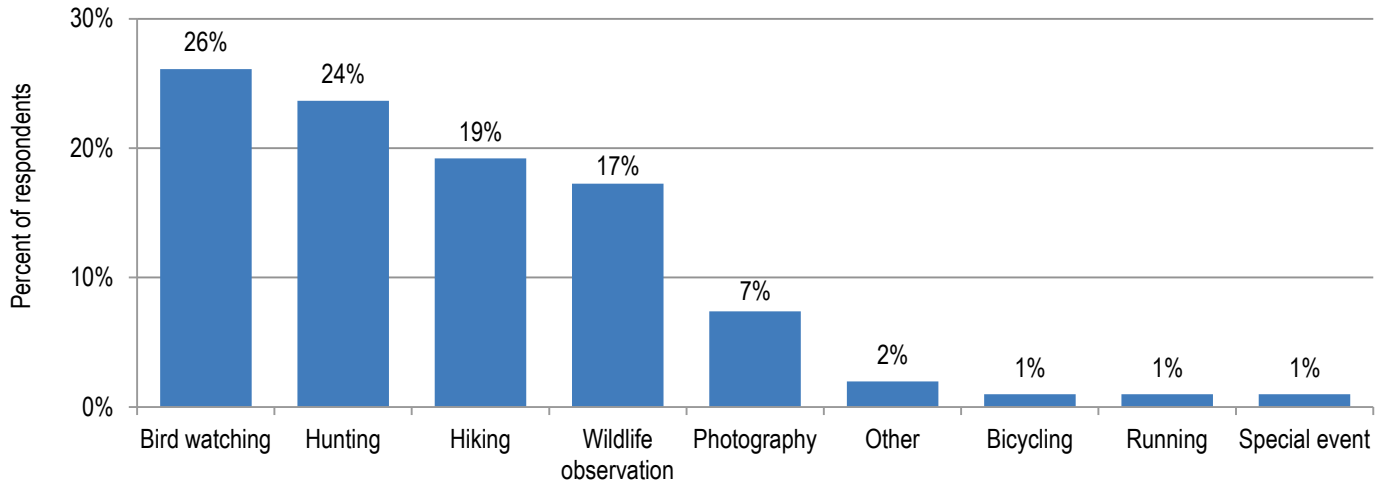


**Figure 6.** Activities in which visitors participated during the past 12 months at Great Swamp NWR (n = 219). See Appendix B for a listing of “other” activities.

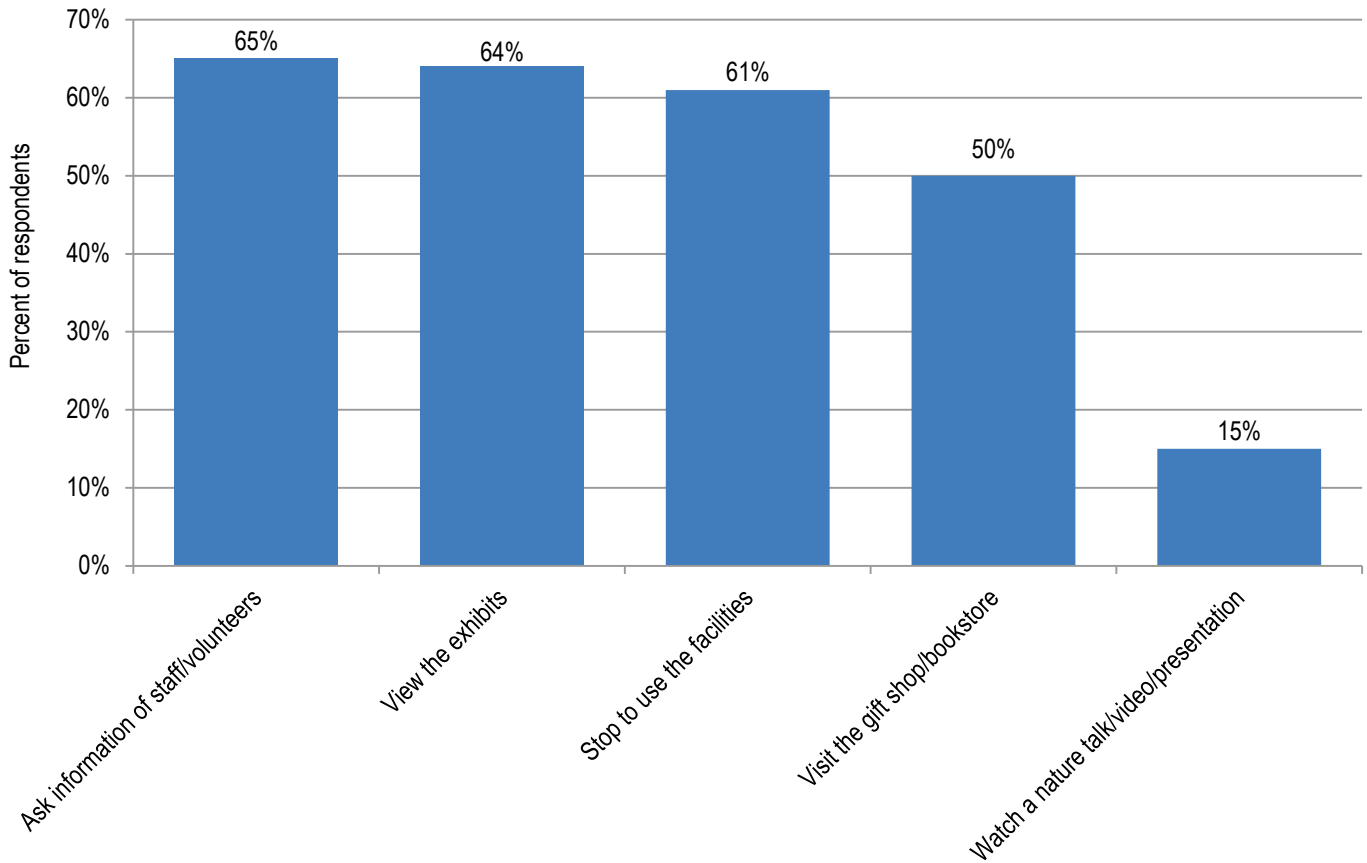
### Visitor Characteristics

Nearly all (98%) surveyed visitors to Great Swamp 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 63% male with an average age of 54 years and 37% female with an average age of 53 years. Visitors, on average, reported they had 16 years of formal education (college or technical school). The median level of income was \$100,000-\$149,999. 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 Great Swamp NWR (n = 203). See Appendix B for a listing of “other” activities.



**Figure 8.** Use of the visitor center at Great Swamp NWR (for those visitors who indicated they used the visitor center, n = 131).

## 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, 82% of surveyed visitors to Great Swamp NWR indicated that they live within the local area. Nonlocal visitors (18%) stayed in the local area, on average, for 2 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. ***It is important to note that summary statistics based on a small sample size ( $n < 30$ ) may not provide a reliable representation of that population.*** During the two sampling periods, nonlocal visitors spent an average of \$42 per person per day and local visitors spent an average of \$31 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 the Great Swamp NWR expressed in dollars per person per day.

Visitors	n <sup>1</sup>	Median	Mean	Standard deviation	Minimum	Maximum
Nonlocal	29	\$28	\$42	\$42	\$0	\$154
Local	129	\$20	\$31	\$42	\$0	\$235

<sup>1</sup>n = 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.

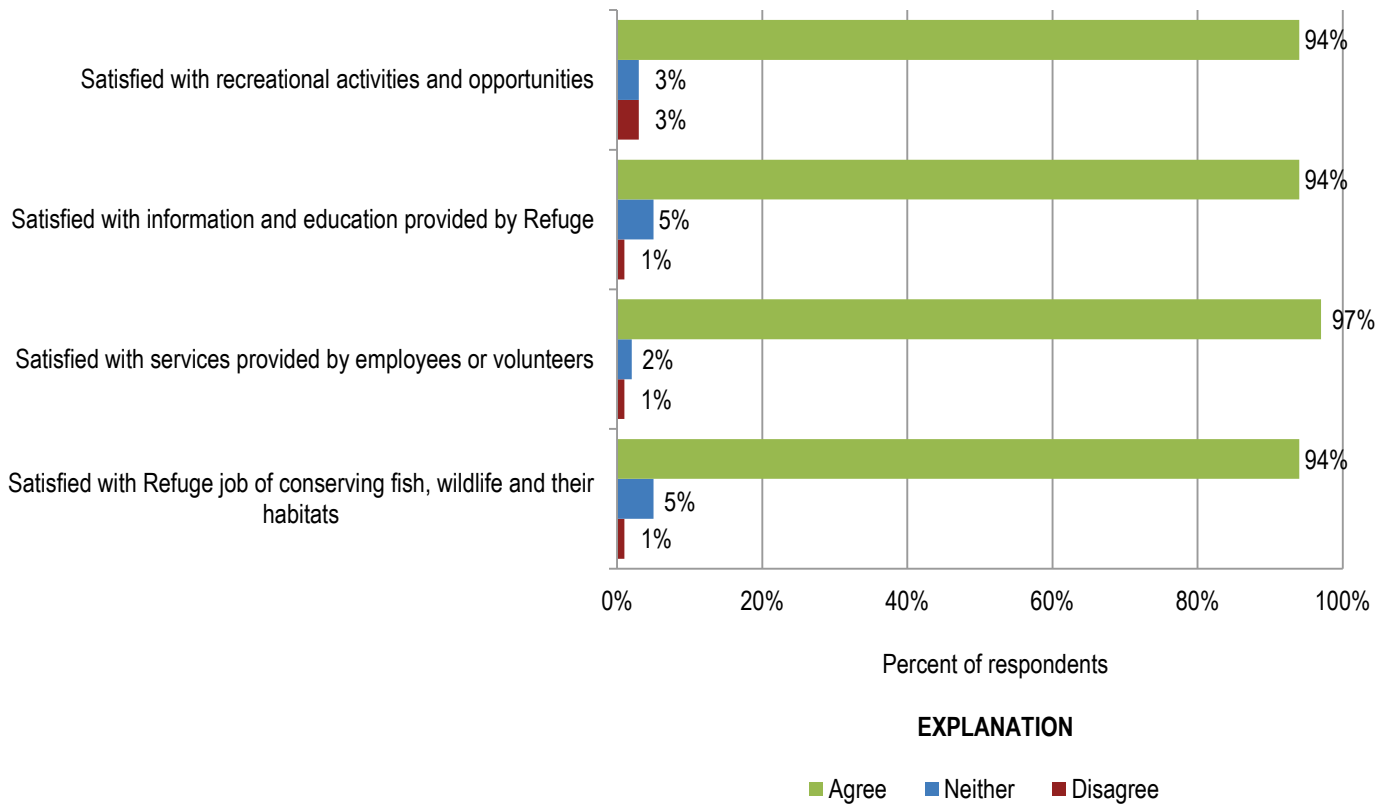
## Visitor Opinions about This Refuge

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 Great Swamp NWR were as follows (fig. 9):

- 94% were satisfied with the recreational activities and opportunities,
- 94% were satisfied with the information and education about the refuge and its resources,
- 97% were satisfied with the services provided by employees or volunteers, and
- 94% were satisfied with the refuge's job of conserving fish, wildlife and their habitats.

Although 25% of visitors (n = 53) indicated they paid a fee to enter Great Swamp NWR, the refuge does not have an entrance fee. The refuge does have a permit fee for hunters. It may be that some visitors were referencing this fee when answering the question.



**Figure 9.** Overall satisfaction with Great Swamp NWR during this visit (n ≥ 209).

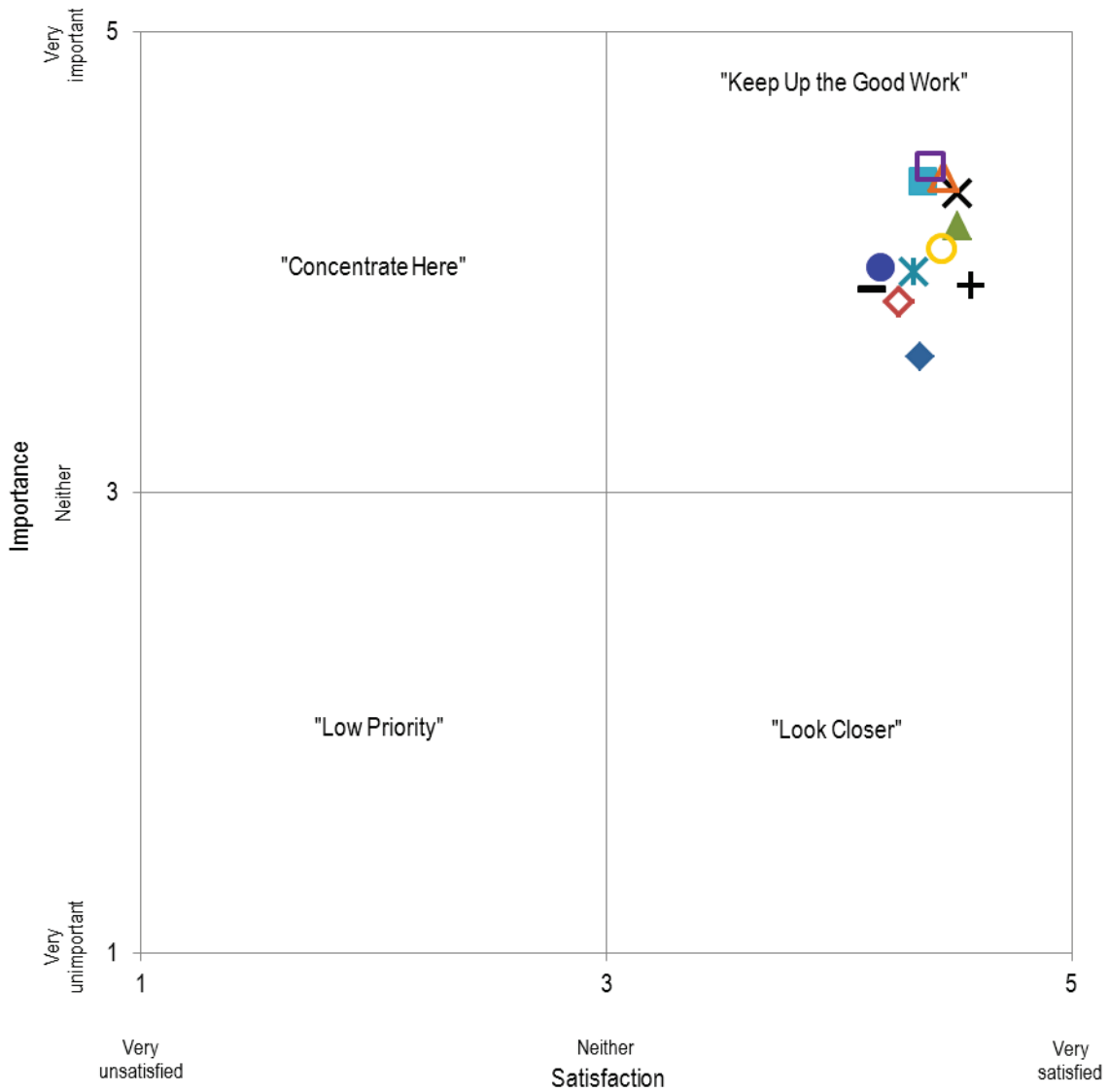
## Importance/Satisfaction Ratings

*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 Great Swamp 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.*

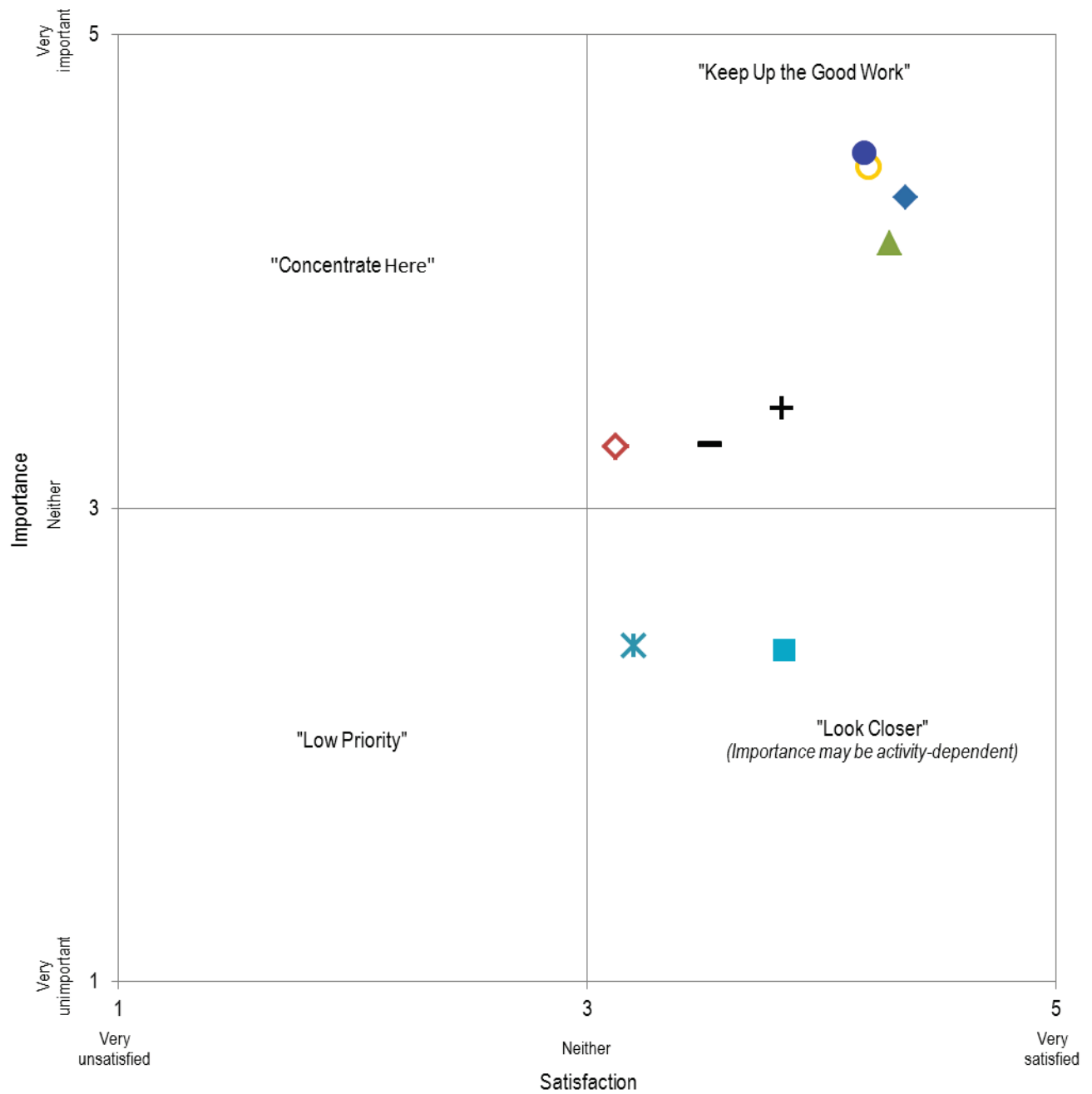
Figures 10-12 depict surveyed visitors' importance-satisfaction results for refuge services and facilities, recreational opportunities, and transportation-related features at Great Swamp NWR, respectively. All refuge services and facilities fell in the "Keep Up the Good Work" quadrant (fig. 10). Nearly all refuge recreational opportunities fell in the "Keep Up the Good Work" quadrant except hunting and fishing opportunities, which fell into the "Look Closer" quadrant (fig. 11). Those who participated in hunting during the past 12 months ( $n = 53$ ) indicated on average that hunting opportunities were very important (mean importance score = 4.60), while visitors who did not participate in hunting at all indicated on average that hunting opportunities were somewhat unimportant (mean importance score = 1.62). The average importance of fishing opportunities in the "Look Closer" quadrant may be higher among visitors who have participated in this activity during the past 12 months; however, there were not enough individuals in the sample to evaluate the responses of such participants. 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

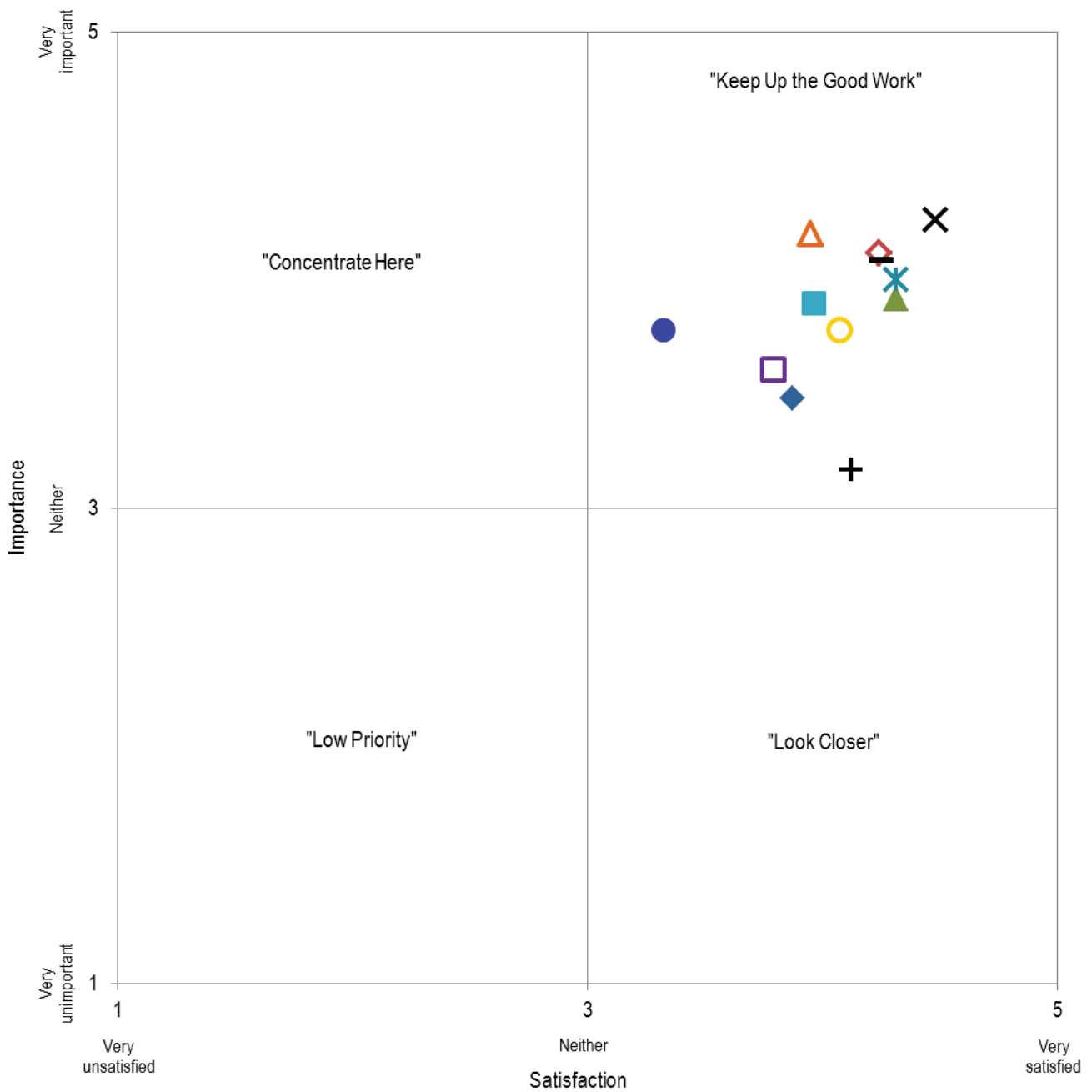
**Figure 10.** Importance-satisfaction ratings of services and facilities provided at Great Swamp NWR.



**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 Great Swamp 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 Great Swamp 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 Great Swamp 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.*

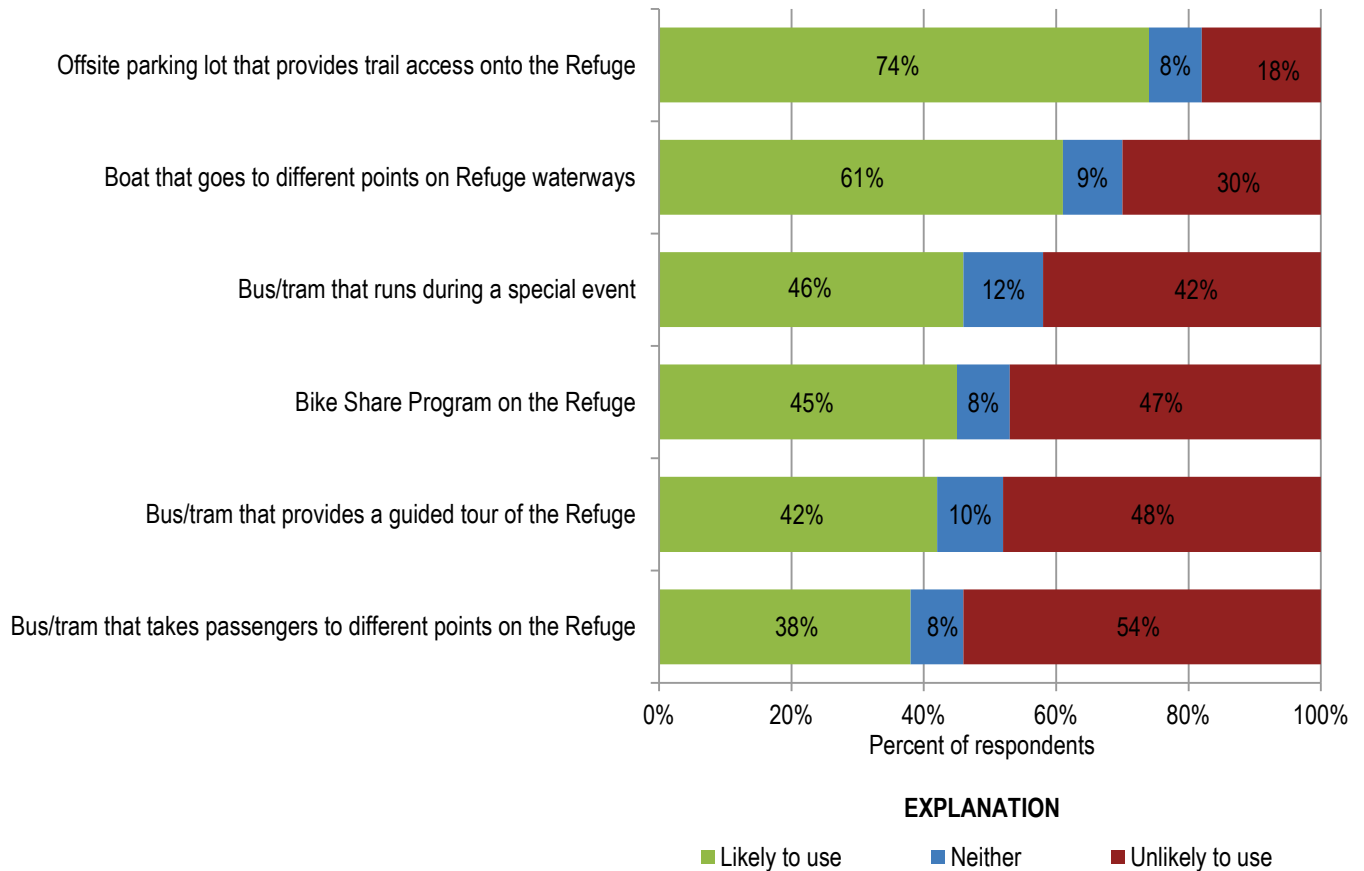
Of the six Refuge System-wide alternative transportation options listed on the survey, the majority of Great Swamp NWR visitors who were surveyed were likely to use the following options at national wildlife refuges in the future (fig. 13):

- an offsite parking lot that provides trail access; and
- a boat that goes to different points on Refuge waterways.

The majority of visitors were *not* likely to use a bus/tram that takes passengers to different points on national wildlife refuges in the future (fig. 13).

When asked about using alternative transportation at Great Swamp NWR specifically, 39% of visitors indicated they were unsure whether it would enhance their experience; however, some visitors thought alternative transportation would enhance their experience (18%) and others thought it would not (43%).





**Figure 13.** Visitors’ likelihood of using alternative transportation options at national wildlife refuges in the future (n ≥ 207).

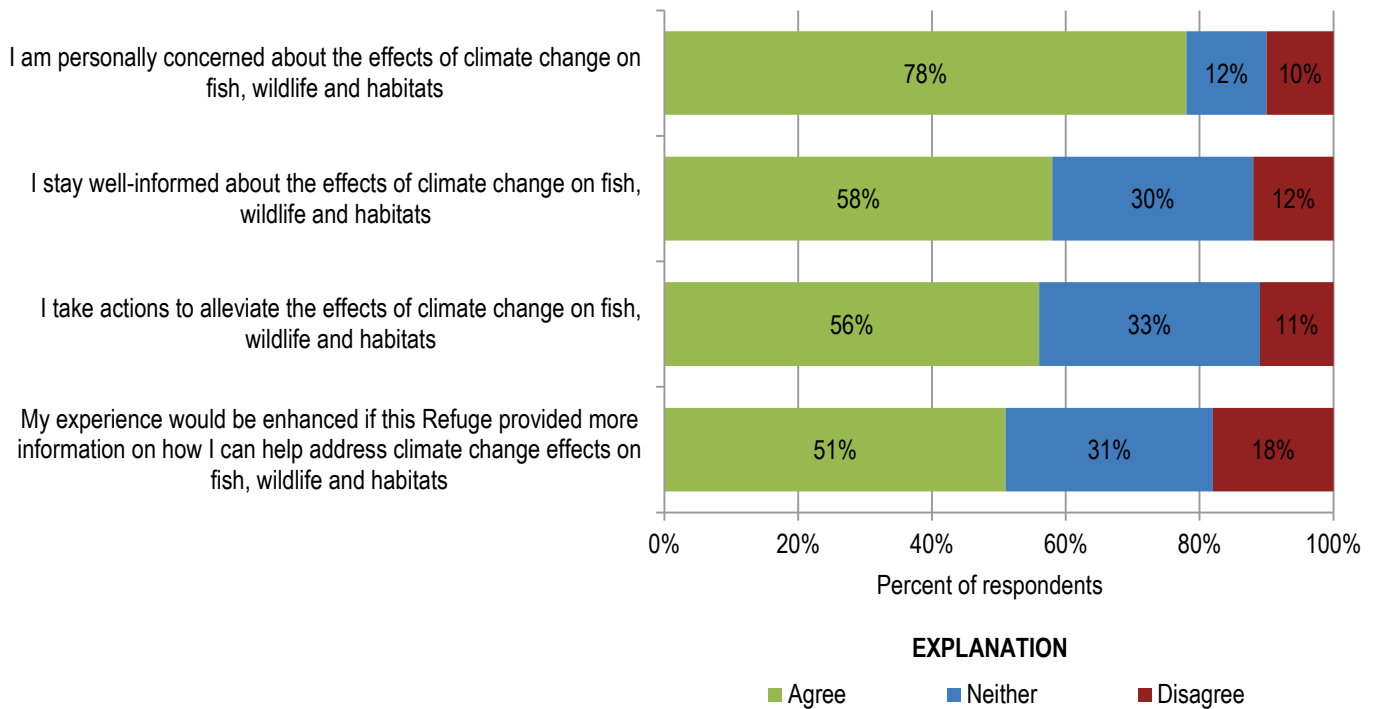
### Climate Change and the National Wildlife Refuge System

*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 Great Swamp NWR agreed with the following statements (fig. 14):

- “I am personally concerned about the effects of climate change on fish, wildlife and habitats;”
- “I stay well-informed about the effects of climate change;”
- “I take actions to alleviate the effects of climate change;” and
- “My experience would be enhanced if the Refuge provides information about how I can help address climate change effects.”



**Figure 14.** Visitors’ personal involvement with climate change related to fish, wildlife and their habitats (n ≥ 208).

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).

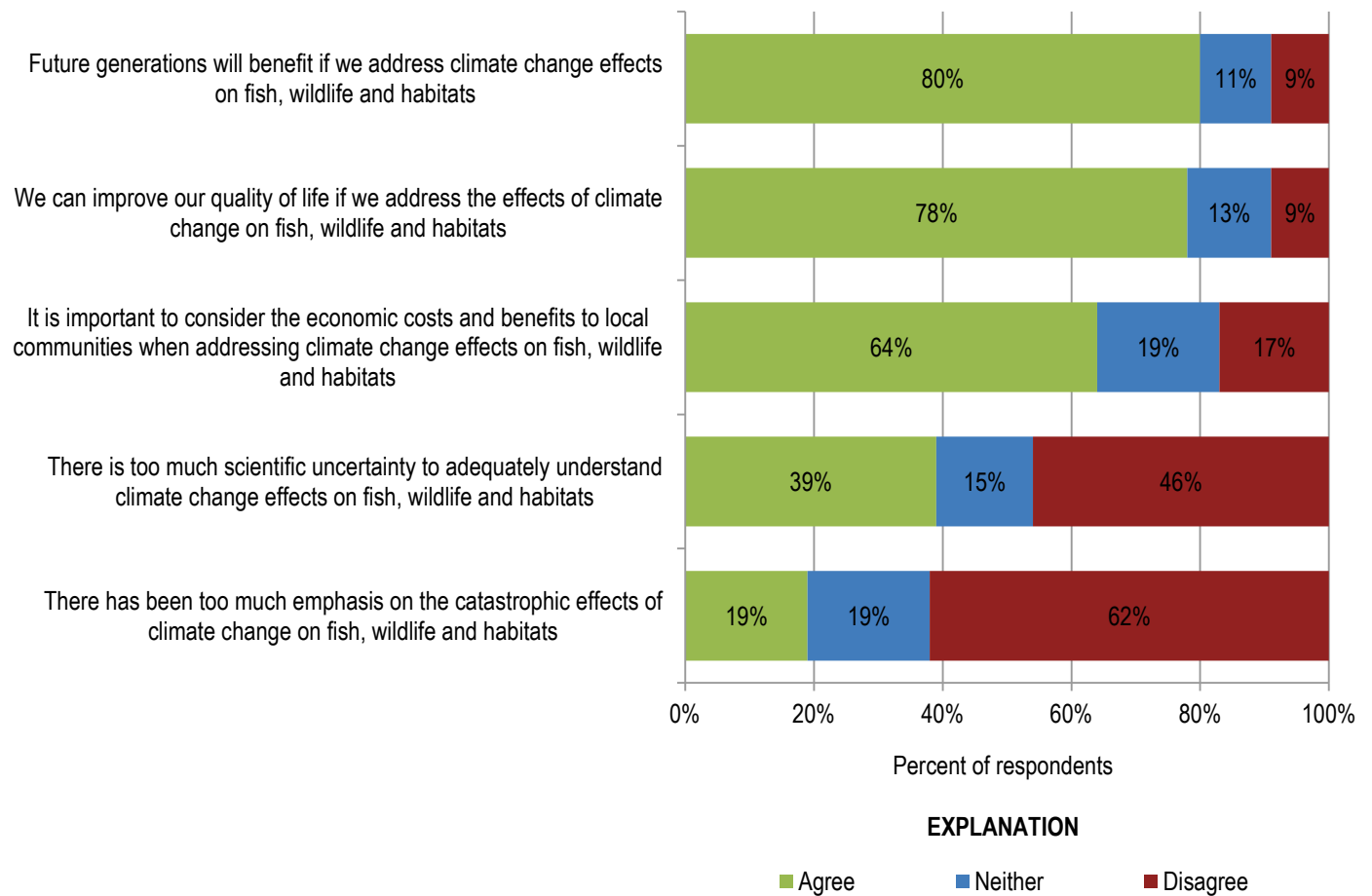
For Great Swamp NWR, the majority of visitors believed the following regarding climate change related to fish, wildlife and their habitats (fig. 15):

- “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;” and
- “It is important to consider the economic costs and benefits to local communities when addressing 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 more than half of visitors (51%) indicated that their experience would be enhanced if Great Swamp 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 ≥ 210).

## Characterization of Deer Hunters at Great Swamp NWR

*The following section provides a summary of key survey responses of deer hunters sampled during the first sampling period at Great Swamp NWR from 10/23/10 to 11/06/10. This analysis was conducted at the request of Great Swamp NWR in an effort to provide a more in-depth characterization of these refuge visitors. As described in the Introduction of this report, part of the Refuge System mission is “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). Understanding certain user groups such as hunters can help refuge management develop appropriate strategies for the diversity of visitors using the refuge.*

### Methods for Characterization

This analysis is based on 47 visitors who indicated deer hunting as their primary activity the day they were contacted to participate in the survey. This represents 40% of the total sample for the first sampling period. Statistical differences between deer hunters and the rest of the first sampling period sample (either in frequency distributions or mean responses) are marked by footnotes. Comparisons were made with either Chi-Square tests of independence ( $\chi^2$ ) or Independent Samples T-tests ( $t$ ). The alpha level for determining statistical differences in response was  $p = .05$  for all tests. ***It is important to note the potential limitations outlined in the Interpreting the Results section of this report, as they also apply to generalizing these results to the entire population of deer hunters.***

### Visitor and Trip Characteristics

#### Familiarity with the Refuge System and Visiting This Refuge

Deer hunters to Great Swamp NWR have a high familiarity with the Refuge System mission (96%) and U.S. Fish and Wildlife Service’s role in managing national wildlife refuges (94%)<sup>2</sup>. Some deer hunters had been to at least one other National Wildlife Refuge in the past year (35%). Most (79%) of the deer hunters had been to Great Swamp NWR numerous times in the past 12 months, visiting an average of 6 times<sup>3</sup> during that same time period. Most deer hunters (64%)<sup>4</sup> had used the refuge during only one season during the past 12 months.

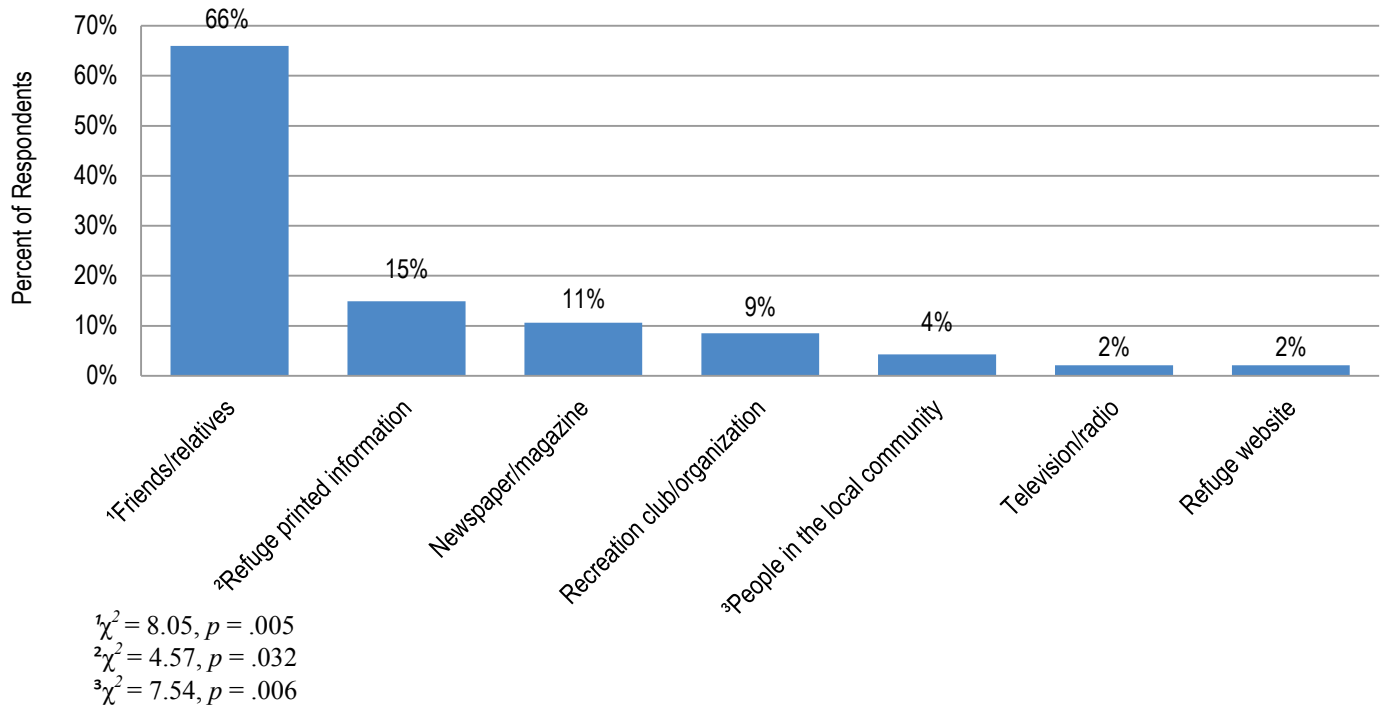
Most deer hunters first learned about the refuge from friends and relatives (66%; Figure 16), while none of the deer hunters learned about the refuge from signs on the highways. Many of the deer hunters had been to the refuge and relied on previous knowledge to get there (57%); however, other deer hunters used directions from friends or family (25%) and signs on the highways (23%; Figure 17). Only 2% of deer hunters used maps from the internet to find their way.

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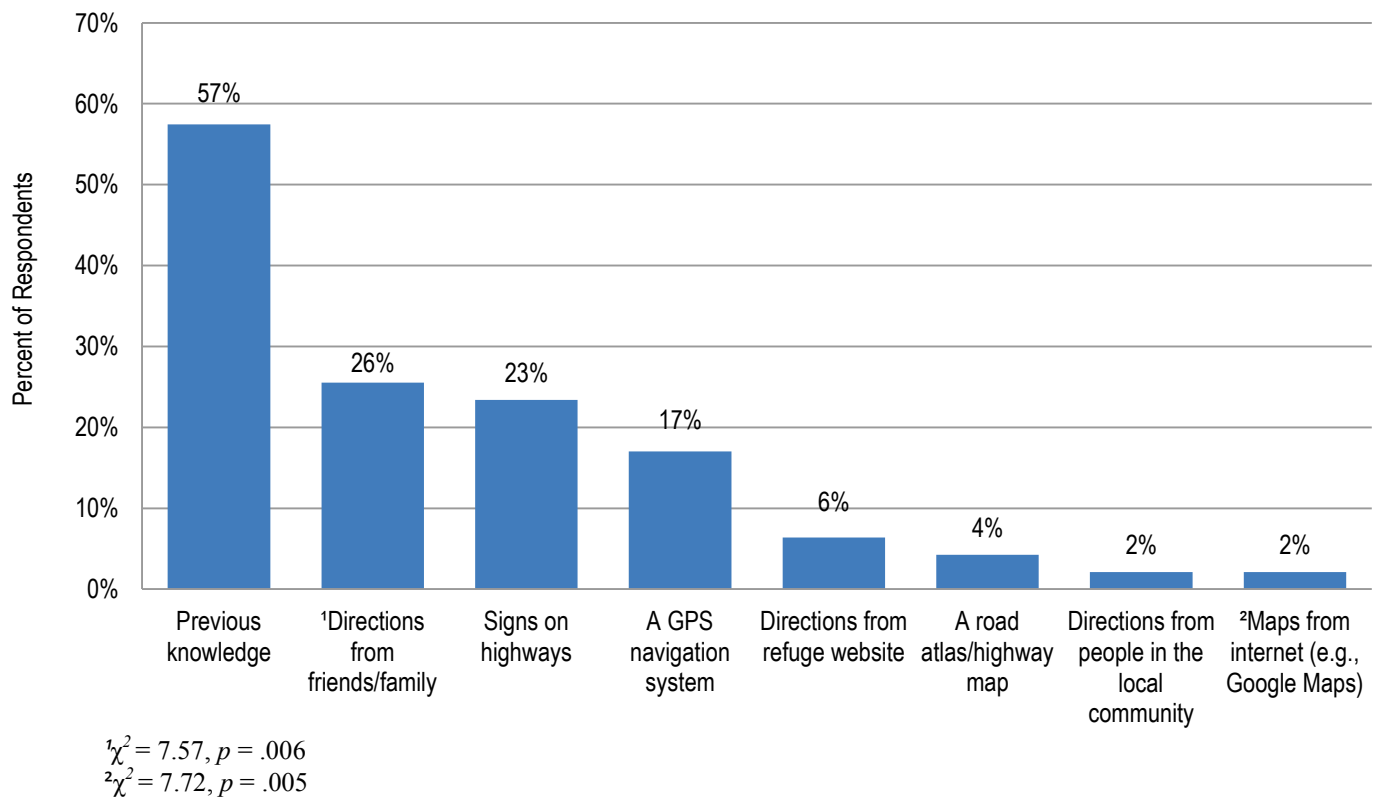
<sup>2</sup> $\chi^2 = 4.05, p = .044$

<sup>3</sup> $t = 2.12, p = .040$

<sup>4</sup> $\chi^2 = 13.51, p = .001$



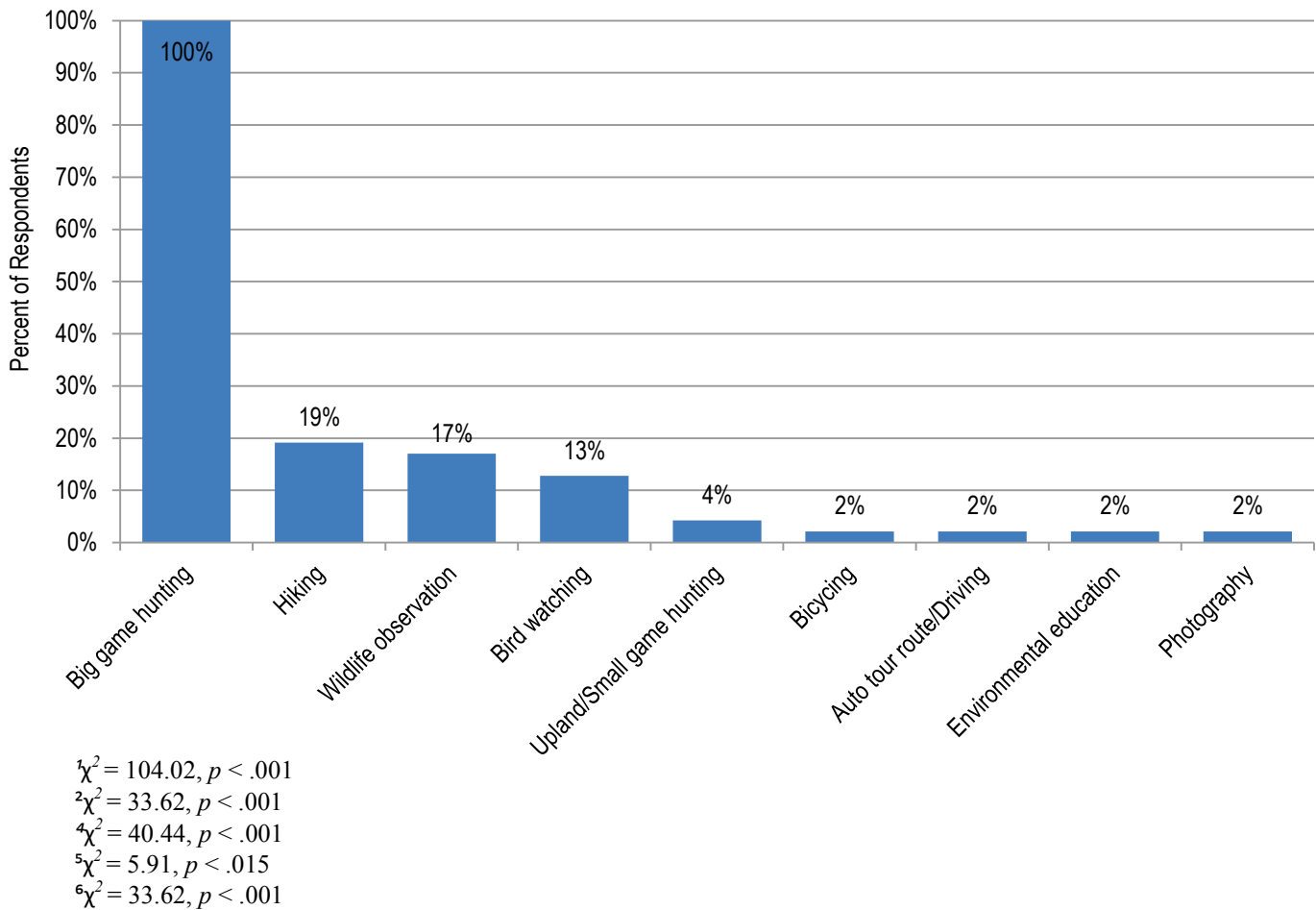
**Figure 16.** How deer hunters first learned or heard about Great Swamp NWR.



**Figure 17.** Resources used by deer hunters to find their way to Great Swamp NWR.

Most deer hunters (70%) live in the local area (within 50 miles of the refuge). These local hunters reported that they traveled approximately 31 miles to get to the refuge, while nonlocal hunters (n = 14) traveled an average of 164 miles. ***It is important to note that summary statistics based on a sample size of less than 30 respondents (n < 30) may not provide a reliable representation of the population.*** The key mode of transportation used by deer hunters to travel around the refuge were private vehicles (96%) and walking or hiking (19%).

Deer hunters reported that they spent an average of 9 hours<sup>5</sup> at Great Swamp 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 8 hours (87%). They participated in a variety of refuge activities over the past 12 months besides hunting (Figure 18); the top three activities reported after hunting were hiking (19%), wildlife observation (17%), and bird watching (13%). About a third of deer hunters (n = 16; 34%)<sup>6</sup> used the visitors center on their visit. ***It is important to note that summary statistics based on a sample size of less than 30 respondents (n < 30) may not provide a reliable representation of the population.***



**Figure 18.** Activities deer hunters participated in during past 12 months at Great Swamp NWR.

<sup>5</sup>  $t = -14.45, p < .001$   
<sup>6</sup>  $\chi^2 = 29.28, p < .001$

## Visitor Characteristics

Nearly all deer hunters surveyed were male (97%),<sup>7</sup> with an average age of 49 years.<sup>8</sup> On average, visitors reported they had 14 years<sup>9</sup> of formal education (college or technical school). The median level of income was \$150,000-199,999.

## Visitor Opinions about This Refuge

At Great Swamp NWR, deer hunters' overall satisfaction with the services, facilities, and recreational opportunities provided were as follows:

- 94% were satisfied with the recreational activities and opportunities,
- 93% were satisfied with the information and education about refuge its resources,
- 100% were satisfied with the services provided by employees or volunteers, and
- 96% were satisfied with the refuge's job of conserving fish, wildlife and their habitats.

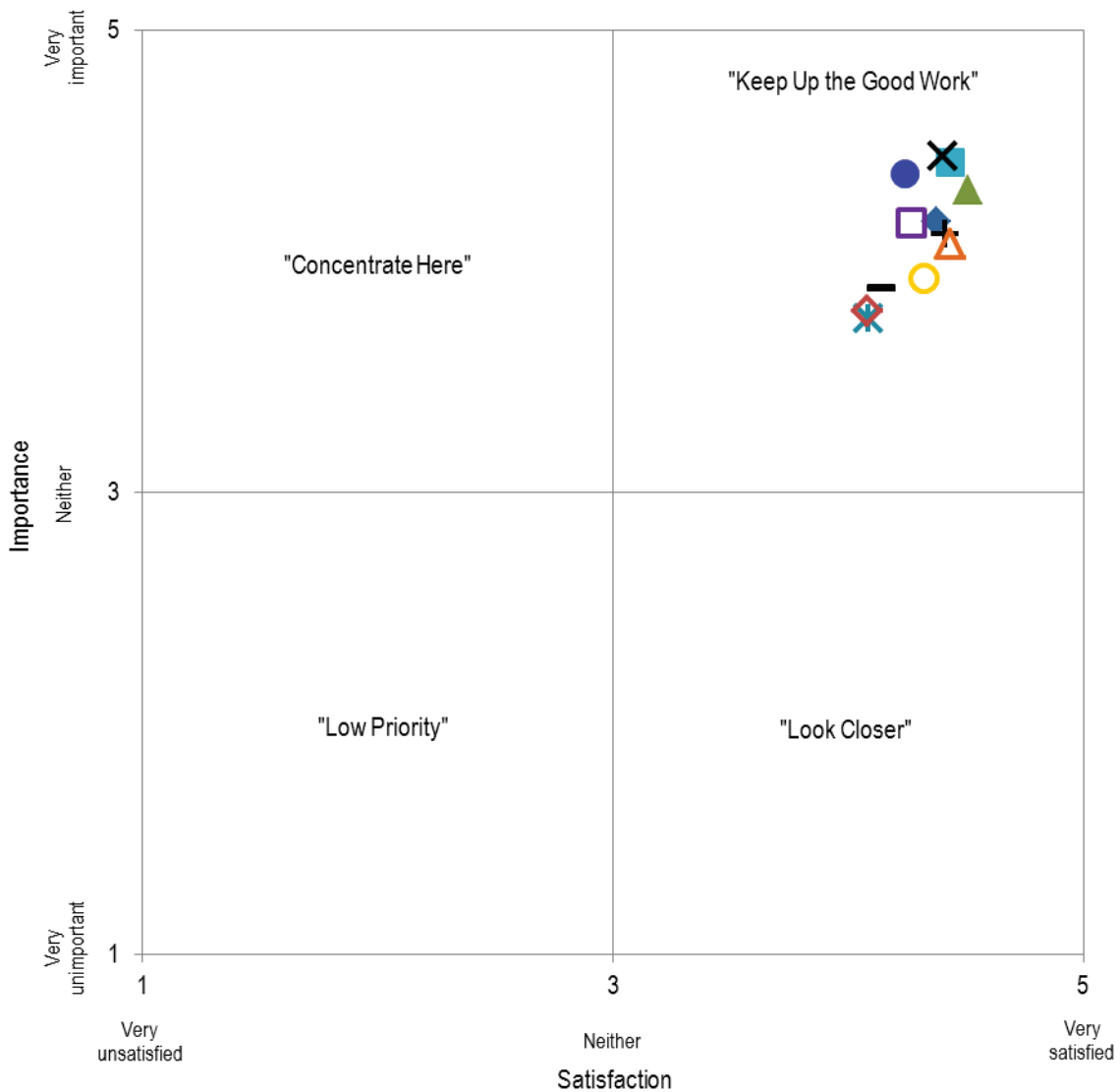
Figures 19-21 depict importance-satisfaction results for deer hunters on refuge services and facilities, recreational opportunities, and transportation-related features. All items fell in the "Keep Up the Good Work" quadrant. It is worth noting, however, that while in still in the "Keep Up the Good Work" quadrant, canoe/kayak opportunities and fishing opportunities were rated as important though satisfaction was rated closer to neutral (3.23 and 3.09, respectively). This may be because canoe/kayak opportunities are limited on the refuge and fishing is not allowed.

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<sup>7</sup>  $X^2 = 29.28, p < .000$

<sup>8</sup>  $t = 2.94, p = .004$

<sup>9</sup>  $t = 3.31, p < .000$

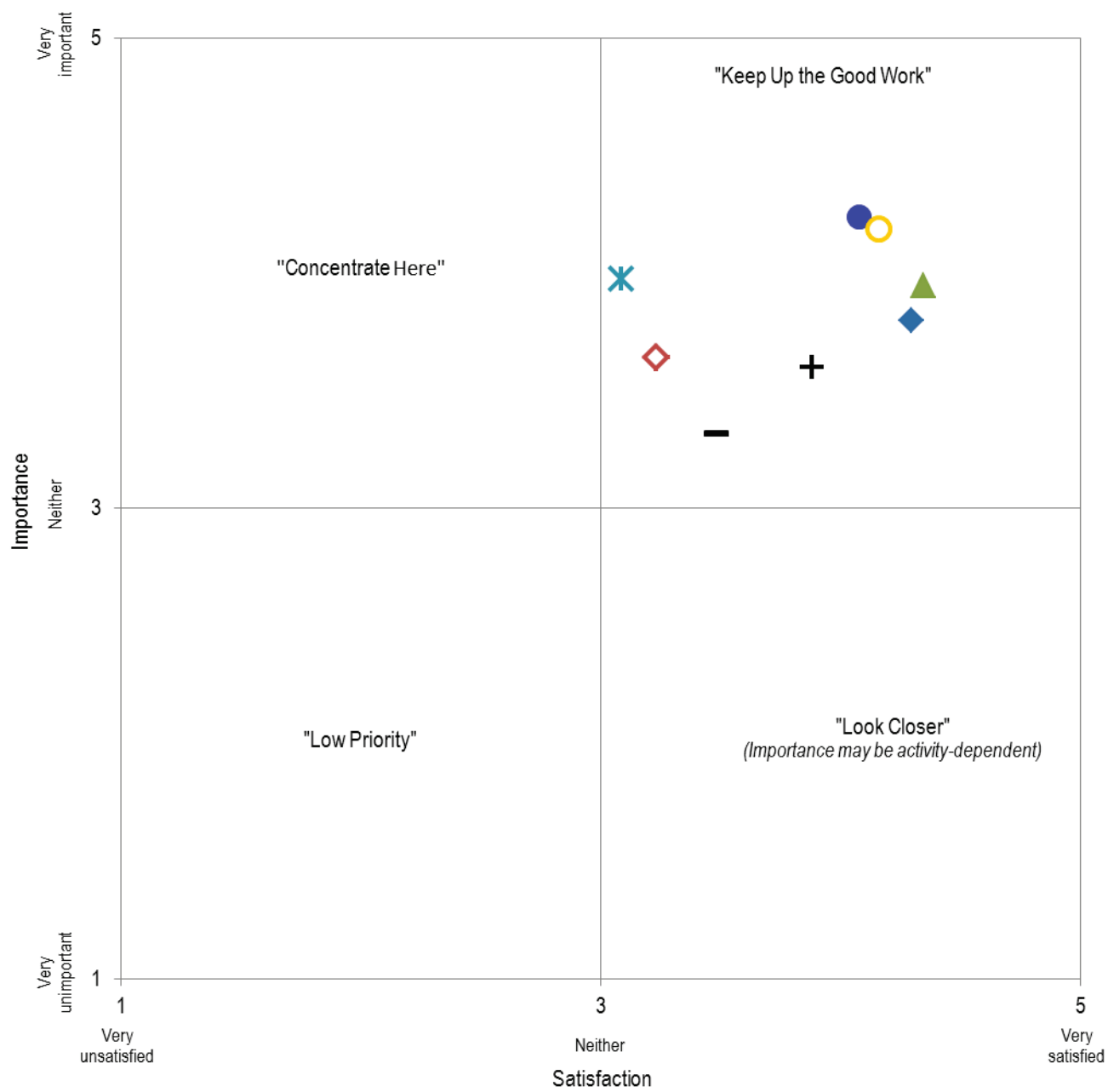


**EXPLANATION**

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

**Figure 19.** Deer hunters' importance-satisfaction ratings with services and facilities provided at Great Swamp NWR.

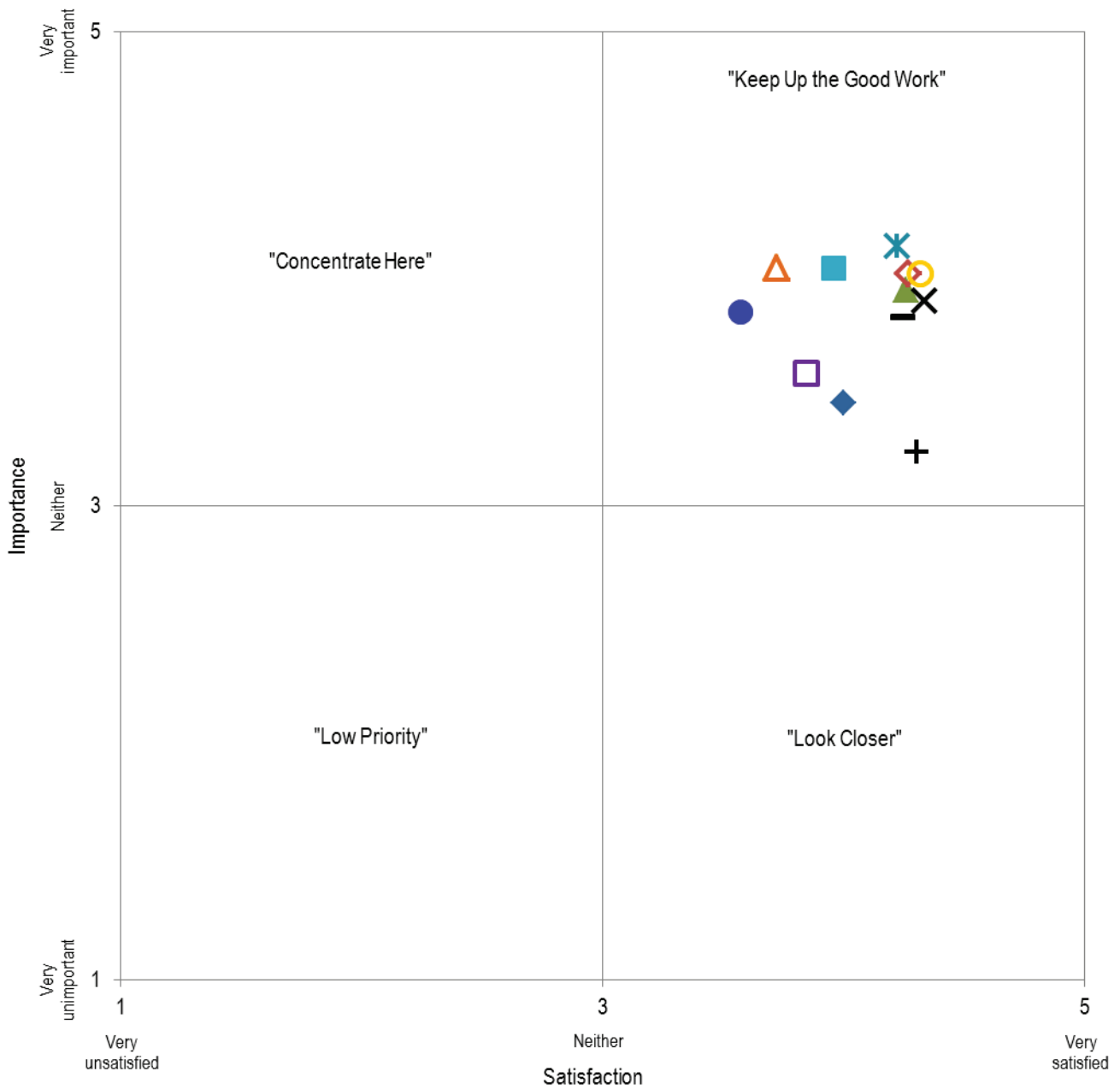




**EXPLANATION**

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

**Figure 20.** Deer hunters' importance-satisfaction ratings with recreation opportunities provided at Great Swamp 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 21.** Deer hunters' importance-satisfaction ratings with transportation-related features provided at Great Swamp NWR.

## Conclusion

These individual refuge results provide a summary of trip characteristics and experiences of a sample of visitors to Great Swamp 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](mailto: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**

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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"/> 24% Big game hunting                | <input type="checkbox"/> 57% Hiking   | <input type="checkbox"/> 9% Environmental education (for example, classrooms or labs, tours) |
| <input type="checkbox"/> 0% Upland/Small-game hunting        | <input type="checkbox"/> 9% Bicycling   |  |
| <input type="checkbox"/> 0% Migratory bird/Waterfowl hunting | <input type="checkbox"/> 14% Auto tour route/Driving                                | <input type="checkbox"/> 8% Special event ( <i>please specify</i> )<br><u>See Appendix B</u> |
| <input type="checkbox"/> 64% Wildlife observation            | <input type="checkbox"/> 0% Motorized boating                                       |  |
| <input type="checkbox"/> 62% Bird watching                   | <input type="checkbox"/> 0% Nonmotorized boating (including canoes/kayaks)          | <input type="checkbox"/> 11% Other ( <i>please specify</i> )<br><u>See Appendix B</u>        |
| <input type="checkbox"/> 0% Freshwater fishing               |   |  |
| <input type="checkbox"/> 0% Saltwater fishing                | <input type="checkbox"/> 19% Interpretation (for example, exhibits, kiosks, videos) | <input type="checkbox"/> 0% Other ( <i>please specify</i> )<br><u>See Appendix B</u>         |
| <input type="checkbox"/> 36% 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?

- 40% No
- 60% Yes → If yes, what did you do there? (Please mark **all that apply.**)
- |  |   |
|--|---|
| <input type="checkbox"/> 50% Visit the gift shop or bookstore    | <input type="checkbox"/> 15% Watch a nature talk/video/presentation                               |
| <input type="checkbox"/> 64% View the exhibits                   | <input type="checkbox"/> 61% Stopped to use the facilities (for example, get water, use restroom) |
| <input type="checkbox"/> 65% Ask information of staff/volunteers | <input type="checkbox"/> 15% 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	
74%	85%	83%	It was the primary purpose or sole destination of my trip.
13%	10%	10%	It was one of many equally important reasons or destinations for my trip.
13%	5%	6%	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** 132 number of miles

**Local** 16 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?

45% No (*skip to question #9*)

55% Yes → What **type of group** were you with on your visit? (*Please mark **only one.***)

87% Family and/or friends

5% Organized club or school group

1% Commercial tour group

8% Other (*please specify*) See Appendix B

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

4 number 18 years and over

1 number 17 years and under

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

49% Friends or relatives

9% Refuge website

18% Signs on highway

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

6% Recreation club or organization

1% Television or radio

19% People in the local community

10% Newspaper or magazine

12% Refuge printed information (brochure, map)

12% 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.***)

67% Spring  
(March-May)

50% Summer  
(June-August)

85% Fall  
(September-November)

45% Winter  
(December-February)

11. How many times have you visited...

...this Refuge (including this visit) in the last 12 months? 15 number of visits

...other National Wildlife Refuges in the last 12 months? 4 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"/> 91% | Private vehicle without a trailer                             | <input type="checkbox"/> 0% | Refuge shuttle bus or tram       | <input type="checkbox"/> 8%  | Bicycle                               |
| <input type="checkbox"/> 1%  | Private vehicle with a trailer<br>(for boat, camper or other) | <input type="checkbox"/> 0% | Motorcycle                       | <input type="checkbox"/> 33% | Walk/Hike                             |
| <input type="checkbox"/> 0%  | Commercial tour bus   | <input type="checkbox"/> 0% | ATV or off-road vehicle          | <input type="checkbox"/> 0%  | Other ( <i>please specify below</i> ) |
| <input type="checkbox"/> 1%  | Recreational vehicle (RV)                                     | <input type="checkbox"/> 0% | Boat                             | <u>See Appendix B</u>        |                                       |
|                              |   | <input type="checkbox"/> 0% | 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"/> 28% | Signs on highways  | <input type="checkbox"/> 12% | Directions from Refuge website                        |
| <input type="checkbox"/> 17% | A GPS navigation system  | <input type="checkbox"/> 4%  | Directions from people in community near this Refuge  |
| <input type="checkbox"/> 8%  | A road atlas or highway map                                      | <input type="checkbox"/> 11% | Directions from friends or family                     |
| <input type="checkbox"/> 13% | Maps from the Internet (for example,<br>MapQuest or Google Maps) | <input type="checkbox"/> 62% | Previous knowledge/I have been to this Refuge before  |
|                              |  | <input type="checkbox"/> 1%  | 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"/> 45%	<input type="checkbox"/> 10%	<input type="checkbox"/> 8%	<input type="checkbox"/> 24%	<input type="checkbox"/> 13%
...a bike that was offered through a Bike Share Program for use while on the Refuge?	<input type="checkbox"/> 36%	<input type="checkbox"/> 11%	<input type="checkbox"/> 8%	<input type="checkbox"/> 25%	<input type="checkbox"/> 21%
...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"/> 10%	<input type="checkbox"/> 9%	<input type="checkbox"/> 23%	<input type="checkbox"/> 19%
...a boat that goes to different points on Refuge waterways?	<input type="checkbox"/> 24%	<input type="checkbox"/> 6%	<input type="checkbox"/> 10%	<input type="checkbox"/> 31%	<input type="checkbox"/> 29%
...a bus or tram that runs during a special event (such as an evening tour of wildlife or weekend festival)?	<input type="checkbox"/> 31%	<input type="checkbox"/> 11%	<input type="checkbox"/> 12%	<input type="checkbox"/> 29%	<input type="checkbox"/> 17%
...an offsite parking lot that provides trail access for walking/hiking onto the Refuge?	<input type="checkbox"/> 13%	<input type="checkbox"/> 5%	<input type="checkbox"/> 8%	<input type="checkbox"/> 31%	<input type="checkbox"/> 42%
...some other alternative transportation option? ( <i>please specify</i> ) <u>See Appendix B</u>	<input type="checkbox"/> 0%	<input type="checkbox"/> 7%	<input type="checkbox"/> 7%	<input type="checkbox"/> 50%	<input type="checkbox"/> 36%

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

- 18% Yes       43% No       39% 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
9%	16%	13%	43%	18%	Surface conditions of roads	7%	11%	8%	33%	40%	NA
13%	20%	16%	40%	11%	Surface conditions of parking areas	3%	7%	11%	30%	48%	NA
8%	7%	11%	41%	34%	Condition of bridges	5%	3%	11%	19%	62%	NA
5%	4%	4%	36%	50%	Condition of trails and boardwalks	3%	1%	5%	24%	66%	NA
6%	6%	7%	47%	34%	Number of places for parking	4%	2%	8%	30%	56%	NA
6%	11%	14%	45%	26%	Number of places to pull over along Refuge roads	8%	21%	20%	32%	19%	NA
7%	3%	12%	35%	44%	Safety of driving conditions on Refuge roads	4%	3%	11%	29%	53%	NA
6%	4%	8%	42%	39%	Safety of Refuge road entrances/exits	4%	5%	10%	26%	56%	NA
9%	7%	14%	40%	30%	Signs on highways directing you to the Refuge	3%	7%	12%	35%	43%	NA
6%	7%	9%	51%	28%	Signs directing you around the Refuge roads	3%	7%	17%	38%	35%	NA
5%	4%	9%	35%	47%	Signs directing you on trails	5%	10%	9%	37%	39%	NA
11%	8%	25%	27%	30%	Access for people with physical disabilities or who have difficulty walking	1%	9%	30%	29%	31%	NA

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

See Appendix B

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**SECTION 3. Your expenses related to your Refuge visit**

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

82% Yes

18% No → How much time did you spend **in local communities** on this trip?

  2   number of hours      OR        3   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	Amount Spent in Local Communities & at this Refuge <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?

  2   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
18%	18%	26%	8%	11%	1%	11%	1%	2%	0%	4%

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	77%	About right	21%	Too high	2%	Far too high	75%	Did not pay a fee <i>(skip to Section 4)</i>
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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	6%	Disagree	13%	Neither agree or disagree	51%	Agree	30%	Strongly agree
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#### SECTION 4. Your experience at this Refuge

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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.	1%	2%	3%	41%	53%	NA
Overall, I am satisfied with the information and education provided by this Refuge about its resources.	0%	1%	5%	45%	49%	NA
Overall, I am satisfied with the services provided by employees or volunteers at this Refuge.	0%	0%	2%	37%	60%	NA
This Refuge does a good job of conserving fish, wildlife and their habitats.	1%	0%	5%	27%	67%	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
9%	12%	13%	43%	23%	Availability of employees or volunteers	1%	3%	16%	21%	59%	NA
9%	5%	10%	37%	38%	Courteous and welcoming employees or volunteers	2%	2%	9%	13%	74%	NA
6%	3%	4%	39%	47%	Knowledgeable employees or volunteers	1%	2%	8%	23%	66%	NA
2%	3%	5%	41%	49%	Printed information about this Refuge and its resources (for example, maps and brochures)	2%	2%	4%	29%	63%	NA
4%	7%	12%	44%	33%	Informational kiosks/displays about this Refuge and its resources	1%	3%	12%	32%	52%	NA
5%	6%	10%	44%	35%	Signs with rules/regulations for this Refuge	1%	7%	11%	36%	46%	NA
5%	9%	14%	42%	30%	Exhibits about this Refuge and its resources	1%	2%	18%	29%	50%	NA
4%	7%	19%	37%	34%	Environmental education programs or activities	1%	3%	22%	27%	46%	NA
4%	7%	12%	36%	42%	Visitor Center	0%	4%	11%	22%	63%	NA
2%	3%	6%	39%	51%	Convenient hours and days of operation	2%	5%	8%	26%	59%	NA
2%	3%	9%	31%	56%	Well-maintained restrooms	1%	2%	9%	28%	60%	NA
3%	2%	6%	33%	58%	Wildlife observation structures (decks, blinds)	2%	4%	5%	33%	57%	NA
3%	5%	11%	21%	61%	Bird-watching opportunities	1%	4%	9%	28%	57%	NA
2%	2%	6%	35%	57%	Opportunities to observe wildlife other than birds	3%	6%	7%	36%	48%	NA
5%	3%	17%	26%	49%	Opportunities to photograph wildlife and scenery	2%	3%	13%	29%	53%	NA
54%	4%	15%	3%	24%	Hunting opportunities	6%	3%	36%	10%	45%	NA
45%	9%	21%	12%	14%	Fishing opportunities	8%	10%	55%	8%	19%	NA
2%	2%	6%	26%	65%	Trail hiking opportunities	4%	6%	7%	33%	50%	NA
17%	10%	25%	25%	23%	Water trail opportunities for canoeing or kayaking	14%	9%	41%	22%	14%	NA
18%	8%	25%	28%	21%	Bicycling opportunities	6%	6%	40%	28%	20%	NA
11%	6%	36%	26%	22%	Volunteer opportunities	2%	2%	41%	20%	35%	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

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

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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?

88%

Yes

12%

No

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

92%

Yes

8%

No

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

85%

Yes

15%

No

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

See Appendix B

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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.	5%	5%	12%	33%	45%
We can improve our quality of life if we address the effects of climate change on fish, wildlife and their habitats.	5%	4%	13%	35%	43%
There is too much scientific uncertainty to adequately understand how climate change will impact fish, wildlife and their habitats.	19%	27%	15%	24%	15%
I stay well-informed about the effects of climate change on fish, wildlife and their habitats.	3%	9%	29%	45%	14%
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.	5%	12%	19%	48%	16%
I take actions to alleviate the effects of climate change on fish, wildlife and their habitats.	3%	8%	33%	38%	17%
There has been too much emphasis on the catastrophic effects of climate change on fish, wildlife and their habitats.	27%	35%	19%	13%	6%
Future generations will benefit if we address the effects of climate change on fish, wildlife and their habitats.	4%	5%	11%	32%	48%
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%	9%	31%	34%	17%

## 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?

98% Yes  2% No → If not, what is your home country? See Figure 4 in Report

2. Are you?  63% Male  37% Female

3. In what year were you born? 1958 (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%			11%				51%				38%			

5. What ethnicity do you consider yourself?  2% Hispanic or Latino  98% 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  1% Black or African American  93% White  
 5% 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"/> 1% Less than \$10,000  | <input type="checkbox"/> 6% \$35,000 - \$49,999  | <input checked="" type="checkbox"/> 28% \$100,000 - \$149,999 |
| <input type="checkbox"/> 3% \$10,000 - \$24,999 | <input type="checkbox"/> 15% \$50,000 - \$74,999 | <input type="checkbox"/> 12% \$150,000 - \$199,999            |
| <input type="checkbox"/> 3% \$25,000 - \$34,999 | <input type="checkbox"/> 18% \$75,000 - \$99,999 | <input type="checkbox"/> 15% \$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.)?

26 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 Great Swamp 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
2010 Bio Blitz participant	1
Audubon Big Sit	1
Deer hunting	1
Donor's Reception, Helen Fenske Center	1
Fall Festival	3
Guided walks	1
Guided walks in closed areas	1
Night duck watch	1
NWR Week	1
Photography class trip	1
Scouting Related Events, Cub Scouts and Boy Scouts	1
Special permit deer hunt, muzzleloader.	1
Thanksgiving Walk	1
Turtles, Frogs, and Snakes	1
World Series of Birding	1
Total	17

Other Activity	Frequency
2nd Sunday programs	1
Audubon Animal Christmas Count	1
Big Sit	1
Cleanup	1
Cross country skiing	2
Cub Scout Badges	1
Gardening	1
Guided walk to areas usually closed to public	1
Meetings of Friends of Great Swamp Book Group	1
Most of the 2nd Sunday programs and other programs	1
Organized fieldtrip	1
Painting/Drawing	1
Plein air painting class	1
Running	2
Trail running	1
Tree and Wildflower Identification	1
Visited Raptor Center	1
Visitors Center	1
Volunteer	1
Volunteer gardening	1
Walking our dogs	1
Total	23

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
Being in Nature	1
Cross country skiing	1
Explore Refuge	1
Tree and Wildflower Identification	1
Total	4

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

Other Visitor Center Activity	Frequency
Became member	1
Bicycling and birding	1
Brought a cake to honor a retirement.	1
Buy duck stamp	1
Chat	1
Check-in door	1
Children's discovery area	1
Deer check	2
Entered information for the E-book Kiosk	1
Get a trail map	1
Get kids bingo	1
Picnic on the Grounds	1
Recorded bird sightings	1

Report sightings	1
Say hello to John, the volunteer.	1
Specifically went to bring our children and grandchildren.	1
There is a kiosk where we write down what animals we've observed... I think I stopped there.	1
To park car	1
View the bird sighting list	1
Total	20

Question 7: "Were you part of a group on your visit to this Refuge?; If Yes, "What type of group were you with on your visit?"

Other Group Type	Frequency
Birding trip	1
Boy Scouts	1
Church group	1
Hunting group	2
Hunting partner	1
MCST photo class	1
Photography class	1
Refuge Deer Hunt	1
Work	1
Total	10

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

Other Website	Frequency
Google	1
Google Maps	1
<a href="http://www.state.nj.us/dep/fgw/">http://www.state.nj.us/dep/fgw/</a>	1
morrisparks.net	1
NJ Fish & Game	3
NJ Fish and Game Digest	1
NJ Fish and Wildlife	1
nytimes.com	1
Search Engine	1
Total	11

Other Ways Heard about This Refuge	Frequency
AAA Guidebook	1
Also volunteered at a raptor rehabilitation located there.	1
Book on finding birds in New Jersey	1
College Field Trips in the 1970's	1
Cycling	1
Hiking book	1
Hotel concierge	1
Hunting law book	1
Map	1
NJ Audubon Society	1

NJ Audubon Society, National Audubon Society	1
NJ Map	1
NJ State Hunting Guide	1
NJ Walking Guide Book	1
NY Times	1
Other birder in NY	1
Photography teacher	1
Photography teacher talked about The Great Swamp	1
Reader's Digest Travel Book	1
Rutger's Ornithology Class	1
Saw it on a roadmap actually, first. It took some time to find it.	1
Through school where I work.	1
Travel Company	1
Was asked to help with initial funding program.	1
Work	1
Total	25

## Survey Section 2

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

Other Forms of Transportation	Frequency
Run	1

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

Other Ways Found This Refuge	Frequency
Directions in Travel Book	1
Map from Ranger	1
Refuge Ranger	1
Total	3

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
ATV for older people	1
Balloon	1
Bus	1
Bus or Tram	1
Canoe/Kayak	1
Horseback	2
If the refuge provided quiet, electric vehicles, I might use them.	1
Intercity Train	1
Just wanted to note that it is preferable to have a non-gas transportation method.	1
Kayaks	2
Private Car	3
Public Transportation	1
Segway	1
Ski Trail	1
Total	18

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)

All trails for walks/bird watching should be available.

Continue to discourage use of Pleasant Plains Road as thoroughfare.

Gravel is great when dry - very, very dusty. Not good for cars, plants or wildlife. Not just speed limit signs and bump trips. How about low dust signals? It's awful. Also, too much gravel at Great Swamp.

Gravel roads are normally good but currently need to be graded. I would like to see the bridge on Pleasant Plains Road open earlier on weekends.

I believe the speed limits on the roads that run through the sanctuary are too high. Cars often go faster than the speed limit already and pose a real risk to wildlife. In addition, I believe there needs to be more wildlife crossing signs put up, including those warning people about turtles crossing, especially during this time of year. I have already seen multiple turtles killed on the road and it is disheartening to say the least. There also needs to be better enforcement of the speed limit, especially around rush hour when the roads get quite busy.

I enjoyed walking to all the trails. They were well marked and in good condition.

I was once caught between a fallen tree and fire (lightning strike?) blocking an exit road in Great Swamp and a bridge at the other end that was closed. It took several hours for the fire department to arrive and clear the road. Not sure why that bridge needs to be closed.

I would like off road vehicles, ATVs, to take out deer.

It would be safer to have walkways made from natural materials running along the roads in the most highly traveled areas, and much more pleasant. Dirt trails could use more chips/cover. Very soggy and muddy.

Lots of pot holes around the entrance and driveway to the parking area off Long Hill Road. Not a huge problem, but it would be nice if we didn't have to swerve so much to reach parking.

Many parts are under restricted access. Having clear, easy instructions for applying for access would be wonderful. Currently, people do go in, but are asked by armed guards to leave. Not a welcoming experience.

More places to stop along road. Main road through refuge is too busy (cross traffic).

Number of places to pull over along roads - there are spaces to stop and get pictures along some roads, but they have no parking signs.

One of the roads that was next to a refuge access point appeared to be quite busy and some cars drove fast, and it was scary as there were a lot of people on bikes too. It seemed the road acted as a thoroughfare for a neighborhood.

Paved roads are narrow, need bicycle/walking shoulders for improved safety.

Please pave the gravel road between the Visitors Center and the Headquarters.

Pot holes on some of the dirt roads could use filling in. It was a rather harsh winter.

Refuge's dirt road has too many potholes. Slippery walkways (mud and leaves caused my spouse to slip and injure his leg twice).

Seems like wasted money for new entrance gate and construction sign for Obama Program. Money could have been spent to fix potholes in road



which is in terrible condition.

The boardwalks, where they exist, are excellent. There are places in the refuge, however, where the only access is the road; there is no separate pedestrian walkway and there is also no place to pull over. Sometimes people will drive through the refuge quickly which causes some safety concerns.

The refuge should be managed in a way that maximizes people's access while minimizing their impact. Lack of parking and pull-off areas reduces access and tends to concentrate traffic, which would focus the impact on just a few areas and likely aid damage, even as it reduces total traffic to the refuge. Opening up access makes the refuge more interesting to more people and also spreads out their collective impact on the environment.

The road is open for through traffic when the Visitors Center is open, and the refuge becomes a highway, which is a big shame; another entrance exists. Also, road should be closed when the snakes come out, as hundreds are killed from the car traffic every year.

The roads do not allow for safe bicycling along the side of the road. I do not ride my bike on the road, because it is very narrow and unsafe. I did not find any biking trails. Biking trails would help limit the amount of car traffic.

There are many huge pot holes and many people driving way too fast.

There are very few pull offs on the main roads at Great Swamp. There are several areas that state no stopping or parking, so even though they are there, they are of no use. A big inconvenience. It means in certain areas that miles must be walked along fast traffic roads. I am referring to roads that crisscross the swamp, not the off road parking areas which are satisfactory.

This refuge is often frequented by bicyclists, who travel down nearby roads to get to the refuge. The roads are not made for bikes (there is no shoulder) and car and bike interactions are a HUGE concern.

This is a small refuge. Longer hiking trails would be nice.

This refuge is very broken up. Connecting trails would be a big bonus and would make using the refuge much more interesting and enjoyable.

Too many bikers on the roads. Could be dangerous for cars to pass. Road too narrow.

Traffic too fast on roads- used by local people commuting to work.

Trails in the wilderness area are becoming quite overgrown in some areas, the Orange and Silver Trails specifically, as some trees are down and grasses are over 4 feet high, which makes it tough to take small children.

Visibility is obstructed at one entrance with trees and angle of road. Transition from pavement to dirt and vice versa frequently causes some traffic concerns.

When the bridge on Pleasant Plains Road was open to allow access to the new Visitors Center there was a noticeable increase in through traffic. Slightly degraded road conditions might make the shortcut less appealing.

Would like the use of off-road vehicles to get deer out on trails back to the parking areas when deer hunting.

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## 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."

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Comments on Services, Facilities, and Activities at This Refuge (n = 61)

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1. Should stay open every wood cock mating season. 2. Need more opportunities to get into restricted areas with guides. 3. There is one ranger who is rude to birders.

Allow bow hunting.

At this refuge there is one park ranger who is out-of-sync with all the other rangers and is hated by all who have an encounter with him. He is mean, over-the-top and nasty versus all the other park staff. I believe he has been spoken to, but he really should be re-assigned to another place. He does not fit the "mood" of this special place.

Beautiful new Visitors Center! Great volunteers! We like the quiet, and do not want biking, kayaking, etc. encouraged. (Biking and walking on the trails is not a good combination!)

Do not eliminate shotguns for deer hunting at Great Swamp. Go back to an either sex hunt.

Dry Roads.

During hunting season I would like to see a porta-john in each parking facility open during the 4 days.

During this trip to the Great Swamp we only visited the boardwalk area. There are several areas we enjoy, but didn't visit on this short trip to the refuge.

Each time we have been to the Great Swamp we participate in hiking, birding, educational and their recreation programs. We have been very pleased with the staff and facilities.

Entrance to Great Swamp area (not Visitor Center) is not paved and is full of holes.

Fish and Game Officer was rude and unknowledgeable.

Friendly, pleasant staff. Very clean facilities and well-maintained refuge.

Great clean bathrooms. Great trails.

Great job - no complaints!

Great opportunity for hunters and youth who are just starting their hunting experience.

Having some people have access to areas while others are forced off under armed threat is unpleasant. Making the rules clear about how access can be gained would help.

I am very pleased with the Great Swamp Wildlife Refuge.

I do not believe hunting should be allowed on the refuge. I feel the refuge should be a haven for wildlife only. I also believe the Passaic River, which runs through the refuge should be cleared more often of downed trees, so that kayaking and canoeing are easier for those who enjoy it.

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I enjoy living close for hiking and cross country skiing. The Great Swamp seems to be managed well.

I like the opportunity to participate in the photography contest.

I love the new Visitors Center. The staff are friendly and know a lot about the wildlife. The gift shop has reasonably priced gifts. I wish it was open more days.

I use the Great Swamp Refuge for two purposes: I enjoy hiking with my sons during the winter months and I also participate in their annual deer hunt. I have been doing both of these activities since 1990 and all refuge staff have always been professional and helpful. It's a great place and a short drive from my home. I am very fortunate to have such a wonderful place nearby to enjoy!

I wish that there were more hiking trails.

I wish we didn't have to pay for an extra buck permit when we already buy 1 from the state for a buck. In other words, we pay twice whether we get a buck or not.

I would like to have another opportunity to hunt at the refuge. The November time frame, during rye, is a great time. Would like another time later in the month or December. This would give a better opportunity to fill both tags.

In addition to the deer hunting, I would like to see some waterfowl hunting opportunities. I would also like to see fishing.

It was a good time. I loved it.

It's great!

Lovely accessible boardwalks, blinds, and walkways for people of all ages. Wish there was a signup sheet for people to list animals they have spotted.

Nothing but good comments.

Opening water trail opportunities would be a great addition. More trails and employees who can provide advice on wildlife viewing opportunities in different sections of the refuge would be a big help.

Please run guided bird watching tours of the Great Swamp Refuge, increase the number of restrooms, mark and maintain hiking trails, and provide maps of the trails.

Restrooms for ladies are not always clean. Walkways can be slippery. Dust or gravel roads are not well maintained- many pot holes.

Satisfied

Satisfied. Had a nice day even though it was rainy. Observed a variety of birds, learned more about services offered. Next time, I'll bring grandchildren.

Saving the Great Swamp from development was one of our nation's greatest conservation efforts!

Should offer bow hunting throughout the season. Should also allow turkey hunting in the spring.

Stop speeding on roads through the refuge. Roads are used as to cut through to towns.

The amount of wildlife one can watch seems to be decreasing from year to year.

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The best part about Great Swamp is its undeveloped character and the fact that it is opened at sunrise. I use it for birding and need little more than a restroom. I do like the new Visitors Center.

The Great Swamp National Wildlife Refuge is a wonderful place to experience nature and especially sharing it with children.

The Great Swamp Refuge is absolutely wonderful for birders and their interest in flora and fauna in the wetland areas. Our guest, who could not walk well, wished for benches - more benches! We saw a beautiful Eastern Bluebird - a neat treat for us, who just moved here from the West Coast.

The hunting in the refuge for deer could be better controlled if the US Fish and Wildlife put in place a buffer zone on all private property that borders the refuge property, all hunting would be added to zone 38 only. As it is now, all private land owners shoot the deer on the refuge to try to extend an older age class. All private land owners would have to hunt by zone 38 rules. No extended season, all roads surrounding the refuge would be the new boundary for zone 38. With the US Fish and Wildlife Services, it should be easy to pressure the state to create a buffer zone just around the refuge private property that touches its boundary.

The limited hours of operation limit my opportunity to volunteer due to my work hours. It may be good to extend the hours of operation during the week and weekends.

The rangers and volunteers we spoke with were knowledgeable and friendly.

The reason I was somewhat unsatisfied with the signage for rules and regulations is because I was ticketed for parking at the Visitors Center during a hunting period after not noticing the hunting sign.

The refuge is a treasure and is well-managed.

The volunteers and employees were extremely helpful in planning our visit within the refuge.

The volunteers/staff were very welcoming. Their enthusiasm was contagious. It is such a good idea for those who are more knowledgeable about this place. There were ample opportunities to learn and read, but it is great to touch base with someone and learn which points of interest are not to be missed. Much easier to glean from a person than having to read everything and then decide. This refuge accomplished that I believe. Thank you.

This is an under-utilized refuge resource. Could be a better example to greater community and what DOI has to offer especially given the proximity to New York City.

This is one of my favorite sites to visit. It is well maintained and provides numerous opportunities to observe wildlife.

This refuge is POORLY MANAGED for birds/wildlife viewing. Ponds with boardwalk access have been allowed to fill in or vegetation allowed to grow that blocks views. Fields are mowed too often and too short making them useless to wildlife in winter. There are many available access points that would open new areas for viewing and help to spread out people and therefore lessen their impact on the environment and the wildlife.

Too many children use the area to make it a nice QUIET place to observe birds, which is why we go infrequently.

Too much of the refuge is closed to visitors on foot. If pedestrians would be too disruptive to the wildlife at this NWR, then how could the government even think of permitting oil drilling in the Arctic NWR? Conversely, if it's ok to drill there, why can't I walk more places here?

Very peaceful. Friendly, informative volunteers. Their enthusiasm and knowledge encouraged us to visit this refuge in other seasons. They say in the spring when wildlife is more active.

We have loved the Great Swamp since we first discovered it - we lived in the area for 8 years and visited there an average of 6 times a year.

We love this place but are sorry to see the road/traffic now that the bridge is open. We would also love to see the "closed trails" opened so we

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can walk/bird watch without exhaust fumes.

We took our 4 and 7 year old grandsons and their parents to the Great Swamp Visitors Center. Volunteer staff were friendly, welcoming and helpful. This beautiful new facility is well designed and filled with interactive exhibits geared for young children. Our grandsons loved it and we are very impressed with the educational opportunities the center provides.

Why are their questions about hunting on a wildlife refuge questionnaire? Clearly, if we are hunting them, we are not giving them refuge.

Wonderful experience, looking forward to returning in the spring.

Zealous and threatening interactions with a Federal Law Enforcement Officer have reduced my overall positive feelings about the Great Swamp.

## 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 = 144)

A chance for people to get away from the chaos of everyday life. Other public lands are more crowded.

A chance to walk on well-maintained trails. I am seventy years old and it is a joy to be among nature and take pictures.

A great place to visit in the middle of New Jersey.

A pristine refuge in the midst of sprawl or threatened development.

Ability to view turtles, frogs, and snakes in natural habitat, all within a few feet of the parking lot.

Active wildlife habitat maintenance is important.

All of its beauty and wildlife contents.

Allows you to keep in touch with nature outside of the commercial reality of life.

America's wildlife is being killed in the face of over-development and population growth! Bravo!

As the word "refuge" implies, wildlife is allowed to live in a protected environment with minimal human intervention.

Availability of wildlife observation.

Available to observe in natural environment.

Because the deer hunting is very limited, and this allows you to hunt a mature animal, which is very uncommon in New Jersey.

Because with the regulations of all the refuges you can keep a deep connection with nature without the noise of other public lands.

Being in the heart of Morris County- It was a beautiful hunt and time well spent outdoors in a peaceful environment

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Benefits of federal dollars and government scientists makes management of refuges well-funded and in balance with how nature would take care of things if people weren't in the picture.

Boardwalk trails

Can observe migratory birds during migration.

Close to major metro, unique habitat.

Conservation of the wild, with access.

Conservation offers the public a chance to experience the wildlife and learn more about wildlife, plants and conservation.

Considering the loss of natural habitat in New Jersey, the refuge provides an accessible opportunity to observe wildlife, particularly birds, reptiles and amphibians, in suburban New Jersey.

Convenient short and easy walks for all weather - nice, easy outdoor break.

Deer hunting close to urban areas; well managed hunts. Would suggest implementing antler restrictions, either a 3 pt. on one side or even a 6 pt. rule.

Despite the obvious "conflict of interest" between accommodating the public and protecting wildlife, the refuges strike an intelligent balance. This balance usually does, and should, favor the wildlife side.

Falls somewhere between National Parks which are not multi use and National Forests which are multi use.

Fishing and hunting opportunities.

Good opportunity for children to see and learn about nature and the outdoors.

Great boardwalks "in" the swamp.

Habitat

I can hunt on it.

I find refuges are less built up and offer a more "natural" opportunity for hiking, photography, etc., but with some assistance (e.g., clear trails, blinds).

I have mostly been to national and state parks, seeking both hiking opportunities and the great chance to be in nature. I did not know that refuges have this mission, but am so glad to hear it. I will seek out more refuges to visit.

I just love the Great Swamp.

I like the fact that these lands are well looked after, unlike many other public lands. I like the fact that there are biologists working with the general public and the area is patrolled with Law Enforcement.

I liked the Raptor Center.

I love getting to interact with the wildlife, although I feel bad that the refuges seem to be the only place where wildlife can really go any more. I think refuges are important so the animals have a place to live.

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It has a controlled deer hunt.

It is a quiet, undeveloped haven for people and animals.

It is a wonderful opportunity to observe plants and wildlife.

It is well maintained in its natural state. It's clean, quiet and remote. You can enjoy nature in its natural setting which is great.

It shows life in the swamp.

It's a gem in the midst of a populated area. It's unspoiled. Offers a place to be "up close and personal" with the creatures that inhabit the swamp. It's great to see the habitat.

It's a location that will always be there where man and nature can co-exist.

It's great to have undeveloped space to observe wildlife.

It's great. The unique water table, I have photos of otters, owls, and Eagles. You name it, it's here. Accessible from car for the most part.

It's kept natural and very clean. Other public places seem to be beaten down and not clean. I communicate to my friends that when I am in the Great Swamp, I know I am only 5 miles from home, but it feels like I am hundreds of miles deep into nature!

It's like an oasis in the desert that allows visitors to see a vast amount of wildlife that we would normally not have an opportunity to see/experience. The bird activity was exceptional.

It's the great swamp.... It's unique in itself!

Its location and habitat.

Just a wonderful place to go with my son and husband on the weekend, and it is toddler friendly.

Less party people. More nature lovers and more visitors who respect wild areas. More quiet. They're less trampled. Less garbage. Animals are not quite so shy. Very large open spaces/wild areas. Our favorite place to visit.

Less people

Limited hunting in a safe and regulated environment.

Locally accessible for hiking, cross country skiing, open everyday, and no fees.

Maintaining an area that is primarily for wildlife conservation, not for the convenience of the human visitors. It is a difficult balance.

Management of the refuge is great.

No other place like this in the entire state!

No place else does it as well.

No pressure- hunting is excellent.

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NWRs are, for the most part, untouched by the activities of man. There are not nearly as many people trashing the grounds of the refuges when compared to the usual local park.

NWRs provide the opportunity to see wildlife that other public lands may not have.

Often the amount of space that is preserved is excellent (i.e., the refuges are large). Additionally, the programs that are generally available are very informative and interesting.

One can walk and enjoy nature in peace and quiet.

Paved walkways and well-built bird observation areas.

Peaceful.

Preserved land and open space, having a unique place for animals to thrive.

Preserves the natural habitat for the birds and other wildlife.

Primarily managed for benefit of wildlife, rather than scenic, recreation, etc.

Primary concern is wildlife conservation, not commercial or recreation.

Provides a natural area that is not too developed.

Provides a safe zone habitat with very low human impact, which provides the "best" environment for study and interaction.

Provides a unique opportunity to watch birds in their natural habitat, see nesting activities, and be undisturbed by human activity to a large extent.

Provides an unspoiled environment that can be viewed by the public without having to travel a great distance to observe.

Refuges allow nature to go on their own a bit more than a 'park'. A bit more natural and less commercialized.

Refuges are supposed to protect native flora and fauna that support a healthy ecosystem, the key word here is refuge.

Refuges are unique because they are for the most part an oasis for nature to be natural and not manicured and removed as it is in urban and suburban areas. People and wildlife can live together. More people should experience the outdoors in the refuges, but sadly don't. They either never learned to appreciate it or are not able to experience it. People will protect what they love. Education and opportunities to experience nature are key to our refuge's future.

Refuges are unique from other public lands because they are about the animals and not the people. I like that swimming and other disruptive activities aren't allowed on the refuge.

Refuges are unique, because they provide a very natural setting.

Refuges keep out humans, which have enervated into too much of our national lands.

Refuges offer a nature experience that the user must invest his or her energy in to enjoy. No black top. No gift shop. No crowds. No tour buses. The wildlife and the environment are the attractions. A trail to walk is all that we should need.

Refuges provide a critical service of conserving rapidly dwindling natural spaces. They offer a place of peace and quiet (particularly when near urban area). They are places where we can go to hear Sparrows and Bluebirds.



Saving open spaces and helping create a balance of development and nondevelopment for NJ and other states.

Simple wilderness

Since the refuge is "wild" we are able to see flora and fauna in their natural state. For the most part undisturbed by large crowds and public encroachment. The wildlife is viewed in a more relaxed atmosphere.

So all the animals will live.

Some public lands are not as well protected as refuges. I feel there is a better chance to witness and understand nature in areas such as a refuge better than some other public parks.

Swamp - great Education Center - more to look forward to on future visits - loved the walkway!

Swamps, grasslands, hardwood & conifer forests, streams & rivers in close proximity.

The abundance of wildlife, the variety of wildlife, the openness, and the serenity.

The availability, knowledge, and kindness of the staff running the hunting program.

The beauty of the swamp - hardwoods and abundant wildlife in NJ can be enjoyed.

The boardwalk, the way it wanders through the woods then out over the swamp with great scenery of wildlife.

The commitment to keep a large tract of public land wild forever is of great importance.

The critters can only be observed and not hunted or carried away.

The Great Swamp is a natural wildlife setting. Unspoiled beauty.

The Great Swamp is a place I only visit once a year with a small group of hunters and look forward to it every year. It is like my 4 day mini vacation. It's one of New Jersey's last refuges for wildlife. While hunting, one never knows what will cross their path and that's what keeps me coming back every year.

The habitat.

The habitats for birds & other critters. And their proximity to my home.

The management

The natural environment is protected, maintained and useable by the public.

The nice thing about them is that their main purpose is to preserve nature and its natural habitats while giving you a unique opportunity to observe both.

The NJ Jetport story is quite inspiring.

The one near my home is a paradise, an oasis just 35 miles west of busy Manhattan.

The opportunity to share the peaceful, tranquil environment that wildlife refuges provide and to be able to observe wildlife.

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The refuge is a special place for me to sit and watch nature while I'm waiting for a deer to walk by.

The resources there are all natural. It is a great place given where it is located.

The swamp has been maintained to retain all its natural beauty.

The Visitors Center was our main destination. Weather and trail conditions prevented using the short outdoor hiking trail at this location. Pond and wetlands observation areas were open to cars - we stopped there briefly.

The volunteers love this place. If the cars are not too heavy, great bird watching. Nice group of "regulars", very peaceful on "off" hours.

The wildlife.

The wood plank trails make it really accessible and the observation decks are great.

The work that is done to conserve our natural resources and restore and maintain wildlife and plants.

Their mission.

There are opportunities to observe wildlife and to learn how to preserve it. The main focus is the plant and animal population.

There is precious little habitat of this type, even less that allows visitors. Knowing that the land is protected and taken care of for the benefit of nature is wonderful. Having the ability to visit and experience this nature is tremendous.

They are natural areas for preserving and enjoying nature, not tourist recreational parks. They provide a refuge not only to nature, but to people to get away from the hustle and bustle. They protect water tables. They preserve nature for future generations.

They are primarily for wildlife.

They are sometimes (though not always) better maintained and managed and more user friendly. In my experience they usually have better trail maintenance and restroom facilities.

They are undeveloped areas.

They are unique in that the primary focus is preserving nature and not necessarily recreation for people.

They are very informative and very detailed when it comes to hunting deer and said land. I've been hunting on this refuge for over 30 years and I am totally satisfied.

They offer an opportunity to explore and understand nature better, especially for those in urban environments who may not get to "see" nature in an unspoiled way.

They offer opportunities to observe wildlife and spend time alone.

They offer the opportunity to see wildlife in its natural habitat and mostly undisturbed. They are calm and peaceful places to visit and take in the beauty of our communities.

They preserve large tracks of land that are valuable for wildlife and plants. In addition, they allow recreation/education opportunities for the general public that may be more limited elsewhere.

They provide a great venue for observing wildlife respectfully and they educate the public on how to preserve our local habitat.

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They provide a safe place for wild animals and a chance to observe them in a natural spot.

This refuge has its own deer season and rules, the layout of the land from upland to swamps make it very scenic. The thousands of acres of land make it a great place to spend a few days and miles to walk.

This was a swamp in New Jersey, which is very unique. The wooden walkways were also neat.

To enjoy a quiet time with nature, and learn and explore new areas, unique plants, animals and birds of that area.

Undisturbed natural setting, many opportunities to see animals/birds.

Unspoiled nature.

Very few protected swamps.

Very good hunting opportunity because of lack of pressure on game.

Very large freshwater swamp habitat. Less than 30 miles from Midtown Manhattan. Amazing diversity of birds.

Very quiet most of the time, and not too many visitors at once. Clean and peaceful.

View natural wildlife and forests and naturally occurring vegetation.

We enjoy the true down to earth experiences and realistic approach to nature. The volunteers are wonderful!

We have hiked/rafted many County and State Parks (and National Parks) and we have enjoyed all. It seems the amount of wildlife encountered at a refuge is extraordinary. Thank you!

We have observed just about every type of wildlife native to this state on the refuge at one time or another. I greatly enjoyed watching the ducks this year during the refuge hunt.

Well-maintained with shaded trails. Impeccably clean trails and restrooms, knowledgeable and courteous volunteer staff, unique opportunity to view a vast amount of wildlife.

Wilderness experience was great.

Wildlife opportunities.

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#### Additional Comments (n = 40)

Access to trails and rivers is too limited. Visitors Center is not in the refuge and is difficult to get to during weekdays.

Additional food sources such as Oak trees, fruit trees, etc., should be planted for big game animals. Grasses, etc., on the main hiking paths should be trimmed/cut. Too many ticks. High grass increases contact with ticks for all visitors. Possible risk of disease.

As a retired couple in New Jersey, a state with a hideously high cost of living, we depend on recreational opportunities within modest driving distance. These include municipal libraries, the Jockey Hollow National Park, and the Great Swamp. With limited income, we cannot afford frequent trips to places charging entrance fees, even though we understand that these are necessary. We tend to seek

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out interesting places that are quiet and uncrowded, and we are delighted to be able to spend time in "our own" refuge in this densely populated area.

Auto traffic is a negative aspect of this refuge; there is only a dirt road for wildlife viewing on parts of it. The guided walks have gotten so popular; need to limit the number of people on each one and offer more so all can enjoy.

Better maps both online and printed would be helpful. It was quite beautiful and I need to visit more often.

Bike trails would benefit the refuge and provide a good way to limit the car traffic on the roads.

Biologist does a good job. Should institute antler restrictions (at least 3 points on at least one side). Should allow other hunting on the refuge.

Climate change created by humans, I do not believe this. Can we conserve resource and should we, yes. Would suggest lowering the "take" of does, as the population is down, which was the point of the hunt. Previous restrictions to reduce the "take" and thereby increase the herd have not worked.

Fun to drive through in all kinds of weather. Wish you could explore a bit more, but I understand that is not what a refuge is all about.

Get the children's book - "Let's Find It" - a child's first nature study.

Hunting & fishing are fine, but that should not be the charter for NWRs. Providing access to wildlife and preserving environment, especially critical habitats, are not mutually exclusive. Enhancing public use and enjoyment of NWRs and the habitat, flora & fauna they protect/maintain is necessary and beneficial to the long-term survival of the NWRs themselves.

I am a big fat guy so I do not hike very much per visit - 1/2 mile or less per visit. More observation platforms that are car friendly would be great. America in general is getting bigger everyday. There's more and more fat people like me out here. Address the speed and road dust problem.

I am so glad I live near the Refuge ("the swamp") and for Helen Fenske whose efforts back in the early 1960s saved it (the one in Chatham, NJ) from being an airport.

I appreciate and enjoy the natural beauty of the Great Swamp that is located close to urban areas. I would like to see cross country skiing developed on the trails, also snow shoeing.

I have been hunting the Great Swamp since its inception in 1974. I have seen many improvements in the hunt. A bow season would be great. Keep up the good work.

I run almost weekly at The Great Swamp for app. 2 hrs.

I would like to see more opportunities within this refuge for different types of sportsmen related events other than just culling the herd. Sportsmen and their families enjoy the woods, wildlife and waters more so than the no-sportsmen type person and never want to see the great outdoors disappear.

I would like to see the hunting program have more opportunity to hunt (deer, game birds, pheasants). I would like to see more fishing opportunities at the reserve.

I'm very sorry for the late response, due to death in the family. The Great Swamp hunt was a very enjoyable time.

If you would like any assistance on introducing more information about Climate Change to the Great Swamp NWR (Helen Fenske Visitors Center), note that I am a career environmental engineer and an air quality specialist.

It is a wonderful place and I try to visit it as often as possible.

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Keep saving our open spaces for our wildlife and for our people! Thanks, USA.

Keep up the good work.

My family and I are very grateful for the Great Swamp National Wildlife Refuge! We hope that it will always be preserved and maintained.

My family enjoys going to: Bear Mountain, Harrison State Park, Nyad's Park, Wuchoff Wildlife Center, Allendale Celery Farm, Ridgewood Duck Pond, Ramapo Reserve, Bronx Zoo.

One of my favorite places.

Special interest at the Visitors Center: the bird computer. We enjoyed seeing the lists of local sightings and discussing birds in our (close-by) yard as compared to those in the swamp. Our seven year old grandson loved the computer. Your staff in Basking Ridge has done an excellent job creating this new center!

Thank you very much; may your funding only increase. It is very important to preserve as many natural habitats as we are able to in this country and this world.

Thanks for a great experience.

The Great Swamp is truly one of New Jersey's greatest treasures, and must be preserved!

The refuge was a great visit and educational opportunity for my young 9 yr. old son. He enjoyed the interactive kiosk with all the bird sounds, pictures and data. Well done folks!!

The volunteers do a good job.

The wildlife biologist, Craig, is very informative and an excellent representative for the GSNWR.

There is (or appears to be) much controversy as to whether there really is "climate change" due to human activity (CO<sub>2</sub>, etc.). Hopefully this can be resolved by competent scientific study.

This is an excellent survey. I support the work of the US Fish and Wildlife Service and the National Parks and hope their beauty is not reduced but increased greatly!

This refuge is a great resource for the local community. There are tons of animals and birds, and the volunteers and guests are real lovers of the space.

Truly enjoyed the courteous help from knowledgeable staff, the peace and quiet (was on a week day), and the accessibility.

We really enjoy visiting the Great Swamp; however, we noticed there are not a lot of amenities nearby for food and drink. If there were, I think that would enhance the visitor experience.

Would like to see more hunting and fishing on refuge.

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